DEPARTMENT OF BIOLOGY AND MARINE BIOLOGY

GRADUATE PROGRAM REVIEW

2008-2014
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EXECUTIVE SUMMARY

The Department of Biology and Marine Biology contributes importantly to the teaching, research, and public service missions of the University of North Carolina Wilmington (UNCW). The department began offering the Master of Science in Marine Biology in 1980, and the Master of Science in Biology in 1989. In 2002, we established the Doctor of Philosophy in Marine Biology, which was the first Ph.D. program at UNCW. Since the inception of these programs, we have graduated 440 M.S. students and 18 Ph.D. students. We enjoy continued student interest in our internationally known graduate programs, averaging almost 90 applications per year for fall admission. Our program is selective – admitting, on average, 22% of applicants. These high-quality students enter a graduate program that takes very seriously their academic development. This commitment is reflected in the high retention rates of our students: 95% of our M.S. students and 94% for our Ph.D. students.

Our students join a dynamic department, comprised of highly accomplished and competent faculty, graduate students and staff. Our faculty members are university leaders in grant support, bringing $2.9 million in extramural funding to UNCW each year, which is essential to support student research activities, assistantships and summer stipends. This investment in our graduate students is manifested in their prodigious scholarly output. During the review period, graduate students have been authors on 199 peer-reviewed papers, and 21 have received awards or recognition for the quality of their research at scientific meetings. Graduate students also have been honored with scholarships and fellowships, where 153 have recognized for academic, research or teaching excellence during the reporting period. In addition, 70 graduate students have received independent intra- or extramural funding, and many have taken on leadership and service roles to their scientific and university communities. They also complete their graduate program in a timely manner. During the review period, the median time to graduation for our M.S. students was 2.5 years, and the mean time to graduation for our Ph.D. students was 4.8 years. Ninety percent of our students acquire jobs in their fields or enter Ph.D. and professional programs.

The faculty conducts graduate research and educational activities while maintaining a deeply-rooted commitment to undergraduate education, which forms the backbone of our university. The vibrancy of the graduate programs promotes a research environment that is easily accessible to undergraduate students. This commitment means, though, that our faculty members have heavy workloads for a Ph.D. granting department. While there are many positive features of our graduate programs, there are also notable weaknesses that threaten their sustainability and further development. Chief among these are the low stipends for M.S. Teaching Assistants, an insufficient availability of tuition remissions and scholarships, and a lack of university supported health insurance. Our M.S. students take on critical educational roles for our university, yet do not earn enough to meet basic costs of living. Because our M.S. students must also pay in-state tuition, they are currently being charged almost 50% of their wages to be enrolled in our program. Historically, faculty members have helped offset financial shortfalls during the academic year with increased pay during the summer, but the regional, state and national reduction in success rates for extramural grant proposals has made it more difficult for faculty members to assist students financially with additional summer salary. Intramural summer support would be a mechanism to help remedy this problem. Thus, our department has a long history of, and a continued commitment to, supporting graduate students with extramural grants, but the financial deficits are so profound that substantial investment is necessary to ensure the health and competitiveness of M.S. programs at UNCW.

The Ph.D. stipend level and our commitment to covering full tuition costs provides financial support for our Ph.D. students that more closely approaches cost of living. However, our program has now reached a critical juncture, where enhanced university investment, in the form of more Ph.D. TAs, tuition remissions, and summer support will be required to assure the program’s sustainability and continued growth.

Lastly, our strength as a department relies upon our ability to diversify. This goal is of
fundamental importance, and our department is taking serious steps to include more historically under-represented groups among our faculty and students. We have much work ahead of us, and one important area where the university can enhance its support of these efforts is to provide targeted funding for increasing diversity. Enhanced financial packages available to both graduate students and faculty candidates would strengthen our capacity to develop a more diverse university and department.
1. GENERAL CHARACTERISTICS AND HISTORY

a. DEPARTMENTAL MISSION STATEMENT
   The Department of Biology and Marine Biology is a major contributor to the teaching, research, and public service missions of the University of North Carolina Wilmington. We offer a variety of undergraduate and graduate programs that convey a rigorous and up-to-date understanding of the concepts, principles and theories of the biological sciences and provide our students with knowledge of basic investigative skills and methods of biological inquiry. In our research function, we contribute new insights to fundamental biological processes, from general biological principles, to coastal and marine environments, to biomedical sciences. Where possible, we focus on biological phenomena that impact on the quality of life in our region and the nation. In our public service roles we lend our professional expertise to individuals and organizations working for the improvement of the human condition, especially those agencies committed to the environment.

   In a liberal arts education Biology is of fundamental importance. It provides the student with an understanding of living systems from the level of the ecosystem down to the molecule. For both majors and non-majors the study of biology encourages exploration of personal as well as professional interests. We recognize that our biology classes are particularly important for our non-majors; in their classes we emphasize the biological understanding needed to function successfully as consumers, citizens, and parents in the 21st century.

b. DESCRIPTION OF GRADUATE EDUCATION AND DATES OF NEW PROGRAMS
   Graduate education and training in the department began with the establishment of the M.S. in Marine Biology program in 1980. The M.S. in Biology program was instituted in 1989. Since the inception of these programs, we have graduated 440 Master’s students.

   In fall 2002, we established the Ph.D. in Marine Biology, which was the first doctoral program at UNCW. In spring 2006, Dr. David Meyer graduated as UNCW’s first Ph.D. student. Since then, 17 more students have graduated from this program.

c. SIGNIFICANT ADDITIONS TO THE FACULTY
   Since the last graduate program review (2007), 20 tenure-track faculty members have left the department (8 to retirement, 6 to another job, and 6 for other reasons). During the same period we have hired 12 new tenure-track faculty members and 9 non-tenure-track faculty members, and we are searching for 3 additional tenure-track positions during the 2014-15 academic year. The losses highlight a growing problem of faculty retention due largely to issues related to low and stagnant salaries and increasing workload. As is the case nationally, we also are shifting toward fewer tenure-track hires and more shorter-term contracted lecturers. This trend will aid our capacity to teach our undergraduate students and is a cost savings to the university, but the net loss of tenure-track faculty may cause long term harm to our graduate programs as they are responsible for conducting research, applying for grants, and mentoring graduate students.

d. MAJOR CHANGES IN THE ORIENTATION OF THE ACADEMIC PROGRAM
   Our department regularly reviews both its undergraduate and graduate programs to ensure that our curricula best serve the needs of our students. A major addition to our program since the last review period is the institution of a formal assessment program, as detailed in Sections 7.g. and 7.h. The assessment program has demonstrated that our program is highly effective at meeting our stated learning
objectives, and it has also led to modifications that have enhanced our student’s performance as described below.

Since our last review we have not made significant changes to the curricula of any of our graduate programs. We did change the description of our required introductory course for M.Sc. students (BIO 501) to stress scientific communication, in response to an identified need to better prepare them” for their oral exams (see section 10b below). In 2013, the course description for this class was changed from

**BIO 501 - Methods in Scientific Research**

Credits: (2)
Scientific manuscript preparation and communication techniques: manuscript format, graphics, design of experiments, library use, oral presentation, and writing techniques. Two lecture hours each week.

to

**BIO 501 – Introduction to Science as a Profession**

Credits: (2)
Survey of educational trajectories and employment prospects for graduate students in the sciences, focusing on Biology and Marine Biology. Practical treatment of performance and communication in the scientific profession, with particular coverage of responsible conduct of research, laboratory and field safety, analyses of data, and the writing and reviewing of journal articles and grant proposals. Two lecture hours each week.

We also made a change to the format of the candidacy exam for the Ph.D. program. Prior to 2013, we had required each student to pass a Candidacy Exam that included (1) a written exam consisting of essay questions submitted by the student’s Dissertation Committee that are based upon the graduate curriculum and the student’s area of research, and (2) an oral examination based on the student’s dissertation prospectus. The written exam should be administered no more than 30 days prior to the public presentation and defense of the dissertation prospectus. Many of our faculty felt that the written component of the exam was a large time commitment for both students and committee members, without adding a lot of benefit in terms of revealing the student’s knowledge base. In addition, it was felt that the dissertation proposal (prospectus) document provided a good opportunity to evaluate the writing capabilities of the student, and that the written candidacy exam was not necessarily required for such evaluation. Thus, the faculty agreed to make the oral component the only required exam.

2. FINDINGS OF PREVIOUS REVIEWS

Our graduate program underwent a review in 2007. The invited external reviewers made several recommendations for enhancing our programs. In that review three fundamental problems facing the Department were emphasized. In the opinion of these reviewers the Department, first, lacks sufficient space for research and teaching purposes. Second, faculty workload was judged too high. Third, they suggested that new staff and faculty lines were needed to support continued excellence in scholarly activities. Fourth, the M.S. stipends needed to be raised.

The Department’s responses to these and other recommendations and others are summarized below.

**Suggestion 1: Explore mechanisms for reducing teaching loads for research active faculty.**
Faculty teaching loads in the Department have remained static or have increased since the 2007 review. Increased teaching loads for faculty are principally due to (a) increases in University enrollment and a near doubling of departmental majors coupled with the fact that (b) no new faculty lines have been awarded to
the Department. The number of new faculty hired has kept pace with, but not exceeded, the number of faculty lost to retirement or faculty turnover. The Department presently employs eight full-time lecturers to meet demand for courses.

**Suggestion 2:** *The Department should work to secure additional office and laboratory space for faculty, post-doctoral researchers, and graduate students.*

Acquiring dedicated working space for faculty and graduate students is an acute and on-going problem for the Department. Briefly, the Department has gained offices and lab space in Friday and Dobo Halls. These additions were made by re-purposing existing space. Plans to renovate spaces in other buildings on campus for use by the Department are under way, but these are earmarked for instructional (not research) purposes.

New construction has occurred but, frankly, has had little direct impact on the Department’s graduate program. For example, the Louise Oriole Burevitch Research Laboratory was opened and houses facilities supporting UNCW’s Marine Mammal Stranding Program and selected field programs. Three new buildings have been erected at UNCW’s Crest Research Park including the Marine Biotechnology building, Shellfish Hatchery, and Operations Wing of CMS. At the present time these research buildings house very few of our graduate students.

**Suggestion 3:** *Support staff should be hired to help reduce faculty workloads. Faculty are increasingly distracted by routine paperwork and aspects of grant and research administration.*

No new personnel have been hired in the Department. However, we have been approved to search for a second advising coordinator, to assist our current coordinator, Melanie Canfield. This is a critical addition, as our undergraduate majors have nearly doubled in the past few years to >1000 students. This has led to increased advising loads for Ms. Canfield and the faculty, and since all of our undergraduates are required to have an applied learning component to their degree plan, the assistance in managing internships and other external activities, as well as normal course advising, is essential. However, this new hire will only partially offset the growth in the teaching and advising load for the department, and the lack of net growth in the size of the department faculty means teaching/advising loads will still remain elevated compared to the previous review.

**Suggestion 4:** *The fact that some faculty can take Ph.D. students while others cannot needs to be addressed.*

The Department is keenly aware of this potentially divisive issue. New faculty members are clearly advised as necessary and, when possible, the Department faculty have made every effort to be as inclusive as possible. The Department’s Ph.D. in Marine Biology is expected to remain a specialized low-enrollment program servicing a talented, but small pool of graduate students. For historical, fiscal, and other reasons it is exceedingly unlikely that the Department will establish a second Ph.D. degree (e.g., in Biology) in the foreseeable future. However, we are exploring collaborative programs that would facilitate taking doctoral students in the biological sciences, and we continue to make sure that the faculty evaluation process does not penalize faculty members who are not able to take Ph.D. students.
Suggestion 5: Increase MS graduate student stipends and re-visit the “two class” system of financial support for Master’s and Ph.D. students.

This recommendation continues to be a primary concern of our program. Since the last review, M.S. Teaching Assistant (TA) stipends have increased from $9,500 to $11,000/academic year. Stipends for Ph.D. students are $19,000/academic year. The Department recognizes that the disparity between M.S. and Ph.D. stipends is substantial. Our goal has been, and continues to be, to close this gap by raising stipends for M.S. students.

Suggestion 6: Lines for additional TAs and RAs are needed.

One new M.S. TA line has been awarded to the Department since 2007 and there are no lines for research assistants (RAs). In our Department graduate students working as RAs are typically paid using funds from externally funded grant proposals or other contracts.

Suggestion 7: Require health insurance for, and provide full tuition remissions for, all in- and out-of-state students (M.S. and Ph.D.).

The requirement for health insurance is now a law mandated by the State of North Carolina.

The Graduate School has made efforts to make more remissions available to our out-of-state students; however, no new remissions have been acquired by the Department since 2007. This, along with TA availability, limits our total enrollment. We use all of our tuition remissions to cover out-of-state tuition for our M.S. and Ph.D. students, and we use essentially all of our tuition scholarship money to cover in-state tuition for our Ph.D. students. However, we have no funds to cover in-state tuition for M.S. students and this, along with the low stipend levels, makes our master’s graduate programs a financial strain for most of our students.

Suggestion 8: Add new faculty to relieve overall workloads and increase the breadth of the program.

The Department has received no new faculty lines: therefore, faculty workload remains a principal concern. We have hired 12 new tenure-track faculty members whose expertise complements and broadens the Department’s emphases on research and teaching. These include: Drs. Brian Arbogast (Terrestrial Mammal Conservation), Susanne Brander (Aquatic Toxicology and Endocrinology), Robert Condon (Biological Oceanography), Joseph Covi (Integrative and Comparative Biology), Patrick Erwin (Microbial Ecology), Arthur Frampton (Virology), Stephanie Kamel (Marine Evolutionary Ecology), Zachary Long (Coastal Plant Ecology), Susanna Lopez-Legentil (Marine Molecular Ecology), Darin Pennys (Plant Evolution and Ecology), Ryan Rhodes (Microbiology), and J. Wilson White (Marine Biology).

Suggestion 9: Create post-doctoral teaching positions to provide faculty teaching relief.

Two such positions have been created. These provide teaching and research support for the Graduate Coordinator and the Director of the Microscopy facility.

Suggestion 10: Institute a formal requirement that all graduate students have a course-related teaching experience before graduating.

Nearly all M.S. and Ph.D. students, at one time or another during their program of study, are employed as
TAs. More specialized instruction in biological education can be obtained in the course listed below, which is a requirement for all Ph.D. students and available to M.S. students:

**BIO 594/ BIO694 - Practicum in College Biology Teaching:** An introduction to theory, research, and practice in college biology teaching. Combines supervised internship in biology teaching with formal classroom instruction. For graduate students who have been awarded teaching assistantships in the Department of Biology and Marine Biology and others with permission of instructor. Ph.D. students will be required to engage in limited formal instruction. Two semester hours per week.

**Suggestion 11:** *New efforts are needed to increase minority participation in the faculty and graduate student programs.*

Diversity issues have remained a priority for the Department, and we have had success in attracting underrepresented and international colleagues to our faculty and graduate student population. The department has emphasized enhancing diversity in every faculty search, and we work with the Graduate School to help recruit McNair Scholars, as well as with partner institutions, NC A&T University and Elizabeth City State University, to encourage minority applications.

### 3. GENERAL PROGRAM CHARACTERISTICS

#### a. DESCRIPTION OF GRADUATE PROGRAMS

**MASTER OF SCIENCE IN BIOLOGY AND MARINE BIOLOGY**

The Department of Biology and Marine Biology offers programs of study leading to a Master of Science degree in biology and a Master of Science degree in marine biology. The programs are designed (1) to prepare students for further graduate work leading to the Ph.D.; (2) to provide professional biologists with advanced research and education opportunities; (3) to prepare students as managers of coastal and marine resources, trained to deal with contemporary problems in the environment; or (4) to provide a broad–based graduate program allowing for specialization in the diverse fields of inquiry represented by the faculty of the department.

**Admission Requirements**

Applicants seeking admission to the graduate programs in marine biology and biology are required to submit all of the following to the Graduate School:

1. An application for graduate admission
2. Official transcripts of all college work (undergraduate and graduate)
3. Official scores on the General Test of the Graduate Record Examination (verbal, quantitative, analytical writing)
4. Three recommendations by individuals in professionally relevant fields
5. Resume
6. Research Areas Form/Statement of Interest Form

Scores on the verbal, quantitative and analytical writing portions of the GRE test in the 50th percentile or above are desired. A score of at least 550 on the paper version (213 on the computer version) of the Test of English as a Foreign Language (TOEFL) for applicants whose native language is not English. A baccalaureate degree in a field of biology from an accredited college or university in this country or its equivalent in a foreign institution is required for admission, as well as an average of "B" or better in the undergraduate major. Undergraduate grades, GRE scores, and recommendations are used in concert to determine acceptability. Acceptable students are admitted to the program upon being selected by a faculty
member who will serve as the student's advisor. Selection by a faculty member is a requirement and thus students are encouraged to contact potential advisors. Individuals desiring to take graduate courses as a non-degree-seeking student must have completed a baccalaureate degree in a field of biology. Non-degree candidates must submit an application for graduate admission and official transcripts of all college work. Courses taken at UNCW as a non-degree student will not count toward the hours required for the completion of a degree program upon subsequent acceptance.

**Degree Requirements**
- The program requires 30 semester hours of graduate study.
- Six semester hours of credit may be transferred from another accredited institution. Grades earned on transfer work must be equivalent to “B” or better.
- A minimum of 24 semester hours of graduate study must be completed in residence.
- No more than nine hours of graduate level courses offered by other science departments at UNCW may be applied toward the degree.
- Undergraduate courses taken to make up deficiencies will not count toward the 30 hours required.
- All deficiencies must be remedied prior to graduation.
- The student must successfully complete a comprehensive examination based on prior coursework and an oral defense of the thesis.
- Each student will present a thesis, acceptable to the thesis advisory committee, prior to graduation.
- Each student must complete an approved course of study within five years of the date of the first registration for graduate study.

**Requirements for Master of Science Degrees**
Core courses: required of all students seeking a Master of Science degree in biology or marine biology.
BIO 501 Methods in Scientific Research (2)
BIO 599 Thesis (3–6)

**Master of Science in Biology**
In addition to the core courses listed above, each student, in consultation with his/her thesis advisory committee, shall devise a program of study that meets the requirements below, complements the thesis research, and satisfies individual needs and interests.
Select two of the following:
a) BIO 519 Advanced Topics in Cellular and Molecular Biology (4)
b) BIO 530 Advanced Topics in Evolutionary Biology (3) and BIOL 530 Advanced Topics in Evolutionary Biology Laboratory (1)
c) BIO 534 Advanced Topics in Ecology (3) and BIOL 534 Advanced Topics in Ecology Laboratory (1)
d) BIO 549 Advanced Topics in Physiology (4)

A minimum of 14 hours of elective credit; select from any 500 level biology course, BIO 601-605 and BIO 694. Graduate courses from other disciplines may also be selected, with approval of the student’s thesis committee.

**Master of Science in Marine Biology**
In addition to the core courses listed above, students shall complete the following courses and, in consultation with their thesis advisory committee, select electives to complete a program of study that meets individual needs and interests.
Select two of the following:

a) BIO 519 Advanced Topics in Cellular and Molecular Biology (4)
   or
   BIO 530 Advanced Topics in Evolutionary Biology (3) and BIOL 530 Advanced Topics in Evolutionary Biology Laboratory (1)
   or
   BIO 534 Advanced Topics in Ecology (3) and BIOL 534 Advanced Topics in Ecology Laboratory (1)
   or
   BIO 549 Advanced Topics in Physiology (4)

b) BIO 560 Estuarine Biology (4)

c) BIO 564 Biological Oceanography (3) and BIOL 564 Biological Oceanography Lab (1)

A minimum of 14 hours of elective credit; select from any 500 level biology course, BIO 601-605 and BIO 694. Graduate courses from other disciplines may also be selected, with approval of the student’s thesis committee.

**Ph.D. PROGRAM IN MARINE BIOLOGY**

The Department of Biology and Marine Biology offers a program of study and research leading to the doctor of philosophy in marine biology. The program provides students with a broad background and overview of the fields comprising marine biology and make use of the diverse interests of the marine biology faculty within the department. As is generally the case, the Ph.D. program is primarily a research degree. As such, it is intended to serve students with interests in conducting research in academia, industry, and government along with those who intend to become faculty in undergraduate teaching institutions, managers in technology-based industries and policy makers in government. Students will learn the process of identifying, defining and solving an original research problem. The program also includes a teaching practicum with classroom instruction in pedagogical techniques and technologies along with lecture experience under the guidance of a faculty mentor.

**Admission requirements**

Students will be admitted to the Ph.D. program by a majority vote of the Graduate Advisory Council (GAC) of the Department of Biology and Marine Biology based on eligibility requirements and available resources. Under most circumstances, students admitted to the program will have met the following requirements:

-- received a M.S. degree or equivalent from an accredited university OR, if entering with a B.S., completed all the requirements for the M.S. Biology or M.S. Marine Biology degree at UNCW except submission of bound thesis.*
-- an overall graduate grade point average of at least 3.0 out of 4.0.
-- a score on the Graduate Record Examination General Test with a target of the 65th percentile or better (average for the verbal, quantitative and analytical writing sections).
-- a score of at least 550 on the paper version (213 on the computer version) of the Test of English as a Foreign Language (TOEFL) for applicants whose native language is not English.
-- an application that outlines the applicant’s academic goals and identifies a faculty advisor who has indicated a willingness to mentor the student.
-- three letters of reference, at least two of which must be from faculty members. All three must be from professionals working in the applicant’s field of interest.

*Under certain circumstances, a student may, with the support of his or her faculty advisor, choose to apply to the Ph.D. program before completion of the requirements for the MS biology or marine biology degree. Students who choose this path after their first year of core courses and research planning must complete a new application, including letters of recommendation, to enter the Ph.D. program. If accepted, these students would not take their M.S. oral preliminary exam, but would continue on with their study and take the Ph.D. candidacy exam in year 3. Students who decide upon a Ph.D. later in their academic career, and who have, thus, already taken their preliminary oral exam, may apply to the Ph.D. program, again with the support of their advisor. Students who choose this path must complete a new application, including letters of recommendation, to enter the Ph.D. program. If accepted, these students may decide to bind a M.S. thesis, or simply continue on with their study and research and take the candidacy exam in year 3.

Documents to be submitted for admission:
1. An application for graduate admission
2. Official transcripts of all college work (undergraduate and graduate)
3. Official scores on the Graduate Record Examination (verbal, quantitative, analytical writing and subject test in biology)
4. Three recommendations with accompanying letters by individuals in professionally relevant fields, one from the intended faculty mentor.
5. Official score on the TOEFL (if applicable). TOEFL scores are good for two years from the date the test is administered.
6. Current curriculum vitae
7. Detailed summary of M.S. thesis research (maximum of three pages)
8. Statement of interest for Ph.D. research (maximum of three pages)
9. Reprints or copies of any publications (if applicable)
10. Application and supporting documents must be submitted by the published deadline

Degree Requirements
1. The program requires 78 post baccalaureate (48 post-M.S.) semester hours of graduate study.
2. The maximum amount of credit that a Ph.D. student may count toward a doctorate from a master’s degree program is 30 semester hours. This applies whether the master’s degree was earned at UNCW or elsewhere. Six post-M.S. semester hours of credit may be transferred from another accredited institution. Grades earned on transfer work must be equivalent to “B” or better and must be approved by the Graduate Advisory Committee.
3. A minimum of 24 semester hours of graduate study must be completed in residence.
4. Each student must pass a Candidacy Exam that includes an oral examination based on the student’s dissertation prospectus. The Candidacy Exam should be taken during the second year of residence.
5. The student must complete and defend a dissertation based on a research program approved by the student’s committee that results in an original, high quality, significant, and substantial body of research.
6. All requirements for the degree must be completed within six years after admission to the Ph.D. program (i.e. post-MS).

Additional requirements for the Ph.D. in marine biology
1. Must have master’s degree or must complete course and research requirements of a master’s degree program as described above.
2. Must complete the following courses:
Graduate Seminars in Marine Biology (2 credit hr each; minimum of three required (6)
   BIO 601 Oceanography and Environmental Science*
   BIO 602 Ecology
   BIO 603 Physiology and Biochemistry
   BIO 604 Cellular and Molecular Biology
   BIO 605 Evolution and Biodiversity
   BIO 690 Seminar (1)
   BIO 694 Practicum in College Biology Teaching (2)
   BIO 699 Dissertation (12)

*Required of all students: Prerequisite: Biological Oceanography (564) or equivalent

In addition to the above requirements, each student in consultation with his/her dissertation committee, shall select a minimum of 27 hours of elective credit that may include graduate courses and research hours (BIO 698).

Course descriptions of core and elective courses can be found in Appendix 1, and may also be viewed in the on-line catalog at:
http://catalogue.uncw.edu/content.php?catoid=18&navoid=1222

b. PROGRAM ENHANCEMENT OF DEPARTMENTAL, COLLEGE AND UNIVERSITY OBJECTIVES

   The graduate programs in the Department of Biology and Marine Biology have an extensive and well documented history of promoting the missions of the department, the College of Arts and Sciences, and the University, including but not limited to the seven strategic goals of UNCW. The educational aims of the graduate programs form the foundation upon which all other objectives rest. At the heart of the educational mission is the relationship between the faculty mentor and the graduate student. The mentor provides a research context and support in the form of lab supplies, equipment, and assistantships, as well as training in technical methods, safe laboratory practices, analytical approaches, and critical evaluation of data and the published literature. This intensive learning environment is reinforced by the faculty thesis committee, which offers the student a breadth of knowledge and expertise to draw upon during their thesis research while also promoting academic rigor.

   This process yields a number of tangible products. Perhaps the most important contribution our graduate program makes to the University, the state of North Carolina, and society at large, is creating a pool of highly trained alumni who are well prepared to be responsible citizens, and who are positioned to succeed in an increasingly technical work environment. In addition, many of our top students are attracted to our graduate programs from other states, and they often remain in North Carolina after graduation. The multidisciplinary nature of modern biological research means that these graduate students undergo study that encompasses many fields, including biology, chemistry, physics, mathematics and computer science. The high quality of the graduate programs, in turn, helps the department attract top level faculty who reinforce the educational and research missions of UNCW. In addition, the faculty serves as a resource to the community at large by providing professional expertise in a variety of fields, serving on state and federal panels, and conducting research of regional or national interest.

   One of the unique properties of our departmental graduate programs is that undergraduates, master’s students, Ph.D. students, post-doctoral trainees and faculty members work together in many labs as an integrated research team. That is, the graduate students not only have the opportunity to work with more experienced scientists, but they also learn leadership and team building skills by mentoring undergraduate students. The graduate students also typically gain extensive experience in a formal teaching setting, usually as a laboratory TA, which further enhances leadership and organizational skills.
c. ACADEMIC PHILOSOPHY REFLECTED WITHIN GRADUATE PROGRAM

MASTER OF SCIENCE IN BIOLOGY AND MARINE BIOLOGY

The program of study for the Master’s of Science in Biology and in Marine Biology is built on a strong core of coursework that strives to balance the breadth provided by the required courses with the depth provided by the diverse elective offerings. The core requirements ensure that students achieve the necessary foundation upon which their research will be based, as well as an understanding of biology in areas outside their area of specialization. At the same time, tremendous flexibility is maintained by the broad array of elective courses available (5-10/semester). We feel that this balance facilitates our meeting of the four goals of our M.S. programs (see Section 3.a. above).

One measure of the success of our M.S. program is reflected in the paths taken by students once having completed their program of study at UNCW. Since 2007, 36% of our graduates have gone on to pursue additional graduate study (Objective 1), 40% are currently working as professional scientists (Objectives 2 & 3) and 19% have become educators themselves, teaching in schools and community.

The ability of our programs to achieve the stated objectives is also assessed at several points during each M.S. student’s tenure at UNCW. The process begins with the required BIO 501: Introduction to Science as a Profession. This course is designed to prepare students for their graduate careers by covering such topics as scientific writing and oral presentation, experimental methodology and design, funding and career opportunities, proposal writing, and literature search techniques. In addition to orienting students in their first semester, this course requires students to develop a sound research idea, present that idea in the form of a prospectus and substantiate the project with a literature review. In their second semester, they must orally present their research project to the department during the Graduate Student Prospectus Symposium. The breadth of knowledge attained by students in the required core sequence, as well as their depth of knowledge regarding their area of research focus, is evaluated by an oral exam administered during their third semester. A final and more focused oral examination of the depth of a student’s knowledge in their chosen area of specialization takes place at the thesis defense, where students must successfully communicate their research to a broad public audience, and competently handle questions from that audience as well as the focused questions from their thesis committee. The thesis, written in the format of a manuscript to be submitted for publication, represents the formal culmination of each student’s graduate experience within our department.

Another indicator of the success of the program of mentoring students into scientists is the number of students who publish their research in peer-reviewed journals. Since 2007, M.S. and Ph.D. students have been authors on 199 peer-reviewed papers, and first authors on 151. This is an underestimate of total student productivity, as several faculty members who mentored students have retired or moved to other positions and did not respond to our request for student publications. The ability of our graduate students to undertake, execute and successfully defend their results sufficiently to earn a designation of “acceptable for publication” by the wider scientific community is a true indicator of the success of these graduate programs.

Ph.D. PROGRAM IN MARINE BIOLOGY

The program of study for the doctor of philosophy in Marine Biology is designed to expose our students to a broad array of topics in marine biology and oceanography, and to empower them to identify, define and solve original research problems.

Our Ph.D. curriculum builds upon the strong core curriculum of the M.S. programs and adopts seminar format courses (BIO 602, 603, 604, 605) to extend our students’ knowledge base in marine biology. These seminars are designed to permit students to explore, in collaboration with faculty, topics of special interest in the fields of marine ecology, physiology and biochemistry, cell and molecular biology, and evolution and biodiversity. In addition, all students must participate in the seminar on oceanography and environmental science (BIO 601) because we feel that it is of paramount importance that Ph.D.
candidates earning a degree in Marine Biology have a strong foundation in oceanography. If students have not yet taken a graduate-level course in oceanography (BIO 564 in our department), they must do so before they progress to this required seminar. Because of our department’s commitment to education, our Ph.D. students also participate in a teaching practicum with classroom instruction in pedagogical techniques and technologies. At the heart of the Ph.D. program is the student’s development as an independent researcher. We feel that the flexibility offered by the seminar format, as well as the interactive and participatory nature of seminar courses, fosters this development. As stated above (Section 3.a.), our objective in offering this degree is to serve students with interests in conducting research in academia, industry, and government along with those who intend to become faculty in undergraduate teaching institutions, managers in technology-based industries and policy makers in government.

The ability of our program to achieve its objectives is assessed at several points during each Ph.D. student’s tenure at UNCW. During their first year in the program, Ph.D. students develop a dissertation proposal. This proposal, which can be written as an NSF Doctoral Dissertation Improvement Grant or in a more traditional proposal format (i.e. including a comprehensive literature review) is critically evaluated by the mentor and dissertation committee and must be approved by the committee before the student can progress.

Ph.D. students must complete an oral qualifying exam. This exam consists of both a (a) presentation of the dissertation proposal as a departmental seminar and (b) a candidacy exam to permit questioning of the proposal and areas covered. During these events, the student must demonstrate their scholarly authority of, and their ability to competently answer questions on, their research project as well as demonstrate a broader understanding of marine biology. The proposal and candidacy exam must be completed before the beginning of the 3rd year of study.

The dissertation, written in the format of a series of manuscripts, represents the formal culmination of each Ph.D. student’s graduate experience within our department. At the time of the last program review, one Ph.D. student had produced a dissertation, defended it, and graduated. Since 2007, an additional 17 students have successfully defended their dissertations and graduated from the program. Since 2007, our Ph.D. students have published 81 papers from their work in our department.

4. CERTIFICATION, INTERDISCIPLINARY AND OTHER PROGRAMS

The Department of Biology and Marine Biology does not offer any graduate-level certification programs. The department does participate in the interdisciplinary M.S. in Marine Science program. Over the sixteen years of the M.S. in Marine Science program, biology faculty members from our department have directed or co-directed 72 of the 130 total students who have participated in this master’s program. Our program also provides support for selected M.S. Marine Science students in the form of graduate TAs, and we are pleased to have these students contributing to our undergraduate teaching mission. Our introductory course, BIO 501: Introduction to Science as a Profession, services those M.S. Marine Science students who have biology faculty as their advisors, and our graduate courses serve as core and elective courses in the M.S. Marine Science curriculum. We participated in the planning of the multidisciplinary M.A. in Environmental Sciences, some of whose students now take our graduate courses, and the interdisciplinary M.S. in Coastal and Ocean Policy; two of our faculty now teach a course that serves that program. The department is also involved at this time in planning for an inter-institutional Ph.D. program in coastal and marine science with East Carolina University (program title yet to be decided).

In addition to these established inter-disciplinary graduate programs, our faculty and students are actively involved in a wide range of interdisciplinary, multi-institutional scientific programs that benefit the community. These include the Coastal Ocean Research and Monitoring Program and the Lower Cape Fear River Program. In addition, faculty and students participate in programs with the UNCW Marine Mammal Stranding Program, the Karen Beasley Sea Turtle Hospital, Ft. Fisher Aquarium, Cape Fear
River Watch, the Aquarius underwater ocean laboratory, the Shellfish Research Hatchery, the UNCW Finfish Mariculture program, and the UNCW Coastal Society.

Our students also benefit from their ability to participate in two certificate programs within our College – Applied Statistics and Environmental Studies. Availability of these certificate programs enhances the breadth of training of our graduate students.

5. FACILITIES

a. DESCRIPTION OF FACILITIES

The Department of Biology and Marine Biology occupies c. 42,000 ft² of laboratory and office space in two principal buildings on UNCW’s main campus. Dobo Hall houses faculty from our department and the Department of Chemistry and Biochemistry. Our department occupies 3,500 ft² of office, 7,900 ft² of teaching, and 11,100 ft² of research space in Dobo Hall. Friday Hall provides an additional 3,900 ft² of office, 8,500 ft² of teaching and 7,000 ft² of research space. Laboratories in Dobo Hall and Friday Hall are well equipped with instrumentation needed for a wide range of molecular, microbial and organismal research. In addition, the Department of Chemistry and Biochemistry, also located in Dobo Hall, houses a number of analytical instruments that are available to the Department of Biology and Marine Biology, including nuclear magnetic resonance spectrometers, mass spectrometers and gas chromatographs. The department also has an animal care facility located in the PPH building between Dobo Hall and Friday Hall that has both wet lab space for aquaria and laminar flow cage enclosures.

The Oriole Burevitch laboratory provides laboratory and storage space for faculty and students conducting field studies on marine and terrestrial mammals and reptiles, seabirds and marine fishes.

Offices and research laboratories for approximately one-third of the Department’s faculty are located at UNCW’s CREST Research Campus on the intra-coastal waterway. This campus comprises three principal structures: the Center for Marine Science, Oyster Hatchery and Marine Biotechnology buildings. Facilities at the CREST Campus are described in more detail in a separate section below.

A representative, but by no means complete, list of major equipment housed in Friday Hall, Dobo Hall and at CMS during the previous Graduate Program Review is presented below. For comparison, a list of equipment obtained since then (2008-present) is presented as well; this equipment has been obtained by a mix of intra- and extramural funding.

Examples of equipment housed in research laboratories in Friday Hall, Dobo Hall and the Center for Marine Science; this list is not exhaustive.

• Low speed, high speed centrifuges
• Ultralow freezers, refrigerator freezers
• Analytical and microbalances
• Liquid scintillation and gamma counters (β and γ counters)
• Tissue culture facilities including tissue culture hoods and incubators, and laminar flow hoods
• Spectrophotometers (standard and microplate readers),
• Fluorometers, luminometers
• ELISA readers
• Thermal cyclers
• Gel analysis hardware and software
• Phosphor imager
• Research-grade light microscopes in addition to a multi-user Microscopy Facility (see below)
• Coulter counter
• Flow cytometers including one equipped for cell sorting
• Nutrient analysis laboratory (four-channel autoanalayzer, total organic carbon and nitrogen analyzers,
elemental analyzer

- HPLC and gas chromatographs
- Histology core laboratory
- WNC Herbarium, range and an animal care facility
- Unix and Sun workstations; personal computers upgraded every 2-4 years
- Computing facilities for the development of image processing, and analysis software applicable to the imaging of biological specimens.

Examples of equipment acquired by Department faculty since 2008; this list is not exhaustive

- FEI Tecnai G2 Spirit Biotwin transmission electron microscope
- Leica SP8 laser scanning confocal microscope
- Olympus IX81 spinning disc confocal microscope
- Olympus SZ dissecting microscope with infinity digital camera
- Leica UC7 ultramicrotome
- Leica CM 1860 cryostat
- Bio Rad PDS-1000 particle delivery system
- Leica EM CPD300 critical point dryer
- Dedicated Marine Mammal Stranding Response Truck
- REVCO ULTRACOLD -86 C chest freezer 20.5 CUFT
- Walk-in cold room to hold specimens for detailed dissection
- Thermocyclers (several)
- Thermomixer and table-top shakers
- Microcentrifuges, refrigerated centrifuges (several)
- Expansion of research quality aquaria systems
- Micromill
- Analytical balances (several)
- Peltier biological incubators
- Dissecting microscope with digital camera and software package
- GE Ultrospec 8000 UV/Vis spectrophotometer
- Molecular Devices M2e multimodal microplate spectrophotometer
- Labconco Biological Safety Cabinet for cell culture
- Nuair CO2 incubator for cell culture
- Seahorse XFp metabolic flux analyzer
- Olympus BX40 phase contrast microscope
- Olympus IMT-2 inverted phase contrast microscope
- DMA-80 mercury analyzer
- IKA C2000 calorimeter system
- Perkin-Elmer TriCarb 2910 Liquid Scintillation Counter
- Turner Trilogy module-based fluorometer
- Genesys 20 Spectrophotometer
- 25 Leica DME compound light microscopes
- Thermo Scientific Heracell 150i CO2 incubator
- Labconco Protector Controlled Atmosphere Glove Box
- Sartorius CPA225D micro scale
- Qiagen TissueLyser LT
- DIC/phase contrast inverted microscope with image analysis software
- Research Flume: 4.0m x 0.75m x 0.30m water channel capable of producing flows up to 0.37 m/s. Removable floor panels allow for addition of sediment to a depth of 0.15 m.
- Dantec Particle Image Velocimeter to perform combined measurements of planar 2 component velocity
and concentration measurements for marine applications.

- Nortek "Vector" Acoustic Doppler Velocimeter (x3)
- Nortek "Aquadopp" Acoustic Doppler Profiler
- Sontek "Hydra MicroADV" Acoustic Doppler Velocimeter
- Sequoia Scientific LISST Portable particle analysis system
- Turner Designs "Model 10AU" Chlorophyll Fluorometer
- Turner Designs "Trinity" Flouroimeter with analysis modules for chlorophyll, phycoerythrin, phycocyanin, rhodamine, and fluorescein.
- Eureka Environmental Engineering "Manta 2" Datasonde with temperature, pH, dissolved oxygen, conductivity, and turbidity sensors
- C&I Equipment Water Pumper Tank Trailer - 525 gallon tank trailer with pump for filling and dispensing seawater.

**UNCW Microscopy Facility in Dobo Hall**

The microscopy facility is a dedicated 2,000 ft² laboratory suite located in Dobo Hall expressly designed to accommodate light and electron microscopes. The entire suite is on a separate slab to minimize vibrations and main power lines are routed around the suite. Two 15 ft x 15 ft rooms house a new FEI Tecnai G2 Spirit Biotwin transmission electron microscope and a Philips XL 30S FEG scanning electron microscope. The XL30S FEG SEM is a high-resolution instrument with secondary and backscattered electron detectors as well as an integrated EDAX non-dispersive X-ray microanalysis unit with both analytical and mapping software. New microscopes acquired via extramural funding from NSF’s MRI program since 2007 include a Leica SP8 laser scanning confocal microscope, an Olympus IX81 spinning disc confocal microscope, and an Olympus SZ dissecting microscope with infinity digital camera.

The sample preparation area contains two full-sized hoods, ample bench space, and a darkroom, adjacent to the transmission electron microscope, also serves the suite. Support equipment for specimen preparation include: a Polaron Critical Point Dehydration Unit, a Leica Cryocut 1800 cryostat, a Sorval MT-1 ultramicrotome, a Sorval MT-2 ultramicrotome, a Reichert-Jung Ultracut E ultramicrotome, an LKB 7800 glass knife maker, a Campden 725M vibrotome, a Denton DV502 vacuum evaporator, a Cressington 208HR high resolution sputter coater, as well as general histological support equipment (rotary microtomes for paraffin sections, pH meters, mixers, incubators, balances, ovens, autoclave, etc.). New (replacement) equipment, including a Leica UC7 ultramicrotome, Leica CM 1860 cryostat, Bio Rad PDS-1000 particle delivery system, and Leica EM CPD300 critical point dryer, were obtained through a multi-authored NSF MRI proposal.

A separate 10' x 30' room houses the light microscopes. The room has high and low pressure air, positive ventilation, and computer network connections. In addition to the new microscopes listed above, vibration free tables house the light microscopic equipment which includes: an Olympus BX60 microscope with phase, bright field, and epifluorescence; an Olympus IMT inverted microscope with phase, bright field, epifluorescence and Hoffman modulation contrast optics; a Zeiss Axioscope polarized light microscope; a Zeiss Stemi SV 6 polarizing dissecting scope; a Nikon dissecting scope with split prism for recording stereo pairs; and SPOT RT and SPOT RTke digital cameras. All of these scopes are attached to PC’s with DVD writers and network connections. Image Pro Plus image analysis software is installed on computers linked to the microscopes as well as to a remote station where recorded images can be analyzed. The Olympus Fluoview 1000 Confocal Microscope has three detectors, two channels spectral and one channel with filters. It has lasers suitable for excitation at 405/458/488/515/543/633 with AOTF control. The spectral detectors have a 400-790 nm range, a resolution of 2nm and a speed of 140 nm/sec. It is housed on an Olympus IX81 inverted microscope with PLAN APO lens, DIC capability and motorized Z axis travel of 10mm with 10nm resolution.

The microscopy facility has a faculty supervisor (Dr. Alison Taylor), a full-time, university funded
microscopy lab technician (Daniel Mark Gay) with over 20 years of experience in electron and light microscopy, and a post-doctoral associate who teaches classes in microscopy, supports the facility and conducts independent research in Dr. Taylor’s lab. All major instruments are under service contracts paid by UNCW.

Crest Research Campus: Center for Marine Science

The Center for Marine Science (CMS) at UNCW supports and promotes research and instructional activities involving students and faculty of various departments. Nearly one-third of the Department’s faculty, including their offices and research laboratories, are housed at CMS. CMS also hosts the North Carolina National Estuarine Research Reserve Program (NC-NERR) as well as administrative offices for the NC SeaGrant Program. CMS/UNCW historically hosted one of six the National Oceanic and Atmospheric Administration’s National Undersea Research Centers (NOAA-NURC) but these offices were recently closed.

CMS provides research laboratories for faculty and students, boats for research and field trips, a seawater system (raw and filtered), a machine/instrument shop, and marine engineering services. CMS also operates the R/V Cape Fear, which is 63 ft in length and 21 ft in beam, and has a draft of 4.5 ft. It has a cruising speed of 15 knots and a fuel capacity of 1,800 gallons. It has been used for work on benthic and chemical ecology as well as marine geology, marine archeology, and for training students in scientific diving and ship-board methods.

CMS occupies 80,000 sq. ft. building constructed on University property adjacent to the Intracoastal Waterway. This property, located at Myrtle Grove, is about seven miles southeast of the main UNCW campus. The facility serves as a marine science center for UNCW, visiting scientists from other campuses of the University of North Carolina system, and for visitors from other universities. Facilities exist to support research in the deep water ocean, near-shore waters, barrier islands and estuaries. The Center also provides space for other related agencies and supports marine research projects conducted in the coastal region of North Carolina, in the southeast region of the U.S.A., and other locations as required. A major goal of this facility is to provide the State of North Carolina with a first class marine science facility with quality space for research and immediate access to good quality seawater.

The Center for Marine Science at Myrtle Grove is divided among the following agencies/disciplines: Marine Biology, Oceanography, Coastal and Estuarine Systems, Marine Geology, Aquaculture, Chemistry, Marine Biotechnology, and Public Service. The largest group of occupants is faculty from the Department of Biology and Marine Biology, but faculty from the departments of Geology and Geography, Physics and Physical Oceanography, Mathematics and Statistics are also residents. This integration provides greater opportunities for interaction between faculty and students in marine biology with those in other subdisciplines of the marine sciences. Features of the Center include: group meeting facilities for up to 150 individuals; fully equipped research laboratories, classrooms, and marine science laboratories; a greenhouse with running seawater; a radioisotope laboratory; computer workrooms, cold rooms, walk-in freezers; temperature controlled rooms; autoclave and media preparation room; darkroom; chemical storage and balance rooms; fireproof vault for data storage; clean room; central analytic facility; sample processing rooms; aquarium room with running seawater; indoor storage; outdoor storage; shower/locker facilities; and outdoor facility for tanks with running sea water, and a 900 foot pier with docking facilities for several coastal research vessels on the Atlantic Intracoastal Waterway. The seawater system provides raw, filtered, and purified seawater at flow rates up to 600 liters/min; tank farm services; and aquarium room services.

Several Core facilities have been established to support particular fields of marine science research. These currently include cores for the cultivation of harmful algae, nutrient analysis, analytical chemistry, spectroscopy and DNA analysis. Each core is directed by a faculty member who in consultation of a core user group, has established procedures governing access and use of these facilities. Support for the acquisition and maintenance of core instrumentation is provided through the efforts of the Core
directors and the user groups who work together to acquire the necessary extramural funding. The Center routinely provides partial support for the maintenance of Core equipment, with the remainder in some cases, coming from modest use fees.

The location of the Center provides easy access to regional marine environments such as: tidal marshes/mud flats/sand flats; tidal creeks; barrier islands and tidal inlets; the Atlantic Intracoastal Waterway; near-shore marine environments; the Gulf Stream; hard bottom communities; sand dunes and maritime forests; and both highly developed and minimally developed estuarine environments.

**Crest Research Campus: Oyster Hatchery and Marine Biotechnology Buildings**

The Oyster Hatchery is a recent addition and a state-of-the-art aquaculture facility. Research in this 16,000 sq. ft. facility focuses principally of the production of biomass and the management of stock structures for bivalves of economic importance (principally oysters and scallops). The facility is equipped with an array of equipment including algal bioreactors and shellfish growth chambers.

The Marine Biotechnology building was completed in 2012. Research conducted in this building focuses on the discovery and development of commercially valuable natural products from marine organisms.

**b. ADEQUACY OF FACILITIES**

The growth of the graduate programs in Biology and Marine Biology would be measurably enhanced by improvements in several broad areas of support.

First, enrollment at UNCW and the number of Departmental majors has increased significantly in the last five years. This is necessarily increasing faculty workload. One solution to this problem is to hire new faculty, but the Department has received no new (i.e., beyond replacement) faculty lines. If the Department were to receive new faculty lines there would be limited ready office or laboratory space for new hires. Acquisition of new faculty, using new faculty lines will require construction of new office and laboratory facilities, repurposing existing space (which means relocating their present occupants), or the use of temporary structures.

Second, our students are fortunate to have access to a diversity of state-of-the-art instruments in support of their research and education at UNCW. Within our department, and at CMS, students have access to these tools both through shared-use facilities (e.g., microscopy lab in Dobo Hall, DNA and Nutrient Analysis Core Facility at CMS) and through individual faculty member labs. In addition, the university has in the past two years instituted a policy of replacing high priority equipment that was purchased using capital funds, thus helping preserve the effectiveness of the infrastructure that we have in place. However, a continued need exists to identify new space to locate joint-use laboratory facilities to house equipment purchased by faculty from extramural funding.

Third, there are also infrastructural deficiencies for the support of faculty in the administration of grant awards. Each year, the Department of Biology and Marine Biology brings an average of $2.9 million in new extramural funding to the university (see Section 9 below). We are extremely appreciative of the professional efforts of Ms. Kimberly McKoy, Office of Research Services and Sponsored Programs, who oversees grant activity in our department, among others. Faculty, though, often experience substantial increases in administrative workloads associated with the management of extramural funding, particularly when awards reach the level sufficient to support multiple graduate students. Our exemplary staff members, who are described in Section 6.c. below, are already working at capacity to help support the faculty in these matters. We believe that the department would benefit greatly from the addition of a new staff member who could help faculty with the administrative workload (e.g. hiring, budgets, compliance) associated with extramural funding.

The pursuit of extramural funding resources, necessary to investigate new research areas and increase growth in the graduate programs, would also benefit from enhanced support by the university administration. For instance, more opportunities for faculty release time could be afforded that would...
provide faculty members with adequate time to devote to these pursuits. Because we take very seriously our undergraduate teaching mission, faculty workloads are relatively heavy for a department with such a sustained high level of extramural funding and research productivity. In fact, our department initiated the Ph.D. program with no change to our faculty workloads, and we have experienced a near doubling of undergraduate majors with no additional support. We must find creative ways in which to make workloads manageable to support the graduate programs while meeting our teaching responsibilities. There are a number of potential strategies to help better manage workloads, including increasing release time, hiring more faculty, and increasing the administrative support staff.

Fourth, and most importantly, the program requires more permanent staff for instrumentation operation, maintenance, and student training. Currently, only a single full-time departmental staff member falls under this category, and the duties he performs are invaluable to the success of the graduate program. Additional technical personnel would further enhance graduate student research by providing expertise and training for the sophisticated instrumentation that is increasingly playing a central role in graduate thesis projects. There is a clear need for growth in the area of technical support for the Department.

6. PERSONNEL

a. TENURE TRACK FACULTY

<table>
<thead>
<tr>
<th>Name</th>
<th>Rank</th>
<th>Hired</th>
<th>Deg.</th>
<th>Graduating Institution</th>
<th>Research interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arbogast, Brian</td>
<td>Assoc.</td>
<td>2008</td>
<td>Ph.D.</td>
<td>Wake Forest Univ.</td>
<td>Vertebrate Conservation Biology</td>
</tr>
<tr>
<td>Baden, Daniel G.</td>
<td>Prof.</td>
<td>1998</td>
<td>Ph.D.</td>
<td>Univ. of Miami</td>
<td>Toxic marine algae, toxicology</td>
</tr>
<tr>
<td>Bailey, J. Craig</td>
<td>Assoc.</td>
<td>1999</td>
<td>Ph.D.</td>
<td>Louisiana St. Univ.</td>
<td>Molecular phylogeny, phycology</td>
</tr>
<tr>
<td>Ballard, Timothy</td>
<td>Assoc.</td>
<td>1984</td>
<td>Ph.D.</td>
<td>Wake Forest Univ.</td>
<td>Human and comparative physiology</td>
</tr>
<tr>
<td>Borrett, Stuart R.</td>
<td>Assoc.</td>
<td>2007</td>
<td>Ph.D.</td>
<td>Univ. of Georgia</td>
<td>Quantitative ecology, modeling</td>
</tr>
<tr>
<td>Brander, Susanne</td>
<td>Assist.</td>
<td>2013</td>
<td>Ph.D.</td>
<td>U. Cal. Davis</td>
<td>Toxicology &amp; Pharmacology</td>
</tr>
<tr>
<td>Cahoon, Lawrence</td>
<td>Prof.</td>
<td>1982</td>
<td>Ph.D.</td>
<td>Duke Univ.</td>
<td>Biological oceanography</td>
</tr>
<tr>
<td>Condon, Robert</td>
<td>Assist.</td>
<td>2014</td>
<td>Ph.D.</td>
<td>V.I.M.S.</td>
<td>Biological oceanography</td>
</tr>
<tr>
<td>Covi, Joseph</td>
<td>Assist.</td>
<td>2012</td>
<td>Ph.D.</td>
<td>L.S.U.</td>
<td>Integrative and Comparative Biology</td>
</tr>
<tr>
<td>Dodd, Diane</td>
<td>Assist.</td>
<td>1985</td>
<td>Ph.D.</td>
<td>Yale Univ.</td>
<td>Genetics</td>
</tr>
<tr>
<td>Durako, Michael</td>
<td>Prof.</td>
<td>1997</td>
<td>Ph.D.</td>
<td>University of S. Florida</td>
<td>Coastal plant biology</td>
</tr>
<tr>
<td>Emslie, Steven D.</td>
<td>Prof.</td>
<td>1998</td>
<td>Ph.D.</td>
<td>Univ. of Florida</td>
<td>Ornithology, paleobiology</td>
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<tr>
<td>Finelli, Christopher</td>
<td>Assoc.</td>
<td>2006</td>
<td>Ph.D.</td>
<td>Univ. of S. Carolina</td>
<td>Biological oceanography</td>
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<tr>
<td>Frampton, Arthur</td>
<td>Assist.</td>
<td>2008</td>
<td>Ph.D.</td>
<td>Univ. Tennessee</td>
<td>Cell Biology</td>
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<tr>
<td>Name</td>
<td>Title</td>
<td>Year</td>
<td>Degree</td>
<td>Institution</td>
<td>Major Area</td>
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<td>Kamel, Stephanie</td>
<td>Assist.</td>
<td>2013</td>
<td>Ph.D.</td>
<td>Univ. Toronto</td>
<td>Ecology &amp; Evolution</td>
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<tr>
<td>Kinsey, Stephen</td>
<td>Prof.</td>
<td>1997</td>
<td>Ph.D.</td>
<td>Florida State Univ.</td>
<td>Biochemistry, cellular energetics</td>
</tr>
<tr>
<td>Koopman, Heather</td>
<td>Prof.</td>
<td>2004</td>
<td>Ph.D.</td>
<td>Duke Univ.</td>
<td>Marine lipid physiology</td>
</tr>
<tr>
<td>Lankford, Thomas E.</td>
<td>Assoc.</td>
<td>2000</td>
<td>Ph.D.</td>
<td>University of Delaware</td>
<td>Ichthyology, fish biology</td>
</tr>
<tr>
<td>Long, Zachary</td>
<td>Assist.</td>
<td>2009</td>
<td>Ph.D.</td>
<td>Rutgers Univ.</td>
<td>Ecology</td>
</tr>
<tr>
<td>Pawlik, Joseph</td>
<td>Prof.</td>
<td>1990</td>
<td>Ph.D.</td>
<td>Scripps Inst. Oceanography</td>
<td>Marine chemical ecology</td>
</tr>
<tr>
<td>Pennys, Darren</td>
<td>Assoc.</td>
<td>2015</td>
<td>Ph.D.</td>
<td>U. Florida</td>
<td>Plant Biology</td>
</tr>
<tr>
<td>Posey, Martin</td>
<td>Prof.</td>
<td>1989</td>
<td>Ph.D.</td>
<td>Univ. of Oregon</td>
<td>Estuarine ecology</td>
</tr>
<tr>
<td>Rhodes, Ryan</td>
<td>Assist.</td>
<td>2013</td>
<td>Ph.D.</td>
<td>Univ. Rhode Island</td>
<td>Microbiology</td>
</tr>
<tr>
<td>Roer, Robert</td>
<td>Prof.</td>
<td>1979</td>
<td>Ph.D.</td>
<td>Duke Univ.</td>
<td>Biomineralization, osmoregulation</td>
</tr>
<tr>
<td>Satterlie, Richard</td>
<td>Prof.</td>
<td>2004</td>
<td>Ph.D.</td>
<td>Univ. of Ca-Santa Barbara</td>
<td>Neurophysiology</td>
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<tr>
<td>Scharf, Frederick</td>
<td>Prof.</td>
<td>2003</td>
<td>Ph.D.</td>
<td>Univ. of Massachusetts</td>
<td>Fisheries biology</td>
</tr>
<tr>
<td>Stapleton, Ann</td>
<td>Assoc.</td>
<td>2001</td>
<td>Ph.D.</td>
<td>Univ. of Chicago</td>
<td>Plant genomics</td>
</tr>
<tr>
<td>Taylor, Alison</td>
<td>Prof.</td>
<td>2007</td>
<td>Ph.D.</td>
<td>Oxford Brookes Univ.</td>
<td>Cell Biology</td>
</tr>
<tr>
<td>Tomas, Carmelo</td>
<td>Prof.</td>
<td>1999</td>
<td>Ph.D.</td>
<td>Univ. of Rhode Island</td>
<td>Marine phytoplankton</td>
</tr>
<tr>
<td>Volety, Aswani</td>
<td>Prof.</td>
<td>2014</td>
<td>Ph.D.</td>
<td>William &amp; Mary</td>
<td>Marine Ecology</td>
</tr>
<tr>
<td>Webster, David</td>
<td>Prof.</td>
<td>1977</td>
<td>Ph.D.</td>
<td>Texas Tech</td>
<td>Mammalogy</td>
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<tr>
<td>White, William</td>
<td>Assist.</td>
<td>2010</td>
<td>Ph.D.</td>
<td>U.C. Davis</td>
<td>Marine Ecology</td>
</tr>
<tr>
<td>Wilbur, Ami E.</td>
<td>Assoc.</td>
<td>1999</td>
<td>Ph.D.</td>
<td>Univ. of Delaware</td>
<td>Shellfish genetics and mariculture</td>
</tr>
</tbody>
</table>
### b. NON-TENURE TRACK FACULTY

<table>
<thead>
<tr>
<th>Name</th>
<th>Rank</th>
<th>Hired</th>
<th>Deg.</th>
<th>Graduating Institution</th>
<th>Duties/Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chen, Hsiang-Yin</td>
<td>Lect.</td>
<td>2013</td>
<td>Ph.D.</td>
<td>University of Alabama  Birmingham</td>
<td>Biochemistry, Anatomy and Physiology</td>
</tr>
<tr>
<td>Condon, Beth Darrow</td>
<td>Lect.</td>
<td>2014</td>
<td>M.S.</td>
<td>William &amp; Mary</td>
<td>Marine Ecology</td>
</tr>
<tr>
<td>Dickens, Amanda</td>
<td>Lect.</td>
<td>2014</td>
<td>Ph.D.</td>
<td>UNC Wilmington</td>
<td>Marine Biology</td>
</tr>
<tr>
<td>Dillaman, Richard</td>
<td>Emeritus</td>
<td>1981</td>
<td>Ph.D.</td>
<td>Univ. South Carolina</td>
<td>Morphology and Ultrastructure</td>
</tr>
<tr>
<td>Koester, Julie</td>
<td>Lect.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Mallin, Michael A.</td>
<td>Res. Prof.</td>
<td>1992</td>
<td>Ph.D.</td>
<td>UNC-CH</td>
<td>River, Estuarine Ecology</td>
</tr>
<tr>
<td>McCall, Jennifer</td>
<td>Lect.</td>
<td>2014</td>
<td>Ph.D.</td>
<td>UNC-Charlotte</td>
<td>Health Sciences</td>
</tr>
<tr>
<td>Moore, Leslie J.</td>
<td>Lect.</td>
<td>2006</td>
<td>M.S.</td>
<td>UNCW</td>
<td>Lab Coordinator/</td>
</tr>
<tr>
<td>Plyer, Daniel</td>
<td>Emeritus</td>
<td>1965</td>
<td>Ph.D.</td>
<td>UNC-CH</td>
<td>Plant Genetics</td>
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<tr>
<td>Potts, Linda F.</td>
<td>Sr. Lect.</td>
<td>1998</td>
<td>Ph.D.</td>
<td>UNC-CH</td>
<td>Anatomy &amp; Physiology</td>
</tr>
<tr>
<td>Priester, Carolina</td>
<td>Lect.</td>
<td>2012</td>
<td>Ph.D.</td>
<td>UNC Wilmington</td>
<td>Cell Biology</td>
</tr>
<tr>
<td>Watanabe, Wade O.</td>
<td>Res. Prof.</td>
<td>1997</td>
<td>Ph.D.</td>
<td>Univ. of Hawaii</td>
<td>Finfish Mariculture</td>
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<tr>
<td>Woditschka, Stephan</td>
<td>Lect.</td>
<td>2014</td>
<td>Ph.D.</td>
<td>Univ. Wisconsin</td>
<td>Health Sciences</td>
</tr>
</tbody>
</table>

**Description of Teaching Roles of Faculty, Part-time Faculty and Faculty Associates**

As of the start of the 2014/2015 academic year, the Department of Biology and Marine Biology had 49 full-time faculty, including six faculty with full or partial administrative reassignments (Webster, Posey, Finelli, Wilbur, Volety, and Baden); 37 of these are tenure-track faculty. One faculty member (Tomas) is 0.5 FTE within the department, with a split appointment between CMS and our department, and is retiring this year. We are currently searching for three faculty positions. A position for a Distinguished Professor of Marine Biology is also open at this time. Thirteen of our full-time faculty are non-tenured lecturers: Drs. Chen, Dickens, Gilley, Kiser, Koester, McCall, Melroy, Potts, Priester, Woditschka, and Ms. Condon and Ms. Moore. Ms. Moore serves as our department Laboratory Coordinator for introductory laboratories, working with graduate TAs in the design and implementation of labs for the BIO 105, BIO 201 and 202 courses; the others all have formal classroom teaching responsibilities. Drs. Chen and Koester are departmental post-doctoral associates that support our research...
and teaching mission, and they are associated with the positions of Department Chair, Graduate Coordinator, and Director of the Microscopy Facility, respectively. These lecturers have a reduced teaching load due to their research duties, but they fill a valuable teaching role for the department and gain important teaching experience that will help them in their career. The department employs a number of part-time instructors (13 in Fall, 2014) to fill specific instructional needs, particularly introductory course laboratories. Dr. Watanabe, Director of the UNCW Aquaculture Center, teaches a course, BIO 486: Advanced Topics in Mariculture once per year and Dr. Mallin, Research Faculty at the Center for Marine Science, teaches a graduate course, BIO 568: River Ecology or BIO 560: Estuarine Ecology, once per year. The Department also has five Research Associates (three at post-doctoral level), who also occasionally teach undergraduate courses. In general, the department has followed a philosophy of limited utilization of part-time faculty except as required to fill specific course needs, but has expanded its reliance on lecturers in recent years.

**Description of Teaching Roles of Graduate Students**

Graduate students are integral to both the teaching and research missions of our department. Graduate student Teaching Assistants (TAs) teach almost all of our lower division lab courses (BIO 105: Concepts of Modern Biology; BIO 201, 202: Principles of Biology; BIO 240-241: Human Anatomy and Physiology; and BIO 246: Microbiology of Human Diseases) as well as upper division labs for selected courses (BIO 335: Genetics, BIO 345: Animal Physiology, BIO 362: Marine Biology, BIO 366: Ecology, and BIO 425: Microbiology). Thus, our TAs teach undergraduate students from across our campus, including non-majors, nursing majors, and biology and marine biology majors. During the past seven semesters, graduate TAs have taught or prepared an average of 96 (range 81-109) lab sections. The workloads of our TAs are standard and can generally be accomplished within the 20 hours per week that their stipend covers. They typically teach 2 lab sections each semester, and many also assist with preparing the labs or prepare the labs in lieu of teaching a section, depending on the amount of work required. Our graduate TAs do a fantastic job with this responsibility. Their IDEA online student evaluation scores and faculty peer review ratings are high, and undergraduates often take the effort to express appreciation for their TA’s interest and enthusiasm.

Our graduate students are equally integral to our departmental research mission. It is fair to say that most faculty view graduate student mentoring as a central core of their individual research program. Many faculty include undergraduate Honors and Directed Independent Study students in their research programs as well. Thus, a central mission of the department is to mentor and train research students. This ethic is reflected in the high number of graduate students who are primary or co-authors on peer-reviewed papers. Since fall 2008, 122 M.S. and Ph.D. students have graduated from our program. During this time period, 199 peer-reviewed papers have been published with graduate student authors.

**c. STAFF**

The Biology and Marine Biology Departmental office is staffed by five superlative individuals: (1) Ms. Carol Russell, Administrative Assistant and Office Manager, (2) Ms. Lori Leitch, Program Assistant, (3) Ms. Debbie Cronin, Office Assistant and travel coordinator, (4) Ms. Kelly Northey, part-time Receptionist and purchasing support, and (5) Ms. Tracie Chadwick, Office Assistant and Graduate Secretary. These individuals provide invaluable service to our department and to our graduate program. All budgets, hiring, purchasing, travel, reimbursements, in-departmental mechanics (e.g. issuing keys, processing room requests, supporting computer equipment, mail delivery, etc.), and other graduate student-specific actions (payroll, facilitating graduate hiring requests; maintenance of graduate forms and records, communicating TA assignment requests, maintenance of graduate student mailboxes; seminar notifications) are carried out by these individuals. These tasks are legion for a department of 54 faculty and research associates, 65 graduate students and >1,000 undergraduate majors and pre-majors. Because
our faculty and graduate students are research-active, and these activities add to the level of responsibilities of our departmental staff, the work loads of our staff are high.

Mr. D. Mark Gay is the Laboratory Research Specialist who oversees the operation of the microscopy facility, maintains the departmental teaching microscopes, assists faculty and graduate students with their microscopy research projects, and assists with audiovisual production. Our graduate program relies very heavily upon Mr. Gay’s technical expertise. Ms. Jennifer Abernethy Messer is the Greenhouse Manager, who helps maintain the research and teaching botanical collections, and assists with preparations for the Plant Biology Labs. Ms. Melanie Canfield is the departmental Undergraduate Academic Advisor, and advises all the incoming biology majors and biology transfer students until they are assigned to a faculty member as juniors. We have just received approval to hire an additional Advising Coordinator, who will share that load and take on additional responsibilities as we adjust workloads.

As stated above in Section 6.b., we feel strongly that as we continue to grow our department’s extramurally funded research efforts, which involves and supports both our undergraduate and graduate students, our department would benefit from the addition of both administrative and technical support staff.

7. GRADUATE STUDENTS

a. DESCRIPTION OF GRADUATE STUDENT POPULATION

There are currently 65 graduate students enrolled in our department’s graduate programs, 30 males and 33 females. These include 14 M.S. Biology students, 34 M.S. Marine Biology students and 17 Ph.D. Marine Biology students. Forty-eight of these students are currently classified as N.C. residents for tuition purposes. However, many of these students have been granted N.C. residency after beginning their graduate studies, and over the past 7 years 60% of our new enrollees have been from out of state. There are three current international students (from Ecuador, Belize and Egypt), and six of our graduate students are Hispanic.

b. ADMISSIONS CRITERIA

Admission to our M.S. graduate programs is a two-step process. The first step is an initial screening of the applicant by the Graduate Coordinator based upon the evaluation of their performance on the General Test of the GRE, undergraduate GPA, letters of recommendation, and research and work experience. An initial decision regarding the eligibility of an applicant is based upon a composite numerical score employing a ranking of each of the above criteria. The current protocol is appended as Appendix 2.

The second step in the process is that an eligible applicant must be accepted by a graduate faculty member to be admitted to the program. Thus, once an application is deemed eligible, it is made available to the faculty for their consideration. Applicants are encouraged to contact faculty members with whom they are interested in working to facilitate matching of applicants with advisors, but this is not a requirement for acceptance. Once a faculty member has decided that they would like to accept an applicant, they contact the Graduate Coordinator to discuss departmental and extramural support for the student. The student is then notified by the Graduate Coordinator that they have been accepted, and they are offered either a TA or RA and an out-of-state tuition waiver (if applicable). In some cases, applicants may have fellowships that cover tuition and/or a stipend, and these cases are handled on a case-by-case basis.

Numbers of applications to the M.S. Marine Biology program have remained relatively stable over the past 7 years (mean 96; range 81-112) (Table 1). These numbers have remained high despite the presence of the interdisciplinary M.S. in Marine Science, which might be expected to compete for applicants. The number of applicants to our M.S. Biology program is considerably lower than that for the
M.S. Marine Biology program. This trend likely reflects at least two factors. First, the reputation of marine programs at our university is well established, and garners the most national attention. Second, most of our faculty members engage in marine-related research, although we have made efforts in recent years to hire faculty who teach and conduct research in non-marine related fields.

Admission to our Ph.D. program is also a multi-step process. The first step is, again, an initial screening of the applicant, who must either have an M.S. degree or be in the M.S. program at UNCW. Evaluations of performance include the General Test of the GRE, undergraduate and graduate GPA, letters of recommendation, and research and work experience. Applicants must also provide a current Curriculum Vita, a detailed summary of their M.S. thesis research, and a statement of Ph.D. research interest. The second step in the process is that a faculty member must state their willingness to take on an eligible Ph.D. applicant. Because there are insufficient programmatic funds to support Ph.D. student stipends, the bulk of their support must come from the faculty and/or student fellowships. Thus, it is of critical importance that the applicant and the faculty have developed a line of communication and are entering into the admission process as a team. The final step is that students are admitted to the Ph.D. program by a majority vote of the Graduate Advisory Committee (GAC) of the Department of Biology and Marine Biology based upon eligibility requirements and available resources.

The number of applications to the Ph.D. program has always been small, ranging from 3-8 per year for the past 7 years (Table 1). We believe that this small number of applicants is mostly due to the above described application process, since we have encouraged all students who have contacted us about the Ph.D. program to contact potential advisors as an integral part of their application process. Thus, the application numbers below mostly reflect those students who have earned an M.S. (or are in that process at UNCW) and have an agreed upon relationship with a faculty advisor. We have received only a small number of applications without any prior communication with the applicant.

Table 1. Numbers of applications for the M.S. and Ph.D. Programs for fall 2008-2014.

<table>
<thead>
<tr>
<th>Program</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.S. Marine Biology</td>
<td>60</td>
<td>81</td>
<td>82</td>
<td>91</td>
<td>86</td>
<td>59</td>
<td>70</td>
</tr>
<tr>
<td>M.S. Biology</td>
<td>13</td>
<td>17</td>
<td>17</td>
<td>14</td>
<td>16</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Ph.D. Marine Biology</td>
<td>8</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>81</td>
<td>101</td>
<td>104</td>
<td>112</td>
<td>107</td>
<td>80</td>
<td>90</td>
</tr>
</tbody>
</table>

Applications to the M.S. Marine Biology come largely from out-of-state (Table 2). The 89% rate for fall 2014 reflects the overall trend of 80-90% out-of-state applications over the past ten years. In contrast, most of our applicants to the M.S. Biology program are from in-state, as this program recruits heavily from our undergraduate students, who are predominantly major in Biology and increasingly are interested in health related professions. The Ph.D. in marine biology draws from both in-state and out-of-state applicants, including from within professional and governmental agencies in the region.

The solid reputation of our program is reflected in the high enrollment rate for accepted students (Table 3). While we do have strong enrollment rates (between 69-100%), these rates are a bit misleading. We have lost a number of high-quality M.S. applicants who would have accepted our offer to join the program, had they not accepted much more lucrative offers from other institutions. These students have been very forthcoming, stating that finances played an important role in their decision. We believe that our current recruitment package for M.S. students is severely deficient and that it has and will continue to negatively affect our ability to compete for high-quality students.
Table 2. Completed applications, acceptance and enrollment data for fall 2014.

<table>
<thead>
<tr>
<th></th>
<th>M.S. Marine Biology</th>
<th>M.S. Biology</th>
<th>Ph.D. Marine Biology</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In-State</td>
<td>Out</td>
<td>In-State</td>
<td>Out</td>
</tr>
<tr>
<td>Applications</td>
<td>8</td>
<td>62</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Accepted</td>
<td>5</td>
<td>13</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Enrolling</td>
<td>5</td>
<td>10</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 3. Summary data on applications, acceptance and enrollments for fall 2008 through 2014. Percentage accepted is relative to the applicant pool; percentage enrolling is relative to the number accepted.

<table>
<thead>
<tr>
<th>Year</th>
<th># Applications</th>
<th>#Accepted (%)</th>
<th># Enrolling (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>81</td>
<td>23 (28.4%)</td>
<td>20 (86.9%)</td>
</tr>
<tr>
<td>2009</td>
<td>101</td>
<td>19 (18.8%)</td>
<td>17 (89.4%)</td>
</tr>
<tr>
<td>2010</td>
<td>104</td>
<td>13 (12.5%)</td>
<td>9 (69.2%)</td>
</tr>
<tr>
<td>2011</td>
<td>112</td>
<td>24 (21.4%)</td>
<td>21 (87.5%)</td>
</tr>
<tr>
<td>2012</td>
<td>107</td>
<td>21 (19.6%)</td>
<td>21 (100%)</td>
</tr>
<tr>
<td>2013</td>
<td>80</td>
<td>18 (22.5%)</td>
<td>17 (94.4%)</td>
</tr>
<tr>
<td>2014</td>
<td>90</td>
<td>25 (27.7%)</td>
<td>22 (88%)</td>
</tr>
</tbody>
</table>

The quality of the applicant pool has been consistently high (Table 4). These students enter a graduate program that takes very seriously their academic development. This commitment is reflected in the high (>94%) retention rates of our M.S. and Ph.D. students.

Table 4. Mean scores for students enrolling in the M.S. and Ph.D. programs for fall 2008-2014. The “points” column is our internal scoring system and has a range from 0 to 20.

<table>
<thead>
<tr>
<th>Year (n)</th>
<th>GRE (V)</th>
<th>GRE (Q)</th>
<th>GRE (AW)</th>
<th>G.P.A.</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008 (20)</td>
<td>509.5</td>
<td>650.5</td>
<td>4.5 (19)</td>
<td>3.55</td>
<td>13.5</td>
</tr>
<tr>
<td>2009 (17)</td>
<td>556</td>
<td>662</td>
<td>4.6</td>
<td>3.51</td>
<td>13.3</td>
</tr>
<tr>
<td>2010 (9)</td>
<td>533</td>
<td>678</td>
<td>4.7</td>
<td>3.538</td>
<td>13.8</td>
</tr>
<tr>
<td>2011 (21)</td>
<td>534</td>
<td>688</td>
<td>4.3</td>
<td>3.45</td>
<td>13</td>
</tr>
<tr>
<td>2012 (21)</td>
<td>549</td>
<td>656</td>
<td>4</td>
<td>3.48</td>
<td>12.8</td>
</tr>
<tr>
<td>2013 (17)</td>
<td>156</td>
<td>153</td>
<td>4</td>
<td>3.43</td>
<td>12.5</td>
</tr>
<tr>
<td>2014 (22)</td>
<td>155</td>
<td>153</td>
<td>4</td>
<td>3.53</td>
<td>13</td>
</tr>
</tbody>
</table>
Most years we tend to have more females enroll than males (Table 5). Since 2008, 7 international students and 10 Hispanic students have enrolled in our program. No African Americans or Native Americans have enrolled. Each year, efforts are made to increase African-American enrollment by sending program information to all McNair Scholars who list biology or marine biology as their prospective graduate school majors. The Graduate Dean and Graduate Coordinator for Biology and Marine Biology have also participated in student fairs and outreach activities to better publicize our program to minority students. In addition, the Graduate Coordinator and other members of the department have hosted a group of undergraduate African American biology students from NC A&T University for a day each summer. The students are part of an accelerated curriculum and our meeting is part of an effort to expose them to the graduate program in our department early in their undergraduate careers. Such opportunities offer potential future graduate applicants the opportunity to get to know UNCW. We believe that there is much promise for enhancing the diversity of our student body, as well as the diversity of research experiences all students receive at UNCW, by such focused efforts with a UNC sister institution. Our ability to diversify the student body would also be greatly enhanced by more attractive recruitment packages for students (see below).

<table>
<thead>
<tr>
<th>Academic Year</th>
<th># female</th>
<th># male</th>
<th># International</th>
<th># Hispanic</th>
</tr>
</thead>
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<tr>
<td>Spring 2008</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2008-09</td>
<td>15</td>
<td>7</td>
<td>3</td>
<td>2</td>
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<tr>
<td>2009-10</td>
<td>14</td>
<td>8</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2010-11</td>
<td>5</td>
<td>12</td>
<td>1</td>
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<tr>
<td>2011-12</td>
<td>13</td>
<td>11</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2012-13</td>
<td>12</td>
<td>10</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2013-14</td>
<td>12</td>
<td>6</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Fall 2014</td>
<td>17</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>89</strong></td>
<td><strong>60</strong></td>
<td><strong>7</strong></td>
<td><strong>10</strong></td>
</tr>
</tbody>
</table>

c. ORIENTATION AND ADVISING

As stated above, our department takes very seriously its role of academic mentoring and teaching training. These processes are supported throughout the student’s tenure with a series of planned events. We officially meet our new graduate students during a morning orientation session and distribute the Graduate Student Handbook, where all major facets of their academic life are touched upon (see Appendix 3 for agenda, and a copy of the Student Handbook). The orientation ends with a lunch with current graduate students and faculty. Later that afternoon, “TA Boot Camp”, run primarily by veteran TAs, offers them a supportive but realistic view of their new profession as graduate Teaching Assistants. In addition to these departmental functions for new students, the Graduate School also sponsors a complimentary orientation session as well as a TA Institute. While the departmental support sessions are focused on information specific to our students, the graduate school functions cover information that is relevant to all new graduate students.

In support of their teaching training TAs have weekly meetings with their lab coordinators and faculty members evaluate all TAs each spring. The Graduate Coordinator also meets with TAs as needed to address specific concerns or problems. In addition, BIO 694: Teaching Practicum is offered biennially to permit interested master’s and all doctoral students the opportunity to explore methods and theory of teaching.

There are also a series of events and goals that are planned to support the research training of our
students. For our master’s students, these include: meetings each semester with their thesis committee, a research prospectus that must be defended to their committee and to the department (during the Graduate Student Prospectus Symposium), their oral preliminary exams, and the defense of their thesis. All M.S. students also must enroll in BIO 501: Introduction to Science as a Profession, during their first semester in residence. For Ph.D. students, these events include: annual meetings with their dissertation committee, a research proposal that must be defended to their committee and to the department (individual departmental seminar), their written and oral comprehensive exams, and the defense of their dissertation. Again, students also meet with the Graduate Coordinator as needed to resolve any issues related to the program requirements, as well as academic or personal issues. Alternatively, the Graduate Coordinator may contact the student to schedule a meeting if certain benchmarks are not met or if their advisor feels that it is appropriate to intervene.

d. GRADUATE STUDENT SUPPORT
Graduate Teaching Assistantships and extramurally-funded Research Assistantships

Most of our M.S. and Ph.D. students, and all who are not otherwise supported on federal fellowships, are supported with either departmental teaching assistantships (TAs) or faculty-provided research assistantships (RAs) for their entire tenure. Nearly all are also supported on faculty-provided RAs during the summer. The department currently has 32 M.S. TAs to award at a level of $11,000 and 8 Ph.D. TAs at a level of $19,000 for the nine month academic year (paid in 10 installments). Research assistantships are generally paid at the same level during the academic year, but RAs may be paid at increased levels during the summer months.

Each semester extramurally funded RAs support an average of 36% of all enrolled graduate students (Table 6). However, RA funding appears to be dropping in recent years likely because of reduced success rates of extramural grant applications. For instance, for the five-year period from 2008-2012 we supported 43% of our graduate students with RAs, whereas in 2013 there was 26% RA support and in 2014 only 15% of our students were supported with RAs.

Table 6. Number of M.S. and Ph.D. TAs and RAs per semester during 2008-2014.

<table>
<thead>
<tr>
<th>Year</th>
<th>Spring TAs</th>
<th>Spring RAs</th>
<th>Fall TAs</th>
<th>Fall RAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>34</td>
<td>5</td>
<td>37</td>
<td>13</td>
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<tr>
<td>2009</td>
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</tr>
<tr>
<td>2010</td>
<td>37</td>
<td>17</td>
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<td>18</td>
</tr>
<tr>
<td>2011</td>
<td>28</td>
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<tr>
<td>2012</td>
<td>32 (*4)</td>
<td>14</td>
<td>38</td>
<td>14</td>
</tr>
<tr>
<td>2013</td>
<td>39 (*2)</td>
<td>12</td>
<td>39 (*4)</td>
<td>10</td>
</tr>
<tr>
<td>2014</td>
<td>39 (*2)</td>
<td>3</td>
<td>39</td>
<td>9</td>
</tr>
</tbody>
</table>

*Additional TAs that were not part of our allocation from the Graduate School. TAs paid from Department of Biology and Marine Biology part-time funds, IDC funds and other funds.

Adequacy of Number of Teaching Assistantships

We are currently using all of our available TA funds to support graduate students. In fact, since 2012 we have started to use additional money provided by the College of Arts and Sciences, beyond the TA money allocated by the Graduate School, to pay graduate students to teach laboratories. We also must hire additional part-time faculty to meet our instructional need for undergraduate laboratories. Our faculty members remain committed to continuing their efforts to enhance the extramural funding of our M.S. and Ph.D. students. However, we believe that we have reached a point where the continued growth of our program will be constrained by the number of available TA stipends. For instance, it has become clear that our goal of a Ph.D. program that sustains between 20-30 students each year cannot be attained without at
least a doubling of the current number of available TA stipends. While there are healthy numbers of students in the graduate program, the number of students in each degree program has remained essentially unchanged for the past 7 years (Figure 1). The same is true for the number of graduates over this time period, although there is more variation year-to-year (Figure 2).

Figure 1. Total number of graduate students enrolled in each program for academic years 2008-09 to 2014-15.

Figure 2. M.S. Biology and Marine Biology graduates since inception of graduate programs. The top shaded bar that appears beginning is 2006 is for the Ph.D. in Marine Biology.
**Tuition Remissions and Tuition Scholarships**

Each year, the Graduate School provides our department with 26 out-of-state tuition remissions, which pays the difference between the in-state and out-of-state tuition costs for 9 or greater credit hours. We use these funds to support 34 out-of-state students, at 6-8 credit hours (credit hours are bundled at UNCW), to make these extremely valuable remissions extend as far as possible to support our large student body. In addition, we receive support in the form of Graduate Tuition Scholarships that can be used to help defray the costs of in-state tuition for our students, and in-state tuition remissions that can be used only to support Ph.D. students.

These resources are now funded at rates that are insufficient for our program, and these deficiencies have exacerbated the difference in support that we offer our Ph.D. vs. our M.S. students. To ensure the competitiveness of our Ph.D. program, we decided upon the inception of the Ph.D. program that doctoral students must receive full tuition support. However, due to the growth of our Ph.D. program, we have lost the ability to use Graduate Tuition Scholarships to offer our M.S. students any in-state tuition support. For instance, we are recruiting more international students who will always need a remission since they cannot become NC state residents for tuition purposes. In addition, with the advent of the Affordable Care Act, students can now remain on their parent’s insurance policy until they are 26 years old, and some students are unable to apply for in-state residency without losing their insurance. Thus, there is a population of students who remain out-of-state and deplete tuition resources that could otherwise be used to help cover in-state tuition costs. Thus, growth of our program can only occur with additional tuition remissions and scholarships that can cover the expanding cost of out-of-state and in-state tuition and fees. Further, simply sustaining the M.S. programs may be impossible without additional in-state tuition support (see below).

**Adequacy of Stipend and other forms of support for our M.S. and Ph.D. students**

The primary threat to the continued health and vigor of our graduate programs is the severely inadequate support we offer our M.S. students. Our M.S. TA stipends are low, we do not offer these students in-state tuition waivers, and we do not provide them health insurance.

The M.S. TA stipend is $11,000/academic year. This stipend is many thousands of dollars lower than those offered by many of our sister institutions (e.g. NCSU, UNC-Chapel Hill, UNC-Charlotte and UNC-Greensboro), and much lower than those schools in our regional footprint with which we primarily compete for high-quality students (e.g. Old Dominion University, University of Delaware, College of Charleston, VIMS) (Figure 3). Many of these other programs also offer full tuition support and health insurance.

From this low stipend, our M.S. students are required to pay in-state tuition. Although the stipend has increased modestly over time, their tuition costs have increased at a faster rate. Thus, in 2001, in-state tuition costs represented 17% of an M.S. stipend while in 2014 these costs represent >42% of their stipend (Figure 4). More realistically for our students, their tuition costs represent 46% of their take-home pay (approximately $1000/month x 10 months). These students are, during this time, providing the service of teaching our undergraduates – our primary university mission – while paying the university nearly half of their take home pay for tuition and fees.

As this issue first began to present significant issues to our students, we carried out a voluntary survey asking for information on monthly living expenses. Students could not include “luxury” costs, but reported only real costs of living. The survey results (based upon 27 responses) were collated by officers of the BIO Graduate Student Association, and reported to the Graduate Coordinator. Unfortunately, the summary results from that year were dire. Our students’ average monthly cost of living was $1,463; their average monthly take home at that time was $850. Rent (which averaged $569/month) and tuition costs alone represent over 100% of the monthly take-home TA stipend of our M.S. students. This imbalance resulted in 41% of the respondents taking out loans to meet basic living expenses. This survey was conducted in fall of 2007! The situation has only worsened since then. Ironically, the university requires
our students to carry health insurance, but we do not provide these students sufficient stipend support to purchase this insurance.

The woeful support that we offer our M.S. students is financially unsustainable first and foremost for our students, but also for our program and our university. We are asking our students to take on critical educational roles in our university, and we are not paying them enough to meet their basic costs of living. We are also charging them almost 50% of their wages to be enrolled in our program. Although our department has a long history of supporting graduate students with extramural grants, the current federal and state funding climate is not conducive to remedying all of the fiscal deficiencies described above. Further, it is inconsistent and unrealistic to expect the faculty to generate extramural support sufficient to offset these shortfalls while simultaneously committing extensive time and effort to our undergraduate teaching mission. These deficits are so profound that institutional realignment is necessary to ensure the health and competitiveness of M.S. graduate programs at UNCW.

![Figure 3. Comparison of UNCW M.S. graduate stipend (black bar) with M.S. stipends for biology departments from other universities that compete with our department for graduate students.](image-url)
Other Graduate and Departmental Support and Competitive Scholarships

The Graduate School provides one New Scholar Award ($1,000) to the department annually to aid in recruiting a highly ranked student. In addition, the Graduate School solicits nominations annually for the Jane Logan Lackey scholarship, the Owen Graham Kenan scholarship, the Sylvia Schwarz graduate fellowship, and the Lacy C. and Doris L. Sidbury scholarship, and a number of our students have benefitted from these awards. The Department of Biology and Marine Biology also has additional endowed graduate fellowships. These are the Dr. James F. and Frances B. Parnell Fellowship, for students who are studying some aspect of field oriented terrestrial vertebrate biology; the Mulligan Fellowship, for students who have achieved academic excellence and demonstrated exemplary service; the Frances Peter Fensel Memorial Fellowship, established for the purpose of recognizing merit in the area of Marine Biology at UNCW; and the Judith C. Bryan Holden Beach Turtle Watch fellowship, which recognizes work in sea turtle conservation. There are two other scholarships that can be awarded to either an undergraduate or a graduate student. These are the John Colucci Jr. Memorial Scholarship and the David G. Lindquist Scholarship in Biology established for the purpose of recognizing merit in the area of Marine Biology at UNCW.

Graduate student travel is funded largely by research grants to individual faculty members. The Graduate School supplements these funds with $400 travel grants to graduate students who are first authors on papers being presented at scientific meetings. The University Graduate Student Association competitively offers students $400 for travel to meetings if they are not eligible for Graduate School funds, and the Biology GSA offers graduate student support for registration and other costs. The department supplies very little university or trust funds for support of graduate student travel. However, each faculty member is provided with $500 per year that they may use to subsidize travel costs, which frees grant money that can be applied to graduate student travel.

e. GRADUATE STUDENT PERFORMANCE MEASURES

As has been mentioned throughout this document, the scholarly output of our students is exceptional. They have been authors on 199 peer-reviewed papers since 2007. Our graduate students have also been authors on over 214 presentations at international, national and regional meetings.

In an effort to better capture the breadth of accomplishments of our graduate students, we initiated a “Graduate Student Annual Report” in 2004. The reports for each of the past seven years are included in
Appendix 4. During this period our students have published 199 peer-reviewed papers, and a number of students have also won awards for their work. For example, 21 students received recognition for the quality of their presentations at scientific meetings, including the Society for Integrative and Comparative Biology, the American Fisheries Society, the International Society of Protistologists, the World Seabird Conference, the International Sea Turtle symposium, and the Biennial Conference on the Biology of Marine Mammals.

During the review period, 147 students have received external fellowships and awards, or UNCW scholarships and travel awards. In addition, 70 graduate students received extramural or intramural grant funding from a variety of organizations, including NSF, Sigma-Xi, Lerner-Gray, NC Seagrant and NOAA. Our students also take on leadership roles within their scientific community. For example, Christy Visaggi served as a mentor for the NSF Research Experience for Undergraduates in Biodiversity Conservation at UNCW; Jessica Lisa was the Environmental Editor for Carolina Surf Magazine; Kalman Bugica was an instructor for the Duke University Talent Identification Program in Near Shore and Ocean Marine Biology at the Duke University Marine Laboratory; Micah Marty taught a winter field course on Coral Reef Ecology in Bocas del Toro, Panama at the Institute for Tropical Ecology and Conservation; Carly Randall worked for the UNCW Marine Quest program; Anne-Marie Hodge was invited to write a feature guest post for Scientific American’s official blog; Julie Campbell presented her research to the NC General Assembly in Raleigh for the 2011 Graduate Education Week; and many of our students performed volunteer work as Science Fair and Science Olympiad judges, among other service activities.

Importantly, many of our graduate students have demonstrated exemplary performance as teaching assistants. The majority of the department’s TAs regularly received student evaluation scores above the university and the departmental averages. In the past seven years, six of our students have received graduate teaching awards, including the University Teaching Excellence Award, the highest honor graduate student teachers can attain at UNCW.

This partial list of achievements demonstrates that our graduate students are active in their science and teaching, and in service to their academic and broader communities. They also complete their work in a timely manner. During the past two review periods, the median time to graduation for our M.S. students has been 2.5 years (Figure 5). For our Ph.D. students who will have graduated by summer 2014, the mean time to graduation is 4.8 years. We have also enjoyed a high degree of success in placing the graduates of our programs in both jobs in their fields (within and outside of North Carolina) and in Ph.D. programs (Figure 6). Since our Ph.D. program is relatively new (first graduate in 2006), most of our graduates during the review period are still in post-doctoral positions. However, a number of our recent graduates have acquired permanent positions in their field, including:

- Dr. Mike Polito, Assistant Professor, Louisiana State University
- Dr. Kristin Hardy, Assistant Professor, Cal Poly San Luis Obispo
- Dr. Tim Henkel, Assistant Professor, Valdosta State University
- Dr. Pedro Medina Rosas, Assistant Professor, Universidad de Guadalajara, Mexico
- Dr. Virginia Winder, Assistant Professor, Benedictine College
- Dr. Carlos Zavalaga, Assistant Professor, Universidad Cientifica del Sur, Lima
- Dr. Christy Visaggi, Lecturer, Georgia State University
- Dr. Amanda Kahn, Lecturer, UNCW
- Dr. Carolina Priester, Lecturer, UNCW
- Dr. Erin Fougeres, Marine Mammal Stranding Coordinator, NOAA Fisheries

We are also pleased with the high retention rates of our students, which is 95% for our M.S. students for the past 5 years and 94% for our Ph.D. students from 2008-2014.
Figure 5. Time to degree for our M.S. students from May 2002-2014.

Figure 6. Placement of our students from the inception of our graduate program in jobs out of state, jobs in NC, PhD programs (for M.S. graduates) and other jobs.

f. ROLE OF TEACHING ASSISTANTS IN GRADAUTE PROGRAM

Graduate teaching assistants participate in the undergraduate instructional program primarily as laboratory instructors and through assistance in laboratory preparations, as is detailed in section 6.b. Thus, our TAs fill a fundamental role in our teaching mission, and essentially every undergraduate student in our
The department takes a course with a graduate TA instructor. As stated above, the graduate program is increasingly dependent on TAs to provide financial support to our graduate students, and TAs therefore are the prime driver of our research productivity. Teaching assistants therefore fill an invaluable role to our educational and research missions.

**g. PROGRAMMATIC ASSESSMENT**

We recognized early the importance of evaluating the overall performance of our students from a broad program perspective, and had been measuring student performance in several of the program elements informally for several years, through solicitation of faculty input after major milestones (student prospectus symposia, departmental seminars, thesis defenses). As part of the UNCW focus on assessment that was spurred on by SACS requirements for undergraduate programs, we formalized our assessment process for our graduate programs in 2007. This process required: the formation of a graduate program assessment plan, including development of desired student learning outcomes; the creation of associated assessment tools and rubrics for each degree program; the appointment of a graduate assessment coordinator (Dr. Heather Koopman); the compilation and evaluation of assessment data to detect trends in student performance over time, and to identify any areas within the programs in which students were not meeting departmental expectations and where actions could be taken to correct the problem; and finally, evaluation of whether any programmatic changes made led to increased student performance (“closing the loop”).

Each year, graduate program assessment data are tabulated and compared to previous years’ data by the graduate assessment coordinator and discussed at the annual department retreat in August. Motions/suggestions for required action (programmatic changes, continued monitoring, or no action required) are approved by the faculty, and implemented during that academic year. Formal assessment reports are provided to and evaluated by the Director of Assessment, College of Arts and Sciences (CAS) and General Education in the fall of each year.

The stated learning objectives (SLOs) for each program are provided below, each linked to the appropriate UNCW learning goals.


SLO 1a: A graduate student should be able to develop a research plan. Link to UNCW Learning Goal: Inquiry.
SLO 1b: A graduate student should be able to present and defend a research plan. Link to UNCW Learning Goal: Thoughtful expression and Information literacy.
SLO2: A graduate student should be able to independently answer questions regarding their research field. Link to UNCW Learning Goal: Information literacy, critical thinking, thoughtful expression.
SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience. Link to UNCW Learning Goal: Thoughtful expression.
SLO 4: A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific journal. Link to UNCW Learning Goal: thoughtful expression, information literacy, critical thinking, inquiry.

**Ph.D. Marine Biology Student Learning Outcomes**

SLO 1: A graduate student should be able to develop a research plan. Link to UNCW Learning Goals: inquiry and thoughtful expression.
SLO2: A graduate student should be able to independently answer questions regarding their research field. Link to UNCW Learning Goals: information literacy, critical thinking, and thoughtful expression.
SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience. Link to UNCW Learning Goals: thoughtful expression.
SLO 4: A graduate student should be able to write up his or her research in the form of multiple manuscripts for publication in scientific journals. Link to UNCW Learning Goals: thoughtful expression, information literacy, critical thinking) and inquiry.

SLO 5: A graduate student should be able to create new teaching materials. Link to UNCW Learning Goals: thoughtful expression, critical thinking, information literacy, and to some extent global citizenship.

We now have separate assessment plans and tools for each of our graduate degree programs. We began in 2007 by assessing our two Master’s programs together, and only SLO3 for our Ph.D. program. However, by 2009 we had established separate assessment plans and tools for all programs, and began collecting data (where possible) on all SLOs. Programmatic outcomes were also established in 2009. The Assessment tools (forms to be filled out by faculty) are provided in Appendix 5. The CAS formal assessment reports are also provided in Appendix 6.

h. RESULTS OF ASSESSMENT AND ACTIONS TAKEN

We have been formally collecting and evaluating graduate student performance since 2007. Overall, we are happy to report that our students are performing at or above expectations for the majority of their student learning outcomes, across all graduate degree programs. Since 2007, we have identified several issues associated with graduate program assessment, which have either stemmed from concerns over student performance in selected program elements, or from problems related to the assessment process itself.

1. Poor faculty compliance in completing assessment tools. When formal graduate program assessment began in 2007, faculty were provided with paper forms to evaluate student performance, which were to be returned to the graduate secretary and the graduate assessment coordinator. Low numbers of responses for many of the SLOs prompted the graduate assessment coordinator to move the assessment tools to online surveys, beginning in the 2010-2011 year. This action had the desired effect of greatly increasing the number of faculty responses to assessment requests, and also made it much easier to tabulate assessment data. In 2012, we had low returns again on several of our SLOs. In response, the graduate assessment coordinator prepared a “milestones for assessment” document to remind faculty of the points in a student’s program at which assessment is required. Compliance in 2013 and 2014 was improved over 2012.

2. Limited data for our Ph.D. program. Compared to our Master’s programs, the Ph.D. program is relatively small, leading to none/low responses for many of the SLOs each year. Thus it is impossible to detect trends over time, on a year-to-year basis, for this program. Due to the nature of this program, there is not a specific action we can take to correct this issue. We will require many years of data collection, and pooling of multiple years, before we will be able to follow any trends in performance in this program.

3. Student performance on the oral exam in the M.Sc. program(s). In 2007, we first evaluated student performance on this SLO (#2) to be lower than expectations. Similar results in 2008 prompted several actions for the 2008-2009 academic year. First, faculty advisors took informal steps to correct this problem, such as encouraging students to interact more with committee members, helping to focus studying, and the implementation of “mock” (practice) oral exams with fellow graduate students. We also initiated the implementation that year of SLO 1b to evaluate the students’ abilities to present and discuss their research, in an attempt to better understand the poor performance in SLO2. In 2009 this SLO was again identified as an area of low performance. The Graduate Advisory Committee was charged with generating suggestions on how to improve student performance on this SLO. In 2010, performance was still low. The faculty decided to implement more formal programmatic changes, by changing BIO 501 (Introduction to Science as a Profession, required for all M.Sc. students) to focus more on scientific communication. In 2011, we noted considerable improvement in student performance on this SLO, which
we believe reflected the formal and informal changes made over the prior two years. In 2012 we collected no data on this SLO. In 2013 and 2014, performance again showed a decline, and the faculty decided to monitor performance for another year as perhaps some of the programmatic changes still need time to take effect. This is really the single performance element that shows multiple years of poor performance (low numbers of students performing at levels 4 or 5). However, the majority of students are performing at the level of “adequate” (3 or above). This year, the faculty will also discuss the levels of expectation for our programs and potentially re-evaluate how we expect our students to perform.

8. AFFIRMATIVE ACTION

The low numbers of under-represented students among those enrolled in our graduate programs remains a central concern of our department. While we have seen growth in the population of Hispanic and international students in the program, we continue to struggle to recruit African American students. A description of our efforts to improve this situation is presented in section 7.b above, and we believe strongly that we must continue to strive to enhance the diversity of our graduate student body. This goal is aligned with our university’s strategic goals.

**UNCW Strategic Goal #3: Embrace and enhance diversity throughout the university’s constituencies, culture, curriculum and outreach activities.** Cultural, racial, ethnic and global diversity are fundamental to the mission of the university and are essential elements of an atmosphere of openness and free inquiry upon which teaching and learning rest. The measure of diversity lies not in maintaining certain percentages of minorities or even in representing the regional population, but rather ensuring a critical mass of historically under-represented groups to promote cross cultural and racial understanding, to break down racial stereotypes, to enliven class discussions, to enable students to understand persons of different backgrounds, and to prepare students with leadership skills for success in an increasingly diverse workforce.

Although we have much work ahead of us, we also have renewed hope that our university’s commitment to enhancing diversity, our Chair’s leadership in seeking out collegial partnerships with one of our sister institutions, and our small but growing alumni of under-represented students, will help propel us to a more diverse student body and faculty. We believe that the university’s recent efforts to increase its financial commitment to enhancing diversity is of paramount importance to achieving this goal, and we strongly support enhancing this investment at all levels. Our University’s Equal Employment Opportunity Affirmative Action Plan is included as Appendix 7.


a. INTRODUCTION

The scholarship and research activity of the faculty of the Department of Biology and Marine Biology has grown significantly since the previous program review, with increases in external funding, peer-reviewed publications, and presentations at national and international meeting. Inclusion of graduate and undergraduate students in scholarship has also risen considerably (see Section 7: Graduate student performance measures).
Table 7. Papers published, presentations and funding for the review period.

<table>
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<th>Year</th>
<th>Peer-reviewed papers</th>
<th>Conference presentations</th>
<th># of new awards</th>
<th>Amount ($)</th>
<th>Major funding sources</th>
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<td>54</td>
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<td>75</td>
<td>202</td>
<td>61</td>
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<td>56</td>
<td>3,093,194</td>
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<td>162</td>
<td>39</td>
<td>2,226,952</td>
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<tr>
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<td>152</td>
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<td>2013-14</td>
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<td>162</td>
<td>39</td>
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<td>Total</td>
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<td>277</td>
<td>20,00,202</td>
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*Total funding amounts ($) do not include collaborative projects (e.g., the NOAA funded Coastal Ocean Research and Monitoring Program)

b. PUBLISHING

The scholarship of the Department of Biology and Marine Biology is documented, in part, in the summary Table 7 above. The faculty, in collaboration with students, has maintained a consistent rate of publication in peer-reviewed journals over the past 7 years, averaging 69 papers per year and a total of 482 papers during the review period (a 9% increase over the previous review period). During the review period, faculty members have published in several leading journals of international scope including Science, Nature, Proceedings of the National Academy of Science, Nature Communications, Limnology and Oceanography, Applied Environmental Microbiology, The ISME Journal, Ecology, Evolution, Journal of Experimental Biology, American Journal of Physiology and Integrative and Comparative Biology. The faculty has also published several books and numerous book chapters, in addition to countless technical reports since 2007. Details of faculty scholarship can be found in their CVs, which are included in Appendix 8.

c. FUNDED PROJECTS

Since the previous program review, the department faculty has continued to increase the level of external funding obtained to support research. Total annual funding averaged $2.85 million during the review period, up 21% from the previous program review. However, during the current review period there has been a troubling trend toward decreased extramural funding, where in 2013-14 the total grant support was only ¼ of that in 2007-08. If this trend continues it will severely impact the viability of our graduate programs. Further evidence of the long-term success of faculty in achieving external funding includes high departmental representation in UNCW’s “Million Dollar Clubs.” Our department represents over one-quarter (27%) of faculty on the James F. Merritt Million Dollar Club, nearly one-third (32%) of the faculty on the 5 Million Dollar Club, and one of five faculty on the Ten Million Dollar Club.

Faculty members have continued to receive financial support from traditional sources that include NSF, NIH, NOAA, NMFS, and Sea Grant, as well as recent awards from the Office of Naval Research (ONR) and the US Department of Agriculture (USDA). Notable awards during the review period include funding to initiate studies of the effects of sea level rise on nitrogen removal processes in tidal freshwater ecosystems (NSF), the evaluation of climate change impacts on the distribution of Antarctic penguins (NSF), the contribution of a new microbial-mediated nitrogen pathway to fertilizer removal in agricultural fields (USDA), neuromuscular control of directional swimming in venomous box jellyfish (NSF), aerial surveys of mid-Atlantic Wright whales (NOAA), fecundity of black sea bass and red porgy in the US
South Atlantic (NOAA), the effects of lipid composition on nitrogen gas dynamics in diving mammals (ONR), chemical defenses and pumping activity of Caribbean invertebrates (NSF), and funding for the acquisition of a transmission electron microscope (NSF).

d. CONFERENCE PRESENTATIONS
The number of presentations by faculty and students continues to increase, up 22% since our last program review, again highlighting the broad impact of departmental research at regional, national and international scales. The department averaged 166 conference presentations annually for a total 1,161 presentation over the 7-year period.

During the review period, UNCW also hosted 4 conferences: (1) the 32nd Annual Southeastern Phycological Colloquy in October 2010, (2) the 35th Annual Larval Fish Conference in May 2011, (3) the 39th Annual Benthic Ecology Meetings in March 2010, and (4) the 21st Annual Southeast and Mid-Atlantic Marine Mammal Symposium in March 2014.

e. LEADERSHIP ROLES
Faculty members in the department take on active leadership roles within their professions. They have served on numerous advisory boards, hold several editorships, participate in review panels, and act as officers for many scientific societies. Many of the faculty have served in noteworthy leadership positions during the review period, including serving as President of the American Chemical Society (Eastern NC Section), Chapter Vice President of the Carolinas Society of Toxicology and Chemistry, AAAS Bioscience Educational Network Scholar, and President and Treasurer of the Society of Integrative and Comparative Biology. A listing of each faculty member’s current (2013-14) professional leadership activities is provided in Appendix 9.

f. HONORS AND AWARDS
Many of the faculty members in the Department of Biology and Marine Biology have been recognized for their extraordinary contributions to the teaching and research mission of UNCW during the review period. Two faculty, Drs. Posey (2008) and Cahoon (2010) earned the Graduate Mentor Award, recognizing their outstanding contributions to the UNCW graduate program. Drs. Emslie (2008) and Kinsey (2010) each received the Faculty Scholarship Award. Dr. Ballard (2011) received the Chancellor’s Award for Teaching Excellence and Ms. Diane Melroy (2011) earned the UNCW Lecture of the Year Award. Several members of the faculty have also been recognized by professional societies and other outside groups for their contributions to their respective fields.

g. COMMUNITY SERVICE
Service to the community has historically been an important goal of the department mission and the orientation towards service demonstrated by many of the faculty and graduate students contributes to the success of the graduate program. Each year, several members of the faculty, as well as numerous graduate students, offer their skills to assist in the education of students from area public schools and integrate public involvement into their research activities. Outstanding examples during the program review period include the roles of both faculty and graduate students in the Oceans ROCK Outreach Event, regular faculty participation in and organization of local and regional Science Olympiads, and the considerable number of volunteers who participate in the Marine Mammal Stranding Program.

10. STRENGTHS, WEAKNESSES, AND FUTURE DIRECTIONS

a. STRENGTHS
The graduate programs in the Department of Biology and Marine Biology are a UNCW success
story. These programs have directly advanced the educational and research missions of the university, and continue to serve as a model for the development and maintenance of graduate programs in other disciplines.

The departmental graduate programs have many strengths that are both tangible and intangible. Most importantly, the programs are comprised of highly accomplished and competent faculty, graduate students and staff. The departmental faculty members are university leaders in grant support, which is essential to support student research assistantships and summer stipends, research supplies and equipment, and travel to field sites and scientific meetings. The research results that are generated by grant support are published in peer-reviewed journals and presented at state, regional, national and international meetings by both faculty members and graduate students. In this area, the Department of Biology and Marine Biology is one of the most prolific at the university, and many of the departmental faculty and graduate students have won awards or fellowships for their scholarship. These products of the graduate programs not only contribute to the advancement of science, but also raise the research profile of the university internationally. Importantly, the departmental faculty members conduct the research and educational activities associated with the graduate programs while maintaining a deeply-rooted commitment to undergraduate education that forms the backbone of our university. In fact, the vibrancy of the graduate programs promotes a research environment that is easily accessible to undergraduate students, and the department has a well documented track record and emphasis on encouraging undergraduate research opportunity.

There are also many less tangible strengths of the graduate programs. New faculty members have been recruited to the department, in part because of the quality of the graduate programs, and they bring with them new research approaches that further enhance the opportunities for graduate research. These newer faculty members, like the rest of the department, share a commitment to both education and research that is central to our university’s mission. Departmental faculty are also exceedingly collegial, which fosters an environment of collaboration and sharing that has been critical to the success of our graduate programs. This positive work environment is particularly evident in the student-centric focus of the department. The well-being of the graduate students and the quality of their education is an overriding concern of the faculty, and the department consistently engages in thoughtful analysis and management of student programs. This attitude extends to the graduate students. The graduate student body is extremely active and collegial, and the students engage in a number activities, some of which are self-governed, including fund raisers, the biannual graduate student prospectus symposium, and “TA Boot Camp”, which promote the success of the graduate programs.

b. WEAKNESSES

While there are many positive features of the graduate programs and their home department, there are also notable weaknesses that, if not addressed, threaten the sustainability and further development of these programs.

A first area of weakness, and chief among those listed herein, is insufficient graduate student support, specifically low stipends for M.S. Teaching Assistants, a low availability of tuition remissions and scholarships, and a lack of university supported health insurance. The lack of adequate graduate student support in these areas has led to a condition where our M.S. TAs, upon whom we depend to fulfill part of our undergraduate teaching obligations, cannot earn a living wage. This situation has been highlighted in previous program reviews and we emphasize, again, that this must be remedied if the graduate programs are to sustain the high level status that has been attained over the past several decades. Further, declines in grant funding, which are critical for graduate support during the summer, also threaten to worsen this situation. TAs rely on summer stipends from grant funding to continue their professional and project development through the summer months. In addition, full-time RA stipends during the summer have been a mechanism to supplement annual student stipends and offset the low TA stipends of the Fall and Spring semesters. Recent and nationwide declines in funding availability are taking effect in our department, as
evidenced in the Table 7, and will directly impact the number and quality of students we can support and attract in the future. Similarly, our Ph.D. TA stipend is not competitive when compared to our sister and peer aspirant institutions. Both stipends must increase annually in the future to meet market value. We also require more Ph.D. TAs if we are to sustainably grow our doctoral student body. Additionally, intramural support for graduate student research in the form of summer stipends and research supply budgets would greatly aid our program.

A second area of weakness is the relatively noncompetitive start-up packages and salaries that we offer to potential new faculty members. We have had remarkable success in recruiting most of our top candidates in the past few years. However, we have also failed to recruit our top candidate in a number of cases because our offers were not at market value. The graduate programs are driven by the ability of the faculty to develop novel research programs, attain grants, write papers and mentor students. We therefore must improve our recruitment packages to maintain the vitality of the graduate programs. The low starting salaries, poor startup packages, and high expectations have also played a role in faculty retention, as we have lost several faculty members recently to better opportunities.

A third area of weakness is the large and growing faculty workloads in our department. Our faculty are actively engaged in teaching and mentoring at both the undergraduate and graduate levels, while maintaining high levels of performance in grantsmanship and scholarly output. Faculty workloads are not only heavy but also growing, as increases in undergraduate enrollment are not being met with increases in faculty numbers. The faculty embrace all these missions, but require more infrastructural support to help maintain them. The addition of technical support staff and administrative staff would add immeasurably to our department’s ability to continue to achieve excellence in all these goals.

A final area of weakness is faculty diversity. Our continued growth and strength as a department relies upon our ability to diversify and we must continue our efforts to invite and encourage under-represented students, faculty and staff to join us.

c. FUTURE DIRECTIONS

The targeted goals listed below, and strategies to achieve these goals, represent an effort to address what we identify as our most serious weaknesses, while continuing to maintain and build upon our existing strengths.

(1) Solicit funds to support the graduate programs. The substandard level of stipends for our M.S. students, the lack of an adequate number of tuition remissions and scholarships, and the lack of student health insurance are the most serious student welfare issues facing our graduate program. The department will continue to request relief in these areas, which have reached the level of crisis. In addition, we will continue to promote the incorporation of these additional student funds in our extramural grants. However, the faculty simply cannot be expected to fully compensate for the current deficiencies through extramural funding, considering the department’s and university’s shared emphasis on the mission of undergraduate education. High quality models for graduate student support plans exist within our state and were highlighted in our last program review. Our department would look forward to working with the university to help enhance the level of support for all of our graduate students. Currently, the success of our programs continues to rely heavily upon individual faculty to provide substantial support for their students. In lieu of appropriate institutional support, this situation poses an immediate problem to the graduate program, as extramural income is falling (see section 9.a) due to the current state of federal funding and overall decreased funding rates for grants.

Strategies to address this problem, as outline in our department’s Long Rang Plan, are:
- Develop support structure within the department for multi-PI grants to support graduate student training and diversity enhancement, and
- Explore funding opportunities with ORSP and the Graduate School to support these activities
Further develop the Ph.D. program. We recognize that we have built our Ph.D. program more slowly than was initially anticipated. From the outset, though, the Ph.D. in Marine Biology was intended to be a moderately sized program to ensure that students received the highest quality education possible. The relatively small size of the program at present results in part from this guiding philosophy and also from the self-limiting initial design of the program described above. However, we have now reached a critical juncture, where enhanced university investment, in the form of more Ph.D. TAs, will be required to assure our young program’s sustainability and continued success.

The department will continue to encourage managed growth both in terms of the number of Ph.D. students and faculty mentor participants. We have already addressed many of the initial restrictions placed on the program that limited the pace of development, and we intend to encourage further participation by reaching out to our colleagues in other departments. The mechanisms for our non-biologist colleagues to mentor Ph.D. students have always been in place, and we welcome their participation. We intend to make a more active effort, though, to include faculty from other departments so that the Ph.D. program can benefit from their expertise and provide valuable support to the students. These efforts will include open discussions with outside faculty members to better define ways in which they may more easily participate.

Recruit and retain top level faculty members. The department will continue to recruit new faculty members who will contribute to the graduate and undergraduate programs, solicit extramural funding, and provide research infrastructure for students. Given the deficiencies in graduate student support, detailed in (1) above, the burden of support continues falls on individual faculty, requiring the recruitment of active, productive faculty to maintain this graduate student support. To do this, the department will continue to request better start-up packages and faculty salaries. In a past effort, we determined market value for biology faculty members by comparison to like departments, allowing the university administration to have data upon which to base potential changes in recruitment packages. Even comparisons with comparable institutions within the UNC system reveal large disparities that will continue to affect faculty recruitment. We will continue to highlight this problem, and its long-term consequences, to the university administration.

Request additional technical and support staff. Recruiting and retaining high-quality technical and administrative staff is of great import to our department. The department would benefit from the addition of at least one research technician to direct and instruct student in the usage of shared core facilities and one administrative support staff to help address the high workloads of our departmental staff and faculty. These individuals would benefit our graduate program by offering our graduate students the technical assistance and training needed to efficiently utilize shared resources and equipment, as well as, by ensuring that their administrative needs (hiring, budgets, compliance) were met.

Strategies to address this problem, as outlined in our department’s Long Range Plan, are:
- Increase by one the technical research staff to assist with established shared core facilities.
- Increase by one the support staff to assist with administrative needs (beyond the soon to be hired advising coordinator).

Increase diversity among faculty and graduate students. This goal is of fundamental importance to our department and university. Our department is taking serious steps to include more historically under-represented groups among our faculty and students, including instituting a departmental Diversity Committee, taking a more active role in soliciting minority applicants for faculty positions, and working with the university Department of Human Resources to promote diversity in our hires. We have much work ahead of us, and one important area where the university can enhance its support of these efforts is to provide targeted funding for increasing diversity. Enhanced financial packages available to recruit and
retain both graduate students and faculty candidates, would strengthen our capacity to develop a more diverse university and department.

Strategies to address this problem, as outlined in our department’s Long Range Plan, are:
· Explicitly address diversity of hiring at each step of the committee process.
· Ensure composition of search committees is balanced as far as practicable (tenure, gender).
· Utilize other campus resources (e.g. CTE, Office of Institutional Diversity and Inclusion) to assist us in the process of enhancing diversity.
Appendix 1. Catalogue course descriptions.
Biology

- **BIO 501 - Introduction to Science as a Profession**
  
  Credits: 2

  Survey of educational trajectories and employment prospects for graduate students in the sciences, focusing on Biology and Marine Biology. Practical treatment of performance and communication in the scientific profession, with particular coverage of responsible conduct of research, laboratory and field safety, analyses of data, and the writing and reviewing of journal articles and grant proposals. Two lecture hours each week.

- **BIO 512 - Electron Microscopy and Cell Ultrastructure**
  
  Credits: 3

  Prerequisite: Course in cell biology or permission of instructor. A discussion of the general and specialized techniques of transmission and scanning electron microscopy and their application to the elucidation of the structure and function of cell organelles in plants and animals. Three lecture hours each week. The lab for this course is [BIOL 512](#).

- **BIO 515 - Introductory Biostatistics**
  
  Credits: 3

  Introduction to biostatistical methods including exploratory data analysis, distributions, experimental design and hypothesis testing, analysis of variance, simple linear and multiple regression, analysis of covariance, and model selection. The lab for this course is [BIOL 515](#).

- **BIO 519 - Advanced Topics in Cellular and Molecular Biology**
  
  Credits: 4

  Prerequisite: Upper-level undergraduate or graduate course work in cellular and molecular biology or permission of the instructor. Selected topics in cellular and molecular biology. Includes: cytoskeletal components, membrane dynamics, cellular receptors, metabolism, gene expression, protein structure and function, molecular evolution and extrachromosomal DNA. Three lecture and three laboratory hours each week. May be taken more than once for credit under different topics.

- **BIO 526 - Advanced Topics in Microbiology**
  
  Credits: 2-4
Prerequisite: Course in microbiology and organic chemistry or permission of instructor. Study of the taxonomy, morphology, metabolism, genetics and ecology of microorganisms. Emphasis is placed on the current microbiological literature. Lecture and laboratory hours each week. May be taken more than once for credit under different topics.

- **BIO 530 - Advanced Topics in Evolutionary Biology**
  Credits: 3
  The study of adaptation and diversity from both a micro and macro evolutionary perspective. Principles of population genetics, molecular evolution, phylogeny and systematics are among the topics that will be addressed in lecture and readings. Applications in behavior, physiology, ecology, medicine and conservation are stressed throughout. Three lectures per week. May be taken more than once for credit under different topics. The lab for this course is [Biol 530](#).

- **BIO 531 - Population Genetics**
  Credits: 3
  Prerequisite: Course in genetics. Basic principles of the dynamics of genes within populations. Topics include fitness, polymorphism, genetic equilibrium, and the effects of non–random mating and selection. Three lecture hours each week.

- **BIO 534 - Advanced Topics in Ecology**
  Credits: 3
  Prerequisite: Course in general ecology. Advanced topics in population dynamics, and community ecology. Current ecological theory on population regulation and community dynamics will be examined using a combination of literature readings, class discussion, and formal lectures. Three lecture hours each week. May be taken more than once for credit under different topics. The lab for this course is [Biol 534](#).

- **BIO 538 - Cytogenetic Methodology**
  Credits: 2
  Prerequisite: Course in genetics. Laboratory course introducing techniques for studying and analyzing the chromosomes of a variety of organism including plants and animals. Four laboratory hours each week.
• **BIO 539 - Advanced Topics in Population Biology**
  Credits: 2-4

  Prerequisite: Courses in genetics and ecology or permission of instructor. Study of the ecology, genetics, and evolution of populations. Topics include dynamics of population structure, growth, and regulation; natural selection and the maintenance of genetic variation within populations; differentiation of populations and speciation; evolution of population strategies. Lecture hours each week. May be taken more than once for credit under different topics.

• **BIO 549 - Advanced Topics in Physiology**
  Credits: 4

  Prerequisite: Permission of instructor. Study of topics in physiology for which significant new understanding has been obtained. Consideration is given to those emergent techniques that have permitted the application of scientific methodology to particular physiological problems. Three lecture and three laboratory hours each week. May be taken more than once for credit under different topics.

• **BIO 550 - Systematic Biology**
  Credits: 3

  Prerequisites: A course in statistics is strongly recommended. A survey of methods used in systematic investigations including phylogenetic, cladistic, and eclectic approaches to the analysis of molecular, allozymic, cytogenetic, morphometric, and discrete plant and animal data sets. Nomenclatorial rules and procedures are discussed. Three lecture hours each week.

• **BIO 551 - Advanced Vertebrate Biology**
  Credits: 2

  Prerequisite: Permission of instructor. Individualized instruction in the identification, classification, and ecology of the terrestrial vertebrates of the coastal zone with emphasis on field methodologies. Designed to fill gaps in each student’s knowledge of the classes of terrestrial vertebrates. Four laboratory hours each week.

• **BIO 558 - Biology of Recreational and Commercial Fishes**
  Credits: 3

  Prerequisite: Course in ichthyology and permission of the instructor. A study of the major groups of fishes
and invertebrates utilized in fisheries, with emphasis on the biology, economic importance, and management of selected groups. Topics focus on contemporary management strategies and needs. Two lecture and three laboratory periods each week.

- **BIO 560 - Estuarine Biology**
  Credits: 4
  Prerequisite: Course in general ecology or permission of instructor. An examination of the unique physical, chemical, and biological interactions within estuaries, emphasizing nutrient cycles and energy flows. Three lecture and three laboratory hours each week.

- **BIO 561 - Barrier Island Ecology**
  Credits: 3
  Prerequisite: Course in general ecology or permission of instructor. Survey of vegetation and physiography of barrier islands. Two lecture and three laboratory hours each week.

- **BIO 562 - Wetlands of the United States and their Management**
  Credits: 3
  Prerequisite: Course in general ecology or permission of the instructor. Ecology and management of wetlands and adjacent communities. Examination of methods used to restore and create wetlands. Two lecture and four laboratory hours each week.

- **BIO 564 - Biological Oceanography**
  Credits: 3
  Prerequisite: Permission of instructor. Discussion of the recent oceanographic literature concerning nutrient cycling, distribution and regulation of oceanic productivity, and advances in methodologies used to study oceanic processes and controlling factors. Three lecture hours per week. The lab for this course is **BIOL 564**.

- **BIO 566 - Behavioral Ecology of Reef Fishes**
  Credits: 3
Prerequisite: Course in ichthyology or permission of instructor. An ecological and ethological approach to the study of reef fishes, including theories and problems dealing with ecological niche, competition, social systems, and population biology. Two lecture and three laboratory hours each week.

- **BIO 568 - River Ecology**  
  Credits: 3

  Prerequisite: course in general ecology or permission of instructor. The biology, ecology, chemistry, and physical nature of streams, rivers, and watersheds. Biodiversity, endangered species, pollutants, the regulatory structure, and river politics will be discussed. Three combined lecture and lab hours per week, plus field trips to local rivers, streams and tidal creeks.

- **BIO 571 - Phytoplankton**  
  Credits: 0-4

- **BIO 575 - Taxonomy of Aquatic and Wetland Plants**  
  Credits: 3

  Prerequisite: Course in plant taxonomy or permission of instructor. Discussion, collection, and identification of vascular plants found in the aquatic and wetland habitats of coastal North Carolina. Extensive field work and individualized instruction in collection and identification techniques. Two lecture and three laboratory hours each week.

- **BIO 577 - Experimental Mycology**  
  Credits: 3

  Prerequisite: Graduate status. An accelerated introduction to general mycology with emphasis on the role of fungi as friend and foe in various ecosystems. The use of fungi as experimental tools as well as modern technology useful to their study are considered. Two lecture and three laboratory hours each week.

- **BIO 578 - Biology of Harmful Algae**  
  Credits: 3

  Prerequisite: BIO 205, BIO 446, or consent of instructor. Identification (taxonomy), ecology, physiology and...
toxin production by both marine and freshwater microalgae. Toxin structure and mode of action, effects on humans and public health, environmental damage and possible mitigation/management strategies.

- **BIO 579 - Advanced Topics in Organismic Biology**
  Credits: 2-4
  
  Prerequisite: Permission of instructor. Advanced study of the ecology, natural history, behavior, or systematics of selected groups of organisms. Lecture and laboratory hours each week. May be taken more than once for credit under different instructors.

- **BIO 580 - Field Studies in Biology**
  Credits: 1-6
  
  A research experience–oriented field course offered in selected regional locales. Emphasis is placed on distribution, taxonomy, and ecology of animal and/or plant organisms.

- **BIO 585 - Special Topics in Advanced Biology**
  Credits: 1-6
  
  Designed to deal with selected topics not considered in detail in regular course offerings. More than one topic may be taken for credit.

- **BIO 590 - Biomechanics**
  Credits: 4
  
  Prerequisite: Course in animal biology. A study of the interactions of organisms with their physical environment. Concepts from fluid and solid mechanics are applied to biological form and function. Three lecture and three laboratory hours each week.

- **BIO 591 - Directed Independent Study**
  Credits: 1-4
  
  Prerequisite: Permission of instructor. Involves investigation under faculty supervision beyond what is offered in existing courses. May be repeated under different subtitles.
• BIO 594 - Pract: College Bio Teaching  
  Credits: 2

• BIO 596 - Critique of Scientific Literature  
  Credits: 1
  Review and critique of grant proposals, manuscripts, and published papers pertaining to biological research.

• BIO 598 - Research  
  Credits: 1-3
  Credit hours taken by students in pursuing their masters thesis research. May be taken more than once for credit, but for no more than 3 hours total.

• BIO 599 - Thesis  
  Credits: 1-6
  Intensive research study of a topic selected by student and approved by a thesis committee. A scholarly oral presentation and defense of thesis is required.

• BIO 601 - Oceanography and Environmental Science  
  Credits: 2-3
  Prerequisite: BIO 564 or permission of instructor. Topics and methods in biological oceanography and environmental science. Required of all Ph.D. candidates. May be repeated under different subtitles.

• BIO 602 - Ecology  
  Credits: 2-3
  Prerequisite: permission of instructor. Topics and methods in marine ecology. May be repeated under different subtitles.
• **BIO 603 - Physiology and Biochemistry**
  Credits: 2-3
  Prerequisite: permission of instructor. Topics and methods in the physiology and biochemistry of marine organisms. May be repeated under different subtitles.

• **BIO 604 - Cellular and Molecular Biology**
  Credits: 2-3
  Prerequisite: permission of instructor. Topics and methods in the cellular and molecular biology of marine organisms. May be repeated under different subtitles.

• **BIO 605 - Evolution and Diversity**
  Credits: 2-3
  Prerequisite: permission of instructor. Topics and methods in the evolution and diversity of marine organisms. May be repeated under different subtitles.

• **BIO 690 - Seminar**
  Credits: 1
  For resident students, attendance at departmental seminars is required. Candidates are required to present two scientific seminars (dissertation proposal and dissertation defense) at UNCW within four years of residency. Candidates are expected to orally present their research at least once at other institutions or (inter-) national scientific meetings. Credit is awarded during the candidate’s last semester of residency.

• **BIO 694 - Practicum in College Biology Teaching**
  Credits: 2
  [594](594) An introduction to theory, research, and practice in college biology teaching. Combines supervised internship in biology teaching with formal classroom instruction. For graduate students who have been awarded teaching assistantships in the Department of Biology and Marine Biology and others with permission of instructor. Ph.D. students will be required to engage in limited formal instruction. Two semester hours per week.
• BIO 698 - Research
  Credits: 1-6
  Credit hours taken by students in pursuing their dissertation research. May be taken more than once for credit.

• BIO 699 - Dissertation
  Credits: 1-12
  Credit hours taken by students in analyzing their research data and writing their dissertation.
Appendix 2. Application evaluation form and scoring criteria.
BIOLOGY AND MARINE BIOLOGY GRADUATE APPLICANT EVALUATION

Applicant: _______________________________________

Term: ____________

GRE Scores:
Verbal: Score _______ Percent _______ Points _______
Quantitative: Score _______ Percent _____ Points _______

Analytical Writing: Score _______ Percent _______ Points _______ __ (6)

Grade Point Average (GPA):

Undergraduate ________ __ (6)

Recommendations: _________________________________________ __ (4)

Research and Work Experience:
Internships, applied learning experience _______ (1)
Honors Undergraduate experience _______ (1.5)
Germaine field/lab research or work experience _______ (1.5) __ (4)

Comments:

TOTAL SCORE __ (20)
RATING SYSTEM FOR APPLICANTS TO THE M.S. PROGRAMS IN THE DEPARTMENT OF BIOLOGY AND MARINE BIOLOGY

Four criteria are utilized in developing a composite score for each applicant. These include: 1) the Graduate Record Examination General Test (GRE), 2) a weighted undergraduate grade point average, 3) letters of recommendation, and 4) research and/or work experience. The maximum scored based upon four standard criteria is 20. Generally, students scoring 9 or below will be rejected on the basis of standards.

The composite score is computed as follows:

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<th>Percentile Score</th>
<th>General GRE Test</th>
<th>Grade Point Average</th>
<th>Recommendations</th>
<th>Research and Work Experience</th>
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<td></td>
<td>≤40%</td>
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<td>Unacceptable – Unenthusiastic comments; ratings average or less</td>
<td>Internships, applied learning experience (range 0 – 1)</td>
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<td></td>
<td>41-60%</td>
<td>3.00-3.24</td>
<td>Barely acceptable – Neutral comments, ratings good – average</td>
<td>Honors undergraduate experience (range 0 – 1.5)</td>
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<td>61-80%</td>
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<td>Germane field/lab research or work experience (range 0 – 1.5)</td>
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<td>&gt;80%</td>
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Appendix 3. New graduate student orientation agenda and Graduate Student Handbook.
Department of Biology and Marine Biology
New Graduate Student Orientation
10:30-noon, Tuesday, August 19, 2014, Dobo Hall 103

10:30 Welcome and Introduction to the Department of Biology and Marine Biology
Steve Kinsey, Graduate Coordinator
Tracie Chadwick, Administrative Associate/Graduate Program

10:35 Welcome from the Chair
Chris Finelli, Department Chair

10:50 Biology and Marine Biology Graduate Student Association
Clark Marino, Vice President of the Biology & Marine Biology Graduate Student Association (BioGSA)

11:00 Departmental Policies and Procedures I
Introduction to Office Staff
Tracie Chadwick, Administrative Associate/Graduate Program
Debbie Cronin, Administrative Associate/Travel
Lori Leitch, Administrative Associate/Purchasing
Kelly Northey, Receptionist
Carol Russell, Administrative Specialist

11:10 Departmental Policies and Procedures II
Payroll and Worker’s Compensation – Tracie Chadwick
Safety (handout included in new student packets)
Animal care and use (IACUC)
Insurance
TA Parking

11:30 Rights and Responsibilities
Course Registration
Office Space
Computers, E-mail, social networking
Departmental Seminars
Prospectus Symposium
Annual Report
Graduate Student Handbook

11:45 Graduate School Assistance
Fellowships and Teaching Awards (GSA, Department, Graduate School, and University)
Summer Research Fellowship (Graduate School and CMS)
Travel Awards (BioGSA, GSA and Graduate School)

11:35 Residency for Tuition Purposes

11:40 Teaching and Research Assistantships and Support
Leslie Moore, Lab Coordinator
TA Institute
Lab Coordinator leadership
Center for Teaching Excellence
Faculty Evaluation of Teaching

11:50 Photographs – Mark Gay, Laboratory Research Specialist

Noon Pizza Lunch
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Graduate Programs

The Department of Biology and Marine Biology offers graduate programs leading to the following degrees: Master of Science in Biology, Master of Science in Marine Biology, and Doctor of Philosophy in Marine Biology. Programs are described in detail below.

Master of Science (MS) degrees

The faculty have designed the Master of Science (MS) degree programs to: (1) prepare students for further graduate work leading to the Ph.D.; (2) provide professional biologists with advanced research and education opportunities; (3) prepare students as managers of coastal and marine resources, trained to deal with contemporary problems in the environment; (4) provide students with a broadly-based graduate program allowing for specialization in the diverse fields of inquiry represented by the faculty of the department; and (5) provide increased avenues for secondary school teachers to pursue graduate studies. All students in the MS degree program should gain an in-depth knowledge of a chosen specialty, knowledge of available resource materials, and basic writing and problem-solving skills.

As you enter the MS degree program in the Department of Biology and Marine Biology, you should discuss your educational and job-related goals with your graduate advisor, committee members, and faculty at large. These individuals can help you in determining the most appropriate instructional and research programs available at UNC Wilmington. For example, if your goals include a continuation of your studies at the Ph.D. level, faculty members will probably advise you to pursue extensive independent research, while minimizing the number of formal courses taken. Conversely, if your employment goal is to work in the private or government sectors, understanding the conduct of research is important, but a breadth of course work may be the most appropriate approach to this goal.

MS Degree Requirements

General Requirements for the Master of Science

1. The program requires 30 semester hours of graduate study.
2. Six (6) semester hours of credit, if approved by your graduate committee and the departmental graduate coordinator, may be transferred from another accredited institution. Grades earned on transfer work must be equivalent to a “B” or better.
3. A minimum of 24 semester hours of graduate study must be completed in residence at UNC Wilmington.
4. No more than nine (9) hours of graduate level courses offered by other science departments at UNC Wilmington may be applied toward the 30 credit hour requirement for your degree.
5. Undergraduate courses taken to make up deficiencies will not count toward the 30 hours required.
6. All deficiencies must be remedied before graduation.
7. Students must successfully complete both a comprehensive oral examination and a defense of the thesis.
8. Students will present a thesis based on original research that is acceptable to the committee, before graduation.
9. Students must complete an approved course of study within five years of the date of the first registration for graduate study.

Coursework Requirements for the Master of Science

Required Courses for both Biology and Marine Biology MS degrees

The following courses are required of all students seeking a Master of Science degree in biology or marine biology:

BIO 501 Introduction to science as a profession (2)
BIO 599 Thesis (minimum of 3 and maximum of 6 credits applied toward the 30 credit requirement)
Core courses for each MS degree program

In addition to the required courses for both biology and marine biology degrees listed above, each student, in consultation with his/her graduate committee, shall devise a program of study that meets the requirements below, complements the thesis research, and satisfies individual needs and interests.

MS in Biology students must complete two of the following:

BIO 519 Advanced Topics in Cellular and Molecular Biology (4)
BIO 534 Advanced Ecology (3) and BIOL 534 Advanced Ecology Lab (1)
BIO 549 Advanced Topics in Animal Physiology (4)
BIO 530 Advanced Topics in Evolutionary Biology (3) and BIOL 530 Advanced Topics in Evolutionary Biology Lab (1)

and a minimum of 14 hours of elective credit; at least seven (7) hours of which must come from the following list of graduate courses:
BIO 512, BIOL 512, 519*, 526, 531, 534*, 538, 539, 544, 549*, 550, 551, 563, 575, 577, 578, 579, 580, 585, 590, 591, 594, 596 (*If not taken as a core course above.)

MS in Marine Biology students must complete two of the following:

a) BIO 534 Advanced Ecology (3) and BIOL 534 Advanced Ecology Lab (1) OR
   BIO 549 Advanced Topics in Animal Physiology (4) OR
   BIO 519 Advanced Topics in Cellular & Molecular Biology (4) OR
   BIO 530 Advanced Topics in Evolutionary Biology (3) and BIOL 530 Advanced Topics in Evolutionary Biology Lab (1)
b) BIO 560 Estuarine Biology (4)
c) BIO 564 Biological Oceanography (3) and BIOL 564 Biological Oceanography Lab (1)

and a minimum of 14 hours of elective credit; at least seven (7) hours of which must come from the following list of graduate courses:
BIO 519*, 534*, 549*, 558, 560*, 561, 562, 563, 564*, 566, 575, 577, 578, 579, 580, 585, 590, 591, 594, 596 (*If not taken as a core course above.)

Doctor of Philosophy (PhD) degree

The Department of Biology and Marine Biology offers a program of study and research leading to the doctor of philosophy (PhD) in marine biology. The program provides students with a broad background and overview of the fields comprising marine biology and make use of the diverse interests of the marine biology faculty within the department. As is generally the case, the PhD program is primarily a research degree. As such, it is intended to serve students with interests in conducting research in academia, industry, and government along with those who intend to become faculty in undergraduate teaching institutions, managers in technology-based industries and policy makers in government. Students will learn the process of identifying, defining and solving an original research problem. The program also includes a teaching practicum with classroom instruction in pedagogical techniques and technologies along with lecture experience under the guidance of a faculty mentor.

PhD Degree Requirements

General Requirements for the Doctor of Philosophy

1. The program requires 78 post-baccalaureate (48 post-MS) semester hours of graduate study.
2. The maximum amount of credit that a PhD student may count toward a doctorate from a master’s degree program is 30 semester hours. This applies whether the master’s degree was earned at UNCW or elsewhere. Six post-MS semester hours of credit may be transferred from another accredited institution. Grades earned on transfer work must be equivalent to “B” or better and must be approved by the Graduate Advisory Committee.
3. A minimum of 24 semester hours of graduate study must be completed in residence.
4. Each student must pass a Candidacy Exam that includes an oral examination based on the student’s dissertation prospectus. The Candidacy Exam should be taken before the beginning of the third year in the PhD program.
5. The student must complete and defend a dissertation based on a research program approved by the student’s committee that results in an original, high quality, significant, and substantial body of research.
6. All requirements for the degree must be completed within six years after admission to the PhD program (i.e. post-MS).

**Additional requirements for all students seeking the PhD in Marine Biology**

1. Students must have a master’s degree or must complete course and research requirements of a master’s degree program within the department as described above.
2. Students must complete the following course requirements:

   **Graduate Seminars in Marine Biology**
   (2-3 credit hr each; minimum of three differently numbered seminars required) (6)
   - BIO 601 Oceanography and Environmental Science*
   - BIO 602 Ecology
   - BIO 603 Physiology and Biochemistry
   - BIO 604 Cellular and Molecular Biology
   - BIO 605 Evolution and Biodiversity

   * Required of all students. Prerequisite: Biological Oceanography (564) or equivalent

   **Additional required courses:**
   - BIO 690 Seminar (1)
   - BIO 694 Practicum in College Biology Teaching (2)
   - BIO 699 Dissertation (12)

   In addition to the above requirements, each student, in consultation with his/her dissertation committee, shall select a minimum of 24 hours of elective credit that may include graduate courses and research hours (BIO 698).

**For Biology or Marine Biology MS students considering entering the PhD Program**

**Admission requirements**

Students will be admitted to the PhD program by a majority vote of the Graduate Advisory Committee of the Department of Biology and Marine Biology based on eligibility requirements and available resources. Under most circumstances, students admitted to the program will have met the following requirements:

1. Received a MS degree or equivalent from an accredited university OR, if entering with a BS, completed all the requirements for the MS marine biology degree at UNCW except submission of the bound thesis.*
2. An overall graduate grade point average of at least 3.0 out of 4.0.
3. A score on the Graduate Record Examination General Test with a target of the 65th percentile or better (average for the verbal, quantitative, and analytical writing sections), and a target of the 70th percentile or better in the Biology Subject Test.
4. A score of at least 550 on the paper version (79 on the computer version) of the Test of English as a Foreign Language (TOEFL) for applicants whose native language is not English.

*Under certain circumstances, a student may, with the support of his or her faculty advisor, choose to apply to the PhD program before completion of the requirements for the MS biology or marine biology degree. Students who choose this path after their first year of core courses and research planning must complete a new application, including letters of recommendation, to enter the PhD program. If accepted, these students would not take their MS oral preliminary exam, but would continue on with their study and take the PhD candidacy exam in year 3. Students who decide upon a PhD later in their academic career, and who have, thus, already taken their preliminary oral exam, may apply to the PhD program, again with the support of their advisor. Students who choose this path must complete a new application, including letters of recommendation, to enter the PhD program. If accepted, these students may decide to bind a MS thesis, or simply continue on with their study and research and take the candidacy exam in year 3.

**Documents to be submitted for admission to the PhD Program**

All applicants must submit:
1. An application for graduate admission
2. Official transcripts of all college work (undergraduate and graduate)
3. Official scores on the Graduate Record Examination (verbal, quantitative, analytical writing and subject test in biology)
4. Three recommendations with accompanying letters by individuals in professionally relevant fields, one from the intended faculty mentor.
5. Official score on the TOEFL (if applicable)
6. Current curriculum vitae
7. Detailed summary of M.S. thesis research (maximum of three pages)
8. Statement of interest for Ph.D. research (maximum of three pages)
9. Reprints or copies of any publications (if applicable)
Departmental Policies related to Graduate Study

Role of the Graduate Advisor

You must have a graduate advisor. Your advisor will be determined by mutual consent. Full-time students will not be admitted to the program unless they have obtained the consent of a faculty member to serve as their advisor. Part-time and non-degree students may be admitted without prior consent of an advisor. In such cases, the departmental graduate coordinator will serve as interim advisor. If you are unable to continue with your original advisor and, in consultation with the departmental graduate coordinator, are unable to obtain a new advisor, you will be ineligible to continue in the program.

The primary role of your graduate advisor is to help you choose a thesis topic and assist you with the design of your research program. Your advisor, therefore, should have expertise in the area of your research and usually will agree to advise only those students wishing to pursue a research topic within his or her range of expertise. Your graduate advisor will also help you in selecting other faculty members to serve on your graduate committee. The committee should be selected during your first year in residence. You should choose your graduate committee members based on their ability to provide you with additional expertise in designing and carrying out your thesis research. Any tenure-track graduate faculty member within the department is eligible to be your graduate advisor and the chair of your graduate committee if he or she provides the needed expertise. If pursuing a PhD, graduate faculty must also be eligible to recruit PhD students.

Under unusual circumstances, you may elect to change graduate advisors during the course of your degree. This process must be accomplished with the knowledge and consent of both your new and current graduate advisor, and in consultation with the departmental graduate coordinator, who will oversee the process and provide the necessary forms that must be completed.

The Graduate Committee

All graduate committees are formally appointed by the department chair. You should submit the appropriate form to notify the chair in writing of your committee choices. The chair will then make the formal appointments.

Your graduate committee will help you in many ways. Members will assist in putting together your degree program and must approve your program of courses. They will also assist you with the development of the research proposal and must approve the research project. They will be prepared to offer you advice and counsel throughout your degree program on any aspect of the program. Each committee member will read, edit, and evaluate your thesis and must approve the final draft. Your committee is responsible for conducting your comprehensive examinations and they will evaluate your performance to determine whether you pass or fail.

It is very important that your committee be carefully chosen and that you maintain close contact with each member throughout your degree program. It is especially important to keep them informed of your progress on research and the writing of your thesis. When they do not know what is being done, they will assume that nothing is happening. To assure that your committee is kept informed about your progress, the department suggests that the student’s committee be convened at least once each semester. Forms reporting the outcome of each meeting are provided to all students and must be turned in to the graduate coordinator. The relationship between you, your advisor, and your committee is a critical one. Maintain good working relations, and generally the advisor and committee will be of great help. If the relationship becomes too distant, you will likely lose much of the opportunity to make the most of your time in the graduate program.

MS
For the master’s degree programs in Biology and Marine Biology, the student will have a Thesis Committee.

Before the end of the first semester in the MS program, and in consultation with the major advisor, each student will select a Thesis Committee of at least 3 members.

At least two committee members, including your major advisor, should be from the faculty of the Department of Biology and Marine Biology.

The third committee member may be (1) a graduate faculty within our department, from another department at UNCW, or from a department at another university, (2) an adjunct graduate faculty member of our department, or (3) a PhD (or equivalent terminal degree) scientist outside of a traditional university setting, which would require a review of the individual’s CV by the GAC, and approval as adjunct graduate faculty by the Graduate School.
A fourth committee member may be any of the above, or any other individual who can contribute to the MS student’s scholarly development, and receives approval as adjunct graduate faculty by the Graduate School.

**PhD**

For the Ph.D. degree program in Marine Biology, the student will have a Dissertation Committee.

Before the end of the first year in the Ph.D. program, and in consultation with the major advisor, each student will select a Dissertation Committee of at least 5 members.

Three of the committee members, including the major advisor, must be graduate faculty of the Department of Biology and Marine Biology.

The fourth committee member may be (1) a graduate faculty within our department, from another department at UNCW, or from a department at another university, (2) an adjunct graduate faculty member of our department, or (3) a PhD (or equivalent terminal degree) scientist outside of a traditional university setting, which would require a review of the individual’s CV by the GAC, and approval as adjunct graduate faculty by the Graduate School.

The fifth committee member may be any of the above, or any other individual who can contribute to the PhD student’s scholarly development, and receives approval as adjunct graduate faculty by the Graduate School.

One member must be from outside the department.

**Annual Review of Progress**

Annually, the departmental graduate coordinator will review the progress of each graduate student in the biology and marine biology programs. The review is designed to determine if you are making satisfactory progress toward your degree. Milestones such as completion of identified deficiencies, selection and meeting of your thesis committee, reports of committee meetings, presentation at the prospectus symposium, submission of a signed prospectus, and satisfactory progress in course work will be reviewed. Should your progress be less than satisfactory, the departmental graduate coordinator will meet with you and your faculty advisor to discuss strategies to help your progress.

**MS degree policies**

**MS Thesis Prospectus**

Oversight of your course work and your original research is the responsibility of the university faculty. Failure to monitor these elements may result in considerable strain on the student-graduate advisor-university relationship. To promote a firm understanding of expectations of you in your educational and research program, a prospectus prepared early in your program is essential.

The prospectus should contain three elements: (1) Program of Course Work, (2) Literature Review, and (3) Research Proposal.

**1. Program of Course Work**

You and your graduate committee should develop, by mutual agreement, a course sequence for one to two years based upon projected course offerings.

- a. Your program should reflect the broad aspects of course offerings in biology or marine biology, but should provide some focus concerning your specific research interests.
- b. Your program should reflect your background and your preparation; it should remedy deficiencies from your undergraduate coursework.
- c. Your program should identify required and collateral courses so that all requirements are met.

**2. Literature Review**

A review of the pertinent primary literature concerning the specific research topic mutually agreed upon by you and your graduate
advisor should be completed. The review should be considered a demonstration of your command of the primary literature within your intended field of study.

a. Using conventional or computer-based searching techniques, and/or consultation with persons knowledgeable in the field, you should review major relevant research papers in your area of study.

b. Your review should include broad papers in the field of study and specific papers related directly to the research topic.

c. Your review should show the data gap which your research will address.

d. Your review should be written in scientific style and include a literature cited section written in the format of a major journal in your field of study.

3. Research Proposal

A research proposal, written in narrative form, describing the objectives, hypotheses, methodology, and data analyses, should be completed before you start your thesis research.

a. Your research proposal can be broad-based in nature, especially if the topic or approach is novel.

b. The document should address the significance of the study considering the literature cited.

c. The objectives of your study should be clearly stated. Objectives are measurable or demonstrative accomplishments.

d. Hypotheses and anticipated results should be discussed.

e. Your research proposal should include a timetable for accomplishment of the proposed objectives.

f. The entire document should be considered conditional allowing changes because of circumstances beyond your control.

g. Your methodology for accomplishing each objective should be presented in as much detail as feasible.

h. The kinds of data to be collected and your method(s) of analysis should be clearly stated.

i. Your research proposal can be used to measure your progress and to help develop a schedule for accomplishments.

General Timetable

To ensure the timely submission of the prospectus by the end of the second semester:

a) A copy of the signed prospectus cover sheet must be submitted to the graduate coordinator, who will log the completion of the prospectus (a copy of the prospectus should be submitted directly to the Biology Office for placement in your file).

b) Failure to submit the cover sheet to the graduate coordinator by the end of your second semester will result in a written warning with copies to your graduate advisor and department chair.

c) Failure to submit the cover sheet to the graduate coordinator by the beginning of the third semester will result in a block on your registration for the third semester.

The prospectus will be maintained as a part of your permanent record.

Prospectus Symposium

All MS students are required to participate in a Prospectus Symposium at the end of their second semester in residence. The graduate coordinator will schedule a Symposium at the end of each semester. Symposium presentations will consist of a 10-minute synopsis (with appropriate visual/multimedia aids) of the research question, hypotheses to be tested, research design and statistical analyses to be performed. Each student presentation will be followed by a 5-minute question-and-answer period.

The MS Comprehensive Examination

The comprehensive examination is an oral exam designed to provide you with the opportunity to demonstrate your competence in the field of general biology and/or marine biology as well as in your area of specialization. It will also serve as a diagnostic tool to identify any areas in which your knowledge is deficient and provide avenues for remediation of any such deficiencies.

The scope of the examination should be discussed during an early committee meeting, and should include coverage of general biological knowledge in addition to a command of the specific discipline related to your thesis research. Questions that address biological topics that you should have in focus (based on recent course work) will be considered in developing the examination; however, your entire biological experience will not be neglected. Questions that explore your knowledge in the area of general biology (for example, physiology, genetics, ecology, structure, etc.) are appropriate for either biology or marine biology programs.

The comprehensive examination will be conducted by members of your thesis committee. Comprehensive examinations will be usually conducted within the first two weeks of each semester. You should plan to take the examination at the beginning of your third semester.
The outcome of the examination will be pass, pass with requirements for remediation, or fail (student may retake the examination at the beginning of the next semester). Failure of the exam for a second time will result in dismissal from the program.

The MS Thesis

Thesis Credit

You are required to register for a minimum of three (3) credit hours of thesis. A maximum of six (6) credit hours may be used toward the master’s degree requirements. Since course work is usually taken during the initial semesters of graduate study, students often elect to register for thesis during their final semesters, although research may be initiated soon after admission. You should register for some thesis credits during any semester in which you are primarily working on your thesis.

Philosophy

Although course work is important, research and the resultant thesis are the unique experiences of graduate study. Consequently, the design of a realistic and well-defined research project should be considered the highest priority by you and your graduate advisor. A detailed prospectus outline helps you achieve this goal by explaining the steps in developing a review of the pertinent literature and a written narrative of the direction the thesis will take. This prospectus can be used by both you and your graduate committee for evaluating and overseeing your research progress.

Directed research can provide you with an opportunity to make a contribution to science, and more importantly, to learn firsthand the objectives, hypotheses, methodology, and data analyses and interpretations used in research. Since graduate students often lack experience in conducting research, it is important that your graduate advisor take an active role as teacher and advisor in the design and completion of your research.

Authorship

It should be the goal of both student and advisor to publish the results of the thesis research. Since there are many possible arrangements between you and your advisor concerning this work, several authorship arrangements are possible. The most common is for you to be senior author and the advisor to be junior author. However, when your research is part of an ongoing research project, authorship may be reversed. Sometimes, your graduate advisor may choose to not share authorship. Recognizing that these and other arrangements are possible and proper, and to avoid misunderstandings between you and your advisor, each student and advisor must complete the Authorship of Publications form when the thesis project is agreed upon. This form will be forwarded to the departmental graduate coordinator and it will become part of your permanent academic record. The chair’s signature indicates that the agreement has been made. If circumstances later dictate that a new authorship agreement is appropriate, the department chair may approve a new arrangement if both parties approve.

Citing the work of others

The writing of a thesis involves both presentation of research findings and evaluation of these findings concerning work done by others. Thus, the incorporation of the body of knowledge existing—relative to the research being reported—is most important. This process involves the frequent and careful citing of work published by others in the body of scientific literature. Such citations should be carefully done and should conform to the principles set forth in the CBE Style Manual and in the journal in which you expect to publish. It is occasionally necessary to cite work not yet published. This is usually done after a personal contact with another researcher and is cited as a “Personal Communication.” To prevent misinterpretation of the unpublished findings of another worker, such citations should be based only on the written transfer of information.

Thesis Format

It is the general policy of the Graduate School and the Department of Biology and Marine Biology that your thesis should be in the format of an article ready for submission to an appropriate scientific journal. Thesis guidelines are available on the Graduate School web site: http://www.uncw.edu/gradschool/thesis.html

All instructions for the format of the thesis should follow these guidelines. Detailed presentations of data should be in appendices and should be sufficient to allow future students to repeat the work or to make comparisons between your data and newly gathered information. You should realize, however, that graduate advisors will differ in opinion about what is an appropriate length and style of a
thesis. You should discuss this with your advisor before beginning to write and make sure that both of you have an understanding about what format is to be used and how much detail is to be included.

Extensive reviews of literature and methods, of course, are rightfully parts of your prospectus, a document where, by design, you show your mastery of relevant background information before committing to a focused project. However, you should not submit a thesis clogged with pages and pages of material that will never be published in a respectable journal. Students can refer to the following reference for more information on style and content:


Besides the two copies of the thesis required by the Graduate School, you should submit one copy on 100% cotton rag paper for the Department. This copy will be bound, at Departmental expense, and will be kept on file in the Departmental office. The format of your thesis will be discussed in some detail in Biology 501 - Methods in Scientific Research, offered during the fall semester of each year.

**Thesis Review by the Graduate Dean**

After your graduate advisor and committee have reviewed your thesis and determined that it is in proper journal format and conforms to the thesis guidelines, you should submit one complete copy of your thesis to the Graduate School for format approval. The copy of the thesis must be accompanied by the thesis format form which is available as an interactive/printable form on the Graduate School website at: [http://www.uncw.edu/gradschool/thesis.html](http://www.uncw.edu/gradschool/thesis.html)

Because this copy will be subject to edit in the Graduate School, it should be printed on low-grade paper. The thesis must be submitted for format approval before the defense of your thesis can take place.

Following the defense of your thesis and the incorporation of all changes requested by your committee, you should submit three (3) complete copies of your thesis to the Graduate School. These three copies should be printed on 100% rag-content paper. (Note: You do not pay binding fees for these copies.) At this time, submit as many extra copies of your thesis as you wish to have bound. These copies must be printed on white paper with a quality paper of your choice, although 100% rag-content paper is recommended. These are your personal copies and will require a nominal binding fee (contact the Graduate School for current information). Please include a name, address and telephone number where you can be reached to pick up these copies when they are returned from the bindery.

Your thesis does not fulfill the degree requirement until it has been signed by the dean of the Graduate School. The thesis title and date of approval must be filed in the Graduate School before the degree requirement is officially met.

**Theses as Public Documents**

It is the policy of the Department of Biology and Marine Biology to make all theses available to the public. The William Madison Randall Library of the University of North Carolina Wilmington will be the location where the public may view theses.

**Admission to Candidacy**

A candidate for a graduate degree is a student who has been approved for graduation at the end of a specific semester, subject to the completion of ongoing courses and/or research as outlined in the application for graduation. You apply for candidacy by filing an application for graduation. Applications for graduation are obtained from the Graduate School. Semester deadlines for submission of these applications are published annually in the university Calendar of Events and posted on the Graduate School website. Your graduate advisor and the departmental graduate coordinator must sign your graduation application. If you apply for candidacy, but fail to meet the deadline for a particular graduation, you must notify the Graduate School, specifying a new graduation date.

**Defense of your Thesis**

The defense of your thesis administered by the Department of Biology and Marine Biology is designed to provide you with an opportunity to (1) demonstrate your competence in your chosen field of expertise, and (2) display argumentative and persuasive skills augmented with data collected by sound scientific methods. Your thesis defense may be scheduled once you have completed your research and have prepared the final draft of your thesis and submitted it to the Graduate School for format approval.

**Format of the defense**
The format of the thesis defense will involve a public presentation (departmental seminar) describing the results of your thesis research. The public seminar will be followed by a private thesis defense before your committee. Your thesis committee will take this opportunity to question you on all phases of your research and your written thesis. Normally, the private defense of your thesis will immediately follow your public presentation (departmental seminar); however, under appropriate circumstances and with prior approval of your committee and the graduate coordinator, the date and time of the committee defense may be separate from the date and time of your public seminar. However, in all cases, the public seminar must coincide with or precede the committee defense.

The examining committee will include a member of the department’s Graduate Advisory Committee or an appointed representative. This additional member will serve as a reader and may participate in your thesis defense. It is your responsibility to ensure a reader has been assigned. See the graduate coordinator at least 2 weeks before your scheduled thesis defense to arrange for a reader assignment. It is also your responsibility to notify the Graduate School of the time and place of your public seminar and thesis defense before your committee. You must take a copy of your thesis abstract to the Graduate School office no later than 10 days prior to your thesis defense.

Defense Procedure

At least 15 days before you wish to conduct the defense of your thesis, you should submit a request to your graduate advisor who will then schedule your thesis defense. At least one week before the scheduled date of the defense of your thesis, you must submit a copy of your thesis to each committee member and to the appointed departmental reader. This should be a complete copy, as close to final draft as possible. Figures and tables should be of finished quality. Each committee member will study and edit the thesis before your thesis defense. Should the committee determine that your thesis is not sufficient for a defense, they may cancel your scheduled thesis defense and request that it be rescheduled for a future date.

At the conclusion of your thesis defense, the copies of your thesis containing each member’s suggestions for changes will be returned to you. Your committee will inform you whether you have passed or failed your thesis defense after the committee has had an opportunity to deliberate on the quality of your responses to their questions, your oral performance, and the condition of your thesis.

If you pass your thesis defense, you must prepare a final copy of your thesis based on the written and oral comments provided by your committee. Should you fail your thesis defense, your committee will schedule a second defense after what it considers an adequate interval for further study or for revision of your thesis, typically a period of three months.

Appeal of Examination Evaluation

The burden of proof of unfair treatment always rests with the student making the appeal. Appeals will not be entertained until the student has exhausted existing policy, namely that a second comprehensive examination has been taken after a three-month waiting period has elapsed; excluding:

a. when any form of harassment (sexual, racial, national origin, etc.) is alleged.

b. when the appeal alleges arbitrary or capricious action, including deviations from established procedure that clearly affect the outcome of the examination.

In these instances, the appeals procedure may be initiated without the requirement of having taken a second examination.

If you wish to appeal the decision of the examining committee, you should first present evidence of discrimination or violation of due process to the chair of the department, who may consult with the departmental graduate coordinator and the faculty member(s) involved in evaluating the examination, in seeking resolution of the dispute.

Failing resolution at the departmental level, the student may appeal to the dean of the Graduate School for review and mediation. The appeal must include supporting information, copies of which shall be sent to the departmental graduate coordinator, the chair of the department, and faculty member(s) involved. The dean of the Graduate School shall request written information about the case from the department, with the intent of resolving the issue through informal consultation. However, failing in that effort, the graduate dean will assemble a formal hearing before the Student Affairs Committee of the Graduate Council, with the exception that no member of the hearings panel may be a member of the faculty of the student’s department. Other members of the Student Affairs Committee also may disqualify themselves should there be a personal or professional conflict of interest. In such cases where a replacement member to the Student Affairs Committee is required, the dean shall appoint another member from the Graduate Council to serve on the panel.

The Hearings panel shall be supplied with copies of the information at hand and after that hold whatever hearings and meetings it deems necessary. The dean of the Graduate School shall chair the meeting, but shall not be involved in any deliberations concerning the outcome of the hearing. All parties involved have the right to appear before the panel, if they wish, but otherwise need not do so. The panel shall forward its recommendation to the graduate dean who, after considering those recommendations, shall notify the student in
writing of the final decision, with copies sent to the departmental graduate coordinator and the chair of the department. The matter, as an academic issue, ends at this time.

**PhD degree policies**

**Procedures for the PhD Prospectus, Prospectus Seminar, and Candidacy Exam (All must be completed before the beginning of the 3rd year in the Ph.D. program)**

**Prospectus:** All PhD students are required to complete a written dissertation prospectus that outlines their plans for their PhD research. The prospectus should contain well-defined objectives and experimental approaches, and should be of sufficient breadth and depth to demonstrate mastery of the literature in the field and how the intended research will contribute to the discipline. Once a draft of the prospectus is completed, it should be distributed to the committee members, and a committee meeting should be scheduled to discuss and approve its content.

**Prospectus seminar:** After the prospectus has been approved by the dissertation committee, PhD students must give a seminar during which the proposed research will be presented to the faculty and students in the department. The seminar should be 40-50 minutes in length, with 10 or more minutes for questions.

**Candidacy exam:** After completing the departmental prospectus seminar, PhD students must take the oral candidacy exam. The purpose of the PhD candidacy exams is to test the breadth and depth of the student’s knowledge in the chosen area of marine biology and supporting disciplines. In preparing for the candidacy exam, students should discuss the format and areas of focus with individual members of the advisory committee. While topics central to the prospectus are likely to be emphasized during the exam, some committee members may also wish to explore other areas, so it is important that each student has a clear understanding of the committee’s expectations in advance of the exam. The candidacy exam should last 2-3 hours. A passing vote from four of the five committee members is required to pass the oral candidacy exam. Upon successful completion of the candidacy exam, the student will be admitted to doctoral candidacy.

A student who fails the candidacy exam may, at the discretion of the student’s advisory committee, be permitted to take a second oral candidacy exam within 3 months. Alternatively, the committee may wish to allow the student to respond in writing to questions covering topics that were inadequately addressed by the student during the oral exam. If a student fails the second candidacy exam (either written or oral), those who do not possess an MS degree would have the option of completing their MS degree; those who already possess an MS degree would have to withdraw from the PhD program.

**The PhD Dissertation**

You must complete and defend a dissertation based on a research program approved by your dissertation committee that results in an original, high quality, significant, and substantial body of research. You must orally present and successfully defend the dissertation to your dissertation committee in a defense that is open to the public. A copy of the dissertation must be made available for review by your dissertation committee at least two weeks prior to the public defense.

**The Defense of the PhD**

The format, procedure, and appeals process for the defense of the PhD degree are similar to those outlined above for the MS degree.

**Residency Requirement**

PhD students must satisfy the residency requirement for the PhD program by completing at least 24 hours, either as course work or research credits, in residence.

**Graduation and the Awarding of Degrees (MS and PhD)**
Graduate degrees are conferred by the university three times each year: May, August, and December. Students that successfully complete their defense will have their degree conferred based upon the date of completion of all requirements (e.g., spring completion = May degree; summer completion = August degree; and fall completion = December degree). You are eligible to participate in either December or May Commencement ceremonies, based on the expected time that your degree will be conferred. If your degree is conferred in August, you can participate in Commencement ceremonies the following December. No diplomas will be given out at any ceremony. Your diploma will be mailed to you. Students receiving graduate degrees in December and May are expected to participate in Commencement ceremonies. All students participating in the Commencement ceremonies must order academic regalia 2-3 months in advance.

**Academic Regulations and Procedures**

**Transfer of Graduate Credits**

You may transfer a maximum of six (6) semester hours of graduate credit from another accredited institution. Under special circumstances, you may transfer additional credit by submission of a petition, endorsed by the chair of the Department of Biology and Marine Biology, to the Graduate Council of the University. You may start this process by indicating your desire to seek additional transfer credits in a written memorandum to the departmental graduate coordinator.

Graduate courses that you have taken while enrolled as an undergraduate are not transferable unless they are approved by the dean of the Graduate School at UNCW before taking the course.

No grade less than B, or equivalent, may be transferred. You obtain graduate transfer credit by having the departmental graduate coordinator submit a request to the dean of the Graduate School. This request must have the approval of the chair of the Department of Biology and Marine Biology and must be accompanied by an official transcript.

A student enrolled in the UNCW graduate program may take up to six (6) hours of credit at another accredited institution. You must have prior approval of the dean of the Graduate School before taking the course.

**Deficiencies in coursework**

Your graduate advisor and your graduate committee will evaluate your undergraduate program as you enter one of the MS degree programs and may require that coursework deficiencies be remedied. You may fulfill a deficiency by taking one or more undergraduate courses before graduation, and you must receive a passing grade. However, no graduate credit will be given. In many cases, you can receive graduate credit for an undergraduate course by taking the course under the BIO 591/691 listing. This will require that you meet with the course instructor to agree upon the course listing and credit hours, and the means of evaluating graduate level work in an undergraduate course (graduate students will be expected to perform additional assignments to those of undergraduate students).

**Full-Time Status**

Full-time status requires a minimum enrollment of nine credit hours. However, a graduate student may also be considered full-time when enrolled for less than nine hours if (1) the student holds a teaching or research assistantship or (2) is enrolled for one to three hours of thesis work or (3) is enrolled in GRC 600 (continuous enrollment) or (4) is enrolled in PSY 598 (Internship). Half-time status begins with at least four and a half (4.5) credit hours. A student may not enroll beyond two terms of continuous enrollment (GRC 600). No course enrollment is required during summer.

**Directed Independent Study (BIO 591) and Research (BIO 598 or 698)**

Directed Independent Study is designed to allow students to spend focused time researching or studying a particular topic (often, but not always related to your thesis research). This course designation is also sometimes used to enroll for graduate credit when you participate in an upper level undergraduate course to remedy a deficiency. All Directed Individual Study courses must have approval of the instructor (this will generally be either your graduate advisor or the instructor of an upper level undergraduate course that you are taking), the graduate coordinator, and the dean. You may accomplish this by completing a Directed Individual Study form that can be found on the Graduate School website: [http://www.uncw.edu/gradschool/registration/forms.html](http://www.uncw.edu/gradschool/registration/forms.html). MS thesis (BIO 598) or PhD dissertation research (BIO 698) allow students to receive credit for research that is a part of their thesis or dissertation.
Adding and Dropping Courses

You must obtain a form from the course instructor to add or drop courses. Complete the form and obtain the required signatures. The form must be turned in to the Graduate School office during the add/drop period.

Auditing Courses

If you are interested in auditing a course, you should review the requirements in the Graduate Catalogue and speak to the instructor.

Course Waivers and Substitutions

You should consult the departmental graduate coordinator. The coordinator can request that a particular course be waived; however, the request must be approved by the dean of the Graduate School. You should consult your graduate advisor and the departmental graduate coordinator to request a substitution of a course or other degree requirement. The departmental graduate coordinator will complete the substitution form and forward it to the dean of the Graduate School for approval.

Degree Time Limit

You have five years from the date of your initial entrance into the graduate school to complete your MS degree; six years for a PhD. When extenuating circumstances warrant, the Graduate School may grant you an extension. Consult the departmental graduate coordinator. You will not be permitted to register beyond five (MS) or six (PhD) years without prior approval of the dean of the Graduate School.

Incomplete (I) Grades

If you do not complete the required materials for a course during the normal academic term (e.g., your field research requires you to miss classes before the semester is completed), you will be assigned a grade of Incomplete (I). Generally, you will have arranged this ahead of time with the course instructor. Once an Incomplete has been assigned, you have a maximum of 12 months to complete the required materials for the course. The instructor may set the maximum allowable period for completion of the course materials at less than 12 months, but the extension can never exceed 12 months. If the time allowed to you is less than 12 months, this information will be transmitted to you in writing, with a copy to the dean of the Graduate School. Once you have completed the course requirements to the satisfaction of the instructor, he/she will re-assign your grade appropriately. If you do not complete the required materials within 12 months (or a shorter time period as assigned by the instructor), the grade of (I) will be converted to a grade of (F). A single grade of (F) renders you ineligible to continue in the graduate program.

Withdrawal from a Course or Graduate School

If you wish to withdraw from a course or from the graduate program, you must complete the withdrawal form obtained directly from the Graduate School. Check the academic calendar each semester for withdrawal deadlines. A grade of (W) is assigned for a course when a withdrawal is processed before the published deadline; after the deadline, a grade of (F) is assigned. See the Graduate Catalogue for details on formal withdrawal from the graduate program.

Grading

Grades for graduate students enrolled in graduate courses are assigned as one of the following:

A (4 quality points) – excellent
A- (3.67 quality points)
B+ (3.3 quality points)
B (3 quality points) – completely satisfactory
B- (2.67 quality points)
C+ (2.33 quality points)
C (2 quality points) – minimally acceptable
F (0 quality points) – failure
S - satisfactory progress (thesis 599 or dissertation 699)
U - unsatisfactory progress (thesis 599 or dissertation 699)
I - work incomplete
W - withdraw passing

Grade Appeals

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If you protest a course grade, you must first attempt to resolve the matter with the instructor involved. Failing to reach a satisfactory resolution, you may appeal the grade following the procedures outlined below. Such appeals must be made by the last day of the next regular semester. You must present your appeal in writing to the dean of the College of Arts and Sciences. By conferring with you and your instructor, the dean will seek resolution by mutual agreement. Failing such resolution, the dean will transmit the written appeal to the dean of the Graduate School. The dean of the Graduate School will convene the Grades Appeals Committee.

The Grade Appeals Committee will consist of the graduate dean as chair and five members of the graduate faculty appointed by the dean of the Graduate School. If the committee affirms the instructor’s decision, the graduate dean will notify you, the faculty member, and the dean of the College of Arts and Sciences in writing. If the committee supports your appeal, it shall prescribe the method by which you will be reevaluated. If the reevaluation results in a grade change, the established course grade change procedure will be followed. The grade resulting from the reevaluation is final and may not be appealed further.

**Academic Grievance Procedure**

Graduate students who have academic or procedural concerns, other than grades, should attempt to resolve those concerns at the lowest academic level as soon as possible, generally no more than 90 days after the event giving rise to the complaint. The first level for redress is with the appropriate faculty member. Within 30 days of failing to reach a satisfactory resolution with the faculty member, the student may appeal to the department chair. Failing resolution at the department level, the student may, within 10 business days, appeal jointly to the dean of the College of Arts and Sciences and to the dean of the Graduate School. The deans (or their designees) will conduct interviews with all parties to arrive at a resolution of the issue. The mutually agreed upon decision of the deans will be final and not subject to further appeal. Complaints that fall within the categories of sexual harassment, improper personal relationships, personal discrimination, unlawful workplace harassment, or workplace violence should be filed in accordance with Appendix J of the UNCW Code of Student Life.

**Retention**

To remain in good academic standing, you must maintain satisfactory grades and be making substantial progress toward the completion of your thesis or dissertation research. Three grades of C or one grade of F will result in your dismissal from the graduate program. Further, if you fall below a 3.0 GPA at any time, you will be placed on academic probation and have three subsequent courses to bring your GPA up to at least 3.0. In addition, you must have at least a 3.0 GPA to begin any program-specific comprehensive examination and thesis/dissertation research. You must have no less than a 3.0 GPA on all graduate-level courses to graduate. Grades of A, B, C, F, S, U, and W are permanent grades and can be changed only by the dean of the Graduate School in cases of arithmetical or clerical error or because of a grade appeal.

**Graduate Courses**

Graduate courses are fundamentally different from undergraduate courses, and it is important for new graduate students to recognize this difference. Graduate courses are usually designed such that student participation is a major part of the class format. Therefore, graduate students are expected to take an active role in the course, and in so doing they help to shape the class structure. Participation by students includes preparing for class in advance, asking questions and otherwise contributing to discussions, and possibly presenting materials as part of the course. Therefore, the passive learning that may have been sufficient in some undergraduate courses is inappropriate at the graduate level, where students are expected to take partial ownership of the class.

Many graduate courses will include reading primary literature (i.e., journal articles), rather than using a textbook. This is more challenging and often requires the students to do some additional textbook–level research in order to fully understand the primary literature. Acquiring skills in evaluating primary literature is often a core goal of graduate courses, as the primary literature is the information currency of science.

There are two levels of graduate courses in our department. 500-level courses are open to all graduate students and are taught at a level appropriate for the M.S. degree programs. 600-level courses are Ph.D.-level and are also open to all graduate students, but enrolling in these courses requires permission from the instructor. The permission requirement is simply to ensure that Ph.D. students who need the course are not excluded, and also to allow the instructor to confirm that the students in the class have a background suitable for the course content. 600-level courses often have fewer credit hours and may cover a more specific topic area than 500-level courses. As such, they tend to vary more from year to year in topic than do 500-level courses. These courses may also demand more participation from graduate students than 500-level courses. The expectation for student performance will also be higher in 600-level courses, and it is generally expected that students are more independent and are able to critically evaluate literature and data and identify relevant
unanswered questions that should be addressed. While 600-level courses may appear to be more free-form, it is the instructor’s responsibility to ensure rigor, as well as provide sufficient structure, learning objectives, and feedback to students regarding their performance.

Preregistration and Registration

You should seek registration advice from your graduate advisor, and if necessary, from the departmental graduate coordinator before registering, and all registration is online through SeaNet. To assure a seat in the classes you wish to take, you should take advantage of the preregistration process available to you following your first semester in residence.

Re-enrollment

Should you have a gap in enrollment of either a fall or spring semester (not summer), you must file a re-enrollment form with the dean of the Graduate School. The re-enrollment form is available in the Graduate Office.

Departmental Teaching Requirement

It is a requirement of the department that you gain experience in teaching while pursuing your graduate degree. MS students holding teaching assistantships automatically fulfill this requirement. All other MS students, whether financially supported by the university or not, will be required to gain formal experience in teaching. See your graduate advisor and the department chair to decide the manner in which you may fulfill this requirement. If you do not hold a teaching assistantship during at least one semester, you must submit written verification that you have fulfilled this requirement before admission to candidacy. All PhD students must complete BIO 694 (Practicum in College Biology Teaching), during which they will gain experience in formal classroom instruction. Details are arranged through your graduate advisor and the departmental graduate coordinator.

Departmental Seminars

Each semester the Department of Biology and Marine Biology offers seminars by scientists and students. These seminars are designed to provide intellectual stimulation for both students and faculty, and you are expected to attend. PhD students are required to attend whenever in residence.

Health Insurance

Student Group Health Insurance is available to all graduate students. A copy of the application is included in your orientation packet and contains application information, benefits and cost schedules. However, you are urged to go to the Student Health Center (962-3280) in Westside Hall to obtain an up-to-date brochure and application. They can also answer questions about coverage, etc.

Liability Insurance

Graduate teaching assistants may take advantage of the Teachers’ Liability Insurance offered by the University of North Carolina system.

General Departmental Procedures

The Department of Biology and Marine Biology office staff will provide information and help you in successfully completing your course of study. Below are general procedures that specifically affect you. For information on general office procedures that affect both faculty and graduate students, you should seek information from your graduate advisor.

Mail Service

A mailbox is provided for each full-time graduate student in the Biology and Marine Biology mailroom located in Dobo Hall. You should use your departmental address for all professional correspondence. The Department will provide regular postage for mail that is required by your course of study and is clearly university business. Special postage (overnight shipping, etc.) must be covered by yourself or your graduate advisor.
Telephone Service

The Department cannot provide telephones specifically for graduate students. You are allowed to use faculty and office phones whenever possible and appropriate. You should obtain permission for the use of the telephone from the individual responsible for the telephone. Many faculty provide a phone in their research labs for graduate student use. You should check with your graduate advisor about their specific policies regarding phone use. Telephone messages received by the office staff will be placed in your mailbox. You should check these mailboxes at least once a day for messages and other information.

Office Space

If you are a full-time graduate student or teaching assistant you will be provided office space where materials may be stored and where you may study and work. Office space is generally provided by your graduate advisor within their laboratory space. If such space is not available, the department chair, in consultation with the departmental graduate coordinator, will make alternative office assignments and will notify you of your assigned location.

Departmental Keys

All graduate students will be granted ID card-access to Dobo Hall and other needed keys from the departmental office. You should consult with your graduate advisor to determine the specific keys you will need. A secretary in the Biology and Marine Biology office will issue you the necessary keys. Upon completion of your degree program or if you withdraw from the university, all keys must be returned to the Biology and Marine Biology office before you leave campus.

Use of Departmental Equipment

Most of the equipment in the research and teaching laboratories is university-owned. It is, however, usually assigned to a particular faculty member for use in specific courses and research programs. Often this equipment requires considerable skill and care during use to avoid damage that may be costly to repair and may render the item unusable while parts are ordered or repairs made, or while an item is being repaired elsewhere. Therefore, you should never use a piece of equipment without first requesting its use from the faculty member in charge. If it is not clear which faculty member is in charge, see the department chair. Generally, such use will be granted if the item is not in use and the responsible faculty member is convinced that you know how to use the equipment properly and will give the equipment proper care during its use. There may be times when equipment is in heavy use and will not be available, and there may be certain items that faculty members will not allow others to use. If a project is being planned that may require such items of equipment, discuss their lack of availability with your graduate advisor.

Building Security

You are expected to assist the faculty in maintaining building security. It is the responsibility of any graduate student who is working in a laboratory during off hours to leave the room secure with lights off and doors locked. On weekends, the outside building doors will be kept locked.

You should also be prepared to deal with emergencies as effectively as possible. You should locate fire extinguishers, fire blankets, exits and emergency lights in the building you are working in. Also, in any lab where you will be teaching or working, you should locate the nearest first aid kit, eyewash station, and shower. If you are working in the building during off hours and an emergency occurs, call the campus police (911), then call the department chair, and take safety measures that are feasible until help arrives.

Boat Certification

UNCW maintains a fleet of small boats that can be used in your research. Anyone operating a university vessel must have a university boat certification. Certifications are obtained upon successful completion of university-sponsored short course in boat handling and water safety. Other boating courses may be acceptable if approved by the boating safety officer. Consult the boating safety officer (962-2310) for certification information. The University requires that all students that use small boats (whether as operator or passenger) for their research must have health insurance.

Photography and Illustration Preparation

A darkroom is available, with permission, in Dobo 112 for developing film and printing photographs, as is a separate room for
photography and preparation of illustrations.

**Poster Printing**

If you need to print a poster for a presentation at a scientific conference, a large format printer is available in the microscopy lab in Dobo Hall. You will need to make arrangements with Mark Gay (gaydm@uncw.edu) for printing. There may be a nominal charge to help defray costs of paper, ink cartridges and maintenance.

**Interlibrary Loan Services (ILL) and the Randall Library**

The William Madison Randall Library provides interlibrary loan services by which faculty members and graduate students may borrow materials that are not available in the Randall Library collections. Although undergraduate students must have their instructor’s approval and the material must be available in North Carolina, no such restrictions have been placed on graduate students. Interlibrary loans can be requested on-line via the Randall Library link from the UNCW homepage (www.uncw.edu), they can also be requested in person by filling out forms at the Library Reference desk. Indicate the maximum cost you are willing to pay to obtain this material. Ordinarily, no charges are incurred in obtaining loans, but there may be a charge for certain materials. Most books will be loaned to you, through the library, for a specified period of time. Requested journals articles are usually scanned and sent to you electronically as pdf files. These items generally incur no cost. If you are unsure about the potential cost of an item, check with Peter Fritzler (Ph: 962-7807; email fritzlerp@uncw.edu), who serves as a liaison between the library and our department. Our library at UNCW is very good and will have many of the resources that you require for your research. The library subscribes electronically to many scientific journals and you can access these from any campus computer through the library website. In addition, the library staff (e.g., Peter Fritzler) are tremendously helpful and you should take advantage of the resource that they provide.

**Financial Aid**

**Teaching Assistantships**

The Department of Biology and Marine Biology offers teaching assistantships to students enrolled in the biology and marine biology graduate programs. Students must apply for these assistantships, and selection will be based on an evaluation of academic records, recommendations, experience, and relevant criteria. In this regard, you should keep your Graduate Student Information sheet as current as possible.

Each teaching assistant will be assigned duties by the department chair and graduate coordinator. Duties will generally involve preparing for and helping in the teaching of laboratories and/or performing preparation work for the laboratory. Other duties may be assigned as appropriate. While serving as a teaching assistant, it is expected that students will also continue to make progress toward the completion of their MS or PhD degree. Teaching assistants are expected to be on campus and available for work assignments by the start of classes, and to remain on campus through the period of final examinations. Arrival delays or early departures must be approved by the department chair. If you have met the 30-hour degree requirement, you can maintain your teaching assistantship by enrolling in GRC 600.

Teaching assistantships are awarded each semester. You may normally expect to be retained as a TA in subsequent semesters if your performance is satisfactory. Continuation of the teaching assistantship past the 4th semester is permissible (but not guaranteed) providing your performance as a teaching assistant is acceptable and that satisfactory progress in your research program has been made. Research assistantships will be counted as support when determining fifth or sixth semester teaching assistant support awards. Students failing to perform their duties satisfactorily may have their assistantship revoked any time.

If you were not awarded a teaching assistantship upon admission, you may be considered for a teaching assistantship as positions become available. You should notify the department graduate coordinator of your interest in being considered for a teaching assistantship.

The graduate secretary in the Department of Biology and Marine Biology will complete form HR 1.35 to initiate payment to you for your teaching assistantship. Valid I-9 and W-4 forms must be completed and forwarded to the dean of the Graduate School before you will receive your paycheck.

**Instructor of Record and TA Responsibilities**
The lab instructor of record, and not TAs, are responsible for course development. The instructor of record should provide all materials, background, and training necessary for the TAs to set up and execute the labs, and should clearly articulate the expectations and responsibilities of the TAs. The instructor of record should meet regularly with TAs to ensure that past labs were conducted as expected, to help them prepare for future labs, and should provide ample opportunity for feedback from the TAs. The instructor of record is the final authority for dealing with student issues in the course, and is responsible for ensuring that grades are accurate and submitted to the registrar on time.

TAs are expected to work with the instructor of record to ensure that they have a full understanding of the rights and responsibilities of their position, as well as the expectations regarding content and execution of each lab. It is the TA’s responsibility to be fully familiar with every lab and, when necessary, to prepare solutions, specimens, etc. for upcoming labs. TAs must be prompt, respectful and responsive to their students, and return graded material to students in a timely fashion. TAs must submit final grades to the instructor of record well before the university deadline (by a date specified by instructor of record) to allow sufficient time for grades to be submitted to the registrar. Failure to fulfill TA duties may disqualify a student from receiving future TA support.

Research Assistantships

Research assistantships will be offered by the department through individual faculty who have funds available from research grants or contracts. Selection criteria will be similar to that required for teaching assistantships, but will emphasize the suitability of an applicant for a particular research program. Stipends are generally the same as for teaching assistantships. Duties will be assigned by the faculty member administering the particular research project. Research assistantships are typically awarded for a given semester or for the summer based on funds available to the faculty member.

Similar to a teaching assistantship, the graduate secretary in the Department of Biology and Marine Biology will complete form HR 1.35 to initiate payment to you for your research assistantship. Valid I-9 and W-4 forms must be completed and forwarded to the dean of the Graduate School before you will receive your paycheck.

Out-Of-State Tuition Remission

Partial out-of-state tuition remissions are available competitively. These remissions are typically offered to out-of-state students for one year. During the first year of residence, the recipients are encouraged to complete the steps to attain the status of North Carolina Resident (see section on Establishing North Carolina Residency below).

Scholarships Available to Graduate Students

Students should refer to the Graduate Catalogue http://catalogue.uncw.edu/index.php?catoid=14 for a complete listing of available scholarships.

Graduate School Summer Research Awards

The dean of the Graduate School annually awards several stipends for summer research during a period when your teaching or research assistantships lapse. The awards are competitive and require a research proposal. Please discuss the conditions and application procedures for this award with the departmental graduate coordinator. The current value of this award is $1,000.

Graduate School Travel Awards

The dean of the Graduate School awards several travel grants to graduate students delivering a paper or poster presentation at a national or regional conference. Your request for support, prepared by you and signed by the chair of the Department of Biology and Marine Biology, must include evidence of acceptance of your presentation, evidence of matching support and an explicit presentation of the use of the funds requested. The Biology Graduate Student Association (BIO GSA) also provides support for travel, and students should participate in the BIO GSA to be eligible.

Student Loans and Applying for Research Grants

Besides teaching and research assistantships, state and federal loan and work study programs are available to qualified graduate students. Specific information concerning details, applications, changes, and additions may be obtained from the Financial Aid Office: http://uncw.edu/finaid/.
You are also encouraged to obtain funding for research by independently seeking grant or scholarship funding. The Office of Research Services and Sponsored Programs can provide assistance with information on sources of funding and with the preparation of application packages. The Office of Research Services and Sponsored Programs is located in King Hall (910) 962-3810.

**Establishing North Carolina Residency**

Under North Carolina law, legal residence means more than simply living in the state. More specifically, it means maintaining a domicile (permanent home of indefinite duration) as opposed to a temporary residence incident to enrollment in a college, university or technical institute of the state. As a starting point, if you have living parents, your domicile is presumed to be that of your parents but may be changed to qualify for in-state tuition if your required legal residence can be demonstrated. Marriage does not prevent you from becoming a legal resident for tuition purposes, nor does marriage ensure that you will become a resident.

To determine whether you can become a legal resident of North Carolina for tuition purposes, you must demonstrate an **intent** to make North Carolina your permanent dwelling place of indefinite duration by performing residentiary acts. These acts should be **undertaken immediately** upon your arrival to campus and North Carolina (preferably within the first month). The following are some more important residentiary acts:

1. Convert your automobile registration to North Carolina
2. Obtain a North Carolina drivers license (or NC Identification Card from the Driver’s License office)
3. Register to vote in North Carolina and vote when possible
4. List your personal property at the New Hanover County Tax Office for taxation
5. File a North Carolina tax return as a resident at the next appropriate time
6. Convert your banking, club/organization membership, etc., to North Carolina

Completion of these actions will **begin** a one-year (12 month) waiting period to attain residency.

To become a North Carolina resident you must demonstrate that you are financially independent of your parents or guardian if your parents or guardian are non-residents of North Carolina and demonstrate a visible means of support substantiating the claim of financial independence. If you have not been entirely self-supporting during the last **12 months**, a completed affidavit will be required from your parent(s) to indicate the amount of support provided.

Further and equally important, once you have clearly established the residency intent and financial independence, you must **maintain** North Carolina residence for **12 months** immediately before the semester the in-state status can be made effective. The **only exceptions** to the required 12 months residency period apply in some, but not all, cases to individuals marrying a North Carolina resident who has maintained residency 12 months or longer, and to individuals whose parents have been North Carolina residents 12 months or longer and who are legal dependents of their parents.

If you desire a residence change, you must complete a Residence and Tuition Status Application and submit it to the dean of the Graduate School (Applications can be obtained from the Graduate School). **No status change can be made without submission of this application.** The 12-month residency waiting period must be completed before the first day of the semester in which in-state residency is being requested. Please note that you must submit your application up to 60 days **before** the start of the semester in which your in-state status can be become effective although the entire 12 month residency period may not have been satisfied at the time your application is filed.

In other words, to avoid being billed as an out-of-state resident, you should file for a status change before the tuition bills are due so that the Graduate School will have time to process the application and notify Student Accounts as to your status change. For example, when applying for in-state residency for the fall semester of 2006, students may submit their applications starting June 2006, or 60 days before the semester begins.

A decision on your residency status will be mailed approximately 10 days after being reviewed by the Graduate School. If you are denied North Carolina residency for tuition purposes, an appeal of the decision is possible. At that time, you can, and should, attend to clarify points and to present additional arguments in your favor.

**Program Assessment**

In addition to progress that you make in your course work and your individual research project, your performance as a graduate student will be assessed at various milestones as part of the Department’s Assessment of our graduate programs as a whole. It is important for us to assess our graduate programs to ensure that they are robust and functioning as they should. It is important for
you to realize that the data gathered during the program assessment process are separated from you as an individual and have no bearing on your course grades or progress to earning your degree – because the methods used to assess programs are anonymous. With the exception of Learning Outcomes 1b for MSc students, all evaluations are conducted using an online survey, which is doubly-blind (i.e. neither the name of the student nor the faculty member are connected to the survey data).

Each year, faculty evaluations of overall student performance in our graduate programs are tabulated and evaluated in the context of data from previous years, so that we can identify any places in our programs where students might not be performing at expectation, and can make adjustments to courses and programs accordingly.

You should know what the expectations are in terms of your performance, and who will evaluate students at each point. We have adopted a series of Student Learning Outcomes (what we expect you to be able to accomplish as a graduate student) and metrics to evaluate them.

Assessment for M.Sc. Students:

Learning Outcome #1a: A graduate student should be able to develop a research plan.
Assessment #1a: Prospectus is successfully completed and defended to student’s committee. Committee members will evaluate the prospectus document.

(1) The student’s prospectus was written:

(2) The student synthesized the literature:

(3) The student’s proposed research project was defined:

(4) The methods that the student will employ suit the project:

1          2            3       4     5
Poorly          Adequately    Very well

Learning Outcome #1b: A graduate student should be able to present and defend a research plan.
Assessment #1b: Prospectus is successfully presented to the department. Faculty present at the Graduate Symposium evaluate performance using the last question on the evaluation sheet (which is intended to provide feedback to the student).

5. What would be your overall rank of the student’s proposed research project?

Unsatisfactory   Satisfactory   Commendable

Learning Objective #2: A graduate student should be able to independently answer questions regarding their research field.
Assessment #2: Oral preliminary exam is successfully completed. Your committee will evaluate your performance.

(1) The student was able to articulate his or her answers:

(2) The student was able to answer a breadth of questions:

(3) The student demonstrated an appropriate depth of knowledge:

(4) The student was able to demonstrate professional poise during the exam:

1          2            3       4     5
Poorly          Adequately    Very well

Learning Objective #3: A graduate student should be able to communicate his or her research to a broadly-trained public audience.
Assessment #3: Departmental Seminar presentation of thesis research is successfully completed. Faculty present at the seminar will evaluate your performance.
(1) The student’s presentation was professional and well-organized:

(2) The student’s demonstrated mastery of his or her research was:

(3) The student was able to answer questions from the audience:

(4) The student was able to demonstrate professional poise during the presentation:

   1           2             3      4    5
   Poorly       Adequately     Well done

Learning Objective #4: A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific journal.
Assessment #4: Thesis is successfully completed. Your committee will evaluate your performance.
(1) The student’s thesis was written:

   1           2           3    4    5
   Poorly     Adequately        Very well

(2) The student’s thesis demonstrated mastery of the research:

   1           2           3   4    5
   Poor    Adequate  Well done

(3) Based upon its quality, the likelihood of the thesis being published is:

   1         2           3     4    5
   Poor     Likely      Very likely

Assessment for Ph.D. Students:
Learning Outcome #1: A graduate (Ph.D.) student should be able to develop a research plan.
Assessment #1: Dissertation proposal is successfully completed and defended to student’s committee. Your committee will evaluate your performance.

(1) The student’s dissertation proposal was written:

(2) The student synthesized the literature:

(3) The student’s proposed research projects were defined:

(4) The methods that the student will employ suit the projects:

   1          2            3    4    5
   Poor          Adequate    Well done

Learning Outcome #2: A graduate (Ph.D.) student should be able to independently answer questions regarding their research field.
Assessment #2: Oral comprehensive exams are successfully completed (written if requested by your committee). Your committee will evaluate your performance.
(1) The student was able to articulate his or her answers in a written format:

(2) The student was able to articulate his or her answers orally:

(3) The student was able to answer a breadth of questions:

(4) The student demonstrated an appropriate depth of knowledge:

(5) The student was able to demonstrate professional poise during the exam:
Learning Objective #3: A graduate (Ph.D.) student should be able to communicate his or her research to a broadly-trained public audience.

Assessment #3: Departmental Seminar presentation of dissertation research is successfully completed. All faculty present at the seminar will evaluate your performance.

1. The student’s presentation was professional and well-organized:

2. The student’s demonstrated mastery of his or her research was:

3. The student was able to answer questions from the audience:

4. The student was able to demonstrate professional poise during the presentation:

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Learning Objective #4: A graduate (Ph.D.) student should be able to write up his or her research in the form of multiple manuscripts for publication in scientific journals.

Assessment #4: Multi-chaptered dissertation is successfully completed. Your committee will evaluate your performance.

1. The student’s dissertation was written:

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2. The student’s dissertation demonstrated mastery of the research:

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3. Based upon its quality, the likelihood of the dissertation being published is:

<table>
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4. Has the student already submitted for publication one or more chapters?  
   Yes   No

5. Has the student already published one or more chapters?  
   Yes   No

Learning Outcome #5: A graduate student should be able to create new teaching materials

Assessment #5: Successful completion of Teaching practicum course and a formal lecture or laboratory presentation in an undergraduate course. Form used for this assessment is our Evaluation of Teaching form. Our assessment tool will be the last question on the form. Your advisor and the course instructor will evaluate your performance.

Overall effectiveness of teaching:

**Unsatisfactory** – cannot keep attention of class; shows little enthusiasm for subject matter; un-organized presentation of material; does not link lessons with class theme; unresponsive to students.

**Satisfactory** – generally keeps attention of class; shows enthusiasm for subject matter; presents material in organized fashion; links
lessons with class theme; adequate attention to students.

**Outstanding** – always keeps attention of class; shows great enthusiasm for subject matter; presents material in highly organized fashion; clearly links lessons with class theme; is very attentive to students; significantly enhances student learning.
Appendix 4. Graduate student annual reports.
Presentations at scientific meetings:

Adam Branson


James Casey


Katie Chartrand


Chip Collier


Lisa Goshe


Kristin Hardy


Hillary Lane

Lane, H. and Koopman, H. Ontogenetic, seasonal, and annual variation in lipid content and composition of Atlantic herring (*Clupea harengus*) from the Bay of Fundy, Canada. American Fisheries Society Tidewater Chapter Meeting, March, 2008.


Tse-Lynn Loh

Cassie Martin

Martin, C., and Scharf, F. Intracohort variation in vital rates of age-0 red drum (Sciaenops ocellatus) with evidence for demographic restructuring during winter. Tidewater Chapter meeting of the American Fisheries Society, March, 2008.


Steve McMurray


Pedro Medina-Rosas

Presentations in the IV Mexican Coral Reefs Meeting, 24 - 26 October 2007, in La Paz, Baja California Sur, México:


Medina-Rosas, Pedro y Cruz Piñón. Representativity of Mexican Pacific hard corals in scientific collections.


Chávez Romo, E, Correa, Reyes, Paz, Lopez, Medina-Rosas, Hernández. Genetic variation of leucil aminopeptidase (EC.3.4.11.1) in Pocillopora damicornis (Linnaeus, 1758) of the Mexican Pacific.


Medina-Ortiz, MC, González, Cifuentes, Rodríguez, Medina-Rosas. Aspergillus species isolated from Pacifigorgia rutila in the Islas Marietas, México reef.

Nava-Bravo, H, Carballo, Cruz, Bautista, Medina-Rosas. Variation in the abundante and diversity of boring sponges of coral substrates at local and regional scales (Mexican Pacific).


Adriane Michaelis

Marina Piscitelli

Piscitelli, M., McLellan, W., Rommel, S., and Pabst, D.A. A plan to compare thoracic morphology in a shallow (Tursiops truncatus) and deep diving (Kogia spp.) cetacean. Southeast and Mid-Atlantic Marine Mammal Symposium, March, 2008.

Mike Polito


Carly Randall


Mark Sherman


Jessica Snoddy


Zach Swaim


Christy Visaggi


Chuck Wilson


**Papers:**

**Lisa Goshe**


**Kristin Hardy**


**Ana Jimenez**


**Steve McMurray**


**Erin Meagher**


Marina Piscitelli


Mike Polito


Christy Visaggi


Awards and Recognitions:

Kristin Hardy
- Robert C. Terwilliger Best Student Oral Presentation Award in the Division of Comparative Physiology and Biochemistry- SICB meeting, 2008
- Owen Graham Kenan Scholarship
- Lewis/Wiley Alumni Endowed Fellowship

Tim Henkel
- UNCW Graduate Teaching Award
- Biology and Marine Biology Graduate Student Teaching Award

Hillary Lane
- Best Master’s Student Oral Presentation at SEAMAMMS
Tse-Lynn Loh
- The John Colucci Jr. Memorial Scholarship, UNCW
- UNCW Graduate Tuition Scholarship

Cassie Martin
- Estuaries Section student travel award for travel to San Francisco AFS annual meeting
- Got-em-on Live Bait Scholarship

Janie McAuliffe
- CMS Summer Stipend Award

Steve McMurray
- Recipient of the 2009 Knauss Fellowship

Erin Meagher
- Sea Grant Knauss Marine Policy Fellow Finalist, 2008

Adriane Michaelis
- Ralph W. Brauer Fellowship recipient.

Marina Piscitelli
- Best Master’s Poster at Southeast and Mid-Atlantic Marine Mammal Symposium

Carly Randall
- UNCW Graduate School Travel Award

Christy Visaggi
- Teaching Award (Dept. of Biology & Marine Biology)
- Teaching Award (Graduate School)

Grants applied for:

Lisa Goshe
- UNCW Graduate School travel grant
- International Sea Turtle Society travel grant

Ana Jimenez
- American Physiology Society’s Portner Fellowship
- NOAA’s Nancy Foster scholarship

Hillary Lane
- CMS Summer Stipend
- Graduate School Summer Stipend
- Sigma Xi
- Department of Fisheries and Oceans Canada Herring Science Council Research Grant

Tse-Lynn Loh
- Brauer Fellowship
- Sigma Xi GIAR
- Lerner-Gray
- UNCW Graduate School Travel Award
- UNCW BioGSA Travel Award
Janie McAuliffe
- Sigma Xi
- EPA STAR

Pedro Medina-Rosas
- Mexican government grant for PhD program.

Marina Piscitelli
- Sigma – Xi
- North Carolina Maritime Museum ‘Protect Wild Dolphins’ Grant
- Graduate School Travel Grant, UNCW

Mike Polito
- Dr. Ralph W. Brauer Fellowship
- EPA STAR Fellowship
- EPA GRO Fellowship
- NSF - Office of Polar Programs – Antarctic Research Grant

Carly Randall
- CMS Summer Research Scholarship
- UNCW Graduate School Summer Research Scholarship
- North Carolina Association of Environmental Professionals Scholarship

Christy Visaggi
- American Malacological Society
- AMNH Lerner-Gray Fund for Marine Research
- CMS Pilot Project
- Conchologists of America
- Geological Society of America
- Malacological Society of London
- National Geographic
- Paleontological Society
- Sigma Xi
- UNCW Brauer Fellowship
- UNCW Office of International Programs
- Western Society of Malacologists

Grants received:

Chip Collier
- Stock structure of southern kingfish (*Menticirrhus americanus*): Defining units for stock assessment and management of North Carolina fisheries. NC Sea Grant (PIs Dr. T. Lankford and Dr. A. Wilbur).

Lisa Goshe
- UNCW Graduate School travel grant
- Graduate Tuition Scholarship

Hillary Lane
- Department of Fisheries and Oceans Canada Herring Science Council Research Grant

Tse-Lynn Loh
- Brauer Fellowship
Marina Piscitelli
- North Carolina Maritime Museum 'Protect Wild Dolphins' Grant
- Graduate School Travel Grant

Mike Polito
- Dr. Ralph W. Brauer Fellowship

Carly Randall
- CMS Summer Research Scholarship
- UNCW Graduate School Summer Research Scholarship

Christy Visaggi
- Sigma Xi
- UNCW Brauer Fellowship
- UNCW Office of International Programs
  *(Five Grants Currently Being Reviewed)*

**Any other information that you would like to share (for example, if you are graduating, where are you off to?):**

Katie Chartrand
- I have already sadly departed but am happy to report I am settled into life Down Under up near Cairns in Far North Queensland Australia….on the reef daily and can’t get enough!

Chip Collier
- Elected President of the UNCW American Fisheries Society.
- Successfully completed PhD candidacy exams.

Ana Jimenez
- Elected president of the Biology Graduate Student Association for 2008-2009
- Attending Friday Harbor’s invertebrate zoology class over the summer

Tse-Lynn Loh
- Just applied for the UNCW PhD program!

Erin Meagher
- I defended my dissertation in January and am working for the National Marine Fisheries Service in St. Petersburg, FL as the Southeast Region Marine Mammal Health and Stranding Response Program Administrator and Pelagic Long-line Take Reduction Team Coordinator.

Pedro Medina-Rosas
- I will attend the 11th International Coral Reef Symposium in July 2008, at Fort Lauderdale, Florida.
- Going to Mexico for more coral larvae this summer!

Steve McMurray
- Presented:


Adriane Michaelis
- Also presented at symposiums:


Jeff Overton
- Will begin Ph.D studies in the Dept. of Physiology and Integrative Biology (Rutgers/UMDNJ) on a Society for Scholars Fellowship.

Zach Swaim
- After graduation in May, I will be working in the Bay of Fundy (for the summer) with the Grand Manan Whale and Seabird Research Station.

Christy Visaggi
- Shall serve as a mentor in summers of 2008-2010 for the NSF Research Experience for Undergraduates in Biodiversity Conservation at UNCW
- Ph.D. stipend for 2008-2009 academic year supported by Provost Paul Hosier and Academic Affairs as part of the UNCW Evolution Learning Community
- Led the foundation of a new UNCW organization: Women in Science & Engineering
- Volunteered for the College Park Elementary School Science Fair, Southeast Regional Science Fair, and Science Olympiad
- Guest Lecturer in Biology 170, Geology 135, Geology 337, Geology 431
- Ph.D. representative for the Graduate Advisory Committee
Biology and Marine Biology Graduate Student Annual Report
2008-2009 Academic Year

Presentations at scientific meetings:

Laura Bagge


Cory Dashiell


Joe Facendola


Julia Jenkins

Ana Jimenez

Ana G. Jimenez, Stephen T. Kinsey, Richard Dillaman, and Donald F. Kapraun, Nuclear genome size variation implicated in decapod crustacean muscle fiber hypertrophic growth, Darwin’s legacy student conference in Wilmington, NC, March 2009

Ana G. Jimenez and Stephen T. Kinsey. Reduced cost of Na⁺-K⁺ pump activity in large muscle fibers of the lobster, Homarus americanus, Annual Society of Integrative and Comparative Biology meeting in Boston, MA, January 2009

Ana G. Jimenez, Stephen T. Kinsey, Richard Dillaman, and Donald F. Kapraun, Nuclear genome size variation implicated in decapod crustacean muscle fiber hypertrophic growth, Annual Society of Integrative and Comparative Biology meeting in Boston, MA, January 2009

Amanda Kahn


Hillary Lane


Wai Leong


Thiago Lima

Lima, T., McCartney, M.A., and Yund, P.O. Results from a blue mussel hybrid zone question the role of M7 lysin as a speciation gene. ELC Darwin’s legacy, March 2009.
Jessica Lisa


Tse-Lynn Loh


Loh, T.L., Pawlik, J.R. Investigating the association between the Caribbean Orange Icing Sponge and scleractinian corals- Friend or foe? Benthic Ecology Meeting, Corpus Christi, Texas, March, 2009


Cassie Martin


Janie McAuliffe


Caitlin McKinstry


Pedro Medina-Rosas


Lisa OGawa


Marina Piscitelli


Michael Polito


**Carly Randall**


**Victor Schmidt**


**Mark Sherman**


**Jessica Snoddy**


**Christy Visaggi**


*Co-authored 12 additional abstracts for GSA Southeastern Section, March, 2009.*


Papers:

Brian Balmer


Cory Dashiell


Lisa Goshe


Ying Fang

Fang Y., Pinsky, M., Newsome S., Hadly E., and van Tuinen M. Population genetics of Northern Fur Seals (*Callorhinus ursinus*) using ancient DNA. SEAMAMMS – Southeast and Mid-Atlantic Marine Mammal Symposium, April, 2009


Kristin Hardy


Ana Jimenez


Amanda Kahn


Jessica Lisa


Tse-Lynn Loh


Pedro Medina-Rosas


Michael Polito


Carly Randall


Samantha Schmitt


Jessica Snoddy


Christy Visaggi


Carlos Zavalaga


Awards and Recognitions:

Joseph Facendola
- American Fisheries Society student travel award

Ying Fang
- The Ralph Brauer Graduate Student Fellowship, UNCW
Kristin Hardy
- Lewis/Wiley Alumni Fellowship

Julia Jenkins
- Nominated for the Graduate Teaching Assistant Award

Ana Jimenez
- Nominated for a departmental teaching award

Hillary Lane
- Second best student paper at the annual meeting of the Tidewater Chapter of the American Fisheries Society, March, 2009.

Wai Leong
- Frances Peter Fensel Memorial Scholarship

Jessica Lisa
- SEERS Travel Award
- American Microbiology Society Travel Award

Lisa OGawa
- Owen Graham Kenan Scholarship

Marina Piscitelli
- Best Master’s Talk award at the Southeast and Mid-Atlantic Marine Mammal Conference

Michael Polito
- 2nd Runner Up – Best Oral Presentation Duke University Marine Lab Graduate Student Research Symposium, November 2008

Carly Randall
- Working with Marine Quest, Oceans Camp, this summer followed by a move to Pensacola Florida.

Mark Sherman
- Honorable Mention in the Gordon Gunter scientific poster award competition
- Biology and Marine Biology Departmental Graduate Teaching Award
- UNCW Graduate Teaching Award
- BioGSA Travel Award
- GSA Travel Award

Christy Visaggi
- Cornerstone Distinguished Service Award (UNCW)
- Campus Recreation Exemplary Service Award (UNCW)
Grants applied for:

Brian Balmer
- National Estuarine Research Reserve System Graduate Research Fellowship

James Casey
- The David G. Lindquist Scholarship in Biology
- The Graduate School Summer Stipend Award

Cory Dashiell
- Ralph Brauer Graduate Student Fellowship
- CMS Summer Stipend
- Graduate School Summer Stipend

Julia Jenkins
- Sigma Xi Grants in Aid of Research

Thiago Lima
- Lerner-Gray fund for marine research
- SICB - Libbie H. Hyman memorial scholarship
- Sigma Xi-Grants-in-aid of research programs

Jessica Lisa

Tse-Lynn Loh
- Dr. Ralph W. Brauer Fellowship
- Lerner Gray Fund for Marine Research
- Smithsonian Tropical Research Institute Short-Term Fellowship

Janie McAuliffe
- Charles L. Cahill Award (Co-Primary Investigator)
- Got-Em-On Live Bait Club Scholarship
- UNCW Professional Development Program-Graduate School Summer Research Award (In Review)
- UNCW Center for Marine Science Summer Research Award (In Review)
- Lerner-Gray Grants for Marine Research (In Review)
- UNCW Department of Biology and Marine Biology Grants and Fellowships (In Review):
  - Frances Peter Fensel Memorial Fellowship
  - John Colucci Jr. Memorial Scholarship
  - David G. Lindquist Scholarship in Biology

Caitlin McKinstry
- SICB’s Libbie H. Hyman Memorial Scholarship
• Sigma Xi’s Grant-in-Aid of Research

**Victor Schmidt**
• UNCW graduate school stipend
• UNCW CMS summer stipend

**Samantha Schmitt**
• Hannah T. Croasdale Fellowship-Phycological Society of America
• Friday Harbor Laboratory-University of Washington tuition waiver
• Center for Marine Science Summer Research Stipend for Graduate Students
• UNCW Graduate School Summer Research Stipend

**Meagan Schrandt**
• Sigma Xi Grant-in-Aid of Research
• SICB Grant-in-Aid of Research
• Lewis/Wiley Alumni Endowed Fellowship

**Mark Sherman**
• CMS Summer Research Grant
• UNCW Summer Research Grant

**Christy Visaggi**
• American Malacological Society
• AMNH Lerner-Gray Fund for Marine Research
• Conchologists of America
• Geological Society of America
• Lewis & Clark
• National Geographic
• NOAA Nancy Foster Fellowship
• Paleontological Society
• UNCW Brauer Fellowship

**Carlos Zavalaga**
• Pacific Seabird Group Craig S. Harrison Conservation Fund
• American Bird Conservancy Conservation Fund.

**Grants received:**

**Cory Dashiell**
• Ralph Brauer Graduate Student Fellowship

**Julia Jenkins**
• Sigma Xi Grants in Aid of Research

**Tse-Lynn Loh**
• Dr. Ralph W. Brauer Fellowship
Janie McAuliffe
- Charles L. Cahill Award (Co-Primary Investigator)
- Got-Em-On Live Bait Club Scholarship

Lisa OGawa
- Graduate Student Association Travel Award
- Biology Graduate Student Association Travel Award
- Ralph Brauer Special Activities Fellowship

Michael Polito
- National Science Foundation ($503,195) for "Stable Isotope Analyses of Pygoscelid Penguin Remains from Active and Abandoned Colonies in Antarctica." (Co-PI)

Samantha Schmitt
- Tropical Field Phycology Workshop student support grant
- Hannah T. Croasdale Phycological Society of America
- Friday Harbor Laboratory-University of Washington tuition waiver

Meagan Schrandt
- Lewis/Wiley Alumni Endowed Fellowship

Christy Visaggi
- Geological Society of America
- National Geographic
- UNCW Brauer Fellowship

*Three grants are currently being reviewed.*

Ginger Winder
- NERR Graduate Research Fellowship
- UNCW Brauer Award
- Eastern Bird Banding Association Research Award
- Sigma Xi GIAR

Carlos Zavalaga
- Pacific Seabird Group Craig S. Harrison Conservation Fund
- American Bird Conservancy Conservation Fund

Any other information that you would like to share (for example, if you are graduating, where are you off to?):

Ying Fang
- Enrolling in the Ph.D. program in Department of Biology, Texas A&M University

Lisa Goshe
- Graduating in May 2009 and returning to full-time as a biological technician in the NOAA Fisheries National Sea Turtle Aging Laboratory in Beaufort, NC.
Kristin Hardy
- I will be beginning a three year NOAA funded (Oceans and Human Health) post-doc at the Hollings Marine Lab (through the Medical University of South Carolina and the College of Charleston) September 1, 2009.

Ana Jimenez
- President of the Biology Graduate Student Association
- Attended Friday Harbor Laboratories Invert course in Summer 2008

Hillary Lane
- Graduating in May 2009 and then possibly going to Research Triangle Park to work at the EPA as a student services contractor.

Wai Leong
- Graduating May 2009 and heading off to the University of Southern California for PhD studies.

Jessica Lisa
- I am the Environmental Editor for Carolina Surf Magazine. Each issue I write about environmental concerns or facts – anything pertaining to the ocean. I have written about plastic pollution, stormwater runoff, and phytoplankton so far and welcome any ideas for new article topics!

Cassie Martin
- Moving to Los Angeles, CA, to work as a field sampler for Pacific States Marine Fisheries Commission.

Caitlin McKinstry
- Will be going to the Grand Manan Whale and Seabird Research Station this summer to collect data for thesis.

Pedro Medina-Rosas
- Another spawning field trip this summer down in Puerto Rico!

Adriane Michaelis
- Graduating in May 2009 and staying in Wilmington, working as a field biologist for Audubon NC.

Marina Piscitelli
- Graduating in May 2009. Will still be living in Dobo Hall working in the VABLAB and applying for PhD schools.

Victor Schmidt
- Will be Graduating in July 2009, currently applying for jobs, and will begin PhD searches soon after.

Samantha Schmitt
- Attended Southeast Phycological Society 2008 meeting.
• Attended the Tropical Field Phycology Workshop offered through the Smithsonian Tropical Research Institute located in Bocas del Toro, Panama.
• Marine Science graduate student, Nadya Mamoozadeh, and I collected tropical marine algae at the Keys Marine Lab in Long Key, Florida during the 2008 spring break.
• Wilson Freshwater, Nadya Mamoozadeh and I will be traveling with fellow phycological students and staff from Roger Williams University to Panama for the collection of marine algae.
• I will be attending the Friday Harbor Laboratory Marine Algae course offered this summer through the University of Washington.

Meagan Schrandt
• The following abstract was submitted for the UNCW Conference on Health and Related Sciences, 2008:


Christy Visaggi
• Served as a mentor for the NSF Research Experience for Undergraduates in Biodiversity Conservation at UNCW (and shall continue in that role through the summer of 2010)
• Co-organized an international multi-disciplinary student conference among other events for the UNCW Evolution Learning Community
• Volunteered for SMEC at the Southeast Regional Science Fair and Science Olympiad
• Invited to give a research seminar at Lafayette College
• Guest Lecturer in Geology 337 at UNCW
• Student Representative for the Paleontological Society
• 2008 Ph.D. Representative for the Graduate Advisory Committee
• 2008 President of UNCW Women in Science & Engineering
• Advanced to Candidacy!

Ginger Winder
• I am traveling to KS, MO, ND and James Bay near Moosonee, Ontario to sample breeding populations of Nelson’s Sharp-tailed Sparrow which we sample in our local NC marshes throughout the winter season.

Carlos Zavalaga
• I am currently working on several seabird projects in Peru, which include different topics in seabird ecology, evolution and conservation:
  o Diversification without obvious geographical barriers in Blue-footed boobies, Peruvian boobies and Peruvian Pelicans (2007-2009) Dr. Dave Anderson (Wake Forest University, US), Scott Taylor and Dr. Vicki Friesen (Queens University, Ontario, Canada).
  o At-sea distribution of Humboldt Penguins, Peruvian Pelicans, Peruvian Diving-petrels and Inca terns and areas of competition with artisanal fisheries (2008-2010) Dr. Giacomo Dell’Omo (Technosmart, Ornis italic, Italy), Joanna Alfaro (Pro-delphinus, Peru).
- Genetic structure of ticks at several colonies of seabirds (2009). Dr. Elena Gómez (Centtre d’ecologie fonctionell et evolutive, CNRS-France).

- I was accepted as an Adjunct Professor in the Departments of Geography and Geology, and Biology and Marine Biology at UNCW.
**Presentations at scientific meetings:**

**Laura Bagge**

Posters: 


Oral Presentation: 

**Brian Balmer**


**James Casey**


**Nathan Gavin**


Leigh Anne Harden


Kenneth Hoadley

Hoadley, K., Pyott, S., Szmant, A. Diel and lunar changes in cryptochrome (*cry1* and *cry2*) transcript abundances in the brooding coral *Favia fragum*. Society for Integrative and Comparative Biology, January 2010.


Anne-Marie Hodge


Caitlin Kielhorn


Pugliese, A., Powell, J., Kohli, E., and Kielhorn, C., and McFee, W. Development of the

*Please Note: These are all poster presentations.

**Sheila Kitchen**


**Anne Leaser**


**Tse-Lynn Loh**


**Sara McClelland**


**Caitlin McKinstry**


**Pedro Medina-Rosas**


**Steve Midway**


**Corey Novak**


**Mike Polito**


**Carolina Priester**


**Meagan Schrandt**

Schrandt, M., Hardy, K., Johnson, K., Lema, S. Ecological correlates of intraspecific behavioral variation in the bicolor damselfish (*Stegastes partitus*): Interacting influences of physical and social conditions. Society for Integrative and Comparative Biology, January, 2010


**Lauren Singletary**


**Christy Visaggi**


Papers:

**Brian Balmer**


**Rebecka Brasso**


**Anne-Marie Hodge**


**Ana Jimenez**

**Tse-Lynn Loh**


**Pedro Medina-Rosas**


**Steve Midway**

Peer-reviewed


**Popular Articles**

Mike Polito


Carolina Priester


Meagan Schrandt


Christy Visaggi


Awards and Recognitions:

**Brian Balmer**

**Nathan Gavin**
- Second Place Oral presentation, South Eastern Phycological Colloquy

**Leigh Anne Harden**
- 2010. University of North Carolina Wilmington Graduate Student Association award for best graduate student poster.

**Kenneth Hoadley**
- Sigma Xi Associate Member

**Anne-Marie Hodge**

**Caitlin Kielhorn**
- Best Graduate Poster Presentation, SEAMAMMS 2010

**Sheila Kitchen**
- Poster presentation at International Society of Protistologist conference received Third Place Honors, June 2009

**Sara McClelland**
- 18th Biennial Conference on the Biology of Marine Mammals: Best oral presentation by a non-Ph.D. student

**Caitlin McKinstry**
- SEAMAMMS Best Masters Level Oral Presentation

**Pedro Medina-Rosas**
- GSA Travel Award
- Selected to present a poster at Intercultural Festival, organized by International Programs, UNCW

**Steve Midway**
- 2010 UNCW Graduate School Travel Award

**Carolina Priester**
- Biology and Marine Biology Graduate Teaching Award
- Graduate School Summer Research Award
Christy Visaggi
- James Mulligan Fellowship in Marine Biology (UNCW)

Grants applied for:

Rebecka Brasso
- EPA STAR Fellowship
- Department of Energy Office of Science Graduate Fellowship
- NOAA Dr. Nancy Foster Scholarship
- NSF Field Station and Marine Laboratories equipment grant
- NC Association of Environmental Professionals Scholarship
- UNCW Public Service Education Fellowship
- SICB Fellowship for Graduate Student Travel

Sandy Camilleri
- AFO Bergstrom Award
- AMNH Frank M. Chapman Memorial Fund
- AMNH Theodore Roosevelt Memorial Grant
- Baillie Fund
- CMS summer research grant
- Dr. Nancy Foster Fellowship
- EPA STAR Fellowship
- Morris Animal Foundation
- National Geographic
- New Brunswick Wildlife Grant
- North Carolina Academy of Science
- NSF Fellowship
- SeaWorld/Busch Gardens

Nathan Gavin
- Graduate School Summer Research Award, 2009
- UNCW Center for Marine Science Summer Research Award, 2010

Leigh Anne Harden
- Sigma Xi Grant-in-Aid of Research
- National Science Foundation Graduate Research Fellowship
- Diamondback Terrapin Working Group Research Grant
- Graduate Student Travel Grant, UNCW Graduate Student Association
- Society for Integrative Biology FGST (Travel Grant)
- Nancy Foster NOAA Fellowship
- Ralph Brauer Graduate Student Special Activities Fellowship Application
- Department of Biology and Marine Biology Scholarship Awards (Merit Scholarship, the John Colucci Jr. Memorial Scholarship, the David G. Lindquist Scholarship in Biology, and the Frances Peter Fensel Memorial Fellowship)

Anne-Marie Hodge
- American Society of Mammalogists Grants-in-Aid (award decision pending)
- Panthera Small Cat Action Fund
• People’s Trust for Endangered Species Research

Ana Jimenez
• Society of Integrative and Comparative Biology Grants-in-Aid of Research
• Sigma Xi Grants-in-Aid of Research

Tse-Lynn Loh
• PADI Foundation
• National Geographic-Waitt

Carolina Priester
• Graduate School Summer Research Award
• Center for Marine Science Summer Research Award

Meagan Schrandt
• American Academy of Underwater Sciences Kevin Gurr Scholarship
• Sigma Xi Grants-in-Aid of Research
• Society for Integrative and Comparative Biology Grants in Aid of Research

Katelyn Schumacher
• Sigma Xi Grants-in-Aid of Research
• American Museum of Natural History Theodore Roosevelt Memorial Grant (pending approval)
• American Society of Mammalogists Grants-in-Aid of Research (pending approval)

Lauren Singletary
• Graduate School Travel Grant

Christy Visaggi
• AAUW Dissertation Fellowship
• Ford Dissertation Fellowship
• Houston Conchology Society
• AWG Chrysalis Scholarship
• UNCW Brauer Fellowship
• Unitas Malacologica

Ginger Winder
• NSF FSML

Grants received:

Laura Bagge
• North Carolina Maritime Museum “Protect Wild Dolphins” Grant
• Graduate School Travel Grant
• GSA Travel Grant

Rebecka Brasso
• SICB Fellowship for Graduate Student Travel ($2000.00)
**Sandy Camilleri**
- North Carolina Academy of Science
- CMS summer research grant

**Nathan Gavin**
- Graduate School Summer Research Award, 2009

**Leigh Anne Harden**
- 2010. Sigma Xi Grant-in-Aid of Research
- 2010. National Science Foundation Graduate Research Fellowship
- 2010. Diamondback Terrapin Working Group Research Grant
- 2009. Graduate Student Travel Grant. UNCW Graduate Student Association
- 2009. Judith C. Bryan Holden Beach Turtle Watch Fellowship in Marine Biology

**Kenneth Hoadley**
- PADI Project AWARE

**Ana Jimenez**
- Society of Integrative and Comparative Biology Grants-in-Aid of Research
- Sigma Xi Grants-in-Aid of Research

**Tse-Lynn Loh**
- SICB travel grant for 2010 annual meeting
- Graduate School Travel Award
- Brauer Fellowship

**Mike Polito**
- The Company of Biologist Direct Travel Grant (£250): To attend the 2010 Stable Isotopes in Ecology Summer Course at the University of Utah, Salt Lake City

**Carolina Priester**
- Graduate School Summer Research Award

**Meagan Schrandt**
- Sigma Xi Grants-in-Aid of Research

**Lauren Singletary**
- Graduate School Travel Grant

**Christy Visaggi**
- Ford Dissertation Fellowship (Honorable Mention)
- Houston Conchology Society
- UNCW Brauer Fellowship

*One grant application is currently being reviewed.*

**Ginger Winder**
- Sigma Xi Grant-In-Aid of Research 2010
Any other information that you would like to share (for example, if you are graduating, where are you off to?)

Sandy Camilleri  
- Elected Vice President of Bio GSA for the 2010-2011 academic year

James Casey  
- Defended master’s thesis titled “Behavior and Habitat of Leatherback Turtles (Dermochelys coriacea) from the St. Croix, U.S. Virgin Islands Nesting Population: Evidence of Feeding During the Nesting Season.”
- Relocated to Providence, Rhode Island, is preparing thesis for publication in scientific journals, and is analyzing data collected from leatherback sea turtles tagged offshore of Nova Scotia, Canada.

Leigh Anne Harden  
- Accepted into Ph.D. marine biology program at UNCW for fall 2010

Anne-Marie Hodge  
- First documentation of the endangered white-bellied spider monkey (Ateles belzebuth) in Sumaco, Ecuador!

Sheila Kitchen  
- Will be finishing up degree in July 2010 just in time to begin the Ph.D. program at Oregon State University in the Department of Zoology this fall.

Pedro Medina-Rosas  
- Going to Woods Hole Oceanographic Institution in May to analyze coral samples.

Meagan Schrandt  
- Will begin a Ph.D. program at Dauphin Island Sea Lab, AL, in fall 2010 with the University of South Alabama.

Katelyn Schumacher  
- Elected Biology GSA president for the 2010-2011 academic year.

Christy Visaggi  
- Presented at Lafayette College for their weekly department seminar in April 2010
- Ongoing service as a mentor of undergraduate research in ecology and paleontology for the UNCW NSF Research Experience for Undergraduates in Biodiversity Conservation
- Continues to organize activities for the UNCW Women in Science & Engineering
- Co-designed the paleontology event for the NC Regional Science Olympiad
- Co-judged the 1st year of WiSE awards for the NC Regional Science Olympiad
- Completed Ph.D. fieldwork on the coasts of Brazil and Argentina from 6°S to 52°S
Biology and Marine Biology Graduate Student Annual Report
2010-2011 Academic Year

Presentations at scientific meetings:

Laura Bagge


Julie Campbell


Justin Eichinger


Nina Griffin


Leigh Anne Harden


Anne-Marie Hodge

Ana Jimenez


Tse-Lynn Loh


Pedro Medina-Rosas


Michael Polito

Polito M.J., Lynch H.J., Naveen R., and Emslie S.D. Stable isotopes reveal regional heterogeneity in the pre-breeding distribution and diets of sympatrically breeding Pygoscelis penguins. 1st World Seabird Conference, Victoria, Canada, August 2010


Katelyn Schumacher


Lauren Singletary


Christy Visaggi


*Co-authored 4 additional abstracts for SEGSA, March, 2011.

Ginger Winder

Winder, V., and Emslie, S. Ecology of Nelson’s, Seaside and Saltmarsh Sparrows (Ammodramus nelsoni, A. maritimus and A. caudacutus, respectively) and mercury availability at breeding versus non-breeding sites. Association of Field Ornithologists/Cooper Ornithological Society/Wilson’s Ornithological Society, March, 2011.

Papers:

Leigh Anne Harden

Williard, A.S., Harden, L.A. in press. Seasonal changes in thermal environment and metabolic enzyme activity in the diamondback terrapin (Malaclemys terrapin). Comparative Biochemistry and Physiology Part B.
Ana Jimenez


Tse-Lynn Loh


Pedro Medina-Rosas


Michael Polito


**Lauren Singletary**


**Christy Visaggi**


**Ginger Winder**


Winder, V., Michaelis, M., and Emslie S. Non-breeding ecology of three coastal sparrow species (*Ammodramus maritimus*, *A. nelsoni* and *A. caudacutus*). Submitted to *The Auk* (Feb. 2011).

**Awards and Recognitions:**

**Julie Campbell**
- Chosen to be one of the representatives for the UNCW graduates to present my research to the NC General Assembly in Raleigh for the 2011 Graduate Education Week

**Leigh Anne Harden**
Anne-Marie Hodge
- Invited to write a feature guest post for Scientific American’s official blog

Tse-Lynn Loh
- Graduate Teaching Award
- UNCW Alumni Association Scholarship (2011)
- Francis Peter Fensel Memorial Scholarship (2010-2011)

Michael Polito
- Highly Commended Student Oral Paper Award. 1st World Seabird Conference. 2010

Katelyn Schumacher
- UNCW Graduate School Summer Research Award ($1000)

Ginger Winder
- Parnell Award

Grants applied for:

Justin Eichinger
- Sigma Xi

Leigh Anne Harden
- February, 2011. Graduate Student Travel Grant. UNCW Graduate Student Association. $250 for ISTS.
- November, 2010. Graduate Student Travel Grant. UNCW Graduate Student Association. $400 for DTWG.

Anne-Marie Hodge
- U.S. Fish and Wildlife Service/Red Wolf Recovery Program Cooperative Funding Agreement
- Sigma Xi Grant-in-Aid

Tse-Lynn Loh
- Graduate School Travel Award
- NCEAP Grant

Courtney McClurkin
- Sigma Xi GIAR
- SICB GIAR
- Lerner-Gray Fellowship in Marine Biology (AMNH)
- AMS Student Research Fellowship
Michael Polito
- Sigma Xi Grants-in-Aid of Research
- American Ornithologist Union Student Research Award
- Antarctic Science Bursary

Katelyn Schumacher
- Sigma Xi Grants-in-Aid of Research
- American Society of Mammalogists Grants-in-Aid of Research
- UNCW Graduate School Travel Grant
- UNCW Biology Graduate Student Association Travel Grant

Lauren Singletary
- Graduate School Travel Grant. Fall 2010.
- Graduate School Travel Grant. Spring 2011.
- Mid-Atlantic Microbial Pathogenesis Meeting Travel Grant. Spring 2011.

Christy Visaggi
- AAUW Dissertation Fellowship
- Ford Foundation Dissertation Fellowship
- UNCW Graduate School Summer Research Award
- UNCW Public Service Educational Fellowship

Grants received:

Leigh Anne Harden
- February, 2011. Graduate Student Travel Grant. UNCW Graduate Student Association. $250 for ISTS.
- November, 2010. Graduate Student Travel Grant. UNCW Graduate Student Association. $400 for DTWG.

Anne-Marie Hodge
- U.S. Fish and Wildlife Service/Red Wolf Recovery Program Cooperative Funding Agreement: $5,000

Tse-Lynn Loh
- Graduate School Travel Award

Pedro Medina-Rosas
- John Colucci scholarship
Michael Polito
- Sigma Xi Grants-in-Aid of Research

Katelyn Schumacher
- American Society of Mammalogists Grants-in-Aid of Research ($1500)
- UNCW Graduate School Travel Grant ($400)
- UNCW Biology Graduate Student Association Travel Grant ($100)

Lauren Singletary
- Graduate School Travel Grant. Fall 2010.
- Graduate School Travel Grant. Spring 2011.
- Mid-Atlantic Microbial Pathogenesis Meeting Travel Grant. Spring 2011.

Christy Visaggi
- Ford Foundation Dissertation Fellowship
- UNCW Graduate School Summer Research Award
- UNCW Public Service Educational Fellowship

Any other information that you would like to share (for example, if you are graduating, where are you off to?):

Laura Bagge
- After graduating in May, I’ll be heading to Duke University to join Dr. Sönke Johnsen’s lab and work toward a Ph.D. in biology.

Anne-Marie Hodge
- Ground was officially broken on the new scientific research station at my field site, Sumaco, Ecuador, which is being co-funded by UNCW and Francis Marion University

Ana Jimenez
- Heading to Ohio State University as a post-doctoral researcher to work on birds!

Christy Visaggi
- Twelve students I’ve helped mentor these last 3 years through the UNCW NSF Research Experiences for Undergraduates in Biodiversity Conservation are now pursuing graduate work at the following institutions: California State University - Fullerton, Cornell University, East Carolina University, Ohio University, Pennsylvania State University, University of California - Santa Cruz, University of Chicago, University of Georgia, University of Puerto Rico - Mayagüez, University of Southern California, and UNCW.
Presentations at scientific meetings:

Rebecka Brasso


Kalman Bugica


Leigh Anne Harden


Jennifer Idol


Tse-Lynn Loh


Steve McMurray


**Steve Thornton**

Poster:

**Christy Visaggi**

Visaggi, C. and Dietl, G. Examining the influence of seasonality on drilling frequency of *Neverita duplicata* through field and laboratory experiments: implications for patterns of drilling predation in the fossil record. Geological Society of America, November, 2011.


*Co-authored 3 additional abstracts for the Geological Society of America meeting (November, 2011). Two of these abstracts were by students I mentored in research.*

*Co-authored 2 abstracts for the Southeastern Geological Society of America meeting (April, 2012).*

**Maria White**


**Papers:**

**Rebecka Brasso**


**Andrea Dingeldein**


**Leigh Anne Harden**

Southwood Williard, A. and Harden, L.A. 2011. Seasonal changes in thermal environment and metabolic enzyme activity in the diamondback terrapin (*Malaclemys terrapin*).
Comparative Biochemistry and Physiology A – Molecular and Integrative Physiology 158, 477-484.

**Jennifer Idol**


**Tse-Lynn Loh**


**Steve McMurray**


**Pedro Medina-Rosas**


Christy Visaggi


**Awards and Recognitions:**

Andrea Dingeldein

- David G. Lindquist Scholarship in Biology (UNCW)

Tse-Lynn Loh

- Graduate Teaching Award (2011)
- UNCW Alumni Association Scholarship (2011/2012)

Brad Parnell

- Sylvia and B. D. Schwartz Graduate Fellowship Award for the 2011-2012 academic year ($2500)

Steve Thornton

- 4.0 GPA

Christy Visaggi

- 2011 Association for Women Geoscientists Winifred Goldring Award

Maria White

- UNCW Graduate School Travel Award

**Grants applied for:**

Rebecka Brasso

- Graduate School Travel Grant

Andrea Dingeldein

- NSF GRFP
Leigh Anne Harden

- American Society for Ichthyologists and Herpetologists Gaige Fund Award
- Herpetologists’ League E. E. Williams Research Grant

Jennifer Idol

- UNCW CMS Summer Research Award 2012

Tse-Lynn Loh

- Graduate Student Association Travel Award
- Graduate School Travel Award
- BioGSA Travel Award

Steve McMurray

- UNCW Dr. Ralph W. Brauer Fellowship
- The American Museum of Natural History Lerner Gray Memorial Fund
- UNCW Dept of Bio and Mar Bio Graduate School Association registration grant
- UNCW Graduate School Travel Grant

Zach Siders

- NSF GRFP
- Mohammed bin Zayed Species Conservation Fund
- Save our Seas Grant
- PADI Research Support Grant
- Explorer’s Club Student Fellowship
- UNCW Grad School Summer Support
- Lerner-Gray Marine Research

Steve Thornton

- Graduate Summer Research Fellowship

Christy Visaggi

- 2012 Association for Women Geoscientists Chrysalis Scholarship

Maria White

- North Carolina Horse Council (NCHC) Health and Research Grant

Grants received:

Rebecka Brasso

- Graduate School Travel Grant ($400)
Kalman Bugica

- Research Assistantship in collaboration with SeaGrant

Jennifer Idol

- UNCW CMS Summer Research Award 2012

Tse-Lynn Loh

- Graduate Student Association Travel Award
- Graduate School Travel Award
- BioGSA Travel Award

Steve McMurray

- UNCW Dr. Ralph W. Brauer Fellowship
- The American Museum of Natural History Lerner Gray Memorial Fund
- UNCW Dept of Bio and Mar Bio Graduate School Association registration grant
- UNCW Graduate School Travel Grant

Zach Siders

- UNCW Grad School Summer Support

Christy Visaggi

- 2012 Association for Women Geoscientists Chrysalis Scholarship

Any other information that you would like to share (for example, if you are graduating, where are you off to?):

Rebecka Brasso


Andrea Dingeldein

- Conducting M.S. research in St. Croix July-August

Tse-Lynn Loh

- I’m graduating this summer, currently applying for postdoctoral positions (and preparing for an interview!). I’ll be sad to leave UNCW after 6 years, but also excited about what the future holds.
Courtney McClurkin

- I have been accepted to Temple University’s School of Podiatric Medicine for the fall of 2013.

Brad Parnell

- Offered and accepted a full time Biology Instructor position at Robeson Community College

Steve Thornton

- Starting a DIS over the summer with Dr. Butch Rommel that will be focusing on terrestrial and marine mammalian skull asymmetry via specimen measurements and computer aided design (CAD) software.

Christy Visaggi

- This summer I will be graduating with my PhD. This fall I will join the faculty of the Department of Geosciences at Georgia State University in Atlanta.
Presentations at scientific meetings:

Sue Barco


Rebecka Brasso


Kalman Bugica


Stephanie Chavez

Chavez, S., Southwood-Williard, A. Assessment of the Impact of Bycatch Reduction Devices on Diamondback Terrapin (Malaclemys terrapin) and Blue Crab (Callinectes sapidus) Catch. International Sea Turtle Symposium, February 2013

Lindsey Deignan


Leigh Anne Harden


Micah Marty


Steve McMurray


McMurray, S.E. Demographics of the giant barrel sponge Xestospongia muta and planktonic carbon flux on coral reefs. Invited Speaker, Eastern Carolina University Department of Biology, February, 2013.

Kiersten Newtoff

*Note: this was a professionals meeting, not necessarily a conference. My presentation was mainly an overview of my project and me reaching out to federal/state/local agencies for data collection.

Steve Thornton


Maria White


Papers:

Sue Barco


2 additional multi-authored papers in review with Fishery Bulletin and Journal of Wildlife Diseases. I am not first author on either paper

Rebecka Brasso


Brasso RL., Drummond BE*, Borrett SR, Chiaradia A, Polito MJ, and Raya Rey A. Unique pattern of molt leads to low intra-individual variation in feather mercury concentrations in penguins, *Environmental Toxicology and Chemistry, submitted*

Brasso RL, Polito MJ, Lang J*, and Jones CD. Increased variation in mercury concentrations with ontogeny in the Antarctic silverfish (*Pleuragramma antarcticum*), *in prep*

* indicates undergraduate student

Leigh Anne Harden

Steve McMurray


Kiersten Newtoff


*Note: this paper was from my undergraduate work*

Maria White


Awards and Recognitions:

Stephanie Chavez

- 2012-2013 Judith C. Bryan Holden Beach Turtle Watch Fellowship in Marine Biology
- 2012-2013 Jane Logan Lackey Fellowship

Lindsey Deignan

- Owen Graham Kenan Scholarship - $6,500, August 2012
- John Colucci Jr. Memorial Scholarship - $5,000, August 2012
- UNCW Graduate School Travel Award - $400, March 2013
- Biology Graduate Student Association Travel Award - $100, March 2013

Steve McMurray

- Sigma Xi Scientific Research Society

Kiersten Newtoff

- Department of Biology and Marine Biology Scholarship, UNCW (Spring 2013)
- Dr. James F. and Frances B. Parnell Fellow (Fall 2012 – Spring 2013)
- North Carolina Wildlife Federation Scholarship (Fall 2012)
Steve Thornton

- Best Master’s oral presentation at 2013 Southeast and Mid-Atlantic Marine Mammal Symposium

Maria White

- Recipient of the Mary Poston Award for best student presentation at the North Carolina American Society for Microbiology Annual Meeting (October 2012)

**Grants applied for:**

Sue Barco

- Virginia Department of Game and Inland Fisheries Wildlife Grants to States 2012 & 2013. (4 total)-2 in review
- NOAA Coastal Zone Management Program Projects of Special Merit 2012 & 2013 (2)-1 in review
- NOAA Recovery Grants to States 2013(2)- in review
- Virginia Saltwater Fishing Fund 2012-denied
- Maryland DNR Offshore Wind Energy Fund 2013-in review
- US Navy 2013 (2)-in review

Rebecka Brasso

- Graduate School Travel Award
- NC Sea Grant Fisheries Resource Grant
- Ford Fellowship (results not announced yet)

Kalman Bugica

- The Frances Peter Fensel Memorial Fellowship

Stephanie Chavez

- 2012 Graduate Student Travel Grant
- 2013 Turtle Conservation Fund
- 2013 NCCR Sea Grant Coastal Research Fellowship
• 2013 Sigma Xi Grants in Aid of Research

Leigh Anne Harden

• Three University of North Carolina Wilmington travel grants: UNCW BioGSA, UNCW Graduate School, UNCW GSA.
• Seasonal variation in osmotic and metabolic status of diamondback terrapins. North Carolina Herpetological Society Grant in Herpetology. $360.

Steve McMurray

• UNCW Dept of Bio and Mar Bio Graduate School Association registration grant
• UNCW Graduate School Travel Grant

Kiersten Newtoff

• Mewaldt-King Student Research Award
• Louis Agassiz Fuertes Award

Steve Thornton

• Sigma Xi Grants-in-aid-of-Research

Maria White

• Sigma Xi Grants-in-aid-of-Research

Grants received:

Sue Barco

• Virginia Department of Game and Inland Fisheries Wildlife Grants to States 2 received
  1) $19,600 Diagnostic testing for stranded and wild caught sea turtles in Virginia-2 years
  2) $10,000 Baseline ambient noise measurements in Chesapeake Bay and surrounding waters-1 year

  Documenting Whale Migration off Virginia’s Coast for use in Marine Spatial Planning –Coastal Zone Management Grant to-Virginia Coastal Programs. S.G. Barco, P.I. $189,000. Oct 2012-Nov 2013

Rebecka Brasso

• Graduate School Travel Award (August 2012, $400.00)
• NC Sea Grant Fisheries Resource Grant (co-PI with Steve Poland, Feburary 2013, $10,000.00)
Stephanie Chavez

- 2012 Graduate Student Travel Grant

Leigh Anne Harden

- Three University of North Carolina Wilmington travel grants: UNCW BioGSA ($100), UNCW Graduate School ($400), UNCW GSA ($250).

Steve McMurray

- UNCW Dept of Bio and Mar Bio Graduate School Association registration grant
- UNCW Graduate School Travel Grant

Steve Thornton

- Sigma Xi Grants-in-aid-of-Research

Maria White

- Sigma Xi Grants-in-aid-of-Research

Any other information that you would like to share (for example, if you are graduating, where are you off to?):

Kalman Bugica

- Instructor for Duke University TIP in Near Shore and Ocean Marine Biology this summer at the Duke University Marine Laboratory.

Lindsey Deignan

- I was accepted to the UNCW PhD in marine biology program last fall.
- In July 2012, I traveled to the Smithsonian research station in Bocas del Toro, Panama to take the Taxonomy and Ecology of Caribbean Sponges course.

Micah Marty

- I taught a winter field course on Coral Reef Ecology in Bocas del Toro, Panama at the Institute for Tropical Ecology and Conservation.
Courtney McClurkin

- I have been accepted to Temple University’s School of Podiatric Medicine for the fall of 2013.
Presentations at scientific meetings:

Sue Barco


Molly Gabler


Nathan Gavin


**Stephanie Johnstone**


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**Tiffany Keenan-Bateman**


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**Micah Marty**


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**Steve McMurray**


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**Nina Neill**

Emily Singleton


Hayley Vatcher


Elliot Weston


Papers:

Nathan Gavin


Steve McMurray


Appendix 5. Assessment forms to be filled out by faculty.
Department of Biology and Marine Biology
Assessment for Biology and Marine Biology Graduate Program
Masters of Science Program in Biology

Learning Outcome #1a: A graduate student should be able to develop a research plan.

Assessment #1a: Prospectus is successfully completed and defended to student’s committee.

Form to be filled out by the Thesis Committee after reviewing prospectus. Please add comments on back of form or extra sheet if you wish.

(1) The student’s prospectus was written:

1         2            3     4   5
Poorly           Adequately    Very well

(2) The student synthesized the literature:

1         2            3     4   5
Poorly           Adequately    Very well

(3) The student’s proposed research project was defined:

1         2            3     4   5
Poorly           Adequately    Very well

(4) The methods that the student will employ suit the project:

1         2            3     4   5
Poorly           Adequately    Very well
Learning Outcome #1b: A graduate student should be able to present and defend a research plan.

Assessment #1b: Prospectus is successfully presented to the department.

Form used for this assessment is our Graduate Student Prospectus Symposium Evaluation form. Our assessment tool will be question #5. This form should be filled in by faculty only.

5. What would be your overall rank of the student's proposed research project?

**Unsatisfactory** – research question is not interesting or important; research unlikely to yield significant results; project poorly designed; requires minimal effort on the part of the student

**Satisfactory** - research question is valid; research likely to yield useful results; project adequately designed; requires acceptable level of effort on the part of the student

**Commendable** - research question is novel; research likely to yield significant results; project very well designed; project requires significant effort on the part of the student

In the box below, tally up the number of times you used each answer for Question #5.

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<th>Unsatisfactory</th>
<th>Satisfactory</th>
<th>Commendable</th>
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Learning Outcome #2: A graduate student should be able to independently answer questions regarding their research field.

Assessment #2: Oral preliminary exam is successfully completed.

Form to be completed by Thesis Committee at end of the exam. Please add comments on back of form or extra sheet if you wish.

(1) The student was able to articulate his or her answers:

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<tr>
<td></td>
<td>Poorly</td>
<td>Adequately</td>
<td>Very well</td>
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(2) The student was able to answer a breadth of questions:

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<td>Poorly</td>
<td>Adequately</td>
<td>Very well</td>
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</tbody>
</table>

(3) The student demonstrated an appropriate depth of knowledge:

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<td>Poorly</td>
<td>Adequately</td>
<td>Very well</td>
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(4) The student was able to demonstrate professional poise during the exam:

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<td>Poorly</td>
<td>Adequately</td>
<td>Very well</td>
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</tbody>
</table>
Department of Biology and Marine Biology  
Assessment for Biology and Marine Biology Graduate Program  
Masters of Science Program in Biology

Learning Objective #3: A graduate student should be able to communicate his or her research to a broadly-trained public audience.

Assessment #3: Departmental Seminar presentation of thesis research is successfully completed.

Form to be completed by Thesis Committee at end of the thesis defense. Please add comments on back of form or extra sheet if you wish.

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<th>5</th>
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<tbody>
<tr>
<td>1</td>
<td>Poor</td>
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<td></td>
</tr>
<tr>
<td>2</td>
<td>Adequate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Well done</td>
<td></td>
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</tr>
</tbody>
</table>

(1) The student's presentation was professional and well-organized:

(2) The student's demonstrated mastery of his or her research was:

(3) The student was able to answer questions from the audience:

(4) The student was able to demonstrate professional poise during the presentation:
Department of Biology and Marine Biology

Assessment for Biology and Marine Biology Graduate Program

Masters of Science Program in Biology

Learning Objective #4: A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific journal.

Assessment #4: Thesis is successfully completed.

Form to be completed by Thesis Committee at end of the thesis defense. Please add comments on back of form or extra sheet if you wish.

(1) The student’s thesis was written:

1         2            3     4   5
Poorly           Adequately    Very well

(2) The student’s thesis demonstrated mastery of the research:

1         2            3     4   5
Poor           Adequate     Well done

(3) Based upon its quality, the likelihood of the thesis being published is:

1         2            3     4   5
Poor           Likely     Very likely
Learning Outcome #1a: A graduate student should be able to develop a research plan.

Assessment #1a: Prospectus is successfully completed and defended to student’s committee.

Form to be filled out by the Thesis Committee after reviewing prospectus. Please add comments on back of form or extra sheet if you wish.

(1) The student’s prospectus was written:

1         2            3     4   5
Poorly           Adequately    Very well

(2) The student synthesized the literature:

1         2            3     4   5
Poorly           Adequately    Very well

(3) The student’s proposed research project was defined:

1         2            3     4   5
Poorly           Adequately    Very well

(4) The methods that the student will employ suit the project:

1         2            3     4   5
Poorly           Adequately    Very well
Learning Outcome #1b: A graduate student should be able to present and defend a research plan.

Assessment #1b: Prospectus is successfully presented to the department.

Form used for this assessment is our Graduate Student Prospectus Symposium Evaluation form. Our assessment tool will be question #5. This form should be filled in by faculty only.

5. What would be your overall rank of the student's proposed research project?

Unsatisfactory – research question is not interesting or important; research unlikely to yield significant results; project poorly designed; requires minimal effort on the part of the student

Satisfactory - research question is valid; research likely to yield useful results; project adequately designed; requires acceptable level of effort on the part of the student

Commendable - research question is novel; research likely to yield significant results; project very well designed; project requires significant effort on the part of the student

In the box below, tally up the number of times you used each answer for Question #5.

<table>
<thead>
<tr>
<th>Unsatisfactory</th>
<th>Satisfactory</th>
<th>Commendable</th>
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<tbody>
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</table>
Department of Biology and Marine Biology
Assessment for Biology and Marine Biology Graduate Program
Masters of Science Program in Marine Biology

Learning Outcome #2: A graduate student should be able to independently answer questions regarding their research field.

Assessment #2: Oral preliminary exam is successfully completed.

Form to be completed by Thesis Committee at end of the exam. Please add comments on back of form or extra sheet if you wish.

(1) The student was able to articulate his or her answers:

1         2            3     4   5
Poorly           Adequately    Very well

(2) The student was able to answer a breadth of questions:

1         2            3     4   5
Poorly           Adequately    Very well

(3) The student demonstrated an appropriate depth of knowledge:

1         2            3     4   5
Poorly           Adequately    Very well

(4) The student was able to demonstrate professional poise during the exam:

1         2            3     4   5
Poorly           Adequately    Very well
Learning Objective #3: A graduate student should be able to communicate his or her research to a broadly-trained public audience.

Assessment #3: Departmental Seminar presentation of thesis research is successfully completed.

Form to be completed by Thesis Committee at end of the thesis defense. Please add comments on back of form or extra sheet if you wish.

(1) The student’s presentation was professional and well-organized:

1 2 3 4 5
Poor Adequate Well done

(2) The student’s demonstrated mastery of his or her research was:

1 2 3 4 5
Poor Adequate Well done

(3) The student was able to answer questions from the audience:

1 2 3 4 5
Poorly Adequately Very well

(4) The student was able to demonstrate professional poise during the presentation:

1 2 3 4 5
Poorly Adequately Very well
Learning Objective #4: A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific journal.

Assessment #4: Thesis is successfully completed.

Form to be completed by Thesis Committee at end of the thesis defense. Please add comments on back of form or extra sheet if you wish.

(1) The student’s thesis was written:

1 2 3 4 5
Poorly Adequately Very well

(2) The student’s thesis demonstrated mastery of the research:

1 2 3 4 5
Poor Adequate Well done

(3) Based upon its quality, the likelihood of the thesis being published is:

1 2 3 4 5
Poor Likely Very likely
Learning Outcome #1: A graduate student should be able to develop a research plan.

Assessment #1: Dissertation proposal is successfully completed and defended to student's committee.

Form to be filled out by the Dissertation Committee member after reviewing dissertation proposal. Please add comments on back of form or extra sheet if you wish.

(1) The student’s dissertation proposal was written:

1       2       3       4       5
Poorly  Adequately  Very well

(2) The student synthesized the literature:

1       2       3       4       5
Poorly  Adequately  Very well

(3) The student's proposed research projects were defined:

1       2       3       4       5
Poorly  Adequately  Very well

(4) The methods that the student will employ suit the projects:

1       2       3       4       5
Poorly  Adequately  Very well
Department of Biology and Marine Biology
Assessment for Biology and Marine Biology Graduate Program
PhD Marine Biology

Learning Outcome #2: A graduate student should be able to independently answer questions regarding their research field.

Assessment #2: Written candidacy and oral qualifying exams are successfully completed.

Form to be completed by Dissertation Committee at end of oral exam. Please add comments on back of form or extra sheet if you wish.

(1) The student was prepared for the candidacy exam

1 2 3 4 5
Poorly Adequately Very well

(2) The student was able to articulate his or her answers:

1 2 3 4 5
Poorly Adequately Very well

(3) The student was able to answer a breadth of questions:

1 2 3 4 5
Poorly Adequately Very well

(4) The student demonstrated an appropriate depth of knowledge:

1 2 3 4 5
Poorly Adequately Very well

(5) The student was able to demonstrate professional poise during the exams:

1 2 3 4 5
Poorly Adequately Very well
Department of Biology and Marine Biology
Assessment for Biology and Marine Biology Graduate Program
PhD Marine Biology

Learning Objective #3: A graduate student should be able to communicate his or her research to a broadly-trained public audience.

Assessment #3: Two Departmental Seminar presentations of dissertation research are successfully completed.

Form to be completed by Dissertation Committee at end of each seminar. Please add comments on back of form or extra sheet if you wish.

(1) The student's presentation was professional and well-organized:

<table>
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<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>Poor</td>
<td>Adequate</td>
<td>Well done</td>
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</tbody>
</table>

(2) The student's demonstrated mastery of his or her research was:

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<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>Adequate</td>
<td>Well done</td>
<td></td>
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</tbody>
</table>

(3) The student was able to answer questions from the audience:

<table>
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<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poorly</td>
<td>Adequately</td>
<td>Very well</td>
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</tbody>
</table>

(4) The student was able to demonstrate professional poise during the presentation:

<table>
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<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poorly</td>
<td>Adequately</td>
<td>Very well</td>
<td></td>
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</tbody>
</table>
Learning Objective #4: A graduate student should be able to write up his or her research in the form of multiple manuscripts for publication in scientific journals.

Assessment #4: Multi-chaptered dissertation is successfully completed.

Form to be completed by Dissertation Committee at end of defense. Please add comments on back of form or extra sheet if you wish.

(1) The student's dissertation was written:

1 Poorly  2 Adequately  3 Very well

(2) The student's dissertation demonstrated mastery of the research:

1 Poor  2 Adequate  3 Very well

(3) Based upon its quality, the likelihood of the dissertation being published is:

1 Poor  2 Likely  3 Very likely

(4) Has the student already submitted for publication one or more chapters?
Yes  No

(5) Has the student already published one or more chapters?
Yes  No
Learning Objective #5: A graduate student should be able to create new teaching materials.

Assessment #5: Successful completion of Teaching Practicum course and a formal lecture or laboratory presentation in an undergraduate course.

Form to be completed by each faculty member who evaluates student’s teaching. Please add comments on back of form or extra sheet if you wish.

(1) The student’s presentation was professional and well-organized:

1         2            3     4   5  
Poor           Adequate     Well done

(2) The student's demonstrated mastery of his or her subject was:

1         2            3     4   5  
Poor           Adequate     Well done

(3) The student was able to answer questions from students:

1         2            3     4   5  
Poorly           Adequately    Very well

(4) The student was able to demonstrate professional poise during the presentation:

1         2            3     4   5  
Poorly           Adequately    Very well

(5) The overall effectiveness of teaching was:

1  
Unsatisfactory  

3  5  
Satisfactory                   Outstanding
Appendix 6. Assessment annual reports.
Primary Contact Name/Info: Heather Koopman, koopmanh@uncw.edu, 962-7199

<table>
<thead>
<tr>
<th>Program Outcome</th>
<th>Tools</th>
<th>Implementation</th>
<th>Summary of Findings</th>
<th>Actions Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PO 1: Graduation of M.S. students within 3 years.</strong> Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - monitoring of time to graduation - periodic outside review</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>We have combined data for both our Biology and Marine Biology MSc programs. Over 2002-2013, data indicate that 62% of our students are graduating within 3 years, based on 256 graduates. We would like to increase this proportion in future. Financial concerns have been identified as a significant concern for time to graduate.</td>
<td>The Graduate School has worked to incrementally increase TA salaries. We should continue this process to speed up graduation times for all of our MSc students.</td>
</tr>
</tbody>
</table>

| **PO2: Targeted recruitment and enhanced retention of students.** Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students. | Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions | The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC. | In 2013-2014, we accepted 16 new students into our program. In 2012-2013, we accepted 8 new students into this program. In 2011-2012, we accepted 12 new students into this program. In 2010-2011, we accepted 15 students. | We have increased core course options for the M.S. program by adding a course in evolution. The Graduate School has worked to incrementally increase TA salaries. |
PO3: Faculty development.
Links to UNCW Strategic Goal #2: Recruit, retain and develop quality faculty, administration and staff in appropriate numbers.

<table>
<thead>
<tr>
<th>Periodic outside review</th>
<th>Financial concerns have been identified as a significant concern for recruitment of students.</th>
</tr>
</thead>
</table>

Several tools are used for the assessment process of this PO:
- review of trends in annual faculty productivity
- annual meetings with each faculty member
- monitoring of faculty workloads, including relative efforts put into service, scholarly and training activities.

The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for gathering this information.

Faculty members identified the following needs:
- a greater need for flexibility for in-class instruction.
- support for faculty travel
- peer support for new/untenured faculty

We have implemented the following actions:
- instituted flexibility for in-class instruction, such as heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty
- retained modest departmental support for faculty travel
- the department has implemented a peer monitoring system for untenured, tenure-track faculty

The continued high level of performance of departmental faculty, coupled with high rates of successful decisions for reappointment, tenure, and promotion suggest that our faculty development policies are sufficient. However, we continue to refine our procedures to ensure effective communication between faculty and administrators.

<table>
<thead>
<tr>
<th>Student Learning Outcome UNCW-wide Learning Goal</th>
<th>Tools</th>
<th>Implementation</th>
<th>Summary of Findings</th>
<th>Actions Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>What will students know or</td>
<td>What tools or measures will</td>
<td>Who will be responsible for</td>
<td>What was learned from the</td>
<td>What changes were made</td>
</tr>
<tr>
<td>SLO 1a: A graduate student should be able to develop a research plan.</td>
<td>Prospectus is successfully completed and defended to student’s committee. The student’s committee evaluates prospectus with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on prospectus quality, depth and breadth are collected. Implementation of the assessment of this SLO was planned to begin in the 2009-2010 year. Department moved to online forms in 2010-2011 to improve faculty participation.</td>
<td>We are slow to collect data on this SLO, with 6 respondents in 2012-2013 and 2 in 2013-2014. Students that are assessed are performing well on this SLO (100% performing at levels 4 or 5 for all elements of this SLO!). Given the size of the student body, we should have more data for this SLO (i.e. more than one or two students per year should be completing their prospectus). Either students are not on time with completion of this SLO, or the Graduate Secretary is not being made aware of completion of the prospectus. This is an issue for both of our M.Sc. programs (see next column).</td>
<td>The faculty discussed the results of assessment to date at the 2014 retreat and decided that our students are meeting our expectations in this SLO and that no action will be taken. However the Graduate Assessment Coordinator plans to work with the Graduate Secretary to determine why there are so few data points for this SLO. A total of 3 students (combined for both M.Sc. programs) were identified as having completed their prospectus documents this year, which explains why the responses are low. Yet at this point we do not know if this reflects low numbers of prospectus documents or students not bringing their prospectus forms to the Graduate Secretary in a timely manner.</td>
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<tr>
<td>SLO 1b: A graduate student should be able to present and defend a research plan.</td>
<td>Prospectus is successfully presented to the department. Form used for this assessment is our Graduate Student Prospectus Symposium.</td>
<td>Each student in the program is assessed by all faculty members in the department attending the Graduate Student Prospectus symposium. Data on each</td>
<td>During 2013-2014, we had a total of 162 respondents for this SLO. Faculty evaluated students in both M.Sc. programs as continuing to perform well on this SLO,</td>
<td>The faculty discussed the results of assessment to date at the 2014 retreat and decided that our students are meeting our expectations in this SLO and</td>
</tr>
<tr>
<td>SLO2: A graduate student should be able to independently answer questions regarding their research field. Link to UNCW Learning Goal: Information literacy, critical thinking, thoughtful expression.</td>
<td>Oral preliminary exam is successfully completed. The student’s committee evaluates performance in the exam with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information, on the depth and breadth of their knowledge, and professional poise are collected.</td>
<td>Faculty compliance improved significantly for this SLO this year. In 2013-2014 we had 40 respondents. Unfortunately student performance for this SLO is still low. We do have &gt;90% of students performing at the level of adequate (3 or better) but the fraction of students performing at levels 4 or 5 was 60% for articulation, 58% for breadth and 60% for depth of knowledge. Professional poise was assessed at being above level 3 for 73% of cases. In 2012-2013 we had 25 respondents for this SLO. Faculty determined that the fraction of students performing above the level of adequate students was 52% in ability to articulate, 50% in breadth, and 48% in depth of knowledge, and Student performance on this SLO has been a concern in the past. Given the small sample size for this SLO, the Graduate Assessment Coordinator recommended that we carefully monitor performance for another year before evaluating whether any programmatic changes are warranted. The fraction of students in 2013-2014 performing above adequate for this SLO is lower than 2012-2013 for both of our M. Sc. Programs. The faculty discussed the results of assessment to date at the 2014 retreat and decided to adopt that suggestion. In addition, the faculty will discuss levels of expectation for our programs (i.e. do we expect our students to be adequate [3] or better than adequate [4 or 5]?). At the</td>
<td></td>
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<tr>
<td>SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience.</td>
<td>Departmental Seminar presentation of thesis research is successfully completed. An assessment form is filled out by departmental faculty members after the thesis seminar.</td>
<td>Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality, mastery of research, professional poise, and ability to answer questions are collected.</td>
<td>During 2013-2014, 112 respondents deemed student performance on this SLO to continue to be good. &gt;79% of students were assessed as being at levels 4 or 5 for organization, mastery, and poise. Of slight concern is the ability to answer questions (only 71% at levels 4 or 5). In 2012-2013, student performance on this SLO was strong [n=24 respondents]. Presentation quality and poise were judged at 88% and 91% (students performing at level 4 or 5), mastery of research was 92%, and ability to answer questions was 96%. In September 12 2014 department faculty meeting, the faculty passed the following motion associated with this SLO: “1. Continued monitoring of performance on SLO #2 (oral exam) for M.Sc. students. The department has made some changes in recent years to improve performance on this SLO, which may not have had adequate time to take effect. We will gather another year of data and then evaluate whether further action is required.”</td>
<td></td>
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<tr>
<td>SLO 4: A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific journal.</td>
<td>Thesis is successfully completed. The student’s committee evaluates the quality of the thesis with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on the quality of the writing, mastery of the research, and likelihood of being published in a peer-review journal are collected. Department moved to online forms in 2010-2011 to improve faculty participation.</td>
<td>Student performance on this SLO was a bit lower than last year. In 2013-2014, 39 faculty responses were recorded. Thesis quality was at levels 4 or 5 for 59% of cases, mastery of research was 64% for levels 4 or 5, and the likelihood of the thesis being published was high (4 or 5) for 54% of cases. However, 82-97% of cases had students performing at adequate (level 3) or higher. In 2012-2013 we had 9 respondents. Faculty judged student performance on thesis quality at 78%, mastery of research at 77%, and likelihood of publication at 78%. In 2011-2012 we had 22 respondents. Faculty judged student performance to be acceptable, with thesis quality at 86%, mastery of research at 82%, and likelihood of publication at 91%. For 2010-2011 (n=19), Performance on this SLO is lower than last year, although still very much adequate (&gt;82% at 3 or above). The faculty discussed the results of assessment to date at the 2014 retreat and decided to continue to monitor performance for another year before deciding if there is a trend over time. At the September 12 2014 departmental faculty meeting, the following motion for an action item was passed by the faculty: “2. Continued monitoring of performance on SLO #4 (thesis quality) for M.Sc. students in Marine Biology to determine whether data collected from 2013-2014 represents a trend or a spurious result.”</td>
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faculty determined that students were performing well on this SLO, in thesis quality (95%), mastery of research (89%), and likelihood of the data being published (100%).

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### University of North Carolina Wilmington

Educational Program Assessment Plan and Report  
(M.Sc. Biology, Dept of Biology & Marine Biology – October 1 2014)  
Assessment Plan for 2013 – 2014 (July 1 to June 30)

Primary Contact Name/Info: Heather Koopman, koopmanh@uncw.edu, 962-7199

<table>
<thead>
<tr>
<th>Program Outcome</th>
<th>UNCW Strategic Goal</th>
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<tbody>
<tr>
<td>PO 1: Graduation of M.S. students within 3 years.</td>
<td>Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
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</tbody>
</table>

<table>
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<tr>
<th>Tools</th>
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<th>Summary of Findings</th>
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<tbody>
<tr>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - monitoring of time to graduation - periodic outside review</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>We have combined data for both our Biology and Marine Biology MSc programs. Over 2002-2013, data indicate that 62% of our students are graduating within 3 years, based on 256 graduates. We would like to increase this proportion in future. Financial concerns have been identified as a significant concern for time to graduate.</td>
<td>The Graduate School has worked to incrementally increase TA salaries. We should continue this process to speed up graduation times for all of our MSc students.</td>
</tr>
</tbody>
</table>

| PO2: Targeted recruitment and enhanced retention of | |
| Several tools are used for the assessment process of | The Graduate Advisory Committee (GAC) and the | We accepted 5 new students into the MSc | We have increased core course options for the M.S. |
Students. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.

<p>| PO3: Faculty development. Links to UNCW Strategic Goal #2: Recruit, retain and develop quality faculty, administration and staff in appropriate numbers. | Several tools are used for the assessment process of this PO:  - review of trends in annual faculty productivity  - annual meetings with each faculty member  - monitoring of faculty workloads, including relative efforts put into service, scholarly and training activities. | The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for gathering this information. | Faculty members identified the following needs:  - a greater need for flexibility for in-class instruction.  - support for faculty travel  - peer support for new/untenured faculty | We have implemented the following actions:  - instituted flexibility for in-class instruction, such as heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty  - retained modest departmental support for faculty travel  - the department has implemented a peer monitoring system for untenured, tenure-track faculty  The continued high level of performance of departmental faculty, coupled with high rates of successful decisions for reappointment, tenure, and promotion suggest that our faculty development policies are sufficient. However, we continue to refine our procedures to ensure effective communication between faculty and administrators. |</p>
<table>
<thead>
<tr>
<th>Student Learning Outcome</th>
<th>Tools</th>
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<tbody>
<tr>
<td>UNCW-wide Learning Goal</td>
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<tr>
<td>What will students know or be able to do upon completion of the program?</td>
<td>What tools or measures will be used?</td>
<td>Who will be responsible for implementation; who will be assessed; what is the schedule?</td>
<td>What was learned from the collection and analysis of data for student learning outcomes?</td>
<td>What changes were made because of what you learned?</td>
</tr>
<tr>
<td>SLO 1a: A graduate student should be able to develop a research plan. Link to UNCW Learning Goal: Inquiry</td>
<td>Prospectus is successfully completed and defended to student’s committee. The student’s committee evaluates prospectus with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on prospectus quality, depth and breadth are collected. Implementation of the assessment of this SLO was planned to begin in the 2009-2010 year. Department moved to online forms in 2010-2011 to improve faculty participation.</td>
<td>We are slow to collect data on this SLO, with 2 respondents in 2012-2013 and 5 in 2013-2014. Students that are assessed are performing well on this SLO (80% or more performing at levels 4 or 5 for all elements of this SLO). Given the size of the student body, we should have more data for this SLO (i.e. more than one or two students per year should be completing their prospectus). Either students are not on time with completion of this SLO, or the Graduate Secretary is not being made aware of completion of the prospectus. This is an issue for both of our M.Sc. programs (see next column).</td>
<td>The faculty discussed the results of assessment to date at the 2014 retreat and decided that our students are meeting our expectations in this SLO and that no action will be taken. However the Graduate Assessment Coordinator plans to work with the Graduate Secretary to determine why there are so few data points for this SLO. A total of 3 students (combined for both M.Sc. programs) were identified as having completed their prospectus documents this year, which explains why the responses are low. Yet at this point we do not know if this reflects low numbers of prospectus documents or students not bringing their prospectus forms to the Graduate Secretary in a timely manner.</td>
</tr>
<tr>
<td>SLO 1b: A graduate student</td>
<td>Prospectus is successfully completed and defended to student’s committee. The student’s committee evaluates prospectus with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on prospectus quality, depth and breadth are collected. Implementation of the assessment of this SLO was planned to begin in the 2009-2010 year. Department moved to online forms in 2010-2011 to improve faculty participation.</td>
<td>During 2013-2014, we had a</td>
<td>The faculty discussed the</td>
</tr>
</tbody>
</table>
### SLO1: Should be able to present and defend a research plan.

**Link to UNCW Learning Goal:** Thoughtful expression and Information literacy

- Presented to the department. Form used for this assessment is our Graduate Student Prospectus Symposium Evaluation form. Our assessment tool will be question #5. This SLO was created, in part, to help understand the poor performance of students on “breadth of knowledge” in SLO2 in the 2007-08 year.

- A total of 162 respondents for this SLO. Faculty evaluated students in both M.Sc. programs as continuing to perform well on this SLO, with 97% of students to be satisfactory (59%) or commendable (39%). These numbers are similar to previous years. In 2012-2013, we collected 259 responses. Faculty deemed student performance on this SLO to be excellent with 98% of students to be satisfactory (63%) or above (commendable, 36%).

- Student performance on this SLO has been a concern in the past. Given the small sample size for this SLO, the Graduate Assessment Coordinator recommended that we carefully monitor performance for another year before evaluating whether any programmatic changes are warranted. The fraction of students in 2013-2014 performing above adequate has fallen (55%) compared to 2012-2013 (78%). The faculty discussed the results of assessment to date at the 2014 retreat and decided that our students are meeting our expectations in this SLO and that no action will be taken.

### SLO2: A graduate student should be able to independently answer questions regarding their research field.

**Link to UNCW Learning Goal:** Information literacy, critical thinking, thoughtful expression.

- Oral preliminary exam is successfully completed. The student’s committee evaluates performance in the exam with a form.

- Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information, on the depth and breadth of their knowledge, and professional poise are collected.

- During 2013-2014 we had 19 respondents for this SLO. Student performance at levels 4 or 5 was lower than last year for articulation (68%), breadth (63%) and depth (63%) of knowledge, and 84% of cases for demonstrating poise. In 2012-2013 we had 14 respondents for this SLO. Faculty assessed students as performing above the level of adequate (at levels 4 or 5) in 79% of cases for articulation, breadth and depth of knowledge, and in 93% of cases for demonstrating poise. In 2011-2012 we had 5 responses to this SLO. Students were performing...
| SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience. Link to UNCW Learning Goal: Thoughtful expression. | Departmental Seminar presentation of thesis research is successfully completed. An assessment form is filled out by departmental faculty members after the thesis seminar. | Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality, mastery of research, professional poise and ability to answer questions are collected. | Students continue to perform well on this SLO. During 2013-2014, 65 respondents assessed student performance on this SLO to be excellent, with >90% of all students at levels 4 or 5 for all elements (professional presentation, mastery of research, ability to answer questions, and poise). In 2012-2013 we had 40 respondents. 80-adequately on breadth of knowledge and poise (80% at level 4 or 5), but only 60% on articulation of answers and depth of knowledge. | discuss levels of expectation for our programs (i.e. do we expect our students to be adequate [3] or better than adequate [4 or 5]?). At the September 12 2014 department faculty meeting, the faculty passed the following motion associated with this SLO: “1. Continued monitoring of performance on SLO #2 (oral exam) for M.Sc. students. The department has made some changes in recent years to improve performance on this SLO, which may not have had adequate time to take effect. We will gather another year of data and then evaluate whether further action is required.” |
90% of students performed at level 4 or 5 for all elements of the seminar. In 2011-2012, 80% of students performed at level 4 or 5 for all elements of the seminar (professional presentation, mastery of research, ability to answer questions, and poise; n=5 respondents).

<p>| SLO 4: A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific journal. Link to UNCW Learning Goal: thoughtful expression, information literacy, critical thinking, inquiry. | Thesis is successfully completed. The student’s committee evaluates the quality of the thesis with a form. | Each student in the program is assessed by each of his/her committee members. Data on the quality of the writing, mastery of the research, and likelihood of being published in a peer-review journal are collected. Department moved to online forms in 2010-2011 to improve faculty participation. | Student performance on this SLO was similar to last year. During 2013-2014, 18 respondents assessed student performance as being at levels 4 or 5 for &gt;78% of students. In 2012-2013 [n=15 respondents], thesis quality, mastery of the research and likelihood of publication were assessed at levels 4 or 5 in 80-86% of all cases. In 2011-2012, thesis quality was judged at 78% (fraction of students performing at level 4 or above), mastery of research was 67%, and likelihood of publication was 78% [n=9 respondents]. | The faculty discussed the results of assessment to date at the 2014 retreat and decided that our students are meeting our expectations in this SLO, matching the acceptable performance of previous years, and that no action will be taken. |</p>
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<td>PO 1: Graduation of PhD students within 5-6 years. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - monitoring of time to graduation - periodic outside review</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>PhD students are taking 4.5 years to graduate, well within our expectation. Financial concerns have previously been identified as a significant concern for time to graduate. Based on student comments and comparisons with other programs, a need to make the curriculum more flexible was identified. For M.S students in the department wishing to change to the PhD program, a need for an easier transition was identified.</td>
<td>In previous years, the Graduate School has worked to incrementally increase TA salaries. The PhD core curriculum was revised to be more flexible. The progression from the M.S. program to the PhD program was made easier through a Master’s bypass option. Given our results we feel that these actions have been successful.</td>
</tr>
</tbody>
</table>
| PO2: Targeted recruitment and enhanced retention of students. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students. | Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - periodic outside review | The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC. | Data from 2012-2013 indicate that program enrollment is steady. In 2010-2011 we had 22 PhD students, in 2011-2012 we had 20, in 2012-2013 we had 18, and in 2013-2014 year we accepted 2 new students into the program. Financial concerns have been identified as a significant concern for the Graduate School. | The Graduate School has worked to incrementally increase TA salaries. The PhD core curriculum was revised to be more flexible. In addition, in fall 2012 the Graduate Coordinator, working with the graduate students and the Graduate advisory committee, drafted a long-term PhD course offering plan that will better
recruitment of students. Based on student comments and comparisons with other programs, a need to make the curriculum more flexible was identified in 2012; this has been dealt with. allow our PhD students to plan their curriculum over a period of several years. Our program is steady but not yet growing. We will continue to find ways to attract more students.

**PO3: Faculty development.**

Links to UNCW Strategic Goal #2: Recruit, retain and develop quality faculty, administration and staff in appropriate numbers.

<table>
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<tr>
<th>Several tools are used for the assessment process of this PO:</th>
<th>The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for gathering this information.</th>
<th>Faculty members identified the following needs:</th>
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<td>- review of trends in annual faculty productivity</td>
<td>- a greater need for flexibility for in-class instruction.</td>
<td>- a greater need for flexibility for in-class instruction.</td>
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<td>- annual meetings with each faculty member</td>
<td>- support for faculty travel</td>
<td>- support for faculty travel</td>
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<tr>
<td>- monitoring of faculty workloads, including relative efforts put into service, scholarly and training activities.</td>
<td>- peer support for new/untenured faculty</td>
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We have implemented the following actions:

- instituted flexibility for in-class instruction, such as heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty
- retained modest departmental support for faculty travel
- the department has implemented a peer monitoring system for untenured, tenure-track faculty

The continued high level of performance of departmental faculty, coupled with high rates of successful decisions for reappointment, tenure, and promotion suggest that our faculty development policies are sufficient. However, we continue to refine our procedures to ensure effective communication between faculty and administrators.
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<td><strong>SLO 1: A graduate student should be able to develop a research plan.</strong>&lt;br&gt;Link to UNCW Learning Goals: inquiry and thoughtful expression.</td>
<td>Dissertation proposal is successfully completed and defended to student’s committee. The student’s committee evaluates proposal with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on proposal quality, synthesis of literature, definition of project, and suitability of methods to be employed are collected. We began implementation of the assessment of this SLO in the 2010-2011 year.</td>
<td>During 2013-2014, we had 4 respondents for this SLO. Student performance was assessed as strong, with 75-100% of responses at levels 4 or 5 for writing, literature synthesis, project definition and methods. We had few responses for assessment for the PhD program in 2012-13, so data were combined for the longer two year period of 2011-2013. There were a total of 14 responses for report for this SLO in 2011-2013. Faculty determined that the Ph.D. students were generally performing well on this SLO. Performance (determined as fraction of students performing at levels 4 or 5 on a scale of 5) on writing skills and project definitions were at 100%; literature synthesis was 86% and methods to be used was 93%.</td>
<td>Results were discussed at the Faculty retreat in August 2014. No actions will be taken at this point as the data are limited to two years. We will continue to collect these data in the coming years.</td>
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<td><strong>SLO2: A graduate student should be able to independently answer questions regarding their research field.</strong>&lt;br&gt;Link to UNCW Learning Goals: information literacy, critical thinking, and thoughtful</td>
<td>Written and oral comprehensive exams are successfully completed. The student’s committee evaluates performance in the exams with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on the student's ability to articulate information in both oral and written formats, on the depth and</td>
<td>During 2013-2014 we had 9 respondents for this SLO. Faculty assessed student performance as good for written articulation (71% at level 4 or 5), and poise (78%). However, oral articulation, breadth and</td>
<td>In the August 2014 Departmental Graduate Assessment Report, the Graduate Assessment Coordinator recommended that performance on the candidacy exams be monitored for another few</td>
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<td>SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience. Link to UNCW Learning Goals: thoughtful expression.</td>
<td>Departmental Seminar presentation of dissertation research is successfully completed. An assessment form is filled out by departmental faculty members after the seminar.</td>
<td>Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality, mastery of research, professional poise and ability to answer questions are collected.</td>
<td>During 2013-2014 we had 51 respondents for this SLO! Student performance on the public seminar was assessed as excellent, with &gt;90% of all responses at levels 4 or 5 for organization, mastery of research, answering questions, and poise. This is much improved over the last reporting period. We had few responses for assessment for the PhD program in 2012-13, so data from 2011-2013 were combined. For 2011-2013 years. Given the smaller sample size for this graduate program, it is difficult to detect trends. Results were discussed at the Faculty retreat in August 2014. No actions will be taken at this point as student performance was strong on this SLO.</td>
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we have 27 responses for assessment of this SLO. In the areas of presentation quality, mastery of research, and ability to answer questions, 66-69% of students performed at level 4 or 5 on a scale of 1-5. For demonstration of professional poise, 86% of students performed at levels 4 or 5. In 2010-2011 our Ph.D. students were assessed as performing well on presentation quality and poise (85% for both), but at lower levels for mastery of research and ability to answer questions (54% for both).

SLO 4: A graduate student should be able to write up his or her research in the form of multiple manuscripts for publication in scientific journals. Link to UNCW Learning Goals: thoughtful expression, information literacy, critical thinking) and inquiry.

Multi-chaptered dissertation is successfully completed. The student’s committee evaluates the quality of the dissertation with a form.

Each student in the program is assessed by each of his/her committee members. Data on the quality of the writing, mastery of the research, and likelihood of being published in a peer-review journal are collected. In an effort to better understand how successful our students are at publishing their work, we recently added two assessment questions to this SLO that permit us to monitor the progress each student has made towards publication by asking whether chapters of their dissertation is successfully completed. The student’s committee evaluates the quality of the dissertation with a form.

During 2013-2014, we had 8 respondents for this SLO. Student performance on the dissertation was assessed as excellent, with 100% of students writing high-quality dissertations with chapters already published. We had few responses for assessment for the PhD program in 2012-13, so data from 2011-2013 were combined. In 2011-2013 we had 13 responses for this SLO. Faculty assessed student performance as generally good, with 93-100% of students at levels 4 or 5 on mastery of research.

Results were discussed at the Faculty retreat in August 2014. No actions will be taken at this point as student performance was strong on this SLO.
dissertation have been submitted for publication or have already been published.

and likelihood of publication. Dissertation quality was high, with 100% scoring very likely to be published, and submission and publication were at 77%.

| SLO 5: A graduate student should be able to create new teaching materials. | Successful completion of Teaching practicum course and a formal lecture or laboratory presentation in an undergraduate course. The student’s committee evaluates the teaching ability of the student using the Last question on the Evaluation of Teaching form that asks about the overall effectiveness of teaching. | Each student in the program is assessed by each of his/her committee members. Data on overall effectiveness of teaching are collected. Implementation of the assessment of this SLO was planned for the 2010-2011 year. | For 2013-2014 there were 3 respondents for this SLO. All respondents rated “student understanding of teaching responsibilities at the university level” at level 5. However, we have identified some confusion over the evaluation of this SLO, as the assessment tool should be a question about the overall effectiveness of teaching. The teaching practicum is not taught every year, which is one of the reasons we have not been able to collect very much data on student performance on this SLO. In 2010-2011 we had only one respondent for this SLO. The program is small and we may not necessarily have any students completing requirements to be assessed each year for this SLO. We will likely need to wait several years before we have an adequate sample size for this SLO. | At the 2012-2013 faculty retreat, the lack of data for this SLO was discussed. At the September 2013 faculty meeting the following motion was passed by the department: That the Graduate Assessment Coordinator work with the Graduate Secretary to better coordinate the teaching practicum evaluation for the Ph.D. program (SLO#5). We have managed to collect some data during 2013-2014, but now need to ensure that the correct assessment tool is being used. The Graduate Assessment Coordinator will work with the Graduate Secretary in 2014-2015 and future years to correct this issue. |
### Program Outcome
**UNCW Strategic Goal**
- What is the intended or desired effect of your programming or services? What Strategic Goal does it link to?

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<td>PO 1: Graduation of M.S. students within 3 years. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>Tools or measures of program outcomes must address the outcome directly</td>
<td>Identify who will be responsible for implementation; what data will be collected.</td>
<td>What was learned from the collection and analysis of data for the program outcome?</td>
<td>What changes were made because of what you learned?</td>
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<td>PO 2: Targeted recruitment and enhanced retention of students. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - monitoring of time to graduation - periodic outside review</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>In 2012-2013, we accepted 8 new students into this program. In 2011-2012, we accepted 12 new students into this program. In 2010-2011, we accepted 15 students. Enrollment in this program has been steady but is lower this year,</td>
<td>The Graduate School has worked to incrementally increase TA salaries. We should continue this process to speed up graduation times for all of our MSc students.</td>
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**Primary Contact Name/Info:** Heather Koopman, koopmanh@uncw.edu, 962-7199
<p>| PO3: Faculty development. Links to UNCW Strategic Goal #2: Recruit, retain and develop quality faculty, administration and staff in appropriate numbers. | Several tools are used for the assessment process of this PO: - review of trends in annual faculty productivity - annual meetings with each faculty member - monitoring of faculty workloads, including relative efforts put into service, scholarly and training activities. | The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for gathering this information. Faculty members identified the following needs: - a greater need for flexibility for in-class instruction. - support for faculty travel - peer support for new/untenured faculty | We have implemented the following actions: - instituted flexibility for in-class instruction, such as heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty - retained modest departmental support for faculty travel - the department has implemented a peer monitoring system for untenured, tenure-track faculty The continued high level of performance of departmental faculty, coupled with high rates of successful decisions for reappointment, tenure, and promotion suggest that our faculty development policies are sufficient. However, we continue to refine our procedures to ensure effective communication between |</p>
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<td>What will students know or be able to do upon completion of the program? What UNCW Learning Goal Does it link to?</td>
<td>What tools or measures will be used?</td>
<td>Who will be responsible for implementation; who will be assessed; what is the schedule?</td>
<td>What was learned from the collection and analysis of data for student learning outcomes?</td>
<td>What changes were made because of what you learned?</td>
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<td>SLO 1a: A graduate student should be able to develop a research plan. Link to UNCW Learning Goal: Inquiry.</td>
<td>Prospectus is successfully completed and defended to student’s committee. The student’s committee evaluates prospectus with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on prospectus quality, depth and breadth are collected. Implementation of the assessment of this SLO was planned to begin in the 2009-2010 year. Department moved to online forms in 2010-2011 to improve faculty participation.</td>
<td>We were finally able to collect some data on this SLO in 2012-2013, likely because of moving forms online and greater prompting of faculty. We had 2 respondents to this SLO, with both respondents assessing student performance in all aspects of this SLO (quality of writing, literature synthesis, definition of project and methods), at level 5.</td>
<td>Faculty were reminded at the annual Retreat in August 2012 that compliance with Assessment materials is mandatory and crucial for our ability to evaluate the performance of our students and whether or not they are meeting their SLOs. This step and loving to online forms seems to have helped compliance. The faculty discussed the results of assessment to date at the 2013 retreat and decided that our students are meeting our expectations in this SLO and that no action will be taken. <strong>Action Item:</strong> Continue collecting data as prescribed by the approved SLO assessments.</td>
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<td>SLO 1b: A graduate student should be able to present and defend a research plan.</td>
<td>Prospectus is successfully presented to the department. Form used for this assessment is our</td>
<td>Each student in the program is assessed by all faculty members in the department attending the Graduate</td>
<td>During 2012-2013, we collected 259 responses. Faculty deemed student performance on this SLO to be level 5.</td>
<td>The faculty discussed the results of assessment to date at the 2013 retreat and decided that our students</td>
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<td>Goal: Thoughtful expression and Information literacy</td>
<td>Graduate Student Prospectus Symposium Evaluation form. Our assessment tool will be question #5. This SLO was created, in part, to help understand the poor performance of students on “breadth of knowledge” in SLO2 in the 2007-08 year.</td>
<td>Student Prospectus symposium. Data on each student’s project in terms of quality, design and significance are collected. Assessment of this SLO began in Spring 2009. By the nature of data collection, assessment for this SLO is pooled with the Biology M.Sc. program.</td>
<td>be excellent with 98% of students to be satisfactory (63%) or above (commendable, 36%) These numbers are similar to previous years. In 2011, faculty deemed student performance on this SLO to be excellent with 99% of students to be satisfactory (63%) or above (commendable, 36%) [n=123]. In 2011, faculty determined that 98% of the students were performing well in this SLO, with 40% of projects rated as “commendable”, 58% as “satisfactory” and only 2% as “unsatisfactory” (n=261). In 2009-2010, the faculty determined that 98% of the students were performing well in this SLO, with 36% of projects rated as “commendable”, 62% as “satisfactory” and only 2% as “unsatisfactory”.</td>
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<td>SLO2: A graduate student should be able to independently answer questions regarding their research field. Link to UNCW Learning Goal: Information literacy, critical thinking, thoughtful expression.</td>
<td>Oral preliminary exam is successfully completed. The student’s committee evaluates performance in the exam with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information, on the depth and breadth of their knowledge, and professional poise are collected.</td>
<td>Faculty compliance improved significantly for this SLO this year. In 2012-2013 we had 25 respondents for this SLO. Unfortunately student performance was assessed at lower levels than previous years. We still have 83-96% of students performing at the level of</td>
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<td>This SLO has been recognized in the past as being a challenge for our students. Over 2009-2012, we implemented a series of formal (course-related) and informal changes to our M.Sc. programs with the aim of improving student performance on this SLO, which continued to be the</td>
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adequate or above (level 3 or above), but the proportion of students assessed as being above adequate dropped. Faculty determined that the fraction of students performing above the level of adequate students was 52% in ability to articulate, 50% in breadth, and 48% in depth of knowledge, and 60% in professional poise. No data were returned for this SLO in 2011-2012. In 2010-2011, student performance (determined as fraction of students performing at levels 4 or 5 on a scale of 5) on this SLO was notably improved over previous years. Faculty determined that students did better in ability to articulate (78%), demonstrate breadth (78%) and depth (67%) of knowledge, and poise (89%). Comparable data for the previous years: ability to articulate (75% in 2010 vs 57% for 2009), breadth of knowledge (75% in 2010 vs 57% for 2009), depth of knowledge (50% in 2010 vs. 59% for 2009). and professional poise (88% in 2010 vs 73% for 2009).

one of concern in our graduate program. The Biology master’s students have improved their performance on this SLO but the Marine Biology levels are not as high, for reasons we cannot determine. This result was discussed at the faculty retreat at length in August 2013. Because the performance of students varies from year to year with different cohorts, and because the majority of students are performing at the level of adequate or better, the department decided to monitor the results of this SLO carefully over the next few assessment cycles to determine if any trends emerge before taking further action.

At the September 2013 faculty meeting, the following motion was passed by the department: That the Graduate assessment coordinator, working with the Graduate Advisory Committee (GAC), examine the oral exam guidance for our M.Sc. programs and generate a plan for making sure that
| SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience. | Departmental Seminar presentation of thesis research is successfully completed. An assessment form is filled out by departmental faculty members after the thesis seminar. | Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality, mastery of research, professional poise and ability to answer questions are collected. | In 2012-2013, student performance on this SLO was strong [n=24 respondents]. Presentation quality and poise were judged at 88% and 91% (students performing at level 4 or 5), mastery of research was 92%, and ability to answer questions was 96%. In 2011-2012, we received 14 responses for this SLO. Presentation quality and poise were judged at 93% (students performing at level 4 or 5), mastery of research was 86%, and ability to answer questions was 71%. In 2010-2011, the faculty assessed performance of this learning outcome to be good for the majority of students, with 44 respondents, in organization (86%), mastery of research (89%), and professional poise (86%), with the exception of ability to field questions from the audience (74%). In 2009-2010, the faculty assessed performance of this learning outcome to be generally a bit higher for the majority of students. The faculty discussed the results of assessment to date at the 2013 retreat and decided that our students are meeting our expectations in this SLO and that no action will be taken. Action Item: Continue collecting data as prescribed by the approved SLO assessments. |
| SLO 4: **A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific journal.** | Thesis is successfully completed. The student’s committee evaluates the quality of the thesis with a form. | Each student in the program is assessed by each of his/her committee members. Data on the quality of the writing, mastery of the research, and likelihood of being published in a peer-review journal are collected. Department moved to online forms in 2010-2011 to improve faculty participation. | Student performance on this SLO was a bit lower than last year. In 2012-2013 we had 9 respondent. Faculty judged student performance on thesis quality at 78%, mastery of research at 77%, and likelihood of publication at 78%. However, 89-100% of cases had students performing at adequate (level 3) or higher. In 2011-2012 we had 22 respondents. Faculty judged student performance to be acceptable, with thesis quality at 86%, mastery of research at 82%, and likelihood of publication at 91%. For 2010-2011 (n=19), faculty determined that students were performing well on this SLO, in thesis quality (95%), mastery of research (89%), and likelihood of the data being published (100%). | Performance on this SLO is lower than last year, although still very much adequate (>89% at 3 or above). The faculty discussed the results of assessment to date at the 2013 retreat and decided to continue to monitor performance for another year before deciding if there is a trend over time. **Action Item:** Continue collecting data as prescribed by the approved SLO assessments. |

| **Link to UNCW Learning Goal:** thoughtful expression, information literacy, critical thinking, inquiry. | | | | |
To ensure timely and appropriate action in response to our discussion at the faculty retreat, the following motion was presented to the faculty of the department at our September 13 faculty meeting.

Motion 2014.05
Motion was made by Dr. Koopman, Graduate Assessment Coordinator and seconded by Dr. Kinsey. Motion is to adopt the following graduate assessment goals for Academic Year 2013-2014:
Based on the assessment results for Academic Year 2012-2013 and discussion of these results at the annual department retreat, the Graduate Assessment Coordinator proposes the following goals for the coming academic year:
1. That the Graduate assessment coordinator, working with the Graduate Advisory Committee (GAC), examine the oral exam guidance for our M.Sc. programs and generate a plan for making sure that students stay on schedule and are aware of the time required to prepare for this exam
2. That the Graduate Assessment Coordinator, in consultation with the GAC, will develop an alternating schedule for assessment of various aspects of the graduate programs over the 2013-14 academic year, for the next five year period (similar to the schedule developed for assessing undergraduate performance).
3. That the Graduate Assessment Coordinator work with the Graduate Secretary to better coordinate the teaching practicum evaluation for the Ph.D. program (SLO#5).

Following discussion the motion passed by unanimous vote with one proxy “abstain” vote on 9/13/2013.

University of North Carolina Wilmington
Educational Program Assessment Plan and Report
(M.Sc. Biology, Dept of Biology & Marine Biology –October 1 2013)
Assessment Plan for 2012 – 2013 (July 1 to June 30)

Primary Contact Name/Info: Heather Koopman, koopmanh@uncw.edu, 962-7199

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<td>PO 1: Graduation of M.S. students within 3 years. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our</td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the</td>
<td>We have combined data for both our Biology and Marine Biology MSc programs. Over 2002-2013, data indicate that 62% of our students are graduating</td>
<td>The Graduate School has worked to incrementally increase TA salaries. We should continue this process to speed up graduation times for all of our MSc</td>
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<tr>
<td>PO</td>
<td>Description</td>
<td>Tools for Assessment</td>
<td>Information Source</td>
<td>Actions</td>
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<tr>
<td>PO2</td>
<td>Targeted recruitment and enhanced retention of students. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>Several tools are used for the assessment process of this PO:</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>We accepted 6 new students into the MSc Biology program in 2012-2013. In 2011-2012 this number was 7. The students wanted to see more core course options for the M.S. program. Financial concerns have been identified as a significant concern for recruitment of students. We have increased core course options for the M.S. program by adding a course in evolution. The Graduate School has worked to incrementally increase TA salaries.</td>
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<td>PO3</td>
<td>Faculty development. Links to UNCW Strategic Goal #2: Recruit, retain and develop quality faculty, administration and staff in appropriate numbers.</td>
<td>Several tools are used for the assessment process of this PO:</td>
<td>The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for gathering this information.</td>
<td>Faculty members identified the following needs:</td>
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<td>- review of trends in annual faculty productivity</td>
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<td>- annual meetings with each faculty member</td>
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<td>We have implemented the following actions:</td>
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<td>- instituted flexibility for in-class instruction, such as heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty</td>
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<td>- retained modest departmental support for faculty travel</td>
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<td>- the department has implemented a peer monitoring system for untenured, tenure-track faculty</td>
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<td>The continued high level of performance of departmental faculty, coupled with high rates of</td>
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Successful decisions for reappointment, tenure, and promotion suggest that our faculty development policies are sufficient. However, we continue to refine our procedures to ensure effective communication between faculty and administrators.

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<td><strong>UNCW-wide Learning Goal</strong></td>
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<td>What will students know or be able to do upon completion of the program?</td>
<td>What tools or measures will be used?</td>
<td>Who will be responsible for implementation; who will be assessed; what is the schedule?</td>
<td>What was learned from the collection and analysis of data for student learning outcomes?</td>
<td>What changes were made because of what you learned?</td>
</tr>
<tr>
<td>What UNCW Learning Goal Does it link to?</td>
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<tr>
<td>SLO 1a: A graduate student should be able to develop a research plan. Link to UNCW Learning Goal: Inquiry</td>
<td>Prospectus is successfully completed and defended to student’s committee. The student’s committee evaluates prospectus with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on prospectus quality, depth and breadth are collected. Implementation of the assessment of this SLO was planned to begin in the 2009-2010 year. Department moved to online forms in 2010-2011 to improve faculty participation.</td>
<td>We were finally able to collect some data on this SLO in 2012-2013, likely because of moving forms online and greater prompting of faculty. We had 2 respondents to this SLO, with both respondents assessing student performance in all aspects of this SLO (quality of writing, literature synthesis, definition of project and methods), at level 5.</td>
<td>Faculty were reminded at the annual Retreat in August 2012 that compliance with Assessment materials is mandatory and crucial for our ability to evaluate the performance of our students and whether or not they are meeting their SLOs. This step and loving to online forms seems to have helped compliance. The faculty discussed the results of assessment to date at the 2013 retreat and decided that our students are meeting our expectations in this SLO and...</td>
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<tr>
<td><strong>SLO 1b:</strong> A graduate student should be able to present and defend a research plan. Link to UNCW Learning Goal: Thoughtful expression and Information literacy</td>
<td>Prospectus is successfully presented to the department. Form used for this assessment is our Graduate Student Prospectus Symposium Evaluation form. Our assessment tool will be question #5. This SLO was created, in part, to help understand the poor performance of students on “breadth of knowledge” in SLO2 in the 2007-08 year.</td>
<td>Each student in the program is assessed by all faculty members in the department attending the Graduate Student Prospectus Symposium. Data on each student’s project in terms of quality, design and significance are collected. Assessment of this SLO began in Spring 2009. By the nature of data collection, assessment for this SLO is pooled with the Marine Biology M.Sc. program. During 2012-2013, we collected 259 responses. Faculty deemed student performance on this SLO to be excellent with 98% of students to be satisfactory (63%) or above (commendable, 36%) These numbers are similar to previous years. In 2011, faculty deemed student performance on this SLO to be excellent with 99% of students to be satisfactory (63%) or above (commendable, 36%) [n=123]. In 2011, faculty determined that 98% of the students were performing well in this SLO, with 40% of projects rated as “commendable”, 58% as “satisfactory” and only 2% as “unsatisfactory” (n=261). In 2009-2010, the faculty determined that 98% of the students were performing well in this SLO, with 36% of</td>
<td>The faculty discussed the results of assessment to date at the 2013 retreat and decided that our students are meeting our expectations in this SLO and that no action will be taken. <strong>Action Item:</strong> Continue collecting data as prescribed by the approved SLO assessments.</td>
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### SLO2: A graduate student should be able to independently answer questions regarding their research field.

- **Link to UNCW Learning Goal:** Information literacy, critical thinking, thoughtful expression.

- **Oral preliminary exam is successfully completed.** The student’s committee evaluates performance in the exam with a form.

- **Each student in the program is assessed by each of his/her committee members.** Data on the student’s ability to articulate information, on the depth and breadth of their knowledge, and professional poise are collected.

- **In 2012-2013 we had 14 respondents for this SLO.** Student performance was better than last year. Faculty assessed students as performing above the level of adequate (at levels 4 or 5) in 79% of cases for articulation, breadth and depth of knowledge, and in 93% of cases for demonstrating poise. In 2011-2012 we had 5 responses to this SLO. Students were performing adequately on breadth of knowledge and poise (80% at level 4 or 5), but only 60% on articulation of answers and depth of knowledge. In 2010-2011 we had 3 respondents for this SLO. Students were assessed as performing extremely well, with 100% at level 4 or 5. No data were available for the 2009-2010 year.

- **Students performed better than 2011-2012 on this SLO in the Biology program, but not in the Marine Biology program, for reasons that could not be identified.** Given the small sample size for this SLO, the Graduate Assessment Coordinator recommended that we carefully monitor performance for another year before evaluating whether any programmatic changes are warranted. The faculty discussed the results of assessment to date at the 2013 retreat and decided to adopt that suggestion.

**Action Item:** Continue collecting data as prescribed by the approved SLO assessments.

### SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience.

- **Departmental Seminar presentation of thesis research is successfully completed.** An assessment form is filled out by

- **Each student in the program is assessed by all faculty members in the department attending the seminar.** Data on presentation quality,

- **Students continue to perform well on this SLO. In 2012-2013 we had 40 respondents.** 80-90% of students performed at level

- **The faculty discussed the results of assessment to date at the 2013 retreat and decided that our students are meeting our**
| Link to UNCW Learning | Goal: Thoughtful expression. | departmental faculty members after the thesis seminar. | mastery of research, professional poise and ability to answer questions are collected. | 4 or 5 for all elements of the seminar (professional presentation, mastery of research, ability to answer questions, and poise). In 2011-2012, 80% of students performed at level 4 or 5 for all elements of the seminar (professional presentation, mastery of research, ability to answer questions, and poise; n=5 respondents). In 2010-2011, we had 8 respondents for this SLO. the faculty assessed performance of this learning outcome to be good for the majority of students, in organization (88%), mastery of research (75%), ability to field questions from the audience (75%) and professional poise (75%). In 2009-2010, the faculty assessed performance of this learning outcome to be good for the majority of students, in organization (90%), mastery of research (70%), ability to field questions from the audience (60%) and professional poise (80%). | expectations in this SLO, matching the acceptable performance of previous years, and that no action will be taken. Action Item: Continue collecting data as prescribed by the approved SLO assessments. |

| SLO 4: A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific journal. Link to UNCW | Thesis is successfully completed. The student’s committee evaluates the quality of the thesis with a form. | Each student in the program is assessed by each of his/her committee members. Data on the quality of the writing, mastery of the research, | Student performance on this SLO improved over last year. In 2012-2013 [n=15 respondents], thesis quality, mastery of the research and likelihood of publication | The performance on this SLO, especially for mastery of research, has improved over the previous year. The faculty discussed the results of assessment to date at the |
| Learning Goal: thoughtful expression, information literacy, critical thinking, inquiry. | and likelihood of being published in a peer-review journal are collected. Department moved to online forms in 2010-2011 to improve faculty participation. | were assessed at levels 4 or 5 in 80-86% of all cases. In 2011-2012, thesis quality was judged at 78% (fraction of students performing at level 4 or above), mastery of research was 67%, and likelihood of publication was 78% [n=9 respondents]. No data were available for 2010-2011. In 2009, faculty judged thesis quality as quite good, with 88% of students at level 4 or 5 in thesis quality, 90% for mastery of research, and 83% for likelihood of publication. | 2013 retreat and decided that our students are meeting our expectations in this SLO, matching the acceptable performance of previous years, and that no action will be taken. **Action Item:** Continue collecting data as prescribed by the approved SLO assessments. |
To ensure timely and appropriate action in response to our discussion at the faculty retreat, the following motion was presented to the faculty of the department at our September 13 faculty meeting.

Motion 2014.05
Motion was made by Dr. Koopman, Graduate Assessment Coordinator and seconded by Dr. Kinsey.
Motion is to adopt the following graduate assessment goals for Academic Year 2013-2014.
Based on the assessment results for Academic Year 2012-2013 and discussion of these results at the annual department retreat, the Graduate Assessment Coordinator proposes the following goals for the coming academic year:
1. That the Graduate assessment coordinator, working with the Graduate Advisory Committee (GAC), examine the oral exam guidance for our M.Sc. programs and generate a plan for making sure that students stay on schedule and are aware of the time required to prepare for this exam
2. That the Graduate Assessment Coordinator, in consultation with the GAC, will develop an alternating schedule for assessment of various aspects of the graduate programs over the 2013-14 academic year, for the next five year period (similar to the schedule developed for assessing undergraduate performance).
3. That the Graduate Assessment Coordinator work with the Graduate Secretary to better coordinate the teaching practicum evaluation for the Ph.D. program (SLO#5).

Following discussion the motion passed by unanimous vote with one proxy “abstain” vote on 9/13/2013.

University of North Carolina Wilmington
Educational Program Assessment Plan and Report
(PhD Program, Biology & Marine Biology –October 2013)
Assessment Plan Report for 2012-2013 (July 1 to June 30)

Primary Contact Name/Info: Heather Koopman, Biology & Marine Biology, koopmanh@uncw.edu

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<th>Program Outcome</th>
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<td>PO 1: Graduation of PhD students within 5-6 years. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td></td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - monitoring of time to graduation</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>Based on 15 graduates in the program as of August 2013, PhD students are taking 4.5 years to graduate, well within our expectation. Financial concerns have previously been identified as a significant concern for time to graduate. Based on student comments and comparisons with other programs, a need to make</td>
<td>In previous years, the Graduate School has worked to incrementally increase TA salaries. The PhD core curriculum was revised to be more flexible. The progression from the M.S. program to the PhD program was made easier through a Master’s bypass option. Given our results we feel that these actions</td>
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<td>PO2: Targeted recruitment and enhanced retention of students.</td>
<td>Several tools are used for the assessment process of this PO:  - solicitation of information from alumni  - meetings with graduate students and surveys of graduate student needs  - review of programs at other institutions  - periodic outside review</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>Data from 2012-2013 indicate that program enrolment is steady. In 2010-2011 we had 22 PhD students, in 2011-2012 we had 20, and in the 2012-2013 year we had 18. Financial concerns have been identified as a significant concern for recruitment of students. Based on student comments and comparisons with other programs, a need to make the curriculum more flexible was identified in 2012; this has been dealt with.</td>
<td>The Graduate School has worked to incrementally increase TA salaries. The PhD core curriculum was revised to be more flexible. In addition, in fall 2012 the Graduate Coordinator, working with the graduate students and the Graduate advisory committee, drafted a long-term PhD course offering plan that will better allow our PhD students to plan their curriculum over a period of several years. Our program is steady but not yet growing. We will continue to find ways to attract more students.</td>
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<td>PO3: Faculty development.</td>
<td>Several tools are used for the assessment process of this PO:  - review of trends in annual faculty productivity  - annual meetings with each faculty member  - monitoring of faculty workloads, including relative efforts put into service, scholarly and training activities.</td>
<td>The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for gathering this information.</td>
<td>Faculty members identified the following needs:  - a greater need for flexibility for in-class instruction.  - support for faculty travel  - peer support for new/untenured faculty</td>
<td>We have implemented the following actions:  - instituted flexibility for in-class instruction, such as heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty  - retained modest departmental support for faculty travel  - the department has</td>
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implemented a peer monitoring system for untenured, tenure-track faculty
The continued high level of performance of departmental faculty, coupled with high rates of successful decisions for reappointment, tenure, and promotion suggest that our faculty development policies are sufficient. However, we continue to refine our procedures to ensure effective communication between faculty and administrators.

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| **SLO 1: A graduate student should be able to develop a research plan.**  
Link to UNCW Learning Goals: inquiry and thoughtful expression. | Dissertation proposal is successfully completed and defended to student’s committee. The student’s committee evaluates proposal with a form. | Each student in the program is assessed by each of his/her committee members. Data on proposal quality, synthesis of literature, definition of project, and suitability of methods to be employed are collected. We began implementation of the assessment of this SLO in the 2010-2011 year. | We have few responses for assessment for the PhD program in 2012-13, so data presented here are for the longer two year period of 2011-2013. Thus we have a total of 14 responses for report for this SLO in 2011-2013. Faculty determined that the Ph.D. students were generally performing well on this SLO. Performance (determined as fraction of students performing at levels 4 or 5 on a scale of 5) on writing Results were discussed at the Faculty retreat in August. No actions will be taken at this point as the data are limited to one year. We will continue to collect these data in the coming years. **Action Item:** Continue collecting data as prescribed by the approved SLO assessments. |
| SLO2: **A graduate student should be able to independently answer questions regarding their research field.** | Written and oral comprehensive exams are successfully completed. The student’s committee evaluates performance in the exams with a form. | Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information in both oral and written formats, on the depth and breadth of his/her knowledge, and professional poise are collected. Implementation of the assessment of this SLO was planned for the 2010-2011 year. | We have few responses for assessment for the PhD program in 2012-13, so data presented here are for the longer two year period of 2011-2013. We have 4 responses for this SLO. Faculty assessed performance on this SLO as generally good (determined as fraction of students performing at levels 4 or 5 on a scale of 5), with oral articulation of answers, breadth of knowledge and poise at 100%, and written articulation and depth of knowledge at 75%. Results were discussed at the Faculty retreat in August. No actions will be taken at this point as the data are limited to one year. We will continue to collect these data in the coming years. **Action Item: Continue collecting data as prescribed by the approved SLO assessments.** |
| SLO3: **A graduate student should be able to communicate his or her research to a broadly-trained public audience.** | Departmental Seminar presentation of dissertation research is successfully completed. An assessment form is filled out by departmental faculty members after the seminar. | Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality, mastery of research, professional poise and ability to answer questions are collected. | We have few responses for assessment for the PhD program in 2012-13, so data presented here are for the longer two year period of 2011-2013. For 2011-2013 we have 27 responses for assessment of this SLO. Performance is at a slightly lower level than in previous years. In the areas of presentation quality, mastery of research, and ability to answer questions, results were discussed at the Faculty retreat in August. No actions will be taken at this point as the data are limited to one year. We will continue to collect these data in the coming years. **Action Item: Continue collecting data as prescribed by the approved SLO assessments.** |
66-69% of students performed at level 4 or 5 on a scale of 1-5. For demonstration of professional poise, 86% of students performed at levels 4 or 5. In 2010-2011 our Ph.D. students were assessed as performing well on presentation quality and poise (85% for both), but at lower levels for mastery of research and ability to answer questions (54% for both). In the 2009-2010 year, we had no assessments to report. In 2008-2009 our students demonstrated higher levels of performance with performance >90% for all parts of this SLO. However any trends in these data need to be viewed with caution as sample sizes are still small. We feel that given the nature of this assessment tool, a greater number of responses is required to fully evaluate student performance on this SLO.

| SLO 4: A graduate student should be able to write up his or her research in the form of multiple manuscripts for publication in scientific journals. Link to Multi-chaptered dissertation is successfully completed. The student’s committee evaluates the quality of the dissertation with a form. | Each student in the program is assessed by each of his/her committee members. Data on the quality of the writing, mastery of the research, | We have few responses for assessment for the PhD program in 2012-13, so data presented here are for the longer two year period of 2011-2013. | Results were discussed at the Faculty retreat in August. We will continue to collect data on this SLO in 2013-2014 and monitor the performance of our |
| UNCW Learning Goals: thoughtful expression, information literacy, critical thinking) and inquiry. | and likelihood of being published in a peer-review journal are collected. In an effort to better understand how successful our students are at publishing their work, we recently added two assessment questions to this SLO that permit us to monitor the progress each student has made towards publication by asking whether chapters of their dissertation have been submitted for publication or have already been published. | In 2011-2013 we had 13 responses for this SLO. Faculty assessed student performance as generally good, with 93-100% of students at levels 4 or 5 on mastery of research and likelihood of publication. Dissertation quality was high, with 100% scoring very likely to be published, and submission and publication were at 77%. In 2010-2011 we had only 3 responses for this SLO. Our students were assessed as performing at only 67% on dissertation quality, mastery of research, and likelihood of publication. In addition, submission and publication of manuscripts were at level 1. In the 2009-2010 year, no PhD students defended their dissertations. Performance on this SLO was higher in 2008-2009, with levels >85% in all categories. The Ph.D. program is much smaller than our other graduate programs, and as such it will take longer to accumulate enough data to see any real trends in performance. Action Item: Continue collecting data as prescribed by the approved SLO assessments. | students on this SLO over several years, and with greater numbers, before making any changes to our program. |

| **SLO 5: A graduate student should be able to create new teaching materials.** Link to UNCW Learning | Successful completion of Teaching practicum course and a formal lecture or laboratory presentation in | Each student in the program is assessed by each of his/her committee members. Data on overall | The teaching practicum is not taught every year, which is one of the reasons we have not been able to | Results were discussed at the Faculty retreat in August. We will continue to collect data on this SLO in |
| Goals: thoughtful expression, critical thinking, information literacy, and to some extent global citizenship. | an undergraduate course. The student’s committee evaluates the teaching ability of the student using the Last question on the Evaluation of Teaching form that asks about the overall effectiveness of teaching. | effectiveness of teaching are collected. Implementation of the assessment of this SLO was planned for the 2010-2011 year. | collect very much data on student performance on this SLO. In 2010-2011 we had only one respondent for this SLO, and since then we have not collected any further data. The program is small and we may not necessarily have any students completing requirements to be assessed each year for this SLO. We will likely need to wait several years before we have an adequate sample size for this SLO. | 2013-2014 and will improve the mechanism for faculty response to this SLO in the lecture or lab class taught by the student. At the September 2013 faculty meeting the following motion was passed by the department: **Action Item: That the Graduate Assessment Coordinator work with the Graduate Secretary to better coordinate the teaching practicum evaluation for the Ph.D. program (SLO#5).** |
To ensure timely and appropriate action in response to our discussion at the faculty retreat, the following motion was presented to the faculty of the department at our September 13 faculty meeting.

**Motion 2014.05**

Motion was made by Dr. Koopman, Graduate Assessment Coordinator and seconded by Dr. Kinsey.

Based on the assessment results for Academic Year 2012-2013 and discussion of these results at the annual department retreat, the Graduate Assessment Coordinator proposes the following goals for the coming academic year:

1. That the Graduate assessment coordinator, working with the Graduate Advisory Committee (GAC), examine the oral exam guidance for our M.Sc. programs and generate a plan for making sure that students stay on schedule and are aware of the time required to prepare for this exam.
2. That the Graduate Assessment Coordinator, in consultation with the GAC, will develop an alternating schedule for assessment of various aspects of the graduate programs over the 2013-14 academic year, for the next five year period (similar to the schedule developed for assessing undergraduate performance).
3. That the Graduate Assessment Coordinator work with the Graduate Secretary to better coordinate the teaching practicum evaluation for the Ph.D. program (SLO#5).

Following discussion the motion passed by unanimous vote with one proxy “abstain” vote on 9/13/2013.

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**University of North Carolina Wilmington**

Educational Program Assessment Plan and Report

(M.Sc. Marine Biology, Dept of Biology & Marine Biology – October 1 2012)

Assessment Plan for 2011 – 2012 (July 1 to June 30)

**Primary Contact Name/Info: Heather Koopman, koopmanh@uncw.edu, 962-7199**

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<td>PO 1: Graduation of M.S. students within 3 years.</td>
<td>What is the intended or desired effect of your programming or services? What Strategic Goal does it link to?</td>
<td>Tools or measures of program outcomes must address the outcome directly</td>
<td>Identify who will be responsible for implementation; what data will be collected.</td>
<td>What was learned from the collection and analysis of data for the program outcome?</td>
<td>What changes were made because of what you learned?</td>
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<td>Linked to UNCW Strategic Goal #1: Create the most</td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for</td>
<td>We have combined data for both our Biology and Marine Biology MSc programs. Over 2002-2013, the Graduate School has worked to incrementally increase TA salaries. We should continue this process</td>
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<td>powerful learning experience possible for our students.</td>
<td>from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - monitoring of time to graduation - periodic outside review</td>
<td>gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>2012, data indicate that 63% of our students are graduating within 3 years. We would like to increase this proportion in future. Financial concerns have been identified as a significant concern for time to graduate.</td>
<td>to speed up graduation times for all of our MSc students.</td>
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<tr>
<td>PO2: Targeted recruitment and enhanced retention of students. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - periodic outside review</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>In 2011-2012, we accepted 12 new students into this program. In 2010-2011, we accepted 15 students. Enrollment in this program seems steady. The students wanted to see more core course options for the M.S. program. Financial concerns have been identified as a significant concern for recruitment of students.</td>
<td>We have increased core course options for the M.S. program by adding a course in evolution. The Graduate School has worked to incrementally increase TA salaries.</td>
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<td>PO3: Faculty development. Links to UNCW Strategic Goal #2: Recruit, retain and develop quality faculty, administration and staff in appropriate numbers.</td>
<td>Several tools are used for the assessment process of this PO: - review of trends in annual faculty productivity - annual meetings with each faculty member - monitoring of faculty workloads, including relative efforts put into service, scholarly and training activities.</td>
<td>The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for gathering this information.</td>
<td>Faculty members identified the following needs: - a greater need for flexibility for in-class instruction. - support for faculty travel - peer support for new/untenured faculty</td>
<td>We have implemented the following actions: - instituted flexibility for in-class instruction, such as heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty - retained modest departmental support for faculty travel - the department has implemented a peer monitoring system for untenured, tenure-track faculty</td>
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The continued high level of performance of departmental faculty, coupled with high rates of successful decisions for reappointment, tenure, and promotion suggest that our faculty development policies are sufficient. However, we continue to refine our procedures to ensure effective communication between faculty and administrators.

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<td>What will students know or be able to do upon completion of the program? What UNCW Learning Goal Does it link to?</td>
<td>What tools or measures will be used?</td>
<td>Who will be responsible for implementation; who will be assessed; what is the schedule?</td>
<td>What was learned from the collection and analysis of data for student learning outcomes?</td>
<td>What changes were made because of what you learned?</td>
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<td>SLO 1a: A graduate student should be able to develop a research plan. Link to UNCW Learning Goal: Inquiry.</td>
<td>Prospectus is successfully completed and defended to student’s committee. The student’s committee evaluates prospectus with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on prospectus quality, depth and breadth are collected. Implementation of the assessment of this SLO was planned to begin in the 2009-2010 year. Department moved to online forms in 2010-2011 to improve faculty participation.</td>
<td>Despite the change to online forms, no data are available for 2010-2011 nor for 2011-2012.</td>
<td>Faculty were reminded at the annual Retreat in August 2012 that compliance with Assessment materials is mandatory and crucial for our ability to evaluate the performance of our students and whether or not they are meeting their SLOs. The Graduate Assessment Coordinator prepared a “Milestones for Assessment” document to remind faculty at which...</td>
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</table>
points in a student’s program Assessment is required, and this was recirculated. Faculty mentors were instructed to inform the Graduate Secretary when these events have taken place for a student, so that she can send out the assessment materials to the relevant individuals. We are currently seeking to identify other means by which we can track assessment compliance by our faculty, which continues to be a challenge for our assessment programs. We will therefore start evaluating student performance on this SLO in the 2012-2013 year.

**SLO 1b: A graduate student should be able to present and defend a research plan.**

Link to UNCW Learning Goal: Thoughtful expression and Information literacy

Prospectus is successfully presented to the department. Form used for this assessment is our Graduate Student Prospectus Symposium Evaluation form. Our assessment tool will be question #5. This SLO was created, in part, to help understand the poor performance of students on “breadth of knowledge” in SLO2 in the 2007-08 year.

Each student in the program is assessed by all faculty members in the department attending the Graduate Student Prospectus symposium. Data on each student’s project in terms of quality, design and significance are collected. Assessment of this SLO began in Spring 2009. By the nature of data collection, assessment for this SLO is pooled with the Biology M.Sc. program.

During 2011-2012, we collected 123 responses. Faculty deemed student performance on this SLO to be excellent with 99% of students to be satisfactory (63%) or above (commendable, 36%). These numbers are similar to previous years. In 2011, faculty determined that 98% of the students were performing well in this SLO, with 40% of projects rated as “commendable”, 58% as “satisfactory” and only 2%

The faculty discussed the results of assessment to date at the 2012 retreat and decided that our students are meeting our expectations in this SLO and that no action will be taken.
In 2009-2010, the faculty determined that 98% of the students were performing well in this SLO, with 36% of projects rated as “commendable”, 62% as “satisfactory” and only 2% as “unsatisfactory.”

**SLO2: A graduate student should be able to independently answer questions regarding their research field.** Link to UNCW Learning Goal: Information literacy, critical thinking, thoughtful expression.

- Oral preliminary exam is successfully completed. The student’s committee evaluates performance in the exam with a form.
- Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information, on the depth and breadth of their knowledge, and professional poise are collected.
- No data were returned for this SLO in 2011-2012. Faculty compliance continues to be one of the challenges for assessment of our graduate programs. In 2010-2011, student performance (determined as fraction of students performing at levels 4 or 5 on a scale of 5) on this SLO was notably improved over previous years. Faculty determined that students did better in ability to articulate (78%), demonstrate breadth (78%) and depth (67%) of knowledge, and poise (89%). Comparable data for the previous years: ability to articulate (75% in 2010 vs 57% for 2009), breadth of knowledge (75% in 2010 vs 57% for 2009), depth of knowledge (50% in 2010 vs 59% for 2009), and professional poise (88% in 2010 vs 73% for 2009).

Over 2009-2011, we implemented a series of formal (course-related) and informal changes to our M.Sc. programs with the aim of improving student performance on this SLO, which continued to be the one of concern in our graduate program. Given that and the results from the Biology MSc program this year, it is very disappointing not to have any data for this SLO for the Marine Biology program this year. Faculty were reminded at the annual Retreat in August 2012 that compliance with Assessment materials is mandatory and crucial for our ability to evaluate the performance of our students and whether or not they are meeting their SLOs. The Graduate Assessment Coordinator prepared a “Milestones for Assessment” document to
SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience. Link to UNCW Learning Goal: Thoughtful expression.

| Departmental Seminar presentation of thesis research is successfully completed. An assessment form is filled out by departmental faculty members after the thesis seminar. | Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality, mastery of research, professional poise and ability to answer questions are collected. | In 2011-2012, we received 14 responses for this SLO. Students are generally performing at levels similar to previous years. Presentation quality and poise were judged at 93% (students performing at level 4 or 5), mastery of research was 86%, and ability to answer questions was 71%. In 2010-2011, the faculty assessed performance of this learning outcome to be good for the majority of students, with 44 respondents, in organization (86%), mastery of research (89%), and the ability to answer questions appears to be the weakest portion of this SLO. The faculty discussed the results of assessment to date at the 2012 retreat and decided to monitor student performance over the next few years on this SLO before considering any other changes to our program. |
| SLO 4: A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific journal. | Thesis is successfully completed. The student’s committee evaluates the quality of the thesis with a form. | Each student in the program is assessed by each of his/her committee members. Data on the quality of the writing, mastery of the research, and likelihood of being published in a peer-review journal are collected. Department moved to online forms in 2010-2011 to improve faculty participation. | This year we had 22 respondents. Faculty judged student performance to be acceptable, with thesis quality at 86%, mastery of research at 82%, and likelihood of publication at 91%. For 2010-2011 (n=19), faculty determined that students were performing well on this SLO, in thesis quality (95%), mastery of research (89%), and likelihood of the data being published (100%). | Performance on this SLO is lower than last year, although still very much acceptable (>80% at 4 or above). The faculty discussed the results of assessment to date at the 2012 retreat and decided to continue to monitor performance for another year before deciding if there is a trend over time. |

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**University of North Carolina Wilmington**

Educational Program Assessment Plan and Report

(M.Sc. Biology, Dept of Biology & Marine Biology – October 1 2012)

Assessment Plan for 2011 – 2012 (July 1 to June 30)
<table>
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<tr>
<th>Program Outcome</th>
<th>Tools</th>
<th>Implementation</th>
<th>Summary of Findings</th>
<th>Actions Taken</th>
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</thead>
</table>
| **PO 1**: Graduation of M.S. students within 3 years.  
Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students. | Several tools are used for the assessment process of this PO:  - solicitation of information from alumni  - meetings with graduate students and surveys of graduate student needs  - review of programs at other institutions  - monitoring of time to graduation  - periodic outside review | The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC. | We have combined data for both our Biology and Marine Biology MSc programs. Over 2002-2012, data indicate that 63% of our students are graduating within 3 years. We would like to increase this proportion in future. Financial concerns have been identified as a significant concern for time to graduate. | The Graduate School has worked to incrementally increase TA salaries. We should continue this process to speed up graduation times for all of our MSc students. |
| **PO 2**: Targeted recruitment and enhanced retention of students.  
Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students. | Several tools are used for the assessment process of this PO:  - solicitation of information from alumni  - meetings with graduate students and surveys of graduate student needs  - review of programs at other institutions  - periodic outside review | The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC. | We accepted 7 new students into the MSc Biology program in 2011-2012. In 2010-2011 this number was 4. The students wanted to see more core course options for the M.S. program. Financial concerns have been identified as a significant concern for recruitment of students. | We have increased core course options for the M.S. program by adding a course in evolution. The Graduate School has worked to incrementally increase TA salaries. |
| **PO 3**: Faculty development.  
Links to UNCW Strategic Goal #2: Recruit, retain and develop quality faculty, | Several tools are used for the assessment process of this PO:  - review of trends in annual | The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for | Faculty members identified the following needs:  - a greater need for flexibility for in-class | We have implemented the following actions:  - instituted flexibility for in-class instruction, such as |
administration and staff in appropriate numbers.

- faculty productivity
  - annual meetings with each faculty member
  - monitoring of faculty workloads, including relative efforts put into service, scholarly and training activities.

- gathering this information.

- instruction.
  - support for faculty travel
  - peer support for new/untenured faculty

- heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty
  - retained modest departmental support for faculty travel
  - the department has implemented a peer monitoring system for untenured, tenure-track faculty

The continued high level of performance of departmental faculty, coupled with high rates of successful decisions for reappointment, tenure, and promotion suggest that our faculty development policies are sufficient. However, we continue to refine our procedures to ensure effective communication between faculty and administrators.

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<tr>
<th>Student Learning Outcome</th>
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<tr>
<td>UNCW-wide Learning Goal</td>
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<tr>
<td>What will students know or be able to do upon completion of the program? Does it link to?</td>
<td>What tools or measures will be used?</td>
<td>Who will be responsible for implementation; who will be assessed; what is the schedule?</td>
<td>What was learned from the collection and analysis of data for student learning outcomes?</td>
<td>What changes were made because of what you learned?</td>
</tr>
<tr>
<td>SLO 1a: A graduate student should be able to develop a research plan.</td>
<td>Prospectus is successfully completed and defended to student’s committee. The student’s committee evaluates prospectus with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on prospectus quality, depth and breadth are collected. Implementation of the assessment of this SLO was planned to begin in the 2009-2010 year. Department moved to online forms in 2010-2011 to improve faculty participation.</td>
<td>Despite the change to online forms, no data are available for 2010-2011 nor for 2011-2012.</td>
<td>Faculty were reminded at the annual Retreat in August 2012 that compliance with Assessment materials is mandatory and crucial for our ability to evaluate the performance of our students and whether or not they are meeting their SLOs. The Graduate Assessment Coordinator prepared a “Milestones for Assessment” document to remind faculty at which points in a student’s program Assessment is required, and this was recirculated. Faculty mentors were instructed to inform the Graduate Secretary when these events have taken place for a student, so that she can send out the assessment materials to the relevant individuals. We are currently seeking to identify other means by which we can track assessment compliance by our faculty, which continues to be a challenge for our assessment programs. We will therefore start evaluating student performance on this SLO in the 2012-2013 year.</td>
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<tr>
<td>SLO 1b: A graduate student</td>
<td>Prospectus is successfully completed and defended to student’s committee.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on prospectus quality, depth and breadth are collected. Implementation of the assessment of this SLO was planned to begin in the 2009-2010 year. Department moved to online forms in 2010-2011 to improve faculty participation.</td>
<td>During 2011-2012, we</td>
<td>The faculty discussed the</td>
</tr>
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should be able to present and defend a research plan. Link to UNCW Learning Goal: Thoughtful expression and Information literacy

| presented to the department. Form used for this assessment is our Graduate Student Prospectus Symposium Evaluation form. Our assessment tool will be question #5. This SLO was created, in part, to help understand the poor performance of students on “breadth of knowledge” in SLO2 in the 2007-08 year. |
| is assessed by all faculty members in the department attending the Graduate Student Prospectus symposium. Data on each student’s project in terms of quality, design and significance are collected. Assessment of this SLO began in Spring 2009. By the nature of data collection, assessment for this SLO is pooled with the Marine Biology M.Sc. program. |
| collected 123 responses. Faculty deemed student performance on this SLO to be excellent with 99% of students to be satisfactory (63%) or above (commendable, 36%). These numbers are similar to previous years. In 2011, faculty determined that 98% of the students were performing well in this SLO, with 40% of projects rated as “commendable”, 58% as “satisfactory” and only 2% as “unsatisfactory” (n=261). In 2009-2010, the faculty determined that 98% of the students were performing well in this SLO, with 36% of projects rated as “commendable”, 62% as “satisfactory” and only 2% as “unsatisfactory”. |
| results of assessment to date at the 2012 retreat and decided that our students are meeting our expectations in this SLO and that no action will be taken. |

SLO2: A graduate student should be able to independently answer questions regarding their research field. Link to UNCW Learning Goal: Information literacy, critical thinking, thoughtful expression.

| Oral preliminary exam is successfully completed. The student’s committee evaluates performance in the exam with a form. |
| Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information, on the depth and breadth of their knowledge, and professional poise are collected. |
| In 2011-2012 we had 5 responses to this SLO. Faculty assessed students as performing at a lower level than last year. This year, students were performing adequately on breadth of knowledge and poise (80% at level 4 or 5), but only 60% on articulation of answers and depth of knowledge. In 2010-2011 we had 3 respondents for this assessment tool. Students were assessed as |
| Given the small sample size for this SLO, the Graduate Assessment Coordinator recommended that we carefully monitor performance for another year before evaluating whether any programmatic changes are warranted. The faculty discussed the results of assessment to date at the 2012 retreat and decided to adopt that suggestion. |
| SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience. | Departmental Seminar presentation of thesis research is successfully completed. An assessment form is filled out by departmental faculty members after the thesis seminar. | Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality, mastery of research, professional poise and ability to answer questions are collected. | In 2011-2012, we had 5 respondents for this SLO. Students are generally performing well, with 80% at level 4 or 5 for all elements of the seminar (professional presentation, mastery of research, ability to answer questions, and poise). In 2010-2011, we had 8 respondents for this SLO. The faculty assessed performance of this learning outcome to be good for the majority of students, in organization (88%), mastery of research (75%), ability to field questions from the audience (75%) and professional poise (75%). In 2009-2010, the faculty assessed performance of this learning outcome to be good for the majority of students, in organization (90%), mastery of research (70%), ability to field questions from the audience (60%) and professional poise (80%). | The faculty discussed the results of assessment to date at the 2012 retreat and decided that our students are meeting our expectations in this SLO, matching the acceptable performance of previous years, and that no action will be taken. |

<p>| SLO 4: A graduate student should be able to write up his or her research in the Thesis is successfully completed. The student’s committee evaluates the | Each student in the program is assessed by each of his/her committee | In 2011-2012, we had 9 respondents for this SLO. Faculty judged students as | The performance on this SLO, especially for mastery of research, may require |</p>
<table>
<thead>
<tr>
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<th>Summary of Findings</th>
<th>Actions Taken</th>
</tr>
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</table>
| **PO 1:** Graduation of PhD students within 5-6 years. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students. | Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at | The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC. | Based on 13 graduates in the program as of August 2012, PhD students are taking 4.5 years to graduate, well within our expectation. Financial concerns have previously been identified as a significant concern for time to graduate. Based on some attention. Given the small sample size for this SLO, the Graduate Assessment Coordinator recommended that we carefully monitor performance for another year before evaluating whether any programmatic changes are warranted. The faculty discussed the results of assessment to date at the 2012 retreat and decided to adopt that suggestion. | In previous years, the Graduate School has worked to incrementally increase TA salaries. The PhD core curriculum was revised to be more flexible. The progression from the M.S. program to the PhD program was made easier.

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**University of North Carolina Wilmington**

Educational Program Assessment Plan and Report
(PhD Program, Biology & Marine Biology –October 2012)
Assessment Plan Report for 2011-2012 (July 1 to June 30)

Primary Contact Name/Info: Heather Koopman, Biology & Marine Biology, koopmanh@uncw.edu
other institutions
- monitoring of time to graduation
- periodic outside review

student comments and comparisons with other programs, a need to make the curriculum more flexible was identified. For M.S students in the department wishing to change to the PhD program, a need for an easier transition was identified.

through a Master’s bypass option. Given our results we feel that these actions have been successful.

PO2: Targeted recruitment and enhanced retention of students. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.
Several tools are used for the assessment process of this PO:
- solicitation of information from alumni
- meetings with graduate students and surveys of graduate student needs
- review of programs at other institutions
- periodic outside review

The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.

Data from 2011-2012 indicate that program enrolment is steady. In 2010-2011 we had 22 PhD students, and in 2011-2012 we have 20. Financial concerns have been identified as a significant concern for recruitment of students. Based on student comments and comparisons with other programs, a need to make the curriculum more flexible was identified.

The Graduate School has worked to incrementally increase TA salaries. The PhD core curriculum was revised to be more flexible. In addition, in fall 2012 the Graduate Coordinator, working with the graduate students and the Graduate advisory committee, drafted a long-term PhD course offering plan that will better allow our PhD students to plan their curriculum over a period of several years. Our program is steady but not yet growing. We will continue to find ways to attract more students.

PO3: Faculty development. Links to UNCW Strategic Goal #2: Recruit, retain and develop quality faculty, administration and staff in appropriate numbers.
Several tools are used for the assessment process of this PO:
- review of trends in annual faculty productivity
- annual meetings with each faculty member
- monitoring of faculty workloads, including

The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for gathering this information.

Faculty members identified the following needs:
- a greater need for flexibility for in-class instruction.
- support for faculty travel
- peer support for new/untenured faculty

We have implemented the following actions:
- instituted flexibility for in-class instruction, such as heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty
- retained modest
relative efforts put into service, scholarly and training activities.

departmental support for faculty travel - the department has implemented a peer monitoring system for untenured, tenure-track faculty.

The continued high level of performance of departmental faculty, coupled with high rates of successful decisions for reappointment, tenure, and promotion suggest that our faculty development policies are sufficient. However, we continue to refine our procedures to ensure effective communication between faculty and administrators.

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<tbody>
<tr>
<td>SLO 1: A graduate student should be able to develop a research plan. Link to UNCW Learning Goals: inquiry and thoughtful expression.</td>
<td>Dissertation proposal is successfully completed and defended to student’s committee. The student’s committee evaluates proposal with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on proposal quality, synthesis of literature, definition of project, and suitability of methods to be employed are collected. We began implementation of the assessment of this SLO in the 2010-2011 year.</td>
<td>Although we did have a few responses for this SLO in late summer 2011 (n=4; reported in the 2010-2011 CAS Assessment report for this program), because of the small sample size we have lumped those in with the rest of the 2011-2012 year. Thus we have a total of 14 responses for report for this SLO in 2011-2012. Faculty determined that the</td>
<td>Results were discussed at the Faculty retreat in August. No actions will be taken at this point as the data are limited to one year. We will continue to collect these data in the coming years.</td>
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</table>
Ph.D. students were generally performing well on this SLO. Performance (determined as fraction of students performing at levels 4 or 5 on a scale of 5) on writing skills and project definitions were at 100%; literature synthesis was 86% and methods to be used was 93%.

| SLO2: A graduate student should be able to independently answer questions regarding their research field. Link to UNCW Learning Goals: information literacy, critical thinking, and thoughtful expression. | Written and oral comprehensive exams are successfully completed. The student’s committee evaluates performance in the exams with a form. | Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information in both oral and written formats, on the depth and breadth of his/her knowledge, and professional poise are collected. Implementation of the assessment of this SLO was planned for the 2010-2011 year. | This is the first year we have data to report for this SLO as no data were returned on this SLO in 2010-2011. In Spring 2010 the Graduate Assessment Coordinator moved all faculty assessment forms online, hoping for enhanced compliance in response. For 2011-2012 we have 4 responses for this SLO. Faculty assessed performance on this SLO as generally good (determined as fraction of students performing at levels 4 or 5 on a scale of 5), with oral articulation of answers, breadth of knowledge and poise at 100%, and written articulation and depth of knowledge at 75%. Results were discussed at the Faculty retreat in August. No actions will be taken at this point as the data are limited to one year. We will continue to collect these data in the coming years. |

| SLO3: A graduate student should be able to communicate his or her Departmental Seminar presentation of dissertation research is successfully | Each student in the program is assessed by all faculty members in the department | In 2011-2012 the faculty assessed our students as performing well on this SLO | Results were discussed at the Faculty retreat in August. No actions will be |
research to a broadly-trained public audience.
Link to UNCW Learning Goals: thoughtful expression.

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<tr>
<th>SLO 4: A graduate student should be able to write up</th>
<th>Multi-chaptered dissertation is successfully written</th>
<th>Each student in the program is assessed by each of</th>
<th>In 2011-2012 we had 9 responses for this SLO.</th>
<th>Results were discussed at the Faculty retreat in</th>
</tr>
</thead>
</table>

completed. An assessment form is filled out by departmental faculty members after the seminar. attending the seminar. Data on presentation quality, mastery of research, professional poise and ability to answer questions are collected. (n=9), with all elements of this SLO (presentation quality, mastery of research, ability to answer questions and poise all at 100%. These numbers are improvements over the previous year. In 2010-2011 our Ph.D. students were assessed as performing well on presentation quality and poise (85% for both), but at lower levels for mastery of research and ability to answer questions (54% for both). In the 2009-2010 year, we had no assessments to report. In 2008-2009 our students demonstrated higher levels of performance with performance >90% for all parts of this SLO. However any trends in these data need to be viewed with caution as sample sizes are still small – all faculty members view this seminar but we still only have 9 responses here for 2011-2012. We feel that given the nature of this assessment tool, a greater number of responses is required to fully evaluate student performance on this SLO.

taken at this point as the data are limited to one year. We will continue to collect these data in the coming years.
his or her research in the form of multiple manuscripts for publication in scientific journals. Link to UNCW Learning Goals: thoughtful expression, information literacy, critical thinking) and inquiry.

| SLO 5: A graduate student should be able to create new teaching materials. | Successful completion of Teaching practicum course and a formal lecture or laboratory presentation in an undergraduate course. | Each student in the program is assessed by each of his/her committee members. Data on overall effectiveness of teaching | Faculty assessed student performance as generally good, with 100% of students at levels 4 or 5 on mastery of research and likelihood of publication. Dissertation quality was 89%, and submission and publication were at 78%. In 2010-2011 we had only 3 responses for this SLO. Our students were assessed as performing at only 67% on dissertation quality, mastery of research, and likelihood of publication. In addition, submission and publication of manuscripts were at level 1. In the 2009-2010 year, no PhD students defended their dissertations. Performance on this SLO was higher in 2008-2009, with levels >85% in all categories. However, it is important to recognize how small the sample size was for 2010-2011. The Ph.D. program is much smaller than our other graduate programs, and as such it will take longer to accumulate enough data to see any real trends in performance. | August. We will continue to collect data on this SLO in 2012-2013 and monitor the performance of our students on this SLO over several years, and with greater numbers, before making any changes to our program. |
expression, critical thinking, information literacy, and to some extent global citizenship.

The student’s committee evaluates the teaching ability of the student using the last question on the Evaluation of Teaching form that asks about the overall effectiveness of teaching. Implementation of the assessment of this SLO was planned for the 2010-2011 year.

The overall effectiveness of teaching was assessed as very good (level 5). However, this is only one data point. The program is small and we may not necessarily have any students completing requirements to be assessed each year for this SLO. We will likely need to wait several years before we have an adequate sample size for this SLO.

the mechanism for faculty response to this SLO in the lecture or lab class taught by the student.

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### University of North Carolina Wilmington

**Educational Program Assessment Plan and Report**

(M.Sc. Marine Biology, Dept of Biology & Marine Biology – September 30 2011)

Assessment Plan for 2010 - 2011

**Primary Contact Name/Info:** Heather Koopman, koopmanh@uncw.edu, 962-7199

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<th>UNCW Strategic Goal</th>
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<th>Summary of Findings</th>
<th>Actions Taken</th>
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<tr>
<td>PO 1: Graduation of M.S. students within 3 years. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>What is the intended or desired effect of your programming or services? What Strategic Goal does it link to?</td>
<td>Tools or measures of program outcomes must address the outcome directly</td>
<td>Identify who will be responsible for implementation; what data will be collected.</td>
<td>What was learned from the collection and analysis of data for the program outcome?</td>
<td>What changes were made because of what you learned?</td>
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<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of</td>
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Financial concerns have been identified as a significant concern for time to graduate. The Graduate School has worked to incrementally increase TA salaries.
### Student Learning Outcome

**UNCW-wide Learning Goal**

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<th>What will students know or understand?</th>
<th>What tools or measures will be used?</th>
<th>Who will be responsible for gathering this information?</th>
<th>What was learned from the assessment process?</th>
<th>What changes were made?</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO2: Targeted recruitment and enhanced retention of students. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - periodic outside review</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>The students wanted to see more core course options for the M.S. program. Financial concerns have been identified as a significant concern for recruitment of students.</td>
<td>We have increased core course options for the M.S. program by adding a course in evolution. The Graduate School has worked to incrementally increase TA salaries.</td>
</tr>
<tr>
<td>PO3: Faculty development. Links to UNCW Strategic Goal #2: Recruit, retain and develop quality faculty, administration and staff in appropriate numbers.</td>
<td>Several tools are used for the assessment process of this PO: - review of trends in annual faculty productivity - annual meetings with each faculty member - monitoring of faculty workloads, including relative efforts put into service, scholarly and training activities.</td>
<td>The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for gathering this information.</td>
<td>Faculty members identified the following needs: - a greater need for flexibility for in-class instruction. - support for faculty travel - peer support for new/ untenured faculty</td>
<td>We have implemented the following actions: - instituted flexibility for in-class instruction, such as heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty - retained modest departmental support for faculty travel - the department has implemented a peer monitoring system for untenured, tenure-track faculty</td>
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<tr>
<td>What will students know or understand?</td>
<td>What tools or measures will be used?</td>
<td>Who will be responsible for gathering this information?</td>
<td>What was learned from the assessment process?</td>
<td>What changes were made</td>
</tr>
<tr>
<td>SLO 1a: A graduate student should be able to develop a research plan.</td>
<td>Prospectus is successfully completed and defended to student’s committee. The student’s committee evaluates prospectus with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on prospectus quality, depth and breadth are collected. Implementation of the assessment of this SLO was planned to begin in the 2009-2010 year. Department moved to online forms in 2010-2011 to improve faculty participation.</td>
<td>Despite the change to online forms, no data are available for 2010-2011.</td>
<td>Faculty were reminded at the annual Retreat in August 2011 that compliance with Assessment materials is mandatory and crucial for our ability to evaluate the performance of our students and whether or not they are meeting their SLOs. The Graduate Assessment Coordinator prepared a “Milestones for Assessment” document to remind faculty at which points in a student’s program Assessment is required. We will therefore start evaluating student performance on this SLO in the 2011-2012 year.</td>
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<tr>
<td>SLO 1b: A graduate student should be able to present and defend a research plan.</td>
<td>Prospectus is successfully presented to the department. Form used for this assessment is our Graduate Student Prospectus Symposium Evaluation form. Our assessment tool will be question #5. This SLO was created, in part, to help understand the poor performance of students on “breadth of knowledge” in</td>
<td>Each student in the program is assessed by all faculty members in the department attending the Graduate Student Prospectus symposium. Data on each student’s project in terms of quality, design and significance are collected. Assessment of this SLO began in Spring 2009. By the nature of data collection, assessment for</td>
<td>At the fall and spring 2011 Prospectus Symposia, we collected 261 data points. The faculty determined that 98% of the students were performing well in this SLO, with 40% of projects rated as “commendable”, 58% as “satisfactory” and only 2% as “unsatisfactory”. Performance was similar to, but a bit better than, 2009-2010, in which the faculty</td>
<td>The faculty discussed the results of assessment to date at the 2011 retreat and decided that our students are meeting our expectations in this SLO and that no action will be taken.</td>
</tr>
<tr>
<td>SLO2 in the 2007-08 year.</td>
<td>this SLO is pooled with the Biology M.Sc. program.</td>
<td>determined that 98% of the students were performing well in this SLO, with 36% of projects rated as “commendable”, 62% as “satisfactory” and only 2% as “unsatisfactory”.</td>
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**SLO2: A graduate student should be able to independently answer questions regarding their research field.** Link to UNCW Learning Goal: Information literacy, critical thinking, thoughtful expression.

| Oral preliminary exam is successfully completed. The student’s committee evaluates performance in the exam with a form. | Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information, on the depth and breadth of their knowledge, and professional poise are collected. | In 2010-2011, student performance (determined as fraction of students performing at levels 4 or 5 on a scale of 5) on this SLO was notably improved over previous years. Faculty determined that students did better in ability to articulate (78%), demonstrate breadth (78%) and depth (67%) of knowledge, and poise (89%). Comparable data for the previous two years: ability to articulate (75% in 2010 vs 57% for 2009), breadth of knowledge (75% in 2010 vs 57% for 2009), depth of knowledge (50% in 2010 vs. 59% for 2009). and professional poise (88% in 2010 vs 73% for 2009). |

Over 2009-2011, we implemented a series of formal (course-related) and informal changes to our M.Sc. programs with the aim of improving student performance on this SLO, which continues to be the one of concern in our graduate program. The formal course-related changes (for BIO 501) were implemented in Fall 2010 (the first time this course will be taught since the changes were accepted by the faculty). We feel that we have “closed the loop” with this SLO issue. We also encouraged our students and faculty to increase the number of interactions our students have with non-scripted oral communication (using oral testing and discussion in class, having students participate in mock oral examinations, etc.). With no formal means of determining how often these activities are
occurring and therefore cannot evaluate whether they are affecting student performance on this SLO. Thus in 2010-2011 we were planning to implement two new assessment tools; this has not been done yet and we will do so in 2011-2012: 1) a questionnaire for all graduate students to ask how many times they have participated in oral discussions, such as mock exams or interactions in the classroom with the instructor and other students; 2) a questionnaire for faculty asking how often they have incorporated oral skills and discussion in the class. We hope that this information will permit evaluation of whether these activities are being carried out, and if so whether they are helping our students reach a higher level of achievement for this SLO. The faculty discussed the results of assessment to date at the 2011 retreat and decided to monitor student performance over the next few years on this SLO before considering any other changes to our program.

| SLO3: A graduate student | Departmental Seminar | Each student in the program is assessed by all faculty | In 2010-2011, the faculty assessed performance of | The faculty discussed the results of assessment to |
should be able to communicate his or her research to a broadly-trained public audience. Link to UNCW Learning Goal: Thoughtful expression.

Presentation of thesis research is successfully completed. An assessment form is filled out by departmental faculty members after the thesis seminar. Data on presentation quality, mastery of research, professional poise and ability to answer questions are collected.

This learning outcome to be good for the majority of students, with 44 respondents, in organization (86%), mastery of research (89%), and professional poise (86%), with the exception of ability to field questions from the audience (74%). In 2009-2010, the faculty assessed performance of this learning outcome to be generally a bit higher for the majority of students, in organization (95%), mastery of research (90%), ability to field questions from the audience (90%) and professional poise (90%).

Date at the 2011 retreat and decided to monitor student performance over the next few years on this SLO before considering any other changes to our program.

SLO 4: A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific journal. Link to UNCW Learning Goal: thoughtful expression, information literacy, critical thinking, inquiry.

Thesis is successfully completed. The student’s committee evaluates the quality of the thesis with a form.

Each student in the program is assessed by each of his/her committee members. Data on the quality of the writing, mastery of the research, and likelihood of being published in a peer-review journal are collected. Department moved to online forms in 2010-2011 to improve faculty participation.

This year we had 19 respondents. For 2010-2011, faculty determined that students were performing well on this SLO, in thesis quality (95%), mastery of research (89%), and likelihood of the data being published (100%).

The faculty discussed the results of assessment to date at the 2011 retreat and decided that our students are meeting our expectations in this SLO and that no action will be taken.

University of North Carolina Wilmington
Educational Program Assessment Plan and Report
(M.Sc. Biology, Dept of Biology & Marine Biology –September 30 2011)
## Program Outcome

### UNCW Strategic Goal

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<td>What is the intended or desired effect of your programming or services? What Strategic Goal does it link to?</td>
<td>Tools or measures of program outcomes must address the outcome directly</td>
<td>Identify who will be responsible for implementation; what data will be collected.</td>
<td>What was learned from the collection and analysis of data for the program outcome?</td>
<td>What changes were made because of what you learned?</td>
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<td>PO 1: Graduation of M.S. students within 3 years. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - monitoring of time to graduation - periodic outside review</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>Financial concerns have been identified as a significant concern for time to graduate.</td>
<td>The Graduate School has worked to incrementally increase TA salaries.</td>
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<td>PO2: Targeted recruitment and enhanced retention of students. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - periodic outside review</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>The students wanted to see more core course options for the M.S. program. Financial concerns have been identified as a significant concern for recruitment of students.</td>
<td>We have increased core course options for the M.S. program by adding a course in evolution. The Graduate School has worked to incrementally increase TA salaries.</td>
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<td>PO3: Faculty development. Links to UNCW Strategic Goal #2: Recruit, retain and</td>
<td>Several tools are used for the assessment process of this PO:</td>
<td>The Chair of the department, and the Chair’s Advisory Committee (CAC)</td>
<td>Faculty members identified the following needs: - a greater need for</td>
<td>We have implemented the following actions: - instituted flexibility for in-</td>
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</table>

Primary Contact Name/Info: Heather Koopman, koopmanh@uncw.edu, 962-7199
develop quality faculty, administration and staff in appropriate numbers. - review of trends in annual faculty productivity - annual meetings with each faculty member - monitoring of faculty workloads, including relative efforts put into service, scholarly and training activities. are largely responsible for gathering this information. flexibility for in-class instruction. - support for faculty travel - peer support for new/untenured faculty are largely responsible for gathering this information. flexibility for in-class instruction. - support for faculty travel - peer support for new/untenured faculty

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<td>What will students know or be able to do upon completion of the program? What UNCW Learning Goal Does it link to?</td>
<td>What tools or measures will be used?</td>
<td>Who will be responsible for implementation; who will be assessed; what is the schedule?</td>
<td>What was learned from the collection and analysis of data for student learning outcomes?</td>
<td>What changes were made because of what you learned?</td>
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</table>
| SLO 1a: A graduate student should be able to develop a research plan. Link to UNCW Learning Goal: Inquiry | Prospectus is successfully completed and defended to student’s committee. The student’s committee evaluates prospectus with a form. | Each student in the program is assessed by each of his/her committee members. Data on prospectus quality, depth and breadth are collected. Implementation of the assessment of this SLO was planned to begin in the 2009-2010 year. Department moved to online forms in 2010-2011 to improve faculty participation. | Despite the change to online forms, no data are available for 2010-2011. | Faculty were reminded at the annual Retreat in August 2011 that compliance with Assessment materials is mandatory and crucial for our ability to evaluate the performance of our students and whether or not they are meeting their SLOs. The Graduate Assessment Coordinator prepared a “Milestones for Assessment” document to remind faculty at which points in a student’s
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<tr>
<th>SLO 1b: A graduate student should be able to present and defend a research plan.</th>
<th>Prospectus is successfully presented to the department. Form used for this assessment is our Graduate Student Prospectus Symposium Evaluation form. Our assessment tool will be question #5. This SLO was created, in part, to help understand the poor performance of students on “breadth of knowledge” in SLO2 in the 2007-08 year.</th>
<th>Each student in the program is assessed by all faculty members in the department attending the Graduate Student Prospectus symposium. Data on each student’s project in terms of quality, design and significance are collected. Assessment of this SLO began in Spring 2009. By the nature of data collection, assessment for this SLO is pooled with the Marine Biology M.Sc. program.</th>
<th>At the fall and spring 2011 Prospectus Symposia, we collected 261 data points. The faculty determined that 98% of the students were performing well in this SLO, with 40% of projects rated as “commendable”, 58% as “satisfactory” and only 2% as “unsatisfactory”. Performance was similar to, but a bit better than, 2009-2010, in which the faculty determined that 98% of the students were performing well in this SLO, with 36% of projects rated as “commendable”, 62% as “satisfactory” and only 2% as “unsatisfactory”.</th>
<th>The faculty discussed the results of assessment to date at the 2011 retreat and decided that our students are meeting our expectations in this SLO and that no action will be taken.</th>
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<td>SLO 2: A graduate student should be able to independently answer questions regarding their research field.</td>
<td>Oral preliminary exam is successfully completed. The student’s committee evaluates performance in the exam with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information, on the depth and breadth of their knowledge, and</td>
<td>In 2010-2011 we had 3 respondents for this assessment tool. Students were assessed as performing extremely well, with 100% at level 4 or 5. We are pleased that our actions in 2009-2011 seem</td>
<td>The faculty discussed the results of assessment to date at the 2011 retreat and decided that our students are meeting our expectations in this SLO and that no action will be taken.</td>
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</table>
expression.

professional poise are collected.

to have led to improvements in performance on this SLO. See the Assessment Report for the Marine Biology M.Sc. program for details on the changes we made to our program over the past two years. No data were available for the 2009-2010 year.

SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience. Link to UNCW Learning Goal: Thoughtful expression.

Departmental Seminar presentation of thesis research is successfully completed. An assessment form is filled out by departmental faculty members after the thesis seminar. Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality, mastery of research, professional poise and ability to answer questions are collected.

In 2010-2011, we had 8 respondents for this SLO. The faculty assessed performance of this learning outcome to be good for the majority of students, in organization (88%), mastery of research (75%), ability to field questions from the audience (75%) and professional poise (75%). In 2009-2010, the faculty assessed performance of this learning outcome to be good for the majority of students, in organization (90%), mastery of research (70%), ability to field questions from the audience (60%) and professional poise (80%).

The faculty discussed the results of assessment to date at the 2011 retreat and decided that our students are meeting our expectations in this SLO and that no action will be taken.

SLO 4: A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific review. Link to UNCW Learning Goal: Writing.

Thesis is successfully completed. The student’s committee evaluates the quality of the thesis with a form. Each student in the program is assessed by each of his/her committee members. Data on the quality of the writing, despite the change to online forms, no data are available for 2010-2011.

Faculty were reminded at the annual Retreat in August 2011 that compliance with Assessment materials is
**University of North Carolina Wilmington**

Educational Program Assessment Plan and Report
(PhD Program, Biology & Marine Biology – September 30 2011)
Assessment Plan Report for 2010-2011

Primary Contact Name/Info: Heather Koopman, Biology & Marine Biology, koopmanh@uncw.edu

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<td>PO 1: Graduation of PhD students within 5-6 years. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - monitoring of time to</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>Financial concerns have been identified as a significant concern for time to graduate. Based on student comments and comparisons with other programs, a need to make the curriculum more flexible was identified. For M.S students in the department wishing to change to the</td>
<td>The Graduate School has worked to incrementally increase TA salaries. The PhD core curriculum was revised to be more flexible. The progression from the M.S. program to the PhD program was made easier through a Master’s bypass option.</td>
</tr>
</tbody>
</table>
PO2: Targeted recruitment and enhanced retention of students. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.

Several tools are used for the assessment process of this PO:
- solicitation of information from alumni
- meetings with graduate students and surveys of graduate student needs
- review of programs at other institutions
- periodic outside review

The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.

Financial concerns have been identified as a significant concern for recruitment of students. Based on student comments and comparisons with other programs, a need to make the curriculum more flexible was identified.

The Graduate School has worked to incrementally increase TA salaries. The PhD core curriculum was revised to be more flexible.

PO3: Faculty development. Links to UNCW Strategic Goal #2: Recruit, retain and develop quality faculty, administration and staff in appropriate numbers.

Several tools are used for the assessment process of this PO:
- review of trends in annual faculty productivity
- annual meetings with each faculty member
- monitoring of faculty workloads, including relative efforts put into service, scholarly and training activities.

The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for gathering this information.

Faculty members identified the following needs:
- a greater need for flexibility for in-class instruction.
- support for faculty travel
- peer support for new/untenured faculty

We have implemented the following actions:
- instituted flexibility for in-class instruction, such as heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty
- retained modest departmental support for faculty travel
- the department has implemented a peer monitoring system for untenured, tenure-track faculty

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<td>SLO 1: A graduate student should be able to develop a research plan. Link to UNCW Learning</td>
<td>Dissertation proposal is successfully completed and defended to student’s committee. The student’s</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on proposal</td>
<td>2010-2011 was the first year for data collection on this SLO. Faculty determined that the Ph.D. students</td>
<td>Results were discussed at the Faculty retreat in August. No actions will be taken at this point as the</td>
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<td>Goals: inquiry and thoughtful expression.</td>
<td>committee evaluates proposal with a form.</td>
<td>quality, synthesis of literature, definition of project, and suitability of methods to be employed are collected. We began implementation of the assessment of this SLO in the 2010-2011 year.</td>
<td>were generally performing well on this SLO, although the sample size for this year was small (n=4 respondents). Performance (determined as fraction of students performing at levels 4 or 5 on a scale of 5) on writing skills, project definitions and methods to be used were all at 100%; literature synthesis was 75%.</td>
<td>data are limited to one year. We will continue to collect these data in the coming years.</td>
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<tr>
<td>SLO2: A graduate student should be able to independently answer questions regarding their research field. Link to UNCW Learning Goals: information literacy, critical thinking, and thoughtful expression.</td>
<td>Written and oral comprehensive exams are successfully completed. The student’s committee evaluates performance in the exams with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information in both oral and written formats, on the depth and breadth of his/her knowledge, and professional poise are collected. Implementation of the assessment of this SLO was planned for the 2010-2011 year.</td>
<td>No data were returned on this SLO. This indicates that faculty are not being as compliant as we would like with Assessment evaluations. In Spring 2010 the Graduate Assessment Coordinator moved all faculty assessment forms online, hoping for enhanced compliance in response. The faculty discussed the results of assessment to date at the 2011 retreat and were reminded that compliance with Assessment reporting is mandatory and crucial for evaluation of program performance.</td>
<td>N/A</td>
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<tr>
<td>SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience.</td>
<td>Departmental Seminar presentation of dissertation research is successfully completed. An assessment form is filled out by</td>
<td>Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality,</td>
<td>In 2010-2011 our Ph.D. students were assessed as performing well on presentation quality and poise (85% for both), but at</td>
<td>Results were discussed at the Faculty retreat in August. We will continue to collect data on this SLO in 2011-2012 and monitor the</td>
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<td>SLO 4: A graduate student should be able to write up his or her research in the form of multiple manuscripts for publication in scientific journals.</td>
<td>Link to UNCW Learning Goals: thoughtful expression, information literacy, critical thinking) and inquiry.</td>
<td>Multi-chaptered dissertation is successfully completed. The student’s committee evaluates the quality of the dissertation with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on the quality of the writing, mastery of the research, and likelihood of being published in a peer-review journal are collected. In an effort to better understand how successful our students are at publishing their work, we recently added two assessment questions to</td>
<td>In 2010-2011 we had only 3 responses for this SLO. Our students were assessed as performing at only 67% on dissertation quality, mastery of research, and likelihood of publication. In addition, submission and publication of manuscripts were at level 1. In the 2009-2010 year, no PhD students defended their dissertations. Performance on this SLO was higher in 2008-2009,</td>
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</table>
SLO 5: A graduate student should be able to create new teaching materials.

Link to UNCW Learning Goals: thoughtful expression, critical thinking, information literacy, and to some extent global citizenship.

Successful completion of Teaching practicum course and a formal lecture or laboratory presentation in an undergraduate course. The student’s committee evaluates the teaching ability of the student using the Last question on the Evaluation of Teaching form that asks about the overall effectiveness of teaching.

Each student in the program is assessed by each of his/her committee members. Data on overall effectiveness of teaching are collected. Implementation of the assessment of this SLO was planned for the 2010-2011 year.

In 2010-2011 we had only one respondent for this SLO. The overall effectiveness of teaching was assessed as very good (level 5). However this is only one data point. The program is small and we may not necessarily have any students completing requirements to be assessed each year for this SLO.

Results were discussed at the Faculty retreat in August. We will continue to collect data on this SLO in 2011-2012 and will improve the mechanism for faculty response to this SLO in the lecture or lab class taught by the student.

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University of North Carolina Wilmington

Educational Program Assessment Plan and Report
(M.Sc. Marine Biology, Dept of Biology & Marine Biology – revised October 15 2010)
Assessment Plan for 2009 - 2010

Primary Contact Name/Info: Heather Koopman, koopmanh@uncw.edu, 962-7199

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<td>UNCW Strategic Goal</td>
<td>Tools or measures of program outcomes must address the outcome</td>
<td>Identify who will be responsible for implementation; what data</td>
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<td>What Strategic Goal does it link to?</td>
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<td>outcome?</td>
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</table>
| PO 1: Graduation of M.S. students within 3 years. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students. | Several tools are used for the assessment process of this PO:  
- solicitation of information from alumni  
- meetings with graduate students and surveys of graduate student needs  
- review of programs at other institutions  
- monitoring of time to graduation  
- periodic outside review | The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC. | Financial concerns have been identified as a significant concern for time to graduate. |
| PO2: Targeted recruitment and enhanced retention of students. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students. | Several tools are used for the assessment process of this PO:  
- solicitation of information from alumni  
- meetings with graduate students and surveys of graduate student needs  
- review of programs at other institutions  
- periodic outside review | The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC. | The students wanted to see more core course options for the M.S. program. Financial concerns have been identified as a significant concern for recruitment of students. |
| PO3: Faculty development. Links to UNCW Strategic Goal #2: Recruit, retain and develop quality faculty, administration and staff in appropriate numbers. | Several tools are used for the assessment process of this PO:  
- review of trends in annual faculty productivity  
- annual meetings with each faculty member  
- monitoring of faculty workloads, including relative efforts put into service, scholarly and training activities. | The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for gathering this information. | Faculty members identified the following needs:  
- a greater need for flexibility in in-class instruction.  
- support for faculty travel  
- peer support for new/untenured faculty  
- retained modest departmental support for faculty travel  
- the department has |
implemented a peer monitoring system for untenured, tenure-track faculty

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<td>What will students know or be able to do upon completion of the program? What UNCW Learning Goal Does it link to?</td>
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<tr>
<td>SLO 1a: A graduate student should be able to develop a research plan. Link to UNCW Learning Goal: creative inquiry (inquiry).</td>
<td>Prospectus is successfully completed and defended to student’s committee. The student’s committee evaluates prospectus with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on prospectus quality, depth and breadth are collected. Implementation of the assessment of this SLO was planned for the 2009-2010 year.</td>
<td>No data were available for the 2009-2010 year as of July 19 2010. The faculty discussed the results of assessment to date at the 2010 retreat and decided that the Graduate Assessment Coordinator will explore options for online assessment form reporting, rather than the return of paper forms, in the 2010-2011 year with the hopes that this will improve faculty participation in the Assessment process.</td>
<td>N/A</td>
</tr>
<tr>
<td>SLO 1b: A graduate student should be able to present and defend a research plan. Link to UNCW Learning Goal: thoughtful expression (thoughtful expression).</td>
<td>Prospectus is successfully presented to the department. Form used for this assessment is our Graduate Student Prospectus Symposium Evaluation form. Our assessment tool will be question #5. This SLO was</td>
<td>Each student in the program is assessed by all faculty members in the department attending the Graduate Student Prospectus symposium. Data on each student’s project in terms of quality, design and significance are collected. At the fall and spring 2010 Prospectus Symposium, we collected 261 data points. The faculty determined that 98% of the students were performing well in this SLO, with 36% of projects rated as “commendable”, 62% as “satisfactory” and only 2%</td>
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created, in part, to help understand the poor performance of students on “breadth of knowledge” in SLO2 in the 2007-08 year. Assessment of this SLO was implemented in Spring 2009.

as “unsatisfactory”. Performance in 2009-2010 was slightly lower than 2008-2009, in which 45% of projects rated as “commendable”, 54% as “satisfactory” and only 1% as “unsatisfactory”.

| **SLO2: A graduate student should be able to independently answer questions regarding their research field.** Link to UNCW Learning Goal: critical thinking (information literacy and critical thinking) and thoughtful expression (thoughtful expression). | Oral preliminary exam is successfully completed. The student’s committee evaluates performance in the exam with a form. | Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information, on the depth and breadth of their knowledge, and professional poise are collected. | During the 2009-2010 year, faculty determined that our students have made improvements on some elements of this SLO but are still not performing as well as we would like them to as a whole. Performance was better this year (determined as fraction of students performing at levels 4 or 5 on a scale of 5) in ability to articulate (75% vs 57% for 2009), breadth of knowledge (75% vs 57% for 2009), and professional poise (88% vs 73% for 2009). However, depth of knowledge declined (50% vs. 59% for 2009). | We have implemented a series of formal (course-related) and informal changes to our MSc programs (see attached report on Graduate Assessment for the Departmental Faculty retreat) with the aim of improving student performance on this SLO, which continues to be the one of concern in our graduate program. The formal course-related changes (for BIO 501) will be implemented in Fall 2010 (the first time this course will be taught since the changes were accepted by the faculty). We have also encouraged our students and faculty to increase the number of interactions our students have with non-scripted oral communication (using oral testing and discussion in class, having students participate in mock oral examinations, etc.). |
However we have no formal means of determining how often these activities are occurring and therefore cannot evaluate whether they are affecting student performance on this SLO. Thus in 2010-2011 we are going to implement two new assessment tools: 1) a questionnaire for all graduate students to ask how many times they have participated in oral discussions, such as mock exams or interactions in the classroom with the instructor and other students; 2) a questionnaire for faculty asking how often they have incorporated oral skills and discussion in the class. We hope that this information will let you evaluate whether these activities are being carried out, and if so whether they are helping our students reach a higher level of achievement for this SLO.

| SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience. Link to UNCW Learning Goal: thoughtful expression | Departmental Seminar presentation of thesis research is successfully completed. An assessment form is filled out by departmental faculty members after the thesis. Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality, mastery of research, professional poise and ability to answer questions are collected. The faculty assessed performance of this learning outcome to be good for the majority of students, in organization (95%), mastery of research (90%), ability to field questions from the audience (90%) and professional poise (90%). The faculty discussed the results of assessment to date at the 2010 retreat and decided that our students are meeting our expectations in this SLO and that no action will be taken. |
SLO 4: A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific journal. Link to UNCW Learning Goal: thoughtful expression (thoughtful expression), critical thinking (information literacy and critical thinking) and creative inquiry (inquiry).

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<tr>
<td>PO 1: Graduation of M.S. students within 3 years.</td>
<td>Several tools are used for the assessment process of this PO:</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are</td>
<td>Financial concerns have been identified as a significant concern for time</td>
<td>The Graduate School has worked to incrementally increase TA salaries.</td>
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<tr>
<td>What is the intended or desired effect of your programming or services? What Strategic Goal does it link to?</td>
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<tr>
<td>What was learned from the collection and analysis of data for the program outcome?</td>
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</table>
| Goal #1: Create the most powerful learning experience possible for our students. | - solicitation of information from alumni  
- meetings with graduate students and surveys of graduate student needs  
- review of programs at other institutions  
- monitoring of time to graduation  
- periodic outside review | largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC. | to graduate. |

| PO2: Targeted recruitment and enhanced retention of students. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students. | Several tools are used for the assessment process of this PO:  
- solicitation of information from alumni  
- meetings with graduate students and surveys of graduate student needs  
- review of programs at other institutions  
- periodic outside review | The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC. | The students wanted to see more core course options for the M.S. program. Financial concerns have been identified as a significant concern for recruitment of students. |

| PO3: Faculty development. Links to UNCW Strategic Goal #2: Recruit, retain and develop quality faculty, administration and staff in appropriate numbers. | Several tools are used for the assessment process of this PO:  
- review of trends in annual faculty productivity  
- annual meetings with each faculty member  
- monitoring of faculty workloads, including relative efforts put into service, scholarly and training activities. | The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for gathering this information. | Faculty members identified the following needs:  
- a greater need for flexibility for in-class instruction.  
- support for faculty travel  
- peer support for new/untenured faculty |

|  |  | We have implemented the following actions:  
- instituted flexibility for in-class instruction, such as heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty  
- retained modest departmental support for faculty travel  
- the department has implemented a peer monitoring system for untenured, tenure-track faculty | We have increased core course options for the M.S. program by adding a course in evolution. The Graduate School has worked to incrementally increase TA salaries. |
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<td>UNCW-wide Learning Goal</td>
<td>What tools or measures will be used?</td>
<td>Who will be responsible for implementation; who will be assessed; what is the schedule?</td>
<td>What was learned from the collection and analysis of data for student learning outcomes?</td>
<td>What changes were made because of what you learned?</td>
</tr>
<tr>
<td><strong>SLO 1a:</strong> A graduate student should be able to develop a research plan. Link to UNCW Learning Goal: creative inquiry (inquiry).</td>
<td>Prospectus is successfully completed and defended to student’s committee. The student’s committee evaluates prospectus with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on prospectus quality, depth and breadth are collected. Implementation of the assessment of this SLO was planned for the 2009-2010 year.</td>
<td>No data were available for the 2009-2010 year as of July 19 2010. The faculty discussed the results of assessment to date at the 2010 retreat and decided that the Graduate Assessment Coordinator will explore options for online assessment form reporting, rather than the return of paper forms, in the 2010-2011 year with the hopes that this will improve faculty participation in the Assessment process.</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>SLO 1b:</strong> A graduate student should be able to present and defend a research plan. Link to UNCW Learning Goal: thoughtful expression (thoughtful expression).</td>
<td>Prospectus is successfully presented to the department. Form used for this assessment is our Graduate Student Prospectus Symposium Evaluation form. Our assessment tool will be question #5. This SLO was created, in part, to help understand the poor performance of students on “breadth of knowledge” in SLO2 in the 2007-08 year.</td>
<td>Each student in the program is assessed by all faculty members in the department attending the Graduate Student Prospectus symposium. Data on each student’s project in terms of quality, design and significance are collected. Assessment of this SLO was implemented in Spring 2009. By the nature of data collection, assessment for this SLO is pooled with the Prospectus Symposium, we collected 261 data points. The faculty determined that 98% of the students were performing well in this SLO, with 36% of projects rated as “commendable”, 62% as “satisfactory” and only 2% as “unsatisfactory”. Performance in 2009-2010 was slightly lower than 2008-2009, in which 45% of projects rated as</td>
<td>At the fall and spring 2010 Prospectus Symposium, we collected 261 data points. The faculty determined that 98% of the students were performing well in this SLO, with 36% of projects rated as “commendable”, 62% as “satisfactory” and only 2% as “unsatisfactory”. Performance in 2009-2010 was slightly lower than 2008-2009, in which 45% of projects rated as</td>
<td>The faculty discussed the results of assessment to date at the 2010 retreat and decided that our students are meeting our expectations in this SLO and that no action will be taken.</td>
</tr>
<tr>
<td>SLO2: A graduate student should be able to independently answer questions regarding their research field. Link to UNCW Learning Goal: critical thinking (information literacy and critical thinking) and thoughtful expression (thoughtful expression).</td>
<td>Marine Biology M.Sc. program.</td>
<td>“commendable”, 54% as “satisfactory” and only 1% as “unsatisfactory”.</td>
<td>No data were available for the 2009-2010 year as of July 19 2010 for the M.Sc. in Biology. The faculty discussed the results of assessment to date at the 2010 retreat and decided that the Graduate Assessment Coordinator will explore options for online assessment form reporting, rather than the return of paper forms, in the 2010-2011 year with the hopes that this will improve faculty participation in the Assessment process. Note: see the Assessment report for the Marine Biology M.Sc. program for changes we are making to our program to improve performance on this SLO.</td>
<td></td>
</tr>
<tr>
<td>SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience. Link to UNCW Learning Goal: thoughtful expression (thoughtful expression).</td>
<td>Oral preliminary exam is successfully completed. The student’s committee evaluates performance in the exam with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information, on the depth and breadth of their knowledge, and professional poise are collected.</td>
<td>The faculty assessed performance of this learning outcome to be good for the majority of students, in organization (90%), mastery of research (70%), ability to field questions from the audience (60%) and professional poise (80%). The faculty discussed the results of assessment to date at the 2010 retreat and decided to collect another year of data before making any changes to our program in relation to this SLO.</td>
<td></td>
</tr>
<tr>
<td>SLO 4: A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific journal. Link to UNCW Learning Goal: thoughtful expression (thoughtful expression)</td>
<td>Departmental Seminar presentation of thesis research is successfully completed. An assessment form is filled out by departmental faculty members after the thesis seminar.</td>
<td>Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality, mastery of research, professional poise and ability to answer questions are collected.</td>
<td>The faculty is N/A for the 2009-2010 year as of July 19 2010. The faculty discussed the results of assessment to date at the 2010 retreat and decided that the Graduate Assessment Coordinator will explore options for online assessment form reporting, rather than the return of paper forms, in the 2010-2011 year with the hopes that this will improve faculty participation in the Assessment process. Note: see the Assessment report for the Marine Biology M.Sc. program for changes we are making to our program to improve performance on this SLO.</td>
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expression), critical thinking (information literacy and critical thinking) and creative inquiry (inquiry).

explore options for online assessment form reporting, rather than the return of paper forms, in the 2010-2011 year with the hopes that this will improve faculty participation in the Assessment process.

University of North Carolina Wilmington

Educational Program Assessment Plan and Report
(PhD Program, Biology & Marine Biology – revised October 18 2010)
Assessment Plan Report for 2009-2010

Primary Contact Name/Info: Heather Koopman, Biology & Marine Biology, koopmanh@uncw.edu

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<th>Summary of Findings</th>
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<tbody>
<tr>
<td>PO 1: Graduation of PhD students within 5-6 years. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - monitoring of time to graduation - periodic outside review</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>Financial concerns have been identified as a significant concern for time to graduate. Based on student comments and comparisons with other programs, a need to make the curriculum more flexible was identified. For M.S students in the department wishing to change to the PhD program, a need for an easier transition was identified.</td>
<td>The Graduate School has worked to incrementally increase TA salaries. The PhD core curriculum was revised to be more flexible. The progression from the M.S. program to the PhD program was made easier through a Master’s bypass option.</td>
</tr>
</tbody>
</table>

| PO2: Targeted recruitment and enhanced retention of students. Links to UNCW Strategic Goal #1: Create the most powerful learning | Several tools are used for the assessment process of this PO: - solicitation of information from alumni | The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. | Financial concerns have been identified as a significant concern for recruitment of students. Based on student comments | The Graduate School has worked to incrementally increase TA salaries. The PhD core curriculum was revised to be more flexible. |
experience possible for our students.

- meetings with graduate students and surveys of graduate student needs
- review of programs at other institutions
- periodic outside review

Student members of the GAC are important conduits of information from the student body to the GAC. and comparisons with other programs, a need to make the curriculum more flexible was identified.

PO3: Faculty development. Links to UNCW Strategic Goal #2: Recruit, retain and develop quality faculty, administration and staff in appropriate numbers.

Several tools are used for the assessment process of this PO:
- review of trends in annual faculty productivity
- annual meetings with each faculty member
- monitoring of faculty workloads, including relative efforts put into service, scholarly and training activities.

The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for gathering this information.

Faculty members identified the following needs:
- a greater need for flexibility for in-class instruction.
- support for faculty travel
- peer support for new/untenured faculty

We have implemented the following actions:
- instituted flexibility for in-class instruction, such as heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty
- retained modest departmental support for faculty travel
- the department has implemented a peer monitoring system for untenured, tenure-track faculty

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<tr>
<td>SLO 1: A graduate student should be able to develop a research plan.</td>
<td>Dissertation proposal is successfully completed and defended to student’s committee. The student’s committee evaluates proposal with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on proposal quality, synthesis of literature, definition of project, and suitability of methods to be employed are collected. We will begin implementation of the assessment of this SLO in the 2009-2010 year.</td>
<td>In the 2009-2010 year, we have no assessments to report. The faculty discussed the results of assessment to date at the 2010 retreat and decided that the Graduate Assessment Coordinator will explore options for online assessment form reporting, rather than the return of paper forms, in the 2010-</td>
<td>N/A</td>
</tr>
<tr>
<td>SLO2: A student should be able to independently answer questions regarding their research field.</td>
<td>Written and oral comprehensive exams are successfully completed. The student's committee evaluates performance in the exams with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on the student's ability to articulate information in both oral and written formats, on the depth and breadth of his/her knowledge, and professional poise are collected. Implementation of the assessment of this SLO was planned for the 2009-2010 year.</td>
<td>In the 2009-2010 year, no PhD students took their comprehensive exams.</td>
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<tr>
<td>SLO3: A student should be able to communicate his or her research to a broadly-trained public audience.</td>
<td>Departmental Seminar presentation of dissertation research is successfully completed. An assessment form is filled out by departmental faculty members after the seminar.</td>
<td>Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality, mastery of research, professional poise and ability to answer questions are collected.</td>
<td>In the 2009-2010 year, we have no assessments to report. Even though several PhD students presented a seminar, no data on performance was returned. This indicates that faculty are not being as compliant as we would like with Assessment evaluations. The faculty discussed the results of assessment to date at the 2010 retreat and decided that the Graduate Assessment Coordinator will explore options for online assessment form reporting, rather than the return of paper forms, in the 2010-2011 year with the hopes that this will improve faculty participation in the Assessment process.</td>
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<tr>
<td>SLO 4: A graduate student should be able to write up his or her research in the form of multiple manuscripts for publication in scientific journals.</td>
<td>Multi-chaptered dissertation is successfully completed. The student’s committee evaluates the quality of the dissertation with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on the quality of the writing, mastery of the research, and likelihood of being published in a peer-review journal are collected. In an effort to better understand how successful our students are at publishing their work, we recently added two assessment questions to this SLO that permit us to monitor the progress each student has made towards publication by asking whether chapters of their dissertation have been submitted for publication or have already been published.</td>
<td>2011 year with the hopes that this will improve faculty participation in the Assessment process.</td>
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<tr>
<td>SLO 5: A graduate student should be able to create new teaching materials.</td>
<td>Successful completion of Teaching practicum course and a formal lecture or laboratory presentation in an undergraduate course. The student’s committee evaluates the teaching ability of the student using the Last question on the Evaluation of Teaching form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on overall effectiveness of teaching are collected. Implementation of the assessment of this SLO was planned for the 2009-2010 year.</td>
<td>In the 2009-2010 year, no PhD students defended their dissertations.</td>
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</table>
# University of North Carolina Wilmington

## Educational Program Assessment Plan and Report

(Master’s Program, Marine Biology)

Assessment Plan for 2008 - 2009

**Primary Contact Name/Info:** Heather Koopman, Biology & Marine Biology, [koopmanh@uncw.edu](mailto:koopmanh@uncw.edu)

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<td><strong>PO 1:</strong> Graduation of M.S. students within 3 years. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - monitoring of time to graduation - periodic outside review</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>Financial concerns have been identified as a significant concern for time to graduate.</td>
<td>The Graduate School has worked to incrementally increase TA salaries.</td>
</tr>
<tr>
<td><strong>PO 2:</strong> Targeted recruitment and enhanced retention of students. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - periodic outside review</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>The students wanted to see more core course options for the M.S. program. Financial concerns have been identified as a significant concern for recruitment of students.</td>
<td>We have increased core course options for the M.S. program by adding a course in evolution. The Graduate School has worked to incrementally increase TA salaries.</td>
</tr>
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<td><strong>PO 3:</strong> Faculty development. Links to UNCW Strategic</td>
<td>Several tools are used for the assessment process of</td>
<td>The Chair of the department, and the Chair’s</td>
<td>Faculty members identified the following needs:</td>
<td>We have implemented the following actions:</td>
</tr>
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</table>
Goal #2: Recruit, retain and develop quality faculty, administration and staff in appropriate numbers.

**this PO:**
- review of trends in annual faculty productivity
- annual meetings with each faculty member
- monitoring of faculty workloads, including relative efforts put into service, scholarly and training activities.

Advisory Committee (CAC) are largely responsible for gathering this information.

- a greater need for flexibility for in-class instruction.
- support for faculty travel
- peer support for new/ untenured faculty

- instituted flexibility for in-class instruction, such as heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty
- retained modest departmental support for faculty travel
- the department has implemented a peer monitoring system for untenured, tenure-track faculty

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<td>SLO 1a: A graduate student should be able to develop a research plan. Link to UNCW Learning Goal: creative inquiry (inquiry).</td>
<td>Prospectus is successfully completed and defended to student’s committee. The student’s committee evaluates prospectus with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on prospectus quality, depth and breadth are collected. We will begin implementation of the assessment of this SLO in the 2009-2010 year.</td>
<td>None yet.</td>
<td>N/A</td>
</tr>
<tr>
<td>SLO 1b: A graduate student should be able to present and defend a research plan. Link to UNCW Learning Goal: thoughtful expression (thoughtful expression).</td>
<td>Prospectus is successfully presented to the department. Form used for this assessment is our Graduate Student Prospectus Symposium Evaluation form. Our assessment tool will be question #5. This SLO was created, in part, to help</td>
<td>Each student in the program is assessed by all faculty members in the department attending the Graduate Student Prospectus symposium. Data on each student’s project in terms of quality, design and significance are collected. Assessment of this SLO was</td>
<td>At the spring 2009 Prospectus Symposium, 17 students presented their work and were evaluated by 20 faculty members. The faculty determined that 99% of the students were performing well in this SLO, with 45% of projects rated as “commendable”, 54% as</td>
<td>The faculty discussed the results of assessment to date at the 2009 retreat. Faculty were heartened by these results and decided to continue with this assessment tool. The introduction of this SLO represents a “closing of the loop” for problems</td>
</tr>
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</table>
understand the poor performance of students on “breadth of knowledge” in SLO2 in the 2007-08 year. implemented in Spring 2009. “satisfactory” and only 1% as “unsatisfactory”. identified by assessment of SLO2 (see below); however we have not yet identified the changes we need to make to enhance performance on SLO 2 and continue to seek ways to do this (see below).

SLO2: A graduate student should be able to independently answer questions regarding their research field. Link to UNCW Learning Goal: critical thinking (information literacy and critical thinking) and thoughtful expression (thoughtful expression).

Oral preliminary exam is successfully completed. The student’s committee evaluates performance in the exam with a form.

Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information, on the depth and breadth of their knowledge, and professional poise are collected.

During the 2008-09 year, 14 students completed the oral preliminary exam. Faculty determined that our students are still not performing as well as we would like them to on this student learning outcome. Only a little more than half the students were assessed as performing well in ability to articulate (57%), breadth (57%) and depth (59%) or knowledge, while 72% of students demonstrated professional poise. It is useful to point out that none of the students was assessed as performing “poorly”, but rather that there were more students in the “adequate” category than we would like to see.

Performance at the oral examination was identified earlier as an area of concern for our Master’s students during the 2007-08 assessment period. We began to assess the ability of our students to speak and answer questions in public through another measure, SLO1b (see above) this year, and the students were assessed as performing well on that SLO; therefore oral communication itself does not seem to be the problem but rather knowledge and understanding of material, and the ability to convey this information, in the setting of the oral examination. The faculty discussed the results of assessment to date at the 2009 retreat and decided that student performance on this SLO is still of concern. The faculty passed a motion at the retreat to refer this SLO and assessment tool back to the
### SLO 3: A graduate student should be able to communicate his or her research to a broadly-trained public audience.

**Link to UNCW Learning Goal:** thoughtful expression (thoughtful expression).

**Description:**
- Departmental Seminar presentation of thesis research is successfully completed. An assessment form is filled out by departmental faculty members after the thesis seminar.

**Assessment:**
- Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality, mastery of research, professional poise and ability to answer questions are collected.
- In the 2008-09 year, 12 seminars were presented to the department by M.Sc. students and evaluated by the faculty. The faculty assessed performance of this learning outcome to be high for the majority of students, in organization (94%), mastery of research (86%), ability to field questions from the audience (86%) and professional poise (91%).

**Discussion:**
- The faculty discussed the results of assessment to date at the 2009 retreat and decided to continue the assessment of this learning goal.

### SLO 4: A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific journal.

**Link to UNCW Learning Goal:** thoughtful expression (thoughtful expression), critical thinking (information literacy and critical thinking) and creative inquiry (inquiry).

**Description:**
- Thesis is successfully completed. The student’s committee evaluates the quality of the thesis with a form.

**Assessment:**
- Each student in the program is assessed by each of his/her committee members. Data on the quality of the writing, mastery of the research, and likelihood of being published in a peer-review journal are collected.
- In the 2008-09 year, 12 theses were completed and evaluated. Faculty assessed performance of this learning outcome as high, with writing quality, mastery of research, and likelihood of publication being high for the majority of students (88%, 90% and 83%, respectively).

**Discussion:**
- The faculty discussed the results of assessment to date at the 2009 retreat and decided to continue the assessment of this learning goal.
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<tr>
<td><strong>PO 1</strong>: Graduation of M.S. students within 3 years. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - monitoring of time to graduation - periodic outside review</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>Financial concerns have been identified as a significant concern for time to graduate.</td>
<td>The Graduate School has worked to incrementally increase TA salaries.</td>
</tr>
<tr>
<td><strong>PO2</strong>: Targeted recruitment and enhanced retention of students. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students.</td>
<td>Several tools are used for the assessment process of this PO: - solicitation of information from alumni - meetings with graduate students and surveys of graduate student needs - review of programs at other institutions - periodic outside review</td>
<td>The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>The students wanted to see more core course options for the M.S. program. Financial concerns have been identified as a significant concern for recruitment of students.</td>
<td>We have increased core course options for the M.S. program by adding a course in evolution. The Graduate School has worked to incrementally increase TA salaries.</td>
</tr>
<tr>
<td><strong>PO3</strong>: Faculty development. Links to UNCW Strategic Goal #2: Recruit, retain and develop quality faculty, administration and staff in appropriate numbers.</td>
<td>Several tools are used for the assessment process of this PO: - review of trends in annual faculty productivity - annual meetings with each faculty member - monitoring of faculty workloads, including</td>
<td>The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for gathering this information.</td>
<td>Faculty members identified the following needs: - a greater need for flexibility for in-class instruction. - support for faculty travel - peer support for new/untenured faculty</td>
<td>We have implemented the following actions: - instituted flexibility for in-class instruction, such as heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty - retained modest</td>
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<tr>
<td>Student Learning Outcome</td>
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<tr>
<td>SLO 1a: A graduate student should be able to develop a research plan. Link to UNCW Learning Goal: creative inquiry (inquiry).</td>
<td>Prospectus is successfully completed and defended to student’s committee. The student’s committee evaluates prospectus with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on prospectus quality, depth and breadth are collected. We will begin implementation of the assessment of this SLO in the 2009-2010 year.</td>
<td>None yet.</td>
<td>N/A</td>
</tr>
<tr>
<td>SLO 1b: A graduate student should be able to present and defend a research plan. Link to UNCW Learning Goal: thoughtful expression (thoughtful expression).</td>
<td>Prospectus is successfully presented to the department. Form used for this assessment is our Graduate Student Prospectus Symposium Evaluation form. Our assessment tool will be question #5. This SLO was created, in part, to help understand the poor performance of students on “breadth of knowledge” in SLO2 in the 2007-08 year.</td>
<td>Each student in the program is assessed by all faculty members in the department attending the Graduate Student Prospectus symposium. Data on each student’s project in terms of quality, design and significance are collected. Assessment of this SLO was implemented in Spring 2009.</td>
<td>At the spring 2009 Prospectus Symposium, 17 students presented their work and were evaluated by 20 faculty members. The faculty determined that 99% of the students were performing well in this SLO, with 45% of projects rated as “commendable”, 54% as “satisfactory” and only 1% as “unsatisfactory”.</td>
<td>The faculty discussed the results of assessment to date at the 2009 retreat. Faculty were heartened by these results and decided to continue with this assessment tool. The introduction of this SLO represents a “closing of the loop” for problems identified by assessment of SLO2 (see below); however we have not yet identified the changes we need to make to enhance performance on SLO 2 and continue to seek ways to do...</td>
</tr>
<tr>
<td>SLO2: A graduate student should be able to independently answer questions regarding their research field.</td>
<td>Oral preliminary exam is successfully completed. The student’s committee evaluates performance in the exam with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information, on the depth and breadth of their knowledge, and professional poise are collected.</td>
<td>During the 2008-09 year, 14 students completed the oral preliminary exam. Faculty determined that our students are still not performing as well as we would like them to on this student learning outcome. Only a little more than half the students were assessed as performing well in ability to articulate (57%), breadth (57%) and depth (59%) or knowledge, while 72% of students demonstrated professional poise. It is useful to point out that none of the students was assessed as performing “poorly”, but rather that there were more students in the “adequate” category than we would like to see.</td>
<td>Performance at the oral examination was identified earlier as an area of concern for our Master’s students during the 2007-08 assessment period. We began to assess the ability of our students to speak and answer questions in public through another measure, SLO1b (see above) this year, and the students were assessed as performing well on that SLO; therefore oral communication itself does not seem to be the problem but rather knowledge and understanding of material, and the ability to convey this information, in the setting of the oral examination. The faculty discussed the results of assessment to date at the 2009 retreat and decided that student performance on this SLO is still of concern. The faculty passed a motion at the retreat to refer this SLO and assessment tool back to the Graduate Advisory Committee, so that the GAC can bring suggestions to the faculty for how to improve student performance on this learning goal.</td>
</tr>
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</table>
**SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience.**

Link to UNCW Learning Goal: thoughtful expression (thoughtful expression).

<table>
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<tbody>
<tr>
<td>Departmental Seminar presentation of thesis research is successfully completed. An assessment form is filled out by departmental faculty members after the thesis seminar.</td>
<td>Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality, mastery of research, professional poise and ability to answer questions are collected.</td>
<td>In the 2008-09 year, 12 seminars were presented to the department by M.Sc. students and evaluated by the faculty. The faculty assessed performance of this learning outcome to be high for the majority of students, in organization (94%), mastery of research (86%), ability to field questions from the audience (86%) and professional poise (91%).</td>
<td>The faculty discussed the results of assessment to date at the 2009 retreat and decided to continue the assessment of this learning goal.</td>
</tr>
</tbody>
</table>

**SLO 4: A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific journal.**

Link to UNCW Learning Goal: thoughtful expression (thoughtful expression), critical thinking (information literacy and critical thinking) and creative inquiry (inquiry).

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<tr>
<td>Thesis is successfully completed. The student’s committee evaluates the quality of the thesis with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on the quality of the writing, mastery of the research, and likelihood of being published in a peer-review journal are collected.</td>
<td>In the 2008-09 year, 12 theses were completed and evaluated. Faculty assessed performance of this Learning outcome as high, with writing quality, mastery of research, and likelihood of publication being high for the majority of students (88%, 90% and 83%, respectively).</td>
<td>The faculty discussed the results of assessment to date at the 2009 retreat and decided to continue the assessment of this learning goal.</td>
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University of North Carolina Wilmington
Educational Program Assessment Plan and Report
(PhD Program, Biology & Marine Biology)
Assessment Plan for 2008 - 2009

Primary Contact Name/Info: Heather Koopman, Biology & Marine Biology, koopmanh@uncw.edu

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<tr>
<td>PO 1: Graduation of PhD</td>
<td>Several tools are used for</td>
<td>The Graduate Advisory</td>
<td>Financial concerns have</td>
<td>The Graduate School has</td>
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<tr>
<td>PO1: Student development</td>
<td>Several tools are used for the assessment process of this PO:  - solicitation of information from alumni  - meetings with graduate students and surveys of graduate student needs  - review of programs at other institutions  - monitoring of time to graduation  - periodic outside review</td>
<td>Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC.</td>
<td>been identified as a significant concern for time to graduate. Based on student comments and comparisons with other programs, a need to make the curriculum more flexible was identified. For M.S students in the department wishing to change to the PhD program, a need for an easier transition was identified.</td>
<td>worked to incrementally increase TA salaries. The PhD core curriculum was revised to be more flexible. The progression from the M.S. program to the PhD program was made easier through a Master’s bypass option.</td>
</tr>
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</table>

| PO2: Targeted recruitment and enhanced retention of students. Links to UNCW Strategic Goal #1: Create the most powerful learning experience possible for our students. | Several tools are used for the assessment process of this PO:  - solicitation of information from alumni  - meetings with graduate students and surveys of graduate student needs  - review of programs at other institutions  - periodic outside review | The Graduate Advisory Committee (GAC) and the Graduate coordinator are largely responsible for gathering this information. Student members of the GAC are important conduits of information from the student body to the GAC. | Financial concerns have been identified as a significant concern for recruitment of students. Based on student comments and comparisons with other programs, a need to make the curriculum more flexible was identified. | The Graduate School has worked to incrementally increase TA salaries. The PhD core curriculum was revised to be more flexible. |

<p>| PO3: Faculty development. Links to UNCW Strategic Goal #2: Recruit, retain and develop quality faculty, administration and staff in appropriate numbers. | Several tools are used for the assessment process of this PO:  - review of trends in annual faculty productivity  - annual meetings with each faculty member  - monitoring of faculty workloads, including relative efforts put into service, scholarly and training activities. | The Chair of the department, and the Chair’s Advisory Committee (CAC) are largely responsible for gathering this information. | Faculty members identified the following needs:  - a greater need for flexibility for in-class instruction.  - support for faculty travel  - peer support for new/untenured faculty | We have implemented the following actions:  - instituted flexibility for in-class instruction, such as heavy vs. light semesters for some faculty, when needed, to meet the research needs of certain faculty  - retained modest departmental support for faculty travel  - the department has implemented a peer monitoring system for |</p>
<table>
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</table>
| **SLO 1: A graduate student should be able to develop a research plan.**  
Link to UNCW Learning Goals: creative inquiry (inquiry) and thoughtful expression (thoughtful expression). | Dissertation proposal is successfully completed and defended to student’s committee. The student’s committee evaluates proposal with a form. | Each student in the program is assessed by each of his/her committee members. Data on proposal quality, synthesis of literature, definition of project, and suitability of methods to be employed are collected. We will begin implementation of the assessment of this SLO in the 2009-2010 year. | None yet. | N/A |
| **SLO2: A graduate student should be able to independently answer questions regarding their research field.**  
Link to UNCW Learning Goals: critical thinking (information literacy and critical thinking) and thoughtful expression (thoughtful expression). | Written and oral comprehensive exams are successfully completed. The student’s committee evaluates performance in the exams with a form. | Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information in both oral and written formats, on the depth and breadth of his/her knowledge, and professional poise are collected. We will begin implementation of the assessment of this SLO in the 2009-2010 year. | None yet. | N/A |
<p>| <strong>SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience.</strong> | Departmental Seminar presentation of dissertation research is successfully completed. An assessment form is filled out by | Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality, in the 2008-09 year, 2 seminars were presented to the department by PhD students and evaluated by the faculty. The faculty discussed the results of assessment to date at the 2009 retreat and decided to continue the assessment of this learning goal. | | |</p>
<table>
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<tr>
<th>SLO 4: A graduate student should be able to write up his or her research in the form of multiple manuscripts for publication in scientific journals.</th>
<th>Multi-chaptered dissertation is successfully completed. The student’s committee evaluates the quality of the dissertation with a form.</th>
<th>Each student in the program is assessed by each of his/her committee members. Data on the quality of the writing, mastery of the research, and likelihood of being published in a peer-review journal are collected. In an effort to better understand how successful our students are at publishing their work, we recently (2008-09) added two assessment questions to this SLO that permit us to monitor the progress each student has made towards publication by asking whether chapters of their dissertation have been submitted for publication or have already been published.</th>
<th>In the 2008-09 year, 4 dissertations were completed and evaluated. Faculty assessed performance of this Learning outcome as high, with writing quality, mastery of research, and likelihood of publication being high for the majority of students (92%, 85% and 92%, respectively). In addition, 100% of students had already submitted a chapter for publication at the time of completing the thesis, and 77% had already published a chapter.</th>
<th>The faculty discussed the results of assessment to date at the 2009 retreat and decided to continue the assessment of this learning goal. Faculty were pleased with the introduction of the two additional questions regarding publications submitted/published.</th>
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<tbody>
<tr>
<td>SLO 5: A graduate student should be able to create new teaching materials.</td>
<td>Successful completion of Teaching practicum course and a formal lecture or laboratory presentation in an undergraduate course. The student’s committee</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on overall effectiveness of teaching are collected. We will begin</td>
<td>None yet.</td>
<td>N/A</td>
</tr>
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expression), critical thinking (information literacy and critical thinking), and to some extent responsible citizenship (global citizenship) evaluates the teaching ability of the student using the Last question on the Evaluation of Teaching form. implementation of the assessment of this SLO in the 2009-2010 year.

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**University of North Carolina Wilmington**

Educational Program Assessment Plan and Report
(Master’s Program, Biology & Marine Biology)
Assessment Plan for 2007 - 2008

Primary Contact Name/Info: Heather Koopman, Biology & Marine Biology, koopmanh@uncw.edu

<table>
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<tr>
<td>We did not have any program outcomes in place in 2007-08.</td>
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<tbody>
<tr>
<td>SLO2: A graduate student should be able to independently answer questions regarding their research field. Link to UNCW Learning Goal: critical thinking (information literacy and critical thinking) and thoughtful expression (thoughtful expression).</td>
<td>Oral preliminary exam is successfully completed. The student’s committee evaluates performance in the exam with a form.</td>
<td>Each student in the program is assessed by each of his/her committee members. Data on the student’s ability to articulate information, on the depth and breadth of their knowledge, and professional poise are collected.</td>
<td>In the 2007-08 year, 5 oral examinations were completed and assessed. While faculty determined that student performance was good for three of the expectations of the exam (ability to articulate 80%, depth of knowledge 80% and professional poise 100%), students did not meet faculty expectations in terms of demonstrating the ability to answer a breadth of questions (60%).</td>
<td>The findings on the 2007-08 year were reported to the department and discussed at the faculty retreat. The faculty were made aware of this weakness in our program. As a result, many advisors took informal steps to correct this problem, such as encouraging students to interact more with committee members, helping to focus studying, practicing the presentation</td>
</tr>
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</table>
of their work in public, and the implementation of “mock” (practice) oral exams with fellow graduate students. Graduate Advisory Council was also charged with creating specific strategies to improve the performance of our students and the two student members of the GAC were encouraged to share discussions with other students at BIO GSA meetings. The faculty discussed the option of creating a test bank for students to utilize in preparation for the exam, and after much thought and conferring decided not to adopt such a strategy but instead that students would be better served by discussing expectations with each of the committee members. We also initiated Masters of Science Learning Outcome 1b (assessment tool for this implemented in 2009; see 2008-09 report) to evaluate the students’ ability to present and discuss their research, in an attempt to better understand the poor performance of the student for SLO2.
| SLO3: A graduate student should be able to communicate his or her research to a broadly-trained public audience. | Departmental Seminar presentation of thesis research is successfully completed. An assessment form is filled out by departmental faculty members after the thesis seminar. | Each student in the program is assessed by all faculty members in the department attending the seminar. Data on presentation quality, mastery of research, professional poise and ability to answer questions are collected. | In the 2007-08 year, 16 seminars were presented to the department by M.Sc. students and evaluated by the faculty. The faculty assessed performance of this learning outcome to be high for the majority of students, in organization (88%), mastery of research (88%), ability to field questions from the audience (88%) and professional poise (94%). | The faculty discussed the results of assessment to date at the 2008 retreat and decided that students were meeting this Learning Outcome satisfactorily. The decision was made to take no action at that time. |
| A graduate student should be able to write up his or her research in the form of a manuscript for publication in a scientific journal. | Thesis is successfully completed. The student’s committee evaluates the quality of the thesis with a form. | Each student in the program is assessed by each of his/her committee members. Data on the quality of the writing, mastery of the research, and likelihood of being published in a peer-review journal are collected. | In the 2007-08 year, 15 theses were completed and evaluated. Faculty assessed performance of this Learning outcome as high, with writing quality, mastery of research, and likelihood of publication being high for the majority of students (87%, 93% and 93%, respectively). | The faculty discussed the results of assessment to date at the 2008 retreat and decided that students were meeting this Learning Outcome satisfactorily. The decision was made to take no action at that time. |
THE UNIVERSITY OF
NORTH CAROLINA WILMINGTON

EQUAL EMPLOYMENT OPPORTUNITY
AFFIRMATIVE ACTION PLAN

Part I: Policies and Procedures

As of January 1, 2014

UNC Wilmington Human Resources
601 S. College Road
Wilmington, NC 28403-5960
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COMMITMENT TO EQUAL EDUCATION AND EMPLOYMENT OPPORTUNITY
[41CFR 60-2.10]

The University of North Carolina at Wilmington is committed to and will provide equality of educational and employment opportunity for all persons regardless of race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents -- except where sex, age, or ability represent bona fide educational or occupational qualifications or where marital status is a statutorily established eligibility criterion for State funded employee benefit programs.

This affirmative action plan is published in accordance with 41 CFR Part 60 and is implemented in accordance with the following laws and their amendments: Title VII and Title IX of the Civil Rights Act of 1964; The Equal Pay Act of 1963; Executive Order 11246; the Age Discrimination in Employment Act of 1967; the Rehabilitation Act of 1973; the Americans with Disabilities Act of 1990; the Vietnam Era Veterans' Readjustment Assistance Act of 1974; the Civil Rights Restoration Act of 1988; NC General Statutes Chapters 116 and 126 and Title II of the Genetic Information Nondiscrimination Act of 2008.

To ensure that equal educational and employment opportunity exists throughout UNC Wilmington, a results-oriented equal opportunity/affirmative action program has been implemented to overcome the effects of past discrimination and to eliminate any artificial barriers to educational or employment opportunities for all qualified individuals that may exist in any of our programs. UNC Wilmington is committed to this program and is aware that with its implementation, positive benefits will be received from the greater utilization and development of previously under-utilized human resources.

STATEMENT OF NORTH CAROLINA POLICY

Equal Employment Opportunity as a concept, philosophy, principle and practice is an integral aspect of North Carolina State Government's personnel system. The provision of equal employment opportunity to all persons regardless of their race, color, religion, sex, national origin, age or disability has long been recognized by state government and the North Carolina State Personnel Commission as a social, legal and economic obligation involving all aspects of employment.

As an employer, North Carolina State Government is committed to equal employment opportunity for applicants and employees and has and will continue to take full advantage of all the talents, skills and abilities of all available human resources. The State supports a work environment that fosters respect and values all people.

The Office of State Personnel is charged with the responsibility of leading State government's EEO and diversity efforts by developing programs and policies to promote equal employment opportunity, diversity, fair and impartial treatment of all employees in all terms and conditions of employment throughout all aspects of the workforce.
ASSIGNMENT OF RESPONSIBILITY & ACCOUNTABILITY

[41 CRF 60-2.17]

Governor of the State of North Carolina

The Governor of the State of North Carolina has overriding responsibility for the State’s equal employment opportunity policies and programs. The responsibility or the actual development and implementation of individual equal employment opportunity plans and programs is delegated by the Governor to each university chancellor.

Office of State Personnel

The Office of State Personnel shall develop and implement a State Equal Employment Plan to promote equal opportunity throughout state government. The Office of State Personnel shall provide technical assistance, training, monitoring, oversight, evaluation and support programs.

UNCW Chancellor

The chancellor of UNC Wilmington is responsible for implementing UNC Wilmington's commitment to equal employment opportunity and affirmative action through leadership, the adoption of EEO and AA policy statements, and setting specific hiring goals for racial/ethnic minorities and women. The chancellor will report to the Board of Trustees on an annual basis documenting UNC Wilmington’s progress toward realizing its hiring goals. The chancellor shall appoint a senior-level employee to serve as UNC Wilmington’s EEO/AA officer and shall use the chancellor’s cabinet as an EEO/AA Advisory Committee.

UNCW EEO/AA Advisory Committee

The administrative cabinet consisting of the chancellor, the provost, and vice chancellors shall constitute the university's EEO/AA advisory committee. Sitting as the EEO/AA Advisory Committee, the cabinet is responsible for reviewing the university's EEO/AA Plan and adopting annual good faith hiring objectives.

UNC Wilmington's standing grievance committees will continue to provide an avenue of redress for employees or applicants who believe they have been discriminated against because of their race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents.

UNCW EEO/AA Officer

The UNC Wilmington EEO/AA officer is responsible for:

- Advising the chancellor on affirmative action policy.
- Developing UNC Wilmington's EEO/AA Plan in compliance with federal and state laws and regulations and university guidelines.
- Ensuring search committees for faculty and senior administrative positions are trained on EEO/AA policies, affirmative action preferences in hiring (if appropriate), and the evaluation of "substantially equally qualified" applicants.
• Reviewing all recruitment processes and exercising approval authority on behalf of the chancellor for all employment and promotional decisions with respect to ensuring such recruitment processes comply with UNC Wilmington's EEO/AA Plan.
• Coordinating internal responses to employee complaints of personal discrimination.
• Documenting UNC Wilmington's progress towards realizing its EEO/AA goals regarding employment in annual reports to the chancellor.

Contact information: JoAnn McDowell, Interim Associate Vice Chancellor for Business Affairs - Human Resources, 601 S. College Rd., Wilmington, NC 28403, mcdowellj@uncw.edu, 910-962-3160

**UNCW Deans, Department Chairs, Directors, and other Hiring Officials**

Deans, department chairs, directors, and other hiring officials are responsible for working toward the balanced representation of racial/ethnic minorities and women within the workforce and the elimination of barriers to equal employment opportunities for persons with disabilities.

Hiring officials determine vacancy-specific qualifications required for entry to the position (in addition to any state required minimum qualifications) and desired for full-performance in the position (preferred qualifications). They ensure advertisements for the position reasonably describe principal duties to be performed and cite both minimum and preferred qualifications. Hiring officials recruit a pool of qualified candidates with good-faith efforts to ensure racial, ethnic, and gender diversity; all the while ensuring that the screening and selection process is free from bias related to race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents -- except where sex, age, or ability represents bona fide job-related occupational qualifications.

Further the hiring official will select, hire, place, train, and promote persons in all employment categories without regard to race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents -- except where sex, age, or ability represent bona fide educational or occupational qualifications. The hiring official selects the candidates for hire from the pool of the most qualified applicants for employment based upon job related qualifications using fair and valid selection criteria.

All selection decisions and hiring salaries are contingent on approval by the EEO/AA officer (or designee) for conformance to UNC Wilmington's EEO/AA Plan. SPA positions require approval by the Office of Human Resources. EPA positions require approval by the provost for faculty positions, and division vice chancellor for administrative, instructional and research positions. Hiring officials are not authorized to offer positions prior to receiving these approvals.

**UNCW Human Resources**

In coordination with the EEO/AA officer, the Office of Human Resources is operationally responsible for ensuring that:
• Recruitment procedures for EPA (including nine-month teaching faculty) and SPA positions comply with UNC Wilmington’s equal employment opportunity and affirmative action policies.

• Hiring officials and search committees understand their roles in supporting UNC Wilmington’s affirmative action hiring objectives.

• Applicants and employees are provided accurate information about the recruitment process and avenues of redress available to them should they believe they have been discriminated against because of their race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents -- except where sex, age, or ability represent bona fide educational or occupational qualifications.

• Each hiring recommendation and the applicant's qualifications for the position and hiring salary are reviewed and approved before any commitment is extended to a prospective employee for SPA and EPA (including nine-month teaching faculty) positions.

STATEMENT ON DIVERSITY IN THE UNIVERSITY COMMUNITY

In the pursuit of excellence, UNC Wilmington actively fosters, encourages, and promotes inclusiveness, mutual respect, acceptance, and open-mindedness among students, faculty, staff, and the broader community. Diversity is an educational benefit that enhances the academic experience and fosters free exchange of ideas from multiple perspectives. Diversity includes, but is not limited to, race, sex, age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran’s status, gender, educational disadvantage, socio-economic circumstances, language, and history of overcoming adversity.

UNLAWFUL HARASSMENT, DISCRIMINATION, AND RETALIATION

UNC Wilmington affirms that students and employees are entitled to an educational and employment environment free from unlawful harassment or discrimination based on that individual’s race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents, and expressly prohibits unlawful harassment or discrimination of any individual among the university community engaged in educational or employment pursuits. Further, no student or employee shall be subject to retaliation for bringing a good faith complaint pertaining to unlawful harassment or discrimination or for protesting such behavior directed against another member of the university community.

For more information concerning ways in which our multicultural learning community may be nurtured and protected contact the Office of Institutional Diversity and Inclusion, or to utilize complaint resolution procedures, contact the Office of the Dean of Students, the Office of Academic Affairs, the Office of Human Resources, the Title IX coordinator, or the ADA coordinator.

1 For complaints of sexual orientation, please refer to the university policy for internal review.
**DISCIPLINARY PROCESS**

UNCW policy on disciplinary procedures and processes follows the Office of State Personnel policy. Further information and the UNCW policy can be found at: http://www.uncw.edu/policies/documents/08.510_SPA_Disciplinary_Action.082806.pdf

**GRIEVANCE PROCEDURES**

UNCW policy on grievance procedures follows the Office of State Personnel policy. Further information and the UNCW policy can be found at:
http://www.uncw.edu/policies/documents/08.520SPAGrievanceFinalSeptember09.pdf


**Scope and Application of EEO/AA Policy and Plan**

UNC Wilmington's EEO/AA policy and plan apply to all employees of UNC Wilmington. The policies and plan apply to all departments of UNC Wilmington -- located in Wilmington, North Carolina or elsewhere.

In furtherance of its Equal Employment Opportunity policies, UNC Wilmington will:

1. Using the concepts of Affirmative Action, recruit a pool of qualified candidates with good faith efforts to ensure racial, ethnic, and gender diversity.

2. In compliance with the Civil Rights Act of 1964, as amended, and the NC General Statutes select, hire, place, train, and promote persons in all employment categories without regard to race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents -- except where sex, age, or ability represent bona fide educational or occupational qualifications. Base selection, hiring, and promotion decisions on valid requirements related to job performance and necessary upon entry to the position.

3. Administer all employment practices including compensation, benefits, promotion, training, educational assistance, termination, transfer, demotion, and reduction-in-force fairly and objectively without regard to race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents.

4. Provide, when necessary, reasonable accommodations for an applicant’s or an employee’s disabilities within the meaning of federal and state laws and regulations.

5. Not intimidate, interfere with, or retaliate against employees or applicants for employment who make a charge of employment discrimination or who testify, assist, or participate in any manner in a hearing, proceeding, or investigation of employment discrimination.
6. Strive for a work environment that is free from discrimination based on race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents.

**STATUTORY AND REGULATORY AUTHORITY**

UNC Wilmington's EEO/AA Plan is derived from the following statutory and regulatory authorities:

**North Carolina Statutes and Policies**

- G.S. 126-12 Compliance Services
- G.S. 126-14.2 Discrimination in Hiring Based on Political Activity
- G.S. 126-16 Equal Employment Opportunity
- G.S. 126-17 Prohibits Retaliation
- G.S. 126-36 Establishes Appeal Rights for Applicants
- G.S. 127B-10-15 Discrimination Against Military Personnel
- G.S. 168A-5-11 Handicapped Persons Protection Act

**Federal Laws and Regulations (including all amendments)**

- Title VII of the Civil Rights Act of 1964
- Title IX of the Educational Amendments of 1972
- Civil Rights Restoration Act of 1988
- Executive Order 11246
- Age Discrimination in Employment Act of 1967
- Equal Pay Act of 1963
- Section 503 and 504 of the Rehabilitation Act of 1973
- Vietnam Era Veterans Readjustment Assistance Act of 1972 and 1974
- Immigration Reform and Control Act of 1986, Section 102
- Civil Rights Act of 1991
- Americans with Disabilities Act of 1990
- ADA Amendments Act (2009)
- Title II of the Genetic Information Nondiscrimination Act of 2008

**DISSEMINATION OF THE AFFIRMATIVE ACTION POLICY**

[41 CFR 60-2.10]

The University of North Carolina at Wilmington makes known its commitment to affirmative action by disseminating broadly its equal employment opportunity policy and information about its affirmative action program. Ultimate responsibility for adequate communication of the institution's commitment rests with the chancellor and the Equal Employment Opportunity/Affirmative Action (EEO/AA) officer who must emphasize the importance of continued discussion of the policy and provisions of the affirmative action program at all levels of UNC Wilmington. The following specific actions have been instituted and will continue:
Internal Notice and Distribution

The university publishes this annual EEO/AA Plan and it is available to university employees and applicants for university employment in the following locations: Office of Human Resources, Office of the Provost and Vice Chancellor for Academic Affairs, and the Reserve Desk of Randall Library. The EEO/AA Plan is also published on the Human Resources Web site. http://www.uncw.edu/hr/employment.html

UNC Wilmington’s "Reaffirmation of Commitment to Equal Education and Employment Opportunity" is posted on bulletin boards across campus, and on the Human Resources Web site, and is provided to all faculty and senior officer search committees at the onset of a search.


UNC Wilmington's commitment to equal employment opportunity and affirmative action is emphasized during all orientation programs and supervisory and management training and with appropriate hiring officials and faculty and senior officer search committees. The reaffirmation of commitment to equal education and employment opportunities is distributed to the campus annually.

External Notice and Distribution

An Equal Employment Opportunity/Affirmative Action (EEO/AA) statement is contained in all Web and print advertisements for vacant positions: either "Equal Opportunity/Affirmative Action Employer" for brief pointer advertisements or “UNC Wilmington actively fosters a diverse and inclusive working and learning environment and is an equal opportunity employer. Qualified men and women from all racial, ethnic, or other minority groups are strongly encouraged to apply.”

A summary of UNC Wilmington’s EEO/AA policy and recruitment procedures is available on the UNC Wilmington Human Resources Web site. Printed versions are available in the UNC Wilmington Office of Human Resources.

UNC Wilmington has adopted the following equal opportunity / non-discrimination affirmation statement:

UNC Wilmington is committed to and will provide equality of educational and employment opportunity for all persons regardless of race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents -- except where sex, age, or ability represent bona fide educational or occupational qualifications or where marital status is a statutorily established eligibility criterion for State funded employee benefit programs.

The following equal opportunity / non-discrimination statement (or an approved abbreviation) appears within university publications distributed to the general public.

To ensure that equal educational and employment opportunity exists throughout the university, a results-oriented equal opportunity/affirmative action program has been implemented to overcome the effects of past discrimination and to eliminate any
artificial barriers to educational or employment opportunities for all qualified individuals that may exist in any of our programs. UNC Wilmington is committed to this program and is aware that with its implementation, positive benefits will be received from the greater utilization and development of previously under-utilized human resources.

The following publications are examples of such publications.

- UNC Wilmington Code of Student Life
- UNC Wilmington Graduate Catalogue
- UNC Wilmington Undergraduate Catalogue
- UNC Wilmington Magazine
- UNC Wilmington Pathways Lifelong Learning Catalog

The executive director for university relations makes a consistent and conscientious effort to publish articles covering activities related to the affirmative action program, including progress reports, promotions and achievements of women, racial/ethnic minorities, persons with disabilities, and covered veterans, when appropriate.

When photographs of university employees or students are included in publications, the executive director for university relations ensures that photographs reflect the diversity of UNC Wilmington community by including males and females, racial/ethnic minorities and non-minorities, and persons with disabilities in educational, employment, and social settings.

The North Carolina Department of Commerce – Division of Employment Security and the Office of State Personnel are informed of UNC Wilmington's commitment to equal employment opportunity and affirmative action. These sources are asked to recruit actively for UNC Wilmington and to refer racial/ethnic minorities, women, persons with disabilities, and covered veterans.

UNC Wilmington "EEO/AA" statement or "Equal Opportunity/Non-Discrimination" statement (or a version thereof) is printed or appended to purchase orders and contracts for goods or services in order to communicate UNC Wilmington’s status to vendors, suppliers, contractors, and subcontractors.

**Outreach Activities**

UNC Wilmington encourages representation by faculty and administrative staff on community councils, boards, and organizations which promotes the employment of women, racial/ethnic minorities, persons with disabilities, and covered veterans.

In addition, UNC Wilmington encourages its members to participate at the state and national level in professional organizations that address issues of minorities, women, and persons with disabilities. University employees regularly participate in conferences sponsored by their professional organizations which focus on issues of campus diversity. Though most of these organizations do not conduct formal job fairs, the contacts made allow for both specific and general recruitment activities. Some of these organizations offer formal placement centers at national and regional meetings, special training programs, mailing lists of individuals who are in the target groups, and publications which are likely to reach members of those groups.
For all staff job categories, vacancy announcements are sent to the local North Carolina Employment Security Commission; the Office of State Personnel; and posted to the UNC Wilmington Human Resources Web site.

IMPLEMENTATION OF AFFIRMATIVE ACTION PROGRAM

[41 CFR 60-2.10]

PROGRAM OBJECTIVES

UNC Wilmington's EEO/AA policy and plan applies to all employees and all departments of UNC Wilmington and other locations where UNC Wilmington has established worksites. In furtherance of its Equal Employment Opportunity policies, UNC Wilmington will use the concepts of affirmative action to recruit a pool of qualified candidates with good faith efforts to ensure racial, ethnic, and gender diversity.

In compliance with the Civil Rights Act of 1964, as amended, NC General Statutes, and related policies, UNC Wilmington selects, hires, places, trains, and promotes persons in all employment categories without regard to race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents - except where sex, age, or ability represent bona fide educational or occupational qualifications. Further, selection is from the pool of most qualified applicants for university employment based upon job-related qualifications for employment using fair and valid selection criteria.

UNC Wilmington administers all employment practices including compensation, benefits, promotion, training, educational assistance, termination, transfer, demotion, and reduction-in-force fairly and objectively without regard to race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents.

UNC Wilmington, when necessary, provides reasonable accommodations for an applicant's or an employee's disabilities within the meaning of federal and state laws and regulations.

UNC Wilmington does not intimidate, interfere with, or retaliate against employees or applicants for employment who make a charge of employment discrimination or who testify, assist, or participate in any manner in a hearing, proceeding, or investigation of employment discrimination. Further, UNC Wilmington does not tolerate any employee who engages in any related intimidation or retaliatory behaviors as noted in the previous sentence.

UNC Wilmington strives for a work environment that is free from discrimination based on race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents.
DEVELOPMENT AND EXECUTION OF ACTION ORIENTED PROGRAMS & ACTIVITIES

[41 CFR 60-2.17 (c)]

UNC Wilmington’s action oriented Equal Employment Opportunity and Affirmative Action programs are designed to identify, prevent, and correct related problem areas, and to support the attainment of goals identified in the annual report. UNC Wilmington’s programs consist of well defined recruitment procedures to attract individuals to its faculty and staff positions; career planning and professional development programs to increase promotional opportunities; reduction-in-force impact analysis; outreach activities to increase general awareness of UNC Wilmington’s interest in recruiting racial/ethnic minorities, women, persons with disabilities, and veterans; exit surveys to understand the reason employees leave UNC Wilmington; and significant diversity initiatives to increase diversity among employees and students.

RECRUITMENT PROCEDURES

UNC Wilmington has established well-defined recruitment procedures for both EPA (including nine-month teaching faculty) and SPA positions which require the posting or advertising of all vacant positions which may result in benefit-earning appointments. Under limited circumstances, however, a waiver of recruitment for an EPA position (including nine-month teaching faculty) may be approved by the chancellor and the EEO/AA Officer. These exceptional circumstances include efforts to obtain special skills not expected to be attainable through an open search, and/or other compelling circumstances in the best interest of the university.

Recruitment procedures do not apply to reclassification of positions or title changes based on changes in work assignments or attainment of a new competency level. These typically result from either a reorganization or reallocation of university resources, or changes in work duties or skill development, which evolve over time.

Increasing the numbers of underrepresented groups of people and achieving employment diversity on campus are two extremely important goals to UNC Wilmington. Nevertheless, because equal employment opportunity laws prohibit discrimination, even benign discrimination in favor of underrepresented groups, there are certain steps that UNC Wilmington cannot take to achieve its goals. These concepts remain confusing to many in higher education because legal decisions in the area of student admissions tend to allow some use of a person’s diverse status as a "plus factor." However, the area of student admissions is legally distinct from employment decisions and has no impact on these decisions.

Diversity and affirmative action are related concepts, but the terms have different origins and legal connotations. The Equal Employment Opportunity Commission has stated that “workplace diversity is a business management concept under which employers voluntarily promote an inclusive workplace.” But while Title VII permits diversity efforts designed to open opportunities to everyone, hiring departments cannot make employment decisions such as whom to interview or select for the position based on the candidate's protected status. Instead, search committee members must carefully examine each applicant's qualifications and experiences to determine which applicants are best qualified to serve UNC Wilmington’s interests, as articulated in the position description and vacancy announcement, without regard to the applicant's race, sex, age, or other protected status. The argument that an individual of
a particular race or sex will be better suited to the position is generally not legally sustainable because it is based on assumptions about the person's experiences that may or may not be valid. Instead, the committee must rely on tangible evidence of the person's actual experiences and qualifications.

Furthermore, a candidate’s race, sex or disability cannot be used as a tie-breaker. Hiring officials must make their recommendations based on the candidate’s qualifications in relation to the stated requirements for the position, and not based on the person’s protected status.

**EPA Recruitment Procedures** (including nine-month teaching faculty)

Vice chancellors have oversight responsibility for the recruitment of EPA positions within their respective divisions. The provost has oversight responsibility for the recruitment and appointment of faculty, though recommendations are made by academic department chairs through the academic deans.

The procedures for recruiting and making appointments to EPA administrative and faculty positions are summarized as follows:

1. The position is defined in terms of duties required, level of appointment, and approximate salary or salary range. Authorization to initiate recruitment is provided by the division vice chancellor for EPA administrative positions and by the respective dean for faculty positions.

2. The official vacancy announcement is advertised on the UNC Wilmington Human Resources’ Web site. In addition, the vacancy may be advertised nationally in appropriate media, with national professional job services, or professional associations. Nine-month teaching and research faculty positions, however, must be advertised in a national professional journal. Administrative appointments, supplemental assignments, and similar opportunities for faculty members are typically advertised internally to current UNC Wilmington faculty. UNC Wilmington’s commitment as an affirmative action / equal opportunity employer is noted prominently in all advertisements.

3. Announcements may be made with organizations that are likely to have contact with minority and women candidates. Search committee members for EPA (including nine-month teaching faculty) positions are required to contact five colleagues from other institutions and seek nominations of racial/ethnic minorities and women who would be competitive for the given position. These individuals are contacted by the committee and encouraged to submit their application.

4. Applicants are given the opportunity to identify their race and ethnicity, gender, disability, and veteran’s status on UNC Wilmington’s PeopleAdmin and Consensus™ on-line application systems.

5. A properly constituted search committee screens the qualified applicant pool to determine the best qualified applicant pool, which is then referred to the hiring official. The dean or vice chancellor and the EEO/AA officer (or designee) are responsible for reviewing and approving the recommended interview pool. Race and sex information on specific applicants is released to the search committee when it is necessary to identify individual(s) for a “second look” as part of our variance analysis.

6. As part of each recommendation for a new appointment, a search summary is filed that
details the recruiting efforts and explains reasons for the recommended appointment. The EEO/AA officer exercises final approval authority on behalf of the chancellor for all EPA and faculty appointments with respect to compliance with UNC Wilmington’s EEO/AA Plan.

**SPA Recruitment Procedures**

The Associate Vice Chancellor for Business Affairs - Human Resources exercises oversight responsibility for the recruitment of SPA staff throughout UNC Wilmington. Principal EEO/AA components of the SPA recruitment policy are noted below.

1. **Job Structuring** Position descriptions provide a bona-fide definition of position duties and responsibilities and include job-related knowledge, skills, and abilities considered essential to satisfactory job performance. Job descriptions are audited by Human Resources and appropriate classification levels are assigned for each SPA position.

   UNC Wilmington does not permit job factors to be incorporated in position descriptions which discriminate against minorities, women, or persons with disabilities -- except where sex, age, or physical ability are bona fide occupational qualifications.

2. **Advertising** The official vacancy announcement is advertised on the UNC Wilmington Human Resources’ Web site, with the NC Department of Commerce – Division of Employment Security and the Office of State Personnel. Vacancies may be advertised in appropriate electronic or print media. Departments can advertise internally, with only current UNC Wilmington permanent or time limited employees eligible to apply, if Human Resources expects a viable applicant pool (with regard to racial/ethnic minorities and women) will result. Internal job postings support the State's policy encouraging internal promotion. Where it does not appear that a viable applicant pool will result from an internal job posting, UNC Wilmington advertises externally.

   Typically, UNC Wilmington recruits SPA employees within the Wilmington/New Hanover County area. When applicants are unlikely to be available in significant numbers in the local labor market, positions may be advertised regionally, state-wide, or nationally to supplement the UNC Wilmington Website listing.

   The deadline for receipt of applications will be indicated in the vacancy announcement. The deadline will be a minimum of seven work days from the last public advertisement or a minimum of five work days for an internal posting. Longer recruitment periods are encouraged if needed to ensure a diverse applicant pool.

   When consultants, search firms, or employment agencies are utilized for recruitment assistance, they will be required to refer persons without regard to race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents.

3. **Application Processing** UNC Wilmington utilizes a web-based vacancy announcement and application system. Applications must be submitted electronically for a specific position vacancy. Applications are accepted at any time during the posting period. A separate application is required for each vacancy for which the applicant wishes to be considered.

   Applicants are asked to provide birth date, sex, race/ethnicity, veteran’s status and disability
status on a voluntary basis. This information is used for affirmative action and equal employment opportunity analysis within the Office of Human Resources. The hiring official has access to information concerning the race/ethnicity and sex distribution of the overall applicant pool. The race/ethnicity and/or sex of applicants is released to the hiring official when it is necessary to identify that individual for a “second look” as part of our variance analysis.

4. **Applicant Screening** Applicants are screened into two pools: qualified applicant pool and referred applicant pool. A member of the employment services team in the Office of Human Resources screens the total applicant pool for minimum advertised qualifications. Applications which meet minimum advertised requirements form the "qualified applicant pool." The same member of the employment services team or a properly constituted search committee screens the qualified applicant pool to determine the best qualified applicant pool, which is then referred to the hiring official. Consistent with NC General Statute 126-14.2, only applicants within the referred applicant pool are available to the hiring official.

**Selection Procedures**

Interview Pool and Hiring Recommendation

The "Hiring Official" is the individual charged by the department director with the responsibility for reviewing the referred applicant pool, determining the interview pool, interviewing candidates, and making the primary hiring recommendation. As noted previously, authority to hire cannot be delegated below the department director level, is subject to at least one level of administrative review above the hiring official (regardless of level), and is contingent on approval by the Office of Human Resources.

EEOC Variance Analysis

The referred applicant pool and the interview pool are subjected to EEOC-defined variance analysis by a member of the employment services team who compares the representation of women and minority applicants at successive stages in the screening, referral, and interview process. If women or minority applicants do not progress to successive levels at a percentage rate consistent with their representation in the total applicant pool, then a “second look” is conducted to determine if any racial/ethnic minorities or women no longer under consideration are substantially equally qualified to the least qualified of the applicants still under consideration. If this is the case, the minority or woman applicant is added to the pool still under consideration.

This variance analysis alerts the employment services team member to the possibility of adverse selection criteria at work in the screening process and provides an opportunity to discuss UNC Wilmington’s affirmative action objectives with the interviewer(s) or department director to assure appropriate consideration of minority or women applicants.

**EEO/AA Review and Approval of Hiring Decision**

The Associate Vice Chancellor for Business Affairs - Human Resources (or designee) serves as the EEO/AA Officer and reviews the statistical analyses of the applicant pool at the following junctures to ensure compliance with UNC Wilmington’s Equal Employment Opportunity / Affirmative Action Plan:

Composition of the referred applicant pool
Composition of the interview pool
Selection of the candidate to be hired

The EEO/AA officer (or designee) must approve each hiring decision and the salary to be offered prior to any commitment being extended to an applicant by the hiring department. Formal appointment letters are prepared by the Office of Human Resources.

Both EPA and SPA recruitment procedures conform to the Uniform Guidelines on Employee Selection Procedures [41 CFR 60-3.1 through 3.18].

Hiring Preferences

Nothing in UNC Wilmington’s EEO/AA plan is to be construed as preventing UNC Wilmington's compliance with hiring preferences established by the North Carolina General Assembly for state employees previously reduced in force who are eligible for priority re-employment consideration, current state employees seeking promotion, and eligible veterans (and spouses of veterans) who have served honorably during recognized periods of national conflict.

PROMOTIONAL OPPORTUNITIES

UNC Wilmington encourages all employees to seek promotional opportunities and in accordance with North Carolina law, extends priority consideration and hiring preference for promotions for SPA employees who are substantially equally qualified to a non-state employee.

Faculty positions allow progression to higher levels of the professorate according to policies published in the UNC Wilmington Faculty Handbook and the codes and policies of University of North Carolina. Faculty are selected for award of tenure and for promotion to higher rank regardless of race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents -- except where sex, age, or ability represent bona fide educational or occupational qualifications. It is the responsibility of the provost, the deans, and department chairs to apply nondiscriminatory criteria for promotion and for tenure.

Supervisors of SPA classified positions are asked to monitor the employee’s duties and to seek a classification review if the work changes. Reclassifications are recommended whenever the position study indicates that position duties have changed substantially over time. The reclassification of an SPA position to higher competency level or career band (though not subject to competitive recruitment procedures) is construed as a promotion under OFCCP guidelines. Reclassification decisions are based on job content, increased competencies and market considerations, and are made regardless of race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents.

CAREER PLANNING AND PROFESSIONAL DEVELOPMENT

Training is a vital tool in achieving equal employment opportunity and in strengthening affirmative action efforts. UNC Wilmington is committed to providing opportunities for employees to acquire new skills and to update and enhance existing ones. Faculty and staff
employees are provided opportunities for professional development.

**Performance Management**

All employees receive annual performance evaluations in accordance with UNC Wilmington and State Personnel policies on employee performance management for SPA employees or administrative guidelines for EPA and faculty employees. Effective performance management is the first step in career planning and professional development as it provides an opportunity for employee and supervisor to agree on specific training and developmental courses which will enhance the employee's value to the organization and increase the likelihood of promotion.

Effective performance management integrates performance management, competency assessment and career development to ensure a competent workforce to meet UNC Wilmington’s goals and objectives. Since 2009, performance management links the annual performance evaluation with the employee’s competency assessment to ensure employees have and demonstrate the knowledge, skills and abilities required to make the organization successful. The evaluation is based on specific job duties and performance standards related to competencies and established by the supervisor at the beginning of the performance review period and discussed with the employee.

Employee performance ratings are reviewed by the rater's supervisor and reviewed by the Office of Human Resources for SPA employees.

**Career Planning and Staff Development**

Supervisors and managers are responsible for providing developmental opportunities for their employees including access to on-campus seminars, courses, and training without regard to race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status or relationship to other university constituents. Career development planning provides a systematic way to build critical competencies and develop individuals.

The State of North Carolina encourages internal promotion when feasible. When evaluating recruitment options and considering internal promotion, managers will evaluate employees regardless of race, sex (such as gender, marital status, and pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status or relationship to other university constituents -- except where sex, age or ability represent bona fide educational or occupational qualifications.

**Management Training**

Training is provided to managers in the following areas:
- EEO/AA Plan
- Performance Management
- Supervisory and Management Skills
- Employee Selection
- Managing Diversity
- Unlawful Workplace Harassment Awareness
- Leadership Development
- Competency Assessment
Employee Training

UNC Wilmington offers training opportunities for staff employees consisting of skills and development workshops. Typical types of workshops include:

Clerical and Office Management Skills
Foundations of Supervision
Fiscal Resource Management
Customer Service
Office Computer Applications Training
Valuing Diversity

Examples of training programs with particular EEO/AA benefits include:

- New Employee Orientation welcomes new employees to the university and provides information on the university structure, mission, goals, and policies including a diversity training module.
- PeopleAdmin Training for Hiring Managers provides training on the electronic software used for establishing and recruiting positions and develops manager skills in identifying competencies required for the position; evaluation of applicant’s competencies and determining applicant pay based on competencies.
- Career Banding for Supervisors provides training to understand UNC Wilmington’s compensation goals, identify position competencies, apply pay factors to determine salary and salary progression, set maximum recruitment salary and process pay changes.
- Computer Competency Program is designed to introduce non-computer users to keyboard skills using self-directed programs to gain competency and confidence. Targeted toward non-clerical staff seeking career progression to positions which require terminal or data entry use.
- Supervisory Development Workshops adapted for service and maintenance employees whose work schedules do not permit them to attend traditionally scheduled classroom training.
- Harassment Awareness training is required for faculty and staff. This training educates and introduces the campus community to the unlawful harassment policy and resolution procedures; raise awareness among employees about responsibility they have in treating others with civility and respect; and increase participants’ understanding of how to respond to and report harassment.
- Equal Employment Opportunity Institute, provided by the NC Office of State Personnel, addresses federal and state EEO laws and issues of workplace diversity in state government.
- Leadership Enhancement and Administrative Development (LEAD) provides eight training modules for senior administrators including legal and ethical issues, employee relations and diversity.
Exit Surveys

Since July 2007, UNC Wilmington’s Office of Human Resources has a program to survey separated employees with regard to their reasons for leaving the university. Former employees (who left voluntarily) are contacted and asked a series of questions designed to help determine their motivation for leaving the university. Results of the survey are tabulated and analyzed. Patterns which suggest a workplace that disenfranchises employees are discussed with supervisors of those areas.

Reduction in Force Impact Analysis

When budgetary constraints or changes in operational requirements necessitate, UNC Wilmington may abolish positions and separate employees under provisions of its Reduction in Force (RIF) Policy and state law.

As a matter of university practice, all reasonable means of avoiding a reduction in force will be explored prior to separating permanent employees -- including, for example, reducing non-salary expenditures, reducing salary expenditures, reallocating resources within UNC Wilmington, and abolishing vacant positions.

In accordance with current federal and state law, reduction-in-force decisions must be made regardless of an employee's demographic category. However, to assess the potential adverse impact on the diversity of the work force, an adverse impact analysis will be performed for the purpose of determining the effects of an impending reduction in force on the demographics of the university's work force -- with respect to the representation of racial/ethnic minorities, women, and persons with disabilities.

Where reduction-in-force criteria are applied uniformly and lead to the separation of minority or female employees, UNC Wilmington will immediately review the race/sex composition of the remaining work force in order to determine whether the current year's affirmative action objectives need to be revised under its federally approved EEO/AA Plan.

Diversity Initiatives

Statement on Diversity in the University Community

In the pursuit of excellence, UNC Wilmington actively fosters, encourages, and promotes inclusiveness, mutual respect, acceptance, and open-mindedness among students, faculty, staff, and the broader community. Diversity is an educational benefit that enhances the academic experience and fosters free exchange of ideas from multiple perspectives. Diversity includes, but is not limited to, race, sex (such as gender), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran’s status, gender, educational disadvantage, socio-economic circumstances, language, and history of overcoming adversity.

UNC Wilmington diversity initiatives have evolved with progress toward a bold and inclusive organizational cultural change based on collaboration and relationship building. Chancellor Gary L. Miller maintains a Diversity Council with campus-wide representation to lead diversity planning efforts. UNC Wilmington’s Diversity Initiative Plan provides guidance for the campus. These essential steps fostered the initial infrastructure to create the Diversity Council and the Office of Institutional Diversity and Inclusion, an office with specific operational duties for this initiative. The associate provost for institutional diversity and
inclusion provides enhanced program offerings for the university community. The council reviews and refreshes the progress on the initiatives annually.

For more information concerning ways in which our multicultural learning community may be nurtured and protected contact the Office of Institutional Diversity and Inclusion, or to utilize complaint resolution procedures, the Office of the Dean of Students, the Office of Academic Affairs, the Office of Human Resources, the Title IX coordinator, or the ADA coordinator.

**Diversity Council Plan’s Key Features**

Implementation of the UNC Wilmington Diversity Council recommendations are outlined and monitored in a matrix reporting process with eight functional areas: Web-presence, Campus Awareness, Office of Institutional Diversity and Inclusion, Admissions, Academic Affairs, Human Resources, Administration, and Student Affairs.

**Enhance the Web Presence of Diversity Initiatives.**

The Office of Institutional Diversity and Inclusion is responsible for monitoring and promoting a prominent diversity Web site with links to related activities and campus information both to and from division, college, and school diversity Web sites.

**General Campus Awareness**

Under the leadership of the Office of Institutional Diversity and Inclusion, these initiatives will be continued:

- Include topic of diversity in the chancellor’s annual State of the University Address
- Hold Annual Diversity Symposium on campus
- Conduct climate survey and disseminate survey findings to faculty, students, and staff
- Develop Speakers Bureau from which orientation and training planners can draw programs and expert presenters
- Communicate broadly UNC Wilmington’s diversity definition and vision, including incorporation into appropriate documents
- Communicate broadly the Campus Respect Compact, which describes expectations for interactions among students, administrators, faculty, and staff implemented on campus.
- The Arts in Action Performance Series seeks to culturally enrich, educate and entertain students, faculty, staff, and the general public through the presentation of diverse programs featuring professional, high-quality performing artists.
- The Leadership Lecture Series invites nationally-known speakers who enlighten, challenge, inspire and demonstrate that all people have the ability to lead if they have the desire to make a difference.

Specific campus operations are engaged in diversity activities.

- Admissions identified resources to institute a mentoring program for racial/ethnic minority students upon admission.
• Academic Affairs instituted a diversity module as a required component of all orientation programs for new and transfer students, administrators, faculty, and staff with a refresher curriculum. Also, Academic Affairs works with academic departments to identify how diversity is addressed in required coursework for their majors and charges the Basic Studies Committee with curriculum revision to incorporate diversity.
• The Director of International Student & Scholar Services coordinates cultural programs, excursions, international student recruitment, etc. and established funds dedicated to international student scholarships.
• EEO/AA briefings for each search committee at UNC Wilmington.
• Programs created in University College to support diverse students, addressed targeted needs and established a summer residential student fellows program.

In response to the call of university leadership, UNC Wilmington’s Office of Institutional Diversity and Inclusion, in an effort to better serve our constituency, was charged to launch a robust effort in the establishment of cultural centers to address the needs of underrepresented groups. As a whole, these centers strive to coordinate and implement programs that support our diverse student population, assist in the development of diversity policies and procedures, provide academic and social guidance to students, engage in grant writing and fundraising efforts related to diversity initiatives, and assume responsibility for the enhancement of the overall cultural and academic enrichment experiences of UNC Wilmington students.

In support of these efforts, the Office of Institutional Diversity and Inclusion is mindful of its preamble: In the pursuit of excellence, UNC Wilmington actively fosters, encourages, and promotes inclusiveness, mutual respect, acceptance, and open-mindedness among students, faculty, staff, and the broader community. Diversity is an educational benefit that enhances the academic experience and fosters free exchange of ideas from multiple perspectives.

Office of Institutional Diversity and Inclusion

The vision of the Office of Institutional Diversity and Inclusion is to become a national model for diversity and inclusion services based on research and best practices for an institution with our designation as master’s comprehensive university. The mission is to provide diversity and inclusion initiatives and strategies that contribute to UNCW’s mission and strategic direction to facilitate a powerful learning experience for all students. The office also has an institutional role in providing guidance related to diversity and inclusion initiatives campus wide. The initiatives and strategies are based on research and best practices, and clustered in the five key areas of Climate, Leadership, Excellence, Access and Representation (CLEAR) framework.

Upperman African American Cultural Center

The Upperman African American Cultural Center supports UNC Wilmington’s commitment to diversity and inclusion, and its mission to offer “powerful academic experiences” through the successful execution of three primary goals:

1. Development and presentation of programs that explore and educate students, staff and community about the historical, cultural, social and artistic experiences of African Americans and other people of the African Diaspora.
2. Support development and maintenance of programs and resources that support quality of life, academic excellence, social well-being and a positive over-all experience for Black students at UNC Wilmington.

3. Maintain a level of expertise about the Black student experience that affirmatively informs the policies, practices and programs of UNC Wilmington administration, Academic Affairs and Student Affairs.

Centro Hispano

The mission of Centro Hispano is to nurture students into becoming strong leaders representative of all the core values of UNC Wilmington, through the promotion of academic excellence, cultural representation, and leadership development. Centro Hispano serves as a link between students and all available resources needed for their academic growth, as well as for their development as future professionals. The focus is on embracing and nurturing diversity, on developing student leadership, and on promoting best practices and best use of resources needed for academic success. The emphasis on diversity is exemplified by a goal of increasing the representation of the diversity within the Hispanic culture through students, faculty, staff, campus events, curriculum, and community engagement. The focus on student leadership development provides students with enrichment opportunities including leadership conference, leadership seminars and certificates, as well as leadership roles within our campus and community.

Women’s Studies and Resource Center

The Women’s Studies and Resource Center strives to create an interdisciplinary community of scholars working in the areas of sex, gender, and women’s issues. The center offers research, programming, education, and advocacy to promote gender equality, both locally and globally. The Center also provides information and referrals for a variety of UNC Wilmington and community services and resources. The Women’s Studies and Resource Center provides students, faculty, staff, and those in the greater Wilmington community with opportunities to experience the diverse facets of women’s lives, hopes and concerns from artistic, historical, and other perspectives. The center offers an interdisciplinary Women’s and Gender Studies minor, opportunities for community outreach and an ongoing calendar of co-curricular activities which include workshops, lectures and scholarly panels.

LGBTQIA Resource Office

The LGBTQIA Resource Office at the University of North Carolina Wilmington supports gay, bisexual, transgender, questioning, intersex and allied students, faculty, staff, and alumni. The office works to create a safe and inclusive environment for the LGBTQIA community and contribute to a culturally rich campus. Additionally, the office works both to raise awareness and inclusion of sexual and gender minorities and to provide information, referral, support, and programming to the UNCW Community. We do this through community building, advocacy, social justice and diversity education and the development of global citizens. All members of the UNCW campus are welcome, regardless of gender identity or other factors.

**Representation Analysis Methodology**
In compliance with regulations of the OFCCP, UNC Wilmington compiles an annual report of the representation of women and racial/ethnic minorities consisting of the following components: Work Force Analysis, Job Group Analysis, Availability Analysis and Representation Analysis.

In performing these analyses, UNC Wilmington uses “AA Planner" software designed and developed by Peopleclick Corporation to facilitate the representation analysis as specified in 41 CFR 60-2.15. This section of the EEO/AA plan will outline the methodology employed in undertaking UNC Wilmington’s representation analysis and summarize the resulting representation of women and racial/ethnic minorities in our work force.

WORK FORCE ANALYSIS

Data for all permanent and time limited employees is extracted annually from UNC Wilmington’s Human Resources system. The data represents persons employed at UNC Wilmington on December 31 of each year, and is downloaded to AAPlanner to initiate the work force analysis.

A Work Force Analysis (organizational profile) is then prepared which details each organizational unit of UNC Wilmington by listing all positions assigned to the unit and providing the count and percentage representation of women and racial/ethnic minorities for the unit as a whole -- as well as providing subtotals and percentages for each minority group. The Work Force Analysis is included in Part II of the annual EEO report.

JOB GROUP ANALYSIS

Job groups for all permanent full-time or part-time employees are determined by reviewing each employee's job and classification to determine: (l) similar content, (2) similar rates of pay, and (3) similar opportunities.

A job group analysis is then prepared which details each job group by total female and total minority representation -- and provides subtotals and percentages for each minority group. In the job group analysis, position titles are listed from the highest individual salary or salary range to the lowest. This analysis is included in Part II of the annual EEO/AA Report. [Note: While the chancellor's and chancellor emeritus’s positions are included in the work force analysis, both are excluded from the job group analysis because hiring decisions for these positions are made at the UNC system level rather than at UNC Wilmington.]

AVAILABILITY ANALYSIS

UNC Wilmington uses Factor I (the percentage of racial/ethnic minorities or women with requisite skills in the reasonable recruitment area) exclusively for determining race and sex
availability for all job groups. Factor II (the percentage of racial/ethnic minorities or women among those promotable, transferable, and trainable within the contractor's organization) is not used because of UNC Wilmington’s preference that its internal distribution of racial/ethnic minorities and women should not influence our goal for the UNC Wilmington workforce to equate to the labor market.

Because all of the job groups for staff are composed of job titles with different availability rates, a composite availability figure for the job group must be calculated. UNC Wilmington determines the availability for each job title within the job group by assigning an occupational code from the 2000 census, and then determines the proportion of job group incumbents employed in each job title using the Peopleclick AA Planner software. This software weighs the availability for each job title by the proportion of job group incumbents employed in that job group. The sum of the weighted availability estimates for all job titles in the job group indicates the composite availability for the job group.

UNC Wilmington uses the best available information to determine the percentage of racial/ethnic minorities and women in occupations that correspond to UNC Wilmington’s job groups. The best available information for our staff positions and Tier II senior officers is the 2000 federal census. For Tier I senior officers and faculty job groups, UNC Wilmington uses data provided by the US Department of Education. This data indicates the race and sex of employees in educational institutions similar to UNC Wilmington. UNC Wilmington may use nation-wide, state-wide or Wilmington area census data based on the predominate recruitment strategies used for vacancies within the job group. The specific availability data is found in Part II of the EEO/AA plan.

COMPARING INCUMBENCY TO AVAILABILITY

[41 CFR 60-2.15]

Under-representation of women or racial/ethnic minorities exists in a job group when the actual number of employees is less than the number that would reasonably be expected by their availability in the labor market. The OFCCP’s definition of under-representation relies on a standard of reasonableness. Institutions may select among three recognized standards: the Any Difference Test; 80% Test; and Standard Deviations Test.

UNC Wilmington has adopted the most stringent of these standards, the Any Difference Test, to guide our affirmative action planning. The Any Difference Test documents whenever the representation of women or racial/ethnic minorities among the UNC Wilmington workforce is at least one whole person less than the expected representation of these groups in relation to their availability in the relevant labor market. This is done by comparing the UNC Wilmington workforce percentage to the availability percentage and calculating the number of persons UNC Wilmington would need to recruit in order to bring the representation of women or racial/ethnic minorities in the job group into parity with the labor market.

The comparison and analysis of the work force and availability percentages generated in the Job Group Analysis and Availability Analysis, respectively, enable us to develop a clear picture concerning the relative representation of women and racial/ethnic minorities at UNC Wilmington. The final step in the analysis is to compare the work force percentages and market availability for women and racial/ethnic minorities by job group. Wherever the work force percentage is equal to or exceeds market availability, women or racial/ethnic minorities
are "fully represented" within the UNC Wilmington work force. Wherever the work force percentage is less than market availability (and the difference equates at least to one whole person), women or racial/ethnic minorities are "under-represented."

PROCEDURES FOR MONITORING

METHODOLOGY TO ESTABLISH PLACEMENT GOALS

[41 CFR 60-2.16]

The goal of UNC Wilmington’s Affirmative Action planning is for women and racial/ethnic minorities to be represented on our campus to the same extent as they are represented in the appropriate labor market -- or for the work force percentage to equal the availability percentage.

Relying on the current year’s comparison between the UNC Wilmington work force percentage and the labor market availability for both women and racial/ethnic minorities by job group, UNC Wilmington establishes an affirmative action goal wherever the work force percentage is less than the availability percentage and the difference is at least one whole person. No goals are established for job groups with under-representation of less than one whole person.

METHODOLOGY TO EVALUATE PRIOR YEAR’S GOALS

[41 CFR 60-2.16]

Evaluation by Comparing Net Change in Representation

Where work force counts are below labor market, UNC Wilmington establishes a goal to increase the representation of women or racial/ethnic minorities (incumbency) to bring their representation in line with the labor market (availability). Each job group is evaluated against the previous year’s representation as one means of evaluating the prior year’s goal accomplishment (Part II, Tables 3 and 4). As a quantitative measure, this picture of gains and losses in each job group helps administrators understand where we have made progress in recruiting and retaining women and racial/ethnic minorities and where we need to make further progress to achieve a fully balanced and diverse work force.

Evaluation by Comparing Percentage Change in Availability and Representation

For job groups that require a closer examination of under-representation, comparisons are made between the current and previous year’s availability and the current and previous year’s incumbency (Part II, Tables 5 and 6). In some cases, this may indicate that even though UNC Wilmington is using good faith efforts to hire and retain women and racial/ethnic minority employees, the percentage of women and racial/ethnic minority employees in the labor market may be rising at a pace faster than at UNC Wilmington.

IDENTIFICATION OF PROBLEM AREAS

[41 CFR 60-2.17]

UNC Wilmington is committed to and will provide equality of educational and employment opportunity for all persons regardless of race, sex (such as gender, marital status, and
pregnancy), age, color, national origin (including ethnicity), creed, religion, disability, sexual orientation, political affiliation, veteran status, or relationship to other university constituents. The Office of Human Resources consistently evaluates impediments to equal employment opportunity by ensuring non-discriminatory practices in personnel activity such as selection, recruitment, compensation, training, and hiring. In addition, the Office of Human Resources annually evaluates the representation of women and racial/ethnic minorities by job group and monitors all employment activity. Situations that indicate an adverse condition are typically identified early in the recruitment and selection process and the hiring official is advised on corrective actions.

INTERNAL ACCOUNTABILITY AND REPORTING SYSTEMS

[41 CFR 60-2.17]

Supervisory Accountability for Affirmative Action Efforts

Every supervisor is charged with carrying out the program of equal employment opportunity and affirmative action.

Monitoring and Assessment of Good Faith Efforts to Obtain Goals

The affirmative action program is evaluated in two ways:

1. Monitoring UNC Wilmington’s commitment and good faith efforts, and
2. Comparison of numerical goals and progress toward accomplishing those goals.

Both of these functions are the responsibility of the EEO/AA officer in conjunction with the chancellor and the EEO/AA Advisory Committee (cabinet). To evaluate adherence, the EEO/AA officer (or designee) requires reports from those involved in the search and selection process and, when necessary, consults with them at important steps in the employment process. Reports and consultations also occur whenever there appears to be an insufficient number of racial/ethnic minorities or women in the pool of candidates or whenever a substantial portion of such applicants has been eliminated.

The EEO/AA officer has published reporting requirements for faculty members and administrative officers participating in the hiring process.

1. When the search is initiated, the department must notify the EEO/AA officer (or designee) of the type of position and of specific plans for advertising the position.
2. Each applicant for the position is asked to voluntarily identify his or her race and ethnicity, gender, disability, and/or veteran status on UNC Wilmington’s PeopleAdmin and Consensus™ on-line application systems. The results of each search are made available to the EEO/AA officer (or designee) who may, in some searches, recommend that the search be extended to reach additional racial/ethnic minorities and women in percentages more reflective of availability for the applicant pool.
3. In any search, if the EEO/AA officer (or designee) perceives the possibility of deficiencies in the application of the affirmative action process, the officer may request a review by the academic dean of the affected unit, or by the appropriate vice chancellor. If appropriate, the division vice chancellor for EPA positions, the provost...
for faculty positions, or the EEO/AA officer for any position may suspend a search and report the suspension to the chancellor.

4. Before a search leader extends an offer of employment, the EEO/AA officer shall have received a report which describes the recruiting and advertising efforts; and states the reason or reasons for preferring the person chosen for the position. This report should include a summary report on compliance with the affirmative action process. The EEO/AA Officer (or designee) will confirm the EEO/AA certification of the search process to the hiring official in writing with a concurrent copy to the search reviewer.

For SPA appointments, the EEO/AA officer ensures that procedures published by the North Carolina Office of State Personnel are followed. In addition, the EEO/AA officer requires that a report be filed in the Office of Human Resources describing the reasons for selection of one applicant over the other applicants who were interviewed.

In overseeing UNC Wilmington’s affirmative action program, the EEO/AA officer makes regular reviews of the work force complement. Those job groups which demonstrate under-representation are scrutinized carefully. Hiring decisions made in the various units are assessed on an ongoing basis as they relate to the progress toward accomplishing the percentage goal within job groups. The provost and vice chancellors who oversee positions affected by the under-utilization are regularly informed of the progress toward attaining those goals.

Further, the Director of Internal Audit incorporates formal audit procedures into UNC Wilmington’s on-going audit protocols to monitor compliance issues with respect to UNC Wilmington's EEO/AA program.

**COMPLIANCE WITH GUIDELINES ON DISCRIMINATION BECAUSE OF RELIGION OR NATIONAL ORIGIN**

**[41 CFR 60-50]**

UNC Wilmington has reviewed its employment practices to ensure that members of various religious and/or ethnic groups receive fair consideration for employment opportunities. In addition, UNC Wilmington makes reasonable accommodation to religious observances and practices.

**COMPLIANCE WITH GUIDELINES ON SEX DISCRIMINATION**

**[41 CFR 60-20]**

**Recruitment and Advertisement**

UNC Wilmington will continue its policy of equal employment opportunity for members of both sexes. UNC Wilmington has no job positions reserved for members of one sex only due to a bona fide occupational qualification. UNC Wilmington actively recruits both men and women for all jobs. Advertisements for university positions express no sex preference. Print advertisements do not appear under headings labeled "male" or "female."

**Job Policies and Practices**

Written personnel policies clearly indicate that there shall be no discrimination against employees on the basis of sex or gender. All employees have equal opportunity for any job for
which they are qualified. UNC Wilmington makes no distinction based on sex or gender in employment opportunities, wages, hours, benefits, or other conditions of employment and places no restrictions on a women's ability to work that are not placed on a men's ability in the same setting. There is no distinction between the hiring, employment treatment or termination of a woman or a man based on marital status (except where marital status is a statutorily established eligibility criterion for State funded employee benefit programs). UNC Wilmington does not deny employment to women with young children nor does it treat male and female employees differently as to retirement or termination because of age. Seniority at UNC Wilmington is not based in any way on sex. UNC Wilmington provides appropriate and comparable physical facilities for female and male employees. There is no distinction based on sex in determining eligibility for any training and development program offered by UNC Wilmington. Women are encouraged to participate in such opportunities both within and outside UNC Wilmington.

Pregnancy and Medical Conditions
Women are not discriminated against in their employment because of time spent away for childbearing or related medical conditions. Disabilities resulting from pregnancy are treated like any other temporary disability suffered by an employee. Female employees who are pregnant are not subjected to limitations on their employment rights before childbirth. After a leave for pregnancy or related conditions, entitlements are retained in the same manner as for any employee returning from disability leave. Under UNC Wilmington’s health insurance coverage and disability programs, a disability contributed to or caused by pregnancy or related medical conditions is treated the same as a disability contributed to or caused by other medical conditions.

Sexual Harassment and Undue Favoritism Based on Sex
Sexual harassment and/or the assignment or suggestion of rewards and punishments on the basis of sex are prohibited. Intimate consensual sexual relations between supervisors and subordinates and between faculty members and students are a cause for concern. Those relationships are improper when they influence or could reasonably be expected to influence decisions or actions related to employment and/or academic success. UNC Wilmington has specific conduct policies prohibiting improper relationships, sexual harassment and conflict of interest. [link]

Upon allegations that raise reasonable apprehension of prohibited activity that violates this policy, careful inquiry and investigation--with appropriate safeguards insuring individual rights and confidentiality--will be carried out. Appropriate penalties will be given under normal procedures ensuring due process. Those who invoke the policy are protected from retaliatory acts. Information concerning complaints arising under it will be treated responsibly. Malicious or frivolous claims of harassment or favoritism are also prohibited and, if substantiated, will result in disciplinary action.

This policy applies to all applicants for employment or for admission to university programs; to all officers, employees, and students; and to persons who serve UNC Wilmington as agents and are under the control of UNC Wilmington.

The Office of Human Resources, the Office of General Counsel, and the Dean of Students' Office provide training to faculty and staff on ways to identify and correct sexual harassment.
That training focuses especially on relevant state and federal laws, court decisions, grievance and disciplinary procedures, and useful mediation strategies.

All faculty and staff are required to attend harassment awareness educational sessions.

**Title IX Coordinator**

Dr. Terrance Curran is the Title IX Coordinator.

Contact Information: Dr. Terrance Curran, Associate Provost Academic Affairs/Enrollment Management, 601 S. College Rd, Wilmington, NC 28403. currant@uncw.edu, 910-962-3876

**SPECIFIC PROVISIONS CONCERNING INDIVIDUALS WITH DISABILITIES AND QUALIFIED COVERED VETERANS [41 CFR 60-250 and 60-741]**

UNC Wilmington does not discriminate against persons with disabilities and is committed to taking affirmative action to employ and advance in employment qualified individuals with disabilities and qualified covered veterans. This affirmative action program applies to the recruitment, employment, compensation, and advancement of persons with disabilities and qualified covered veterans.

**Outreach Activities**

In seeking persons with disabilities and qualified covered veterans, UNC Wilmington identifies agencies and organizations which may refer applicants. Specifically, UNC Wilmington regularly seeks the aid of the following sources in the interest of identifying and giving employment consideration to qualified covered veterans and to persons with disabilities:

- **Director**
  - N.C. Department of Commerce – Division of Employment Security
  - 717 Market Street
  - Wilmington, NC 28401

- **Unit Manager**
  - NC Vocational Rehabilitation Services
  - 709 Market Street
  - Wilmington, NC 28402

Employees with disabilities and qualified covered veterans may appropriately identify themselves as such to facilitate accommodation. Job applicants are advised, during the recruitment process, to contact the UNC Wilmington employment services manager if they require an accommodation if called for an interview.

**Personnel Practices**

UNC Wilmington makes reasonable accommodation to the physical and mental limitations of an employee or applicant. Information obtained from applicants and employees concerning a physical or mental condition is kept confidential, except that (1) supervisors and managers may be informed regarding the necessity for accommodation or restrictions on work or duties; (2) first
aid and safety personnel may be informed, when appropriate; and (3) government officials investigating compliance with equal employment opportunity laws may be informed.

The applications of employees and veterans who make their disability status known to the Office of Human Resources are reviewed to ensure that qualified individuals are given equal consideration for opportunities for hire, promotion, and transfer.

Employment procedures for EPA (including faculty) and SPA positions include careful attention to evidence of self-identification in these categories and require thoughtful consideration of such applicants for initial employment and promotions and for participation in training opportunities. Periodic reviews of employment procedures allow monitoring of affirmative action activities and responses to these populations. Recruitment staff in the Office of Human Resources address issues involved in placing persons with disabilities in employment and respond to requests for accommodation by such persons. The Office of Human Resources provides information to supervisors on affirmative action principles and recruitment policies affecting persons with disabilities and disabled veterans.

So that qualified persons with disabilities are not screened out unnecessarily for UNC Wilmington’s jobs, the Office of Human Resources reviews job descriptions of positions to ensure that physical and mental job qualifications are job-related, are consistent with business necessity, and will ensure the safe performance of the job.

In offering employment or promotions to individuals with disabilities or qualified covered veterans, UNC Wilmington does not reduce the amount of compensation offered because of any disability income, pension, or other benefits the applicant or employee receives from other sources.

Facilities

All buildings were subjected to a compliance review by the Office of Civil Rights of the Atlanta regional office of the U. S. Department of Education in 1991 and suggested corrections were made. Since that time, UNC Wilmington has maintained an ongoing program to both improve facilities and ensure compliance with the Americans with Disabilities Act (ADA and ADAAA) as needs are identified and funding becomes available. In addition, all plans for new construction projects and renovations involving the reorientation of building components are submitted for review and approval by the NC Department of Insurance Fire Fund Division. The NC Department of Insurance reviews the plans for compliance to the NC Building Code, which includes the North Carolina Accessibility Code and meets ADA requirements.

ADA Coordinator

The ADA Coordinator is David Todd.
Contact Information: David Todd, Safety & Accessibility Specialist, Environment Health & Safety, 601 South College Rd., Wilmington, NC 28403, toddd@uncw.edu, 910-962-4287
In order to reduce the cost of publishing, UNC Wilmington publishes the EEO/AA Plan in three parts. Part I is distributed to the North Carolina Office of State Personnel, the Office of the Provost and the Reserve Desk of Randall Library. Part I is updated as needed and posted to the UNC Wilmington Human Resources Web site. Part II is produced annually, and posted to the UNC Wilmington Human Resources Web site and distributed to the NC Office of State Personnel, and the Office of the Provost. Part III is produced annually as supporting tables for Part II and is maintained in the Office of Human Resources. All three parts also are available for inspection during regular working hours in the Office of Human Resources, 601 S. College Road, Wilmington, NC 28403 for a period of three years after they are produced.

**Part I: EEO/AA Policies and Procedures**
- EEO/AA Policy Statement
- Dissemination of The Affirmative Action Policy
- Implementation of Affirmative Action Program
- Development and Execution of Action-Oriented Programs
- Utilization Analysis Methodology
- Methodology to Establish Placement Goals
- Methodology to Evaluate Prior Year’s Goals
- Identification of Problem Areas
- Internal Accountability and Reporting Systems
- Compliance with Guidelines on Discrimination Because of Religion or National Origin
- Compliance with Sex Discrimination Guidelines
- Specific Provisions Concerning Persons with Handicapping Conditions Disabled Veterans and Vietnam Era Veterans
- Cost Reduction Mechanisms and Records Availability

**Part II: EEO/AA Annual Report**
- Reaffirmation of EEO/AA Policy Statement
- Executive Summary
- Utilization Observations by Job Group
- Summary Observations by EEO6 Category
- Utilization Analysis
- Placement Goals
- Good Faith Efforts
- Supporting Tables and Graphs

**Part III: EEO/AA Supporting Documentation**
- Factor Availabilities
- Job Group, EEO Codes, and Census Occupation Codes Assigned to Job Titles
- Job Group Analysis
- Work Force Analysis (Organizational Profile)
Appendix 8. Faculty *curricula vitae*.
BRIAN S. ARBOGAST

Associate Professor     Phone: 910-962-2644
Department of Biology and Marine Biology  Fax: 910-962-4066
University of North Carolina Wilmington  Email: arbogastb@uncw.edu
Wilmington, NC 28403 (USA)  http://people.uncw.edu/arbogastb/

EDUCATION
1999  Ph. D.  Biology, Wake Forest University, Winston-Salem, North Carolina
1996  M. S.  Zoology, Louisiana State University, Baton Rouge, Louisiana
1992  B. S.  Biology, Wake Forest University, Winston-Salem, North Carolina

PROFESSIONAL POSITIONS
2011-present:  Associate Professor, Dept. of Biology & Marine Biology, UNC Wilmington, Wilmington, NC
2011-present:  Assistant Director, Wildsumaco Biological Station, Ecuador
2013-present:  Research Associate, Museum of Comparative Zoology, Harvard University
2008-2011:  Assistant Professor, Dept. of Biology & Marine Biology, UNC Wilmington, Wilmington, NC
2006-2008:  Associate Professor & Curator of Mammals, Department of Biological Sciences, Humboldt State University, Arcata, CA
2001-2006:  Assistant Professor and Curator of Mammals, Department of Biologic Sciences, Humboldt State University, Arcata, CA
1999-2001:  Post-Doctoral Research Associate, Department of Zoology and Burke Museum of Natural History, University of Washington, Seattle, WA

PUBLICATIONS SINCE 2007 (*Undergraduate; **Graduate Student)

PEER-REVIEWED PUBLICATIONS

**Hodge, AMC and BS Arbogast. High carnivore diversity at a mid-elevation site in Ecuador’s Gran Sumaco biosphere reserve: implications for conservation and niche partitioning. In Review.


Vanderhoff, EN., A-MC Hodge, BS Arbogast, J Nilsson, and TW Knowles. 2011. Abundance and


**RESEARCH REPORTS SINCE 2007** (*Undergraduate; **Graduate Student*)


**POPULAR PUBLICATIONS**

SCIENTIFIC PRESENTATIONS (2007-present)

Arbogast, BS. **Invited Seminar.** Department of Biology, Wake Forest University. Volcano at the edge of two worlds: Mammalian Biodiversity of Sumaco Volcano, an unstudied peak at the Amazonian-Andean Junction in eastern Ecuador. September, 2013.

Arbogast, BS. **Invited Seminar.** Department of Biology, The College of William and Mary. Volcano at the edge of two worlds: Mammalian Biodiversity of Sumaco Volcano, an unstudied peak at the Amazonian-Andean Junction in eastern Ecuador. October, 2013.

**Curry-Lindahl, K, BS Arbogast, TW Knowles, and SF Burneo. Using camera trap surveys to address terrestrial mammal biodiversity and conservation in Sumaco National Park, Ecuador. 93rd Annual Meetings of the American Society of Mammalogists, Philadelphia, PA. June, 2013.**


Arbogast, B. **Invited Seminar.** Humboldt State University, Department of Biological Sciences, Arcata, CA. Cryptic diversity in an iconic Australian marsupial: the Greater Glider, Petauroides volans. February, 2012.

Arbogast, B. **Invited Seminar.** Humboldt State University, Wildlife Department, Arcata, CA. Volcano at the edge of two worlds: Mammalian Biodiversity of Sumaco Volcano, an isolated and unstudied peak at the Amazonian-Andean Junction in eastern Ecuador. February, 2012.


**Schumacher, KI, BS Arbogast, JL Sparks, JF Pagels, RJ Dyer, BL Brown. Genetic evidence for a new subspecies of the endangered northern flying squirrel (Glaucomys sabrinus)


Vanderhoff, EN, AMC **Hodge, BS Arbogast, **JR Burger, JD Camper, and TW Knowles. The margay (Leopardus wiedii) as a flagship species for conservation in the foothills of the Andes. Association of Southeastern Biologists, Asheville, North Carolina. April, 2010.


Cardona, MA, and BS Arbogast. Phylogeography of Ringtails: A Comparison between populations from Texas and northern California. SACNAS (Society for Advancement of Chicanos/Latinos and Native Americans in Science) National Conference, University of Utah, Salt Lake City, Utah. 2008.

RECENT GRANT SUPPORT

2013-2016 Conservation Genetics of the Cheat Mountain Salamander. West Virginia Department of Natural Resources. $34,800. PI: BS Arbogast.


2010-2012 Conservation genetics of an endemic and threatened species of West Virginia snail: the flat-spired three-toothed land snail, Triodopsis platysayoides. West Virginia Department of Natural Resources. $32,610. Co-PI's: BS Arbogast and M van Tuinen

2010-2011 Cracking the Gliding Code: Applying modern genomic approaches to identify new species, understand phenotypic variation, and unravel the great mystery of how
gliding mammals are “built”. UNCW Faculty Min-grant Program. $9,300. PI: BS Arbogast

2010-2012 Use of Stable Isotope Analysis to Elucidate Differences in Prey Selection by Red Wolves and Coyotes. Red Wolf Recovery Program, U.S. Fish and Wildlife Service. $5,000. Lead PI: BS Arbogast; Co-PI: Anne-Marie C. Hodge

2009-2011 Conservation Genetics of the northern flying squirrel and Allegheny woodrat. West Virginia Department of Natural Resources. $30,500. PI: BS Arbogast

2009-2011 Conservation Genetics of the northern flying squirrel (Glaucous sabrinus) in North Carolina and Virginia. NC Wildlife Resources Commission. $4,750. PI: BS Arbogast


2008 UNCW Center for Teaching Excellence Summer Pedagogy Initiative Grant: Using Remote Camera Trap Technology to Bring Tropical Rainforest Diversity into the Classrooms at UNCW. $3,000. PI: BS Arbogast

2005-2008 Systematics and Evolutionary Ecology of New and Old World Avian Sister Radiations [Aves: Mimidae and Sturnidae]. NSF, Systematic Biology. $145,816. PI: IJ Lovette, Cornell Univ. I was ‘Senior Personnel’ on this grant

PROFESSIONAL SERVICE (2007-PRESENT)

2008-present: Member of the Conservation Committee, American Society of Mammalogists

2008-present: Coordinator of the Conservation Option for Biology Majors, UNC Wilmington, Wilmington, NC.

2008-present: Member of the North Carolina Scientific Council on Mammals

2008-present: Adjunct Associate Professor, Department of Biological Sciences, Humboldt State University, Arcata, CA.

2011-2012: Associate Editor, Journal of Mammalogy


STUDENT MENTORSHIP

GRADUATE STUDENTS- MAJOR ADVISOR:

M. Novillo  Niche partitioning in nectarivorous bats at Sumaco Volcano, EC (MS, UNCW, In progress).
L. Rowan  Conservation genetics of the Cheat Mountain Salamander (MS, UNCW, In progress)
R. Hanson  Diversity and biogeography of amphibians at Sumaco Volcano, Ecuador (MS, UNCW, In progress)
K. Curry-Lindahl  Species diversity and elevational structuring of medium-large mammals in the cloud forest of Sumaco Volcano, Ecuador (MS, UNCW, 2013)
A-M., Hodge  Ecological interactions among Andean forest carnivores (MS, UNCW, 2012)
K. Schumacher  Conservation genetics of the northern flying squirrel (MS, UNCW, 2012)
C. Callahan  Systematics and biogeography of whale lice (MS, Humboldt St., 2008)
N. Kerhoulas  Molecular Systematics of Mesoamerican Flying Squirrels (MS, Humboldt St. 2008)

GRADUATE STUDENTS- CO-ADVISOR

L. Ogawa  Conservation Genetics of the Eared-Grebe. (MS, UNCW, 2010)
B. Garner  Conservation Genetics of the Cheat three-tooth Lands Snail (MS, UNCW, 2012)
GRADUATE STUDENTS- COMMITTEE MEMBER (2008-PRESENT)

C. Torres
Systematics and morphological evolution in flamingos (MS, UNCW, In progress)

S. Chavez
Assessment of exclusion devices on reducing by-catch of Diamondback terrapins in southeastern North Carolina (MS, UNCW, In progress)

J. Pinson
Phylogeography of Appalachian ferns (MS, UNCW, In progress)

JE Williams
Species richness of bats (Chiroptera) in western South Carolina (MS, UNCW, 2013)

A. Millis
Seasonal patterns of reproduction in male evening bats (MS, UNCW, 2013)

L. Jarvis
Sperm preference and hybridization in blue mussels, Mytilus spp. (MS, UNCW, 2012)

K. Freeman
Behavior of Townsend’s Big-eared Bat (MS, Humboldt State, 2012)

B. McClean
Stable isotope analysis of enamel in fossil and modern mammals (MS, UNCW, 2011)

JP Kennedy
Bat Activity across a vertical gradient of an old-growth redwood forest (MS, HSU 2011)

S. Hutchinson
Phylogeography of Cryptotis parva (MS, UNCW, 2010)

S. Schmitt
Genetic and morphological variation in the Udoteaceae (MS, UNCW, 2010)

UNDERGRADUATE HONORARY-PRIMARY MENTOR (UNCW 2008-PRESENT)

M. Taig-Johnston
Mammal diversity in managed and unmanaged longleaf pine forests (2014)

K. Dodds
Genetic variation in the Allegheny woodrat (2012)

S. Chavez
Comparative phylogeography of Great Basin Mammals (2012)

A. Taylor-Smith
Assessing urban stream quality (2011)

C. Goldchain
Comparative feeding morphology in marine carnivores (2011)

B. Manly
Conservation genetics of the black-capped petrel. (2010)

UNDERGRADUATE HONORARY- COMMITTEE MEMBER (UNCW 2008-PRESENT)

M. Yeager
Herpetological survey of the longleaf pine forest on the UNCW campus.

E. Probst

A. Tomerdahl
Blood biochemistry of loggerhead sea turtles (Caretta caretta) entangled in longline fishing gear in the western Mediterranean (2010).

B. Reuhland
Reconstruction of the Evolutionary History of Parrots (Aves: Psittaciformes) from retroelement insertion events (2010).

TEACHING (2007-PRESENT)

Conservation Biology (Full Undergraduate Course, UNCW)

Mammalogy and Lab (Full Undergraduate Course, UNCW & HSU)

Advanced Conservation Biology and Lab (Full Graduate Course, UNCW)

Tropical Ecology and Biodiversity in Ecuador (UNCW; 3-week Field Course at Wildsumaco Biological Station, Sumaco Volcano, Napo, Ecuador)

Advanced Ecology and Lab (Full Graduate Course, UNCW)

Ice-Age Biodiversity and Loss (Senior Seminar, UNCW)

Biology of Marsupials (Senior Seminar; UNCW & HSU)

Conservation Biology of Carnivores (Senior Seminar, UNCW)

Evolutionary Developmental Biology (Graduate Seminar, UNCW)

Advanced Mammalogy and Lab (Full Graduate Course, HSU)

RECENT AWARDS & HONORS (2007-PRESENT)

2013 Appointed as Research Associate, Museum of Comparative Zoology, Harvard
<table>
<thead>
<tr>
<th>Year</th>
<th>Award Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>University of North Carolina Wilmington Grant Writing Incentive Program Award. Cracking the Gliding Code: Applying modern genomic approaches to unravel the mystery of how gliding mammals are “built.”</td>
</tr>
<tr>
<td>2011</td>
<td>Featured Symposium Speaker, Joint Meetings of the American Society of Mammalogists and the Australian Mammal Society, Portland, OR. Cryptic speciation in an iconic Australian marsupial, the greater glider (<em>Petauroides volans</em>)</td>
</tr>
<tr>
<td>2011</td>
<td>Global Citizenship Course Development Award, UNCW-International Programs</td>
</tr>
</tbody>
</table>
CURRICULUM VITAE

Timothy A. Ballard, Ph. D.
Associate Professor
Department of Biology and Marine Biology
University of North Carolina Wilmington
(910) 962-7263 ballardt@uncw.edu

EDUCATION:
1978 B.S. Department of Biology, Appalachian State University, Boone, NC
1983 Ph. D. Department of Anatomy, Bowman Gray School of Medicine of Wake Forest University, Winston-Salem, NC

RESEARCH TRAINING:
Ph. D. Dissertation entitled “The Morphology and Hormonal Responsiveness of Isolated Embryonic Cells from the Developing Skeletal System of Chick Limb Buds,” under the direction of Dr. David M. Biddulph, Department of Anatomy, Bowman Gray School of Medicine of Wake Forest University

POSTDOCTORAL TRAINING:
Research Associate, Developmental Biochemistry Laboratory, Department of Biology, Emory University, Atlanta, GA, under the direction of Dr. William A. Elmer. Research concerned with the biochemical and physiological effects of hormones and growth factors on the differentiation of normal and Brachypod mutant mouse embryo limb buds.

GRANT PROPOSALS:
2008 National Science Foundation -- $148,952 – Human Physiology Laboratory for Non-Science Majors, Co-investigator with Dr. Richard Satterlie

HONORS and AWARDS:
2013 BEN Scholar (Bioscience Educational Network), American Association for the Advancement of Science nominated for UNC Board of Governors Teaching Excellence Award and Chancellor’s Excellence in Teaching Award
2012 BEN Scholar, American Association for the Advancement of Science nominated for UNC Board of Governors Teaching Excellence Award and Chancellor’s Excellence in Teaching Award
2011 BEN Scholar, American Association for the Advancement of Science
nominated for UNC Board of Governors Teaching Excellence Award and Chancellor’s Excellence in Teaching Award

2010 nominated for Chancellor’s Teaching Excellence Award

2008 Freshman convocation speaker
nominated for Chancellor’s Teaching Excellence Award

UNIVERSITY SERVICE:

Graduate thesis advisor:


Graduate thesis committee member:

Kristen Andrews Lisa Elliott-Lewis Leslie Moore
Meg Baish Mark Gay Nancy Norcross
Jean Benton Joseph Gouveia Renee Pearsall
Erin Caldwell Brad Jenkins Marina Piscitelli
Tony Capehart Ana Jimenez Laura Reuss
Holly Cate Charlene Kozerow Cathy Songer
Amy Cherry-Millis Christine Lisiewski Macy Toedt
Shauna Dalton Pam Madden Donna Ugucioni
Chris DePalo Lisa Mazzaro Brent Winner

PUBLICATIONS:


T. A. Ballard. Surviving in the Large Enrollment Classroom. Best Practices In College Teaching. (in press)


http://www.apsarchive.org/resource.cfm?submissionID=9054

MEETINGS ATTENDED and PAPERS PRESENTED:

2012  BEN Scholars Institute, Washington, DC
EDUCATION

2005 Doctor of Philosophy, University of Georgia, Athens, GA
1997 Bachelor of Arts (Biology Major, Environmental Studies Minor), Austin College, Sherman, TX

APPOINTMENTS

Associate Professor (Quantitative Ecologist) July 2013-present. Department of Biology and Marine Biology, University of North Carolina Wilmington.

Visiting Research Fellow. 2013-present. Duke Network Analysis Center, Social Science Research Institute, Duke University, Durham, NC.


Adjunct Assistant Professor. 2008-2012. Biology Department, Western Kentucky University. Research mentor for graduate and undergraduate students in collaboration with Dr. Albert Meier.


Assistant Staff Scientist. 1997–1998. ENTRIX, Inc. Houston, TX. Environmental impact assessment and environmental management planning, primarily for oil and gas exploration and development in the US Gulf Coast and Latin America (Bolivia, Ecuador, Venezuela).

PUBLICATIONS (SINCE 2007)

* postdoc, ** graduate student, *** Undergraduate student


**PRESENTATIONS**

* postdoc, ** graduate student, *** Undergraduate student


66. Borrett, S.R. 2012. Connecting the dots: Developments in ecosystem theory and an application of ecosystem network analysis to investigate nitrogen cycling in the Cape Fear River Estuary, NC. Invited presentation, Department of Biology, Eastern Carolina University. (Feb. 23)

65. Borrett, S.R. 2012. Ecological network analysis: recent work and future opportunities at UNCW. Invited presentation, Department of Computer Science, UNCW.

64. Borrett, S.R. 2011. Undergraduate learning through biological research, Center for Teaching Excellence, Teaching Celebration, UNCW.


44. Kaufman**, A., **Borrett, S.R.** *Ecosystem network analysis indicators are generally robust to parameter uncertainty in a phosphorus model of Lake Sidney Lanier, USA.* Meeting of the International Society for Ecological Modelling, Quebec City, Canada. and UNCW CSURF Annual Showcase.


34. **Borrett, S.R.** 2007. *Network architecture determines the development of indirect effects in ecosystems.* Invited Presentation, Western Kentucky University, Bowling Green, KY. Nov. 30

33. **Borrett, S.R.** 2007. *Searching for ecosystem models that explain phytoplankton dynamics in the Ross Sea.* Invited Presentation, University of Georgia, Athens, GA.


**GRANTS**

UNCW Office for International Programs travel grant ($1000) to attend the 2014 International Conference on Environmental Biology and Ecological Modelling, Visva-Bharati University, Santiniketan, India.


UNCW Quality Enhancement Plan Pilot Grant. Experience Research: Enhancing the CSURF program to promote engagement in research as applied learning. Pls: Bruce, K. E., Atwill, W. D., Kelley, P.H., Borrett, S.R. $31,500.


UNCW Office for International Programs travel grant ($1500) to attend the 2011 International Society for Ecological Modelling meeting in Beijing, China. I escorted one graduate and one undergraduate student to the meeting.

UNCW College of Arts and Sciences, Summer Curriculum Development Initiative. Proposal to revise the Ecology Laboratory (BIOL366) to (1) Better align the course activities and assessment
with the departmental and university learning outcomes; (2) Formalize the laboratory report format so that it is consistent across labs in BIOL 366 and makes use of a biological writing text recently adopted by the department; and (3) Integrate the use of spreadsheets (e.g. Microsoft Excel) to teach the students to organize, manage, and analyze biological data, $3,500.

UNCW Biology and Marine Biology Equipment Committee. We requested funds for a departmental video camera to record departmental seminars so that students can practice critiquing science presentations and witness and critique their own presentations. This purchase was targeted to help students in senior seminars, BIO495, $600. 2008

UNCW Special Tenure-Track Faculty Travel Fund ($1000) and Office for International Programs ($600) for travel to 2009 International Society for Ecological Modelling Meeting, UNCW. I Escorted one graduate and one undergraduate student to the meeting.

University of Georgia. University-wide Dissertation Completion Award, Ten months of funding ($15,000) to complete dissertation. University of Georgia, Athens, GA.


HONORS, AWARDS, PROFESSIONAL SERVICE

Honors/Awards

2014 Plenary Speaker. International Conference on Environmental Biology and Ecological Modelling, Santiniketan, India

2009–present Recognized by one or more graduating senior at UNCW as a person whose impact on them was significant. 2009, 2010, 2011, 2012, 2013, 2014

2011 Research Reassignment, Dept. of Biology and Marine Biology, UNCW (1 semester without teaching to focus on research, completed Spring 2013)

2009 Chancellor’s Discere Aude Award for outstanding mentorship, UNCW.


1997 Austin College, cum laude

1997 βββ, Biology Honor Society

1997 Austin College, M.D. “Bud” Bryant Fellowship, Outstanding Biology Student

1993–1997 Austin College, Trustees Scholarship ($3000 per year)

1997 Austin College, Leadership Honor Society

1989 Eagle Scout, Troop 2, El Paso, TX

Professional Service


Judge, Best Student Presentation/Poster. (2014) 43rd Benthic Ecology Meeting, Jacksonville, FL

Judge, Science Fair, Wrightsville Elementary (Dec. 2013).

Organizing Committee. Systems Ecology: A Network Perspective and Retrospective. A workshop in honor of the 45th anniversary of Professor Bernard C. Patten at the University of Georgia (April 12-14, 2013). One of 3 co-organizers (Stuart J. Whipple, Brian D. Fath).


Advisory Board Member. *Cape Fear Economic Development Council* (2013-2014), Wilmington, NC.

Advisory Board Member. *Cape Fear Museum of Science and History* (2010-present), New Hanover County, NC.

Invited Lecturer. *Ecological address and neighbors of the Lower Cape Fear Region*. Osher Lifelong Learning Institute at UNCW. (Sept. 30, 2013); and Cape Fear River Watch, First Saturday public lecture series. (June 2, 2012).

Assembly Representative. UNCW representative to University of North Carolina System Faculty Assembly (2014 – present)

Faculty Senator. UNCW. (2013 – present).

Panel Discussant. *Out of Print: Film Screening & Discussion*. Writers Week 2013 (Nov. 8, 2013)

Organizing Committee. *Walking Tour of UNCW’s Natural Areas*, an Osher Life Long Learning Institute event held for UNCW Chancellor Miller’s Installation. One of 6 committee members and tour leaders.


Administrative Search Committees

ETEAL Director Search Committee. UNCW 2014. Successfully recruited Dr. J. Boersma.

Provost and Vice Chancellor for Academic Affairs Search Committee (2012). UNCW. Successfully recruited Dr. D. Battles


Faculty Search Committees


UNCW Center for Teaching Excellence and Center for Faculty Leadership


**UNCW Honors College**

*Honor Scholars Program Cultural Dinner* (2010). Hosted dinner and cultural experience for 7 UNCW freshman.
Susanne M. Brander, Ph.D.

University of North Carolina, Wilmington
Dept of Biology and Marine Biology
601 South College Road, Wilmington, NC 28403
branders@uncw.edu

Education

2011  Ph.D. Pharmacology and Toxicology. University of California, Davis
2005  M.S. Environmental Science and Policy. Johns Hopkins University, MD
1999  B.S. Business Administration, Minor: Biology. Elizabethtown College, PA

Employment

2013 – present  Assistant Professor, Department of Biology and Marine Biology, University of North Carolina, Wilmington
2012 – 2013  Research Assistant Professor, Department of Biology and Marine Biology, University of North Carolina, Wilmington.
2012 – 2013  Post-Doctoral Scholar, School of Veterinary Medicine, Department of Anatomy, Physiology and Cell Biology, University of California, Davis.
2011 – 2012  Adjunct Professor, Department of Biology and Marine Biology, University of North Carolina, Wilmington.
2007 – 2011  Delta Science Pre-Doctoral Fellow, Department of Environmental Toxicology and Bodega Marine Laboratory, University of California, Davis.
2009 – 2010  National Science Foundation, CAMEOS, GK-12 Pre-Doctoral Fellow, Bodega Marine Laboratory, University of California, Davis.
2007  Graduate Student Researcher, Water Quality Objectives Methodology, Department of Environmental Toxicology, University of California, Davis.

Publications


in prep  Brander S.M., B.J. Cole, K.M. Jeffries, B.M. DeCourten**, N.A. Fangue, R.E. Connon. Alterations to the transcriptome and proteome correlate with reduced fecundity in an estuarine model species exposed to bifenthrin. Planned submission to *Aquatic Toxicology*.


*undergraduate student  **graduate student*
Technical Reports


2007 Werner, Inge, Linda Deavonic, Joy Kamphanh, Juergen Geist, Dan Markiewicz, Kevin Reece, Marie Stillway, and Susanne Brander. Pelagic organism decline: acute and chronic invertebrate and fish toxicity testing. Progress Report II. Aquatic Toxicology Laboratory, School of Veterinary Medicine, University of California, Davis, California.

Press Coverage


Invited Presentations


2013 Mechanistic effects of exposure to ibuprofen on inland silversides (Menidia beryllina). K Jeffries, S Brander, B De Courten**, N Fangue, R Connon, Society for Environmental Toxicology and Chemistry, Nashville, TN.


2013 From molecules to metapopulations: Using native model organisms to assess endocrine disruption. Cape Fear River Watch, Wilmington, NC.
2013 From ‘omics to otoliths: Using *Menidia* species to assess endocrine disruption at multiple biological scales. North Carolina State University, Raleigh, NC.

2013 From molecules to metapopulations: Assessing endocrine disruption in aquatic life. Davidson College, Davidson, NC.


2012 From ‘omics to otoliths: Using responses to endocrine disrupting compounds at multiple biological scales to predict population dynamics. Ecological Society of America, Portland, OR.

2011 From ‘omics to otoliths: Linking responses to estrogenic and androgenic endocrine disrupting compounds at multiple biological scales. Office of Environmental Health Hazard Assessment, Sacramento, CA.

2010 Pyrethroids as endocrine disruptors: bifenthrin and permethrin act as estrogens and anti-estrogens. Society of Environmental Toxicology and Chemistry, Portland, OR.

2010 Pyrethroids as endocrine disruptors: bifenthrin and permethrin acting as estrogens and anti-estrogens. California Department of Pesticide Regulation, Sacramento, CA.

2010 Linking environmentally relevant responses to EDCs at multiple scales. Northern CA Society for Environmental Toxicology and Chemistry, Berkeley, CA.


Other Presentations

*Oral*


2013 Guppy gladiators: endocrine disrupting compounds alter risk-taking behaviors when facing a predator in the arena. Heintz, M. M., Brander, S., White, J. 42nd Benthic Ecology Meeting, Savannah, GA.

*Poster*

2014 Examining the impact of endocrine disrupting compounds on sex determination and development in the blue crab, *Callinectes sapidus*. Goff, A.**, Ryan, L.**, Covi, J., Brander, S. North Carolina Sea Grant Symposium, NC Sea Grant, Raleigh, NC.

2014 Multiple stressors over multiple generations: assessing the combined effects of climate change and endocrine disruptors. DeCourten, B.**, Brander, S. Carolinas SETAC Annual Meeting, Carolinas Society of Environmental Toxicology and Chemistry, Clemson, SC.

2014 The effects of toxicants on the production of ecdysteroids by the Y-organ in *Callinectes sapidus*. Ryan, L.**, Brander, S., Chang, E., Chang, S., Covi, J. SICB Annual Meeting, Society of Integrative and Comparative Biology, Austin, TX.


2012 Transfected vs. native: The potential for conflicting measurements of endocrine activity from different cell lines. Brander, S., Davies, B. H., He, G., Connon, R. E., Denison, M. S., Society of Environmental Toxicology and Chemistry, SETAC, Long Beach, CA.
2012 Transfected vs. native: The potential for conflicting measurements of endocrine activity from different cell lines. Brander, S., Davies, B. H., He, G., Connon, R. E., Denison, M. S., Bay Delta Science Conference, Delta Science, Sacramento, CA.

Grants and Awards

2014 University of North Carolina, Wilmington. Center for Marine Science Pilot Project. What flips the switch?: The role of aromatase in the sex determination of protandrous fishes. PI ($20,000)

2014 University of North Carolina, Wilmington. Cahill grant. The neuroendocrinological basis for sex change and social behavior in *Amphiprion ocellaris*. PI ($2,969)

2013 University of North Carolina, Wilmington. eTEAL Supported Pedagogy Initiative. Applied Environmental Endocrinology. PI ($3,000)

2012 North Carolina Sea Grant. Developing an approach to monitoring potential endocrine disruption in *Callinectes sapidus*. PI ($5,000)

2012 Friends of UNCW. Research on the impact of hormone-disrupting pollutants on fish in the Cape Fear River. PI ($1,000)

2012 - 2015 California Department of Fish and Game. A systems biology assessment of EDCs in the Delta. (with co-PI Richard Connon) ($486,000)

2011 University of North Carolina, Wilmington, Center for Marine Science. Scaling up endocrine disruption effects in the Lower Cape Fear: from individual behavior to population dynamics. (with co-PI W. White) ($35,000)

2010 Northern California Society for Environmental Toxicology and Chemistry. First Place Student Platform Presentation.

2010 University of California, Davis. Graduate Student Association Travel Grant.

2009 – 2010 National Science Foundation CAMEOS GK-12 Graduate Fellowship.

2009 University of California, Davis. Research Scholarship. ($1,000)

2009 Sacramento County Sanitation and Wastewater District. Research Grant. ($5,000)


2007 University of California, Davis. Jastro-Shields Research Scholarship. ($3,000)

2007 - 2011 Phi Sigma, Graduate Honors Society.

2006 University of California Davis. Pharmacology and Toxicology Graduate Group Block Grant.


### Teaching

<table>
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<tr>
<th>Year</th>
<th>Role and Course Details</th>
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<tr>
<td>2014</td>
<td>Guest Lecturer, Honors 120, Honors Principles of Biology: Cells, Behavioral Ecology, University of North Carolina, Wilmington</td>
</tr>
<tr>
<td>2013 - present</td>
<td>Instructor, Applied Learning in Environmental Endocrinology, University of North Carolina, Wilmington</td>
</tr>
<tr>
<td>2014</td>
<td>Instructor, Teaching Assistantship in Cell Biology, University of North Carolina, Wilmington</td>
</tr>
<tr>
<td>2013 – present</td>
<td>Instructor, Beyond DNA: Gene Expression and the Environment, University of North Carolina, Wilmington.</td>
</tr>
<tr>
<td>2012 - present</td>
<td>Instructor, Principles of Biology: Cells, University of North Carolina, Wilmington.</td>
</tr>
<tr>
<td>2011 - present</td>
<td>Instructor, Endocrinology, University of North Carolina, Wilmington.</td>
</tr>
<tr>
<td>2009 – 2010</td>
<td>Graduate Student Mentor, Biology, El Molino High School, Sonoma County, CA.</td>
</tr>
<tr>
<td>2008</td>
<td>Teaching Assistant, Physiology of Marine Organisms, University of California, Davis.</td>
</tr>
<tr>
<td>2007</td>
<td>Teaching Assistant, Biological Effects of Toxicants, University of California, Davis.</td>
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</tbody>
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### Mentoring

<table>
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<tr>
<th>Year</th>
<th>Role and Course Details</th>
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<tbody>
<tr>
<td>2014 – present</td>
<td>Faculty Supervisor, Undergraduate Honors Project. University of North Carolina, Wilmington. Trophic transfer of Macondo oil from the Deepwater Horizon spill, effects on swimming behavior and gene expression in <em>Menidia beryllina</em>. Jacqueline Gross.</td>
</tr>
</tbody>
</table>


Professional Activities

**Leadership** Carolinas Society of Toxicology and Chemistry, Chapter Vice President (2013-14) Carolinas Society of Toxicology and Chemistry, Chapter President (2014-15)

**Peer Review** *Environmental Science and Technology; Aquatic Toxicology; Environmental Pollution; Journal of Freshwater Ecology; Asian Journal of Andrology, G.A.I.A, Pesticide Biochemistry*
and Physiology; Science of the Total Environment; PLoS ONE; Toxicology Letters, Archives of Environmental Contamination and Toxicology

Memberships
- Society of Environmental Toxicology and Chemistry (National and NC), Southeastern Estuarine Research Society, North Carolina Water Resources Association

Workshops
- Let’s Publish This Summer (ALTC / eTEAL, UNCW, 2014)
- “Lean In” book circle (UNCW Center for Teaching Excellence, 2014)
- The Art and Science of Negotiation (Women in SETAC, 2013)
- eTEAL-Supported Pedagogy Initiative Workshop (ALTC / eTEAL, UNCW, 2013)

Service
- 2014 Equipment and Biotechnology Committees, University of North Carolina, Wilmington
- 2013 Seminar Committee, University of North Carolina, Wilmington
- 2013 Wrightsville Beach Elementary, Wrightsville Beach, NC: Science Fair Judge
- 2012 Hoggard High School, Wilmington, NC: Faculty Mentor for Senior Project
- 2011 Holly Shelter Middle School, Castle Hayne, NC: Science Fair Judge
EDUCATION:
Ph.D., 1981, Duke University (Zoology)
B.S., 1975, summa cum laude, Washington & Lee University (Biology)

POSITIONS HELD:
Professor, 1993-
Certified Senior Ecologist, Ecological Society of America, 2002-present
Graduate Faculty, 1991-
Adjunct Graduate Faculty, North Carolina State University, 1991-2001
Associate Professor, Dept. of Biological Sciences, UNC Wilmington, 1987-1993
Assistant Professor, Dept. of Biological Sciences, UNC Wilmington, 1982-1987
Visiting Summer Faculty, Duke University Marine Laboratory
Temporary Instructor, Duke University Zoology Dept., 1981-1982

PUBLICATIONS (PR=peer reviewed):

IN PRESS
Cahoon, L.B. Microphytobenthos. Invited Chapter, In press, “Encyclopedia of
M. Kennish, ed., Springer.

PUBLISHED (GRADUATE STUDENTS IN BOLD)

Wilmington.

99. Dr. Lawrence Cahoon on Hurricanes in relation to Global Warming, Cooling Effects, and
Strength Reduction from Offshore Wind Farms.

ocean warming in the Bay of Fundy as measured by free-swimming basking sharks. Oceanography

98. Cahoon, L.B. Getting ahead of ourselves on oil drilling in NC

PR 95. Roman, M.D., and L.B. Cahoon. 2014. Composition and distribution of phosphorus forms in

contamination in the Cape Fear River Watershed based on the detection and quantification of


96. Dr. Lawrence Cahoon on Sea Level Rise, January 8, 2013. BrunswickGreen.com HTTP://BRUNSWICKGREEN.COM/DR-LAWRENCE-CAHOON-ON-SEA-LEVEL-RISE/


89. Cutting, R.H., L.B. Cahoon, and J. Hall. 2010. If the tide is rising, who pays for the Ark? TCS 22 Symposium; Shifting Shorelines: Adapting to the Future, online publication: http://nsgl.gso.uri.edu/coastalsociety/TCS22/papers/Cutting_papers.pdf


PRESENTATIONS TO PROFESSIONAL/PUBLIC AUDIENCES


characteristics to stormwater and receiving water observational data.” Water Resources Research Institute Annual Conference, Raleigh, NC.


353. Cahoon, L.B. Climate change and coastal plain impacts, Cape Fear Arch meeting, May 18, 2011.


GRANTS:
PENDING:

Determining Seed Population and Nutrient Sources Supporting Toxic Blue-Green Algal Blooms in the Cape Fear River, and Finding Solutions, Mallin, Cahoon and Bailey, Duke Energy Progress, $87,800

Analyses of NERRS long-term data sets as tools for understanding dissolved oxygen dynamics in NC estuaries. Cahoon, Blum and Toothman, UNC Sea Grant, $27,932

**FUNDED (> $10 million total)**

**(2014)**
Quantification of Fecal Bacteria Removal by Micro-zooplankton

Grazing in Stormwater BMPs, UNC WRRI, Mallin and Cahoon, $58,272

**(2012)**
Vulnerability of coastal central sewer systems to sea level rise, UNC Sea Grant, $5,800 + graduate stipend

**(2011)**
Evaluating the invasive seaweed, *Gracilaria vermiculophylla*, as a source of plant growth promoter compounds, UNC Sea Grant ($5040), L.B. Cahoon and B.R. Toothman

Bacterial consortia in swine waste lagoons: The role of purple phototrophic bacteria and anaerobic ammonium oxidation (anammox) in odor control and natural products synthesis. NC Pork Council (Cahoon and Song, $25,000; Year 3)

Evaluating high primary production in the surf zone: expanding the toolbox, CMS Pilot Project, $25,000, with Craig Bailey

**(2010)**
MRI: Acquisition of an LC/MSn (Ralph Mead, PI, LBC co-PI, among many others, 187,884) NSF, CHE - MAJOR RESEARCH INSTRUMENTATION

Response to BP Oil Spill: Baseline Beach Sampling for North Carolina (Cahoon, Lankford and Alphin, $6000, Sea Grant)

Bacterial consortia in swine waste lagoons: The role of purple phototrophic bacteria and anaerobic ammonium oxidation (anammox) in odor control and natural products synthesis. NC Pork Council (Cahoon and Song, $25,000; Year 2)

**(2009)**
Bacterial consortia in swine waste lagoons: The role of purple phototrophic bacteria and anaerobic ammonium oxidation (anammox) in odor control and natural products synthesis. NC Pork Council (Cahoon and Song, $25,000; Year 1)

Biodiesel production from hog lagoon microbial communities, NC Biotechnology Center (Song and Cahoon, $31,000)

Key parameters for assessing beach functionality, UNC Sea Grant (Cahoon, Posey, Leonard, Lankford, and Alphin, $14,357 + $23,395 + $21,762, year 2)

Environmental assessment of Calabash Creek (Stanaland LLC, $10,052)

Using PCR-based methods to assess microbial contamination from swine CAFOs in surface and groundwaters, UNC WRRI (Song, Cahoon and Mallin, $50,000)
(2008): Key parameters for assessing beach functionality, UNC Sea Grant (Cahoon, Posey, Leonard, Lankford, and Alphin, $14,357 + $23,395 + $21,762, year 1)

(2007): Microbial anti-oxidants from swine waste lagoons, UNC Research Competitiveness Fund, w/Song, Halkides, M. Williams, and G. Dubay, $116,507, 1 year

HONORS, AWARDS, PROFESSIONAL SERVICE:

UNCW Faculty Engagement in Sponsored Research (FESR) Proposal Development Fellow, 2008

UNCW Graduate Mentor Award, 2010

Member, Legislative Study Subcommittee on offshore energy exploration, 2009-2010
Member, OCEAN POLICY STEERING COMMITTEE (NC Division of Coastal Management), 2008
Member, Board of Directors, Cape Fear River Watch, 2007-

President, American Chemical Society Eastern NC Section, 2011-2013


CURRICULUM VITAE

Hsiang-Yin Chen
Lecturer
Department of Biology Marine Biology
University of North Carolina Wilmington
e-mail: chenh@uncw.edu

EDUCATION
2007-2012      Department of Biology, University of Alabama at Birmingham; Ph.D. (Dec 2012)
2002-2005      Department of Biology, National Changhua University of Education, Taiwan; 
               M.S. (June 2005)
1998- 2002     Department of Biology, National Changhua University of Education, Taiwan; 
               B.S. (June 2002)

TEACHING EXPERIENCE
National Changhua University of Education
Teaching Assistant, Animal Physiology and Lab (2004 - 2005)
Intern in Senior Industrial Vocational School, National Changhua University of Education, Taiwan 
(2005 - 2006)

University of Alabama at Birmingham
Teaching Assistant, Topics in Contemporary Biology, BY102 (2008)
Teaching Assistant, Introduction to Human Physiology, BY116 (2009, 2011-2013)
Teaching Assistant, Principles of Human Physiology, BY409 (2010)

University of North Carolina Wilmington
Lecturer, Biochemistry Lab, BY465 (2013-present)
Lecture, Human Anatomy Lab, BY201 (2014-present)

PROFESSIONAL EXPERIENCE
Guest lecture: Invertebrate Zoology, BY255, University of Alabama at Birmingham (2012, 2013)

AWARD
1. National Science Council Grant for Undergraduate Student’s Research Project (NSC 90-2815-C- 
2. First place poster of Annual Graduate Student Competition, Department of Biology, National 
Changhua University of Education, 2005.
3. Travel Grant Award, Graduate Student Association, University of Alabama at Birmingham, 2010.
4. Charlotte Mangum Student Support Program, Society for Integrative and Comparative Biology, 
2010.
5. Second place poster in the Biological Science Section at the 88th Annual Meeting of the Alabama 
Academy of Science, 2011.

PUBLICATIONS
expression of two putative molt-inhibiting hormones from Litopenaeus vannamei. Gen 
Comp Endocrinol 151: 72-81.


Robert Howard Condon

Assistant Professor
Department of Biology and Marine Biology
University of North Carolina at Wilmington
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Phone: +1 251 654-3464
Skype: mnemiopsis007
Email: condonr@uncw.edu
Date of Birth: 27 May 1974

Nationality & Resident Status: Australian, US Permanent Resident

Professional Preparation

2010: Post-Doctoral Researcher, Dauphin Island Sea Lab (DISL)
2008 – 2009: Post-Doctoral Fellow, Bermuda Institute of Ocean Sciences (BIOS)
2002 – 2008: Ph.D., Virginia Institute of Marine Science (VIMS), College of William & Mary
1992 – 1997: B.Sc. (Hons.), University of Melbourne, Australia

Scientific Appointments

2014 – Assistant Professor, UNCW
2010 – 2013: Research Senior Marine Scientist, DISL
2009 – 2010: Assistant Research Scientist, BIOS
2008: Senior Research Scientist, VIMS
2001 – 2002: Faculty Research Assistant II, Horn Point Laboratory, University of Maryland Center for Environmental Science (UMCES)
1999 – 2001: Faculty Research Assistant I, Horn Point Laboratory, UMCES

Research Interests

- Biological and chemical oceanography and plankton ecology
- Global jellyfish blooms, societal perceptions and effects on socio-economics and role in biogeochemical cycles
- Global oil spills and effects on food web processes, ecosystem resilience and functioning
- Role of phytoplankton, microbes and zooplankton in carbon export, food web processes, and ecosystem metabolism. Feeding ecology and metabolism of planktonic communities.
- Marine science outreach programs with early childhood and elementary school students

Scientific Experience and Skills

- Research Assistant Professor, USA & Research Senior Marine Scientist, DISL: May 2010 – Dec 2013

Global Jellyfish Blooms and Food Web Interactions Research:

- National Center for Ecological Analysis and Synthesis (NCEAS) Global Jellyfish Project - Lead PI of NCEAS global jellyfish working group, consisting of 30 scientists from around the world. The objective of the project is to examine the magnitude and global
jellyfish blooms and effects on biogeogechemical cycles and socioeconomics. (see ‘Funding and Proposals’). Primary duties:
- Coordinated five workshops at NCEAS
- Led two major papers analyzing the paradigm of global jellyfish blooms (*BioScience* and *PNAS*) and co-authored five additional manuscripts
- Hosted/participated in two public outreach events in Santa Barbara and Madrid, Spain
- Conducting *International Jellyfish Art* contest resulting in the preparation of a coffee-table style book comparing science with artwork (see publications)
- Constructed the Jellyfish Database Initiative (JEDI) with over 500,000 records
- Interviews for global media agencies.

**Trophic BATS** – Co-PI of a NSF collaborative project examining the role of zooplankton as mediators of carbon export and planktonic food web processes across different mesoscale eddies. Conducted four cruises over the past two years in the vicinity of the Bermuda Atlantic Time-series Study (BATS) site in the Sargasso Sea where grazing by crustacean and gelatinous zooplankton were quantified across production gradients and related to the biological pump.

**Deepwater Horizon and Global Oil Spill Research:**

**Fisheries Oceanography of Coastal Alabama (FOCAL) program** – Monthly monitoring of the *Deepwater Horizon* oil spill in northern Gulf of Mexico waters. Primary duties:
- Coordinated water quality and nutrient component of FOCAL measuring: stable (13C and 15N) and radio (14C) isotopes, inorganic nutrients, zooplankton, microbial production and respiration, chlorophyll, flow cytometry, nutrients, particulate and dissolved organic carbon, chromophoric dissolved organic matter spectra, methane, oxygen, CTD profiles, and hydrocarbon analysis of oil and zooplankton.
- Disseminated results of monitoring through daily reports to funding agencies and stakeholders, presentations at conferences and writing publications on the oil spill effects on food web processes.

**Metabolism of oil by plankton communities** – Lead PI on a collaborative project examining the effects of dispersed oil on carbon pathways in pelagic food webs, microbial metabolism (e.g., ‘priming effect’ research) and zooplankton production. Primary duties:
- Management of two large-scale, multidisciplinary mesocosm experiments involving co-PIs, postdocs, graduate students, research technicians and interns
- Conducted independent and collaborative research on effects of dispersed oil on community metabolism and ecosystem resilience

**Effects of dispersants on Sargassum mats** – Conducted three mesocosm experiments with DISL colleagues examining effects of dispersed oil on removal of essential fish habitat in the Gulf of Mexico, specifically measuring sinking of *Sargassum* mats caused by reduced oxygen diffusion. This work will be submitted to *Science* as a brevia article.

**Global oil spill database** – constructed a database of global oil spills with over 8,000 records for the past century to be made publically available in 2013. Global analysis of oil spills being conducted (manuscript in preparation) as a means of assessing oil as an anthropogenic stressor on coastal and open-ocean systems by comparing oil carbon to primary production, riverine carbon inputs and volatile organic fluxes on a global scale.

**NCEAS ecotoxicology oil group** – active participant in the global oil working group that was established to examine environmental and management issues surrounding the *Deepwater Horizon* incident and to provide policy documents for future deep water vs.
surface spills and the application of dispersant (see *BioScience* article – Anderson et al. 2012).

**Teaching and Advisor Duties:**
- Instructor for ‘Introduction to Oceanography’ course: 2010, 2012 & 2013 (4 credits)
- Guest lecturer for graduate level ‘Biological Oceanography’ class
- TEAMS (Toward Elementary Advancement Module in Science) program with direct and virtual classroom visits to US and international (e.g., Bermuda) elementary and early childhood classrooms. TEAMS objectives:
  - To educate young children and nurture their interest in science
  - To teach students the process of science and to involve them in the research
  - To assist teachers and educators in developing marine science curriculum

**Assistant Research Scientist, Bermuda Institute of Ocean Sciences (BIOS):** May 2009 – May 2010

**Research tasks:**
- Responsible for analysing the zooplankton time-series at BATS and the implications of zooplankton for biogeochemical cycling and the biological pump. Participated in BATS cruises and led the zooplankton component on two process-oriented, transect cruises (BVal)
- Established blue-water diving sampling program to monitor delicate open-ocean gelatinous zooplankton
- Environmental & biogeochemical controls on phytoplankton and microbial metabolism (production & respiration) & community structure.
- Examining microzooplankton and flagellate grazing & viruses on picoautotrophs and heterotrophic bacteria and anchialine caves of Bermuda.
- Examining the role of picoautotrophs (*Synechococcus* & *Prochlorococcus*) & attached bacteria in carbon and nitrogen cycling using stable isotopes & flow cytometry sorting

**Teaching Duties:**
- Co-instructor of fall classes: Marine Invertebrate Zoology (5 credits) and Marine Biology & Oceanographic Research (6 credits) conducted through Roger Williams University and University of Rhode Island (teaching syllabus available upon request).
- Co-instructor of Biological Oceanography module, POGO Center of Excellence program.
- Seminars to REU students on jellyfish blooms, experimental design and statistical analyses

**Post-doctoral Fellow, BIOS: Aug 2008 – May 2009**

Supervisor: Dr Michael Lomas

- Flow cytometry project examining picoautotrophs & attached bacteria
- Conducted two week lecture & discussion course on biological oceanography observing systems to POGO Center of Excellence graduate students.

**Post Doctoral Researcher, Virginia Institute of Marine Science, College of William and Mary: May 2008 – Aug 2008**

Supervisor: Dr. Deborah Bronk, Physical Sciences

**Research tasks:**
- Isolation of dissolved organic nitrogen (DON) and development of a method to measure DON
• **Graduate Student, Virginia Institute of Marine Science, College of William and Mary:** Aug 2002 – April 2008
  Major Advisor: Dr. Deborah Steinberg, Zooplankton ecologist

  **Research tasks and responsibilities:**
  - Monitoring blooms of jellyfish and ctenophores in Chesapeake Bay
  - Conducting lab experiments designed to determine (1) the rates of dissolved organic matter (DOM) excretion by phytoplankton, jellyfish and ctenophore blooms and, (2) the impacts of jellyfish on bacterioplankton metabolism and growth efficiencies in Chesapeake Bay
  - Determination of carbon and nitrogen composition of phytoplankton and zooplankton using a Coulter CHN elemental analyser
  - Characterization and environmental regulation of spring phytoplankton blooms, role of mixotrophy in sustaining dinoflagellate (*Cochlodinium*) bloom.
  - Measurement of bacterial abundance, cell activity, communities and metabolism using flow cytometry, radioisotopes, membrane inlet mass spectrometry and fluorescence in situ hybridization (FISH)
  - Measurement of dissolved organic carbon using a Shimadzu TOC 5000 high temperature combustion system; responsible for maintenance of instrument for lab
  - Measurement of dissolved inorganic and organic nitrogen and phosphorus using a Lachet nutrient autoanalyzer and Shimadzu spectrofluorometer

  **VIMS field experience and cruises:**
  - 2005 – 2006: Dissolved Organic Matter in Ocean environments (DOMINO, National Science Foundation, Biocomplexity program), Chesapeake Bay, USA and North Pacific. Cruises investigated impacts of zooplankton, phytoplankton blooms, and viruses on DOM cycling.
  - June 2004: Vertical Transport in the Global Ocean (VERTIGO, National Science Foundation), subtropical North Pacific. Cruises measured biological and physical factors controlling carbon flux in the mesopelagic ocean. Collected zooplankton using a multiple plankton net (MOCNESS) system; assisted with deployment and recovery of sediment trap samples.

  **Teaching experience:**
  - Teaching assistant for first year Chemical, Physical, Biological and Geological Oceanography classes (VIMS MS 501A–D)
  - Presented lectures on methods used in microbial ecology, zooplankton ecology, and topics in biological oceanography to VIMS graduate students
  - Conducted pre-exam review sessions for first year students
  - Coordinated discussion sessions on current topics in estuarine, coastal and ocean science
  - Responsible for grading exams and homework assignments in Chemical Oceanography

• **Faculty Research Assistant (FRA) II, Horn Point Laboratory (HPL), University of Maryland Center for Environmental Science (UMCES), Maryland, USA:** Jan 2001 – Aug 2002
  Supervisor: Dr. Paul del Giorgio, Microbial Ecologist.

  - Determination of bacterial phylogenetic groups using FISH
  - Determination of microbial respiration rates using membrane inlet mass spectrometry
  - Quantification of bacterial production and respiration
- Identification of microzooplankton and bacterial groups using epifluorescence, phase contrast and immersion microscopy
- Primary production and bacterial production using radioactive incorporation techniques
- Bacterial production and abundance determination using flow cytometry
- Preparation and upkeep of bacterial and nanoflagellate cultures
- Laboratory maintenance and administration

• **Faculty Research Assistant I, HPL, UMCES:** Jan 2000 – Dec 2000
  Supervisor: Dr. Jenny Purcell, Zooplankton Ecologist.
  - Identification and gut content analyses of Chesapeake Bay and Alaskan jellyfish and zooplankton
  - Performing experiments investigating the effects of hypoxia on jellyfish polyps
  - Field sampling of plankton within the mid-Atlantic region
  - Sampling apparatus included: Underwater video, Tucker and mid water trawls, benthic sleds, Bongo nets, Niskin bottles, zooplankton pumps
  - Organization and everyday maintenance of laboratory and field equipment
  - Figure and text preparation for scientific presentations, papers and reports

• **Research Assistant, MoV:** November 1995 - June 1996.
  Supervisor: Dr. C.C. Lu, former Senior Curator Invertebrate Zoology.
  - Dissection, electron microscopy, and photography of cephalopod radulae for publication in *Fauna of Australia - Mollusca (2001)*

• **Research Assistant, The University of Melbourne:** July 1995 - June 1996.
  Supervisor: Dr. Mark Norman, Zoology Department.
  - Assistance in day and night SCUBA diving to collect, photograph and video cephalopods
  - Maintenance of octopus and squid in aquaria for behavioural studies
  - Taxonomic description of octopus housed in the Museum of Victoria collections
  - Provided professional expertise and conducted field collection of jellyfish for the Marine and Freshwater Resources Institute, Surf Life Saving Victoria, Australian Venom Research Unit

  - Over 350 hours work for the Invertebrate Zoology, Ichthyology & Crustacean departments
  - Identification and maintenance of specimens housed in the jellyfish, ctenophore, cephalopod, crustacean, fishes and polychaete collections
  - Participation in a MoV field sampling program aimed at documenting the distribution of introduced fish species in Port Phillip Bay, Victoria
  - Interpretation of museum exhibits to the public
  - Dissection and illustration of undescribed cephalopod and crustacean species
  - Literature searches of species descriptions for exhibits and publications

• **Voluntary Field and Laboratory Work:** 1996 – Present.
  Voluntary field and laboratory assistance to Dr. Jenny Purcell (UMCES), Graduate students and Marine Research Group of Victoria. Work experience included:
  - Over 300 hours marine and estuarine based fieldwork.
  - Identification of inter & sub-tidal benthic flora, invertebrates and fishes
- SCUBA diving and snorkelling, often in cold or rough conditions, in waters with poor visibility and in remote locations
- Use of small boats and trawling vessels to undertake benthic & plankton trawls
- Regular monitoring of settlement plates
- Acquiring sediment cores and water samples for nutrient and phytoplankton studies
- Supervision and instruction of first year science students during biology practicals.
- Weekly collection and husbandry of marine invertebrates from Port Phillip Bay and Southern Ocean waters for Invertebrate Zoology class

**Additional Experience and Skills**

- **Assistant Team Manager, State Revenue Office of Victoria, Melbourne, Australia**: Dec 1997 – Dec 1999
  - Management of 30 employees, produced procedure manual
  - Analysis of section statistics and compilation of team and revenue reports for State Treasury
  - Recipient of the State Commissioner’s Monthly Excel Award
  - Answering complex customer inquiries relating to state legislation

- **Computer experience**
  - Word processing programs including Microsoft Office (Word, Excel, Powerpoint)
  - Statistical, database and graphics software including: ArcView GIS, Minitab, JMP, Sigma Stat, Ocean Data View, Sigma Plot, Surfer Plot, Adobe Photoshop, Morpho metadata software, Graph Click

- **Microscopy Experience**
  - Dissecting, light and scanning electron microscopes
  - Phase contrast and epifluorescent microscopy using FISH
  - Histological and microscopy preparation of soft bodied and microscopic tissue samples
  - Critical point drying

- **SCUBA Experience**
  - Blue-water diving experience
  - SCUBA certified, NASDS Open Water Diver, with approx. 200 logged dives
  - Underwater photography and video
  - Scientific collection of jellyfish and other marine species

**Professional Development, Community Service & Awards**

- May 2013: Contributing Editor, *Marine Ecology Progress Series*
- April 2012: VIMS Best Publication by a PhD Student (for 2011 PNAS paper, research conducted during PhD)
- Dec 2011: Member of the DISL Estuarium Advisory Committee
- Sept 2011: Current Chair of the ASLO Image Library Committee
- Nov 2009: Lead PI of the NCEAS Global Jellyfish Group, construction of the Jellyfish Database Initiative (JEDI)
- June 2007: Best Student Oral Presentation, 2nd International Jellyfish Blooms Symposium
April 2007: VIMS Art & Auction Award ($11,000)
March 2007: College of William & Mary Student Activities Conference Fund ($250)
February 2007: College of William & Mary Reves Center International Fund ($500)
January 2007: VIMS Graduate Student Association Conference Fund ($100)
December 2006: VIMS Dean & Directors Office Travel Fund ($500)
May 2006: Craig L. Smith Memorial Educational Scholarship. Virginia Institute of Marine Science, College of William & Mary ($800)

Publications (547 citations, H-index = 14, see Google profile)
* Denotes lead PI on project and also contributed equally to the preparation of the manuscript


**Funding & Proposals**

- NSF, Bio OCE. Condon, R.H., Lomas, M.W., Longnecker, K. & Cowen, R. Collaborative Research: Connecting jelly-plankton communities, microbial dynamics, and biogeochemical cycling in the oligotrophic North Atlantic Ocean. 3-yr program, pending ($1.4 million)

- US Australia Joint Commission Meeting Funding. Condon, R.H. & Duarte, C.M. US and Australia Oil Research Partnership. 2-yr program, pending ($50,000)

- NGI, Phase II Funding. Condon, R.H. & W.M. Graham. Does the “primer effect” caused by the DWH oil spill result in increased microbial and zooplankton consumption of labile and refractory DOC? 2-yr program, completed. ($104,000)


- NSF RAPID. Graham, W.M. & Condon, R.H. Understanding ecosystem change within the plankton communities of the northern Gulf of Mexico as a consequence of the Deepwater Horizon oil spill: Is there a shift in the classical planktonic food web due to increased microbial activity on the shelf? 2-yr program, completed. ($200,000).

**Journal Reviews**


**Oral Presentations** – selection from approx. 30 presentations

- Condon, R.H. (May 2014) Jellyfish blooms may not be increasing globally. Invited speaker for Planet Ocean seminar series. Center for Marine Science, UNCW.
- Condon, R.H. & NCEAS Jellyfish Group (Jan, 2012) Questioning the rise of jellyfish in the world’s oceans? The University of Western Australia, Oceans Institute, Perth.
- Graham, W.M., Condon, R.H., and 8 others. (Nov, 2011). Was there a collapse of lower trophic structure on the northern Gulf Shelf during DWH?. CERF Conference, Daytona Beach, FL
- Ortmann, A.C., Metzger, R.C. & Condon, R.H. (May, 2011). Investigating patterns of growth, grazing and viral lysis of the phytoplankton along a salinity gradient influenced by oil from the Deepwater Horizon spill. NGI Conference, Mobile, AL.
- Graham, W.M., Condon, R.H., Carmichael, R.H., D’Ambra, I., Patterson, H., Linn, L & Hernandez Jr., F. (Dec, 2010). Entry of oil (carbon) into the coastal planktonic food web during the Deepwater Horizon spill. AGU Conference, San Franscico, CA.


Poster presentations


• Graham, W.M., Condon, R.H. et al. (Oct, 2010). Oil carbon entered the coastal microbial & planktonic food web during the Deepwater Horizon oil spill. IMBER Workshop. Poster presentation.


**Current & Previous Students**

**Graduate Students**
2012 – C. Hollyhead, Univ. Southampton (mentor), J. Luo, U. Miami (committee member), J. Stone, VIMS (committee member)
2011 - N. Ortell Cumbaa (committee member), A. Rellinger (committee member), J. Jones (committee member)
2009 – K. Suzuki (POGO, BIOS), O. Shatova (POGO)
2008 – R. Ayala (POGO), N. Joshi (POGO), S. Kidawi (POGO)

**REU & Interns** (* indicates minority student)
2012 – A. Johns* (VCU)
2011 – E. McParland (USC), J. Ivory (Humboldt), M. Bogeberg (Intern)
2010 – N. Shelton (Kansas), S. Cecil (Coastal Carolina), J. Burchfield (Intern)
2009 - A. Hendrix (Scripps College), K. Davis (NCST), A. Hermann (Princeton)

**Media & Public outreach**

**Discovery Day, DISL: 2011**
Hosted children’s jellyfish art display

**School visits**
Conducted regular visits to early childhood and elementary schools in Mobile County, Alabama and Bermuda as part of TEAMS (Toward Elementary Advancement Module in Science) program. Worked with teachers to develop lesson plans and conduct experiments in the classroom, in addition to holding Skype video conference calls with children while on research cruises.

**Media interviews**
Personally conducted over 60 media interviews for local, domestic and international print and television media outlets concerning jellyfish blooms (stemming from the PNAS paper and NCEAS Global Jellyfish Project), open ocean food web project and the Deepwater Horizon oil spill. Several press releases have been coordinated with these papers. These media agencies included:
- Two NSF Discovery Reports: Dybas 2011 and Dybas 2013
Audubon Magazine, Sarasota Herald Tribune, Thom Hartmann Radio program in New York City, and ScienceNow (list of media articles available upon request).

- **Marine Science Day (MSD), Elderhostel & other outreach programs, BIOS:** 2008 – present
  - Presented lectures on global climate change and oceanography, conducted plankton tows and tours of BIOS and the RV Atlantic Explorer for visiting Elderhostel
  - Participated in “Wacky Science” & plankton demonstrations for public on MSD
  - Participated in various BIOS outreach events including the US Consulate General visit and the Ocean Acidification film panel.
  - Presented several seminars to the public on jellyfish blooms, including the Bermuda Lifeguard Service and the Probus group (invitation from Sen. Hughes).

- **MSD, SkIO:** Oct 2009
  - Demonstrated estuarine zooplankton & phytoplankton for public during 2009 MSD

  - Exhibited zooplankton from Chesapeake Bay and the open ocean and demonstrated collection methods to the public
  - Provided tours of the zooplankton ecology lab and answered questions relating to jellyfish and marine science

- **After hours public lecture series, Virginia Institute of Marine Science:** Oct, 2006.
  - Presented a public seminar and fielded questions regarding jellyfish blooms of Chesapeake Bay and their impact on the environment

**References**

Dr. Deborah Steinberg
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*Currently on temporary appointment at NSF
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University of Southampton
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United Kingdom
*Current Phone: +44 (0)23 8059 6617
Email: cathy.lucas@noc.soton.ac.uk*
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Assistant Professor of Biology & Marine Biology
University of North Carolina at Wilmington

E-mail: covij@uncw.edu
Work phone: (910) 962-2514
Cell phone: (970) 980-8314

EDUCATION

2009-2011  Faculty Institutes for Reforming Science Teaching (FIRST) IV Program
Mentors: Diane Ebert-May, Terry Derting, Clarissa Dirks, and Kathy Williams
Training focus: To improve student learning at the undergraduate level through the use of backwards design, validated assessments of learning gains, and a learner-centered classroom. (Intensive two year program)

2005   Ph.D.  Biological Sciences; Louisiana State University
Advisor: Steven C. Hand
Dissertation: Role and fate of proton gradients in the brine shrimp, Artemia franciscana, during dormancy induced by anoxia.

1996   B.S.  Biological Sciences/Zoology; Colorado State University
Advisor: Donald L. Mykles
Undergraduate Research: Subunit composition and biochemical properties of 20S proteasome in Drosophila melanogaster and Homarus americanus.

APPOINTMENTS

2012-Present Assistant Professor; University of North Carolina at Wilmington
Position: Assistant Professor; Integrative and Comparative Biology

2009-2012  Assistant Professor; University of Wisconsin, Stevens Point
Position: Assistant Professor; Animal Physiology

2005-2009  Postdoctoral Fellow; Colorado State University
Advisor: Donald L. Mykles
Focus: Student mentoring, lab management, and invertebrate endocrinology.

PUBLICATIONS


PRESENTATIONS

POSTER PRESENTATIONS


ORAL PRESENTATIONS

Covi, JA, BD Bader, ES Chang and DL Mykles (2014) Fine time-scale observation of development following cryptobiosis yields a non-conventional model for toxicology. Society for Integrative and Comparative Biology annual meeting.

Covi, JA, BD Bader, ES Chang and DL Mykles (2013) Comparative assessment of Smad expression in two models of muscle atrophy for the blackback land crab, Gecarcinus lateralis. Society for Integrative and Comparative Biology annual meeting.

Covi, JA (2011) Integrative physiology of crustaceans: using the physiology of dormancy and molting to ask toxicological questions. Eckerd College

Covi, JA (2009) Integrative physiology of crustaceans: using the physiology of dormancy and molting to ask toxicological questions. University of Wisconsin, Stevens Point.


PRESENTATIONS by MENTORED STUDENTS

Summary: My students presented over 40 posters; seven received awards or special recognition. †presented by a mentored undergraduate student, ‡presented by a mentored graduate student.


Won the Best Undergraduate Poster Presentation Award.


**Won Best Undergraduate Poster award at MAES conference.**


### Mentored Students—Degree, Ethnicity and Gender Summary:

<table>
<thead>
<tr>
<th>High School Students</th>
<th>Undergraduates</th>
<th>Graduate Students</th>
<th>Female</th>
<th>Male</th>
<th>Hispanic</th>
<th>Native American</th>
<th>African American</th>
<th>Asian</th>
<th>Foreign Nationals</th>
<th>First Generation</th>
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**Total Mentored Students:**

<table>
<thead>
<tr>
<th>Colorado State University (Co-mentored with DL Mykles)</th>
<th>University of Wisconsin, Stevens Point</th>
<th>University of North Carolina at Wilmington</th>
</tr>
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<tbody>
<tr>
<td>23</td>
<td>11</td>
<td>14</td>
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</table>
GRANTS

2012-Present  $1,600  Combined UNCW mentored student-specific awards; 3 awards
2014  $3,000  Summer Undergraduate Research and Creativity Award (SURCA)
2014  $2,994  Charles L. Cahill Award; UNCW, Undergraduate Training
2013  $25,970  North Carolina Biotechnology Center; Molecular Biol. Workshop
2013  $9,493  Equipment Grant; UNCW, Ultrapure Water Purification System
2013  $12,000  Equipment Grant; UNCW, Teaching Lab Respirometry Equipment
2013  $1,700  Friends of UNCW Grant; Cardiovascular Outreach Equipment
2013  $500  Applied Learning Award; UNCW, Center for Support of Undergraduate Research and Fellowships (CSURF)
2010  $990  Faculty Development Grant; UWSP, Collaboration support

HONORS & AWARDS

2012  Research featured in editorial article: Rheb regulates crab muscle atrophy. J. Exp. Biol. 215(ii)
2009-2011  Faculty Institutes for Reforming Science Teaching (FIRST IV) Fellowship
2009  Departmental award for Excellence in the Mentoring of Undergraduates; Colorado State University

PROFESSIONAL SERVICE

University of North Carolina at Wilmington
2014-2014 Southeastern Regional Partnership for Life Sciences Education (SERP-PULSE) Institute Team member
2013-2014 Library Committee
2012-Present Undergraduate Academic Assessment Committee

University of Wisconsin, Stevens Point
2011-2012  Faculty mentor for the “Suites@201” residence hall (requested by students)
<table>
<thead>
<tr>
<th>Year</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>Two Faculty Search and Screen Committees (Biology dept.)</td>
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<tr>
<td>2010-2011</td>
<td>Undergraduate academic advising (Biology dept.)</td>
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<tr>
<td>2010-2011</td>
<td>Curriculum Committee (Biology dept.)</td>
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<tr>
<td>2010-2011</td>
<td>Deans Advisory Committee (College of Letters and Science)</td>
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<tr>
<td>2010-2011</td>
<td>Began and currently lead a K-12 outreach program for physiology</td>
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<tr>
<td>2009-2011</td>
<td>Program and Student Assessment <em>ad hoc</em> Subcommittee (Biology dept.)</td>
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Colorado State University, Fort Collins

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<thead>
<tr>
<th>Year</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>Began and led a K-12 outreach program for physiology</td>
</tr>
<tr>
<td>2005-2009</td>
<td>Oversight of common equipment: Roche LC480 and DI water system</td>
</tr>
<tr>
<td>2005-2007</td>
<td>Committee member, Honors thesis of Jocelyn Riehl</td>
</tr>
<tr>
<td>2005-2007</td>
<td>Committee member, Master’s thesis in Biochemistry of April Flack</td>
</tr>
</tbody>
</table>

Community Service

<table>
<thead>
<tr>
<th>Year</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Volunteer; Cape Fear Flyers children’s running club</td>
</tr>
<tr>
<td>2014</td>
<td>Volunteer; Builder for Habitat for Humanity; Wilmington, NC</td>
</tr>
<tr>
<td>2013</td>
<td>Physiology Understanding (PhUn) Week—Led team of two undergraduates and two faculty for active learning experiences in 5th grade classrooms as a representative for the American Physiological Society and UNCW.</td>
</tr>
<tr>
<td>2012</td>
<td>Qualified Scientist (advisor) for local high school student science fair project. Student: Talpa Everette, Project: The Future of Finger Printing.</td>
</tr>
</tbody>
</table>

*Project won first place in local and regional science fairs; Talpa is now proceeding to the state competition.*

<table>
<thead>
<tr>
<th>Year</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>Physiology Understanding (PhUn) Week—Trained two undergraduates to lead active learning experiences in K-12 schools as a representative for the American Physiological Society</td>
</tr>
<tr>
<td>2011</td>
<td>High school physiology fair at UWSP—Built and led a regional science fair for high school students; trained undergraduates in organizing large events for K-12 students (University of Wisconsin, Stevens Point)</td>
</tr>
<tr>
<td>2011</td>
<td>College Days for Kids—Led a team of undergraduates to conduct experiential learning classes with human physiology learning objectives for 6th grade students from regional public schools (University of Wisconsin, Stevens Point)</td>
</tr>
<tr>
<td>2011</td>
<td>Organized physiology experiential (service) learning booth for 7th and 8th grade students at Women in Science Day (University of Wisconsin, Stevens Point)</td>
</tr>
<tr>
<td>2010</td>
<td>Wetland restoration—US Fish and Wildlife Service (Necedah National Wildlife Refuge; Necedah, WI)</td>
</tr>
<tr>
<td>Year</td>
<td>Event Description</td>
</tr>
<tr>
<td>------</td>
<td>-------------------</td>
</tr>
<tr>
<td>2010</td>
<td>Physiology Understanding (PhUn) Week—Trained and led a team of undergraduates in experiential learning classes with human physiology learning objectives for 8th grade students as a representative of the American Physiological Society (PJ Jacobs Middle School; Stevens Point, WI)</td>
</tr>
<tr>
<td>2010</td>
<td>College Days for Kids—Trained and led a team of undergraduates in experiential learning classes with human physiology learning objectives for 6th grade students from regional public schools (University of Wisconsin, Stevens Point)</td>
</tr>
<tr>
<td>2009</td>
<td>Poster judging—Undergraduate research symposium (Colorado State University)</td>
</tr>
<tr>
<td>2008</td>
<td>Tae Kwon Do Instruction—Assistant instructor for lower belt ranks in Tae Kwon Do (Colorado State University)</td>
</tr>
<tr>
<td>2008</td>
<td>Physiology Understanding (PhUn) Week—Trained and led a team of undergraduates in experiential learning classes with human physiology learning objectives for 11th grade students as a representative of the American Physiological Society (Fort Collins High School and Rocky Mountain High School; Fort Collins, CO)</td>
</tr>
</tbody>
</table>
EDUCATION

University of South Alabama, Mobile, Alabama, 2010 - present
  Ph.D. candidate in Marine Science, Area of Specialization: Estuarine Ecology & Biogeochemistry

The College of William and Mary, Williamsburg, Virginia, 2002 - 2005
  M.S. in Marine Science, Department: Biological Sciences

University of Virginia, Charlottesville, Virginia, 1997 - 2001
  B.A. in Biology
  B.A. in Environmental Sciences, concentration in Ecology

APPOINTMENTS

Lecturer: Ecology, Department of Biology & Marine Biology, University of North Carolina Wilmington

PUBLICATIONS


PRESENTATIONS

* Denotes undergraduate research project mentored by E.S. Darrow


Darrow, E.S., R.H. Carmichael, K.R. Calci, W. Burkhardt III. “Sedimentary organic matter source shifts due to land use change in a Northern Gulf of Mexico estuarine system.” Poster presentation, College of Arts and Sciences Research Symposium, University of South Alabama, March 21, 2013.


Darrow, E.S., R.H. Carmichael, H.E. Jackson. “Growth patterns of the eastern oyster, Crassostrea virginica from the Gulf of Mexico: records in ancient and modern shell.” Oral presentation, Gulf of Mexico Graduate Student Symposium, March 2012.


Darrow, E.S. “Landscape-scale impacts on human health indicators in the northern Gulf of Mexico.” GIS project and poster, University of South Alabama Geography Department, November 2011.


**AWARDS and HONORS**

The Wetland Foundation Travel Grant, 2013
Food and Drug Administration – Dauphin Island Sea Lab Fellowship, 2010 - present
Ocean Conservation Co. Scholarship, 2002
Graduate Research Fellowship, VIMS Biological Sciences, 2002

**PROFESSIONAL SERVICE**

*Seminar Committee: Department of Biology & Marine Biology, UNCW, 2014-2015*
Coastal and Estuarine Research Federation (CERF) Outreach and Career Development Committee, 2014-present
Gulf Estuarine Research Society (GERS) Executive Board Student Representative, 2014-present
  - Assisted with hosting GERS biannual meeting at Dauphin Island Sea Lab, 2012
Treasurer: Dauphin Island Sea Lab Graduate Student Organization, 2012-2013
Bylaw Revision Committee: Dauphin Island Sea Lab GSO, 2012-2013

*Volunteer: Manatee Sighting Network and Alabama Marine Mammal Stranding Network, Dauphin Island Sea Lab, 2010-2013*
Amanda Kahn Dickens

Education
2008  Ph.D.  Marine Biology, University of North Carolina Wilmington, Wilmington, NC
2004  M.S.  Marine Biology, University of North Carolina Wilmington, Wilmington, NC
2002  B.S.  Biology and Marine Science, Minor in Chemistry, University of Tampa, Tampa, FL
2000  A.S.  Biology and Chemistry, Mercer County Community College, Trenton, NJ
2000  A.A.  Theater and Dance, Mercer County Community College, Trenton, NJ

Appointments
Present  Full time Lecturer, UNCW Department of Biology and Marine Biology
2012-Present  Research Associate, Aquatic Ecology Lab, UNCW Center for Marine Science
2014  Instructor, Cape Fear Academy, Wilmington, NC
2014  Chemist, Envirochem Analytical Laboratories, Inc. Wilmington, NC
2011- 2014  Part-time Faculty UNCW Department of Biology and Marine Biology
2010  Research Associate, Biological Oceanography Laboratory, UNCW
2009-2011  Visiting Assistant Professor, University of North Florida, Jacksonville, FL

Publications: Peer- Reviewed

Mallin, M, **Dickens, A.K.**, McIver, M. In Review. Pollution of a CAFO–influenced creek- Assessing chronic vs. acute pollution responses


**Additional Publications**


**Scientific Presentations**

2014  Southeastern Estuarine Research Society, Savannah, GA. “Connecting research scientists and educators- Developing a community of practice”

2013  Mid-Atlantic Marine Education Association, Gloucester Point, VA. “Building a community of practice: Our experience of initial COSEE SE – sponsored outreach events”

2013  COSEE Southeast Researcher Educator Exchange Forum Workshop, Raleigh, NC. “Developing outreach activities within your community of practice: My experience as a scientist” - Invited Speaker

2012  Southeastern Estuarine Research Society Conference, Beaufort, NC. “Phytoplankton productivity in the surf zone: Developing methods to build baseline knowledge”

2011  Coastal and Estuarine Research Federation Conference, Daytona Beach, FL. “Phytoplankton productivity in the surf zone of sandy beaches estimated by simultaneous in situ 14C incubations and fast repetition rate fluorometry”

2010  University of North Florida Biology Department Seminar Series, Jacksonville, FL. “The wonderful world of seagrass physiological ecology”
2009  Coastal and Estuarine Research Federation Conference, Portland, OR. “Diurnal tidal responses of Halophila johnsonii physiology in a marine versus riverine influenced habitat”


2007  Estuarine Research Federation, Providence, RI. “In situ responses of Halophila johnsonii to hurricane-like water quality conditions”

2007  Southeastern Phycology Colloquy, Dauphin Island, AL. “Photosynthetic action spectra of Halophila johnsonii in marine and riverine influenced sites”

Grants Received

University of North Florida Environmental Center Seed Grant Program, 2010. Co-PI with Dr. C. Ross. “Effects of environmental stressors on seagrass susceptibility to infection and disease”

Florida State Wildlife Grant, 2008. Co-PI’s: J. Beal, Florida Fish and Wildlife Conservation Commission, Dr. J. Voss and Dr. D. Hanisak, Harbor Branch, Florida Atlantic University. “Monitoring and assessment of blackwater effects on St. Lucie Reef: Florida’s northernmost coral reef” - a reduced amount of the overall grant was funded, which precluded my direct involvement.

Grants Applied for

UNCW ETEAL- Supported Pedagogy Initiatives, 2014, Pending review. “A new approach to a core course: Using technology to encourage applied learning in a large lecture setting”

North Carolina Sea Grant, Core Research Grant, 2013. Co-PI’s Dr. L Cahoon and Dr. J.C. Bailey, University of North Carolina Wilmington Department of Biology and Marine Biology. “Understanding ecosystem processes in North Atlantic sandy beach surf zones”

National Science Foundation, Biological Oceanography grant, 2011. Co-PI’s: Dr. L. Cahoon and Dr. J. Bailey, “Evaluating high primary production in the surf zone: expanding the toolbox”

U.S. Army Corps of Engineers, U.S. Army Engineer Research and Development Center-Environmental Lab #18-Coastal Ecology, 2010. Co-PI with Dr. L. Cahoon, University of North Carolina Wilmington Department of Biology and Marine Biology “Real-time in situ measurements of primary productivity in the surf zones”


Awards

2007-2008  James Mulligan Marine Biology Fellow, University of North Carolina Wilmington

2007  Coastal Ocean and Research Monitoring Project (CORMP) Student Research Award, University of North Carolina Wilmington Center for Marine Science
Professional Services

Southeastern Estuarine Research Society Program Chair 2010-2012, Treasurer 2013-2015

Coastal and Estuarine Research Federation Student Activities Chair 2010-2012; Access database developed for judging student participants’ presentations

Coastal and Estuarine Research Federation Conference Steering Committee 2009

Estuarine Research Federation Conference Steering Committee 2007
DIANE M. B. DODD

CURRICULUM VITAE

Address

Department of Biology & Marine Biology
The University of North Carolina Wilmington
601 South College Road
Wilmington, North Carolina 28403-5915
(910) 962-3228
email: doddd@uncwil.edu

Education

Agnes Scott College
B.A. in Biology, with high honors; June 1979

Yale University
Department of Biology, Division of Genetics
M.S.; December 1981
M.Phil.; May 1983
Ph.D.; December 1984
Title of Dissertation: "Behavioral correlates of the adaptive divergence of Drosophila populations"

Professional Experience

Assistant Professor, The University of North Carolina at Wilmington; 1984 - present

Assistant in Research, Yale University; 1983-1984

Teaching Expertise

Undergraduate courses:

Genetics (BIO 335)  Honors Freshman Seminar
(HON 110)
Advanced Topics in Genetics (BIO 491)
Evolutionary Biology (BIO 430)
Genetics of Personality (BIO 495)
Genetics of Speciation (BIO 495)
Seminar in Religion and Evolution (BIO 495)
The Human Genome Project (BIO 495)
Cell Biology (BIO 207)
Graduate courses:

- Evolutionary Biology (BIO 520)
- Population Genetics (BIO 531)
- Colloquium in Marine Biology (MBY 593)

Scholarship and Research

Research Experience

My research has been centered on questions posed in the field of experimental population genetics. I am interested primarily in the genetics of the process of speciation. Using Drosophila pseudoobscura as my principal experimental organism, I have looked at changes in fitness, reproductive isolation, habitat choice, chromosomal inversions, and mitochondrial DNA in evolving populations of Drosophila.

Publications


Professional Service

Reviewer for Scott, Foresman/Little, Brown Publishers; 1989
Genetics Society of America: Education Committee
Roots and Shoots/Reverence for Life Youth Summit (Jane Goodall Institute); 1993
Judge - North Carolina Academy of Sciences, Collegiate Academy Presentation of Papers; 1993
Proposal Development and Sources of Support Workshop, North Carolina State University; 1987
Reviewer for the Competitive Small Grants Program of the NC Biotechnology Center; 1986
Seminar series on "Winning Grants," UNCW; 1986
Administrative Service

University Committees and Service

University College Advisor, 1985 – present
Synergy Selection Committee, Committee Member December 2009 - Present
Honors Scholars Program, Committee Member, 2004 - Present
Honors Mentor Selection Committee, Committee Member, April 2010 - May 2010
CTE panel discussion: "Understanding Haiti: Making a Difference". 2010
Basic Studies Committee, Committee Member, January 2006 - September 2009
Appointed by the Dean of the College of Arts and Sciences to an ad hoc committee to improve Praxis exam scores (state teachers’ exam) of our education majors; 1999 - 2003
Faculty Hearings Panel, 2005 - 2008
Faculty Senate, 1998 – 2001
Campus Recreation Advisory Board, 1998 – present
Parking Appeals Committee, 1997 - 2003
UNCW Representative to University of North Carolina/North Carolina Community Colleges Transfer Advisory Committee, 1997
Faculty Welfare Committee, 1994 - 1996
Computer Services Committee, 1994 - 1996
Search Committee for Director of Career Services, 1995-1996
Chancellor's AIDS Advisory Committee, 1993 - 1994
University Speakers Bureau; 1992 - present
General College Advisor; 1985 - present
Student Health and Wellness Center Committee; 1989 - 1990
Faculty Professional Relations Committee; 1988 - 1991
Student Affairs Committee; 1985 - 1989
Secretary; 1986 - 1987
Chair; 1988 - 1989
Ad hoc Committee on Grade Appeals; 1986
Selection Committee for Who's Who in American Colleges and Universities; 1985
Produced a slide presentation on Marine Biology at UNCW for the 1985 Marine Expo (with Dr. C. S. Dunn)

Departmental Committees and Service

Advancement Committee, Committee Member. August 2006 - 2010
Scholarship Committee, Committee Member August 2000 - Present
Departmental Newsletter, Editor August 2004 - Present
Transfer Orientation, Faculty Advisor, January 2000 - Present
Assessment Committee, Essay exam review panel August 2009 - present
Departmental Senator, 1998 - 2001
Peer Evaluation Committee for Dr. Craig Bailey; 1999 - 2000
Search Committee for Mariculturist Position, 1998 - 1999
Peer Evaluation Committee for Dr. Stephen Kinsey; 1998 - 1999
Peer Evaluation Committee for Dr. Simona Bartl; 1997 - 1998
Assistant Chair, undergraduate studies; 1994 – 1997
Editor, Departmental Newsletter; 1994 – 1997
Editor, Departmental Undergraduate Brochure; 1994 - 1997
Presented lecture on “DNA Fingerprinting” to the BIO 110 Enrichment Sessions, UNCW; 1997.
Experiential Learning Committee; 1996 - 1997
Peer Evaluation Committee for Dr. Laela Sayigh; 1996 - 1997
Peer Evaluation Committee for Dr. Jon Geller; 1995 - 1996
Faculty Recording Secretary; 1989 - 1994
Search Committee for Marine Cordate Immunologist; 1994
Scholarship Committee; 1991 - 1992
Representative to Faculty Senate; 1989 - 1991
Library Journals Committee; 1984 - 1988
Library Committee for the Graduate Program in Biology; 1986

Research Grants and Fellowships

Faculty Research and Development Fund, UNCW. "The genetics of adaptation and reproductive isolation in Drosophila;" 1985

North Carolina Biotechnology Center: Visiting Industrial Scientists and Engineers in Biotechnology at North Carolina Universities Program, with Dr. R. K. Sizemore and Dr. S. K. Burgess; 1985

Research Assistantship, with Dr. J. R. Powell, Yale University; 1983 - 1984

National Institutes of Health Predoctoral Grant; 1979 - 1983

Memberships in Professional Societies

Society for the Study of Evolution
Genetics Society of America
Behavior Genetics Association
Association of Southeastern Biologists
National Center for Science Education
Phi Beta Kappa

Civic and Community Service

Invited to present a seminar on Gene Function and Genetic Technologies to middle school teachers for SMEC’s Science workshop- 6-8 Human Body & Genetic Influences, 2008
Presented talk on “Becoming a College Professor” to fourth and fifth grades of Blount Elementary; 2000
Guest “scientist” at Blount Elementary’s Career Day; 1999
Acted as “nature expert” for fifth grade class of Blount Elementary field trip to Hanging Rock, NC; 1998
Presented demonstration on isolation of DNA to New Hanover High School tenth grade class; 1997
Presented lectures on basic genetics to the fourth and fifth grade classes of Blount Elementary School; 1997
Guest scientist at Blount Elementary’s careers in science night for fifth graders, 1996
Presented two lectures on “DNA Fingerprinting” to eighth grade classes at D.C. Virgo Middle School; 1995
"Genetic Engineering" presentation to the Wilmington chapter of the AAUW; 1994
"The Human Genome Project" presentation to the Wilmington Senior Men's Club; 1991
Through the UNCW Science and Mathematics Education Center, presented lectures on genetics for junior high school teachers in New Hanover, Pender, and Brunswick Counties; 1986
Judge, Blockade Runner Forensics Tournament; 1987, 1986

Honors

Discere Aude Award, 2010

Twice nominated for Chancellor’s Teaching Excellence Award

Named by one or more graduating seniors as the one person at UNCW who had significant impact on their lives; each semester since the program was initiated.

Selection for America's Who's Who - America's Outstanding Women Of The Eighties, 1989
CURRICULUM VITAE

Michael J. Durako
Address: The University of North Carolina at Wilmington
        Department of Biology and Marine Biology
        Center for Marine Science
        5600 Marvin K. Moss Lane
        Wilmington NC 28409
Telephone: (910) 962-2373 work
E-mail: durakom@uncw.edu; http://people.uncw.edu/durakom/index.htm

Education
Ph.D. Marine Science, 1991 University of South Florida, St. Petersburg, FL 33701
M.A. Botany, 1978 University of South Florida, Tampa, FL 33620
B.S. Biology, 1975 Florida Atlantic University, Boca Raton, FL 33432

Appointments
Current Position: Professor (since 8/04), Department of Biology and Marine Biology, UNCW
8/97- 5/04: Associate Professor, Department of Biology, tenured 8/00
5/95- 8/97: Senior Research Scientist, Florida Marine Research Institute - Supervisor of Habitat
          Assessment and Restoration Research Group within Resource Health and Assessment
          Section. Supervised 5-Full Time Research Scientists (3 Ph.D.’s) and 8-Temporary (OPS)
          Research Staff employees.
2/91-5/95- Research Scientist, Florida Marine Research Institute - Botany and Technical Sciences
          Section.
1/89-2/91 - Biological Scientist IV, Bureau of Marine Research - Botany and Technical
          Sciences Section.
11/84- 1/89 - Biological Scientist III, Bureau of Marine Research - Botany and Technical
          Sciences Section.
8/82-11/84 - Senior Biologist, Bureau of Marine Research - Botany Section.
9/79-8/82 - Biologist, Bureau of Marine Research - Botany Section.

Peer-Reviewed Journal Publications (87 total) (Student authors in bold)
Gavin N. M., Durako, M. J. 2014. Population-based variation in resilience to hyposalinity stress in
Howarth, J. F., Durako, M. J. 2013. Variation in pigment content of Thalassia testudinum
Howarth, J. F., Durako, M. J. 2013. Diurnal variation in chlorophyll fluorescence of
         Thalassia testudinum seedlings in response to controlled salinity and light conditions. Marine Biology
         160: 591-605.
Kahn, A. E., Beal, J. L., Durako, M. J. 2013. Diurnal and tidal variability in photobiology of the
         seagrass Halophila johnsonii in a riverine versus marine habitat. Estuaries and Coasts 36:
         430-443.
Griffin, N. E., Durako, M. J., 2012. The effect of pulsed versus gradual salinity reduction on the


**Peer-Reviewed Book Chapters**


**Invited Papers Presented (25 total)**


**Presentations Authored or Co-Authored (Student authors in bold)**


Gavin, N. M., Durako, M. J. Durako, M. J., CERF 2011, Coastal & Estuarine Research Federation, Daytona Beach, FL, "Are their diurnal changes in photoprotective mechanisms in
leaves of intertidal and subtidal *Halophila johnsonii?*, Academic, International, Accepted. (November 9, 2011).


**Corbett, J.,** Durako, M. J. Durako, M. J., Southeast Phycological Colloquy, UNCW, "Does diurnal variation in fluorescence of *Thalassia testudinum* reflect its physiological state?", Academic, Regional, Accepted. (October 30, 2010).


**Localization and antioxidant activity of flavonoid compounds in *Halophila johnsonii* and *Halophila decipiens*. Gavin, N. M.,** Durako, M. J. Benthic Ecology Meetings, Mar. 11-13, 2010, Wilmington, NC

Assessing seagrass health at the landscape level using chlorophyll fluorescence: Diurnal variations and maybe a way to deal with it. Durako, M. J. 20th Biennial Coastal and Estuarine Research Federation Conference, 1-5 November, Portland, OR.


**Seagrass as indicators of ecosystem change in South Florida estuaries.** Hall, M. O., Durako, M.J., Berns, D., **Kunzelman, J.,** Toth, K. Florida Bay Science Conference, Naples, FL, Dec 7-11, 2008.

The photobiology of Symbiodinium indicates populational differences in hyposaline tolerance in Siderastrea radians from Florida Bay, Florida USA. Chartand, K., Durako, M. 11th International Coral Reef Symposium, Ft. Lauderdale, FL July 7-11, 2008

Changes in spectral reflectance in response to salinity variation in Siderastrea radians from Florida Bay, Florida USA. Durako, M., Chartand, K. 11th International Coral Reef Symposium, Ft. Lauderdale, FL July 7-11, 2008


Seagrasses as Indicators of Ecosystem Change in South Florida Estuaries. Hall, M. O., Durako, M. J. Estuarine Research Federation Meetings, Providence, R. I., November 4-9, 2007.

Grants (56 Awards totaling >$7,00,000; 35@UNCW: >$5,000,000)

2013-2014
Florida Bay water quality synthesis. Florida Fish & Wildlife Conservation Commission. ($40,000)

2011-2013
Measuring photosynthetic characteristics of Turtlegrass for the South Florida Fish Habitat Assessment Program. Florida Fish & Wildlife Conservation Commission. ($60,000)

2011-2013

2010-2011

2010-2011
Measuring photosynthetic characteristics of Turtlegrass for the South Florida Fish Habitat Assessment Program. Florida Fish & Wildlife Conservation Commission. ($125,000)

2009-2011

2009-2010
Measuring photosynthetic characteristics of Turtlegrass for the South Florida Fish Habitat Assessment Program. Florida Fish & Wildlife Conservation Commission. ($60,000)

2008-2010

2007-2008

2005-2008
Florida Fish & Wildlife Conservation Commission. Measuring photosynthetic
characteristics of Turtlegrass for the South Florida Fish Habitat Assessment Program. ($200,000)

2005-2007

2005-2007

Honors, Awards and Professional Service
Appointed to NOAA-funded Recovery Plan team for the recently listed species Halophila johnsonii, the only marine plant ever to be listed under the Endangered Species Act. 1999-present
Team Leader - Florida Bay Program Management Committee, Seagrass Research Team 1998-present.

Thesis Advisor:
Graduate- Master’s

Graduate- Ph.D.
Amanda Kahn, 2008; Nathan Gavin 2010

Thesis Committee Member:
Graduate- Master’s

Graduate - Ph.D.
USF - Eva Maria Wysk Koch 1990
FIU – Justin Campbell 2007

Post-doctoral Research Fellows supervised
Dr. Piotr Kowalczyk - 2001-2003
Dr. Marnie L. Campbell - 2003-2004
Dr. Wendy L. Woods - 2003-2005

Professional Societies
Sigma Xi (full member) American Society of Limnology and Oceanography
Coastal & Estuarine Research Federation Southeastern Estuarine Research Society
CURRICULUM VITAE

Steven D. Emslie
September 2014

PERSONAL DATA:

Address: Univ. of North Carolina
Dept. of Biology and Marine Biology
Wilmington, NC 28403
Phone: (910) 962-3357 (office)
Fax: (910) 962-4066
E-mail: emslies@uncw.edu

ACADEMIC BACKGROUND:

Ph.D. 1987 University of Florida, Gainesville--Zoology
M.S. 1982 Northern Arizona University, Flagstaff--Biology
M.A. 1977 University of Colorado, Boulder--Anthropology
B.A. 1975 University of Colorado, Boulder--Anthropology
1971 Graduated from Ft. Collins High School, Colorado

GRANTS AND AWARDS (since 2007 only):

National Science Foundation, MRI: Acquisition of a gas chromatograph and isotope ratio mass spectrometer interface for compound-specific isotope analyses at the University of North Carolina Wilmington, $149,705, with Chad Lane (lead PI) and A. Hawkes, R. Mead, and E. Reber, Co-PIs, July 2014.

National Science Foundation, Office of Polar Programs ANT 0739575, $17,128, supplemental award to Stable isotope analyses of pygoscelid penguin remains from active and abandoned colonies in Antarctica, 9/1/2008 – 8/31/2015 (with Mike Polito and William Patterson, co-PIs).

National Science Foundation, Supplement to The Vertebrate Paleontology of Cement Creek Cave, Colorado, to support graduate research by Bryan McLean, $13,008, 1 Sept. 2010.

National Science Foundation, DEB Biological Research Collections, Enhancement of the natural history collections at the University of North Carolina Wilmington, 8/1/2008 – 7/31/2010 (with Tom Lankford, Marcel van Tuinen, and David Webster as Co-PIs), $314,609.

Faculty Scholarship Award, University of North Carolina Wilmington, 2 September 2008, in recognition of career research and publications, with $1500 stipend.

National Science Foundation, Office of Polar Programs ANT 0739575, $503,195, Stable isotope analyses of pygoscelid penguin remains from active and abandoned colonies in Antarctica, 9/1/2008 – 8/31/2013 (with Mike Polito and William Patterson, co-PIs).

National Science Foundation, Sedimentary Geology and Paleobiology EAR, $65,169, The vertebrate paleontology of Cement Creek Cave, Colorado, 10/1/2008 – 9/30/2009 (with David Meltzer and David Webster, co-PIs).

National Oceanographic and Atmospheric Administration, National Estuarine Research Reserve Graduate Research Fellowship, $60,000, Mercury levels in feather and blood of two species of coastal sparrows from over-wintering and breeding sites in North Carolina, the northern U.S., and Canada (co-PI with Virginia Winder, Ph.D. student for project), 6/1/2008 – 5/31/2011.

National Science Foundation, Office of Polar Programs, $5750 from the Research Experiences for Undergraduates (REU) program to support two students for research on paleoclimatic studies in Colorado with global comparisons, 2007/2008 (supplement to OPP-0125098).
TEACHING/PROFESSIONAL EXPERIENCE:

**Professor**  
1998-  
Depts. of Biology and Marine Biology, University of North Carolina Wilmington. Duties include teaching classes in ecology, ornithology, graduate seminars; conducting research, mentoring graduate students (M.S. and Ph.D.).

**CONNECT Facilitator**  
1997-1998  
Coordinator for the collaborative partnership between Western State College and the REIJ Gunnison School District to bring Standards-Based Education to Colorado K-16 schools in the math and sciences. Duties include interacting and meeting with local K-12 teachers and College faculty to develop standards, integrate standards into curriculum, assessment, and professional development.

**Thornton Visiting Scholar and Adj. Assist. Professor**  
1994-1998  
Western State College, Gunnison, Colorado. Research with undergraduate students, and taught courses in General Ecology (twice), Conservation Biology, Environmental Science (three), and Natural History and Ecology of Birds. Also spent 6 months as the **NAGPRA representative**, C. T. Hurst Museum, to oversee the repatriation of human remains in the collections to Native American Tribes, 1996-1997.

**Adjunct Assistant Curator, 1993-1995**  
Florida Museum of Natural History. Spent three austral summers working with penguins and other seabirds at King George Island, Antarctic Peninsula, in collaboration with Dr. Wayne Trivelpiece.

**Lecturer and Research Associate**  
1990-1992  
Board of Environmental Studies, University of California, Santa Cruz. Taught undergraduate courses in Ecology (four times), Natural History of Birds (twice), Natural History of Mammals (twice), Wildlife Conservation (once) and Biology and Ecology of Vertebrates (7 lectures, one class). Each class had from 17 to 400 students.

**Field Director and Biologist**  
1987-1990  
Point Reyes Bird Observatory, California. Supervised volunteers and directed long-term ecological research on 12 species of seabirds and the Northern Elephant Seal on Southeast Farallon Island.

**Teaching Assistant**  
1983-1987  
University of Florida, Department of Zoology. Taught undergraduate laboratory courses in General Biology, Comparative Vertebrate Anatomy, and Embryology. Participated in numerous paleontological excavations at fossil localities in Florida ranging from Miocene to late Pleistocene in age.

**1981-1982**  
Northern Arizona University, Department of Biological Sciences. Taught undergraduate laboratory courses in General Biology, Cell Biology, and Comparative Vertebrate Anatomy.

**Secretary/Treasurer**  
1983-1986  
Society of Ethnobiology

**Editor**  
1981-1983  

**Instructor**  
1979-1980  
Prescott Center College, Prescott, Arizona. Taught undergraduate courses in Prehistory of the Southwest (twice) and Archaeological Field Techniques (twice).

**Faunal Specialist**  
1978-1980  
Dolores Archaeological Project, Cortez, Colorado. Directed a preliminary survey of birds and mammals in the Dolores River Valley; directed identification and analysis of faunal remains from archaeological sites excavated in the valley.

**Field Supervisor or**  
Numerous archaeological excavations and surveys in Colorado, Arizona,
Crew Member
New Mexico, Nevada and Missouri.
1975-1982

PUBLICATIONS (since 2007 only):


**PROFESSIONAL SERVICE (since 2007 only):**

Curator, UNCW Ornithology Collections, 1998 to present
Editorial Board Member, *Advances in Polar Science*, since fall 2014
NSF Review Panel for Collections in Support of Biological Research Program, fall 2013
NSF Proposal reviewer
Reviewer for numerous peer-reviewed journals, annual since 1998
University Studies Advisory Committee member, since fall 2013
Chair’s Advisory Committee member, since fall 2014

**PRESENTATIONS (past two years only):**

2014 Mercury and Stable Isotope Analysis of Human Bone from a Late Neolithic/Chalcolithic Ditched Enclosure at Perdigões, Portugal (with Rebecka Brasso, William Patterson, Ana Maria Silva, and António Valera, co-authors). Society of Ethnobiology Annual Meeting, 11-14 May 2014, Cherokee, NC.


2012 Integrating stable isotopes with climate change and the paleohistory of Adélie Penguins in Antarctica. Plenary Speaker, Global Change in the Mediterranean, Seville, Spain, 15-16 Nov 2012

2012 Adélie Penguins as biomonitors of Antarctic marine ecosystems: a 45,000 year history. Invited Speaker, Seminar in Polar Sciences, Hefei, China, 28 October 2012

**STUDENT SUPERVISION:**

Graduate Committee Chair for: Terri Maness, Jenny McDaniel, Tom McGinnis, Jason Minton, Ellen Wambach, Carlos Zavalaga, Deniz Aygen, Marcela Liljestrom, Ed Cavallerano, Adriane Michaelis, Michael Polito, Bryan McLean, Chance Remmel, Kiersten Newtoff, Amy Etherington, MS degrees; Carlos Zavalaga, Virginia Winder, Michael Polito, Rebecka Brasso, Ph.D.

All of the above have graduated except for Amy Etherington, a new MS student in fall 2014.

Graduate Committee Member for: Michelle Shipp-Pennock, John Hackney, Debi Koster, Heather Quinn, Melissa Leslie, Cassie Martin, James Casey, Katrina Roman, James Casey, Lisa Ogawa, Sandy Camilleri, Anne-Marie Hodge, Chris Torres, Megan McCracken, Brittany Nicolaysen, Steve Poland MS degrees; Byron Toothman, Ph.D.

Honors Committee Chair for Melissa Meadows, Rebecka Brasso, Mike Polito, Kerry Baumann, Mary Strickland, Jordan Barlow, Chris Vasil, Kyle Welsh, Chelsea McDougall, Jennifer Lang (Co-Chair with M. van Tuinen), Ashley McKenzie, Morgan Taylor (Co-Chair with Devon Eulie, EVS)

Undergraduate Committees: Honors committee member for Cori Cauble, Caitlin Mckinstry,
NAME
Patrick M. Erwin

EDUCATION
2009  MBA  University of North Carolina Wilmington  Business – Marine Biotechnology
2007  Ph.D.  University of Alabama at Birmingham  Biology – Microbial Ecology
2003  M.Sc.  University of Alabama at Birmingham  Biology – Molecular Phylogenetics
2001  B.Sc.  University of Richmond  Biology – Ecology & Evolution

APPOINTMENTS
2013 – Current  Assistant Professor · Microbiology
Department of Biology and Marine Biology · University of North Carolina Wilmington
2012 – 2013  Visiting Research Assistant Professor · Marie Curie Reintegration Grant, SYMASC
Department of Animal Biology · University of Barcelona
2010 – 2012  Post-Doctoral Research Fellow · NSF International Research Fellowship Program
Center for Advanced Studies of Blanes · Spanish Research Council
2007 – 2009  Visiting Research Assistant Professor · Business of Marine Biotechnology Program
Center for Marine Science · University of North Carolina Wilmington

PUBLICATIONS (* = graduate student, ** = undergraduate)
26) Accepted  Burgsdorf I*, Erwin PM, López-Legentil S, Cerrano C, Haber M, Frenk S, Steindler L.
Biogeography rather than association with cyanobacteria structures symbiotic microbial
communities in the marine sponge Petrosia ficiformis. Frontiers in Microbiology (in press)
25) Accepted  Fan Z*, Pita L*, Erwin PM, Summara A, López-Legentil S, Hill RT. Symbiotic archaea in
marine sponges show stability and host specificity in community structure and ammonium
oxidation functionality. FEMS Microbiology Ecology (in press)
24) 2014  Riesgo A, Blasco G, Erwin PM, Pérez-Portela R, López-Legentil S. Optimization of
fourteen microsatellite markers in a Mediterranean demosponge subjected to population
23) 2014  Erwin PM, Pineda MC*, Webster N, Turon X, López-Legentil S. Down under the tunic:
Bacterial biodiversity hotspots and widespread ammonia-oxidizing archaea in coral reef
ascidians. The ISME Journal 8: 575-588.
22) 2013  Pita L*, Erwin PM, Turon X, López-Legentil S. Till death do us part: Stable sponge-
communities associated with marine sponges (Ircinia spp.) in the Western Mediterranean
20) 2013  Turon X, Garriga A*, Erwin PM. Lights and shadows: Growth patterns in three sympatric
and congeneric sponges (Ircinia spp) with contrasting abundances of photosymbionts.
19) 2013  Pita L*, López-Legentil S, Erwin PM. Biogeography and host-fidelity of bacterial
18) 2013  López-Legentil S, Erwin PM, Velasco M*. Turon X. Growing or reproducing in a temperate
sea: Optimization of resource allocation in a colonial ascidian. Invertebrate Biology 132(1):
69-80.
17) 2013  Erwin PM, Pineda MC*, Webster N, Turon X, López-Legentil S. Small core communities
and high variability in bacteria associated with the introduced ascidian Styela plicata.


**PRESENTATIONS** (* = presenting author)

44) 2014 Steindler L*, Burgsdorf I, **Erwin PM**, López-Legentil S, Cerrano C, Haber M. Biogeography rather than association with cyanobacteria structures microbial
communities in the marine sponge *Petrosia ficiformis*. 2\textsuperscript{nd} International Symposium on Sponge Microbiology · Baltimore, Maryland, USA

43) 2014 Marino C*, Erwin PM, Pawlik J. Do microbial communities and chemical defenses change across latitudes for the sponge *Ircinia campana*? 2\textsuperscript{nd} International Symposium on Sponge Microbiology · Baltimore, Maryland, USA

42) 2014 Fan Z*, Pita L*, Erwin PM, Abaid S, López-Legentil S, HIL RT. Stability and host specificity in symbiotic archaea community structure associated with marine sponges. 2\textsuperscript{nd} International Symposium on Sponge Microbiology · Baltimore, Maryland, USA

41) 2014 López-Legentil S, Legentil ML, Erwin PM, Turon X*. Native and introduced ascidians in harbors of the NE Iberian Peninsula: distribution, diversity and abundance. Simposio Ibérico de Estudios de Biología Marina · Gijón, Spain


39) 2014 López-Legentil S*, Pineda MC, Webster N, Turon X, Erwin PM. Unraveling the diversity of the ascidian microbiome. 43\textsuperscript{rd} Annual Benthic Ecology Meetings · Jacksonville, FL, USA

38) 2014 Pita L, López-Legentil S, Turon X, Erwin PM*. How do sponge-bacteria symbioses respond to a changing environment? 43\textsuperscript{rd} Annual Benthic Ecology Meetings · Jacksonville, FL, USA

37) 2014 Marin CM*, Pawlik JR, Erwin PM. Effects of climate change on symbiosis: Microbial assemblages in sponges. 43\textsuperscript{rd} Annual Benthic Ecology Meetings · Jacksonville, FL, USA

36) 2013 Pita L*, Turon X, López-Legentil S, Erwin PM. You’ve got a friend in me: High stability of *Ircinia*-associated bacterial communities over time and space. 9\textsuperscript{th} World Sponge Conference · Fremantle, Australia


34) 2013 Pita L*, Erwin PM, Turon X, López-Legentil S. Till death do us part: Stable sponge-bacteria associations under thermal and food shortage stresses. 9\textsuperscript{th} World Sponge Conference · Fremantle, Australia

33) 2013 Erwin PM, Pineda MC, Webster N, Turon X, López-Legentil S*. Deep sequencing of the ascidian microbiome. 7\textsuperscript{th} International Tunicate Meeting · Naples, Italy

32) 2013 Legentil ML, Turon X, Erwin PM, López-Legentil S*. Introduced ascidians in Catalan harbors (NE Spain). 7\textsuperscript{th} International Tunicate Meeting · Naples, Italy

31) 2012 Hirose E*, Turon X, López-Legentil S, Erwin PM, Hirose M. Caribbean *Prochloron* and the host ascidian. 83\textsuperscript{rd} Annual Meeting of the Zoological Society of Japan · Osaka, Japan


29) 2012 Garriga-Pla A, Erwin PM, Turon X*. Luces y sombras: Patrones de crecimiento en tres esponjas mediterráneas (*Ircinia* spp.) con diferente abundancia de fotosimbiontes. Simposio Ibérico de Estudios de Biología Marina · San Sebastián, Spain

28) 2012 López-Legentil S, Erwin PM, Velasco M, Espluga R, Turon X*, Relationship between host life-cycle and bacterial symbiont diversity in the Mediterranean ascidian *Didemnum fulgens*. Simposio Ibérico de Estudios de Biología Marina · San Sebastián, Spain

27) 2011 Erwin PM*, López-Legentil S, Pita L, Turon X. Host-specificity and environmental structuring of bacterial symbions in Mediterranean *Ircinia* spp. 1\textsuperscript{st} International Symposium on Sponge Microbiology · Würzburg, Germany
26) 2011 Pita L*, Erwin PM, López-Legentil S. Spatial variation and host-specificity of bacterial assemblages in Caribbean sponges. 1st International Symposium on Sponge Microbiology · Würzburg, Germany

25) 2011 Erwin PM*, López-Legentil S, Pita L, Turon X. Host-specificity and environmental structuring of bacterial symbionts in Mediterranean Ircinia spp. 4th Internal Symposium at the Center for Advanced Studies of Blanes · Blanes, Spain

24) 2010 López-Legentil S*, Erwin PM, Song B. Ammonia-oxidizing Archaea in bleached barrel sponges: Diversity, distribution and ammonia monooxygenase expression. 8th World Sponge Conference · Girona, Spain

23) 2010 Erwin PM*, Thacker RW. Molecular tools for community-level profiling and fine-scale phylogenetics of microbial symbionts in marine sponges. Simposio Ibero de Estudios de Biología Marina · Alicante, Spain

22) 2008 Erwin PM*, Song B, Szmant AM. Settlement behavior of Acropora palmata planulae: effects of biofilm age and crustose coralline algae cover. International Coral Reef Symposium · Fort Lauderdale, FL, USA

21) 2008 Thacker RW*, Erwin PM. Evolutionary ecology of sponge-cyanobacteria symbioses. International Coral Reef Symposium · Fort Lauderdale, FL, USA

20) 2007 Erwin PM*, Thacker RW. Host-specificity of sponge-associated unicellular cyanobacteria, Candidatus Synechococcus spongiarum. Society of Integrative and Comparative Biology Annual Meeting · Phoenix, AZ, USA

19) 2007 Erwin PM*, Thacker RW. Cryptic diversity of symbiotic cyanobacteria in coral reef sponges: host-specificity and ecological significance. Annual Benthic Ecology Meetings · Atlanta, GA, USA

GRANTS

2011 – 2013 Spanish Government · Grant · €145,000 · MARSYMBIOMICS Project: Evolutionary implications, ecological roles, and vulnerability to ocean changes of marine symbioses (CTM2013-43287-P)

2010 – 2013 European Commission Marie Curie International Reintegration · Grant · €87,500 · SYMASC Project: Bacterial symbiosis in ascidians (FP7-PEOPLE-2010-RG 277038)

2011 – 2013 Spanish Government · Grant · €166,980 · SOLID Project: Small organisms, large impacts: Diversity, dynamics and significance of microbial symbionts in sponges and ascidians (CTM2010-17755)

2010 – 2012 National Science Foundation · International Research Fellowship Program · $149,812 · Vulnerability and resilience of sponge populations and their bacterial symbionts to climate change and anthropogenic disturbances (NSF-0853089)

2007 – 2009 French Research National Agency · Grant · €916,100 · ECIMAR Project: Marine chemical ecology: Biodiversity indicators and development (ANR06-BDIV00104)

HONORS, AWARDS AND PROFESSIONAL SERVICE

ARTICLE REVIEWER (29 JOURNALS)


**EDITORIAL SERVICE**

**Review Editor** *Frontiers in Microbial Symbiosis*

**CONFERENCE ORGANIZATION:**

**Organizing Committee** · 2nd International Symposium on Sponge Microbiology · Baltimore, Maryland, USA · October 26-28, 2014

**Executive Committee** · 8th World Sponge Conference · Girona, Spain · September 20-24, 2010

**DEPARTMENTAL COMMITTEES**

**Graduate Advisory Committee** · 2014-2016

**Search Committee** · Health Sciences Lecturer · 2013-2014

**Summer School Committee** · 2013-2014

**GRANT REVIEWER**

**National Science Foundation** · Dimensions of Biodiversity · Spring 2014

**UNCW** · ETEAL Summer Undergraduate Research and Creativity Awards (SURCA) · Spring 2014

**SOCIETY MEMBERSHIPS**

- Contributing Member · **American Society for Microbiology** (ASM)

**INVITED SEMINARS & WORKSHOPS**

**2013**

**Friends, foes and freeloaders: Microbial symbionts in marine invertebrates**
Seminar · Department of Biology and Marine Biology
University of North Carolina Wilmington · Wilmington NC, USA

**2012**

**Friends, foes and freeloaders: Microbial symbionts in marine sponges**
Seminar · Department of Biology
Florida State University · Tallahassee FL, USA
East Carolina University · Greenville NC, USA

**2012**

**A specific mix of generalists: What shapes the unique structure of the sponge microbiota?**
Workshop · Lower Invertebrates Symbiosis with Microorganisms
Tel Aviv University · Tel Aviv and Eilat, Israel

**2010**

**Sponge-microbial symbioses: Genetic diversity and ecological significance**
Seminar · Center for Advanced Studies of Blanes
Spanish Research Council · Blanes, Spain

**2009**

**Pharmaceutical value of the sea**
Special Topics Biotechnology Workshop · Marine Biotechnology
University of North Carolina Wilmington · Wilmington NC, USA

**INTERNAL FUNDING AWARDS**

**2014**

**eTEAL-Supported Pedagogy Initiative** · $3,499.58
Molecular and metabolic approaches to identify and characterize unknown microorganisms in BIOL 246 and BIOL 425

**2014**

**Charles L. Cahill Award for Faculty Research and Development** · $2,982
Integrating genetics, taxonomy and chemical ecology to understand biodiversity and ecosystem function of sponge-microbe symbioses on Caribbean coral reefs

**2014**

**CSURF Research Supplies Awards** · $872.98
Undergraduate Awardees: Mara Cloutier, Rebecca Lee, Lisa Litwak

**2014**

**College of Arts and Sciences Equipment Allocation** · $6,600
Eppendorf Model 542R Refrigerated Centrifuge

**2014**

**Applied Learning Funds, Department of Biology** · $465
Molecular characterization of the structure and specificity of bacterial symbionts in the widespread sponge species *Hymeniacidon heliopila*
**Scholarly Awards & Honor Societies**

<table>
<thead>
<tr>
<th>Year</th>
<th>Award Description</th>
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<tbody>
<tr>
<td>2009</td>
<td>Outstanding Academic Achievement · MBA Award · Class of 2009 · UNCW</td>
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<tr>
<td>2009</td>
<td>Beta Gamma Sigma · International Business Honor Society · UNCW Chapter</td>
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<tr>
<td>2007</td>
<td>Phi Kappa Phi · Biological Honor Society · UAB Chapter</td>
</tr>
<tr>
<td>2007</td>
<td>Oral Presentation Award · 1st Place · Graduate Student Research Day · UAB</td>
</tr>
</tbody>
</table>
CHRISTOPHER M. FINELLI
Associate Professor and Chair
Department of Biology and Marine Biology
University of North Carolina Wilmington
601 S. College Rd
Wilmington, NC 28403
Voice: (910) 962-2137; Fax: (910) 962-4066; Email: finellic@uncw.edu

EDUCATION:
1997    Ph.D. Marine Science Program, University of South Carolina
Dissertation title: The influence of behavior and physics on ecological processes.
Advisor: Dr. David S. Wethey.
1990-1991  East/West Marine Biology Program, Northeastern University, Boston, MA
1991   B.S. in Biology, Magna Cum Laude, Honors Program Graduate,
St. Francis College, Loretto, PA

PROFESSIONAL EXPERIENCE:
2011 to Present  Department Chair, Department of Biology and Marine Biology, University of North Carolina Wilmington
2009 to Present   Associate Professor, University of North Carolina Wilmington
Biological-Physical Coupling, Oceanography, Marine Biology
2006 to 2009  Assistant Professor, University of North Carolina Wilmington
Biological-Physical Coupling, Oceanography, Marine Biology
2005 to 2006  Associate Professor, Louisiana Universities Marine Consortium (LUMCON).
Biological-Physical Coupling, Benthic Ecology, Marine Science
1999 to 2005  Assistant Professor, Louisiana Universities Marine Consortium (LUMCON).
Biological-Physical Coupling, Benthic Ecology, Marine Science
1997 to 1999  Postdoctoral Research Associate, Academy of Natural Sciences
Organism-flow interactions, stream ecology

PROFESSIONAL AWARDS and FUNDING:
$635,427 since joining UNCW in 2007
$1,894,921 total

2013  Duke-UNC Oceanographic Consortium;
Biodiversity research and education in the coastal areas of Southeastern North Carolina; $54,000; PI: Christopher Finelli; Co-PI’s: Stuart Borrett, Zac Long, Wilson Freshwater.
2013  North Carolina Sea Grant – Fisheries Resource Grant;
Predicting and controlling recruitment of the shell-boring sponge, Cliona celata.
$19,920.  PI:  Christopher Finelli; CoPI; John Carroll.
2011  St. Francis University Distinguished Alumnus in Science.
2011  UNCW Quality Enhancement Plan Pilot Project;
Enhancing applied learning through explorations of the natural world; $22,890; PI: Arthur Frampton; Co-PIs: Stuart Borrett, Steven Emslie, Christopher Finelli, Zachary Long, Ann Pabst, Sonja Pyott, Eric Schuettpelz, Marcel van Tuinen, Amanda Williard.
2010  Aquarius Reef Base;
Sponges on Florida coral reefs: Anthropogenic threats and demographic changes.
$150,000; Co-PI with Dr. Joseph Pawlik.
2009  North Carolina Sea Grant;
To seed or not to seed: The value for seeding restored oyster reefs for ecosystem function; $120,000; PI: Christopher Finelli; Co-PIs: Ami Wilbur, Troy Alphin, Martin Posey.
2009  UNCW Cahill Award;
Development of a high speed motion analysis system for biological research and education at UNCW. $3000; PIs: Alison Taylor & Christopher Finelli

2008
National Undersea Research Program/Coral Reef Conservation Program; Sponges on Florida Reefs: Basic data for conservation and management. $69,000; Co-PI with Joseph Pawlik

2008-2012
National Science Foundation; Pumping rates of the giant barrel sponge Xestospongia muta on Caribbean reefs: size scaling, environmental controls, and bleaching effects. $193,617; PI: Christopher Finelli.

2008
UNCW Cahill Award; Preliminary investigations of the boring sponge, Cliona celata, and its effects on the eastern oyster Crassostrea virginica. $3000; PI: Christopher Finelli

GRANT APPLICATIONS PENDING

2014
National Science Foundation; Trophic ecology of sponges on Caribbean reefs: POC, DOC and the sponge-loop; $798,723; PI Christopher Finelli; Co-PIs: Patrick Erwin, Joseph Pawlik; Submitted August 2014;

RECENT UNFUNDED GRANT APPLICATIONS

2014
National Science Foundation; Roots, STEMs, and Leaves: A comprehensive approach to a flourishing STEM undergraduate culture at UNCW; $2,846,699; PI Martin Posey; Co-PIs: Jess Boersma, Nathaniel Grove, Dylan McNamara, Christopher Finelli; Submitted February 2014;

2013
National Science Foundation; Collaborative Research: Ocean Acidification: The cascading effects of ocean acidification and species interactions on calcareous biogenic habitats: temperate and tropical comparison; $789,529 ($353,984 to UNCW); PI: Christopher Finelli; Co-PIs: John Carroll (UNCW), Bradley Peterson (SUNY Stony Brook), Robert Whitehead (UNCW); Submitted December, 2013

2013
NOAA - National Marine Fisheries Service, Saltonstall Kennedy Program; Reducing the costs of being bored: Investigations to minimize the impact of the boring sponge, Cliona celata, on oyster aquaculture. $146,062 PI: Christopher Finelli; Co-PIs: John Carroll, Ami Wilbur. Submitted September 2013.

2013
National Science Foundation - WIDER; Building & Using Systems (BUS) – Strategies to increase data-driven STEM teaching. $249,847 PI: Christopher Finelli; Co-PIs: Joseph Covi, Martin Posey, James Reeves, Ann Stapleton. Submitted July 2, 2013

2013
Sea Grant National Omnibus; If you build it, will they come? Testing the factors that are limiting oyster reef development in Southeast North Carolina; $100,000. PI: Christopher Finelli; Co-PIs: John Carroll (UNCW); Preproposal submitted April 5, 2013

2013
Sea Grant National Omnibus; Biological mitigation strategies for the boring sponge, Cliona celata; $100,000. PI: Christopher Finelli; Co-PIs: John Carroll (UNCW), Ami Wilbur (UNCW); Preproposal submitted April 5, 2013

2013
Mid-Atlantic Sea Grant Regional Research; Are oysters being bored to death? The impacts of the boring sponge, Cliona celata, on eastern oysters, Crassostrea virginica; $41,166. PI: Christopher Finelli; Co-PIs: John Carroll (UNCW), Bradley Peterson (SUNY Stony Brook), Lisa Kellogg (VIMS), Daphne Munroe (Rutgers University); Preproposal submitted March 15, 2013

2012
North Carolina Blue Crab and Shellfish Research Program;
The importance of predation on reef restoration; $47,550. PI: Christopher Finelli; Co-PIs: Ami Wilbur (UNCW), John Carroll (UNCW; Submitted December 1, 2012

National Science Foundation;

Collaborative Research: Ocean Acidification: The cascading effects of ocean acidification on calcareous biogenic habitats and their communities: a comparison between temperate and tropical ecosystems; $516,669 ($209,694 to UNCW); PI: Christopher Finelli; Co-PIs: John Carroll (UNCW), Bradley Peterson (SUNY Stony Brook); Submitted December, 2012

PUBLICATIONS (Including those in review or in press, since joining UNCW in 2007, 33 total):


Pawlik, J.R., T.L. Loh, S.E. McMurray, C.M. Finelli (2013). Sponge communities on Caribbean coral reefs are structured by factors that are top-down, not bottom-up. PLOS-One 8(5): e62573 DOI:10.1371/journalpone/0062573.


MEETING PRESENTATIONS AND INVITED SEMINARS (since joining UNCW in 2007, 108 total):

Bleier, T.L., C.M. Finelli, and A.E. Wilbur. 2014. Susceptibility of oysters to infection by the boring sponge Cliona celata. 43rd Benthic Ecology Meeting, Jacksonville, FL.


Carroll, J.M., J.P. Marion, and C.M. Finelli. 2013. The importance of mesopredators on juvenile oyster predation: a field test. 22nd Biennial Meeting of the Coastal and Estuarine Research Federation, San Diego, CA.

Finelli, C.M. 2013. What’s next? Teaching science in the era of budget cuts and Massive Online Open Courses. 42nd Benthic Ecology Meeting, Savannah, GA.


Finelli, C.M. A.E. Wilbur, M.P. Posey, T.A. Alphin. 2012. To seed or not to seed: The value of seeding restored oyster reefs for ecosystem function. 41st Annual Benthic Ecology Meeting, Norfolk, VA.

Finelli, C.M. A.E. Wilbur, M.P. Posey, T.A. Alphin. 2011. To seed or not to seed: The value of seeding restored oyster reefs for ecosystem function. 40th Annual Benthic Ecology Meeting, Mobile, AL.

Jabanoski, K.E., C.M. Finelli. 2011. The effects of flow speed on filtration by the crested oyster, Ostrea equestris. 40th Annual Benthic Ecology Meeting, Mobile, AL.


Weychert, C., C.M. Finelli. 2010. Olfactory responses of the lemon-drop nudibranch, Doriopsilla pharpa, to its prey, the boring sponge Cliona celata. 39th Annual Benthic Ecology Meeting, Wilmington, NC


Lewis, T.B., C.M. Finelli. 2010. Influence of zoanthid inhabitants on pumping rates of two Caribbean vase sponges. 39th Annual Benthic Ecology Meeting, Wilmington, NC


Church, M.B., C.M. Finelli. 2010. Responses of the marsh periwinkle, Littoraria irrorata, to predator (Callinectes sapidus) odors: Indications of a trait mediated indirect effect? 39th Annual Benthic Ecology Meeting, Wilmington, NC

Weychert, C., C.M. Finelli. 2010. Olfactory responses of the lemon-drop nudibranch, Doriopsilla pharpa, to its prey, the boring sponge Cliona celata. 39th Annual Benthic Ecology Meeting, Wilmington, NC


Hopkins, C.E., C.M. Finelli. 2009. Odor mediated climbing behavior of Littoraria irrorata when exposed to blue crabs. 38th Annual Benthic Ecology Meetings, Corpus Christi, TX.

Riddle, K., C.M. Finelli. 2009. Recruitment of the eastern oyster, Crassostrea virginica, in response to settlement cues and predation. 38th Annual Benthic Ecology Meetings, Corpus Christi, TX.

Hopkins, C.E., C.M. Finelli. 2009 Odor mediated climbing behavior of Littoraria irrorata when exposed to blue crabs. 4th Annual Undergraduate Research Symposium, UNCW, Wilmington NC.

Riddle, K., C.M. Finelli. 2009 Recruitment of the eastern oyster, Crassostrea virginica, in response to settlement cues and predation. 4th Annual Undergraduate Research Symposium, UNCW, Wilmington NC.

Finelli, C.M. 2008. Pumping rates of the giant barrel sponge Xestospongia muta on Caribbean reefs: Size scaling, environmental controls, and bleaching effects. 11th International Coral Reef Symposium, Ft. Lauderdale, FL.


Hopkins, CE and C.M. Finelli. 2008. Climbing behavior of Littoraria irrorata when exposed to blue crab scent. 3rd Annual Undergraduate Research Symposium, UNCW, Wilmington NC.


OUTREACH THROUGH THE POPULAR PRESS

Life on a coral reef: Insult is (sometimes) added to injury, National Science Foundation Bulletin, May 9, 2013

UNC marine science program under review, Wilmington StarNews, February 28, 2013

It’s seaweed vs. sponge in battle for dying reefs, Miami Herald, August 26, 2010

Aquanaughts living on ocean floor come up for air, MSNBC.com, August 26, 2010

Wrightsville Beach Magazine, October 2009.

Students Head Outdoors to Study Bayous, Houma Courier, Houma, LA, October 2005

Our Ocean World Radio Program, Going with the Flow: how corals get their food (September 2004).

Our Ocean World Radio Program, Coral Bleaching (September 2004).

Bringing the bayou into the classroom. Houma Courier, Houma LA, November 2003.

Science Friday with Ira Flatau, Comments on that status of coral reef bleaching, National Public Radio, October 2000.

LUMCON researcher readies for adventure/Life underwater can sometimes turn strange (2 article spread) Houma Courier, Houma LA, September 2000.
TEACHING AND SYNERGISTIC ACTIVITIES

Administrative:  Department Chair for the Department of Biology and Marine Biology; all aspects of department administration, budgeting, faculty workload management, scheduling.
Co-Leader of UNCW’s self-study and site review for UNC-GA Statewide Review of Marine Science Programs. Co-wrote review document and organized academic program presentations for site review.
Co-Chair, Undergraduate Programs Working Group, UNC-GA Statewide Review of Marine Science Programs, Organized working group discussions and co-authored working group report.
Member, Marine Science Consortium Reboot Working Group, UNC-GA Statewide Review of Marine Science Programs, Organized working group discussions and co-authored working group report.
Assistant Chair for the Department of Biology and Marine Biology; schedule classes, budget, meet with prospective students.
Undergraduate Assessment Coordinator for the Department of Biology and Marine Biology; develop and revise assessment tools and policies for undergraduate degrees in Biology (BS, BA) and Marine Biology (BS).
Chair, Ad hoc committee for the establishment of an international summer program in marine biology; coordinate the development of a proposal for a degree program for international students that incorporates significant summer research.

Faculty Development:  East-Coast Regional Team Leader, Faculty Institutes Reforming Science Teaching (FIRST IV); Gulf Coast Regional Team Leader, Faculty Institutes Reforming Science Teaching II (FIRST II). NSF sponsored dissemination network.

Courses Taught:  UNCW Oceanography and Environmental Science, BIO 694, 2 credits
UNCW Oceanography and Environmental Science, BIO 601, 2 credits
UNCW Biological Oceanography, BIO 564, 3 credits + 1 credit lab
UNCW Marine Biology, BIO 362, 4 credits
UNCW Applied Learning Seminar, BIOL 495, 1 credit

Associate Editor: Limnology and Oceanography (2008 to 2011)

Panelist: National Science Foundation Biological Oceanography (2X), National Science Foundation Education and Human Resources GK-12
Grant Reviewer: National Science Foundation (BIO, GEO, EHR, ENG, OPP, IBN), Hudson River Foundation, Marsh Ecology Research Program/New Jersey SeaGrant, Maryland SeaGrant, Florida SeaGrant
Organizer: Benthic Ecology Meeting 2010; Special symposium on turbulent mass transfer, 2001 meeting of the American Society of Limnology and Oceanography; Special Session for FIRST Project in Louisiana, 2004 and 2006 meetings of the Louisiana Academy of Sciences

POSTDOCTORAL ADVISEES
John Carroll (current) - UNCW

GRADUATE STUDENTS (Primary Supervisor)
Stephen McMurray, Ph.D. (current) – UNCW (Major Professor)
Heather Stoker, M.S. (current) – UNCW (Major Professor)
Inga Conti-Jerpe, M.S. (2014) – UNCW (Major Professor)
Kristen Jabanoski, M.S. (2013) – UNCW (Major Professor)
Julie Prerost, Ph.D. (2012) – Louisiana State University (Major Professor)
Tiffany Lewis, M.S. (2010) – UNCW (Major Professor)
Louis Musyczek, M.S. (2010) – UNCW (Major Professor)
Andrew Sumerel, M.S. (2009) – UNCW (Major Professor)
Christie Stanzel, M.S. (2003) – University of Louisiana-Lafayette (Major Professor)
Laurie Rodrigue, M.S. (2005) – Nicholls State University (Major Professor)

GRADUATE STUDENTS (Committee Member)
Lindsey Deignan, M.S. (current) – UNCW (Committee Member)
Kerri Allen, M.S. (2013) – UNCW (Committee Member)
William McBurney, M.S. (2013) – UNCW (Committee Member)
Tse-Lynn Loh, PhD. (2012) – UNCW (Committee Member)
Andrew Miller, M.S. (2011) – UNCW (Committee Member)
Jackie Corbett, M.S. (2012) – UNCW (Committee Member)
Julie Campbell, M.S. (2012) – UNCW (Committee Member)
Lara Jarvis, M.S. (2012) – UNCW (Committee Member)
Adam Oaks, M.S. (2011) – UNC-Charlotte (Committee Member)
Caitlin McKinstry, M.S. (2011) – UNCW (Committee Member)
Michael Eschevarria, M.S. (2010) – UNCW (Committee Member)
Meagan Schrandt, M.S. (2010) – UNCW (Committee Member)
Ann Markwith, M.S. (2010) – UNCW (Committee Member)
Adriane Michaels, M.S. (2009) – UNCW (Committee Member)
Victor Schmidt, MS. (2009) – UNCW (Committee Member)
Carly Randall, M.S. (2009) – UNCW (Committee Member)
Eve Robinson, M.S. (2006) – University of Texas, Austin (Committee Member)

UNDERGRADUATE STUDENTS (Primary Supervisor)
Grant Dietrich, Undergraduate Directed Independent Study (2014) – UNCW.
Clarissa Perkins, Undergraduate Directed Independent Study (2014) – UNCW.
Jessica Watts, Undergraduate Directed Independent Study (2014) – UNCW.
Tammy Bleier, Undergraduate Honors Thesis Advisor (2014) – UNCW.
John Marion, Undergraduate Research Assistant (2013) - UNCW
Daniel Link, Undergraduate Research Assistant (2011) - UNCW
Katie O’Shaughnessy, Undergraduate Directed Independent Study (2011) - UNCW
Rebecca Thompson, Undergraduate Directed Independent Study (2011) - UNCW
Curtis Weychert, Undergraduate Honors Thesis Advisor (2010) –UNCW
Morgan Church, Undergraduate Directed Independent Study (2010) – UNCW
Griffin Abernathy, Undergraduate Directed Independent Study (2010) – UNCW
Kristin Riddle, Undergraduate Honors Thesis Advisor (2009) –UNCW
Claire Elise Hopkins, Undergraduate Directed Independent Study (2009) – UNCW
Cheston Peterson, Undergraduate Research Assistant (2007) – UNCW.
Zack Seabrease, Undergraduate Research Assistant (2008) – UNCW.
Kelly Woods, Undergraduate Directed Independent Study (2007) – UNCW
Leah Bailey, Summer Intern (2006) – Louisiana State University
Carey Gelpi, Summer Intern (2005) – Louisiana State University
Jenny Ruiz, Undergraduate Research Assistant (2003-2004) – Nicholls State University (Co-advised w/Tom Soniat)
John Matkowski, Summer Intern (2001) – Coastal Carolina University (Co-advised w/Rodney Powell)

UNDERGRADUATE STUDENTS (Honors Committee Member)
Michael Myers, Undergraduate Honors Thesis Committee (2011) – UNCW
Heather Page, Undergraduate Honors Thesis Committee (2010) – UNCW
Anna Robuck, Undergraduate Honors Thesis Committee (2010) - UNCW
Kelley Salvesen, Undergraduate Honors Thesis Committee (2010) - UNCW
Sarah Fann, Undergraduate Honors Thesis Committee (2009) - UNCW
Curriculum Vitae

Arthur R. Frampton Jr.

Personal Information:

Address: University of North Carolina Wilmington
Department of Biology and Marine Biology
110 Dobo Hall
601 S. College Rd.
Wilmington, NC 28403

Phone: (910) 962-2643
Fax: (910) 962-4066
Email: framptona@uncw.edu

Education & Training:

1989-1994 B.S. Cell Biology, University of Tennessee, Knoxville, Tennessee

1996-2002 Ph.D. Microbiology and Immunology, Louisiana State University Health Sciences Center, Shreveport, Louisiana.
Graduate Advisor: Dr. Dennis J. O’Callaghan
Dissertation Title: Pathogenesis of Equine Herpesvirus Type-1 Recombinants in a Murine Model

2002-2008 Postdoctoral Fellow. Department of Microbiology and Molecular Genetics, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania.
Advisor: Dr. Joseph C. Glorioso

2008-2014 Assistant Professor. Department of Biology and Marine Biology, University of North Carolina Wilmington, Wilmington, North Carolina

2014-present Associate Professor, Department of Biology and Marine Biology, University of North Carolina Wilmington, Wilmington, North Carolina

Membership in Professional Societies:
American Society for Virology
American Society for Microbiology
American Society of Gene Therapy

Teaching Experience:

BIO 201 Principles of Biology: Cells
HON 210: HIV/AIDS in science and art: from outbreak to globalization and complacency
BIO 485 Virology
BIO 495 Senior Seminar “100 Years of Discovery: Biomedical Breakthroughs of the 20th Century”
BIO 491 Directed Independent Study
BIO 499 Honors Work in Biology
BIO 498 Internship in Biological Sciences
BIO 591 Directed Independent Study

Awards and Honors:

UNCW Discere Aude student mentor award. 2010.

Publications:


Presentations and Abstracts:


Lauren B. Singletary, B.M. Kurtz, S.D. Kelly, and Arthur R. Frampton Jr. Equus caballus MHC class I is an entry receptor for equine herpesvirus type 1 (EHV-1). Equus caballus MHC class I is an entry receptor for equine herpesvirus type 1 (EHV-1). Mid-Atlantic Microbial Pathogenesis Meeting, Wintergreen, Virginia, January 30-February 1, 2011.


Maria Christine White, Michael James Courchesne, Arthur R. Frampton, Jr. Equine herpesvirus type 1 (EHV-1) mediated oncolysis and viral cell to cell spread in human glioblastoma multiforme cells are enhanced by valproic acid. North Carolina American Society for Microbiology 2012 Meeting, North Carolina State University, October 6, 2012. *Maria White received the Mary Poston Award presented to the student who gave the best paper at the meeting.


Stephanie E. Johnstone, Danielle Johnson, Alma Sanchez, Emily Marx, Arthur R. Frampton. Generation of equine herpesvirus type 1 (EHV-1) glycoprotein expression plasmids from 4 separate EHV-1 strains. 11th Annual Colonial Academic Alliance Undergraduate Research Conference, University of Delaware, April 12-14th, 2013.

Stephanie E. Johnstone and Arthur R. Frampton Jr. Infection of equine endothelial cells with non-neurovirulent equine herpesvirus-1 strain KyA elicits greater down regulation of inflammatory cytokines CCL3, IL8, TGF-2β and CXCL3 compared to neurologic strain OHIO 2003. North Carolina American Society for Microbiology 2014 Meeting, Appalachian State University, September 27, 2014.

Invited talks:

Equus caballus MHC class I is an entry receptor for equine herpesvirus type 1 (EHV-1). East Carolina University School of Medicine, Department of Microbiology and Immunology. November 16, 2010.

Equus caballus MHC class I is an entry receptor for equine herpesvirus type 1 (EHV-1). University of Kentucky, Department of Veterinary Science, Gluck Equine research Center. January 18, 2011.

Equus caballus MHC class I is an entry receptor for equine herpesvirus type 1 (EHV-1). The Third Havemeyer EHV-1 Workshop at the Home Ranch, Steamboat Springs, September 18-23, 2011.

Research Grants:

Funded


Friends of UNCW. To test the feasibility of using equine herpesvirus type 1 (EHV-1) as a gene therapy vector for the treatment of cystic fibrosis (CF). $1,250. 7/01/10-01/31/11 P.I. Arthur R. Frampton Jr.


P.I.: Bongkeun Song  

Charles L. Cahill Award. Investigation into the antiviral properties of a novel compound isolated from a marine dinoflagellate. 12/31/10-12/30/11. $3,000.  

North Carolina Biotechnology Center. Introductory Biotechnology Workshop for High School Teachers at the University of North Carolina Wilmington. 6/13/11-6/17/11. $22,963.  
CO-P.I.: Karen Shafer

North Carolina Biotechnology Center. Biotechnology Research Grant (BRG). 7/01/11-12/31/12. Chemical and biological studies of an antiviral compound from a marine dinoflagellate. $74,961.  
P.I.: Jeffrey Wright  

UNCW Quality Enhancement Plan (QEP): Explorations of the Natural World Pilot Project. 7/01/11-6/30/12.  
$22,890.  
CO-P.I.’s: Stuart Borrett, Steve Emslie, Chris Finelli, Zachary Long, Ann Pabst, Sonja Pyott, Marcel van Tuinen

University of North Carolina General Administration. Bioinformatics equipment grant. ELx800 microplate reader and Gen5 software workstation to support the discovery and development of novel drugs derived from marine microorganisms. 6/08/12. $8,483.


Morris Animal Foundation. Identification of equine herpsevirus type 1 (EHV-1) neurovirulence determinants. 12/01/12-11/30/15. $100,495.  


North Carolina Horse Council. Characterization of the specific viral and cellular factors required for neurologic and non-neurologic equine herpesvirus type 1 (EHV-1) entry into cells. Submitted 5/07/12. $3,000. 2013

In the news

Article in Star News about norwalk virus. Oysters contaminated and people sickened by eating infected shellfish. Interviewed as an expert in the field of virology

Featured in Re:Search magazine. Magazine put out by UNCW that spotlights the various areas of scientific research by faculty.

Our Honors 210 class: HIV/AIDS in science and art: from outbreak to globalization and complacency, was featured in an article titled “Class looks at AIDS through lenses of science, art.” in the StarNews on October 12, 2012.
EDUCATION
2003-2013  Ph.D. Biology. Auburn University, AL.
Dissertation:
“Discovery and characterization of high frequency calls in North American flying squirrels (Glaucomys sabrinus and G. volans): Implications for ecology, behavior, and conservation”

1999-2002  M.S. degree. Biology. The University of Memphis, Memphis, TN.
Thesis: “Ecological studies of small mammals in temperate deciduous forest: I. An assessment of microhabitat utilization by small mammals in arboreal and ground-level strata of temperate deciduous forest; II. A test of mist-net configurations in capturing bats over stream corridors”


ACADEMIC APPOINTMENTS
2012-present  Lecturer: Department of Biology & Marine Biology, UNCW

Courses Taught
Lecture: Wildlife Ecology (Spring 2014)
Lecture: Human Anatomy & Physiology I (Fall 2013, 2014; Spring 2014)
Lecture: Human Anatomy & Physiology II (Spring 2013)
Lecture: Comparative Vertebrate Anatomy (Spring 2013; Spring 2015)
Laboratory: Human Anatomy & Physiology I & II (6 semesters)
Laboratory: Comparative Vertebrate Anatomy (Spring 2013; Spring 2015)

2010-2012  Lecturer: Department of Biological Sciences, Auburn University

Courses Taught
Lecture: Human Anatomy & Physiology I (Fall 2010; 2011)
Lecture: Human Anatomy & Physiology II (Spring 2011; 2012; Sum 2011)

ACADEMIC APPOINTMENTS – continued

2003-2010  Graduate Teaching Assistantship: Department of Biological Sciences, Auburn University

Courses Taught
Laboratory: Human Anatomy & Physiology II (10 semesters)
Laboratory: Mammalogy (3 semesters)
2002-2003  **Lecturer:** Department of Biological Sciences, University of Tennessee at Martin

**Course Taught**
Lecture: Introduction to Cell Biology & Genetics (Fall 2002)
Lecture: Introduction to Plant & Animal Biology (Spring 2003)
Laboratory: General Biology (Fall 2002)
Laboratory: Plant & Animal Biology (Spring 2003)
Laboratory: Anatomy & Physiology (Fall 2002; Spring 2003)

2000-2002  **Graduate Teaching Assistantship:** Department of Biology, University of Memphis

**Courses Taught**
Laboratory: Human Anatomy & Physiology I (Fall 2000 & 2001)
Laboratory: Human Anatomy & Physiology II (Spring 2001 & 2002)

1999-2000  **Graduate Research Assistantship:** Department of Biology, University of Memphis

**RELEVANT PROFESSIONAL EXPERIENCE**
2000-present (summers)  **Senior Biologist.** Environmental Solutions & Innovations, Cincinnati, OH.

Duties:
- Served as Project Manager of surveys for endangered species of bats on federal, state-owned, and private lands
- Managed budgets exceeding $500,000 for projects
- Ensured compliance with U.S. Fish & Wildlife Service & state non-game agencies
- Wrote technical reports & assisted with writing of Habitat Conservation Plans (HCP), Environmental Impact Statements (EIS) and Biological Assessments (BA) for U.S. Fish & Wildlife Service
- Performed habitat analyses, mist-net surveys, acoustic surveys, radio telemetry studies of endangered bats in eastern U.S.
- Surveyed for Allegheny woodrats (*Neotoma magister*) and Virginia northern flying squirrels (*Glaucomys sabrinus fuscus*)

1995-1999  **Biologist IV.** BHE Environmental, Inc., Cincinnati, OH.

Duties:
- Served as Field Manager over 2 to 12 research technicians
- Conducted endangered species surveys of bats
- Studied occupancy of varying types of artificial roosting structures by bats
- Captured and prepared bats to be analyzed for the presence of chemicals used in warfare by the U.S. military
PEER REVIEWED PUBLICATIONS


PRESENTATIONS

**INVITED SEMINARS:**


**PROFESSIONAL MEETINGS (Oral Presentations):**


PROFESSIONAL MEETINGS (Poster Presentations):


GRANTS


2011 Ford, W. M. (Principal), C. A. Kelly (Co-Principal), and L. M. Gilley (Co-Principal). Assessing occupancy and detection rates for the Carolina northern flying squirrel: examination of nest-box surveys and development of acoustical survey techniques. U. S. Fish and Wildlife Service $22,000, funded.

2010 Travel Award for Key Note Speaker. National Flying Squirrel Association $500.
2006  Gilley, L. M. *Functions associated with ultrasonic communication in flying squirrels.* Graduate Student Research Award, Auburn University. $1,000, funded.

HONORS, AWARDS, AND SERVICE

2013-2014  **Advancement and Student Relations:** Served as Chair of committee charged with public relations for students within the university.

2012-2014  **Equipment committee:** Reviewed internal proposal requests, updated and prioritized equipment replacement, and dispersed funds for new equipment.

2012-2013  **Seminar committee:** Coordinated departmental seminars.

  **Dare to Soar:** University of North Carolina Wilmington. Represented the Dept. of Biology & Marine Biology in hosting senior high school kids and their parents.

  **Seahawk Saturday.** University of North Carolina Wilmington.

2012  **Journal review:** *Acta Theriologica.*

2011  **Creatures of the Night!** Louise Kreher Forest Ecology Preserve, Auburn, AL. Gave talk and live presentation of bats and flying squirrels to kids and adults.

2010-2011  **Bat Walk.** Donald E. Davis Arboretum, Auburn University, AL. Assisted with demonstration of live bats, bat detectors, & night vision scopes to raise public awareness about the importance of neighborhood bats.

2010  **Search committee:** Served as Graduate Student Representative on search for tenure-track Assistant Professor in physiology. Auburn University, AL.

  **Awarded Best Student Oral Presentation:** 20th Colloquium on Conservation of Mammals in the Southeastern U.S. (Asheville, NC)

2007  **Invited Course Lecture:** Mammalogy, Auburn University. Lectured on reproductive systems in mammals. Course taught by Dr. Troy L. Best.
**Stephanie Jill Kamel**

University of North Carolina ● Department of Biology and Marine Biology ● Wilmington ● North Carolina ● USA ● 28403  
Phone: (910) 962-2841  
Email: kamels@uncw.edu

**EDUCATION**

2006  Ph.D. Evolution and Ecology  
University of Toronto, Toronto, Canada

2000  B.Sc. (Hon.) Marine and Freshwater Biology  
University of Guelph, Guelph, Canada

**PROFESSIONAL APPOINTMENTS**

2013  Assistant Professor  
Department of Biology and Marine Biology, University of North Carolina Wilmington, Wilmington, North Carolina

2012  Visiting Scholar  
Department of Ecology and Evolutionary Biology, Princeton University, Princeton, New Jersey

2010  Postdoctoral Research Fellow  
Center for Population Biology, University of California, Davis, California

2008  NSERC Postdoctoral Fellow  
Center for Population Biology, University of California, Davis, California

**PUBLICATIONS**

**Refereed publications**


**GRANTS AND FELLOWSHIPS**

2014 Center for Marine Science at the University of North Carolina Wilmington, Multi-scale analyses of genetic diversity in the Eastern oyster, *Crassostrea virginica*, ($20,000 – funded)

2014 National Science Foundation Biological Oceanography, Pattern beneath the panmixia2 Multi-scale genetic structure and range dynamics in the pink volcano barnacle, *Tetraclita rubescens*, ($853,651 – not funded)

2014 National Science Foundation Division of Environmental Biology, The influence of Mating systems on reproductive strategies, offspring size, and fitness in a clade of marine snails ($901, 782 – not funded)

2013 National Science Foundation Biological Oceanography, The influence of mating systems on reproductive strategies, offspring size, and fitness in a clade of marine snails ($1,089,618 – not funded)
2013  **National Science Foundation Biological Oceanography**, Dynamics of genetic structure across the Range of the pink volcano barnacle *Tetraclita rubescens*: associations with larval settlement behavior and impacts on the mating system ($1,299,785 – declined with invitation to resubmit)

2012  **National Science Foundation Biological Oceanography**, Connecting genetic diversity to ecosystem functioning: links between genetic diversity, relatedness and trait variation in a seagrass community ($919,566 – funded)
  Contributor with co-PIs Jay Stachowicz, Richard Grosberg, and Susan Williams

2009  **National Science Foundation Biological Oceanography**, Reproductive pairing, conflict and offspring size in a marine snail ($744,849 – funded)

2007  Natural Sciences and Engineering Research Council of Canada Postdoctoral Fellowship ($80,000)

**INVITED LECTURES**

2014  Social environment effects in marine benthic populations. Center for Population Biology, University of California, Davis, CA

2013  The ties that bind: social environment effects in marine benthic populations. Department of Marine Biology, Texas A&M University- Galveston, Galveston, TX

2013  The ties that bind: social environment effects in marine benthic populations. Department of Biology, University of Texas Pan-American, Edinburgh, TX

2013  The ties that bind: social environment effects in marine benthic populations. Department of Biology and Marine Biology, University of North Carolina, Wilmington, NC

2013  The ties that bind: family conflict and relatedness shape the ecology and evolution of marine organisms. Center for Environmental Science, University of Maryland, Cambridge, MD

2013  The ties that bind: family conflict and relatedness shape the ecology and evolution of marine organisms. Department of Biology, Wake Forest University, Winston-Salem, NC

2011  Evolution and ecology of marine invertebrates. Department of Biology, St Joseph’s College, Long Island, NY

2010  Evolution and ecology of marine invertebrates. Biology Undergraduate Scholars Program, University of California, Davis

2008  Evolutionary ecology in the sea. California Ecology Field Course, McLaughlin Nature Reserve, University of California, Davis

2007  Some aspects of the biology and conservation of hawksbill sea turtles. Conservation biology, York University, York, Ontario
CONFERENCE PRESENTATIONS


2012  Kamel, S.J., and Grosberg, R.K. Promiscuity, resource allocation, and offspring size variation in the marine snail, Nucella ostrina, Society for the study of Evolution, Ottawa, Ontario, Canada


2010  Kamel, S.J. and Grosberg, R.K. Multiple mating and family conflict in a marine snail. Society for the study of Evolution, Portland State University, Portland, OR.


PROFESSIONAL SERVICE AND OUTREACH

2014  Session chair, Society for the Study of Evolution Annual Meeting, Raleigh, NC

2014  Guest Speaker, Osher Lifelong Learning Institute, Wilmington, NC

2012  K-2 marine science education outreach, R.E. Willett Elementary School, Davis, CA

2011  Organizer, Marine Ecology and Evolution Discussion Group, University of California, Davis, CA

2010  Organizing Committee, Functional Genomics of non-model organisms Workshop Center for Population Biology, University of California, Davis, CA

MANUSCRIPT REVIEWER
Stephen T. Kinsey  
Professor, University of North Carolina Wilmington  
Department of Biology and Marine Biology

**Education:**

1992-1996 Florida State University (advisor: W. Ross Ellington)  
Ph.D. in Biological Science
1988-1991 University of South Florida (advisor: Tom Hopkins)  
M.S. in Marine Science
1983-1987 Old Dominion University (advisor: Ray Birdsong)  
B.S. in Biological Sciences

**Appointments:**

2010-present Graduate Coordinator, University of North Carolina Wilmington, Department of Biology and Marine Biology
2010-present Assistant Chair, University of North Carolina Wilmington, Department of Biology and Marine Biology
2009-present Professor, University of North Carolina Wilmington, Department of Biology and Marine Biology
2003-2009 Associate Professor, University of North Carolina Wilmington, Department of Biology and Marine Biology
1997-2003 Assistant Professor, University of North Carolina Wilmington, Department of Biology and Marine Biology
1996-1997 NIH Postdoctoral Research Fellow, National High Magnetic Field Laboratory
1992-1995 Research/Teaching Assistant, Florida State University, Department of Biological Sciences
1988-1991 Research Assistant, University of South Florida, Department of Marine Science
1988-1991 Research Assistant, Florida Marine Research Institute
1987-1988 Research Assistant, Old Dominion University, Department of Biological Sciences

**Publications (2007-2014; Graduate students in bold):**


**Abstracts for Presentations (2007-2014; Graduate students in bold):**


**EXTRAMURAL FUNDING (2007-2014):**


*National Science Foundation:* “Collaborative Research: Are muscle fibers just the right size?”, **Lead P.I., S.T. Kinsey**, co-P.I. R.M. Dillaman, B.R. Locke (P.I. at Florida State University) and S.C. Grant (co-P.I. at the National High Magnetic Field Laboratory). $860,426 ($466,186 to UNCW), 8/1/07-7/31/11.


*National Science Foundation:* “Collaborative Research: Muscle fiber size as a determinant of metabolic design”, **Lead P.I., S.T. Kinsey**, B.R. Locke (P.I. at Florida State University) and T.S. Moerland (co-P.I. at Florida State University), $562,377 ($278,577 to UNCW), 8/15/03 - 8/14/07.
INTRAMURAL FUNDING (2007-2014):

**UNCW Charles Cahill Award:** “Using targeted, cost-efficient microarray technology in a collaborative investigation of inherited resistance to lead poisoning”, P.I., S.T. Kinsey, $3,000, 1/1/14-1/1/15.

**UNCW Equipment grant:** Acquisition of a spinning disk confocal microscope, ultra-microtome, biolistic gene gun, SimScanner for laser scanning confocal microscope, Olympus diffusion software, and Metamorph image analysis suite. P.I. S.T. Kinsey. $400,000, 10/1/10-6/30/11.


**UNCW Charles Cahill Award:** “Using targeted, cost-efficient microarray technology in a collaborative investigation of inherited resistance to lead poisoning”, P.I., J. Blum, co-P.I.s D. Frierson, R.D. McCall and S.T. Kinsey, $2,500, 1/1/06-1/1/07.

Professional Service (2007-2014):
Editorial Board, Frontiers in Skeletal Muscle Physiology.
UNCW Department of Biology and Marine Biology Graduate Coordinator, beginning August 2010: this entails managing the Departmental M.S. and Ph.D. programs (approximately 70 graduate students).
UNCW Department of Biology and Marine Seminar: “Motion in the ocean: balancing design constraints in skeletal muscle of marine organisms”, Fall, 2011.
Meeting session chair, Society for Integrative and Comparative Biology, Boston, 2009.
UNCW Department of Biology and Marine Seminar: “The long and winding road: how transport processes help shape the evolution of muscle function and design”, Fall, 2008.
UNCW Board of Trustees presentation, Fall, 2008.
NSF Advisory Panel, Fall 2007 (IOS, Physiological and Structural Systems Cluster, Processes Structure and Integrity Program)
Meeting session chair, Society for Integrative and Comparative Biology, Phoenix, 2007.
Officer nominating committee, Society for Integrative and Comparative Biology, Comparative Physiology, January 2007.
Member, UNCW Institutional Animal Care and Use Committee, 2002-present.
NSF ad hoc peer reviewer.

Journal peer reviewer:
American Journal of Physiology
Journal of Experimental Biology
Physiological and Biochemical Zoology
Journal of the Marine Biological Association U.K.
Molecular and Cellular Biochemistry
Fish Physiology and Biochemistry
Biochemistry
Marine Biology
Journal of Applied Physiology
Comparative Biochemistry and Physiology
Journal of Comparative Physiology
Biological Bulletin
Journal of Biomechanics
Journal of Experimental Zoology
International Journal of Biological Science
Cell and Tissue Research
Society for Experimental Biology Seminar Series
Journal of Thermal Biology
Fishery Bulletin
Advances in Physiological Education

Awards and Honors (2007-2014):
UNCW Distinguished Faculty Scholarship Award, 2010
Nominated for Division Secretary, Society for Integrative and Comparative Biology, 2009
Teaching release, UNCW Department of Biology and Marine Biology, Spring Semester, 2009
Article in UNCW Research magazine summarizing our lab’s work, 2008.
Research Reassignment, UNCW, Fall Semester, 2010
Graduate student won best student talk at SICB meeting in San Diego (Hardy et al., 2008)

**Professional Societies:**
Sigma Xi, 1998-present
American Physiological Society, 1993-present
Society for Integrative and Comparative Biology, 1997-present
KEVIN B. KISER, PH.D.

Department of Biology and Marine Biology
University of North Carolina Wilmington
601 S. College Road, Wilmington, NC 28403-5915
Voice: 910-962-2968
Fax: 910-962-4066
E-mail: kiserk@uncw.edu
Web: http://people.uncw.edu/kiserk/

Education

1996
Ph.D.
MEDICAL UNIVERSITY OF SOUTH CAROLINA, Charleston, SC
Major: Molecular and Cellular Biology and Pathobiology
Dissertation: “Translational Regulation of the secA gene of Escherichia coli”
Advisor: Michael G. Schmidt, Ph.D.

1990
B.A.
BOSTON UNIVERSITY, Boston, MA
Major: Biology

Appointments

2012 – Present
Lecturer, Department of Biology and Marine Biology
UNIVERSITY OF NORTH CAROLINA WILMINGTON, Wilmington, NC

2001 – 2012
Instructor, Science Department
CAPE FEAR COMMUNITY COLLEGE, Wilmington, NC

2002 – 2005
Adjunct Research Associate, Center for Marine Science
UNIVERSITY OF NORTH CAROLINA WILMINGTON, Wilmington, NC

2000 – 2001
Staff Scientist, New Technology Research & Development
PERKINELMER LIFE SCIENCES, INC., Boston, MA

2000
Scientific Curator
PROTEOME, INC., Beverly, MA

1999 – 2000
Instructor in Medicine
HARVARD MEDICAL SCHOOL, Boston, MA

1999
Teaching Assistant (Microbiologist)
HARVARD MEDICAL SCHOOL, Boston, MA

1997 – 2000
Teaching Assistant
HARVARD UNIVERSITY EXTENSION SCHOOL, Cambridge, MA

1996 – 2000
Associate Microbiologist, Department of Medicine
BRIGHAM AND WOMEN'S HOSPITAL, Boston, MA

1996 – 1999
Research Fellow in Medicine
HARVARD MEDICAL SCHOOL, Boston, MA
Advisor: Jean C. Lee, Ph.D.

Publications (2007 – present)


Presentations (2007 – present)


Celli JM, McKenna KL, Passerella C, Kiser KB. Development of a Urine-based, Multiplex-PCR Assay to Detect Asymptomatic Chlamydia and Gonorrhea Infections in College Students. COLONIAL ACADEMIC ALLIANCE UNDERGRADUATE RESEARCH CONFERENCE, Towson, MD. April 11-13, 2014.


Honors, Awards, and Professional Service (2007 – present)
2014 Career Adviser for “Everything You Need to Know about Obtaining a Successful and Fulfilling Microbiology Career” workshop, American Society for Microbiology General Meeting, Boston, MA

2014 UNCW ETEAL Applied Learning Supported Pedagogy Initiative Co-PIs: Drs. Ryan Rhodes and Patrick Erwin Molecular and Metabolic Approaches to Identify and Characterize Unknown Microorganisms in BIOL 246 and BIOL 425

2013 UNCW ETEAL Applied Learning Supported Pedagogy Initiative Incidence of Asymptomatic Chlamydia and Gonorrhea Infections in UNCW Students

2013 UNCW ETEAL Applied Learning Supported Pedagogy Initiative Testing UNCW Nursing Students for MRSA Carriage
Julie Anna Koester  
University of North Carolina Wilmington  
Dept. of Biology and Marine Biology  
koesterj@uncw.edu

**CURRENT POSITION**
Lecturer

**PREVIOUS POSITIONS**
Post-doctoral researcher, 2012-2014  
Mount Allison University, Sackville, NB, Canada  
Focus: evolution of phytoplankton with respect to temperature

**EDUCATION**

**Ph.D.** Biological Oceanography, 2012  
University of Washington, Seattle, WA  
Title: Genomic evidence of adaptation and speciation in diatoms

**Advanced Phycology Course** (Taxonomy of Phytoplankton), April 2008  
Stazione Zoologica Anton Dohrn, Naples, Italy

**M.Sc.** Botany and Plant Pathology, 2005  
University of Maine, Orono, Maine  
Title: Sexual Reproduction in the marine centric diatom *Ditylum brightwellii*

Friday Harbor Labs, San Juan Island, WA; Discovery Bay Marine Labs, Jamaica; Northeastern University, Marine Science Center, Nahant, MA

**Honors B.Sc.** Marine Biology, 1991  
University of British Columbia  
Title: Resource allocation in the rockweed *Fucus gardnerii*

**PEER REVIEWD PUBLICATIONS**


INVITED PRESENTATIONS

2014  University of Maine, School of Marine Sciences Seminar  
Koester, J.A. Finding evidence of molecular evolution in diatoms

2013  Mount Allison University, Department of Biology Honors Seminar  
Koester, J.A. Genomic evidence of speciation and adaption in planktonic diatoms.

2012  Maine Maritime Academy’s Corning School of Ocean Studies Seminar  
Koester, J.A. Genomic evidence of speciation and adaption in diatoms

2011  University of Rhode Island’s Integrative and Evolutionary Biology Seminar  
Koester, J.A. Genomic evidence of speciation and adaption in diatoms

CONTRIBUTED CONFERENCE PRESENTATIONS

2013  Koester, J.A., Swanson, W.J., and Armbrust, E.V. Expression of positively selected genes in Thalassiosira pseudonana suggests a link between genotype and phenotype. Northeast Algal Symposium, Mystic, CT.


2011  Koester, J.A., Swanson, W.J., and Armbrust, E.V. Positive selection is detected within a diatom species and affects regulatory genes. Phycological Society of America / International Society of Protistologists, Seattle, WA.


2008  Koester, J.A, Swalwell, J., van den Engh, G., and Armbrust, E.V. Relationships between DNA content, cell size, and growth rate in populations of the planktonic diatom Ditylum brightwellii. Association for the Science of Oceanography and Limnology, St. John’s, New Foundland and Labrador, Canada

2007  Koester, J.A. and Armbrust, E.V. Physiological variation in the marine diatom, Ditylum brightwellii. Association for the Science of Oceanography and Limnology meeting, Santa Fe, NM. (poster)
PROFESSION SERVICE AND SYNERGISTIC ACTIVITIES

Student Member, Phycological Society of America, Program Committee (2010-2012). Participating in organizing symposia, sessions, and workshops for annual meetings. Primary planner and a participant of the freshwater field trip to Seattle’s municipal watershed in 2011.  
Co-organizer (2009): Cascadian Interdisciplinary Seminar Series, University of Washington, School of Oceanography. Four speakers from the Pacific Northwest addressed current topics in chemical, physical, and biological oceanography, and astrobiology.

Researcher for scientific cruises 
2010  SeaFlow flow-through cytometry and concurrent seawater filtration for nucleic acids (Seattle, Washington to Honolulu, Hawaii) 
2009  Oceans and Human Health education and research cruise (Puget Sound, Washington)

Peer reviewer for Genome (1), Journal of Phycology (2), Journal of Plankton Research (2), Paleobiology (1), and PLoS ONE (3)


*  Co-author of peer reviewed and published paper

Outreach mentor (2010 – 2011): Girls in Engineering, Math and Science, a program through Association for Women in Science, Seattle Chapter. Mentored monthly meetings of 30 middle school girls in scientific activities ranging from bridge construction to DNA extraction.

HONORS AND AWARDS
2012  Ecological Dissertations in the Aquatic Sciences Symposium X, Honolulu HI: a workshop of collaboration and career development. Invited Participant
2009  Aquatic Sciences International Meeting with the Association for the Sciences of Oceanography and Limnology. Nice, France. Student presentation award for talks.
2008  Association for the Sciences of Oceanography and Limnology Summer Meeting. St. John’s, New Foundland and Labrador. Student presentation awards for talks.
Curriculum Vitae - Heather Natalie Koopman

Professor
Biology & Marine Biology
University of North Carolina at Wilmington
601 S. College Road
Wilmington, NC USA 28403
Telephone: (910) 962-7199
Fax: (910) 962-4066
Email: koopmanh@uncw.edu

Education: (2001) Ph. D. Duke University, Durham, North Carolina, USA.
Advisor: Dr. A. J. Read.
Advisor: Dr. D. E. Gaskin.

Positions held:
2009 – 2014 Associate Professor, Biology & Marine Biology, UNCW
2004 - 2009 Assistant Professor, Biology & Marine Biology, UNCW
2003 Postdoctoral Researcher, Woods Hole Oceanographic Institution, Woods Hole, MA
2001-03 Postdoctoral Fellow, Woods Hole Oceanographic Institution, Woods Hole, MA

Other affiliations:
Senior Staff Biologist & Board Member
Grand Manan Whale & Seabird Research Station
24 Route 776, Grand Manan, N.B.
Canada E5G 1A1

Research Collaborator
National Museum of Natural History
Smithsonian Institution
Division of Mammals
P.O. Box 37012
Washington, D.C.
20013-7012

Publications:


2014

2014

2014

2013

2013

2013

2013

2012

2012

2012

2012
Polito, M. J., Koopman, H. N., Able, S., Walsh, J., Goebel, M. Physiological constraints and the influence of diet on fatty acids in the yolk of gentoo penguins, Pygoscelis papua. Journal of Comparative Physiology B 182:703-713.

2011

2010


Invited Seminars/Lectures:
2014 Invited seminar at the Duke Marine Lab, Beaufort NC. February 26. “Fat is where it’s at: marine lipids from whales to lobsters”.
2013 Invited to give a guest lecture in the Marine Mammals class at Savannah State University, October 25 2013.
2009-2010 Talks on Field work in Marine Biology given to 10th grade Biology classes at New Hanover High School, Wilmington, NC.

Presentations:
SEAMAMMS (Southeast and Mid-Atlantic Marine Mammal Symposium) meeting, March 28-30, Wilmington, NC.


2010 McKinstry, C. A. E., Westgate, A. J., and Koopman, H. N. Annual variation in energy content of the copepod, Calanus finnarchicus from the Bay of Fundy, Canada. 2010 SEAMAMMS meeting (Southeast and Mid-Atlantic Marine Mammal Symposium), Virginia Beach, VA, March 28-29, 2010. This talk was selected as the Best Oral presentation by an M.Sc. Student


2009 Koopman, H. N., and Westgate, A. J. Solubility of nitrogen gas in Odontocete blubber: are deep divers more vulnerable to nitrogen absorption? 18th Biennial Conference on the Biology of Marine Mammals, Society for Marine Mammalogy, Quebec City, October 2009. This talk was selected as the Best Oral presentation by an M.Sc. Student.


2008 Lane, H. A., and Koopman, H. N. Temporal and ontogenetic variation in the nutritional value of Atlantic herring (Clupea harengus), an important prey species in the Bay of Fundy, Canada. 2008 SEAMAMMS meeting (Southeast and Mid-
Atlantic Marine Mammal Symposium), Charleston, South Carolina, March 28-30, 2008. *This talk was selected as the Best Oral presentation by an M.Sc. Student.*


2007 Koopman, H. N., and Zahordony, Z. P. Can you hear me now? Ontogenetic development of acoustic lipids of dolphins and porpoises. 17th Biennial Conference on the Biology of Marine Mammals, Society for Marine Mammalogy, Capetown, South Africa. *This talk was selected for the Excellence in Scientific Communication Award at the conference (awarded to the best presentation given by a non-student).*


**Scientific funding:**


2013 Koopman, H. N. (Principal) "Infrastructure Improvement for Grand Manan Research Station", Resource Development Canada, Other, $8,000.00, Funded. (sub: January 2013, start: April 2013, end: March 2014). Through the Grand Manan Whale & Seabird Research Station, Grand Manan, Canada.


2007 Factors affecting egg quality in the American lobster (Homarus americanus) in the Bay of Fundy: habitat, diet and female body size. PI: Koopman, H. N. Maine Sea Grant Development Grant (pilot project). Funded in the amount of: $3,000.


Honours, Awards and Professional Service:

Society for Marine Mammalogy 1997 – present (elected Secretary 2006; now serving fifth term)
The Crustacean Society 2013 – present
American Oil Chemists’ Society 1998 – 2001

Appointed/Invited Expertise:
Appointed external examiner for Ph.D. thesis of Ursula Strandberg, student in the Department of Science and Forestry at the University of Eastern Finland. January 2012.

Reviewer for:
Curriculum Vitae – Graduate Program Review 2007-2014

THOMAS E. LANKFORD, JR.

Current Position: Associate Professor, Department of Biology and Marine Biology, and Center for Marine Science, University of North Carolina Wilmington

Education:
Postdoctoral Research Associate, 1997-1999, Marine Sciences Research Center, SUNY Stony Brook
Ph.D., Marine Biology, 1997, University of Delaware; M.S., Marine Biology, 1993, University of Delaware

Research Interests:
Ichthyology; physiological and behavioral ecology of estuarine and marine fishes; disturbance ecology, fisheries ecology; recruitment mechanisms; ecological and evolutionary implications of growth strategies; foraging theory and predator-prey interactions.

Appointments:
2006-present, Associate Professor, Department of Biology and Marine Biology, UNCW
2000-2006, Assistant Professor, Department of Biology and Marine Biology, UNCW

Relevant Publications since 2007:


Lankford, T.E. 2007. Progress Report to UNCW Coastal Ocean Research and Monitoring Program (CORMP): Goal 4-Assessing whether the CFR plume represents Essential Fish Habitat for supporting coastal ecosystems and fisheries production. For period 2/1/06-7/31/06.

Relevant Presentations since 2007 (student co-authors in bold):

Lankford, T.E. 2013. Fish nursery function of ocean surf-zone habitat along a human disturbance gradient. Presentation to North Carolina Sea Grant, UNCW. July 2013.
Royer, Mark; Nosal, Andrew; Lankford, Thomas; Cartamil, Daniel; Wegner, Nicholas; Graham, Jeffery. 2013. Leopard shark (Triakis semifasciata) foraging ecology in the La Jolla Ecological Reserve using non-destructive dietary analysis. Benthic Ecology Meeting. Savannah, Georgia.
Bauer, T.C.¹ and T.E. Lankford. Fish Nursery Function of Surf-Zone Habitat: Effects of Beach Nourishment on Feeding and Nutritional Condition. Contributed Poster. 7th Annual UNCW Undergraduate Research Showcase. April 2012


DeStefano, H.¹ and T.E. Lankford. 2009. Residential development of saltmarsh tidal creek watersheds: effects on nursery habitat function for juvenile mullets (*Mugil cephalus* and *M. curema*). Contributed poster. 4th Annual UNCW Undergraduate Research Showcase. 4/09.


Stuart, C.M., T.E. Lankford and A.E. Wilbur. 2008. Genetic stock structure in bluefish, Pomatomus saltatrix. UNCW Sigma Xi Chapter Meeting


Branson, A.C. and T.E. Lankford. 2007. Fish assemblage structure of estuarine versus ocean surf-zone habitat in southeastern North Carolina. 87th Annual Meeting of The American Society of Ichthyologists and Herpetologists, St. Louis.


Mitchell, M.A.¹, W.R. Collier and T.E. Lankford. 2007. Using otolith morphology to distinguish among closely-related and sympatric kingfishes (Menticirrhus spp.). Sigma Xi Society, UNCW Chapter Annual Meeting. 3/07


Relevant Grants since 2007
Enhancement of the Natural History Collections at The University of North Carolina Wilmington. National Science Foundation. $314,609. Co-PI w/ S. Emslie, D. Webster, C. Bailey, M. Van Tuinen. Concluded 2012

Stock structure of southern kingfish (Menticirrhus americanus) along the U.S. East Coast. N.C. Sea Grant. 2008-2010.


Fish Nursery Function of Saltmarsh Tidal Creeks in Southeastern North Carolina: Effects of Residential Development and Water Pollution. UNCW Cahill Award. $3,000. Co-PI w/ J. McAuliffe. 2009

Recruitment dynamics of bluefish (Pomatomus saltatrix): coastwide patterns of juvenile recruitment. NOAA National Marine Fisheries Service/Rutgers CMER Bluefish Research Program. $90,000. Funded 8/1/06-7/31/08. Co-PI with J. Buckel


**Honors, Awards, and Professional Service since 2007**

2013-2014
Curator of Fishes, UNCW Vertebrate Collection (2006-present)
Member, Search Committee, Marine Biology Lecturer Position
Member, Undergraduate Assessment Subcommittee: Lab Report Review Panel for BIOL 366
Member, Undergraduate Assessment Subcommittee: Senior Essay Review Panel for BIO 495
Attended December commencement exercise
Attended Honors Student Medallioning Ceremony (Fall and Spring)
Assisted with Transfer Student Orientation
Co-Chair, UNCW Small Boat Committee
CMS Seawater Committee
CMS 1st Floor Space Committee
Instructor – MSC526: Provided shipboard research training to graduate students
Coordinator UNCW Campus Fish Relocation Project
Co-Chair, North Carolina Division of Marine Fisheries Advisory Committee, Fishery Management Plan for Kingfishes (2005-present) – assisting DMF with development and assessments of FMP for kingfishes.
Member, North Carolina Marine Fisheries Commission’s *Strategic Habitat Advisory Committee* (2005-present) – assisting MFC and other DENR staff in developing a scientific process for SHA assessment, designation and protection.
Advisor, North Carolina Marine Fisheries Commission’s ‘*Spiny Dogfish Compliance Panel*’ (2005-present) – assisting MFC with approaches to state compliance with federal and interstate regulations regarding spiny dogfish harvests.

2012-2013
Member, Coastal and Marine Biologist Search Committee. >300 applicants, 4 successful hires.
Member, Undergraduate Assessment Committee’s Lab Report Review Panel for BIOL 366
Manuscripts reviewed for Fishery Bulletin (1), North American Journal of Fisheries Management (1), Transactions of the American Fisheries Society (1)
Co-Chair, UNCW Small Boat Committee
CMS Seawater Committee
CMS 1st Floor Space Committee

2011-2012
Faculty Peer Reviewer for Dr. Baumgarner (2 visits), Dr. Melroy (2 visits) and Mr. Muzyczek (1 visit)
Evaluator for 2 Graduate Teaching Assistants
Faculty Peer Reviewer for Dr. Long (2 visits), Dr. Mallin (1 visit) and Mr. Alphin (1 visit)
Evaluator for 2 Graduate Teaching Assistants: Courtney McClurkin and John Mejaski
Chair, Peer Evaluation of Teaching Committee
Summer School Committee
Attended December commencement, will attend May ceremony
Attended Honors Student Graduation Ceremony
Faculty Peer Reviewer for 6 colleagues
Assisted with Transfer Student Advising

2010-2011
Faculty Peer Reviewer for Dr. Southwood (1 visit), Dr. White (2 visits) and Dr. van Tuinen (1 visit)
Evaluator of Graduate Teaching Assistants
Faculty Peer Reviewer for Dr. Potts, Dr. van Tuinen, Dr. Zelnio, Dr. Stapleton, Mr. Alphin and Ms. Markwith
Evaluator of Graduate Teaching Assistants: Tyler Gibson and Bryan McLean

Member, Essay Evaluation Group, Departmental Assessment Committee
Attended December commencement, will attend May ceremony
Attended Honors Student Graduation Ceremony
Faculty Peer Reviewer for 8 faculty colleagues
Member of Committee to select Climate Change Speaker for departmental seminar, 4/11
Chair, UNCW Institutional Animal Care and Use Committee (2-year term completed August 2010).
Final year of activity included 21 reviews of new vertebrate protocols, 17 annual reviews of ongoing protocols, 6 designated protocol reviews, 2 inspections of on-campus and off-campus animal facilities, 4 full committee meetings, 6 reviews of protocol amendments, 5 protocol/grant congruence reviews, and a formal investigation of alleged protocol non-compliance.
Co-Chair, UNCW Small Boat Committee
Participant, CMS/Industry working group on developing protective dissolved oxygen criteria for the Lower Cape Fear River estuary
University Freshman Convocation Program
CMS Seawater Committee
CMS 1st Floor Space Committee
Instructor – MSC526
Student Interview, ENG 311 (Professional Magazine Writing) article on sand tiger sharks

2009-2010
Faculty Peer Reviewer for Dr. Taylor, Dr. Rommel and Dr. Weedon (2 classroom visits each)
Review of Graduate Student Teaching: Lara Jarvis (Bio 105) and Katelyn Schumacher (Bio 241)
Member, Undergraduate Curriculum Committee
Member, Search Committee for Assistant Museum Curator
Member, Essay Evaluation Group, Departmental Assessment Committee
Attended December commencement, will attend May ceremony
Attended Honors Student Graduation Ceremony
Presented “Introduction to IACUC”, New Graduate Student Orientation, 8/09
Faculty Peer Reviewer for Drs. Taylor, Rommel and Weedon (2 classroom visits each)
Chair, UNCW Institutional Animal Care and Use Committee
Co-Chair, UNCW Small Boat Committee
Participant, CMS/Industry working group on developing protective dissolved oxygen criteria for the Lower Cape Fear River estuary
Assisted with UNCW Student Health Studies Symposium
University Freshman Convocation Program
CMS Seawater Committee
CMS 1st Floor Space Committee
Instructor – MSC526
Recipient of 2009 UNCW Discere Aude Award for Teaching Excellence
Judge, Stoye/Storer Student Presentation Award, 2009 American Society of Ichthyologists and Herpetologists Annual Meeting, Portland, OR
Judge, Student Paper and Poster Awards, 2010 Benthic Ecology Meeting, Wilmington, NC

2008-2009
Faculty peer reviewer for Dr. BK Song; Dr. Chris Finelli
Review of Teaching - Dr. Brian Arbogast, Dr. Amanda Southwood
Review of Graduate Student Teaching: Andrew Capps, Pedro Medina-Rosas
Member, Search Committee for ‘Coastal Plant Ecologist’
Member, Undergraduate Curriculum Committee
Member, Long Range Plan Committee
Guest lecture - Hon 120: Student Research Opportunities in Ichthyology & Fish Ecology, 2008
Assisted with registration advising of transfer students
Participant, Departmental Searches for Cell/Molecular Biologist and Marine Biologist
CMS Seawater Committee; CMS 1st Floor Space Committee
Instructor – MSC526
Attended December commencement, will attend May ceremony
Assisted with relocation of Fish Collection to renovated Friday Hall space
Presented “Introduction to IACUC”, New Graduate Student Orientation, 8/08
Judge, 4th Annual UNCW Undergraduate Research Showcase student poster competition
Chair, UNCW Institutional Animal Care and Use Committee (second year)
Co-Chair, UNCW Small Boat Committee
Faculty Leader, Small Group Meeting on Academic Expectations, UNCW Freshman Convocation Program, 8/08.
Attended University Freshman Convocation Program
Member, Selection Committee for Chancellor’s Award for Teaching Excellence (reviewed dossiers of 7 nominees and submitted recommendations to CAS Dean)
Participant, CMS/Industry working group on development of protective dissolved oxygen criteria for Lower Cape Fear River estuary
Member, North Carolina Ocean Observing Planning Team (UNCW, UNC, NCSU, ECU, ECSU) Attended NCABR Workshop on Animal Research & Welfare, Raleigh, NC, 5/08
Interview with P. Smith (NC Sea Grant) for ‘Coastwatch’ article on beach nourishment research at UNCW. 3/09

2007-2008
Peer review of teaching - Dr. Chris Finelli, Dr. Marcel VanTuinen
Post-Tenure Review - Dr. Steve Kinsey
Review of Graduate T.A – Y. Fang
Member, Undergraduate Curriculum Committee
Member, Long Range Plan Committee
Guest lecture - Hon 120: Student Research Opportunities in Ichthyology & Fish Ecology, 2007
Assisted with registration advising of transfer students
Participant, Faculty Searches for Conservation Biologist and Virologist
Participant, Graduate Student Prospectus Symposium
CMS Seawater Committee; CMS 1st Floor Space Committee
Instructor – MSC526:
Attended December and May commencements
Carried CAS Banner at December commencement
Chair, UNCW Institutional Animal Care and Use Committee (first year)
Invited presentation, “Biology of Tunas” to UNCW Marine Odyssey Program
Group Discussion Leader, UNCW Convocation Program on academic expectations for first-year students (planning in progress for fall convocation)
Member, Selection Committee for Chancellor’s Award for Teaching Excellence (reviewed dossiers of 7 nominees, submitted recommendations to CAS Dean)

Manuscripts reviewed for: Marine Ecology Progress Series, Transactions of the American Fisheries Society, Southeastern Naturalist, Biological Journal of the Linnean Society
Grant proposals reviewed for: Florida Sea Grant (2007 Panelist: lead on 6 proposals, secondary on 5 proposals), New Jersey Sea Grant (external reviewer)
Attended PRIM&R 2008 National IACUC Conference and OLAW IACUC 101 Conference Meetings in Atlanta
Teaching Review of Dr. Heather Koopman – Committee member
Appointed Curator of Fishes, UNCW Vertebrate Collection Presented ‘UNCW IACUC: Working with Vertebrates’, 2006 new graduate student orientation
Organized faculty discussion “How to assist departmental teaching activities” for 2006 Retreat
Guest lecture - Hon 120: Student Research Opportunities in Ichthyology & Fish Ecology, 2006
Guest lecturer - Bio 458, 9/06
Assisted with registration advising of transfer students, 8/06
Data Analysis and Interpretation Using Statistica version 6.0. Informal presentation & software demonstration to DIS Students, 4/07
Participated in Faculty Searches for Integrative Biologist and Quantitative Ecologist
Attended Departmental ‘Graduate Student Prospectus Symposium’, 4/07
CMS Seawater Committee; CMS 1st Floor Space Committee
Instructor – MSC526
Attended December and May commencements
Member, UNCW Institutional Animal Care and Use Committee (2005-present)
Invited presentation, “Biology of Flounders” to UNCW Marine Odyssey Program. Landfall Country Club, 9/06
Group Discussion Leader, UNCW Convocation Program on academic expectations for first-year students (planning in progress for fall convocation)
Loaned fish specimens to Hoggard High School science classes – spring, 2006
Assisted with relocation of vertebrate museum in preparation for Friday Hall renovation.
Grant proposals reviewed for: Maryland Sea Grant
Member, North Carolina Ocean Observing Planning Team (UNCW, UNC, NCSU, ECU, ECSU) – discussion and development of proposal for statewide ocean observing system
Judge, Student Paper Awards, 2007 American Fisheries Society Tidewater Chapter Mtg, Lewes, DE
Volunteer Fish Biologist, 2006 Wrightsville Beach King Mackerel Tournament (benefits Seahawk Club), 10/06
ZACHARY T. LONG

EDUCATION

Ph.D.: Ecology and Evolutionary Biology
Advisor: Dr. Peter J. Morin

M.S.: Biological Sciences, Ecology and Evolution Program
University of Pittsburgh: April 1999.
Advisor: Dr. Walter P. Carson.

B.S.: Ecology and Evolutionary Biology

APPOINTMENTS

Assistant Professor: University of North Carolina Wilmington. Department of Biology and Marine Biology. July 2009 to present.


Instructor: Barrier Island Ecology and Geology, co-taught with Drs. Charles H. Peterson and Antonio Rodriguez at the Institute of Marine Sciences, University of North Carolina at Chapel Hill. I was responsible for teaching the ecology of barrier island plant communities. August 2006.


PUBLICATIONS (peer reviewed, graduate students in bold)

Effects of white-tailed deer on the maritime forest of Bald Head Island, North Carolina. Taggart, J. B., and Z. T. Long. Accepted. *American Midland Naturalist.*


MANUSCRIPTS IN REVIEW


MANUSCRIPTS IN PREPARATION

(Available on request)


BOOK CHAPTERS (peer reviewed)


PRESENTATIONS

INVITED SEMINARS

2012: Duke University
2010: College of Charleston
2009: Bald Head Island Consortium

ABSTRACTS / CONTRIBUTED PAPERS (Graduate students in bold)


Taggart, J., and Long, Z. T. Effects of white-tailed deer on the maritime forest of Bald Head Island, North Carolina.” Association of Southeastern Biologists held in Charleston, West Virginia, April 11, 2013.

Taggart, J., and Long, Z. Effects of white-tailed deer on the maritime forest of Bald Head Island, North Carolina.” Bald Head Island Conservancy, April 20, 2013.


GRANTS

2014: How can we effectively prevent and manage invasions in stressful environments? (Declined, National Science Foundation)

2013: The effect of plant and microbial diversity on the functioning of coastal dunes. Charles L. Cahill Award. $2924

2013: CAREER: The effect of plant and microbial diversity on the functioning of coastal dunes. (Declined, National Science Foundation)


PROFESSIONAL SERVICE
Reviewer.
Susanna López-Legentil, PhD MBA

Assistant Professor
Department of Biology & Marine Biology
University of North Carolina Wilmington
Phone: +1 (910) 962-2615
E-mail: lopezlegentils@uncw.edu
Webpage: www.imesalab.com

Education

2009  MBA  University of North Carolina Wilmington – Biotechnology
2005  PhD  University of Barcelona and Perpignan – Zoology
2003  MSc  University of Barcelona – Marine Molecular Ecology
2001  DEA  University of Paris VI – Biogeochemistry & Marine Environment
2000  BSc  University of Barcelona – Biology

Appointments

2014-  Assistant Professor, University of North Carolina Wilmington
2013-2014  Adjunct Assistant Professor, University of North Carolina Wilmington
2009-2014  Assistant Professor (Ramón y Cajal), University of Barcelona
2007-2009  Research Associate Professor, University of North Carolina Wilmington
2006-2007  Visiting Adjunct Assistant Professor, University of North Carolina Wilmington
2005-2006  Postdoctoral Researcher, University of Perpignan EPHE - FMR CNRS 2935
2001-2005  Predoctoral Researcher, University of Barcelona and Perpignan LCBE
2003-2004  Research Assistant, Marine Laboratory, University of Guam
2001  Non-Thesis Research Assistant, University of Paris VI
1998-2000  Undergraduate Research Assistant, University of Barcelona

Publications since 2007  (*Corresponding author; undergraduate & graduate students in bold)

34. López-Legentil S*, Legentil ML, Erwin PM, Turon X (Minor Revision) Harbor networks as introduction patchworks: contrastin Distribution pattern of native and introduced ascidians. Biological Invasions


- Journal cover


Presentations since 2007 (*Presenting author; undergraduate & graduate students in bold)


52. Pineda MC*, López-Legentil S, Turon X (2014) Life history of the introduced ascidian Styela plicata: Pathway to a holistic understanding. XVIII Simposio Ibérico de Estudios de Biología Marina, Gijon (Spain)


43. Riesgo A*, López-Legentil S, Leys SP, Giribet G (2013) Molecular machinery of germ line, sex determination, and vitellogenesis of sponges. 9th World Sponge Conference, Fremantle (Australia)


• Invited speaker


34. López-Legentil S* (2012) Multidisciplinary approaches to the invasive potential of a marine invertebrate Seminar Series: Department of Biology. Old Dominion University, Norfolk VA (USA)
- Invited speaker


- Invited speaker


22. Pineda MC*, López-Legentil S, Rius M, McQuaid C, Turon X (2011) Crossing the thin line between introduced and invasive species: Factors shaping the distribution and invasive potential of the solitary ascidian Styela plicata. 6th International Tunicate Meeting, Montreal (Canada)


   - Invited speaker


   - Published in Integrative and Comparative Biology (2010), Volume 50(1): E260


   - Invited speaker


   - Published in Abstracts of the General Meeting of the American Society for Microbiology (2007), Volume 107: 434-435

<table>
<thead>
<tr>
<th>Grants and Sponsored Projects since 2007</th>
<th>(*Principal Investigator or Co-PI)</th>
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<tbody>
<tr>
<td>2014-2017 Spanish Government CTM2013-43287-P Grant – €145,000</td>
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<tr>
<td>MARSYMBIOMICS: Evolutionary implications, ecological roles, and vulnerability to ocean changes of marine symbioses</td>
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<tr>
<td>2014-2017 Catalan Government Fund for Quality Research Groups SGR 336 – €45,000</td>
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<td>Benthic Biology &amp; Ecology Group (<a href="http://www.ub.edu/beb">www.ub.edu/beb</a>)</td>
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<tr>
<td>2014-2015* CMS Pilot Grants – $20,000</td>
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<tr>
<td>Sea-squirts of North Carolina: Species Diversity and Distribution</td>
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<tr>
<td>2014* UNCW Charles L. Cahill Award (2014) – $2,982</td>
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<tr>
<td>Integrating genetics, taxonomy and chemical ecology to understand biodiversity and ecosystem function of sponge-microbe symbioses on Caribbean coral reefs</td>
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<tr>
<td>2011-2014* European Commission Marie Curie International Reintegration Grant FP7-PEOPLE-2010-RG 277038 – €87,500</td>
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<tr>
<td>SYMASC: Bacterial symbiosis in ascidians</td>
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<tr>
<td>2012-2014 Earth Microbiome Project – Sponsored Project</td>
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<tr>
<td>Sponge microbiomes in times of global change: A contribution to the Earth Microbiome Project</td>
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<tr>
<td>2011-2013* Spanish Government CTM2010-17755 Grant – €166,980</td>
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<tr>
<td>SOLID: Small organisms, large impacts: Diversity, dynamics, and significance of microbial symbions in sponges and ascidians</td>
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<tr>
<td>Biology and Ecology of Marine Invertebrates</td>
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<tr>
<td>2009-2013 Catalan Government Fund for Quality Research Groups SGR 484 – €47,840</td>
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<tr>
<td>Benthic Biology &amp; Ecology Group (<a href="http://www.ub.edu/beb">www.ub.edu/beb</a>)</td>
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<tr>
<td>2009-2010* The Linnean Society &amp; Systematics Association Research Fund – €1,416</td>
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<tr>
<td>Molecular characterization of key ascidians from the Bahamas</td>
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<tr>
<td>Molecular tools for the study of the vulnerability of benthic littoral populations: Structure, connectivity, adaptation and gene expression</td>
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<tr>
<td>2007-2010 French Research National Agency ANR-06-BDIV-001-04 Grant – €916,100</td>
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<tr>
<td>ECIMAR: Marine Chemical Ecology, Biodiversity indicators and development</td>
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<tr>
<td>2006-2008 Catalan Government Fund for Quality Research Groups SGR 674 – €36,600</td>
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<td>Benthic Biology &amp; Ecology Group (<a href="http://www.ub.edu/beb">www.ub.edu/beb</a>)</td>
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<tr>
<td>2005-2007 Spanish Government CTM2004-05265-C02-01/MAR Grant – €188,600</td>
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<tr>
<td>Genetic exchange between invertebrates and fished from the Atlantic and the Mediterranean: Colonization, speciation and invasion</td>
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</tr>
</tbody>
</table>
Honors, Awards, and Professional Services since 2007

Honors (including Scholarships and Fellowships) and Awards

- MBA Award for Outstanding Academic Achievement (2009) University of North Carolina Wilmington
- Beta Gamma Sigma Honor Society (2009) University of North Carolina Wilmington
- Boyd Robinson Most Value Added Award (2008) University of North Carolina Wilmington
- Teaching Accreditation (2008) Catalan University Quality Assurance Agency
- Fulbright Fellowship (2006-2007) US Department of State and Spanish Ministry of Education and Science

Article Reviewer


Grant Reviewer

(1) The Spanish National Agency of Evaluation and Prospective ANEP, (2) The German Research Foundation, (3) The Argentinean National Agency for Scientific and Technological Advancement ANPCyT, (4) The Israel Science Foundation, and (5) USA National Science Foundation NSF

Conference Organization

(1) Executive committee member, 8th World Sponge Conference 2010, Girona (Spain), and (2) Organizing Committee of the 2nd International Symposium in Sponge Microbiology, Baltimore MD (USA)
Jennifer Rettew McCall
Health Sciences Lecturer
Department of Biology and Marine Biology
Center for Marine Science
University of North Carolina at Wilmington
mccalljr@uncw.edu
704-458-4169

EDUCATION
2013  MBA  University of North Carolina at Wilmington.  Wilmington, NC
Focus: Business of Marine Biotechnology
2010  PhD  University of North Carolina at Charlotte.  Charlotte, NC.
Dissertation title: “Sexual dimorphism in sepsis susceptibility: effects of reproductive hormones on microbial pattern recognition receptor expression.” Under the direction of Dr. Ian Marriott.
2006  MS  University of North Carolina at Charlotte.  Charlotte, NC.
2003  BS  University of North Carolina at Chapel Hill, Chapel Hill, NC.

APPOINTMENTS
2014-present  Online Health Sciences Lecturer. Department of Biology and Marine Biology, University of North Carolina Wilmington. Wilmington, NC
2013-present  Owner and CEO. SeaTox Research Inc. Wilmington, NC
2011-2014  Visiting Research Assistant Professor. Center for Marine Science, University of North Carolina Wilmington. Wilmington, NC
2010-2013  Adjunct Instructor. South Piedmont Community College. Monroe, NC
2010  Adjunct Instructor. Queens University of Charlotte. Charlotte, NC

PUBLICATIONS


**SCIENTIFIC PRESENTATIONS**


**GRANTS**

- **2014-2015** NIH/NIEHS: Small Business Technology Transfer (STTR) grant for the development of fluorescent receptor binding assays for saxitoxins and domoic acid. Role: PI. $224,408
- **2014** SURCA award from UNCW for mentoring summer undergraduate research. $3,000
- **2009-2010** Lucille P. and Edward C. Giles Foundation Fellowship, competitive Graduate School Dissertation Year Scholarship, UNC-Charlotte. $21,000

**HONORS/AWARDS/PROFESSIONAL and UNIVERSITY SERVICE**

2013 – present Peer Reviewer for *Immunopharmacology and Immunotoxicology*
2013 – present  Radiation Safety Committee Member, UNCW
2013  Science Olympiad volunteer mentor for local middle school students, Water Quality
2013  Outstanding Academic Achievement Award, MBA award, class of 2013, UNCW
2013  Beta Gamma Sigma, International Business Honor Society, UNCW chapter
2012 – 2014  Committee member for M.S. student Meghan Grandal, UNCW
2012  Boyd Robison Most Added Value Award, MBA consultation project for Flow Sciences, Inc., UNCW (Role: Team Leader)
2009  Science Ambassador for North Carolina DNA Day, outreach to local high school science students, Immunology module
2009  Presentation Excellence Award, 9th Annual Graduate Research Forum, UNCC
2008  New Investigator Award for Excellent Poster Presentation, OSSD annual meeting, New Orleans
2007 – 2009  Association of Biology Graduate Students Treasurer
2007  Graduate Assistant Excellence in Teaching Award in Mathematics and Sciences, UNCC
DIANE LOUISE MELROY

University of North Carolina Wilmington
546 Kelly Rd
Department of Biology and Marine Biology
Wilmington NC 28409
601 S. College Rd.
(910) 392-1757
Wilmington, NC 28403
(910) 962-7640
melroyd@uncw.edu

EDUCATION

Ph.D. 1987 Department of Botany, University of California, Berkeley, CA 94720
Dissertation advisor Dr. Russell L. Jones
Title: The Pathway of α-amylase secretion from the barley aleurone layer: Evidence for passage
through the Golgi apparatus

B.S. 1981 Departments of Botany and Biochemistry, summa cum laude, University of Minnesota, St. Paul, MN
55108. Summa thesis advisor Dr. David J. McLaughlin

PROFESSIONAL HISTORY

Senior Lecturer in Biology, University of North Carolina, Wilmington, Aug 2009 -- present
Lecturer in Biology, University of North Carolina, Wilmington. Aug 2000 – Aug 2009
Courses developed and taught: Bio 105 Concepts of Modern Biology (for non-majors); Bio 205 Plant Biology; Bio 495
Seminar; Bio 202 Biodiversity (on-line); SHS 210 Introduction to Science, Humanities, and Society; and three courses
for Graduate Liberal Studies Dept: Genetics and Its Impact on Society; Exploring Science through Science Writing, and
Human Evolution Past and Future.
Committee memberships: Undergraduate Assessment; Science, Humanities and Society (chair)
Coordinator, Science, Humanities and Society minor

Assistant Professor of Biology, University of North Carolina, Asheville
One University Heights, Asheville, NC 28804. 7/94-7/00
Courses developed and taught: Cell Biology; Plant Biology; Plant Physiology; Developmental Biology; Plants and
Humans; Introductory Biology; Senior Seminar
Committee memberships: Medical School, Writing-Across-the-Curriculum

Assistant Professor of Biology, Siena Heights College
1247 E. Siena Heights Dr. Adrian, MI 49221. 9/90-8/94
Courses developed and taught: Introductory Cell Biology; Botany; Genetics; Cell and Molecular Biology; Life
Science (for non-majors); Developmental Biology; Junior Seminar; Senior Research.
Committee memberships: Rank and Promotion, General Education, Library

Research Affiliate Plant Physiologist, United States Department of Agriculture, Agricultural Research Service,
Beltsville MD 20705. 6/87-7/90

Graduate Teaching Associate, Department of Botany, University of California, Berkeley 1/87-6/87

Graduate Research or Teaching Assistant, Department of Botany, University of California, Berkeley 9/81-12/86

PUBLICATIONS

isoenzymes in barley aleurone. Planta 167:252-259

Jones, R.L.; J. Deikman; D.L. Melroy (1986) Role of Ca++ in the regulation of α-amylase synthesis and secretion in
Publishing Corp.


Kalinski, A., D. L. Melroy, R. S. Dwivedi, and E. M. Herman (1992) A soybean vacuolar protein (P34) related to thiol proteases is synthesized as a glycoprotein precursor during seed maturation. J. Biol. Chem. 267: 12068-12076

PRESENTATIONS

“Flower, Fruit, and Seed” for Women in Science and Math Conference, Siena Heights College, March 1991


“Adventures of Women in Botany” for Women’s History month, UNC-Asheville, 18 March 1995

“Control of Acid Phosphatase Secretion in Pitchers of Sarracenia purpurea” 20 March 1998, American Society of Plant Physiology, Southern Section meeting, Roanoke, VA

Panel discussion “Genetics in the New Millenium” 20 February 2001

Panel discussion “The Primate – Human Connection” 9 April 2002

Panel discussion “The Truth – What is it?” 22 March 2006

“The Discovery of DNA” for the Fabulous Fifties Lecture Series, UNCW, 14 November 2007

GRANTS

4-S Student mentoring grant, $2000, awarded Fall 1991, to carry out research on gravity perception and gravitropism in pea (Pisum sativum).

University Research Council grant, awarded Spring 1996, “Enzyme Secretion in the Pitcher Plant, Sarracenia purpurea”, $1440, to initiate studies with students on enzyme secretion in the pitcher plant.


HONORS AND AWARDS

Nominated for teaching awards, 1994 and 1998

UNCW CTE Teaching Initiative, for proposal “Communicating Science to Children”, 2005

Lecturer of the Year, 2007

Summer Curriculum Development Initiative, 2013
D. Ann Pabst  
Curriculum Vita  
1 October 2014

Department of Biology and Marine Biology  Telephone: (910) 962-7266  
and Center for Marine Science  FAX: (910) 962-4066  
University of North Carolina at Wilmington  e-mail: pabsta@uncw.edu  
601 South College Road  
Wilmington, NC  28403

EDUCATION  
1984-1989 Ph.D., Zoology, Duke University (with Stephen A. Wainwright)  
1978-1982 B.S., Zoology, University of Maryland

POSITIONS  
2002-present Professor, Department of Biology and Marine Biology and Center for Marine Science, University of North Carolina Wilmington  
courses: Comparative Vertebrate Anatomy, Marine Mammalogy; Biomechanics, Marine Biology, PhD Core Course (team-taught)  
2004-2010 Graduate Coordinator and Assistant Chair, Department of Biology and Marine Biology  
2002-07; 2009 Adjunct Faculty, Old Dominion University  
2001-present Adjunct Scientist, Mote Marine Laboratory  
1998-2002 Associate Professor, Department of Biological Sciences and Center for Marine Science, University of North Carolina at Wilmington  
courses: Comparative Vertebrate Anatomy, Marine Mammalogy  
1995-1998 Assistant Professor, Department of Biological Sciences and Center for Marine Science Research, University of North Carolina at Wilmington  
courses: Comparative Vertebrate Anatomy, Marine Mammalogy  
1991-1995 Assistant Professor, Department of Biology, James Madison University.  
courses: Biomechanics, Human Anatomy  
August 1994 Visiting Instructor, School of the Environment, Duke University Marine Laboratory.  
co-taught: Marine Mammals  
1989-1991 Izaak Walton Killam Postdoctoral Fellow  
Department of Zoology, University of British Columbia  
1987-1989 Cocos Training Grant in Morphology Fellow, Department of Zoology, Duke University  
1984-1986 Research Assistant, S.A. Wainwright, Department of Zoology, Duke University  
1983-1984 Coordinator, Marine Mammal Events Program, A joint program with the Smithsonian Institution and the Cousteau Society, Smithsonian Institution, Washington, D.C.  

PUBLICATIONS (undergraduate, graduate and post-doctoral students with whom I have worked in bold)  


PRESENTATIONS, POSTERS, AND PUBLISHED ABSTRACTS
(undergraduate and graduate students with whom I have worked are in bold)

2014


2013


2012


2011


2010


2009


Piscitelli, M.A., McLellan, W.A., Rommel, S.A. and D. A. Pabst. Comparing lung size in shallow (Tursiops truncatus) and deep diving (Kogia breviceps) cetaceans. SEAMAMMS, UNCW, April 3-5, 2009. (Best MS student Oral Presentation Award)

2008

Piscitelli, M.A., McLellan, W.A., Rommel, S.A. and D. A. Pabst. A plan to compare thoracic morphology in a shallow (Tursiops truncatus) and deep diving (Kogia breviceps) cetacean. SEAMAMMS, Charleston, SC, March 28-30, 2008. (Best MS student Poster Award)


**2007**


**FELLOWSHIPS, SCHOLARSHIPS AND GRANTS**

2014 Woods Hole Oceanographic Institution; Principal Investigator: *Measuring compartment size and gas solubility in marine mammals*; 10 month study; $ 25,375.

2014 National Atmospheric and Oceanic Administration, Prescott Stranding Grant, Principal Investigator: *Response to and Coordination of Marine Mammal Strandings in North Carolina*; 1 year study, $99,904
2014 Virginia Aquarium and Marine Science Center, Co-Principal Investigator with William A. McLellan: Aerial Surveys for Endangered Whales at the mouth of the Chesapeake Bay within the Virginia Wind Energy Area; 1 year study, $42,490

2014 HDR/e2M (through Duke University) Co-Principal Investigator with Andrew Read (PI), Charles Borchers and William A. McLellan: Monitoring of Protected Species in the Onslow AFAST and Jacksonville USWTR sites; 1 year study; $243,633

2013 National Atmospheric and Oceanic Administration, Principal Investigator: Hook Interactions with Cetacean Tissue: Mechanical Tests of Hooks from the North Carolina and Hawaii Longline Fisheries; 1 year study; $29,998.81

2013 HDR/e2M (through Duke University), Co-Principal Investigator with Andrew Read (PI), Charles Borchers and William A. McLellan: Monitoring of Protected Species in the Onslow AFAST and Jacksonville USWTR sites; 1 year study, $342,040.

2012 New England Aquarium, Co-Principal Investigator with William A. McLellan: Weak hook interactions with cetacean tissues: tests of various hook designs (circle, offset, tuna and J) and strengths; 1 year study, $15,147

2012 Virginia Aquarium and Marine Science Center, Co-Principal Investigator with William A. McLellan: Aerial Surveys for Endangered Whales at the mouth of the Chesapeake Bay within the Virginia Wind Energy Area; 6 month study, $93,594

2012 National Atmospheric and Oceanic Administration, Prescott Stranding Grant, Principal Investigator: Providing Necropsy Training Workshops for the Southeast and Mid-Atlantic and Stranding Response for North Carolina; 1 year study; $98,765

2011 HDR/e2M (through Duke University) Co-Principal Investigator with Andrew Read (PI), Charles Borchers and William A. McLellan: Monitoring of Protected Species in the Onslow AFAST and Jacksonville USWTR sites; 10 months; $384,608.84

2011 HDR/e2M (through Duke University) Co-Principal Investigator with Andrew Read (PI), Charles Borchers and William A. McLellan: Monitoring of Protected Species in the Onslow AFAST and Jacksonville USWTR sites; 12 months; $362,183.14

2011 National Atmospheric and Oceanic Administration, Prescott Stranding Grant, Principal Investigator: Response to and Coordination of Marine Mammal Strandings in North Carolina; 1 year study, $95,745

2010 HDR/e2M (through Duke University) Co-Principal Investigator with Andrew Read (PI), Charles Borchers and William A. McLellan: Monitoring of Protected Species in the Onslow AFAST and Jacksonville USWTR sites; 6 months; $362,183.14

2010 US Fish and Wildlife Service. Co-Principal Investigator with William A. McLellan: UNC Wilmington Pilot Study to organize past manatee sightings and to collect future manatee sightings data from North Carolina; $11,525

2010 Parsons (through Duke University), Co-Principal Investigator with Andrew Read (PI), Charles Borchers and William A. McLellan: Long-term monitoring of protected species in the USWTR; Onslow Bay and Jacksonville, FL; 8 month continuation, $408,024

2010 National Atmospheric and Oceanic Administration, Prescott Stranding Grant, Principal Investigator: Enhancing Stranding Response in Northern North Carolina; 1 year study, $99,890

2010 National Atmospheric and Oceanic Administration, Prescott Stranding Grant, Co-Principal Investigator with William A. McLellan: Response to and Necropsy of Stranded Large Whales in North Carolina and Virginia; 2 year study; $99,890

2009 Parsons (through Duke University), Co-Principal Investigator with Andrew Read (PI), Charles Borchers and William A. McLellan: Long-term monitoring of protected species in the USWTR; Onslow Bay and Jacksonville, FL; 1 year study; $351,035.

2009 National Atmospheric and Oceanic Administration, Prescott Stranding Grant, Principal Investigator: Building stranding response capacity in northern North Carolina; 1 year study, $99,930.

2009 Parsons (through Duke University), Co-Principal Investigator with Andrew Read (PI), Charles Borchers and William A. McLellan: Long-term monitoring of protected species in the USWTR; Jacksonville, FL; 1 year study, $287,050

2008 Geo-Marine Incorporated (through Duke University), Co-Principal Investigator with Andrew Read (PI), Charles Borchers and William A. McLellan: Long-term monitoring of protected species in the USWTR; 1 year study, $316,375.

2008 National Atmospheric and Oceanic Administration, Prescott Stranding Grant, Principal Investigator: Enhanced tissue collection and health monitoring of stranded marine mammals in North Carolina and Virginia; 1 year study, $99,974
2007 National Atmospheric and Oceanic Administration, Co-Principal Investigator with Principal Investigator W.A. McLellan: Seasonal occurrence of north Atlantic right whales along the mid-Atlantic coast; 1 year study, $264,919.
2007 National Atmospheric and Oceanic Administration, Prescott Stranding Grant, Principal Investigator: Enhanced tissue collection and health monitoring of stranded marine mammals in North Carolina and Virginia; 1 year study; $98,240.

AWARDS, HONORS and PROFESSIONAL SERVICE
2014 Student Poster and Presentation Judge, Division of Vertebrate Morphology, Society for Integrative and Comparative Biology, Annual Meeting, Austin Texas, 3-7 January, 2014.
2014 Coordinator for Student Judging, Southeast and Mid-Atlantic Marine Mammal Symposium
2012 Invited to present William S. Hoar Lecture, Department of Zoology, University of British Columbia, November 19, 2012
2012 Invited to present the George D. Grice, Jr. Lecture, College of Charleston, April 6, 2012
2010 Invited Opening Plenary, National Marine Animal Health and Stranding Network Conference
2009 Co-Chair, Southeast and Mid-Atlantic Marine Mammal Symposium
2009 Invited Participant, ONR Cetacean Tagging Workshop
2009 Abstract review, 18th Biennial, Society for Marine Mammalogy
2008 Invited Participant, South American Stranding Network Meeting, Santiago Chile
CURRICULUM VITAE

Name:  Joseph R. Pawlik - Professor, Department of Biology and Marine Biology

EDUCATION:

1988  Ph.D. in Marine Biology, Scripps Institution of Oceanography, University of California, San Diego.
1982  Bachelor of Science, summa cum laude, in Biology, College of Biological Sciences, University of Minnesota, Minneapolis/St. Paul.

APPOINTMENTS:

2010-13  Chief Scientist, NSF UNOLS expeditions to the Bahamas and Mexico, R/V Walton Smith
2009-10  Chair, 39th Annual Benthic Ecology Meeting, 10-13 March, Wilmington, NC
2003-05  NSF Ex Officio Member, US Coral Reef Task Force
2003-05  NSF Ex Officio Member, Marine Protected Area Federal Advisory Committee
2002    Associate Program Director, National Science Foundation, Biological Oceanography Program
2002    Visiting Professor, Dipartimento di Chimica delle Sostanze Naturali, Universita Degli Studi di Napoli Federico II, Naples, Italy.
2002    Visiting Scholar, Hong Kong University of Science and Technology, Hong Kong, China
1999-08  Chief Scientist, NSF UNOLS expeditions to the Bahamas, R/V Seward Johnson
1999    Visiting Professor, Dipartimento di Chimica delle Sostanze Naturali, Universita Degli Studi di Napoli Federico II, Naples, Italy.
1998    Chief Scientist, NSF UNOLS expedition to Bahamas, R/V Edwin Link
1998-  Professor, Department of Biological Sciences and Center for Marine Science, UNCW
1997-   Senior Editorial Advisor, Marine Ecology Progress Series
1995-   Adjunct Associate Professor, Curriculum in Marine Science, UNC-Chapel Hill
1995-   Adjunct Assistant Professor, Marine, Earth and Atmospheric Sciences, NCSU
1994-98  Associate Professor, Biological Sciences and CMSR, UNC-Wilmington
1992-93  Guest Investigator, Woods Hole Oceanographic Institution
1992-96  Editorial Advisor, Marine Ecology Progress Series
1991-94  Assistant Professor, Biological Sciences and CMSR, UNC-Wilmington
1990    Sessional Lecturer, University of Alberta, Edmonton. Marine Biology.
1988-90  Killam Memorial Postdoctoral Scholarship, University of Alberta, Edmonton, Canada. In residence at the Friday Harbor Laboratories, University of Washington.
1987-88  Lecturer, University of California, San Diego. Introductory Oceanography.
1982-88  Research Assistant, Scripps Institution of Oceanography, UC-San Diego.
1981-82  Teaching Assistant, Bermuda Biological Station for Research. Marine Invertebrate Zoology.
1979-82  Research Assistant, Department of Ecology and Behavioral Biology, University of Minnesota, Minneapolis/St. Paul.

PUBLICATIONS:


ABSTRACTS AND PRESENTATIONS: Most recent of about 275. 


Pawlik, J. R. Linking Science to Management: the Florida Keys Marine Ecosystem, NOAA, Duck Key, FL, "Florida’s “Redwood of the Reef”: Growth, Age, Demographics and Bleaching of the Caribbean giant barrel sponge, Xestospongia muta" (October 2010).

oxidizing Archaea in bleaching barrel sponges: Diversity, distribution and ammonia monooxygenase expression” (September 2010).


Pawlik, J.R. 2010. Researching the “Redwood of the Reef”: How Scuba and related undersea technologies revealed one of the oldest animals on earth. Invited seminar by the National Research Council and Smithsonian Institution. Revolution of Science through Scuba Symposium. 24-26 May, NMNH, Washington, DC.


GRANTS AND AWARDS:

2013 Inducted into UNCW Office of Research Administration’s Five Million Dollar Club
2011 NOAA/Aquarius Reef Base grant, “Sponges on Florida coral reefs: Anthropogenic threats and demographic changes.” $75,000/2yrs – Co-PI with Christopher Finelli.
2010 NSF Biological Oceanography renewal, “Chemical ecology of sponges on Caribbean coral reefs.” $580,000/ 4yrs
2009 NOAA/NURP grant, “Sponges on Florida coral reefs: Demographics and impact on water quality” $69,953/1yr
2006 NOAA/NURP grant, “Ecology of sponges on Florida reefs: Demography and bleaching” $64,502/2yrs
2006 NSF Biological Oceanography renewal, “Chemical ecology of sponges on Caribbean reefs.” $542,000/ 4yrs
2004 NOAA/NURP grant, “Barrel sponges on Florida reefs: Reproduction, mortality and bleaching” $59,774/2yrs
2002 NOAA/NURP grant, "Ecology of Caribbean sponges" $46,476/2 yrs
2001 NSF Biological Oceanography renewal, “Assessing the chemical defenses of Caribbean Invertebrates.” $440,000/ 4yrs
2001 US-Israel Binational Science Foundation grant "Photosymbiotic relationships in marine sponges" with M. Ilan and S. Beer. $229,967/ 3yrs
2000 UNCW Faculty Reassignment Award
2000 NOAA/NURP grant, "Ecology of deep-water sponges" $33,490/2 yrs

GRADUATE STUDENTS:
MS students, acting as major advisor (27): Robert Toonen, David Mense, Brian Chanas, Alicia Henrikson, David Swearingen, Matt Dunlap, Ian Zelo, Brett Waddell, Robyn Palmer, Chloe Deodato, Sebastian Engel, Tim Henkel, Sarah Kelly, Kyle Walters, Shobu Odate, Adam Jones, Steven McMurray, Tse-Lynn Loh, David Hines, Wai Leong, Michael Echevarria, Andrew Miller, John Hanmer, Lindsey Deignan, Inga Conti-Jerpe (with Dr. Chris Finelli), Micah Marty, Clark Marino.
PhD students, acting as major advisor (5): Jonathan Cowart, Tim Henkel, Tse-Lynn Loh, Steven McMurray (with Dr. Chris Finelli), Lindsey Deignan
Postdoctoral students, acting as major advisor (2): Julia Kubanek, Susanna López-Legentil
CURRICULUM VITAE

MARTIN H. POSEY

Undergraduate Studies
University of North Carolina Wilmington
601 S. College Road
Wilmington, N.C. 28403
(910) 962-2474

EDUCATION:
Ph.D. 1985 Biology, University of Oregon
B.A. 1980 Zoology with highest honors, University of North Carolina, Chapel Hill
A.A. 1978 General Studies, Charles County Community College, LaPlata, Maryland

PROFESSIONAL EXPERIENCE:
2013-present Associate Vice Chancellor and Dean of Undergraduate Studies, University of North Carolina at Wilmington
2011-2013 University Accreditation Coordinator working with Provost’s Office
2004-2011 Chair, Department of Biology and Marine Biology, University of North Carolina at Wilmington
1989-present 1989-1994 Assistant Professor, 1994-1998 Associate Professor, 1998-onward Professor, Department of Biology and Marine Biology, University of North Carolina at Wilmington
Summers 1990-91; 1987-1989; Visiting Scientist/Postdoctoral Fellow, Smithsonian Environmental Research Center.
1985-1987 Postdoctoral Research Associate, University of Oregon
1985 Course Assistant, Marine Biological Laboratory, Woods Hole

PUBLICATIONS:


GRANTS AND AWARDS: (PI or co-PI on >$10 million in grants and awards since coming to UNCW)
National Science Foundation. 2009-2014. “STAR (Scholarship Team in Action to Recruit) program.” $898,500. (co-P.I.)
NOAA Habitat Division. 2012-2013. “Assessment of infauna and sediment characteristics associated with the Poplar Island, VA marsh restoration project”. $30,000. (co-P.I.)
South Carolina Department of Natural resources. 2010. “Student internship at Waddell Mariculture Center”. $1717. (P.I)
North Carolina Sea Grant program. 2010-2012. Linking variation in egg quality to hatching success and larval survival in blue crabs. $9545 (co-P.I.).
North Carolina Sea Grant Program. 2010-2012. “To seed or not to seed: the value of seeding restored oyster reefs for ecosystem function”. $88,597 + graduate student support. (co-P.I.)
Dial Cordy and Associates. 2009-2010. “Monitoring effects of a potential increased tidal range in the Cape Fear Ecosystem.” $415,599. (lead P.I)
North Carolina Department of Environment and Natural Resources (CICEET), 2009-2010, “Sustainable estuarine shoreline stabilization”. $117,694. (lead P.I.) (part of larger project administered through NC Department of Natural Resources, $688,478, overall project co-PI)
North Carolina Sea Grant Program. 2008-2010. Key parameters for assessing beach functionality. $99,820, (co-P.I)

Elizabeth City State University (U.S. Army Corps of Engineers), 2008-2009, “The Cape Fear River Ecosystems Project”. $293,373. (lead P.I.)


Elizabeth City State University (U.S. Army Corps of Engineers), 2007-2008, “Biochemistry and Benthic infauna in swamps and Marshes along the NE Cape Fear and Cape Fear Rivers” $46,281. (P.I.)

Elizabeth City State University (U.S. Army Corps of Engineers), 2007-2008 “Service, Maintain and calibrate remote data collection platforms in swamps and channels in the Cape Fear Basin” $43,421. (P.I.)

**SEMINARS AND PAPERS PRESENTED WITHIN PAST 5 YEARS (italics indicate student authors):**


Novak, C., M. Posey and T. Alphin. 2010. Benthic community development on edge vs. interior of created salt marshes. 2010 Benthic Ecology Meetings, Wilmington, NC


Tatem, S., T. Alphin, H. Styron, M. Posey and M. Turano. 2010. Implementing a volunteer
monitoring program for oyster larval settlement throughout the North Carolina coast. Poster presented at the 2010 Benthic Ecology Meetings, Wilmington, NC


CURRICULUM VITAE

Linda Foerst Potts, Ph.D.

PERSONAL:
Work Address: University of North Carolina Wilmington
Department of Biology and Marine Biology
2019 Friday Hall
Wilmington, NC 28403
E-mail: Pottsl@uncw.edu
Phone: Work: (910) 962-3352

EDUCATION:

Ph.D. University of North Carolina at Chapel Hill 1992-1996
Major: Cell Biology and Anatomy

B.S., University of Missouri at Columbia 1988-1992
Major: Honors Biology

APPOINTMENTS:

Senior Lecturer of Biology 1999-present
University of North Carolina Wilmington

Visiting Assistant Professor of Biology 1998-1999
University of North Carolina Wilmington

Instructor of Biology at Queens College 1996-1998
Charlotte, North Carolina

Instructor of Biology 6/96-8/96
The Princeton Review

Teaching Assistant 1993-1994
University of North Carolina-Chapel Hill

PUBLICATIONS:


Mouse Whole Embryo Culture and Antisense Oligodeoxynucleotides: New Approaches to Studying Genes Involved in Early Development:


HONORS, AWARDS and PROFESSIONAL SERVICE
Lecturer of the Year Award 2006
Recognized every year as UNCW faculty who have had a significant impact on graduating seniors 2000-present

University of North Carolina Wilmington:
Activities:
Faculty advisor to Tri-Beta Biological Honor Society 1998-present
Tri-Beta Southeast District Convention- faculty representative 2007
Traveled with two UNCW students presenting research
Poster session judge-Tri-Beta Southeast District Convention 2007

Committees:
Scholarship Committee Chair 2000-present
New Hanover-Pender Medical Society Scholarship Committee 2008-present
Undergraduate Assessment Review Committee 2014-present
Advancement and Student Relations Committee 2009-2012
Master’s Thesis Committee for Samantha Johnson 2004-2005
Curriculum Vitae

Carolina Priester

Lecturer                       phone: 910-962-2943
Dept. of Biology and Marine Biology  priesterc@uncw.edu
University of North Carolina Wilmington
Wilmington, NC 28403-5915

EDUCATION

2012: Ph.D.  UNC Wilmington.  Advisor: Richard Dillaman
2003: M.S.  UNC Wilmington.  Advisor: Richard Dillaman
2001: B.S.  cum laude UNC Wilmington.  Marine Biology, Chemistry minor

APPOINTMENTS

Aug. 2012 to present: Lecturer, UNC Wilmington

Summer 2014:  Lecturer for Cell Biology, UNC Wilmington
Laboratory instructor for Human Anatomy and Physiology I, UNC Wilmington.

Summer 2013:  Laboratory instructor for Human Anatomy and Physiology I, UNC Wilmington.

2008 to 2012:  Teaching Assistant, Human Anatomy and Physiology I and II, UNC Wilmington.


2003 to 2008:  Neuroscience Research Technician/Specialist, UNC Wilmington, Psychology Department – Position funded through an 5 yr. NIH grant (NIMH MH0671560) to Dr. Julian Keith (UNCW) and Dr. Robert Sutherland (University of Lethbridge)

2001 to 2003:  Teaching Assistant, Human Anatomy and Physiology I and II, UNC Wilmington


RECENT PUBLICATIONS


**RECENT ABSTRACTS AND PRESENTATIONS**

**Priester, C., Cornelissen, A., Kinsey, S.T., Dillaman, R.M. 2012.** Nuclear distribution in skeletal muscle of selected members of Chondrichthyans. Oral presentation at the annual meeting of the Society for Integrative and Comparative Biology, Charleston, South Carolina, USA.

**Priester, C., Kinsey, S.T., Dillaman, R.M. 2011.** Nuclear distribution in skeletal muscle of selected members of Elasmobranchs. Poster presentation at the regional Microscopy Meeting - ArEMs, Boone, North Carolina, USA.

**Priester, C., Braude, J.P., Kinsey, S.T., Watanabe, W.O., Dillaman, R.M. 2011.** Change in orientation of the myofibrils and cytoskeleton in white muscle fibers of large black sea bass, *Centropristis striata*. Poster presentation at the annual meeting of the Society for Integrative and Comparative Biology, Salt Lake City, Utah, USA. **Best Student Poster Award**


**GRANTS**

Fall 2014 
ETEAL funded initiative. $ 870.00

**HONORS, AWARDS, PROFESSIONAL SERVICE**

2014: Faculty Senate – Senator for Biology and Marine Biology
2014: Panelist on CTE/ETEAL forum for new faculty (ETEAL 101).
2014: Summer School Committee, Transfer advising, Majors Fair
2013: Seminar Committee, Transfer advising, Seahawk Saturday, Majors Fair, Pre-Health Fair
2012: Seminar Committee
2012: UNCW Graduate School Travel Award ($400) and Biology GSA Travel Award ($100)
2011: Best Student Poster Presentation at the annual meeting for the Soc. for Integrative and Comparative Biol. ($100)
2011: UNCW Graduate School Travel Award ($400) and Biology GSA Travel Award ($100)
2010: UNCW Biology and Marine Biology annual Teaching Assistant Award ($100)
2010: UNCW Graduate School Travel Award ($400) and Biology GSA Travel Award ($100)
2009: UNCW Graduate Student Summer Research Award (1,000)
EDUCATION

<table>
<thead>
<tr>
<th>Year</th>
<th>Degree</th>
<th>Field</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>Ph.D.</td>
<td>Cell and Molecular Biology</td>
<td>University of Rhode Island, Kingston, RI</td>
</tr>
<tr>
<td>2000</td>
<td>M.S.</td>
<td>Biology</td>
<td>Edinboro University of PA, Edinboro, PA</td>
</tr>
<tr>
<td>1997</td>
<td>B.S.</td>
<td>Biology</td>
<td>Ursinus College, Collegeville, PA</td>
</tr>
</tbody>
</table>

APPOINTMENTS

- **University of North Carolina Wilmington, Wilmington, NC**
  - 2013-Present: **Assistant Professor**, Department of Biology and Marine Biology
  - 2011-2013: **Assistant Professor**, Department of Biology.
  - 2008-2011: **Postdoctoral Research Associate**, Department of Biological Sciences.

PUBLICATIONS


**INVITED PRESENTATIONS**

<table>
<thead>
<tr>
<th>Year</th>
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**GRANTS**

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
<th>Funder, Amount, Status, Start/End Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>&quot;Development of a Screening Tool to Identify the Chitinase in the Lyme Disease Spirochete Borrelia burgdorferi&quot;, Charles L. Cahill Award, University of North Carolina Wilmington, $2,976.00, Funded.</td>
<td>University of North Carolina Wilmington, $2,976.00, Funded. (start: January 2014, end: December 2014).</td>
</tr>
</tbody>
</table>

**HONORS/AWARDS/PROFESSIONAL SERVICE**

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
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<tbody>
<tr>
<td>2007</td>
<td><strong>Norris Wood Award</strong> for research excellence in microbiology, Department of Cell and Molecular Biology, University of Rhode Island.</td>
</tr>
<tr>
<td>2007</td>
<td><strong>Student Travel Grant Recipient</strong>, American Society for Microbiology 107th General Meeting, Toronto, Canada.</td>
</tr>
</tbody>
</table>
EDUCATION:

Sc.B. Aquatic Biology Brown University 1974
Ph.D. Zoology Duke University 1979
Dissertation: Mechanisms of Deposition and Resorption of Calcium in the Carapace of the Green Crab, *Carcinus maenas*.

ACADEMIC AND PROFESSIONAL EXPERIENCE:

Professor, Department of Biology & Marine Biology, University of North Carolina Wilmington, 1990-present. Assistant Chair for Graduate Studies, 1994-2002.

Dean of the Graduate School and Research, Chief Research Officer, University of North Carolina Wilmington, 2002-2012.

Assistant Professor and Associate Research Physiologist, 1979-1985; Associate Professor, 1985-1990. Assistant Director of the Institute for Marine Biomedical Research, University of North Carolina Wilmington, 1981-1986.

Visiting Scientist, Zoology Department, University of Reading, England, 1975.

PUBLICATIONS (since 2007)


PRESENTATIONS (since 2007)

Council of Graduate Schools Pre-Meeting Workshop - “Enrollment Planning for Master’s Focused Institutions” –2007 with Robin Bowen (Washburn Univ.)


Council of Graduate Schools Pre-Meeting Workshop - “Assessment and Review of Graduate Programs – Master’s – 2012 with Robert Augustine.


GRANTS RECEIVED:


N.C. Sea Grant - Possible Use of Eyestalk Annuli for Age Determination in the Blue Crab, *Callinectes sapidus* – $4,400 from January 2013 – December 2013.

N.C. Sea Grant - Validating a New and Reliable Method to Determine the Age of Blue Crabs - $66,000 from February 2014 – January 2016.

**PROFESSIONAL SERVICE:**

Conference of Southern Graduate Schools – member of the executive board, 2007-10.

Council of Graduate Schools – member of the advisory panel for the master’s completion project, 2010-2012.

Society for Integrative and Comparative Biology – treasurer-elect, 2009-10; treasurer, 2010-13

**Name:** Richard Satterlie

**Education:**
- Sonoma State University (California) B.A. 1973
- University of California, Santa Barbara Ph.D. 1978
- University of Alberta (Canada) Post-Doc 1978-1980

**Appointments:**
- UNCW - Frank Hawkins Kenan Distinguished Professor of Marine Biology 2004 – present
- Arizona State University Professor 1991 – 2004
- Arizona State University Associate Professor 1985 – 1991
- Arizona State University Assistant Professor 1980 – 1985
- University of Alberta Lecturer 1979 – 1980

**Military Service:**
- Army National Guard (California) – 1969-1975 Honorable Discharge at rank Sergeant, E-5

**Publications (from a total of 80):**

- **Red – UNCW graduate students; Blue – Arizona State graduate students (now both individuals have faculty appointments)**

  - 2010 **Pirtle, T.J.** and R.A. Satterlie. A hyperpolarization-activated inward current alters swim frequency of the pteropod mollusk *Clione limacina*. Comp. Biochem. Physiol. A. **157:** 319-327.

Presentations (2005 to present):

2013 Satterlie, R.A. “Altering rhythmicity: Slow dance, fast dance, hither and yon. (Plenary Lecture), SICB annual meeting, January 2013
2012 Satterlie, R.A. Fall meeting, Office of Naval Research MURI program (Bioinspired robotics), ONR, Bethesda, MD, “Neuromuscular facilitation in jellyfish locomotion.
2012 R.A. Satterlie – Fall meeting. Office of Naval Research MURI program (Bioinspired robotics) “Neuromuscular facilitation in scyphozoan and cubomedusan jellyfish”
2012 R.A. Satterlie – Spring meeting, Office of Naval Research MURI program (Bioinspired robotics) “Organization of swim musculature in scyphozoan jellyfish”
2012 Presentations at annual meeting of the Society for Integrative and Comparative Biology
  • R.A. Satterlie – FMRFamide immunoreactivity and the diffuse nerve net of scyphozoan and cubozoan jellyfish. (oral presentation)
  • Eichinger, J. and R.A. Satterlie – Turning mechanisms in cubomedusae. (poster presentation)
  • Plyler, J. and R.A. Satterlie – Organization of the pedal serotonergic cluster neurons in the pteropod mollusc, Clione (poster presentation)
  • Szymik, B.G. and R.A. Satterlie – Gait selection in a pteropod mollusk: Examining the kinematics of Clione swimming. (poster presentation)
2011 R.A. Satterlie – Fall meeting, Office of Naval Research MURI program (Bioinspired robotics) “Neural organization of scyphozoan and cubozoan jellyfish.”


2011 Presentations at annual meeting of the Society for Integrative and Comparative Biology
  • R.A. Satterlie – Microelectrode electroporation of fluorescent dyes: Identification of small neurons and muscle cells. (poster presentation)
  • Eichinger, J. and R.A. Satterlie – Neural characteristics of cubomedusan swim muscle. (poster presentation)


2009 Presentation at the annual meeting of the Society for Integrative and Comparative Biology: R.A. Satterlie – Nervous System “Centralization” in Jellyfish (oral presentation)

2008 Presentations at annual meeting of the Society for Integrative an Comparative Biology
  • R.A. Satterlie – Two types of mechanoreceptors in the wings of a pteropod mollusc. (oral presentation)
  • B.G. Szymik and R.A. Satterlie – Changes in wingstroke kinematics associated with an increase in swimming speed in a pteropod mollusk, Clione limacina. (poster presentation)


2007 Opisthobranch Neurobiology Symposium – June, Friday Harbor Laboratories, Friday Harbor, Washington (invited participant) Title, “Neural Control of Locomotory Speed in a Pteropod Mollusk.”


2007 Poster Presentations – 2007 annual meeting of the Society for Integrative and Comparative Biology (Phoenix, AZ)
  • Gray, G.C. and R.A. Satterlie. – Ultrastructure of Invaginated Synapses in the Retina of Cubomedusan Complex Eyes
  • Hayward, R. and R.A. Satterlie - Pacemaker coordination in Scyphozoan Jellyfish
  • Jacobson, B. and R.A. Satterlie - Structure and Function of Rhopalial Stalk Musculature in Cubomedusae

2006 Invited Seminar – University of South Carolina – “Neural Control of Locomotory Speed Control in a Flying Mollusk”


2006 Poster presentation - Annual meeting, SICB: Szymik, B, and R.A. Satterlie. Kinematics of Pteropod Swimming from Tethered and Freely Swimming Animals.”


2005 Poster Presentations – 2005 annual meeting of the Society for Integrative and Comparative Biology
• Thomas, K.S. and R.A. Satterlie. “How do Jellyfish Turn? Neuromuscular Considerations”
• Szymik, B.G. and R.A. Satterlie. “A Three-Dimensional Analysis of Pteropod Swimming at Different Speeds”


Grants:
1999 National Science Foundation – (Co-PI) “IGERT: Musculo-Skeletal and Neural Adaptations in Form and Function” – 5 years, $2,699,999.
2000 NIH – RO1 – “Neural Control of a Ballistic Startle Response” – 3 years, $471,529
2001 John Simon Guggenheim Memorial Foundation Fellowship – “Modular and Multifunctional Nature of Arousal Systems” – 1 year, $26,161
2004 National Science Foundation – “Acquisition of a Confocal Microscope” (co-PI) 3 years, $310,173
2009 National Science Foundation – “Control of Directional Swimming in Cubomedusae” 5 years, $400,181.
2009 National Science Foundation – “Expansion of the Seawater System of the Center for Marine Science” 3 years, $109,920.
2009 Office of Naval Research MURI program “Jellyfish Autonomous Node and Colonies: Modeling Biological Structure and Behavior, System Architecture Design and Implementation” (PI – S. Priya) 5 years, $4,000,000.

Honors and Awards:
2002 John Simon Guggenheim Memorial Foundation Fellowship (Academic Year 2002-03)
2007-2009 President-elect, Society for Integrative and Comparative Biology
2009-2011 President, Society for Integrative and Comparative Biology
2011-2013 Past President, Society for Integrative and Comparative Biology

Other Creative Activities:
Novels published:
Phoenix Historical Fiction Whiskey Creek Press, July 2006
Something Bad Horror Medallion Press, October 2007
Agnes Hahn Psychological Suspense Medallion Press, August 2008
Imola Psychological Suspense Medallion Press, September 2009
3.99 Psychological Suspense Musa Publications 2012

The Stick (Horror short story), published in Fear: An Anthology of Horror and Suspense Whiskey Creek Press, September 2006

Frederick S. Scharf  
Professor, Department of Biology and Marine Biology  
University of North Carolina Wilmington  
601 South College Rd., Wilmington, NC 28403-5915  
Tel. (910) 962-7796; Fax. (910) 962-4066  
email: scharff@uncw.edu

**Education**

2001  Ph.D., Wildlife and Fisheries Conservation, University of Massachusetts, Amherst.  
Dissertation: The influence of behavior on size-structured predator-prey interactions:  
prey susceptibility, predator selection, and population-level consequences for  
estuarine fishes

1997  M.Sc., Wildlife and Fisheries Biology, University of Massachusetts, Amherst.  
Thesis: Predator size-prey size relationships and predator dynamics of marine fish on  
the Northeast U. S. Continental Shelf

1994  B.Sc., Biology major/Marine Sciences minor, State University of New York at  
Stony Brook.

**Research areas**  
Recruitment processes in marine and estuarine fishes, mortality estimation, early life history,  
sampling and experimental design, population assessment, behavioral ecology of fishes, fish  
associations with structured habitats, predator-prey interactions, fish physiology and growth  
dynamics, fish reproduction

**Professional appointments**

Aug 2012 – present  
Professor, Department of Biology and Marine Biology, University of North Carolina Wilmington, Wilmington, NC

Associate Professor, Department of Biology and Marine Biology, University of North Carolina Wilmington, Wilmington, NC

Assistant Professor, Department of Biology and Marine Biology, University of North Carolina Wilmington, Wilmington, NC

Sep 2001 – Dec 2002  
National Research Council Postdoctoral Fellow, National Marine Fisheries Service, Sandy Hook, New Jersey

Graduate Research Assistant, Department of Natural Resources Conservation, University of Massachusetts, Amherst

Jul 1997 - Aug 1998  
Fisheries Biologist, Coastal Fisheries Division, Texas Parks and Wildlife Department

Graduate Research Assistant, Department of Forestry and Wildlife Management, University of Massachusetts, Amherst
Jan 1993 - Aug 1994  Research Assistant, Marine Sciences Research Center, State University of New York at Stony Brook

**Teaching experience** (* indicates graduate course)
Courses taught: Fisheries Biology, Ecology of Fishes, Biostatistics*, Experimental Design*, Principles of Zoology, Population Ecology*

**Invited lectures and seminars**
Harvard University (1996, 1999)
University of South Alabama (2002)
NOAA, James J. Howard Marine Laboratory (2002)
East Carolina University (2005)
College of Charleston, Fort Johnson Seminar Series (2005)
South Carolina Department of Natural Resources (2005)
North Carolina State, Center for Marine Sciences and Technology (2007)
NOAA Center for Coastal Fisheries and Habitat Research (2010)

**Professional service**
Reviewed articles for:
- Aquaculture Research
- Bulletin of Marine Science
- Ecology
- Estuaries
- Fishery Bulletin
- Journal of Fish Biology
- Limnology and Oceanography
- Marine and Coastal Fisheries
- Marine and Freshwater Research
- Northeastern Naturalist
- Reviews in Fish Biology and Fisheries
- Brazilian Journal of Oceanography
- Canadian Journal of Fisheries and Aquatic Sciences
- Ecological Applications
- Estuarine and Coastal Shelf Science
- ICES Journal of Marine Science
- Journal of Freshwater Ecology
- Marine Biology
- Marine Ecology Progress Series
- North American Journal of Fisheries Management
- PLoS ONE
- Transactions of the American Fisheries Society

Reviewed proposals for:
- NOAA Bluefish-Striped Bass Research Program
- National Science Foundation (NSF)
- Georgia Sea Grant
- Hudson River Foundation
- NOAA Chesapeake Bay Office
- NOAA CMER Program
- Texas Sea Grant
- Maryland Sea Grant
- Virginia Sea Grant
- Austrian Science Fund

Professional society memberships:
- American Fisheries Society since 1993
- Early Life History Section (AFS)  ***Hosted 2011 Larval Fish Conference***
- Tidewater Chapter (AFS) – 2009-10 President  ***Hosted 2009 Tidewater Chapter annual meeting***
- Southern Division Rep - Marine Fisheries Section (AFS) 2003-2010
Fishery management advisory committees:
North Carolina Division of Marine Fisheries southern regional advisory committee (co-chair since 2013)
North Carolina Division of Marine Fisheries red drum advisory committee (co-chair)

Peer-reviewed publications since 2007 (student authors are in bold; 1 = undergraduate, 2 = MS, 3 = PhD)

Submitted or accepted:

Published:


Professional presentations since 2007 (presenter is underlined; students in bold; 1 = undergraduate, 2 = MS, 3 = PhD)


Poland, S. J.², Scharf, F. S. Annual meeting, AFS Southern Division, Charleston, SC, "Trophic Dynamics of Large Pelagic Fish Predators in the U.S. South Atlantic", Academic, National. 209 (January 2014).


Binion, S. M.³, Reich, B. J., Buckel, J. A., Scharf, F. S. Annual meeting of the Tidewater Chapter of the American Fisheries Society, Solomons, MD, "Bayesian nonparametric approach to estimate the number of stomachs required to fully describe fish diet", Academic, Regional. March 2013.


Klibansky, N. and F.S. Scharf. Seasonal fecundity and reproductive pattern for red porgy in the US South Atlantic. Oral presentation at the 26th annual meeting of the Tidewater Chapter of the American Fisheries Society, Beaufort, NC, March 2012.


Gillum, Z.D., F.S. Scharf, J.J. Facendola, and J.S. Vanderfleet. Consumption and gastric...
evacuation in juvenile red drum (Sciaenops ocellatus): validation of field-based daily ration estimates. Oral presentation given at the Tidewater Chapter (American Fisheries Society) annual meeting, Gloucester Point, VA, March 2011.


Staudinger, M.D., B.N. Salmon1, M.S. Bell1, and F.S. Scharf. Trophic ecology of pelagic predators in the South Atlantic Bight determined from stable isotope analyses. Oral presentation given at the Tidewater Chapter (American Fisheries Society) annual meeting, Gloucester Point, VA, March 2011.

Salmon, B.N.1, M.D. Staudinger, M.S. Bell1, and F.S. Scharf. Food habits of dolphinfish, Coryphaena hippurus, in the South Atlantic Bight. Poster presented at the Tidewater Chapter (American Fisheries Society) annual meeting, Gloucester Point, VA, March 2011.

Bell, M.S.1, M.D. Staudinger, B.N. Salmon1, and F.S. Scharf. Regional food habits of wahoo (Acanthocybium solandri). Poster presented at the Tidewater Chapter (American Fisheries Society) annual meeting, Gloucester Point, VA, March 2011.


Facendola, J.J.2, C.R. Foster1, M.T. Benavides1, J. Vanderfleet1, and F.S. Scharf. Ontogenetic variation in the diet of estuarine red drum (Sciaenops ocellatus) in North Carolina. Poster presented at the Tidewater Chapter (American Fisheries Society) annual meeting, Annapolis, MD, March 2010.


Facendola, J.J. and F.S. Scharf. Predation by age-0 red drum (*Sciaenops ocellatus*) on juvenile blue crabs (*Callinectes sapidus*): estimation of daily ration and seasonal variation in the contribution of blue crab to the diet. Oral presentation given at the Tidewater Chapter (AFS) annual meeting, Wilmington, NC, March 2009.


Benavides, M.T., J.J. Facendola, and F.S. Scharf. Reconstruction of original prey sizes from digested remains using predictive linear equations with applications for interpreting predator-prey relationships. Poster presented at the Sigma Xi chapter meeting, Wilmington, NC, April 2008.


given at the North Carolina chapter (AFS) annual meeting, Greenville, NC, February 2008. *Best student paper award winner*

**Bacheler, N.M.*, L.M. Paramore, J.A. Buckel, and F.S. Scharf.** Recruitment of juvenile red drum in North Carolina: Spatiotemporal patterns of year-class strength and validation of a seine survey. Invited oral presentation at the NCDMF Southeast Regional Advisory Committee meeting, Wilmington, NC, January 2008.

**Bacheler, N.M.*, L.M. Paramore, J.A. Buckel, and F.S. Scharf.** Spatiotemporal patterns of red drum recruitment. Poster presented as part of the Best Student Poster Symposium at the American Fisheries Society annual meeting, San Francisco, CA, September 2007.


**Extramural funding since 2007**


Mid-Atlantic Sea Grant: Scharf, F. S. (Co-Principal), Miller, T. (Principal), Jones, C. (Co-Principal), Frisk, M. (Co-Principal), Nye, J. (Co-Principal), Jensen, O. (Co-Principal), Place, A. (Co-Principal), Grant, "Regional fisheries management in a dynamic environment: a case study of the black sea bass fisheries of the Mid-Atlantic", $660,000.00, Declined.

NC Division of Marine Fisheries Marine Resources Fund: An acoustic tagging study to evaluate migration dynamics and within-estuary habitat use of southern flounder (*Paralichthys lethostigma*) in North Carolina
Scharf, F.S., White, J.W., Collier, W.C., and Batsavage, C.
Funded at $229,466 for 7/1/2012 – 6/30-2014

North Carolina Sea Grant: Estimating the potential influence of hormone-disrupting compounds on North Carolina estuarine fishes
White, J.W., Brander, S.M., and Scharf, F.S.
Requested $73,170 for 2/1/2012 – 1/31/2014; (declined)

North Carolina Sea Grant: A comprehensive evaluation of biological and ecological factors influencing the sustainable management of large pelagic fishes in North Carolina waters
Staudinger, M.D. and Scharf, F.S.
Funded at $66,960 for 2/1/2012 – 1/31/2014

Partnership for Mid-Atlantic Fisheries Science (NOAA): Assessing error rates and efficiency of a two stage approach to determine the sex and maturity stage of black sea bass
Klibansky, N. and Scharf, F.S.
Funded at $68,724 for 6/1/2011 – 5/31/2012

NC Division of Marine Fisheries Marine Resources Fund: Trophic ecology of dolphinfish (*Coryphaena hippurus*) in North Carolina waters
Staudinger, M.D. and Scharf, F.S.
Requested $136,037 for 7/1/2011 – 8/31/2013; (declined)

National Science Foundation – UBM Group: BioMaSS: Biological and Mathematic Synergistic Science
Borrett, S., Freeze, M., Scharf, F.S. (co-PI), Simmons, S. and Van Tuinen, M.
Requested $239,546 for 6/15/10 – 6/14/13; (declined)

NC Division of Marine Fisheries Marine Resources Fund: Stock structure of southern flounder (*Paralichthys lethostigma*) in North Carolina and US South Atlantic waters
Scharf, F.S., McCartney, M.A., and Batsavage, C.
Funded at $281,508 for 8/1/2010 – 7/31/2013

North Carolina Sea Grant: Updating size and age at maturity schedules for southern flounder through examination of reproductive tissue and otolith microchemistry (year 2)
Scharf, F.S. and Taylor, J.C.
Funded at $47,221 for 8/1/10 – 7/31/11

North Carolina Sea Grant: The physiological basis of winter-induced stress and mortality in juvenile red drum
Scharf, F.S. and Southwood, A.
North Carolina Sea Grant: Effects of habitat alteration and biotic interactions on survival of juvenile estuarine fish
Funded at $120,000 for 2/1/2010 – 1/31/2012

North Carolina Sea Grant: Laboratory validation of field-based estimates of red drum foraging rates
Scharf, F.S. (sole PI)
Funded at $1,725 for 8/1/09 – 7/31/10

North Carolina Sea Grant: Impact of predation by red drum on juvenile blue crabs: estimation of predator densities, juvenile blue crab loss rates, and fractional loss due to predation
Scharf, F.S. (sole PI)
$54,488 for 8/1/09 – 7/31/11 – declined

North Carolina Sea Grant: Updating size and age at maturity schedules for southern flounder through examination of reproductive tissue and otolith microchemistry
Scharf, F.S. and Taylor, J.C.
$94,441 for 8/1/09 – 7/31/11 – funded at $47,221

North Carolina Sea Grant: Does density-dependent mortality in a juvenile estuarine fish limit recruitment?
Funded at $116,849 for 2/1/2008 – 1/31/2010

NOAA Cooperative Research Program: Batch fecundity and spawning frequency as a function of size, age, and season for black sea bass and red porgy in the US South Atlantic
Scharf, F.S. (co-lead PI w/Baker), Baker, M.S., Wyanski, D., Burgess, T., and Shertzer, K.
Funded at $222,716 for 8/1/07 – 7/31/09

North Carolina Sea Grant: Predation by red drum on juvenile blue crabs: estimation of daily ration and seasonal and ontogenetic variation in the contribution of blue crab to the diet
Scharf, F.S. (sole PI)
Funded at $46,041 for 8/1/07 – 7/31/09
Ann E. Stapleton

a. Education and Professional Preparation
University of Michigan-Ann Arbor, B.S. (Biology) 1983
University of Chicago, Ph.D. (Genetics) 1990
Postdoctoral Research: UNC-Chapel Hill Maize Pollen Biology 1990-91
Postdoctoral Research: Stanford University Maize Ultraviolet Radiation Responses 1991-1996

b. Appointments
8/01-present Assistant then Associate Professor, Department of Biology and Marine Biology,
University of North Carolina at Wilmington, Wilmington, NC
10/98 and 10/00 International Visiting Professor, taught graduate course on "Plant Molecular
Responses to Ultraviolet Radiation", University of Buenos Aires, Buenos Aires, Argentina
8/96-7/01 Assistant Professor, Department of Biological and Environmental Sciences, University of
Tennessee at Chattanooga, Chattanooga, TN

c. Publications since 2007 (student co-authors bold type), see full list at

Manching, Heather C., Peter J. Balint-Kurti, and Ann E. Stapleton. "Southern leaf blight disease
severity is correlated with decreased maize leaf epiphytic bacterial species richness and the
phyllosphere bacterial diversity decline is enhanced by nitrogen fertilization." Frontiers in plant
science Plant-Microbe Interactions 5 (2014).

Landers, Dustin A., and Ann E. Stapleton. "Genetic interactions matter more in less-optimal
environments: a Focused Review for “Phenotype uniformity in combined-stress environments has a
different genetic architecture than in single-stress treatments”(Makumburage and Stapleton, 2011)."

Stapleton, A. E. (2014) A biologist, a statistician and a bioinformatician walk into a conference
room… and walk out with a great metagenomics project plan. Opinion review. Frontiers in Plant

Yishi Wang, Susan J. Simmons, Latasha L. Smith and Ann E. Stapleton (2104) A novel metric
distance on registered curves with application to a Fourier transform-infrared spectroscopy analysis
international journal, not ISI-listed, ISSN 0019-6363)

Makumburage, GB, Kandianis, CB, Michenfelder, AS, Simmons, SJ, Grusak, MA and
Stapleton, AE (2013) Abiotic stress growth conditions induce different responses in kernel iron
concentration across genotypically distinct maize inbred varieties. Frontiers in Plant Science

Makumburage, G. B., Richbourgh, H. L., LaTorre, K. D., Capps, A., Chen, C., and Stapleton, A.
E. (2013). Genotype to phenotype maps: multiple input abiotic signals combine to produce growth
effects via attenuating signaling interactions in maize. G3 Genes Genomes Genetics 3, 2195–2204.


d.  Presentations (since 2007)


I taught an iPlant tools and services workshop at Linfield College, OR Jan 31-Feb1 2014; I presented the genetic analysis modules.

Lawson, Peter and Stapleton, Ann E. Presentation at the 55th Annual Maize Genetics Meeting March 2013. St. Charles, IL

Stutts, Lauren and Stapleton, Ann Presentation at the 55th Annual Maize Genetics Meeting March 2013. St. Charles, IL


I gave an invited talk for CI Days at Michigan State University on October 26, 2012 entitled Better Data Analysis for Biologists: Help Build the Factory, Not Just the Tools.

I gave an invited talk Northern Arizona University Jan 31, 2012 on phyllosphere diversity genetics.

Presentation given at Oregon State University Aug 2011 “What can iPlant do for me right now?”


Smith, Latasha and Stapleton, Ann E. Drought and Genotype Affect Maize Phyllosphere Communities Presentation at the 54th Annual Maize Genetics Meeting March 2012. Portland, OR


I presented a public talk on the science as compared to perception of GMOs in the Dosher series in October 2011, http://prezi.com/qnp1ghcy7zmt/sea-gmo-talk/.

Presentation at the 2011 Gordon Conference on Quantitative Genetics and Genomics: Combining two stresses creates a joint-stress environment that has a different genetic architecture G. Buddhika Makumburage2 H. Lee Richbourg2, Cuixian Chen, Andrew Capps2, Kalindi LaTorre1, and Ann E. Stapleton

Presentation at Keystone Abiotic Stress and Global Agriculture meeting: Combining two stresses creates a joint-stress environment that has a different genetic architecture G. Buddhika Makumburage2 H. Lee Richbourg2, Cuixian Chen, Andrew Capps2, Kalindi LaTorre1, and Ann E. Stapleton
I gave an invited talk at the Phyllosphere 2010 conference, “Host effects on the composition of the microbial community”.

I gave an invited talk at the International Workshop on Postharvest Biological Control: Challenges and Opportunities; my title was ‘Genetic Control of Plant Microflora’. I also facilitated the new research directions planning session.

I gave an invited talk at East Carolina University titled “Genetic Control of Maize Phyllosphere Diversity” in 2010.

In 2009 I presented seminars about iPlant data analysis and compute resources at University of Missouri Columbia, University of Missouri St. Louis, New York University, Colorado State University, Rice University, and Portland State University.


UNCW Sigma Xi keynote speaker, April 23 2009

SAIL 09 May 13, 2009 Science Librarian conference invited speaker, topic: cyberinfrastructure and data lifecycles.

Poster presentation: “Genetic Architecture of Multiple Stress Responses in Maize” Cuixian Chen, H. Lee Richbourg, Ann E. Stapleton Gordon Conference on Quantitative Genetics and Genomics, Galveston Island, TX

Poster presentation “Multiple Stress Dose Response Comparison of Two Genotypes” Kalindi LaTorre, Susan J. Simmons, Ann E. Stapleton 51th Annual Maize Genetics Meeting, Feb 27-Mar 2, 2009 St. Charles, IL


Poster presentation “Coming of Age of the iPlant Collaborative” Stapleton, Ann E ; Steve Goff, The iPlant Collaborative 51th Annual Maize Genetics Meeting, Feb 27-Mar 2, 2009 St. Charles, IL

e. Grants (since 2007)

NSF BIO PGRP PI Stephen Howell, Iowa State University, CoPIs Diane Bassham, ISU, Federica Brandizzi, Michigan State University, Ann E. Stapleton, UNCW Role of the unfolded protein response in environmental stress tolerance in maize. 12/1/2015-12/31/2017 UNCW subcontract $381,156, in review.
Gordon and Betty Moore Foundation, Data-Driven Discovery Investigator Competition, PI Ann E. Stapleton Tying networks together: tighter connections between bottom-up simulations and data analysis method development to better predict biological system function. Not funded (success rate 93/1095).


I was a collaborator on an NSF proposal from the University of Missouri, PI Toni Kazic, which was not funded.

The NIH and USDA conference grants I wrote in February and March 2014 for the Gordon Research Foundation are in review.

Genetic Architecture of Combined Drought And Ultraviolet Radiation Stress Responses In Maize, USDA CSREES NRI, University of North Carolina at Wilmington, $293,209, 12/15/2008 – 12/14/2013.

NSF PGRP PI Ann E. Stapleton, coPIs Barbara Methe, JCVI, Brad Goodner, Hiram College, Stuart Gordon, Presbyterian College GEPR Plant host control and feedback responses to phyllosphere microbes: Change in metagenomes and plant traits in response to environmental stress. $601,475. Current. I am the supervisor of all grant activities, with coPI Methe responsible for sequencing and annotation and coPIs Goodner and Gordon responsible for educational modules for undergraduate classroom and labs.

NSF PSCIC PI S. Goff, University of Arizona The iPlant Collaborative: A Cyberinfrastructure-Based Community for a New Plant Biology $50 million renewal for five years. UNCW subcontract $626,997 Stapleton role: Education, Outreach and Training, Genotype-to-Phenotype Science, including supervision of genotype-to-phenotype data analysis method integration, supervision of UNCW undergraduate and graduate students, and strategic planning across the project.

UNCW International Programs Faculty Travel Award, $1000, 5/21/13.

UNCW eTEAL proposal: Getting Ready for Applied Learning—Developing Teaching Assistant Training Modules to Prepare Undergraduates for Applied Learning in Research Laboratories, not funded.

PEER NSF NAS partnership program (with my NSF PGRP grant): PROINPA Collaborative Proposal “Quinoa and drought: can leaf microbial diversity play a role in drought tolerance?”, funds for Bolivian graduate students to visit UNCW to learn phyllosphere analysis methods. Not funded.

I agreed to take over as PI for two federal grants that were previously managed by BK Song in 2012; I supervised one graduate student from the Song lab.

NSF UBM PI Stuart Borrett coPIs Michael Freeze, Susan Simmons, Marcel van Tuinen, Fred Scharf, Senior Associates Nolan McMurray and Ann Stapleton BioMaSS: biological and mathematical synergistic science. $287,311 three years. Responsible for network analysis of metabolic and gene regulation pathways--student research and classroom modules. Not funded.


UNCW International Programs 2009 $1000

NSF CDI Preliminary Proposal PI Borrett, coPIs Stapleton, Sztipanovits (Vanderbilt), Levy (GMU)
Title: CDI-TYPE I: Meta-modeling for the computational discovery of cross scale processes. Not funded.

NSF DBI SGER PI Stapleton, coPI Brown MotifGPS: Stochastic Diffusion Search For Biological Motifs $154,463 two years. Not funded.

f. Honors, Awards and Professional Service (since 2007)

Head of the vice-provost for research’s planning group for the UNCW Data Science professional science masters. The program will emphasize UNCW strengths and ties to local clinical research and environmental industries.

Awarded the first UNCW Honors Mentor award in 2012.

Chair for 2014 Maize Genetics meeting to be held in Beijing, China, with full responsibility for all program, financial and administrative details for this large volunteer-run meeting.

Served on the Committee of Visitors for the NSF. Panel member for NSF Eukaryotic Genetics, CDI, ABI, OISE, etc. Panel Member, USDA Plant Genome Program, NRICGP Plants and Environmental Adaptations Program. Acting Panel Manager, USDA RICECAPS panel. Panel Manager for $10 million USDA CAP Applied Genomics Program.


I was elected the next chair for the Quantitative Genetics and Genomics Gordon Conference; I am co-chair in 2015 and chair in 2017, then I join the past-chairs executive committee—an exclusive group! I wrote the NIH and USDA conference grants for this group, as the chair for 2015 is European.

I am an Associate Editor for Frontiers in Plant Genetics and Genomics, with Rich Jorgensen as Editor-in-Chief. I organized a Research Topic in Metagenomics for the journal, with Gane Ka-Shu Wang and Jeffery Chang as co-editors.
I reviewed a proposal for the Canadian national Killiam faculty award.

I was interviewed for an article about maize genomics that appeared in BioScience in 2012 (a professional publication from AIBS); two pictures of my UNCW students were featured in the article.

I was invited to be the discussion leader for one of the four sessions at the Quantitative Genetics and Genomics Gordon conference in 2013. I gave a presentation to introduce the topic area and provide background for the research talks that were in my session; I also selected the student and postdoc talks for my session. I was nominated for vice-chair of the conference (but luckily a European was elected, as the next conference will be in Europe).

I was inducted into the James F. Merritt million dollar club at UNCW in 2010.
Alison Rosemary Taylor
Department of Biology and Marine Biology
University of North Carolina, Wilmington
601 South College Road, Wilmington North Carolina, 28403. USA Tel: 910 962 2176,
Fax: 910 962 4096 Email: taylora@uncw.edu

EDUCATION

APPOINTMENTS
Aug 2012-Professor, Department of Biology and Marine Biology, University of North Carolina, Wilmington, USA 
Aug 2010-July 2012 Associate Professor, Department of Biology and Marine Biology, University of North Carolina, Wilmington, USA 
Jan 2007-July 2010 Assistant Professor, Department of Biology and Marine Biology, University of North Carolina, Wilmington, USA 
Aug 2006-Dec 2006: Adjunct Assistant Professor, Department of Biology and Marine Biology, University of North Carolina, Wilmington, USA 
Aug 2001-Dec 2006: Marine Biological Association Research Fellow & Senior Research Fellow, Marine Biological Association, UK. 
Apr 1996-Apr 1998: Postdoctoral researcher, University of California, Davis, USA. 
Mar 1993-Sept 1993: Visiting scholar, Harvard University, USA. 
Jan 1990-Feb 1993: Postdoctoral researcher, Marine Biological Association, UK. 

PUBLICATIONS—Students and post-docs in BOLD


**INVITED PRESENTATIONS**

7. Taylor, A.R. Rush School of Medicine, Rush School of Medicine, Chicago, ‘Signaling and homeostasis in marine protists: Unraveling ecophysiological and cellular responses to
environmental cues’ October


13. Taylor, A.R. ‘Membrane transport and signaling in algae-ecophysiological implications and evolutionary insights’ 9th International Plant Molecular Biology Congress, St Louis, MO, USA, October 25th-30th 2009


18. Taylor A.R., ‘The diatom action potential-environmental sensing and ecological significance’ IFM-GEOAR, Kiel University, Germany, June 27th 2008


20. Taylor, A.R. Emiliania huxleyii pre-annotation discussion meeting, Station Biologique, Roscoff, France. March 19th-20th 2007


PRESENTATIONS AT CONFERENCES


19. Taylor, A.R. ‘Membrane Transport and Signaling in Marine Protists–A Key Step in Understanding Environmental Physiology’. International Society of Protistologists, North American Section Meeting, Roger Williams University, Bristol, Rhode Island, June 11-13 2009
27. Al-Said, T., Schroeder, D. Taylor, A. & Achterberg, E. ‘The role of *E. huxleyii* viruses in copper cycling’ ASLO Ocean Sciences Meeting, Orlando, Florida, USA, 2\textsuperscript{\textdegree} -7\textsuperscript{\textdegree} March 2008
28. Al-Said, T., Schroeder, D., Taylor, A.R., & Achterberg, E. ‘The role of coccolithoviruses in trace metal speciation’. Algal Virus Workshop 5\textsuperscript{\textdegree} meeting Vancouver, 6\textsuperscript{\textdegree}-11\textsuperscript{\textdegree} July 2008

31. McClachlan DH, Taylor AR, Underwood GJ, Geider R & Brownlee C. ‘Calcium signalling in the regulation of gliding motility and direction reversal in a benthic diatom’. British Phycological Society Annual Meeting. Bristol, January 4\textsuperscript{\textdegree}-7\textsuperscript{\textdegree} 2008
33. Brownlee, C., Taylor, A.R., & Verret, F. ‘Functional characterisation of diatom voltage activated ion channels’. Diatoms final meeting, Eilat, Israel, November 22-25\textsuperscript{\textdegree} 2007

**RESEARCH GRANTS AWARDED**


5. **NERC U.K.** ‘H fluxes in phytoplankton - a mechanistic and modeling study of their physiological roles and community responses to ocean acidification’. Standard grant Glen Wheeler (Plymouth Marine Laboratory, PI) Prof Brownlee (Marine Biological Association, UK, Co-I) Alison Taylor (named visiting investigator). August 2012-September 2015, $638,000, ($29,000 to UNCW).

6. **UNCW Grant Writing Incentive Program** Taylor A.R. November 2012, $3,600.


8. **UNCW International Faculty Travel Award**. May 2012, $1,000.


10. **NSF: REU supplement** Alison Taylor (PI), Feb 2010-Jan 2013, $8,500.


**HONORS**

2014 Shortlisted for Hilda Carter-Lund Prize; British Phycological Society.

2012 Inducted into UNCW Million Dollar Club (grants and extramural awards secured)

2012 Nominated for UNCW College of Arts and Sciences Faculty Research Scholar Award

2011 Guest lecturer and tutor, International Cell Physiology Workshop, Marine Biological Association, UK, September 7-20

2011 Nominated for UNCW Distinguished Faculty Scholar Award

2010 Student award-Mr Brandon Drescher won best student oral presentation. South Eastern Phycological Colloqy. 2010

2010 Guest editor for special issue of *New Phytologist* accompanying publication of the *Ectocarpus* genome

2009 Invited Plenary-41st Sandjberg Meeting on Membrane Transport, University of Aarhus, Denmark.
2009 2008 Kiel Week Guest-University of Kiel and Institutes of Physiology and Marine Science

IFM-GEOMAR. Invitation to participate in Kiel Week Science and Cultural Festival. 2007-
2008 Appointed to the Editorial Advisory Board of the journal New Phytologist 2007-Visiting Senior
Fellowship Awarded by the Marine Biological Association 2007 Kathleen Drew-Baker Prize-Best
paper published in European Journal of Phycology.

PROFESSIONAL and UNIVERSITY SERVICE

Phycology, Limnology and Oceanography Biofouling, Marine Biotechnology, Journal of the Marine
Biological Association, UK, Protoplasma, Journal of Experimental Botany

 (>45 to date) 2014-2015 UNCW-ECU Joint PhD in Coastal and Marine Science Planning
Committee 2014 Steering committee-OCB Workshop: Improving predictive biogeochemical models
through single cell-based analyses of marine plankton physiological plasticity, genetic
diversity and evolutionary processes. Bigelow Laboratory for Oceans Sciences, USA. 2014 Grant
reviewer for NSF Antarctic Organisms & Ecosystems (AOE) Program 2013-pres Director of UNCW
Microscopy Facility 2013 Grant reviewer for NSF Molecular and Cellular Biosciences Program (multiple)
2013 Grant reviewer for NSF Biological Oceanography; Ocean Acidification Program 2013-2014 UNCW
Search Committee for Associate Provost and Dean of Graduate School 2012 Review panel member NIEHS
Oceans and Human Health Program, Chapel Hill, NC. 2011 Grant reviewer for ‘Future Oceans’ cluster of
excellence, CAU, Kiel, Germany. 2011 Grant reviewer for NSF International Research Experience for
Students (IRES) program 2011 Grant reviewer for MBA Peter Baker Fellowship 2010-2012 UNCW
University Studies Implementation Committee 2010 Grant reviewer for NERC Ocean Acidification Panel
2009 Grant reviewer for NSF Plant Fungal and Microbial Development panel RUI. 2008 Invited review of
The Plant and Microbial Science Committee Responsive mode portfolio

of the Biotechnology and Biological Sciences Research Council, UK. 2008 Grant reviewer for Natural
Environment Research Council, UK 2008-2013 Faculty Leader for UNCW-University of Southampton
Exchange Field Course, Bermuda. 2007-pres. Appointed Editorial Advisory Board member for the Journal
New Phytologist 2007 Grant Reviewer for Biotechnology and Biological Sciences Research Council, UK
2007-pres Departmental service including the following committees: multiple searches (1 chaired),

Long Range Plan, Chairs Advisory, Undergraduate Assessment, Advancement and
Student Relations, Post Tenure Review, Peer Review, Assessment Review. 2007-pres 20
Undergraduate DIS or Honors students mentored, 8 undergraduate thesis committees. 2007-pres 5
Graduate students mentored, 23 Graduate student committees
Carmelo R. Tomas
Center for Marine Science
University of North Carolina Wilmington
5600 Marvin K. Moss Lane
Wilmington, NC 28409
Phone: 910-962-2385
Fax: 910-962-2410
E-mail tomasc@uncw.edu

Education:
American International College  B.A.  Biology   1964
University of Rhode Island,  B.S.  Botany   1971
University of Rhode Island  Ph.D.  Biological Sciences 1977

Appointments
2004-present  Professor, Dept. of Biology and Marine Biology, University of North Carolina
Wilmington, NC.
1999-2004  Associate Professor, Dept. of Biology and Marine Biology, University of North Carolina, Wilmington, NC
1986-1999  Research Scientist, Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute, St. Petersburg, FL
1982-1986  Head of Marine Botany, Zoological Station, Naples, Italy
1980-1982  Marine Scientist, Graduate School of Oceanography, URI, Kingston, RI
1979-1980  Fulbright Hays Fellow – Zoological Station, Naples, Italy
1977-1979  Research Associate, Graduate School of Oceanography, URI, Kingston, RI (Post Doctoral Fellow)
1971-1977  Research Assistant and Doctoral Student, GSO, URI, Kingston, RI

I. Pertinent Publications (Partial list of 82 total)


**Synergistic Activities:**


2. Harmful Algal Culture Collection – 1999-present. Establish and maintain over 500 clonal cultures of harmful marine microalgae for studies on physiology, ecology and chemistry of bioactive compounds. Serves as a collaborative tool for graduate students, national and international researchers.

3. Development of mass cultivation photobioreactors for biological studies of active compounds. This is done in conjunction with a local commercial partner (IKA Works).

4. Collaborative research involving genetics and detection of harmful species via qpcr probes with colleagues from NOAA Beauford Laboratory (W. Litaker).

5. Development of presentations for undergraduate and graduate students studying biology, taxonomy and ecology of harmful algal species. Includes help and guidance in High School and K-12 Marine Quest Program at CMS – UNCW.

**Collaborators:**

Andersson, Donald
Baden, Daniel
Barreto, Filipe
Bailey, J. Craig
de Boer, Karin
Eikrem, Wenche
Giner, Jose
Hasle, Grethe
Litaker, Wayne
Mangoni, Olga
Shumway, Sandra
Song, B.K.
Steidinger, Karen
Thordsen, Jahn
Wilson, William
Wright, L.C.
Von Wagnor, Ryan
Zingone, Adriana

WHOI, Massachusetts
UNCW – CMS
USC
UNCW – CMS
University of Groningen, Netherlands
Univ. of Oslo, Norway
SUNY Syracuse
Univ. of Oslo, Norway
NOAA, Beaufort NC
Univ. of Naples, Italy
Univ. Connecticut
UNCW – CMS
Florida Wildlife Research Institute
Univ. of Oslo, Norway
Bigelow Laboratory for Ocean Studies (CCMP collection)
UNCW - CMS
University of Utah
Stazione Zoologica, Naples, Italy

529
Present Graduate Students
Danielle Silver  Masters in Marine Science – mentor
Monica Catanach  Masters in Marine Science – mentor
Michael Eceheverria  Ph.D. Marine Biology – committee member
Amy Barbera  Masters in Chemistry – committee member
Nicholas Fowler  Masters in Marine Science – committee member
Anette Engesmo  Ph.D. Marine Biology, Univ. Oslo, committee member

Former STUDENTS
Debora Cedeño Maldonado (Ph.D.)  Univ. Puerto Rico
Michelle Gomperts (Saboun) MS  Brunswick Community College, Instructor
Melissa Clouse MS  Old Dominion University, VA (Research Associate)
Tyler, Cyronak, MS  Univ. Southern Cross, Australia (Ph.D)
Danelle Lekan, MS  Univ. Wellington, NZ (Ph.D.)
Avery Tatters, MS  Univ. Southern California (Ph.D.)
Reger, Robert MS  NIH Bethesda, MD
Leigh Zimmermann, MS  Knauss Fellow and NOPP - Program Coordinator
Joann Kelly MS  PPD Richmond VA, Research Scientist
Erika Swartz, MS  U. Texas at Austin (Ph.D.)
Michelle Stewart, MS  U. Maryland (Research Associate)
William C. Holland, MS  NOAA Laboratory, Beaufort, NC

Thesis Advisor, Smayda, Theodore  URI, Graduate School of Oceanography

Present Activities
Univ. Puerto Rico
Brunswick Community College, Instructor
Old Dominion University, VA (Research Associate)
Univ. Southern Cross, Australia (Ph.D)
Univ. Wellington, NZ (Ph.D.)
Univ. Southern California (Ph.D.)
NIH Bethesda, MD
Knauss Fellow and NOPP - Program Coordinator
PPD Richmond VA, Research Scientist
U. Texas at Austin (Ph.D.)
U. Maryland (Research Associate)
NOAA Laboratory, Beaufort, NC

Brief History of International Experience - Activities in chronological order:
1977 – Cruise Leader, University of Rhode Island, Graduate School of Oceanography, Led 25 scientific crew to the Campeche Banks, Mexico including two Mexican nationals/students. Involved arrangements for Mexicans to participate on a US ship in Mexican waters.
1979-1980 – Fulbright Hays Fellow to the Zoological Station, Naples Italy. This Marine Biological Station founded in 1873 has been continuously operating through the initial opening. I worked with an ecology group studying the Gulf of Naples and the blooms there. While there, I interacted in scientific projects, gave seminars, instructed staff and co scientist. I was fluent in Italian and attended two national scientific meetings in mainland Italy and Sardinia.
1979 – While as a Fulbright Hays fellow I was invited to give research seminars to the scientist at the Laboratoire de Endoume, in Marseilles, France.
1982-1986 I became a resident scientist in charge of the marine botany laboratory at the Zoological Station in Naples, Italy. I led a staff of 10 people (Italian nationals) and a variety of visiting scientist from various countries. Prof. Fritz Kapraun was one of the visitors while in Naples. As was the custom at Stazione, visitors from all over Europe and Asia came for short or protracted research visits. One of these was Prof. Alfredo Soler B. from Panama (Dean of the Limnology and Oceanographic Laboratory) in Panama. Prof. Soler stayed for 3 years.
1983 – I attended the prestigious International Course on Identification of Marine Phytoplankton (APC3) Oslo, Norway. I was one of 20 participants in this three week training course and was given the opportunity to teach specialized techniques with phytoplankton species. (APC3)
1985 – As head of the Marine Botany Laboratory at the Zoological Station, Naples, I was able to arrange to relocate the International Course from Oslo to Naples. As principal organizer, I was in charge of logistics for the international attendees as well as faculty, procurement of funds, interface with the staff at Zoological Station. We had 22 participants from 14 different countries for the 3 week workshop/course. (APC 4)
1986 – Returned to US at the Florida Research Institute and participated in EPA Gulf of Mexico program which again interacted with Mexican scientist from Vera Cruz.
1988 Seminar on Red Tides and Mortality of Marine Organisms in the Caribbean. July 2-9, Cumaná, Venezuela
1990 – International Phytoplankton Identification Course, APC5 June 7-28. Casa Micchola, Ischia (Naples) Italy. Faculty/organizer
1996 – 1st Gulf States Harmful Algae Taxonomy Workshop – June 7-14, FWC St. Petersburg Florida (with participants from Mexico)
2007 - 2nd Gulf States Harmful Algae Taxonomy Workshop – FWC St. Petersburg Florida (with participants from Mexico
2000 - Course on HAB identification – University of Copenhagen, Denmark. Faculty.
2000 – Advanced Phytoplankton Course APC7, May 8-28, Zoological Station A. Dohrn, Naples, Italy
2005 - Advanced Phytoplankton Course APC8 International Phytoplankton Course, May 4-15, Zoological Station, A. Dohrn, Naples, Italy
2008 – 2nd Gulf States Regional Harmful Algae Taxonomy Workshop, Jun XXX South Padre Island, Texas (sponsored by the Texas Parks and Wildlife Commission. (participants from Mexico included).
2009 - Advanced Phytoplankton Course 9th International Phytoplankton Course, May 10-29, Naples, Italy
2009 - Invited speaker and visiting scientist to the Lagoon Ecology Program, Jun 22, University of Sassari, Sardinia, (Italy).
2009 – 3rd Gulf States Regional Harmful Algae Taxonomy Workshop, St Petersburg, FL
2009 – 1st International Phytoplankton Identification Course, 6-17 July, Marine Biological Association Laboratory, Plymouth, UK.
2009 - Course/workshop on the detection, Identification and Quantification of Harmful Algal Blooms and other species of phytoplankton in the coastal waters of the Gulf of Mexico., Nov. 30 – Dec., Campeche, Mexico, Sponsored by US EPA Gulf of Mexico Program.
2011 – Binational Mexico-USA Course/Workshop on Taxonomy of Harmful Algal Bloom, Feb. 7-11, Merida Mexico. Sponsored by US EPA Gulf of Mexico Program.
2011 – Algal Culturing Techniques Course, Jun. 6-11 National Culture Collection of Marine Phytoplankton, Bigelow, Maine (Participants from US, Canada, India, Korea).
2012 – 2nd International Phytoplankton Identification Course, July 1-14, Marine Biological Association Laboratory, Plymouth, UK
2012 – Advanced Phytoplankton Course APC10, Nov 12-23, University of Copenhagen, Denmark.
BRIEF CURRICULUM VITA

Wm. David Webster
Department of Biological Sciences
University of North Carolina Wilmington
Wilmington, NC 28403-5915
Phone: 910/962-3756   FAX: 910/962-4066

EDUCATION:
University of North Carolina at Wilmington: B.S. in Biology, 1976
Michigan State University: M.S. in Zoology, 1978
Texas Tech University: Ph.D. in Zoology, 1983

PROFESSIONAL EXPERIENCE:
Associate Dean, College of Arts and Sciences, UNCW
2006-present
Professor, Member of the Graduate Faculty, Director of the Vertebrate Collections,
and Curator of Mammals, Department of Biological Sciences, UNCW
1993-present
Director of the Vertebrate Collections, UNCW
1998-present
Affiliate Member of the Graduate Faculty, Western Carolina University
1998-2007
Research Associate, Virginia Museum of Natural History, Martinsville, VA
1995-2009
Adjunct Associate Professor and Member of the Graduate Faculty, Department of
Marine, Earth, and Atmospheric Sciences, North Carolina State University
1991-1994
Coordinator, Environmental Studies Program, UNCW
1990-1995
Associate Professor, Member of the Graduate Faculty, and Curator of Mammals,
Department of Biological Sciences, UNCW
1989-1993
Tenure awarded, Department of Biological Sciences, UNCW
1989
Assistant Professor, Member of the Graduate Faculty, and Curator of Mammals,
Department of Biological Sciences, UNCW
1983-1989
Member of seven professional societies and seven advisory boards

AWARDS AND COMMENDATIONS:
UNCW Distinguished Teaching Professor Award
2006
UNCW Chancellor’s Teaching Excellence Award
2005
BOOKS PUBLISHED:

CHAPTERS IN BOOKS: 18

OTHER PEER-REVIEWED PUBLICATIONS: 59

Journal of Mammalogy  Journal of Wildlife Management
Mammalian Species  Canadian Journal of Zoology
American Midland Naturalist  Holarctic Ecology
Journal of Mammalian Biology  Southwestern Naturalist
Journal of Wildlife Diseases  The Canadian Field-Naturalist
Mammalia  Herpetological Review
American Museum Novitates  Occasional Papers, The Museum, Texas Tech University
Texas Academy of Science  Museo Nacional Historia Naturales de Bolivia, Communicacion
Jeffersoniana  Association of Southeastern Biologists Bulletin
American Journal of Tropical Medicine  Journal of the North Carolina Academy of Science
and Hygiene  Journal of the Elisha Mitchell Scientific Society
Brimleyana

GRANTS AND CONTRACTS AWARDED: 55 for $518,764

National Science Foundation  U.S. Fish and Wildlife Service
U.S. Geological Service, SAR Program  National Park Service
U.S. Forest Service  U.S. Army Corps of Engineers
Natl. Estuarine Research Reserve, NOAA  U.S. Air Force
Cape Lookout National Seashore  The Nature Conservancy
Cape Hatteras National Seashore  N.C. Dept. Environ. & Nat. Resources
N.C. Wildlife Resources Commission  N.C. Natural Heritage Program
N.C. Department Transportation  Virginia Game and Inland Fisheries
Coastal Zone Resources, Inc.  N.C. Academy of Science
Duke Energy  Langley and McDonald, P.C.
Society for Masonboro Island, Inc.  UNCw Faculty R&D Fund
Thorpe Group of Companies, Inc.  New Hanover County, NC
Roosevelt Memorial Fund, AMNH, NY

PAPERS PRESENTED OR ABSTRACTS PUBLISHED: 81

GRADUATE RESEARCH DIRECTED:
J. E. Williams. In progress. Bat diversity across a landscape gradient.
A. M. Cherry Millis. In Progress. The timing of sexual maturation in the eastern red bat (*Lasiurus borealis*) and evening bat (*Nycticeius humeralis*).


S. J. Hutchinson. 2010. Phylogeography of *Cryptotis parva* in the United States using morphometrics and population genetics.


D. R. Rabon, Jr. 1999. Infant ultrasonic vocalizations in two species of voles (*Microtus*).


B. E. Gurshaw. 1996. Protein electrophoresis and allozymic differentiation in two subspecies of the southeastern shrew (*Sorex longirostris*).


**HONORS RESEARCH DIRECTED: 17**
CURRICULUM VITAE
ANDREW JOHN WESTGATE

Education

Appointments
Research Assistant Professor
Biology and Marine Biology
University of North Carolina Wilmington
Wilmington, NC U.S.A. 28403
estgatea@uncw.edu
Phone: 910-962-2783

Senior Marine Biologist
Grand Manan Whale and Seabird Research Station
24 Route 776
Grand Manan, NB, Canada, E5G 1A1

Research Collaborator
National Museum of Natural History
Smithsonian Institution
Division of Mammals
P.O. Box 37012
Washington, D.C.
20013-7012

Publications


in the lower Bay of Fundy, Canada. PLoS ONE 8(12): e82074. doi:10.1371/journal.pone.0082074

2013 McKinstry, C. A. E., Westgate, A. J., Koopman, H. N. Annual variation in the energy content and lipid composition of the copepod Calanus finmarchicus from the Bay of Fundy, Canada. Endangered Species Research


Book Chapters:

Presentations:
2014 Lonati, G. L., Westgate, A. J., and Koopman, H. N. Nitrogen solubility related to lipid composition in toothed whale fats. Society for Integrative and Comparative Biology meeting, Austin TX Jan 3-7. This presentation was awarded the DCPB Jeffrey B. Graham student presentation award.
of the copepod, *Calanus finmarchicus* from the Bay of Fundy, Canada. 2009 SEAMAMMS meeting (Southeast and Mid-Atlantic Marine Mammal Symposium), Wilmington, North Carolina, April 3-5, 2009.


**Scientific Funding**

2012 Nitrogen solubility in adipose tissues of diving animals: implications for human divers and for modeling diving physiology. $446,553. PI's: Koopman, H.N. and Westgate, A.J.


2008 Navigating to the most remote place on Earth: marine habitat use, migration patterns, and seasonally variable niche partitioning of Atlantic shearwaters. Westgate, A.J., Ronconi, R.A. National Geographic Society. $21,000 from Jan. 2008 to Jan 2010.

**Graduate Student Committee Member**

*as a Research Professor, I am not eligible to be the Chair [official supervisor] of graduate student committees, however I have been heavily involved in managing the projects and theses of Swaim, McKinstry, McClelland, Siders, Lonati, and Gabler*

Lisa Hollensend UNCW Ph.D
Molly Gabler UNCW Ph.D
Gina Lonati, UNCW, M. Sc.
Zach Siders, UNCW, M.Sc.
Sarah McClelland, UNCW, M.Sc.
Zachary Swaim, UNCW, M.Sc.
Caitlin McKinstry, UNCW, M.Sc.
James Casey, UNCW, M.Sc.
Jessica Snoddy, UNCW, M.Sc.
Brian Balmer, UNCW, Ph.D.
Reviewer
Canadian Journal of Zoology
Fishery Bulletin
Marine Mammal Science
Environmental Pollution
Journal of Zoology, London
Acta Theriologica
Marine Biology
Endangered Species Research
Polar Biology
J. WILSON WHITE

EDUCATION

2007 Ph.D. Ecology, Evolution, & Marine Biology
University of California, Santa Barbara

2000 B.S. Biology (with honors); magna cum laude
Davidson College, Davidson, NC.

APPOINTMENTS

2010- Assistant Professor
Dept. Biology & Marine Biology, University of North Carolina Wilmington

2007-2010 Postdoctoral scholar
Dept. Wildlife, Fish, & Conservation Biology and Bodega Marine Laboratory,
University of California, Davis

PUBLICATIONS (since 2007)
(UNCW graduate students in bold)

PEER-REVIEWED
reconciling large-scale dispersal and high self-retention. American Naturalist, in press

California, USA. In: Advances in Marine Biology: Marine Managed Areas and Fisheries,

42. Wang HY, Botsford LW, White JW, Fogarty MJ, Juanes F, Hastings A, Holland MD,
Brander K (2014) The influence of temperature on life histories sets the sensitivity of
Atlantic cod, Gadus morhua, to fishing. Marine Ecology Progress Series, in press

41. White JW, Morgan SG, Fisher JL (2014) Planktonic larval mortality rates are lower than
widely expected. Ecology, in press DOI: 10.1890/13-2248.1

information in the static optimization of marine reserve design. Conservation Letters, in
press DOI 10.1111/conl.12097

patch from the predator's perspective. Oecologia 174: 723-729

use statistical significance tests to interpret simulation model results. Oikos 123: 385-389


*SUBMITTED IN REVIEW*

McCarthy EK, White JW. Density-dependent prey mortality is determined by the spatial scale of predator foraging. In review, *Biology Letters*.

White JW. Marine reserve design theory for species with ontogenetic migration. In

Heintz MM, Brander SM, White JW. Endocrine disrupting compounds alter risk-taking behavior in fish (*Poecelia reticulata*). In review, *Ethology*

**PRESENTATIONS**

**INVITED PRESENTATIONS BY J. WILSON WHITE**

2014 School of Forest Resources and Conservation, Univ. of Florida, Gainesville, FL
2014 Dept. of Biology, University of North Carolina, Chapel Hill, NC
2012 Presidential Symposium, Western Society of Naturalists annual meeting, Seaside, CA
2012 Moss Landing Marine Laboratories, Moss Landing, CA
2012 Ecology & Evolution Seminar Series, Rutgers University. New Brunswick, NJ
2012 Institute of Marine Science, University of North Carolina. Morehead City, NC
2011 Dept. Biological Sciences, University of Toronto Scarborough. Toronto, ON, Canada
2011 North Carolina State University Center for Marine Sciences and Technology. Morehead City, NC
2011 NOAA Center for Coastal Fisheries and Habitat Research. Beaufort, NC
2010 Dept. of Biological Science, Florida State University, Elise B. Newell Seminar Series. Tallahassee, FL
2010 Coastal & Marine Laboratory, Florida State University, Elise B. Newell Seminar Series. St. Theresa, FL
2009 California Cooperative Oceanographic Fisheries Investigations (CalCOFI) Symposium. Asilomar, CA
2009 California Marine Life Protection Act Initiative. Oxnard, CA; Carlsbad, CA.
2009 Dept. of Biology and Marine Biology, University of North Carolina Wilmington. Wilmington, NC.
2008 Center for Population Biology, UC Davis. Davis, CA.
2008 California Marine Life Protection Act Initiative.. El Segundo, CA.
2008 Science and Technical Advisory Committee, Oregon Ocean Policy Advisory Council (OPAC). Charleston, OR.
2007 Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) Scientific Symposium. Corvallis, OR.

**RECENT CONTRIBUTED PRESENTATIONS**

(Presenting author underlined; Graduate student authors listed in **bold**)


Dingeldein, A., White, J.W. 42nd Benthic Ecology Meeting, Savannah, GA, "To be or not to be (in a group)? Larval traits influence group-joining behavior in a coral reef fish" (March 2013).

White, J.W., Botsford, L., Moffitt, E., Nickols, K., Barnett, L., Baskett, M., Hastings, A. State of the California Central Coast Symposium, California Ocean Science Trust, Monterey, CA, "Expected population responses to the implementation of MPAs on California’s Central Coast" (February 2013).

Nickols, K., White, J.W., Botsford, L., Malone, D., Carr, M., Barnett, L., Baskett, M., Hastings, A. State of the California Central Coast Symposium, California Ocean Science Trust, Monterey, CA, "Interpretation of population observations from the first 5 years of MPA monitoring in Central California" (February 2013).


PUBLIC SEMINARS
2014 Cape Fear Flyfishers, Southport, NC
2013 Osher Lifetime Learning Institute, Univ. North Carolina Wilmington
2012 College Day, Univ. North Carolina Wilmington

GRANTS

2013 Florida Department of Environmental Protection. Florida’s imperiled Apalachicola oysters: paired experimentation, monitoring, and modeling to understand collapse of oyster reefs and to promote recovery. (with co-PIs D. Kimbro and C. Stallings) (UNCW portion: $109,753)

2013 UNCW eTEAL Pedagogy Initiative. Collaborative learning of population models for conservation biology. ($3500)
2013 NC Sea Grant. Population connectivity of southern flounder in the U.S. South Atlantic. (with co-PI F. Scharf) ($97,955)

2013 Florida Sea Grant. Installation of an oyster-reef monitoring framework throughout Apalachicola Bay, FL, to understand declining oyster landings and alternative management strategies. (with co-PI D. Kimbro) ($10,000)

2012 NC Division of Marine Fisheries. An acoustic tagging study to evaluate migration dynamics and within-estuary habitat use of southern flounder (Paralichthys lethostigma) in North Carolina. (with co-PIs F. Scharf, C. Collier, and C. Batsavage) ($227,989)

2011 NC Sea Grant. Spatial approaches to managing ontogenetically migrating fishes. ($27,000)

2011 UNCW Center for Marine Science Pilot Grant. Scaling up endocrine disruption effects in the Lower Cape Fear: from individual behavior to population dynamics. (with co-PI S. Brander) ($34,978)

2010 UNCW Cahill Research Award ($2880)

2009 California SeaGrant. Adaptive management of marine protected areas: predicting responses to MPA implementation for comparison to monitoring data (with PIs L. Botsford, M. Baskett, and A. Hastings) ($197,000)

2008 Resources Legacy Fund Foundation. Population modeling support for the California Marine Life Protection Act Initiative (with PI L. Botsford) ($65,000)

**HONORS, AWARDS, AND PROFESSIONAL SERVICE**

Guest Subject Editor: *Ecological Applications* (4 times)


Grant Reviewer: California Sea Grant, NSF Comparative Analysis of Marine Ecosystem Organization program (2), NSF OCE, International Marine Conservation Congress, Agence Nationale de la Recherche – Programme la 6ème Extinction, NMFS MARFIN program

Ad hoc Reviews: NMFS Endangered Species Act status review, NMFS California Current Integrated Ecosystem Assessment review
Panelist: NOAA Aquarius Reef Base grant program

Organizer: CalCOFI Symposium, "Forecasting fishery productivity in the California Current" (2009)


Society Member: Ecological Society of America, Benthic Ecology Society
1. Ami Elizabeth Wilbur  
Department of Biology and Marine Biology  
Center for Marine Science

2. Education  
University of Delaware, Lewes, DE    Ph.D. 1995 Marine Biology  
University of South Carolina, Columbia, SC    M.S. 1987 Biology  
University of North Carolina Wilmington, Wilmington, NC  B.S. 1985 Biology

3. Appointments  
Director, 2009- ,  
Shellfish Research Hatchery, Center for Marine Science, University of North Carolina Wilmington  
Associate Professor, 2005- ,  
Department of Biology and Marine Biology, University of North Carolina Wilmington  
Assistant Professor, 1999-2005  
Department of Biology, University of North Carolina Wilmington, Wilmington, NC  
Postdoctoral fellow, 1997-1999  
Florida Marine Research Institute, St. Petersburg, FL  
Postdoctoral fellow, 1996  
University of Delaware, Lewes, DE  
Assistant Professor, 1993-1994  
Department of Biology, Salisbury State University, MD

4. Publications since 2007  


Bert, TM, WSArnold, ALMcMillen-Jackson, AEWilbur & CCrawford. (2011) Natural and anthropogenic forces shape the population genetics and recent evolutionary history of eastern USA bay scallops (Argopecten irradians) Journal of Shellfish Research 30(3):583-608


Hemond E and AEWilbur (2011) Microsatellite loci indicate population structure and selection between Atlantic and Gulf of Mexico populations of the Bay Scallop, Argopecten irradians. Marine Ecology Progress Series 423:131-142
Freshwater DW, RMHamner, SParham and AEWilbur (2009) Molecular evidence that the lionfishes *Pterois miles* and *Pterois volitans* are distinct species. Journal of the North Carolina Academy of Sciences 125(2):39-46

Freshwater DW, AHines, SPArham, AEWilbur, MSabaoun, JLWoodhead, LAkins, BPurdy, PEWhitfield and CParis (2009) Mitochondrial control region sequence analysis indicate dispersal from the US East Coast as the source of the Invasive Indo-Pacific lionfish *Pterois volitans* in the Bahamas. Marine biology 156(6):1213-1221


Carnegie, RB, NAStokes, CAudemard, MJBishop, AEWilbur, TDAalhin, MHPosey, CHPeterson and EMBurreson (2008) Strong seasonality of *Bonamia* sp infection and induced *Crassostrea ariakensis* mortality in Bogue and Masonboro Sounds, North Carolina, USA. Journal of Invertebrate Pathology 98:335-343

5. Presentations since 2007


Bleier, TL, Finelli CM, Wilbur AE “Susceptibility of oysters to infection by the boring sponge *Cliona celata*” (poster presentation) Benthic Ecology meetings Jacksonville FL 19March-22March 2014

Wilbur, AE “Genetic considerations in oyster restoration” (oral presentation) N.C. Oysters: A Workshop to Chart Future Restoration, Learning from the Past 12March-13March 2014 NOAA, Pivers Island, NC


Wilbur, AE “Update on Hatchery Programs: Where are we now” (oral presentation) East Coast Shellfish Breeding Consortium, Kingston, Rhode Island 16December-17December 2013

Wilbur, AE “Update on Hatchery Programs: Where are we now” (oral presentation) Southern NC Oyster Workgroup 6August2013, Wilmington, NC

Wilbur AE “Research at UNCW’s Shellfish Research Hatchery” Osher Life Long Learning’s Wednesdays in Nature 20February 2013

Finelli C, AEWilbur, MHPosey, TAlphin (2012) "To seed or not to seed: The value of seeding restored oyster reefs for ecosystem function" 41st Benthic Ecology Meeting,


Badger C and AE Wilbur (2011) “Evaluation of the efficacy of non-lethal hemolymph sampling for the study of parasite infection in the eastern oyster, *Crassostrea virginica*” 103rd National Shellfisheries Association meeting, Baltimore, MD

Campbell J and AE Wilbur, National (2011) “Seasonality and transmission of parasites infecting *Ostrea equestris* in Masonboro Sound, North Carolina” Shellfisheries Association meeting, Baltimore, MD

Finelli C, AE Wilbur, MH Posey, T Alphin. (2011) 40th Benthic Ecology Meeting, Mobile, AL, "To seed or not to seed: The value of seeding restored oyster reefs for ecosystem function"


Betancur RR, PAcero GOrtí, AHines, AEWilbur and DWFreshwater (2010) Lionfish keep spreading throughout the Western Atlantic: mitochondrial haplotype data reveal a founder effect into the Caribbean (contributed talk) Sea American Society of Ichthyologist and Herpetologist meeting Providence RI

Wilbur AE 2010 An assessment of genetic diversity in North Carolina populations of the eastern oyster *Crassostrea virginica* using microsatellite markers (poster presentation) Benthic Ecology Meetings, March 9-12 Wilmington NC


Wilbur AE (2009) An overview of recent shellfish initiatives and activities in North Carolina” (invited presentation) National Shellfisheries Association meeting Savannah GA

Sherman MW, AE Wilbur (2009) Genetic structure of bay scallop populations in North Carolina coastal waters" (Contributed poster) National Shellfisheries Association meeting Savannah GA

Wilbur AE (2008) Genetic Considerations in Shellfish Restoration Invited Seminar, CMAST Morehead City, NC


Wilbur AE, JDGauthier, TDAlphin, MHPosey. (2008) Preliminary investigations into the occurrence of a novel parasite (Bonamia sp.) associated with the eastern oyster, C. virginica. National Shellfisheries Association meeting, Providence, RI


6. Grants
2013 Farm Bureau Award: Crop diversification for NC shellfish farmers: the sunray venus clam Macrocallista nimbosa. $5000 PI

2013 North Carolina Sea Grant BCSR Program: The distribution and impact of the oyster parasite Bonamia exitiosa on the eastern oyster, Crassostrea virginica $49,932 PI

2013 Farm Bureau Award: Evaluation of the triploid advantage in NC oysters. $5000 PI

2012 NCSG mini-grant: Validation of a quantitative PCR TaqMan assay for the molecular detection and quantification of the parasite Bonamia exitiosa in the eastern oyster Crassostrea virginica PI with RCarnegie (VIMS) $5000 PI

2012 Farm Bureau Award: A floating upweller system (FLUPSY) to augment nursery culture capacity at the UNCW Shellfish Research Hatchery $8500 PI

2012 North Carolina Sea Grant BCSR Program: “The Production and Field Testing of North Carolina Sourced Aquaculture Lines of the Eastern Oyster, Crassostrea virginica” $64,308 PI

2011 Farm Bureau Award: Field testing of hatchery-produced oyster (Crassostrea virginica) lines $10,300 PI

2010-2012 NC Sea Grant: To seed or not to seed: The Value of Seeding Restored Oyster Reefs for Ecosystem Function $119,990 Co-PI with CFinelli (lead), M Posey and T Alphin

2009 North Carolina Sea Grant BCSR Program: Evaluation of genetic differentiation and disease status of North Carolina populations of the Eastern Oyster, Crassostrea virginica $65,650

2010 UNCW Pilot Project “Equipment proposal for the start-up and evaluation of the efficacy of the culture systems at the UNCW Shellfish Research Hatchery” $30,000 (PI)


2008 UNCW Cahill Award “A preliminary evaluation of genetic structure and parasite prevalence in the crested oyster, Ostreola equestris” $2970 (PI)
Manuscript reviews for:
Journal of Shellfish Research
Aquatic Living Resources
Aquaculture Research
Biological Bulletin
Canadian Journal of Fish and Aquatic Sciences
Journal of Theoretical Biology
Aquaculture International
Marine Ecology Progress Series
Journal of Experimental Biology and Ecology
Bulletin of Marine Science

Proposal reviews for:
National Science Foundation
New Jersey Sea Grant
Florida Sea Grant
Maryland Sea Grant
Woods Hole Sea Grant
Coastal Ocean Research
Washington Sea Grant
Texas Sea Grant
North Carolina Sea Grant
Commonwealth Research Commercialization Fund (Virginia)
Virginia Sea Grant Graduate Fellowship (Panel)
Maine Agricultural and Forest Experimentation Station

Member, NCDMF Oyster and Hard Clam Fishery Management Plan Advisory Committee
Vice president, NC Shellfish Growers Association
Chair, Shellfish Hatchery Advisory Committee
Member, NC Hatchery Planning Committee (NCOHP)
Member, Brunswick Community College Aquaculture Advisory Committee
Member, Carteret Community College Aquaculture Advisory Committee
Chair, NCDMF Bay Scallop Fishery Management Plan Advisory Committee
NC Oyster Steering Committee, North Carolina Coastal Federation

Invited participant “Oyster Summit” March 12-13, 2014
Invited participant “Oyster Summit” August 28, Pine Knoll Shores, NC
Co-chair, National Shellfisheries Association student awards committee
CURRICULUM VITAE

Amanda Southwood Williard
Dept. of Biology and Marine Biology, University of North Carolina at Wilmington
601 South College Road, Wilmington, NC, USA 28403
Tel: (910) 962-4064, Fax: (910) 962-4066, e-mail: williarda@uncw.edu

Academic Qualifications

2002 Ph.D. Zoology, University of British Columbia, Vancouver, BC, Canada
(Advisor - Dr. David R. Jones)
“The effects of seasonal cold exposure on metabolism and behavior of juvenile green sea turtles (Chelonia mydas)”

1997 M.Sc. Zoology, University of British Columbia, Vancouver, BC, Canada
(Advisor - Dr. David R. Jones)
“Heart rates and diving behavior of the leatherback sea turtle (Dermochelys coriacea)”

1993 B.Sc. Marine Biology, Auburn University, Auburn, AL, USA
Magna cum laude

Current Position

Associate Professor Department of Biology and Marine Biology
University of North Carolina at Wilmington

Research Experience

2004 – 2005 Associate Researcher (Advisor – Dr. J. Yonat Swimmer)
NOAA Fisheries & The Joint Institute for Marine and Atmospheric Research, University of Hawaii
Chemical ecology of sharks and sea turtles – implications for by-catch reduction in Pacific longline fisheries

2003-2004 Post-Doctoral Fellow (Advisor – Dr. J. Yonat Swimmer)
NOAA Fisheries & The Joint Institute for Marine and Atmospheric Research, University of Hawaii
Behavioral and physiological responses of loggerhead turtles to olfactory stimuli

1994-2002 Graduate Research Assistant (Advisor – Dr. David R. Jones)
Department of Zoology, University of British Columbia
Diving physiology and thermal ecology of sea turtles

1993-1994 Principle Laboratory Technician (Supervisor – Dr. Charles Mactutus)
Tobacco and Health Research Institute, University of Kentucky
Neurological and physiological effects of tobacco smoke on pregnant mothers and their offspring

Research Experience for Undergraduates Grant (NSF), Department of Biology, Auburn University
Physiological and morphological aspects of the symbiotic relationship between zooxanthellae and the nudibranch Berghia verrucicornis

1990
Assistant Laboratory Technician (Supervisor – Dr. James Wojiehowski)
Environmental Health Research and Testing, Lexington, KY
Sub-chronic toxicity studies with rodents

Teaching Experience

2005-2014 Lecturer – Department of Biology and Marine Biology, University of North Carolina at Wilmington, Principles of Biology – Cells (BIO204), Animal Physiology (BIO345), Herpetology (BIO454), Sea Turtle Biology and Conservation (BIO495), Honors Seminar (HON120)

2000-2003 Facilitator - Department of Zoology, University of British Columbia
Advanced Topics in Comparative Physiology (ZOOL503)

2001-2002 Lecturer - Department of Zoology, University of British Columbia
Comparative Physiology (BIOL454)

2000-2002 Problem Based Learning (PBL) Tutor - Faculty of Medicine, University of British Columbia, Principles of Human Biology, Cardio-Respiratory Physiology

2000-2001 Guest Lecturer - Department of Zoology, University of British Columbia
Animal Physiology (BIOL353), Comparative Physiology (BIOL454)

1996-1998 Laboratory Assistant - Department of Zoology, University of British Columbia
Human Anatomy and Physiology (BIOL153), Vertebrate Anatomy (BIOL204)

Peer-reviewed Publications (2007 – present)


† Graduate student
‡ Undergraduate student

**Selected Presentations (2007 – present)**

2014 UNCW Department of Biology and Marine Biology Seminar, Wilmington, NC. “Effects of temperature on metabolism and osmoregulation in diamondback terrapins”

2013 Annual Symposium on Sea Turtle Biology and Conservation, Baltimore, MD. "Temperature effects on the dive behavior of sea turtles", Invited.

2011 Annual Symposium on Sea Turtle Biology and Conservation, San Diego, CA. "Timing and pathways of fall migration for juvenile green sea turtles in Back and Core Sounds, NC"

2010 Auburn University, Auburn, AL. “Thermal biology of marine and estuarine turtles: from biochemistry to behavior”

2010 Hollings Marine Lab, Charleston, SC. “Biology & conservation of diamondback terrapins in southeastern North Carolina”

2010 Duke University Marine Laboratory, Beaufort, NC. “Biology and conservation of diamondback terrapins in southeastern North Carolina”

2010 Society for Integrative and Comparative Biology. Seattle, WA. “Temperature effects on metabolic enzyme activity in diamondback terrapins”

2010 Society for Integrative and Comparative Biology. Seattle, WA. “Blood biochemistry of sea turtles entangled in longline fishing gear”


2009 Joint Meeting of Ichthyologists and Herpetologists. Portland, OR. “Temperature effects on metabolic enzyme activity in diamondback terrapins”

2009 East Carolina University Department of Biology Seminar Series. Greenville, NC. “Turtle bycatch in coastal fisheries of North Carolina: Causes, consequences, and prevention”

2009 Keynote speaker at Old Dominion University, Dept. of Biology graduate student symposium. “Thermal biology of leatherback sea turtles”
2007 Seventh International Congress of Comparative Biochemistry and Physiology. Salvador, Brazil.  “Physiology and behavior of migration in reptiles”

2007 University of New Hampshire, Durham, NH, USA  “Thermoregulation in leatherback turtles”

Funded Proposals (2007 – present)


2011 "Total body water and water turnover rates in the estuarine diamondback terrapin”. Williard, A. S. UNCW Cahill Award. Funded in the amount of $3,000.


2010 “Seasonal changes in blood biochemistry of diamondback terrapins under semi-natural conditions”. Southwood Williard, A. UNCW Academic Affairs Minigrants. Funded in the amount of $741.

2010 “Using Postcard surveys to investigate potential interactions between blue crab fisheries and diamondback terrapins in coastal North Carolina”. North Carolina Sea Grant Minigrant. Funded in the amount of $800.

2010 “The physiological basis of winter-induced stress and mortality in juvenile red drum”. Scharf, F. and Southwood, A.  North Carolina Sea Grant, omnibus funding for core research. Funded in the amount of $41,449.

2010 “The physiological basis of winter-induced stress and mortality in juvenile red drum”. Scharf, F. and Southwood, A.  North Carolina Sea Grant, student stipend funding. Funded in the amount of $12,500.


**Professional memberships**

<table>
<thead>
<tr>
<th>Professional Society</th>
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<tbody>
<tr>
<td>American Physiological Society</td>
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<tr>
<td>Sea Turtle Society</td>
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<tr>
<td>American Society of Ichthyologists and Herpetologists</td>
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<td>Society for Integrative and Comparative Biology</td>
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**Peer-Reviewer**

<table>
<thead>
<tr>
<th>Journal</th>
<th>Journal of Experimental Marine Biology and Ecology</th>
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<tbody>
<tr>
<td>Journal of Experimental Biology</td>
<td>Physiological and Biochemical Zoology</td>
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<tr>
<td>Biological Conservation</td>
<td>Comparative Biochemistry and Physiology</td>
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<tr>
<td>Endangered Species Research</td>
<td>Chelonian Conservation and Biology</td>
</tr>
<tr>
<td>Biological Reviews</td>
<td>Marine Ecology Progress Series</td>
</tr>
</tbody>
</table>
Stephan Woditschka, PhD, MSc

Department of Biology and Marine Biology
University of North Carolina Wilmington
601 South College Road, Wilmington, NC 28403
Mail Stop: Dobo Hall Campus Box 5915
Office phone: (910) 962-3670
Email: woditschka@uncw.edu

EDUCATION

2010  MSc  Stanford University, Stanford, CA
Epidemiology  Focus: Pharmaco-epidemiology, Biostatistics

2008  PhD  University of Wisconsin, Madison, WI
Genetics  Focus: Breast Cancer, Chemoprevention, Biomarkers

2002  BS  University of Tennessee, Knoxville, TN
Biological Sciences  Focus: Plant Biology

APPOINTMENTS

2014 - Present  Lecturer, University of North Carolina at Wilmington, Wilmington, NC
2012  Lecturer, Howard University, Washington, DC
2008 - 2014  Postdoctoral Fellow, National Cancer Institute, Bethesda, MD
2003 - 2008  Predoctoral Research Fellow, McArdle Laboratory for Cancer Research, Madison, WI

PUBLICATIONS


**SELECTED PRESENTATIONS**


**GRANTS/AWARDS**

2013 National Cancer Institute, Fellows Award for Research Excellence (Travel Award)
2013 Scholar in Training Award, American Association for Cancer Research (Travel Award)
2011 National Cancer Institute, Fellows Award for Research Excellence (Travel Award)
2007 National Cancer Institute, Cancer Prevention Fellowship Program Award Post-doctoral Fellowship Award (Four years support)
Appendix 9. Examples of faculty leadership activities.
<table>
<thead>
<tr>
<th>Faculty Name</th>
<th>Professional Leadership Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brian S. Arbogast</td>
<td>Research Associate, Museum of Comparative Zoology, Harvard University; Member of the Conservation Committee, American Society of Mammalogists; Coordinator of the Conservation Option for Biology Majors; Member of the North Carolina Scientific Council on Mammals</td>
</tr>
<tr>
<td>Timothy A. Ballard</td>
<td>Bioscience Educational Network Scholar, American Association for the Advancement of Science (AAAS)</td>
</tr>
<tr>
<td>Stuart R. Borret</td>
<td>Plenary Speaker, International Conference on Environmental Biology and Ecological Modelling, Santiniketan, India; Guest Editor, Special Issue of <em>Ecological Modelling</em>; Conference Organizing Committee, Ecological Network Analysis, University of Georgia; Advisory Board Member, Cape Fear Economic Development Council and Cape Fear Museum of Science and History; Administrative Search Committee Member for ETEAL Director and Provost and Vice Chancellor for Academic Affairs; UNCW Honors College CSURF Advisory Board Member</td>
</tr>
<tr>
<td>Susanne M. Brander</td>
<td>Chapter Vice President, Carolinas Society of Toxicology and Chemistry; Science Fair Judge, Wrightsville Beach Elementary; Member of Equipment, Biotechnology and Seminar Committees, UNCW</td>
</tr>
<tr>
<td>Lawrence B. Cahoon</td>
<td>Certified Senior Ecologist, Ecological Society of America; Member, Board of Directors, Cape Fear River Watch; President, American Chemical Society, Eastern NC Section</td>
</tr>
<tr>
<td>Hsiang-Yin Chen</td>
<td>Guest Lecture, Invertebrate Zoology, University of Alabama at Birmingham</td>
</tr>
<tr>
<td>Robert H. Condon</td>
<td>Contributing Editor, <em>Marine Ecology Progress Series</em>; Coordinator, Oceans ROCK Outreach Event</td>
</tr>
<tr>
<td>Joseph A. Covi</td>
<td>Team Member, Southeastern Regional Partnership for Life Sciences Education Institute; Member of Undergraduate Academic Assessment and Library Committees</td>
</tr>
<tr>
<td>Elizabeth S. Darrow</td>
<td>FDA Dauphin Island Sea Lab Fellowship; Member, Outreach and Career Development Committee, Coastal and Estuarine Research Federation; Representative, Gulf Estuarine Research Society; Member, Seminar Committee, UNCW</td>
</tr>
<tr>
<td>Amanda K. Dickens</td>
<td>Meeting Organizer, Southeastern Estuarine Research Society; Treasurer, Southeastern Estuarine Research Society</td>
</tr>
<tr>
<td>Diane M. B. Dodd</td>
<td>University College Advisor; Member, Synergy Selection Committee, UNCW; Member, Honors Scholar Program Committee, UNCW</td>
</tr>
<tr>
<td>Michael J. Durako</td>
<td>Member, NOAA-Funded Recovery Plan Team; Team Leader, Florida Bay Program Management Committee, Seagrass Research Team; Member, Sigma Xi, American Society of Limnology and Oceanography, Coastal and Estuarine Research Federation, Southeastern Estuarine Research Society</td>
</tr>
<tr>
<td>Name</td>
<td>Position/Role</td>
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</tr>
<tr>
<td>Steven D. Emslie</td>
<td>Editorial Board Member, <em>Advances in Polar Science</em>; NSF Review Panel Member, Collections in Support of Biological Research Program; Member, University Studies Advisory Committee, Chair’s Advisory Committee; Curator, UNCW Ornithology Collection</td>
</tr>
<tr>
<td>Patrick M. Erwin</td>
<td>Organizing Committee, 2nd International Symposium on Sponge Microbiology; Session Chair, 43rd Annual Benthic Ecology Meeting; NSF Reviewer, Dimensions of Biodiversity Program; Review Editor, <em>Frontiers in Microbiology</em>; Member, Graduate Advisory, Lecturer Search and Summer School Committees</td>
</tr>
<tr>
<td>Christopher M. Finelli</td>
<td>Chair, Department of Biology and Marine Biology, UNCW; Co-Leader, UNCW Site Review, and Co-Chair, Undergraduate Programs Working Group, UNC-GA Statewide Review of Marine Science Programs;</td>
</tr>
<tr>
<td>Arthur R. Frampton Jr.</td>
<td>Member, American Society for Virology, American Society for Microbiology and American Society for Gene Therapy</td>
</tr>
<tr>
<td>L. Michelle Gilley</td>
<td>Project Manager and Senior Biologist, Environmental Solutions &amp; Innovations; Chair, Advancement and Student Relations Committee; Member, Equipment Committee</td>
</tr>
<tr>
<td>Stephanie J. Kamel</td>
<td>Session Chair, Society for the Study of Evolution Annual Meeting; Guest Speaker, Osher Lifelong Learning Institute;</td>
</tr>
<tr>
<td>Stephen T. Kinsey</td>
<td>Graduate Coordinator, Department of Biology and Marine Biology; Editorial Board, <em>Frontiers in Skeletal Muscle Physiology</em>; Member, Sigma Xi, American Physiological Society and Society for Integrative and Comparative Biology</td>
</tr>
<tr>
<td>Kevin B. Kiser</td>
<td>Career Advisor, Workshop, American Society for Microbiology General Meeting; Leader and Co-Leader for Two Applied Learning Pedagogy Initiatives, UNCW</td>
</tr>
<tr>
<td>Julie A. Koester</td>
<td>Academic Mentor, Mount Allison University; Peer Reviewer, 5 National Academic Journals</td>
</tr>
<tr>
<td>Heather N. Koopman</td>
<td>Senior Staff Biologist and Board Member, Grand Manan Whale &amp; Seabird Research Station; Research Collaborator, National Museum of Natural History, Smithsonian Institute; External PhD Examiner, University of Eastern Finland; Member, Ontario Provincial Government Review Panel on Cetaceans in Captivity</td>
</tr>
<tr>
<td>Thomas E. Lankford Jr.</td>
<td>Curator, UNCW Vertebrate Collection; Co-Chair, UNCW Small Boat Committee; Co-Chair, Strategic Habitat Committee, and Advisor, Spiny Dogfish Compliance Panel, North Carolina Division of Marine Fisheries Commission</td>
</tr>
<tr>
<td>Zachary T. Long</td>
<td>Reviewer, National Academic Journals</td>
</tr>
<tr>
<td>Susanna Lopez-Legentil</td>
<td>Organizing Committee, 2nd International Symposium on Sponge Microbiology; I3 Program Accreditation, Spanish National Agency of Evaluation and Prospective; Review Editor, <em>Frontiers in Marine Science</em>; Grant Reviewer, NSF, Israel Science Foundation, German Research Foundation and Argentinean Agency for Scientific and Technology Advancement</td>
</tr>
<tr>
<td>Name</td>
<td>Position/Role</td>
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<tr>
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</tr>
<tr>
<td>Jennifer R. McCall</td>
<td>Owner and CEO, SeaTox Research Inc.; Member, Radiation Safety Committee; Mentor, Science Olympiad for Middle School Students; Reviewer, <em>Immunopharmacology and Immunotoxicology</em></td>
</tr>
<tr>
<td>Diane L. Melroy</td>
<td>Leader, Summer Curriculum Development Initiative</td>
</tr>
<tr>
<td>D. Ann Pabst</td>
<td>Adjunct Scientist, Mote Marine Laboratory; Judge, Student Posters and Presentations, Division of Vertebrate Morphology, Society for Integrative and Comparative Biology Annual Meeting; Coordinator, Student Judging, Southeast and Mid-Atlantic Marine Mammal Symposium</td>
</tr>
<tr>
<td>Joseph R. Pawlik</td>
<td>Chief Scientist, UNOLS Expedition to Bahamas, <em>R/V Walton Smith</em>; Senior Editorial Advisor, <em>Marine Ecology Progress Series</em>; Member, 5 Million Dollar Club, Office of Research Administration</td>
</tr>
<tr>
<td>Martin H. Posey</td>
<td>Associate Vice Chancellor and Dean of Undergraduate Studies</td>
</tr>
<tr>
<td>Linda F. Potts</td>
<td>Faculty Advisor, Tri-Beta Biological Honor Society; Chair, Scholarship Committee; Member, New Hanover-Pender Medical Society Scholarship Committee; Member, Undergraduate Assessment Review Committee</td>
</tr>
<tr>
<td>Carolina Priester</td>
<td>Senator, Faculty Senate; Panelist, CTE Forum for New Faculty; Member, Summer School and Seminar Committees; Advisor, Transfer Student Orientation</td>
</tr>
<tr>
<td>Ryan G. Rhodes</td>
<td>Advisor, Beechtree Labs Inc.; Member, Seminar and Lecturer Search Committees</td>
</tr>
<tr>
<td>Robert D. Roer</td>
<td>Treasurer, Society for Integrative and Comparative Biology; Member, GRE Services Committee, Educational Testing Services</td>
</tr>
<tr>
<td>Richard A. Satterlie</td>
<td>Past President, Society of Integrative and Comparative Biology</td>
</tr>
<tr>
<td>Frederick S. Scharf</td>
<td>Co-Chair, Southern Regional Advisory Committee and Red Drum Advisory Committee, North Carolina Division of Marine Fisheries; Member, American Fisheries Society</td>
</tr>
<tr>
<td>Ann E. Stapleton</td>
<td>Chair, Maize Genetics Meeting, Beijing, China; Co-Chair, Quantitative Genetics and Genomics Gordon Conference; Associated Editor, <em>Frontiers in Plant Genetics and Genomics</em></td>
</tr>
<tr>
<td>Alison R. Taylor</td>
<td>Member, UNCW-ECU Joint PhD Planning Committee; Grant Reviewer, NSF AOE Program; Member, Workshop Steering Committee, Bigelow Laboratory for Ocean Sciences; Direct, UNCW Microscopy Facility; Member, Search Committee for Associate Provost and Dean of Graduate School</td>
</tr>
<tr>
<td>Carmelo R. Tomas</td>
<td>Curator, Harmful Algal Culture Collection; Organizer, Algal Culturing Techniques Course, Bigelow, ME</td>
</tr>
<tr>
<td>Wm. David Webster</td>
<td>Associate Dean, College of Arts and Sciences; Director of Vertebrate Collections; Curator of Mammals; Appointee, North Carolina Coastal Resources Commission; Scientific Advisor, South Carolina Department of Natural Resources;</td>
</tr>
<tr>
<td>Name</td>
<td>Position and Affiliations</td>
</tr>
<tr>
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</tr>
<tr>
<td>Andrew J. Westgate</td>
<td>Chair, Scientific Council on Mammals, North Carolina Wildlife Resources Commission</td>
</tr>
<tr>
<td>J. Wilson White</td>
<td>Senior Marine Biologist, Grand Manan Whale and Seabird Research Station; Research Collaborator, National Museum of Natural History, Smithsonian Institute</td>
</tr>
<tr>
<td>Ami E. Wilbur</td>
<td>Guest Subject Editor, <em>Ecological Applications</em>; Member, Region 3 Strategic Habitat Area Advisory Committee, North Carolina Division of Marine Fisheries</td>
</tr>
<tr>
<td>Amanda S. Williard</td>
<td>Director, Shellfish Research Hatchery</td>
</tr>
<tr>
<td>Stephan Woditschka</td>
<td>Member, Assessment Review Committee</td>
</tr>
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