Campus Environmental Stewardship Committee

Recommendations
for
UNC Wilmington Natural Areas

Main Campus Forest and Campus in General, Bluethenthal Wildflower Preserve,
Ev-Henwood Property, and Broadfoot Property

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Prepared for the UNC-Wilmington Chancellor
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Table of Contents

Introduction .................................................................................................................. 2
Executive Summary ...................................................................................................... 3
General Committee Recommendations ................................................................... 5
Specific Committee Recommendations .................................................................. 6
  Introduction .............................................................................................................. 6
  Main Campus Forest ............................................................................................... 7
    Recommendations ............................................................................................... 10
Main Campus Developed Areas ............................................................................... 12
Bluethenthal Wildflower Preserve ............................................................................. 13
Ev-Henwood Property ............................................................................................. 14
Broadfoot Property .................................................................................................... 15
Appendices ................................................................................................................. 17
  Appendix A – Committee Charge from Chancellor
  Appendix B – Assessment – External Sources/Consultants
  Appendix C – Description of the Main Campus Forest
  Appendix D – Academic and Organizational Usage of Campus Forest
  Appendix E – Maps
  Appendix F – Deeds for Broadfoot Property
Plate – Map of UNC-Wilmington Campus with Highlighted Acreage
INTRODUCTION

The charge to the committee from the Chancellor was to inventory and assess the natural areas of the university and to develop recommendations for the best use of and management strategies for those resources (Appendix A). The committee has done this within a comprehensive framework that considers the educational mission of the University and several of the Strategic Goals of the University, especially goals one and six. Goal One is to “create the most powerful learning experience possible for the students” and Goal Six is to “Enhance the quality of UNCW’s environment and provide an attractive, functional, and safe campus”. The natural areas that were reviewed and that are included in this report are:

1. Main campus forested area (140 + acres)
2. Main campus exclusive of the forested areas (campus in general)
3. Bluethenthal Wildflower Preserve on the main campus (10 acres)
4. Ev-Henwood Property in Brunswick County (174 acres)
5. Broadfoot Property on Middle Sound in northern New Hanover Co. (~11 acres)

The report recommendations are summarized by area with supporting information in the appendix. In addition to the discussions/recommendations of the natural areas, there are several topics of concern/interest that the committee considered important to include in the report because of their potential to impact both the natural areas and the campus in general.

Our natural areas are an invaluable resource to the UNC Wilmington community (students, staff, faculty, alumni, and surrounding communities); in many respects they are just as valuable as the buildings. In fact, our natural areas are critical to the educational mission of UNCW by providing a living classroom for many of our departments. The forested areas thereby play a critical role in meeting UNCW’s Strategic Goal number one.

We believe that the natural areas deserve to be managed and maintained for the benefit of the UNCW community and for the surrounding community but also for the future UNCW community and southeastern North Carolina. Enhancement of the natural areas/environment is Strategic Goal number six. We certainly realize that the University must balance the need for growth to meet its primary academic mission with conservation of its environmentally valuable natural areas. We think both goals can be met with careful planning.

We look at these recommendations as a working document. Continuous planning, assessment, and management of the natural areas are necessary to insure that:

1) Full assessments are made to catalog the forest resources (ecosystems and communities),
2) Proper management practices are initiated and implemented to maintain the health of and safety in our natural areas,
3) The best use, without harm, is made of our natural areas for the use of the UNCW and surrounding communities for education and enrichment, and
4) Land conservation and development are considered together so that there is a shared vision of the importance of balancing both on the UNCW campus.

The committee appreciates the opportunity to have participated in this important initial step in the evaluation of our natural areas. We expect these recommendations to provide a starting point for their continuing oversight, management, best use, and conservation. And finally, providing a management plan with specific recommendations for the protection of much of our natural areas demonstrates UNCW’s commitment to environmental stewardship and to a sustainable campus.
EXECUTIVE SUMMARY

The Campus Environmental Stewardship Committee was charged with formulating a natural resources management plan for UNC Wilmington’s natural areas. The Committee recommendations are divided into two categories: general and site specific. The first category includes important general recommendations and concerns as well as a primary recommendation for the main campus forest area. Several of these general recommendations are critical to the success of our site specific recommendations. Detailed site recommendations follow the general recommendations.

Summary Recommendations from the Committee

1. Establish a Director of Sustainability position to oversee environmental issues and campus natural areas.
   Establish a staff position, such as Sustainability Director, whose primary responsibility would be to oversee the management and best use of our natural areas. The Director would work closely with campus expert committees and would report directly to the Chancellor.

2. All University properties need to have an environmental assessment.
   An assessment of our natural areas, including but not limited to the main forest, should be accomplished as soon as possible to establish a baseline for the health and management of these areas. An external, independent assessment, but one that utilizes the comments and expertise of our faculty, is recommended.

3. The risks and consequences of fire are significant and need to be addressed immediately.
   Safety is of primary concern. There are two aspects to safety. The first aspect is the fire risk. There is a large fire hazard in our main campus forest in particular. We recommend the use of the forest service and other experts to survey our forest with an eye to reducing fuel load and establishing manageable burn units. All of the other recommendations concerning our forest would be inconsequential if a devastating fire occurs. The safety concern extends to our students, staff, faculty, and buildings as well as to the surrounding community. The second safety aspect is to insure that our forests are safe from any criminal element. Discussions with campus security should be held to make sure that all possible safety measures are taken. Installing a call box(es) and discussing night access would be beneficial.

4. A campus-wide stormwater plan needs to be developed and implemented.
   We support the establishment of a campus-wide stormwater plan and the use of Best Management Practices for the reduction and improvement in quality of our stormwater. Using stormwater for irrigation is possible and we believe that treated stormwater may be used to benefit our wetlands. This recommendation would be implemented only after a detailed study of the historical and current hydrology as well as a study of the floral and faunal communities in those wetlands is completed.

5. UNCW needs to ensure Randall Parkway is not extended through the campus forest.
   Extension of Randall Parkway through our campus forest, though not currently on DOT plans, would ruin the integrity of our forest. UNCW must be emphatic in its opposition to any proposal that may come up regarding the extension.
6. The City/County Bike Path should not be routed through the campus/campus forest. We are opposed to the City/County Bike Path (Halyburton Park to the Beach) bisecting our main campus forest. Pavement in any part of the forest would be detrimental. Alternate routing on city street right of ways is a much better alternative.

7. A large 110 acre block of contiguous forest area on the northeast side of the campus should be established and conserved as the core conservation area for our forest. The main campus forest, though all of our natural areas are important, requires special note. The Campus Master Plan highlights 140 acres of forest that rims the northeast and east sides of the campus. Based on our review of the forest, we believe that the ~30 acre athletic field area identified in the Master Plan is one of the most valuable parcels and should be included in the conservation area. Adding this area forms a larger contiguous block of forest which will reduce edge effects and should enhance the health of the plant and animal communities. This 110-acre block, which is located on the northeast corner of the campus, is also the site of much of the academic and organizational use of our forest. If needed, alternative sites are suggested for the placement of the athletic fields. The 110-acre block recommendation should not be construed as recommending only 110 acres for conservation; it is part of the larger 140-acre plus conservation area.

8. All future construction should minimize the environmental footprint and be approached wherever possible on an infill basis. We believe a reconsideration of the building/architecture design should be undertaken. The Georgian architecture with 3 story academic buildings may be appropriate but a reduction of the building footprint could be achieved using taller residential units. Infill buildings on existing sites, like is currently being planned, should continue where possible.

9. Reforestation efforts on the main campus need to be increased significantly. Reforestation of selected sites on the main campus should be researched and where possible the pocket wooded areas should be maintained for aesthetics, stormwater runoff, and as habitat.

10. A specific time line for the implementation of the recommendations is needed. A clear time line to accomplish the goals and recommendations in this report should be set as soon as possible.
GENERAL RECOMMENDATIONS

Summary Items

1. Establish a staff position, such as Sustainability Director, whose primary responsibility would be to oversee the management and best use of our natural areas. The individual would utilize campus expertise and committees on the various sites to make recommendations directly to the Chancellor. Having a Director of Sustainability is a similar recommendation to that of the Sustainability Committee.

2. An assessment of all natural areas, including those in the non-forested main campus, should be done as soon as possible to determine the health of those areas. Recommendations should then be provided on maintaining and improving the health of natural areas as well as the best use and management practices that should be implemented. We recommend using our N.C. resources such as the Forest Service as well as a consulting firm, supplemented by UNCW expertise, to provide baseline information on our properties. The baseline information would include summary descriptions of plant and animal communities, soils, potential restoration of damaged areas (such as those areas that may be impacted by too many trails, wetland hydrology changes, high forest density precluding the health of the forest and herbaceous layer, and presence of any invasive species), and suggestions on the reduction of the fuel load and implementation of management/burn units. Assessments should be done on a regular basis after the preliminary evaluations to foster continuous management of both forest and non-forest properties. A list of several resources is included in Appendix B. We should immediately take advantage of the fact that The Forest Service has offered to meet with us, walk the property, and make some recommendations free of charge beginning July 1.

3. The Committee supports establishing a campus-wide stormwater management plan and implementation of Best Management Practices (BMPs) that both lower the amount of stormwater runoff and provide water for irrigation and restoration. We believe that some stormwater may be utilized to help restore the hydrology of several of our isolated wetlands on the main campus. This would require the diversion and minor treatment of a portion of the stormwater, perhaps from the nearby Phase II area.

4. The Committee would like to go on record opposing any efforts by the City, County, and/or DOT to extend Randall Parkway through the campus. Extending Randall Parkway would be a disaster for the integrity of the forest and thereby jeopardize UNCW’s educational and sustainability mission. Randall Parkway, as originally planned, has been removed from the Transportation Improvement Plan. UNCW should be emphatic in opposing any proposal that would allow it to be extended as a thoroughfare.

5. The Committee is opposed to a formalized bike path through campus that would be part of the 10 mile Halyburton to the Beach bike route. UNCW’s commitment to providing a safe environment suggests that the bike path be routed in a way that will enable students, faculty, and staff to access the path but that the path not go through the campus. Other path routes should be considered that will enable the bike path to tie into existing and planned bike paths or avenues. For example, accessing the existing bike path along Eastwood Road would enable bicyclists to travel to and from Wrightsville Beach.

If at some time a route is required through campus, then a UNCW committee should be involved in those discussions. Under no circumstances should the bike path be allowed to bisect the existing undeveloped 140 acres.
6. UNCW is committed to providing a safe and secure environment. Campus safety is affected by how accessible the forest is for members of the campus as well as the public at large. Anything that increases accessibility also increases the risk of fire. The risk of an inadvertent fire is greater than a deliberate fire. The increase in the variety of users and uses of the forest also increases the fire risk and the potential abuse of the natural environment. The increase in accessibility and use by various users also increases the risk of personal harm by people. Accessibility to the forest also increases the risk to homes that border the forest. Access to the forest at night should be restricted.

7. We believe that a reconsideration of building design/architecture should be conducted. Minimizing the ecological footprint is necessary and should be considered a priority whenever possible. One way to minimize the footprint is to build residential units taller while maintaining the 3 story Georgian architecture for the academic buildings. The committee also believes the addition of future housing and academic buildings can and should be handled on an in-fill basis for the foreseeable future to guarantee the least possible destruction of the campus forest. At the same time, campus green space exclusive of the main campus forest is also valuable and should be considered in future development (see the discussion in the section on Main Campus Exclusive of Forest).

8. A clear time line needs to be established for the implementation of our recommendations. This is important for the natural areas but also for the confidence of the students, staff, and faculty of UNCW as well as the surrounding community to demonstrate the University’s commitment to its natural areas and sustainability.

SPECIFIC RECOMMENDATIONS

Introduction

Specific recommendations are listed by property site. Each property has unique characteristics and needs. Supporting information is included in the Appendix. In addition to the specific recommendations, an overarching theme to every site, perhaps with the exclusion of the Broadfoot Property because of deed restrictions and use limitations, is that an assessment of the area should be conducted. The assessment should be conducted by external experts (Forest Service, land conservation management groups) and supplemented by campus experts. The goals of the assessment are to determine the health of the natural areas including the need for fire management and/or other management techniques, provide a baseline of information and listing of species in each site, determine the best educational use of the sites to UNCW and the community, and provide a framework for future conservation and use.

There are five individual sites/locations described with recommendations including:

1. Main Campus Forest Area
2. Main Campus Non-Forested and pocket forest areas
3. Bluethenthal Wildflower Preserve
4. Ev-Henwood property
5. Broadfoot property
UNCW Main Campus Forest

Although all of our natural areas are important, the Main Campus forest that is located on the northeast and east sides of the UNCW campus is the primary focus of our recommendations. This acreage has generated more controversy and discussion and its management requirements are more complex than many of the other natural areas. The reasons for this focus include the significant and ongoing use of the forest, absence of management over a long period of time, pressure on our natural areas and the forest in general from university growth, and community/UNCW interest in the forest.

The map from the Master Plan (Figure 1) shows a designated conservation area of 155 acres on the campus (main forest, Bluethenthal, and small 5 acre tract). The 140 acres of forest outlined on the map (on the northeast and east sides of campus) was the primary charge for the committee, the charge including analysis and recommendations. However, based on our review of the entire forested area, we have also included the area highlighted in light green and shown with the red X (mentioned as possible athletic field/recreation area in the Master Plan and including 30 acres) because of its quality and value to the UNCW forest core. The map also highlights potential building sites from the Master Plan, and even though there have been changes to this plan already, we feel it is instructive to include the map here to illustrate the 140+ acres and surroundings that are discussed below.

Figure 1 – Master plan map of the conservation areas. The light green area with the red X is the area listed as potential athletic fields. This is the area the committee feels is of extremely high value and should be maintained along with the area in the northeast as a core forest area. Figures 2 and 3 highlight these areas.

The 140 acres of forest as well as the 30 acres designated as potential athletic fields are of high conservation and educational value to UNCW. These two continuous sets of acreage will be referred to collectively as the 170 acre area in this report. There are important xeric sandhill coastal fringe variant communities of longleaf pine and wiregrass, jurisdictional and isolated...
wetlands, and minor mixed hardwoods and pond pine flatwoods in the 170 acres. These communities are described in more detail in Appendix C. The forest is highly utilized and valued by numerous academic departments and by organizational groups such as the cross country track club, Discovery Center (ropes course, bikers), and by the community at large. Forest use is highlighted with an impressive list of educational and passive recreation users (see the Recommendations Section below and Appendix D).

It is our contention that all 170 acres (see Figure 1, the satellite image in Figure 2, and Appendix E) are of high value, and conservation of these areas will be of significant benefit to UNCW. However, the committee recognizes that conservation and management of our forested areas must be balanced with the needs of the University for smart, planned growth. In this regard, the area of absolute highest value is the northeast corner of the campus that includes the 30 acre potential athletic field as well as the ~80 acres surrounding it. The committee feels it is essential that UNCW maintain this large, ~110 acre connected forest area, not strips or disconnected parcels; this is the only means of effectively maintaining a small but healthy ecosystem. This does not preclude conservation of the 140 acre conservation area as shown in Figure 1 but is intended to highlight the importance of a contiguous block. Potential alternative athletic field sites are shown in Figure 3.

Figure 2 – UNC-W campus highlighting the outlines of the forest and other features discussed in the text. The Master Plan Athletic Field Outline is only approximate. The 140 acre forest conservation area, which is from the Master Plan, occurs on the northeast and east sides of campus.
Figure 3 – UNC-W campus map highlighting the recommended conservation areas and alternatives to the 30 acre athletic fields adjacent to Phase II in the Master Plan (see Figure 1 and Figure 2). The dotted line is only to indicate the edge of our recommended most valuable no regrets area that should be conserved. Having a larger core area that is not a sliver/edge around the campus edge provides a much better area for the health of our plant and animal communities.
Main Campus Forest Recommendations

1. Although we recommend maintaining all of the 170 acres, we do understand the need for a balance of growth and conservation. For this reason we most strongly recommend and think it is critical that the ~110 acres of forest core on the northeast side of the campus be maintained intact (see maps). This is the area of most use (educational, organizational, and community) and of highest quality forest (biodiversity and community variety). If athletic fields or building sites are needed we recommend placing them at sites adjacent to this area (18 acres adjacent to Phase III and/or immediately behind the residential units on the east side of campus in the forest corridor) or preferably in areas adjacent to the current athletic fields. Recreation fields do not have to be contiguous to the residential units. In addition, the whole 170 forested acres are already utilized for recreation and education (see Item 4 below).

The committee recommends that when looking for organized recreation sites, UNCW should look for alternative locations that can be developed with minimal environmental impact. For example, the property that currently borders the athletic fields (east of the track field) may be a good site for additional recreation fields. The long-range plan does include the development of the forested property beside the track. UNCW should consider negotiating with the UNCW Foundation so athletic fields for intramural activities may be put near all of the other athletic infrastructure.

2. There is a significant fire risk in the main campus forest that could be devastating to the forest, the campus, and surrounding community. A fire occurred in the forest about ten years ago. UNCW was fortunate because there was an air tanker in the area that put out the fire. UNCW needs to provide easy access for fire control; land-based equipment cannot access the property effectively to put out a fire. However, it is perhaps more important to be pro-active in reducing and/or removing the fire hazard itself. The only recent controlled burn was in the 30 acres adjacent to Reynolds Drive in February, 2007 but other areas are in critical need of fuel load reduction. This will require periodic controlled burns and or initial removal of some of the fuel load.

The primary issue with conducting a prescribed burn is, of course, all of the surrounding development. But prescribed burns and other management techniques are important to the health and safety issues within our forest. The longleaf pine/wiregrass community is fire-dependent. Fire, when used correctly, removes many of the shrubs and other growth that shade out the herbaceous groundcover and that prevent the germination of longleaf pine. Fire also promotes the seeding of the wiregrass and helps to restore critical habitat. Additionally, the fuel load (amount of ground cover, litter, and woody debris) is large in parts of the forest. Removal of that fuel load would decrease the chance for a hotter, devastating fire to the plant community, as well as reduce the fire hazard to the surrounding community. We will need to provide information to the community and work closely with fire and other experts (NC Forest Service and Fire Bosses from other groups) to develop a best management plan. These experts have been contacted and meetings are tentatively set pending approval from the Administration.

3. UNCW is committed to providing a safe and secure environment. Campus safety is affected by how accessible the forest is for members of the campus as well as the public at large. Anything that increases accessibility also increases the risk of fire. The risk of an inadvertent fire is greater than a deliberate fire. The increase in the variety of users and uses of the forest also increases the fire risk and the potential abuse of the natural environment. The increase in
accessibility and use by various users also increases the risk of personal harm by people. Accessibility to the forest also increases the risk to homes that border the forest. Access to the forest at night should be restricted.

4. The forested area on the main campus is of high value for many reasons. Well maintained and managed longleaf pine (xeric sandhill) and wetland ecosystems are of value for habitat, biodiversity, and aesthetics. However, the forested area is of critical value to the University’s mission of education and outreach as well. In support of maintaining the forest, a survey of educational and other uses was conducted. The summary of academic and organizational uses shown below illustrates the value of the forest area. Maintaining the area as a living classroom is a critical need of UNCW’s academic departments and clearly enhances the primary strategic goal of the University, to create a powerful learning experience. The details of use by department, class, and organization are given in Appendix D.

Summary of the “academic use” of the forest in the past year:
- 12 academic departments used the forest
- 49 classes used the forest
- 144 class sections used the forest
- 2,689 students used the forest for educational purposes
- There were 8,209 individual uses of the forest

Summary of “organized use” by UNCW clubs and organizations:
- 9,784 individual uses

Total Academic and Organized use:
- 17,993 uses per year

5. We recommend, as another educational opportunity and involvement of the UNCW community, to establish a nature trail with signage highlighting some of the important ecosystems/communities as well as specifics on the importance of the longleaf pine forest, the importance of prescribed fire, and the historical importance (naval stores) of the longleaf pine to southeastern N.C. The wetland ecosystem should be equally highlighted.

6. An assessment must be conducted and a management plan developed and implemented to ensure the health, maintenance, and best use of the forest. These are described in turn:

a. The University faculty and students have abundant expertise on many aspects of the forest ecosystem including the plant and animal communities, soils, and conservation. However, the committee thinks that an external assessment of our natural areas is critical to establish an independent baseline of information on our forest. The assessment should include a full description (plants, animals, soils, community associations, management issues, etc.) of the acreage. UNCW would then be able to use this to supplement courses and provide an independent assessment when needed of the forested area, e.g. environmental assessments. One report was done in conjunction with the Master Plan in 2005 ((Natural Resources Report completed by Kimley-Horn and Associates for UNCW, 2005) but it did not provide details on the plant community distribution, soil variability, fuel load, management details, or provide a GIS database. Another positive aspect of having an assessment done would be to have an example of a consultant’s work to illustrate the types of data that consultants provide and types of jobs that consultants perform. These would show some of the types of topics that students should know and the types of jobs available. Foresters and consultants could provide needed expertise on reviewing the health of the forests (diseases, thinning, maintenance). One study that should be added is a detailed GIS (Geographical Information System) data
base of the trails, roads, separate plant communities, and trees. We will need this for establishing current and future use boundaries such location of burn units, trail locations, and the location of special features in our forest.

b. A full study should be conducted (may be part of the assessment) exclusively on establishing burn units and other management units within the forest. Forest service rangers have been contacted as well as burn experts to consider management plans that UNCW may wish to implement. Burn units are essential to the health of the longleaf pine/wiregrass community. The large ground fuel load that is present in part of the forest is an extreme and immediate safety hazard. Efforts should be made to quickly remedy this situation. This was described in more detail in #2 above.

c. UNCW should look with an eye to restoration in those areas that have been adversely impacted by use (trails, roads, too many bike trails with trail alteration, old challenge course) or natural changes (hydrology changes) over time. One example of a use correction would be removal of the hard packed trail around the old challenge course. A second potential item involves the use of treated stormwater to help restore some of the favorable aspects of the wetland areas. A cursory look at the soils and changing plant communities in the isolated wetlands in particular, e.g. longleaf pine moving into the wetland, indicate a changed/changing hydrology. However, any effort to restore wetlands would obviously require a detailed assessment and an investigation of historical wet seasons to insure that the right seasonal hydrology was established. A third item is that we should insure that no non-native species are present and that none are introduced. And a fourth item is to make sure that adequate buffers are present along the streams, such as along Clear Run Creek, to insure that stormwater runoff does not adversely impact this part of the Bradley Creek watershed.

Main Campus Developed Areas and Pocket Forest
(excludes main campus forest described above and Bluthenthal Wildflower Preserve)

UNC Wilmington’s campus consists of ±656 acres with approximately 190 acres in longleaf and mixed hardwood forests and in wetlands on the northeast and east sides of campus. This forest acreage is described elsewhere in these recommendations. The campus also contains areas with small patchwork forests, mowed areas with trees, and managed landscapes. These areas are also important to UNCW from the point of view of aesthetics as well as for habitat and stormwater control. We believe a comprehensive campus plan should be developed and implemented that will consider the importance and use of these sites as they now exist, as well as a goal of restoration/reforestation of certain areas.

1. The small wooded areas (an example is the area between Leutze Hall, Cameron Hall, Friday Hall, and the CIS building that contains a longleaf pine savanna and a wetland) are very important as buffers between buildings. These small areas are aesthetically pleasing, provide small habitats, and serve to minimize stormwater runoff. These types of areas should be maintained. Figures 2 and 3 highlighted a couple of these “pocket” wooded areas.

2. UNCW should have a goal of reducing mowed areas such as under the longleaf pines toward the front of campus. Adding natural areas, rain gardens, native vegetation, and trails would provide natural walking areas as well as a more picturesque/natural campus. These changes will also help reduce stormwater runoff and reduce the need for irrigation. Plans could include butterfly gardens, wild grasses, and native plants that require less water and maintenance.
3. UNCW should initiate a major reforestation effort on the main campus. It should restore some of the longleaf pines that have been eliminated or reduced in the more manicured/cut areas and in those areas that lost many trees in previous hurricanes. Other types of trees that are suitable to this area would include live oak and perhaps some understory specimens such as dogwood. A natural grass cover, not mowed, would increase the beauty and reduce watering and maintenance. This effort would be a good way for UNCW to enlist the efforts of students and faculty in the planting of trees and reforestation of some of our campus areas.

4. In this regard, and in accordance with the UNCW Master Plan, we also support the enhancement of the blue line stream/ditching to make it more attractive and useful for handling our stormwater runoff. Wider, vegetated buffers and natural areas along the streams would be beneficial to wildlife and to stormwater quality. This is particularly true of the ditching from Bluethenthal to the eastern edge of campus to Rose.

5. We support initiating a campus-wide stormwater plan for UNCW. UNCW needs to incorporate more best management practices including rain gardens, bioretention areas, porous pavement (similar to the recently completed parking area at the Facilities building), cisterns for irrigation, and native vegetation.

Bluethenthal Wildflower Preserve

The Bluethenthal Wildflower Preserve, established in 1973, is a small but critical and historic part of the UNCW campus. Its natural areas are also important to the surrounding community with numerous community members visiting the site. The 10-acre site contains several different ecosystems including mixed hardwood, pine, and a small wildflower/carnivorous plant area. An extensive trail system winds through the natural area taking the visitor to all of these sites.

Overall, the Preserve is in relatively good condition but we would like to offer some suggestions for its improvement/maintenance. The committee realizes that several faculty and students work in the Preserve as well as Landscape and Maintenance to maintain it in good condition. It is not our goal to be prescriptive in what needs to be done but to offer the following as suggestions.

1. First and foremost, the most critical need is to maintain the health of the Preserve. There has been ongoing maintenance of the trails and some efforts to keep the wildflower and carnivorous plant areas intact. We believe, however, that it would be helpful to have a forester/arborist assess the health of the trees in particular and recommend a management strategy (thinning, trimming, removal of diseased trees, local prescribed burns, etc.) for the preserve. Then a short and long-term maintenance plan can be implemented.

2. We recommend establishing a committee to accomplish the goals cited in the preceding recommendation and to oversee and consider/implement the following recommendations:

   a. Maintain and repair the fence; we believe the fence must be kept intact in order to minimize extraneous foot traffic (non-Preserve visitors) that would damage the Preserve

   b. Establish better service access (paths and gate) so that Landscape Service employees can access the Preserve without driving through it. This will also enable ADA access
c. Improve the entrance and signage to the Preserve

d. Improve the introductory kiosk and keep the information current and highly visual; cycle the materials to highlight different features throughout the year including the changing seasons.

e. Expand and improve the interpretive signage throughout the trails. The trees and shrubs could be labeled more clearly and have educational material with them. The alternative and perhaps better way to provide useful information would be to place limited but clear signs with numbers that key to a trail guide.

f. Create a new brochure/trail guide that highlights the points of interest within the Preserve. The brochure could include a map, photos, and profile the history of the Preserve. The Preserve’s website could include much more information including educational materials as well as pictures.

g. Develop an inventory of the flora and fauna in the Preserve. A checklist of species would be educational and it could also be used to monitor the Preserve over time. There have been several studies of the Preserve that could be used as starting points.

h. Put the Preserve on the list of outreach events for the University and Community by offering a tour each semester. This could be part of College Day or a Pathways event.

i. There are only 4 metered parking spaces at the Preserve entrance. These spaces are most often filled by students or non-visitors to the Preserve. UNCW needs to address the parking situation and provide adequate and available parking to people wanting to tour the Preserve (dedicated parking for the community). Enforcement of no parking rules must be done or one other consideration is to have designated parking in Lot M for the Preserve.

Ev-Henwood Property in Brunswick County (174 acres)

The Ev-Henwood Property contains 174 acres in Brunswick County off Highway 17. The property contains a mixed hardwood upland community of oaks, hickories, local loblolly pines, a slope area of beech, and a lowland area and floodplain containing cypress, gum, tupelo, and many more wetland plants. There is also one area that is maintained to illustrate old field succession. The property is an invaluable resource for teaching and research. It provides important natural (forest, fields, ponds, and floodplain to Town Creek) and cultural resources (evidence of naval stores activity and it is an historic family-owned farm) for UNCW and the community. Part of the land is held in cooperation with the Coastal Land Trust. A conservation easement exists on part of the lowland area of the property. Ev-Henwood is also recognized for its value as a birding site. It is now on the North Carolina Coastal Plain Birding Trail. Maps of the location of the property are provided in Appendix E.

There is currently a Planning Committee that is responsible for the oversight and for recommendations regarding the Ev-Henwood site. The committee includes an excellent cross-section of expertise from the UNCW faculty and staff: Jeff Hill (Chair), Steven Brewer, Greg Chandler, David Dickman, Chris Dumas, Jack Hall, Rich Huber, Martin Posey, Robert Warren, and David Webster. The Ev-Henwood committee has made several important recommendations that our committee endorses including:

1. Improving interpretive signage: There is little educational signage on the property. Additional signage is recommended to highlight the importance of the property as well as the ecosystems.
that are present on the site. This could be done in cooperation with the Coastal Land Trust. It is our understanding that the Land Trust would be willing to pay some of the costs.

2. Building a Gazebo/Shelter: Educational opportunities are currently limited because there is no protection during inclement weather. There is also no area to have an outdoor classroom for working assignments or for demonstrations. A special use building is necessary to remedy this situation.

3. Backfill septic tank: A collapsed septic tank is present on the property and needs to be backfilled to eliminate a safety hazard.

4. Trash Clean-Up: In addition to usual maintenance, there is a “contained” trash dump on the property. We encourage a day of clean up by different organizations on campus to remove the trash; this would be an excellent public service event if we could do it as a partnership with UNCW and the Coastal Land Trust.

This committee makes the following recommendations:

5. Improve and update the kiosk and periodically cycle the educational information in it

6. Work closely with the Coastal Land Trust to build a real cooperative program that builds on the strengths of both groups but that recognizes the special needs of UNCW.

7. Update the website. There is an excellent trail guide but it would be beneficial to develop a plant/animal checklist as well as to have photographs of key components of the property including plants, animals, natural sites (tar kiln, floodplain, creek, old field succession, beech trees, etc.)

8. Even though the property is in good condition overall, it would still be beneficial to have a forester consulted on the health/management of the forest

**Broadfoot Property: (11.07 acres)**

The Broadfoot property consists of 11.07 acres of undeveloped land located in New Hanover County. The property was deeded to the University in two processes. The first 10 acre tract was given under a Deed of Gift with a Conservation Agreement on 15 January 1999. The second 1.07 acre tract was given under the same conditions in December, 2006. Maps of the location of the property are included in Appendix E. Copies of the deeds to the property are included in Appendix F.

The goals of the donors (according to Mr. Broadfoot) were to give land to the University to be used for educational and research purposes and to prohibit, in perpetuity, the possibility that the land would ever be developed or sold. The perspective of the University was to acquire additional undeveloped acreage that could be used to enhance its educational mission. This property increases the diversity of the University’s land holdings and has value as an addition to the on-campus land because it is specifically protected from development by the conditions of the grantors.

The conservation agreement reduces the economic value of the land to zero in the eyes of the appraisers who nevertheless appraised the property for the Office of University Advancement as if the Conservation Agreement did not exist. Under those circumstances the property appraised at a value of approximately $150,000 (the property has no access to the water).
The gift was overseen by Eddie Stuart, Director of Major Gifts in the Office of University Advancement. He noted that according to the conditions of the gift, UNCW is not able to sell the property, so this evaluation was only for fact finding purposes. Mr. Stuart continues to serve as the intermediary between the Broadfoot family and the University when there are questions about the property.

The donors are very opposed to continued development in their area and when adjacent development impacts their gift property they are consulted as to their wishes by the University via Eddie Stuart. Consequently, the conservation agreement eliminates most potential uses the University could make of the property. And even though the property is adjacent to the marsh and waterway, there is no water access. Thus there are no possibilities for marine-related access and sampling. There is a private development with a marina that abuts the property. Recently the developers asked permission to drill into the Broadfoot property to strengthen the walls of their marina and this permission was denied by the University in consultation with the Grantors.

The property is largely in the same condition as it was at the time of the gift. Some Biology department classes have been using the property for lab sessions. In Schedule 2 of the deed (see appendix F) there is a list of 17 restrictions of use. The character of the 17 restrictions is to prohibit the University from extracting, adding or engaging in any activity that could result in a change in the property as it currently exists. Under Schedule 3 of the deed there is a list of 6 “responsibilities” of use the University assumed when it accepted the property. The character of the 6 affirmative responsibilities is to ensure that the University appropriately maintains the property in its current state and to protect it from future encroachment, which will require some active management by UNCW.

Eddie Stuart explained that when University Advancement is dealing with potential land donors, the Advancement officers are generally under-qualified to make decisions about academic uses of properties. In these instances Mr. Stuart’s concern is that Advancement might acquire property that does not support the University’s mission. The committee recommends that procedures be established as soon a possible so these situations can be resolved in a manner that benefits all parties.

Broadfoot Property – Important Conditions:
1. The conservation agreement prohibits UNCW from any use other than teaching/research/educational use
2. The conservation easement specifically prohibits any opening of the property to the public
3. The property cannot be used to store materials
4. No building construction is allowed
5. The property has no water access

Broadfoot Property - Recommendations:
1. Immediate evaluation to determine the content and context of the property (ecological survey)
2. Formation or designation of a staff member to be charged with the long-term oversight of the property; this may be the recommended focal point for our natural areas. This is the number one recommendation from the general recommendations.
3. Creation of a management plan in accordance with the Conservation agreement and with the cooperation of the grantors
4. Yearly evaluation for safety concerns
5. Monthly evaluation for trash and debris
APPENDICES

Appendix A: Committee Charge from the Chancellor
Appendix B: List of Contacts for Property Assessments
Appendix C: Description of Main Campus Forest Area
Appendix D: Usage of Forest Area on UNC Wilmington Campus
Appendix E: Map of Campus Acreage
Appendix F: Broadfoot Deeds
Appendix A
Committee Charge from Chancellor

I am specifically charging the subcommittee with developing and recommending a natural resources management plan to include:

1. An exploration and exposition of a shared vision for university natural resource use, with special focus on the 140 acres of undeveloped land;
2. A consideration of how best to inventory and assess all of the university’s natural resource assets, including 174 acres at our Ev-Henwood property in Brunswick County, 11.6 acres at our Broadfoot property in New Hanover County, and 10 acres in the Bluethenthal Preserve;
3. A list of recommendations targeting the development and implementation of specific management strategies for the resources identified; and
4. A plan for the periodic reevaluation of the strategies recommended for implementation.

In the course of its deliberations, there are also a number of questions I would like this subcommittee to address:

1. What are the physical, chemical and biological opportunities and limitations of the longleaf pine forest and associated communities?
2. What are the political, economic and social considerations in managing the natural resources for the campus?
3. What active management strategies can be employed to at least maintain, and potentially enhance, these existing natural resources?
4. What educational and research opportunities can be derived from non-consumptive use?

Key Comments by Chancellor DePaolo:

- UNCW’s commitment to conserving and managing the natural resources on our campus.
- The sustainability committee has spent considerable time reviewing potential opportunities for UNCW to continue demonstrating its commitment to implementing creative, sustainable solutions for our campus and for conserving and managing the natural resources over which our campus has stewardship.
- UNCW to continue demonstrating its commitment to implementing creative, sustainable solutions for our campus and for conserving and managing the natural resources over which our campus has stewardship. The work of the UNCW Sustainability Committee is well documented on its Web site, and I strongly encourage you to browse the information there to learn about the extraordinary efforts underway in the area of sustainability on our campus.
- Several individuals urged UNCW to serve as a model for exemplary stewardship of these natural resources.
- We need to do more to manage and conserve our remaining 140 acres of longleaf pine forest.
- As a first step in actively managing our campus resources, we must conduct an inventory of UNCW’s natural resources and assess the current status of those resources, including describing and determining the spatial distribution and environmental relationships among the natural features, flora, fauna, habitats, water resources, trails and roads.
• Second, we must use the inventory and assessment to develop “highest and best use” guidelines for specific natural communities on UNCW-owned properties.
• It is also clear that the natural resources on our campus have multiple human uses such as education, recreation, research and aesthetics. Identifying the type and extent of these uses is important for determining how best to manage our campus resources.
• Demonstrate the university’s strong and continuing commitment to employ “best management practices” of our natural resources.
• I am asking this subcommittee to provide me with its preliminary recommendations concerning future conservation practices for the contiguous 140 acres of longleaf pine forest within 60 days.
• If the subcommittee determines that the task warrants the assistance of an outside firm or consultant in the development of the plan, then I expect that to be part of the recommendations outlined in the report.
• Once completed, this study will be shared with campus and community constituencies for further input and refinement. Prioritization and implementation of these preliminary recommendations will follow.
• The growth of our university will impact our campus, but growth and sustainability are not mutually exclusive. Working together, we will find solutions to preserve the very best aspects of our campus and its natural assets while creating a more viable community in which to live, learn and work.
Appendix B
External Sources - Assessment

Assessment of all natural areas, including the non-forested main campus, should be done as soon as possible to determine the health of those areas. Recommendations should then be provided on improving and maintaining the health of natural areas as well as best use and management practices that should be implemented. We recommend using external expertise, supplemented with on-campus expertise, to insure unbiased opinions about the natural areas.

Three sources are listed below but there are many others. The N.C. Department of Forestry, New Hanover County Park Ranger, is the only one that is free of charge.

1. North Carolina Forest Service (NCFS)
New Hanover County Park Ranger, Bill Walker, is willing to come out to “look at” the forest with an eye toward stewardship. He has offered to bring a forester, Laura Barston, along as well. This would be a no charge look at our forest. They would be able to do this beginning in July with the new fiscal year.
Contact: Bill Walker (910) 251-5750

2. NatureServe
NatureServe is a highly regarded consulting group that is utilized by groups such as the Nature Conservancy and North Carolina Plant Conservation. Roger Shew has seen examples of their work in the Green Swamp that included GIS data and plant community identification, soils descriptions, discussions of fuel load, and recommendations for restoration. NatureServe can do many levels of study from cursory community breakdowns to detailed community descriptions with all flora identified, etc.
Contact: Milo Pyne
NatureServe, SE US Regional Office
6114 Fayetteville Rd, # 109
Durham, NC 27713-6284
919-484-7857 ext 136
919-484-7357 fax
'milo_pyne@natureserve.org'

3. Land Management Group, Inc.
Land Management is a local group that has a strong reputation, particularly in wetland delineation but also in other assessments too. One job currently being worked on is the assessment of the Eagle Island area. Roger Shew walked part of the property with Rob Moul and Rob feels that there could be potential for restoring some of the isolated wetland areas. Land Management can do many levels of study also.
Contact: Rob Moul
Land Management Group, Inc.
3805 Wrightsville Ave.
Wilmington, N.C. 28403
(910) 452-0001
Appendix C
Description of the Main Campus Forest

The Main Forest site is composed primarily of sandy soils (Baymeade and less well-drained Leon) on flat to slightly rolling sand hills with interspersed isolated wetlands and jurisdictional wetlands. The soils in the wetlands are primarily Murville and Lynn Haven. There are also small areas of mixed hardwoods and pond pine woodlands. The dominant community is the Xeric Sandhill Scrub Coastal Fringe Variant (LeBlonde, 2003). It is also termed the Coastal Fringe Sandhill community (Natural Resources Report completed by Kimley-Horn and Associates for UNCW, 2005). The Xeric Sandhill community is dominated by an open canopy of longleaf pine (*Pinus palustris*) in the healthier parts of the forest and a closed canopy (closely spaced trees) of longleaf in other parts. Although only a few trees were cored, the age of the trees span from current recruits (grass stage) to over 70 – 100+ years. There is often an understory of turkey oak (*Quercus laevis*) and local occurrences of sand live oak (*Quercus geminata*) and dwarf live oak (*Quercus minima*). Wiregrass (*Aristida stricta*) is present but suppressed because of a thick canopy or because of the absence of fire. Longleaf pine and wiregrass are fire dependent species. The isolated wetlands and jurisdictional wetlands, though their hydrology has changed and is less wet than historically, still contain a mix of wetland plants (pond cypress (*Taxodium ascendens*) and fetterbush (*Lyonia lucida*)). These and the less wet transitional areas also contain red maple (*Acer rubrum*), pond pine (*Pinus serotina*), loblolly pine (*Pinus taeda*), swamp red bay (*Persea palustris*), highbush blueberry (*Vaccinium formosum*), dahoon holly (*Ilex cassine*), Inkberry (*Ilex glabra*), and Wax Myrtle (*Myrica cerifera*). Small changes in topography greatly affect the soil moisture/plant communities that are present.

The longleaf pine/wiregrass community was an important forest ecosystem in the southeastern U.S. and in N.C. There are only remnant forests left from a once extensive longleaf pine forest. Of the original ~90 million acres of longleaf, only ~3 million acres remain. Longleaf pine forests developed and thrived in conjunction with low intensity fires that began from lightning strikes and later from fires set by Native Americans realizing the benefits of fire to natural graze. Today, prescribed burns are required for the management of the longleaf pine/wiregrass community. Management and conservation are needed to insure the health of our UNC Wilmington forest for current and future use. We can only do this if we know the ecosystems in detail and are willing to actively manage them.
A preliminary survey of academic and organized use of UNCW forest areas indicates a very high demand for this space. From usage data gathered and given below, it is obvious that the UNCW forest areas are truly an important “Green Classroom”. These areas have as much student usage as many of our traditional classrooms with over 8,000 individual academic uses per year. With use by 12 academic departments encompassing both arts, humanities and sciences, it can not be overstated that this is an integral component of the educational experience at UNCW. Currently nearly 50 classes use forest areas as part of their curriculum with at least 12 additional classes under development or revision that anticipate additional use of this “Green Classroom”.

Loss of the “Living/Green Classroom” would result in additional expense to all the classes listed because they would have to pay for travel to a remote site for the same experience. This would increase the overall carbon footprint of the University with fuel consumption of vehicles used for the transportation of students. It would also decrease instructional time which would be used for travel to and from any remote sites. The UNCW “Green Classroom” not only provides academic opportunities for students, it also saves the University funds for travel and maintenance of vehicles.

Summary of the “academic use” of the forest in the past year:
1. 12 academic departments used the forest.
2. 49 classes used the forest.
3. 144 class sections used the forest.
4. 2,689 students used the forest for educational purposes.
5. There were 8,209 individual uses of the forest.

Summary of “organized use” by UNCW clubs and organizations:
• 9,784 individual uses.

Total Academic and Organized use:
• 17,993 uses per year.

DEPARTMENTAL USE:

BIOLOGY
BIO 105-Concepts of Modern Biology—26 section/yr with 650 students—2 labs
Total usage…………………………………….1,300 uses
BIO 205-Plant Biology soon the become BIO 202-Biodiversity
18 sections/yr with 450 students—3 labs
Total usage…………………………………….1,350 uses
BIO 312-Marine Botany—1 section/yr with 24 students—2 labs
Total usage…………………………………….48 uses
BIO 315 Comparative Vertebrate Anatomy—1 section/yr with 24 students—2 activities
Total usage…………………………………….48 uses
BIO 356-Vertebrate Natural History—1 section/yr with 24 students—4 labs
Total usage…………………………………….96 uses
BIO 366 Laboratory-Ecology—12 sections/yr with 300 students—6 labs
Total usage…………………………………….1,920 uses
BIO 452-Mammalogy—1 section/yr with 24 students—4 labs
Total usage…………………………………….96 uses
BIO 460-Limnology—1 section/yr with 8 students—2 labs
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Section/year</th>
<th>Students/Section</th>
<th>Activities/Section</th>
<th>Total Usage</th>
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<tbody>
<tr>
<td>BIO 480</td>
<td>Field Studies</td>
<td>2</td>
<td>16</td>
<td>10</td>
<td>16 uses</td>
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<tr>
<td>BIO 495</td>
<td>Senior Seminar</td>
<td>1</td>
<td>20</td>
<td>1 activity</td>
<td>20 uses</td>
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<td>BIO 534</td>
<td>Advanced Ecology</td>
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<td>8</td>
<td>1 lab</td>
<td>8 uses</td>
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<td>BIO 550</td>
<td>Advanced Vertebrate Biology</td>
<td>1</td>
<td>12</td>
<td>5 labs</td>
<td>60 uses</td>
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<tr>
<td>CHEM 377</td>
<td>Environmental Chemistry</td>
<td>4</td>
<td>60</td>
<td>3 labs</td>
<td>180 uses</td>
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<td>COM 380</td>
<td>Field Video Production 1</td>
<td>1</td>
<td>16</td>
<td>2 activities</td>
<td>32 uses</td>
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<tr>
<td>COM 480</td>
<td>Field Video Production 2</td>
<td>1</td>
<td>12</td>
<td>2 activities</td>
<td>24 uses</td>
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<tr>
<td>COM 491</td>
<td>Directed Individual Study</td>
<td>3</td>
<td>3</td>
<td>3 activities</td>
<td>9 uses</td>
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<tr>
<td>CRW 201</td>
<td>Intro. to Creative Writing</td>
<td>1</td>
<td>25</td>
<td>2 activities</td>
<td>50 uses</td>
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<tr>
<td>CRW 207</td>
<td>Fiction Writing</td>
<td>1</td>
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<td>2 activities</td>
<td>40 uses</td>
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<td>CRW 208</td>
<td>Poetry Writing</td>
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<td>2 activities</td>
<td>40 uses</td>
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<tr>
<td>EDN 336</td>
<td>Teaching of Science k-6</td>
<td>2</td>
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<td>EDN 338</td>
<td>Teaching of Science-6-9</td>
<td>1</td>
<td>10</td>
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<td>10 uses</td>
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<tr>
<td>EDN 485</td>
<td>Special Topics</td>
<td>1</td>
<td>10</td>
<td>1 activity</td>
<td>10 uses</td>
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<tr>
<td>EDN 592</td>
<td>Independent Study</td>
<td>1</td>
<td>5</td>
<td>1 activity</td>
<td>5 uses</td>
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<tr>
<td>ENG 223</td>
<td>American Literature</td>
<td>1</td>
<td>25</td>
<td>2 activities</td>
<td>50 uses</td>
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<tr>
<td>ENG 350</td>
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<td>28</td>
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<td>ENG 353</td>
<td>Southern American Literature</td>
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<td>30</td>
<td>1 activity</td>
<td>30 uses</td>
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<td>ENG 561</td>
<td>Topic in American Literature</td>
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<td>10</td>
<td>1 activity</td>
<td>10 uses</td>
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<td>EVS 195</td>
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<td>208 uses</td>
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<tr>
<td>EVS 370</td>
<td>Environmental Psychology</td>
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<td>17</td>
<td>2 labs</td>
<td>68 uses</td>
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<tr>
<td>EVS 471</td>
<td>Man. Of Nat. Res. Areas</td>
<td>1</td>
<td>3</td>
<td>1 lab</td>
<td>3 uses</td>
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<td>EVS 472</td>
<td>Coastal Protected Areas Man.</td>
<td>1</td>
<td>11</td>
<td>1 lab</td>
<td>11 uses</td>
</tr>
<tr>
<td>EVS 485</td>
<td>Field Methods</td>
<td>1</td>
<td>20</td>
<td>8 labs</td>
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</table>
EVS 592—Special Topics—2 sections/yr with 9 students—6 labs
Total usage........................................160 uses
SCI 519—Enviro. Ed. for Teachers—1 section/yr with 5 students—1 lab
Total usage........................................5 uses

GEOGRAPHY
GGY 130—Intro. to Physical Geography—16 sections/yr with 360 students—2 labs
Total usage........................................720 uses
GGY 335—Geomorphology—2 sections/yr with 30 students—2 labs
Total usage........................................60 uses
GGY 437—Soils in Earth Science—1 section/yr with 20 students—4 labs
Total usage........................................80 uses
GGY 491—Directed Individual Study—4 students in past year
Total usage........................................100 uses

GEOLOGY
GLY 120—Enviro. Geology—6 labs/yr with 120 students—1 lab
Total usage........................................120 uses
GLY 226—Principles of Hydrology—1 section/yr with 20 students—1 lab
Total usage........................................20 uses
GLY 312—Sedimentary Petrology—1 section/yr with 12 students—1 lab
Total usage........................................12 uses
GLY 426—Geohydrology—1 section/yr with 5 students—2 labs
Total usage........................................10 uses
GLY 599—MS thesis credit—1 student field area in past year
Total usage........................................50 uses
SCI 514—Geo. Ed. for Teachers—1 section/yr with 6 students—4 labs
Total usage........................................24 uses

HONORS
HON 110—Freshman Honors Seminar—2 sections/yr with 45 students—2 activities
Total usage........................................90 uses
HON 120—Honors Enrichment Seminar—3 sections/yr with 30 students—2 activities
Total usage.......................................60 uses

PSYCHOLOGY
PSY 491—Directed Individual Study—5 students in the past year
Total usage.......................................200 uses

UNIVERSITY STUDIES
UNI 101—Freshman seminar—1 section/yr with 25 students—1 activity
Total usage.......................................25 uses

ORGANIZED USES:
UNCW Cycling Club—50 uses with 10 members
Total usage....................................500 uses
UNCW Challenge/ropes course—1,784 participants with 8,126 hours of program use
Total usage....................................1,784 uses
UNCW Cross Country Team—250 daily uses with 30 team members
Total usage....................................7,500 uses
Appendix E
Maps

Maps of the main campus and the Ev-Henwood and Broadfoot properties are included here.

The area shown in the acreage map highlight the important ~110 acre forest core area that the committee thinks is the most important area for conservation.
UNC-W campus and areas of discussion in Campus Environmental Stewardship Report. The image in A (top photo) shows the areas highlighted in the Master Plan as well as the location of Seahawk Crossing, the adjacent 22 acres, approximate area of athletic fields adjacent to Phase II, and a couple of the small pocket forest areas. One of the more important recommendations of the committee is that instead of having a rim forest, that a larger core conservation area of ~110 acres be left intact (B - bottom photo). The athletic field area adjacent to Phase II, as determined by the Committee, is one of the more valuable natural areas with longleaf pine and wiregrass and isolated wetland areas. Keeping a large core conservation area will be more beneficial to the health of the plant and animal communities as well. We propose that if athletic areas are needed, that areas outlined in blue be considered first and the best of those areas would be adjacent to current athletic field areas and not in the forest.
Location maps of Ev-Henwood (174 acres) in Brunswick County off Hwy 17.
Location maps of the Broadfoot Property in northern New Hanover County, Middle Sound.
Appendix F
Broadfoot Property Deeds