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Background and Current Research:

Dr. Wade Watanabe is currently a Research Professor with the Center for Marine Science at UNCW where he is Coordinator of the Center's Aquaculture Program. Dr. Watanabe's background is in the area of general finfish aquaculture. He has published extensively in the areas of controlled breeding, larval culture, and juvenile growout of various freshwater and marine finfish species. He has conducted research in Asia, the Pacific, the Caribbean as well as in the US and with a variety of species including freshwater prawns, carp, tilapias, grey mullet, milkfish, Nassau grouper, red drum, summer and southern flounder, mutton snapper, black sea bass and red porgy. At UNCW, Dr. Watanabe's current research focuses on marine finfish aquaculture research and commercial development, including experimental breeding, larval culture and live feeds production, and intensive growout of new species. He is currently conducting collaborative research on intensive recirculating aquaculture system design and operation, nutrient recycling through integrated finfish-shellfish polyculture, economics and marketing of aquaculture production, and transfer of technology to commercial users through pilot-scale demonstration. Dr. Watanabe is currently serves as Associate Editor for the Journal of the World Aquaculture Society and Director and Publications Chair of the U.S. Aquaculture Society.

Education:

B.S.: 1973, Zoology, Oregon State University, Corvallis.
M.S.: 1975, Zoology, University of Hawaii, Honolulu.
Ph.D: 1982, Zoology, University of Hawaii.

Professional Experience:

1999-present	Research Professor, Aquaculture Program Coordinator, University of North Carolina Wilmington
1997-1999	Associate Research Scientist, University of North Carolina Wilmington
1996	Chief Scientist, Sea Change Foundation, Vero Beach, Florida

1986-1995	Chief Scientist, Caribbean Marine Research Center, Vero Beach, Florida and Lee Stocking Island, Bahamas.
1982-1985	Marine Biologist, International Center for Living Aquatic Resources Management (ICLARM), Manila, Philippines
1976-1981	Research Assistant, Oceanic Institute, Hawaii
1975	Graduate Research Assistant, Hawaii Institute of Marine Biology

Fellowships:

1982-1985	Rockefeller Foundation Post-doctoral Research Fellow, International Center for Living Aquatic Resources Management, Manila, Philippines.
1977-1981	Jessie Smith Noyes Foundation Pre-doctoral Fellow, Oceanic Institute, Hawaii.

Teaching:

1983-1984:	Visiting Lecturer, National Sun Yat Sen University and National Taiwan University, Taiwan
1991-1996:	Graduate Faculty (Adjunct), Department of Biological Sciences, Florida Institute of Technology, Melbourne, Florida.
1997-Present:	Lecturer, Department of Biological Sciences, UNCW (BIO 486/591; Advanced Topics: Finfish Mariculture). Graduate Faculty, Department of Biology and Marine Biology and Marine Sciences.

Selected Publications (1995-present):

Watanabe, W.O. 1995. Aquaculture of the Florida pompano (*Trachinotus carolinus*) and other jacks (family Carangidae) in the western Atlantic, Gulf of Mexico, and Caribbean Basin: status and potential. In: K.L. Main and C. Rosenfeld, editors, Culture of High-Value Marine Fishes in Asia and the United States. Proceedings of the Fifth International Asian Interchange Workshop. The Oceanic Institute, Honolulu, Hawaii.

Watanabe, W.O., S.C. Ellis, E.P. Ellis, W.D. Head, C.D. Kelley, A. Moriwake, C.-S. Lee and P.K. Bienfang. 1995. Progress in controlled breeding of Nassau grouper (*Epinephelus striatus*) broodstock by hormone induction. Aquaculture 138: 205-219.

Ellis, S.C., G. Viala, and W.O. Watanabe. 1996. Growth and feed utilization of hatchery-reared, juvenile Nassau grouper (*Epinephelus striatus*) fed four practical diets. Progressive Fish-Culturist 58: 167-172.

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preliminary pilot-scale culture through metamorphosis. Journal of the World Aquaculture Society 27: 323-331.

Watanabe, W.O., R.I. Wicklund, B.L. Olla and W.D. Head. 1997. Saltwater culture of the Florida red and other saline tolerant tilapias: a review. Pages 54-141 in B.A. Costa-Pierce and J.E. Rakocy (eds). Tilapia Aquaculture in the Americas, Vol. 1. World Aquaculture Society, Baton Rouge, LA, USA.

Ellis, S.C., W.O. Watanabe, and E.P. Ellis. 1998. Temperature effects on feed utilization and growth of post-settlement stage Nassau grouper. Transactions of the American Fisheries Society 126: 309-315.

Watanabe, W.O., M.W. Feeley, S.C. Ellis, E.P. Ellis and R.A. Cooper. 1998. Light intensity and salinity effects on eggs and yolksac larvae of the summer flounder *Paralichthys dentatus*. Progressive Fish-Culturist 60: 9-19 (American Fisheries Society Best Paper Award for 1999 in N.A. Journal of Aquaculture).

Watanabe, W.O., E.P. Ellis, S.C. Ellis, J. Chavez, C. Mandfredi, R.W. Hagood, M. Sparsis and S. Arneson. 1998. Artificial propagation of mutton snapper *Lutjanus analis* a new candidate marine fish species for aquaculture. Journal World Aquaculture Society 29: 176-187.

Watanabe, W.O., E.P. Ellis, S.C. Ellis and M.W. 1998. Progress in controlled maturation and spawning of summer flounder *Paralichthys dentatus* broodstock. Journal of the World Aquaculture Society 29: 393-404.

Watanabe, W.O. S. C. Ellis, E. P. Ellis and M.W. Feeley. 1999. Temperature effects on eggs and yolksac larvae of the summer flounder *Paralichthys dentatus* at different salinities. North American Journal of Aquaculture 61: 267-277. (Nominee American Fisheries Society Best Paper Award for 1999 in N.A. Journal of Aquaculture).

Watanabe, W.O., P. M. Carroll and H.V. Daniels. 2001. Sustained, natural spawning of southern flounder (*Paralichthys lethostigma*) broodstock under an extended photothermal regime. Journal of the World Aquaculture Society 32: 153-166.

Watanabe, W.O. 2001. Species profile: Mutton snapper. Southern Regional Aquaculture Center. Texas A & M University. SRAC Pub. No. 725. 10 pp.

Watanabe, W.O., S.C. Ellis and J. Chaves. 2001. Effects of dietary lipid and energy to protein ratio on growth and feed utilization of juvenile mutton snapper (*Lutjanus analis*) fed isonitrogenous diets at two temperatures. Journal of the World Aquaculture Society 32: 30-40.

Johnson, E.G., W.O. Watanabe and S.C. Ellis. 2002. Effects of dietary lipids and energy: protein ratios on growth and feed utilization of the Nassau grouper (*Epinephelus striatus*) at two temperatures. North American Journal of Aquaculture 64: 47-54.

Copeland, K.A., W.O. Watanabe and P.M. Carroll. 2002. Growth and feed utilization of captive wild-caught black sea bass *Centropristis striata* fed practical diets in a recirculating tank system under a semi-controlled temperature regime. Journal of the World Aquaculture Society 33: 97-109.

Watanabe, W.O., T. M. Losordo, K. Fitzsimmons and F. Hanley. 2002. Tilapia production systems in the Americas: technological advances, trends and challenges. Reviews in Fisheries Science 10: 465-498.

Watanabe, W.O., T.I.J. Smith, D.L. Berlinsky, C.A. Woolridge, K.R. Stuart, K.A. Copeland and M.R. Denson. 2003. Volitional spawning of black sea bass *Centropristis striata* induced with pelleted luteinizing hormone releasing hormone-analogue. Journal of the World Aquaculture Society 34: 319-331.

Henne, J.P. and W.O. Watanabe. 2003. Effects of light intensity and salinity on growth, survival and osmoregulatory ability of southern flounder larvae *Paralichthys lethostigma*. Journal of the World Aquaculture Society 34: 450-465.

Daniels, H.V. and W.O. Watanabe. 2003. A practical hatchery manual: Production of southern flounder fingerlings. North Carolina Sea Grant. 40 pp.

Copeland, K.A., W.O. Watanabe, P.M. Carroll, K.S. Wheatley, and T.M. Losordo. 2003. Growth and feed utilization of captive wild black sea bass *Centropristis striata* at four different densities in a recirculating tank system. Journal of the World Aquaculture Society 34: 300-307.

Moustakas, C. Th., W.O. Watanabe and K.A. Copeland. 2004. Combined effects of photoperiod and salinity on growth, survival, and osmoregulatory ability of southern flounder *Paralichthys lethostigma*. Aquaculture 229: 159-179.

Watanabe, W.O., D.D. Benetti, M.W. Feeley, D. A. Davis and R.P. Phelps. 2005. Status of artificial propagation of mutton, yellowtail and red snapper (family *Lutjanidae*) in the southeastern U.S. In: A.M. Kelly, editor. Aquaculture in the 21st Century. American Fisheries Society. (In Press)

Carroll, P.M., W.O. Watanabe and T.M. Losordo. 2005. Pilot production of hatchery-reared summer flounder in a marine recirculating aquaculture system: the effects of ration level on growth, feed conversion, and survival. Journal of the World Aquaculture Society 36: 120-128.

Watanabe, W.O., K. Fitzsimmons and Yang Yi. 2005. Farming of tilapia in saline waters. In: C. Webster and C. Lim, eds. Tilapia: Biology, Culture and Nutrition. The Haworth Press, Inc., Binghamton, NY (In Press).

Copeland, K.A., W.O. Watanabe and C. Dumas. 2005. Economic evaluation of a small-scale recirculating system for ongrowing of captive wild black sea bass *Centropristis striata* in North Carolina. Journal World Aquaculture Society 36: 489-497.