

CURRICULUM VITAE

Amanda Southwood Williard

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Current Position

Professor Department of Biology and Marine Biology
University of North Carolina at Wilmington

Education

- 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

Experience

- 2016-present Professor, Department of Biology and Marine Biology
University of North Carolina Wilmington
- 2011 – 2016 Associate Professor, Department of Biology and Marine Biology
University of North Carolina Wilmington
- 2005 – 2011 Assistant Professor, Department of Biology and Marine Biology
University of North Carolina Wilmington
- 2004 – 2005 Associate Researcher (Advisor – Dr. J. Yonat Swimmer)
NOAA Fisheries & The Joint Institute for Marine and Atmospheric Research,
University of Hawaii
- 2003-2004 Post-Doctoral Fellow (Advisor – Dr. J. Yonat Swimmer)
NOAA Fisheries & The Joint Institute for Marine and Atmospheric Research,
University of Hawaii
- 1994-2002 Graduate Research Assistant (Advisor – Dr. David R. Jones)
Department of Zoology, University of British Columbia
- 1993-1994 Principle Laboratory Technician (Supervisor – Dr. Charles Mactutus)
Tobacco and Health Research Institute, University of Kentucky
- 1991-1992 Research Assistant (Advisor – Dr. Stephen Kempf)
Research Experience for Undergraduates Grant (NSF), Department of Biology,
Auburn University
- 1990 Assistant Laboratory Technician (Supervisor – Dr. James Wojiehowski)
Environmental Health Research and Testing, Lexington, KY

Teaching

- 2005-present Lecturer – Department of Biology and Marine Biology, University of North Carolina at Wilmington, *Principles of Biology – Cells (BIO204)*, *Animal Physiology (BIO345)*, *Environmental Physiology (BIO445)*, *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

- Williard A.S., Harden L.A., Jones T.T., Midway S.R. 2019. Effects of temperature and salinity on body fluid dynamics and metabolism in the estuarine diamondback terrapin (*Malaclemys terrapin*). *The Journal of Experimental Biology* 222, jeb202390. doi:10.1242/jeb.202390
- Yang, T., Haas, H.L., Patel, S., Smolowitz, R., James, M.C., Williard, A.S. 2019. Blood biochemistry and haematology of migrating loggerhead turtles (*Caretta caretta*) in the Northwest Atlantic: reference intervals and intra-population comparisons. *Conservation Physiology* 7: coy079; doi:10.1093/conphys/coy079.
- Barco SG, Burt ML, DiGiovanni RA Jr, Swingle WM, Williard AS. 2018. Loggerhead turtle *Caretta caretta* density and abundance in Chesapeake Bay and the temperate ocean waters of the southern portion of the Mid-Atlantic Bight. *Endangered Species Research* 37: 269-287. <https://doi.org/10.3354/esr00917>
- Wildermann NE, Gredzens C, Avens L, Barrios-Garrido HA, Bell I, Blumenthal J, Bolten AB, Braun McNeill J, Casale P, Di Domenico M, Domit C, Epperly SP, Godfrey MH, Godley BJ, González-Carman V, Hamann M, Hart KM, Ishihara T, Mansfield KL, Metz TL, Miller JD, Pilcher NJ, Read MA, Sasso C, Seminoff JA, Seney EE, Williard AS, Tomás J, Vélez-Rubio GM, Ware M, Williams JL, Wyneken J, Fuentes MMPB. 2018. Informing research priorities for immature sea turtles through expert elicitation. *Endangered Species Research* 37: 55-76. <https://doi.org/10.3354/esr00916>
- Williard, A.S., Hall, A.G., Fujisaki, I., McNeill, J.B. 2017. Oceanic overwintering in juvenile green turtles *Chelonia mydas* from a temperate latitude foraging ground. *Marine Ecology Progress Series* 564:235-240.
- Barco, S., Law, M., Drummond, B., Koopman, H., Trapani, C., Reinheimer, S., Rose, S., Swingle, M., Williard, A.S. 2016. Loggerhead turtle killed by vessel and fishery interaction in Virginia, USA, are healthy prior to death. *Marine Ecology Progress Series* 555:221-234.
- Chavez, S.J., Williard, A.S. 2016. The Effects of Bycatch Reduction Devices on Diamondback Terrapin and Blue Crab Catch in the North Carolina Commercial Crab Fishery. *Fisheries Research* 186: 94-101.

- Williard, A., Parga, M., Sagarminaga, R., Swimmer, Y. 2015. Physiological ramifications for loggerhead turtles captured in pelagic longlines. *Biology Letters* 11: 20150607.
- Harden, L.A., Midway, S.R., Williard, A.S. 2015. The blood biochemistry of overwintering diamondback terrapins (*Malaclemys terrapin*). *Journal of Experimental Marine Biology and Ecology* 466: 34-41.
- Harden, L.A., Duernberger, K.A., Jones, T.T., Williard, A.S. 2014. Total body water and water turnover rates in the estuarine diamondback terrapin (*Malaclemys terrapin*) during the transition from dormancy to activity. *Journal of Experimental Biology* 217: 4406-4413.
- Casey, J.P., James, M.C., and Williard, A.S. 2014. Behavioral and metabolic contributions to thermoregulation in freely swimming leatherback turtles at high latitudes. *Journal of Experimental Biology* 217: 2331-2337.
- Williard, A.S. 2013. Physiology as Integrated Systems. *In The Biology of Sea Turtles* (vol. 3). Wyneken, J., Lohmann, K., and J. Musick (eds.). Boca Raton, FL. CRC Press. pp 1-30.
- Harden, L. A., Williard, A. S. 2012. Using a spatially-explicit landscape risk model to investigate bycatch risk of terrapins in crab pots. *Marine Ecology Progress Series* 467: 207-217
- DeGregorio, B., Williard, A. S. 2011. Incubation temperatures and metabolic heating of relocated and in situ loggerhead sea turtle (*Caretta caretta*) nests at a northern rookery. *Chelonian Conservation and Biology* 10(1), 54-61.
- Southwood Williard, A., Harden, L.A. 2011. Seasonal changes in thermal environment and metabolic enzyme activity in the diamondback terrapin (*Malaclemys terrapin*). *Comparative Biochemistry and Physiology, Part A* 158(4), 477-484.
- Casey, J.P., Garner, J., Garner, S., Southwood Williard, A. 2010. Diel foraging behavior of gravid leatherback sea turtles in deep waters of the Caribbean Sea. *Journal of Experimental Biology* 213: 3961-3971.
- Snoddy, J.E., Southwood Williard, A. 2010. Movements and post-release mortality of juvenile sea turtles released from gillnets in the lower Cape Fear River, North Carolina, USA. *Endangered Species Research* 12: 235-247.
- Goshe, L., Avens, L. Scharf, F., Southwood A. 2010. Estimation of age at maturation and growth of Atlantic green turtles (*Chelonia mydas*) using skeletochronology. *Marine Biology* 157:1725-1740.
- Southwood, A., Avens, L. 2010. Physiological, behavioral, and ecological aspects of migration in reptiles. *Journal of Comparative Physiology B* 180(1):1-23.
- Snoddy, J., Landon, M., Blanvillain, G., Southwood, A. 2009. Blood biochemistry of sea turtles captured in gillnets in the lower Cape Fear River, North Carolina, USA. *Journal of Wildlife Management* 73(8):1394-1401.
- Southwood, A.L., Fritches, K., Brill, R.W., Swimmer, J.Y. 2008. Sound, chemical, and light detection in sea turtles and pelagic fishes: sensory-based approaches to bycatch reduction in longline fisheries. *Endangered Species Research* 5: 225-238.
- Southwood, A.L., Higgins, B.M., Brill, R.W., Swimmer, J.Y. 2006. Chemoreception in loggerhead sea turtles. *In Sea Turtle and Pelagic Fish Sensory Biology: Developing Techniques to Reduce Sea Turtle Bycatch in Longline Fisheries.* (Eds. Y. Swimmer and R. Brill). U.S. Department of Commerce, NOAA Technical Memorandum, NOAA- NMFS-PIFSC-7: p41-56.
- Southwood, A.L., Reina, R.D., Jones, V.S., Speakman, J.R., and Jones, D.R. 2006. Seasonal metabolism of juvenile green turtles at Heron Island, Australia. *Canadian Journal of Zoology* 84(1): 125-135.

- Southwood, A.L., Andrews, R.D., Paladino, F.V., and Jones, D.R. 2005. Effects of diving and swimming behaviour on body temperatures of leatherback sea turtles in tropical seas. *Physiological and Biochemical Zoology* 78(2): 285-297.
- Jones, D.R., Southwood, A.L., Andrews, R.D. 2004. Energetics of Leatherback Sea Turtles. *In Experimental Approaches to Conservation Biology*. Gordon, M.S. and S. M. Bartol (eds). Berkeley. University of California Press, Ltd. pp 66-82.
- Southwood, A.L., Darveau, C.A., Jones, D.R. 2003. Metabolic and cardiovascular adjustments of juvenile green turtles to seasonal changes in temperature and photoperiod. *Journal of Experimental Biology* 206: 4521-4531.
- Southwood, A.L., Reina, R.D., Jones, V.S., and Jones, D.R. 2003. Seasonal diving patterns and body temperatures of juvenile green turtles at Heron Island, Australia. *Canadian Journal of Zoology* 81(6): 1014-1024.
- Southwood, A.L., Andrews, R.D., Lutcavage, M.E., Paladino, F.V., West, N.H., George, R. H., and Jones, D.R. 1999. Heart rates and diving behaviour of leatherback sea turtles in the Eastern Pacific Ocean. *Journal of Experimental Biology* 202:1115-1125.

Selected Presentations

- 2019 Eighth International Congress of Comparative Biochemistry and Physiology
Ottawa, Canada "*Osmoregulation in the diamondback terrapin: Behavioral vs. physiological strategies*"
- 2017 International Sea Turtle Symposium, Las Vegas, NV "*Oceanic overwintering in juvenile green turtles*"
- 2016 Association of Southeastern Biologists, Concord, NC. "*Effects of temperature on metabolism and osmotic balance of diamondback terrapins*"
- 2014 American Society of Ichthyologists and Herpetologists, Chattanooga, TN. "*Effects of temperature on metabolism and osmotic balance of 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 Planet Ocean Seminar Series. UNCW Center for Marine Science. "*Diamonds in the Rough: Biology and conservation of diamondback terrapins*"
- 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”
- 2006 Duke University Marine Laboratory, Beaufort, NC, USA
“Thermoregulation in leatherback turtles: to be hot or not?”
- 2005 Pacific Islands Fisheries Science Center, NOAA Fisheries, Honolulu, HI, USA
“Seasonal effects on metabolism and behavior of green sea turtles”
- 2004 Department of Zoology, University of Hawaii, Honolulu, HI, USA
“Thermal ecology of sea turtles: acclimatization, thermoregulation, and everything in between”
- 2004 55th Annual Tuna Conference, Lake Arrowhead, CA, USA
“Chemoreception in sea turtles: implications for interactions with fisheries”
- 2004 Western Pacific Fisheries Council, Honolulu, HI, USA
“Chemoreception in sea turtles: implications for interactions with fisheries”

Funded Proposals (external)

- 2018 “Fisheries Bycatch Assessment at Sea Turtle Foraging Grounds in Colombia and Panama”. Williard, A.S., Rodriguez Baron, J.M. National Fish and Wildlife Foundation. Funded in the amount of \$54,956.50.
- 2017 “Assessment of East Pacific Leatherback Turtle Bycatch Off the Coasts of Panama and Colombia”. Williard, A.S., Rodriguez Baron, J.M. NOAA Pacific Islands Regional Office. Funded in the amount of \$27,000.
- 2016 “Assessment of fisheries interactions with East Pacific leatherback turtles at foraging grounds off the coasts of Colombia and Panama”. Williard, A.S., Rodriguez Baron, J.M. NOAA Bycatch Reduction Engineering Program. Funded in the amount of \$110,119.
- 2016 “Estimating the effect of physiological status at boarding and attached monofilament on the post-release fates of loggerhead sea turtles (*Caretta caretta*) incidentally-hooked in the large pelagic longline fishery”. James, M., Williard, A.S., Harvey-Clark, C., Stokes, L., Clark, K., Atkinson, T. Department of Fisheries and Oceans (Canada). Funded in the amount of \$387,100 CAD.
- 2014 "Blood biochemistry of sea turtles incidentally captured in the recreational hook-and-line fishery". Williard, A. S. North Carolina Sea Grant. Funded in the amount of \$4,800.
- 2012 "Assessment of diamondback terrapin presence and abundance in Bogue Sound, NC". Williard, A. S., Harden, L. A., Cluse, W., Wolfe, J. North Carolina Sea Grant. Funded in the amount of \$21,882.
- 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.
- 2010 “Sea turtle nesting activity on Masonboro Island, NC”. Southwood, A. and Snider, A.

- North Carolina Coastal Reserve (DNER). \$8,064.
- 2009 “Timing and pathways of fall migrations for juvenile green sea turtles in Back, Core, and Pamlico Sounds, NC”. Southwood, A. McNeill, J., and Willis, E. North Carolina Sea Grant, Fisheries Resource Grants. Funded in the amount of \$44,590.
- 2009 “Diamondback terrapin distribution and habitat utilization in the lower Cape Fear River: Request for Y2 funds”. Southwood, A. and Wolfe, J. North Carolina Sea Grant, Blue Crab Research Program. Funded in the amount of \$43,998.
- 2009 “Sea Turtle Nesting Activity on Masonboro Island, NC”. Southwood, A.L. North Carolina Coastal Reserve (NERR). Funded in the amount of \$5,801.
- 2008 “Diamondback terrapin distribution and habitat utilization in the lower Cape Fear River”. Southwood, A. and Wolfe, J. North Carolina Sea Grant, Blue Crab Research Program. Funded in the amount of \$35,763.
- 2008 “Sea Turtle Nesting Activity on Masonboro Island, NC”. Southwood, A.L. North Carolina Coastal Reserve (NERR). Funded in the amount of \$5,393.
- 2007 “Sea Turtle Nesting Activity on Masonboro Island, NC”. Southwood, A.L. North Carolina Coastal Reserve (NERR). Funded in the amount of \$5,595.
- 2006 “Biochemical profiling of sea turtles incidentally captured during commercial longline fishing operations”. Southwood, A.L. NOAA Pacific Islands Fisheries Science Center. Funded in the amount of \$18,470.
- 2006 “Health status, post-release behavior, and survivability of sea turtles incidentally captured in the gillnet fishery of the Lower Cape Fear River”. Southwood, A.L. and Wolfe, J. North Carolina Sea Grant (FRG). Funded in the amount of \$100,418.
- 2006 “Leatherback turtle foraging habitat in the North Atlantic Ocean: Implications for fisheries interactions”. Southwood, A.L. and Kirby, D. Large Pelagics Research Center (UNH). Funded in the amount of \$178,032.
- 2006 “Sea Turtle Nesting Activity on Masonboro Island, NC”. Southwood, A.L. North Carolina Coastal Reserve (NERR). Funded in the amount of \$5,000.

Scholarships and Awards

- 2018 College of Arts and Sciences Pilot Grant Initiative (\$3,500)
University of North Carolina at Wilmington
- 2015 College of Arts and Sciences Summer Writing Initiative (\$3,500)
University of North Carolina at Wilmington
- 2011 Charles L. Cahill Award for Faculty Research and Development (\$3,000)
University of North Carolina at Wilmington
- 2010 Academic Affairs Minigrants (\$741)
University of North Carolina at Wilmington
- 2006 Charles L. Cahill Award for Faculty Research and Development (\$2,500)
University of North Carolina at Wilmington
- 2006 Summer Research Initiative (\$3,500)
University of North Carolina at Wilmington
- 1999 Proctor and Gamble Professional Opportunities Award (\$500)
American Physiological Society
- 1998-2000 University Graduate Fellowship (\$36,000)
University of British Columbia
- 1998 McLean Fraser Summer Research Fellowship (\$8,000)
University of British Columbia
- 1996 Kit Malkin Award for Studies in Marine Science (\$1,000)

1997 University of British Columbia
Archie Carr Award for Best Student Paper (\$300)
17th Annual Symposium on Sea Turtle Biology and Conservation
1994-1996 University Graduate Fellowship (\$33,000)
University of British Columbia
1989 – 1992 Kincaid Academic Scholarship (\$8,000)
University of Kentucky and Auburn University

Professional memberships

American Physiological Society American Society of Ichthyologists & Herpetologists
Sea Turtle Society Society for Integrative & Comparative Biology
Diamondback Terrapin Working Group

Peer-Reviewer

Journal of Experimental Biology Physiological and Biochemical Zoology
Journal of Animal Ecology Journal of Experimental Marine Biology and Ecology
Biological Conservation Comparative Biochemistry and Physiology
Endangered Species Research Chelonian Conservation and Biology
Biological Reviews Marine Ecology Progress Series