

CURRICULUM VITAE

Leigh Anne Harden, Ph.D.

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EDUCATION

- 2013 Ph.D. Marine Biology. University of North Carolina Wilmington, Wilmington, NC.
Adviser: Dr. Amanda Southwood Williard
2007 B.S. Biology. Davidson College, Davidson, NC.
2005 James Cook University, Queensland, Australia. July – Dec.

PROFESSIONAL AND ACADEMIC APPOINTMENTS

- 2016- **Assistant Professor of Biology**, Department of Biological Sciences, Benedictine University,
present Lisle, IL.
2015- **Assistant Term Professor of Biology**, Department of Biological Sciences, Benedictine
2016 University, Lisle, IL.
2014- **Assistant Professor of Biology & Postdoctoral Research Associate**, Department of
2015 Biology, Loyola University Chicago, Chicago, IL. Adviser: Dr. Joseph Milanovich.
2014 **Adjunct Assistant Professor of Biology & Postdoctoral Fellow**, Davidson College,
Davidson, NC.

INSTRUCTIONAL ACTIVITY

Benedictine University

BIOL1197: Principles of Organismal Biology
BIOL1180: Ecology of a Changing Planet (non majors)
BIOL2205: Introduction to Environmental Science
BIOL3258: Human Physiology
BIOL3259: Human Physiology Lab
BIOL4363 & 364: Ecology & Ecology Lab
BIOL4393: Great Ideas in Biology and Medicine
BIOL3389: Undergraduate Research
BIOL4303A: Conservation Biology and Biodiversity
BIOL 2155/CORE 3000B1 KYST Ecology and Culture of Asia (with North Park University)

Loyola University Chicago

BIOL265: Ecology
BIOL 111: General Biology Lab – Biodiversity
BIOL 112: General Biology Lab – Biodiversity

Davidson College

BIOL112: Organisms, Evolution, and Ecosystems Lecture & Lab
Group Investigations: Research on Southeastern Amphibians & Reptiles (Co-taught)

University of North Carolina Wilmington

BIO240 & 241: Human Anatomy and Physiology Lab

MENTORSHIP SINCE FALL 2015 “*” indicates that student project resulted in publication

- 2015-present
- Undergraduates (Benedictine University):
- **Elena Garza.** NSSRP 2019 – present. Project title: Adapting a Commercially Available Enzyme Immunoassay to Measure Corticosterone in Turtle Serum.
 - **Rebecca Weber.** NSSRP 2018, 2019 – present. Project title: A Collaborative Effort to Assess the Hematological Health of Augmented Blanding’s Turtle (*Emydoidea blandingii*) Populations.
 - **Alex Karwowska.** NSSRP 2017, 2018 – present. Project title: comparing the hematological health of juvenile Blanding’s turtles across captive rearing sites: implications for improving captive-rearing protocols. (two other students: **Rama Alzein, Yasmeen Ahmad**, are assisting with this project).
 - **Macy Andlinger.** NSSRP 2018 – present. Project title: *Utilizing Capture-Mark-Recapture Methods to Study Lake St. Benedict’s Freshwater Turtle Population.*
 - **Elizabeth Kvittek.** NSSRP 2019. Project description: Developing a problem-based learning discovery box all about Blanding’s turtle biology and conservation using real data.
 - ***Tim Benjamin.** 2017-2018. Project title: *Utilizing non-invasive techniques to measure mercury (Hg) concentrations in endangered, adult Blanding's turtles (Emydoidea blandingii) in northeastern Illinois.*
 - **Sumaiya Shahjahan** (BenU '18 alum). Project title: *Hematological health and immune response of captive-reared, re-released juvenile Blanding’s turtles (Emydoidea blandingii).*
 - **Summer BEST Program students.** 2017-2018. working at the Jurica Suchy Nature Museum at Benedictine University. Project description: *Creating a Blanding’s Turtle Educational Discovery Box as part of the Discovery Box Loan Program.*
 - **Jessica Nelson.** 2015-2016. Project Title: *Do Variations in Behavior & Environmental Temperatures Affect Blood Chemistry of overwintering Diamondback Terrapins?*
- Graduate students:
- **Armand Cann.** 2016-present. MS Student @ Loyola University Chicago. MS Committee Member and co-adviser to MS Thesis: *Behavioral and physiological ecology of augmented juvenile Blanding’s Turtles.*

PUBLICATIONS "*" indicates undergraduate author, + indicates graduate student author.

- 2019 Southwood Williard, A., **Harden, L.A.**, Jones, T.T., and Midway, S.R. (2019). Effects of temperature and salinity on body fluid dynamics and metabolism in the estuarine diamondback terrapin (*Malaclemys terrapin*). J Exp Biol 222, jeb202390.
- 2018 **Harden, L.A.**, Williard, A.S. Osmoregulation of Diamond-backed Terrapins (*Malaclemys terrapin*), In: W. M. Roosenburg and V. S. Kennedy, editors. Ecology and Conservation of the Diamond-backed Terrapin. Johns Hopkins University Press, Baltimore, MD. p. 111-125.
- 2018 Benjamin, T.*, Brasso, R., Midway, S., Thompson, D., **Harden, L.A.** 2018. Using Non-destructive Techniques to Measure Mercury (Hg) Concentrations in Gravid Blanding’s Turtles (*Emydoidea blandingii*) in Northeastern Illinois. Bulletin of Environmental Contamination and Toxicology <https://doi.org/10.1007/s00128-018-2407-4>.

- 2018 **Harden, L.A.**, J. Fernandez*, J.R. Milanovich, B.P. Struecker⁺, S.R. Midway. 2018. Blood biochemical reference intervals for wild ornate box turtles (*Terrapene ornata*) during the active Season. *Journal of Wildlife Diseases*. <https://doi.org/10.7589/2017-09-222>
- 2017 Milanovich, J.R., Struecker, B.P.⁺, Warcholek, S.A.*, **Harden L.A.** Thermal environment and microhabitat of ornate box turtle hibernacula. *Wildlife Biology* 2017: wlb.00295. DOI: 10.2981/wlb.00295
- 2015 Chase, F.W.*, Hardie, B.E.*, Kern, M.M., Pittman, S.E., **Harden, L.A.**, Dorcas, M.E. 2015. Evaluation of two individual identification techniques for spotted salamanders (*Ambystoma maculatum*). *Herpetological Review* 46, 192-196.
- 2015 **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.
- 2014 **Harden, L.A.**, Duernberger, K.A., Jones, T.T., Williard, A.S. Total body water and water turnover rates in the estuarine diamondback terrapin (*Malaclemys terrapin*) during the transition from dormancy to activity. 2014. *Journal of Experimental Biology* 217, 4406-4413.
- 2014 Strickland, J.C.*, Bahram, C.H.*, **Harden, L.A.**, Pittman, S.E., Kern, M.M., Dorcas, M.E. Life-history costs of reproductive behaviors in a wetland-breeding amphibian. *Journal of Freshwater Ecology*. DOI: 10.1080/02705060.2014.982725.
- 2014 Akins, C.*, Ruder, C.D.*, Price, S.J., **Harden, L.A.**, Gibbons, J.W., Dorcas, M.E. 2014. Factors affecting temperature variation and habitat use in free-ranging diamondback terrapins. *Journal of Thermal Biology* 44, 63-69.
- 2012 **Harden, L.A.** and Southwood Williard, A. 2012. Using spatial and behavioral data to evaluate the seasonal bycatch risk of diamondback terrapins (*Malaclemys terrapin*) in crab pots. *Marine Ecology Progress Series* 467, 207-217.
- 2011 Southwood Williard, A. and **Harden, L.A.** 2011. Seasonal changes in thermal environment and metabolic enzyme activity in the diamondback terrapin (*Malaclemys terrapin*). *Comparative Biochemistry and Physiology A – Molecular and Integrative Physiology* 158, 477-484.
- 2009 **Harden, L.A.**, S.E. Pittman, J.W. Gibbons, and M.E. Dorcas. 2009. Development of a rapid assessment technique to monitor diamondback terrapin (*Malaclemys terrapin*) populations using head-count surveys. *Applied Herpetology* 6, 237-245.
- 2009 **Harden, L.A.**, S.J. Price, and M.E. Dorcas. 2009. Terrestrial activity and habitat selection of Eastern mud turtles (*Kinosternon subrubrum*) in a fragmented landscape: Implications for habitat management of golf courses and other suburban environments. *Copeia* 1, 78-84.
- 2008 **Harden, L.A.** and M.E. Dorcas. 2008. Using thermal biology to investigate habitat use and activity of mud turtles (*Kinosternon subrubrum*) on a golf course, p. 321-323. *In* R. E. Jung and J. C. Mitchell (eds.), *Urban Herpetology*. *Herpetological Conservation* Vol. 3, Society for the Study of Amphibians and Reptiles. Salt Lake City, UT.
- 2007 **Harden, L.A.**, N.A. DiLuzio, M.E. Dorcas, and J.W. Gibbons. 2007. The spatial ecology and thermal ecology of diamondback terrapins (*Malaclemys terrapin*) in a South Carolina salt marsh. *Journal of North Carolina Academy of Science* 123, 154-162.

FUNDED PROPOSALS

- 2018 *Chicago Herpetological Society*. Rebounding Blanding's: Conservation-Based Outreach and Education. (with co-PI Karly Tumminello).

- 2014 *Carolina Herp Atlas*. Riverbanks Conservation Support Fund. Riverbanks Zoo & Garden, Columbia South Carolina. (with co-PI M.E. Dorcas) \$5000.
- 2014 *Testing the Utility of Environmental DNA (eDNA) for determining the presence of Bog Turtles (Glyptemys muhlenbergii)*. North Carolina Wildlife Resources Commission. (with co-PI M.E. Dorcas). \$9,981.
- 2012 *Seasonal variation in osmotic and metabolic status of diamondback terrapins*. North Carolina Herpetological Society Grant in Herpetology. \$360.
- 2012 *Assessment of diamondback terrapin presence and abundance in Bogue Sound, NC*. North Carolina Sea Grant. (with co-PIs A.S. Williard, W. Cluse, J. Wolfe). \$21,882.
- 2010 *Seasonal changes in physiology and behavior of the estuarine diamondback terrapin*. National Science Foundation Graduate Research Fellowship. 3-year graduate stipend.
- 2010 *Using postcard surveys to investigate potential interactions between blue crab fisheries and diamondback terrapins in coastal North Carolina*. North Carolina Sea Grant Minigrant. (with co-PI A. S. Williard). \$800.
- 2010 *Seasonal variation of behavior, ecology and physiology of diamondback terrapins (Malaclemys terrapin)*. Sigma Xi Grant-in-Aid of Research. \$996.
- 2010 *Seasonal variation of behavior, ecology and physiology of diamondback terrapins (Malaclemys terrapin) on Bald Head Island, North Carolina*. Diamondback Terrapin Working Group Research Grant. \$655.
- 2009 *Seasonal Changes of Diamondback Terrapin (Malaclemys terrapin) Movement and Physiology in a Southeastern North Carolina Salt Marsh*. North Carolina Academy of Science Robert R. Bryden Graduate Student Research Grant. \$1,000.
- 2006 *Terrestrial Activity of Eastern Mud Turtles (Kinosternon subrubrum) on Golf Courses: An Investigation of Habitat Selection*. North Carolina Herpetological Society Grant in Herpetology. \$600.
- 2006 *Terrestrial Activity of Eastern Mud Turtles (Kinosternon subrubrum) on Golf Courses: An Investigation of Habitat Selection*. Davidson College Biology Department. \$450.

AWARDS AND FELLOWSHIPS

- 2019 Dean's Award for Research – College of Science.
- 2011 *Using a spatially-explicit predator-prey model to investigate bycatch risk of terrapins in crab pots*. International Sea Turtle Symposium Best Student Poster Presentation in the Threats category. \$500.
- 2010 *Seasonal changes in physiology and behavior of the estuarine diamondback terrapin*. National Science Foundation Graduate Research Fellowship. Three-year graduate stipend.
- 2010 Nominated by University of North Carolina Wilmington and top-25 finalist for the K. Patricia Cross Future Leaders Award.
- 2010 University of North Carolina Wilmington Graduate Student Association award for best graduate student poster. \$100.
- 2009 Judith C. Bryan Holden Beach Turtle Watch Fellowship in Marine Biology. \$5000.
- 2009 *Diamondback terrapin (Malaclemys terrapin) habitat utilization in a North Carolina salt marsh: assessment of overlap with blue crab fisheries*. American Society of Ichthyologists & Herpetologists Storer Award for best student herpetology poster. \$300.
- 2009-2012 University of North Carolina Wilmington travel grants (10). (UNCW BioGSA, UNCW Graduate School, UNCW GSA).
- 2007 Sigma Xi Celebration of Undergraduate Research Award. Davidson College.

SELECTED PROFESSIONAL ORAL PRESENTATIONS

- 2016 *A Look Underground at the Ornate Box Turtle: Hibernation Thermal Ecology and Microhabitat of Hibernacula in North-central Illinois.* Co-author Joseph R. Milanovich, Leigh Anne Harden, Stanislaw Warcholek, Brock P. Struecker. American Society for Ichthyologists and Herpetologists. New Orleans, LA.
- 2016 *Seasonal Blood Chemistry of Ornate Box Turtles in Restored Prairies of North-central Illinois.* Co-author Joseph R. Milanovich, Leigh Anne Harden, Jennifer Fernandez, Brock P. Struecker. The 2016 Box Turtle Conservation Workshop. Urbana, IL.
- 2014 *Seasonal variation in body fluid composition and dynamics of diamondback terrapins.* Joint Meeting of Ichthyologists and Herpetologists. Chattanooga, TN.
- 2013 *Variation in osmotic and metabolic status of overwintering diamondback terrapins (Malaclemys terrapin).* Diamondback Terrapin Working Group. Seabrook, SC.
- 2013 *Variation in osmotic and metabolic status of overwintering diamondback terrapins (Malaclemys terrapin).* Society for Integrative and Comparative Biology. San Francisco, CA.
- 2012 *Biology and conservation of diamondback terrapins in North Carolina: implications for crab fisheries interactions.* Annual North Carolina Sea Turtle Meeting. Swansboro, NC.
- 2012 *Seasonal ecology of diamondback terrapins in southeastern North Carolina: implications for interactions with the blue crab fishery.* Society for Integrative and Comparative Biology. Charleston, SC.
- 2011 *Using a spatially-explicit predator-prey model to investigate bycatch risk of terrapins in crab pots.* North Carolina Herpetological Society Fall Meeting. Raleigh, NC.
- 2010 *Seasonal changes in thermal environment and metabolic enzyme activity in the diamondback terrapin.* Diamondback Terrapin Working Group Workshop. Chauvin, LA.
- 2009 *Seasonal changes in diamondback terrapin (Malaclemys terrapin) habitat use and activity in southeastern North Carolina.* Southeast Diamondback Terrapin Working Group Workshop. Wilmington, NC.
- 2009 *Conservation of diamondback terrapins: What do we know, not know, and need to know?* Joint Meeting of Ichthyologists and Herpetologists. Portland, OR. (Presented on behalf of Dr. Michael Dorcas and Dr. Whit Gibbons).
- 2009 *Diamondback terrapin habitat utilization in NC salt marsh: Overlap with crab fisheries.* North Carolina Sea Grant Fisheries Forum. New Bern, NC.
- 2007 *Terrestrial activity and habitat selection of eastern mud turtles (Kinosternon subrubrum) inhabiting golf course ponds.* Joint Meeting of Ichthyologists and Herpetologists. St. Louis, MO.
- 2006 *Keeping on Par with Wildlife: Investigations of Turtle Populations Inhabiting Golf Courses.* North Carolina Herpetological Society Fall Meeting. Raleigh, NC.

SELECTED POSTER PRESENTATIONS "*" indicates student-authored poster.

- 2019 **Adapting a Commercially Available Enzyme Immunoassay to Measure Corticosterone in Turtle Serum.* Louis Stokes Midwest Regional Center of Excellence conference, Indianapolis, IN.
- 2019 **A Collaborative Effort to Assess the Hematological Health of Augmented Blanding's Turtle (Emydoidea blandingii) Populations.* Joint Meeting of Ichthyologists and Herpetologists, Snowbird, UT.

- 2018 *Utilizing Capture-Mark-Recapture Methods to Study Lake St. Benedict's Freshwater Turtle Population. Associated Colleges of the Chicago Area (ACCA) Student Scholarship Symposium, Benedictine University, Lisle, IL.
- 2018 *Using a non-destructive technique to measure mercury (Hg) concentrations in endangered, adult Blanding's turtles (*Emydoidea blandingii*) in northeastern Illinois. Midwest Fish and Wildlife Conference, Milwaukee, WI.
- 2017 *Home Ranges of Captive-Reared, Recently-Released Juvenile Blanding's Turtles (*Emydoidea blandingii*). Annual Meeting of the Society for Freshwater Science, Raleigh, NC.
- 2017 *Examining the Ontogenetic Physiological Health of Captive-Reared and Released Juvenile Blanding's Turtles (*Emydoidea blandingii*). Annual Meeting of the Society for Freshwater Science, Raleigh, NC.
- 2017, *Hematological health and immune response of captive-reared, re-released juvenile
2018 Blanding's turtles (*Emydoidea blandingii*). Associated Colleges of the Chicago Area
2019 (ACCA) Student Scholarship Symposium, Benedictine University, Lisle, IL.
- 2016 *Seasonal Blood Chemistry of Ornate Box Turtles in Restored Prairies of North-central Illinois. Co-authors: American Society for Ichthyologists and Herpetologists. New Orleans, LA.
- 2016 *Do Variations in Behavior & Environmental Temperatures Affect Blood Chemistry of overwintering Diamondback Terrapins? Undergraduate Research, Scholarship, and Arts (URSA) symposium. Benedictine University, Lisle, IL.

INVITED GUEST LECTURES AT ACADEMIC INSTITUTIONS

- 2017 *The Functional Ecology of Endangered Turtles*. Science and Sociability Seminar, Benedictine University.
- 2016 *Behavioral and physiological ecology of reptiles*. Associated Colleges of the Chicago Area (ACCA) Student Seminar Fall 2016, Benedictine University.
- 2015 *Biology and conservation of diamondback terrapins: implications for crab fisheries interactions*. Guest virtual speaker, Coastal Carolina University.
- 2015 *Biology and conservation of turtles*. Guest virtual lecture to post-graduate and graduate students of Zoology, Microbiology and Biochemistry at Auxilium College, an all-Women's College in the Vellore District of India. Department Head & Associate Professor: Dr. Mary Josephine Rani.

ADDITIONAL TEACHING ACTIVITIES AND INVITED PUBLIC SEMINARS

- 2019 *How is Climate Change affecting Herpetofauna?* Chicago Wilderness Climate Clinic, continuing education event held at Benedictine University, Lisle, IL, Nov. 2019.
- 2018- *Life in a Pond: The Science of Turtles*. Jurica Suchy Nature Museum community outreach
2019 event held at Benedictine University, Lisle, IL. Sep. 2018 & 2019.
- 2017- *Career Booth at the Science Career in Search of Women Conference*. Argonne National
2019 Laboratory, Argonne, IL. April 2017-present.
- 2016 Women in Science Career Presentation to the GEMS club at Lane Tech College Prep, Chicago IL, Oct. 2016.
- 2015 Completion of Loyola University Chicago Faculty Center for Ignatian Pedagogy, Online Teaching Course, Summer 2015.

- 2014 *Diamonds in the Rough: Diamondback Terrapins in the Salt Marshes of North Carolina.* Hawk Talk. North Carolina Wildlife Club. Charlotte, NC.
- 2013 *A field guide to research.* Bald Head Island Conservancy Intern Research Seminar guest speaker, Bald Head Island, NC.
- 2009, 2010 Seasonal changes in diamondback terrapin (*Malaclemys terrapin*) habitat use and activity in southeastern North Carolina. Bald Head Island Conservancy Discovery Lecture Series guest speaker, Bald Head Island, NC.
- 2009-12 Summer marine biology educator, University of North Carolina Wilmington Marine Quest Summer Academic Enrichment Program, for 12-16 year old students interested in marine biology research and careers.
- 2010 Summer camp instructor for camp BONES (Brigade of Nurse Exploring Seahawks), a nursing and health academy for underserved and underrepresented middle and high school students from New Hanover County, NC.
- 2007-08 Environmental Educator, University of Georgia Jekyll Island 4 H Center. Supervisor: Melanie Biersmith.

PROFESSIONAL SCHOLARLY AND SERVICE ACTIVITIES

- BenU member: Learning Assistant Committee Member (2018 – present), Jurica-Suchy Natural History Museum Advisory Board Committee Member (March 2017 – present), The General Education Curriculum Committee (Nov. 2016 – present), College of Science Curriculum and Standards Committee (Fall 2019 – present), Sustainability Committee (Fall 2019 – present), People for Animal Welfare (PAW) Faculty Advisor (Sep. 2016 – present).
- Adjunct faculty North Park University, adjunct professor for Taiwan abroad trip Summer 2019: BIOL 2155/CORE 3000B1 KYST Ecology and Culture of Asia—Taiwan with Dr. Timothy Lin.
- Peer reviewer Global Ecology and Conservation, Journal of Natural History, Conservation Physiology, Animal Conservation, Northeastern Naturalist, Diversity and Distributions, Wetlands, Copeia, Endangered Species Research, Southwestern Naturalist, Journal of Herpetology, Journal of Wildlife Management, Journal of Fish and Wildlife, Herpetological Conservation and Biology, Chelonian Conservation and Biology, North American Journal of Fisheries Management, Herpetologica, USGS Internal Reviewer, Herpetological Review, Journal of Urban Ecology.
- Grant proposal reviewer 2009, 2011, 2012, 2019. Diamondback Terrapin Working Group Research travel grants. 2011 Northeast Resource Conservation Needs Proposal Reviewer: Turtle Team. 2013 Hudson River Foundation For Science and Environmental Research Proposal reviewer. 2019 D Diamondback Terrapin Working Group Research student posters.
- Coordinator Southeastern Diamondback Terrapin Working Group Symposium, Wilmington, NC. 2009. Cooperative meeting with agencies: Sapelo Island GA Coastal Training Program and National Estuarine Research Reserve (NERR), SC Division of Natural Resources, NC Coastal Reserve and NERR, North Inlet-Winyah Bay NERR and ACE Basin SC NERR. Southeastern Diamondback Terrapin Working Group Chair (March 2008-2013)

Society member: 500 Women Scientists (500WS) Chicago, American Society of Ichthyologists and Herpetologists, Partners in Amphibian and Reptile Conservation, Association for Zoos and Aquariums, Chicago Herpetological Society, Society of Integrative and Comparative Biology, Diamondback Terrapin Working Group.

RESEARCH FEATURED IN

- 2017 *The Daily Herald* “Blanding's turtles get a boost in DuPage”, *NCTV17* “Forest Preserve Releases Endangered Turtles”, and *ABC7 Chicago*.
- 2017 *BenU Voices Spring 2017* and *Ben.edu News Room* (Benedictine University) “Professor working to save endangered Northern Illinois Turtle”
- 2013 *Star News*, (Wilmington NC) “Diamondback terrapins subject of UNCW student’s research”
- 2013 *Coastal Review Online* (NC Coastal Federation) “Looking for Answers to Help Terrapins”
- 2009 *Coastwatch* (NC Sea Grant) “Mapping the Overlap: Terrapins & Crab Pots in the Lower Cape Fear Region”
- 2007 *The Charlotte Observer: Neighbors of Lake Norman* “Turtle Tracking: College student trying to find out if local golf course is suitable habitat”