

Education

Ph.D. Ecology – In Progress - University of Georgia – Odum School of Ecology, Athens, GA.

Dissertation title: Exploring the role of clandestine species within ecosystems: a case study of aquatic snakes within an isolated wetland in South Carolina. Advisor: Dr. J. Whitfield Gibbons. Degree expected: Dec 2008.

B.S. Biology. Honors. Davidson College, Davidson, NC. Thesis title: The effects of habitat disturbance on stream salamanders: implications for buffer zones and watershed management. Thesis advisor: Dr. Michael E. Dorcas. May 2002.

Research Interests

- Understanding the role of herpetofauna (particularly snakes) in ecosystems, especially their roles as predators and prey.
- Snake population dynamics: causes and consequences.
- Conservation biology and the effects of anthropogenic habitat modification on herpetofauna.
- Elucidating sampling biases associated with herpetofaunal sampling and population monitoring.

Peer-Reviewed Publications – (*) denotes student co-authors

Eskew, E. A. *, **J. D. Willson**, and C. T. Winne. *In review*. Ambush Site Selection and Ontogenetic Shifts in Foraging Strategy in a Semi-aquatic Pit Viper, the Eastern Cottonmouth. *Journal of Zoology, London*.

Winne, C. T., **J. D. Willson**, and J. W. Gibbons. *In review*. Drought survival and reproduction impose contrasting selection pressures on maximum body size and sexual size dimorphism in a snake, *Seminatrix pygaea*. *Proceedings of the Royal Society, B*.

Willson, J. D., C. T. Winne, and M. B. Keck. 2008. Empirical tests of biased body size distributions in aquatic snake captures. *Copeia* 2008:401-408.

Todd, B. D., **J. D. Willson**, C. T. Winne, R. D. Semlitsch, and J. W. Gibbons. 2008. Ecology of the Southeastern Crowned Snake, *Tantilla coronata*, in the Upper Coastal Plain. *Copeia* 2008:388-394.

- Todd, B. D., **J. D. Willson**, C. T. Winne, and J. W. Gibbons. 2008. Aspects of the ecology of the earth snakes (*Virginia valeriae* and *V. striatula*) in the Upper Coastal Plain of South Carolina. *Southeastern Naturalist* 7:349-358.
- Dorcas, M. E., **J. D. Willson**, and J. W. Gibbons. 2007. Population decline and demographic changes of a diamondback terrapin population over three decades. *Biological Conservation* 137:334-340.
- Todd, B. D., C. T. Winne, **J. D. Willson**, and J. W. Gibbons. 2007. Getting the drift: examining the effects of timing, trap type, and taxon on herpetofaunal drift fence surveys. *American Midland Naturalist* 158:292-305.
- Winne, C. T., **J. D. Willson**, B. D. Todd, K. M. Andrews, and J. W. Gibbons. 2007. Enigmatic decline of a protected population of eastern kingsnakes, *Lampropeltis getula*. *Copeia* 2007:507-519.
- Glaudias, X. A., K. M. Andrews, **J. D. Willson**, and J. W. Gibbons. 2007. Migration patterns in a population of cottonmouths (*Agkistrodon piscivorus*) inhabiting an isolated wetland. *Journal of Zoology, London* 271:119-124. (Cover Photo)
- Willson, J. D.**, C. T. Winne, M. E. Dorcas, and J. W. Gibbons. 2006. Post-drought responses of semi-aquatic snakes inhabiting an isolated wetland: Insights on different strategies for persistence in a dynamic habitat. *Wetlands* 26:1071-1078.
- Winne, C. T., **J. D. Willson**, and J. W. Gibbons. 2006. Income breeding allows an aquatic snake (*Seminatrix pygaea*) to reproduce normally following prolonged drought-induced aestivation. *Journal of Animal Ecology* 75:1352-1360.
- Price, S. J., M. E. Dorcas, A. L. Gallant, R. W. Klaver, and **J. D. Willson**. 2006. Three Decades of Urbanization: Estimating the Impact of Land Cover Change on Stream Salamander Populations. *Biological Conservation* 133:436-441.
- Gibbons, J. W., C. T. Winne, D. E. Scott, **J. D. Willson**, et al. (4th of 28 authors). 2006. Remarkable amphibian biomass and abundance in an isolated wetland, with implications for wetland conservation. *Conservation Biology* 20:1457-1465.
- Winne, C. T., **J. D. Willson**, K. M. Andrews, and R. N. Reed. 2006. Efficacy of marking snakes with disposable ophthalmic cautery units. *Herpetological Review* 37:52-54.
- Willson, J. D.**, C. T. Winne, and L. A. Fedewa. 2005. Unveiling escape and capture rates of aquatic snakes and salamanders (*Siren spp.* and *Amphiuma means*) in commercially available funnel traps. *Journal of Freshwater Ecology* 20:397-403.

Tuberville, T. D., **J. D. Willson**, M. E. Dorcas, and J. W. Gibbons. 2005. Herpetofaunal diversity of southeastern National Parks. *Southeastern Naturalist* 4:537-569. **(Cover Photo)**

Willson, J. D., and M. E. Dorcas. 2004. Comparison of aquatic drift fences with traditional funnel trapping as a quantitative technique for sampling amphibians. *Herpetological Review* 35:148-150.

Willson, J. D., and M. E. Dorcas. 2004. Aspects of the ecology of small fossorial snakes in the western Piedmont of North Carolina. *Southeastern Naturalist* 3:1-12.

Willson, J. D., and M. E. Dorcas. 2003. The effects of habitat disturbance on stream dwelling salamander populations: implications for buffer zones and watershed management. *Conservation Biology* 17:763-771.

Willson, J. D., and M. E. Dorcas. 2003. Quantitative sampling of stream salamanders: a comparison of dipnetting and funnel trapping techniques. *Herpetological Review* 34:128-130.

Book Contributions & Other Literature

Willson, J. D., and J. W. Gibbons. *In review*. Drift fences, coverboards, and other traps. In: *Amphibian Ecology and Conservation*, C. K. Dodd, Jr., (Ed.). Oxford University Press, Oxford, UK.

Todd, B. T., **J. D. Willson**, and J. W. Gibbons. *In review*. The global status of reptiles and causes of their decline. In: *Ecotoxicology of Reptiles and Amphibians*, 2 edition, D. W. Sparling, G. Linder, and C. A. Bishop (Eds.). SETAC Press, Pensacola, FL.

Dorcas, M. E., and **J. D. Willson**. *In press*. Innovative methods for studies of snake ecology and conservation. In: *Snakes: Ecology and Conservation*, S. J. Mullin and R. A. Seigel (Eds.). Columbia University Press, New York.

Akre, T. S. B., **J. D. Willson**, and T. P. Wilson. *In press*. Alternative methods for sampling aquatic habitats: turtles and squamates. In *Measuring and Monitoring Biological Diversity: Standard Methods for Reptiles*. University of California Press.

Willson, J. D. *in press*. Automated recording devices. In Graeter, Gabrielle J., Kurt A. Buhlmann, Lucas R. Wilkinson, and J. Whitfield Gibbons (Eds.), *Inventory and Monitoring: Recommended Techniques for Amphibians and Reptiles*, Partners in Amphibian and Reptile Conservation Technical Publication Series, Aiken, SC.

Willson, J. D. *in press*. Aquatic and terrestrial funnel trapping. In Graeter, Gabrielle J., Kurt A. Buhlmann, Lucas R. Wilkinson, and J. Whitfield Gibbons (Eds.), *Inventory and Monitoring: Recommended Techniques for Amphibians and Reptiles*, Partners in Amphibian and Reptile Conservation Technical Publication Series, Aiken, SC.

Willson, J. D. 2008. Eastern Fence Lizard, *Sceloporus undulatus*. In J. Jensen, C. D. Camp, J. W. Gibbons, and M. Elliott, (eds.). *The Amphibians and Reptiles of Georgia*. University of Georgia Press. Athens, GA.

Willson, J. D. and K. M. Andrews. 2008. Copperhead, *Agkistrodon contortrix*. In J. Jensen, C. D. Camp, J. W. Gibbons, and M. Elliott, (eds.). *The Amphibians and Reptiles of Georgia*. University of Georgia Press. Athens, GA.

Willson, J. D. and J. W. Gibbons. 2008. Plain-bellied watersnake, *Nerodia erythrogaster*. In J. Jensen, C. D. Camp, J. W. Gibbons, and M. Elliott, (eds.). *The Amphibians and Reptiles of Georgia*. University of Georgia Press. Athens, GA.

Dorcas, M. E. and **J. D. Willson**. 2008. Queen Snake, *Regina septemvittata*. In J. Jensen, C. D. Camp, J. W. Gibbons, and M. Elliott, (eds.). *The Amphibians and Reptiles of Georgia*. University of Georgia Press. Athens, GA.

Manuscripts in Preparation

Willson, J. D., C. T. Winne, M. A. Pilgrim, C. S. Romanek, and J. W. Gibbons. Effects of terrestrial resource pulses on trophic niche overlap between two sympatric aquatic snake species: a stable isotope approach. Proposed journal: *Ecology*.

Willson, J.D. and W. A. Hopkins. Effects of prey type on prey handling, cost of digestion, and post-feeding locomotor impairment in the banded watersnake, *Nerodia fasciata*. Proposed journal: *Functional Ecology*.

Winne, C. T., **J.D. Willson**, M. A. Pilgrim, C. S. Romanek, and J. W. Gibbons. Income breeding in a snake, *Seminatrix pygaea*: evidence from maternal transfer of stable isotopes. Proposed journal: *Oecologia*.

Willson, J. D., C. T. Winne, and B. T. Todd. Accounting for secretive behavior in demographic estimates of snake populations using robust capture-recapture design. Proposed journal: *Journal of Wildlife Management*.

Willson, J. D., and P. Rohani. The role of ectothermy in vertebrate predator-prey dynamics: a theoretical investigation of snakes as predators in rodent predator-prey systems: *Journal of Animal Ecology*.

Durso, A. M., **J. D. Willson**, C. T. Winne, and J. W. Gibbons. Needle in a haystack: estimating detection probability of aquatic snakes in the Southeastern United States. Proposed journal: *Biological Conservation*.

Platform Presentations

2008. J. D. Willson, W. A. Hopkins, & J. W. Gibbons: “Effects of prey type on prey handling, digestive metabolism, and post-prandial locomotor performance in the banded watersnake, *Nerodia fasciata*.”

- Joint Meeting of Ichthyologists and Herpetologists, Montreal, Quebec.

2007. J. D. Willson, C. T. Winne, M. A. Pilgrim, C. S. Romanek, & J. W. Gibbons: “Effects of terrestrial resource pulses on trophic niche overlap between two sympatric aquatic snake species: a stable isotope approach.” ***Winner of two awards.**

- Association of Southeastern Biologists, Columbia, SC.
- Joint Meeting of Ichthyologists and Herpetologists, New Orleans, LA.
- Ecological Society of America, San Jose, CA.

2007. M.E. Dorcas, J.D. Willson, & J.W. Gibbons.: “Crab Trapping Causes Population Decline and Demographic Changes in Diamondback Terrapins over Two Decades.”

- Association of Southeastern Biologists, Columbia, SC.

2007. M.A. Pilgrim, C.T. Winne, J.D. Wilson , C.A. Romanek & J.W. Gibbons: “Expression of maternal isotopes in offspring: implications for interpreting ontogenetic shifts in isotopic composition of consumer tissues.”

- Association of Southeastern Biologists, Columbia, SC.

2007. C.T. Winne, J.D. Wilson, M.A. Pilgrim, C.A. Romanek & J.W. Gibbons: “Experimental evidence for income breeding in an aquatic snake, *Seminatrix pygaea* , from maternal transfer of stable isotopes”

- Joint Meeting of Ichthyologists and Herpetologists, New Orleans, LA.
- Ecological Society of America, San Jose, CA.

2007. C.T. Winne, J.D. Wilson & J.W. Gibbons: “Rapid recovery of an aquatic snake community following prolonged drought.” Association of Southeastern Biologists, Columbia, SC.

2006. J. D. Willson & C. T. Winne: “Evaluation of trap response in two aquatic snake species using mark recapture and an experimental release study.” ***Winner of two awards.**

- Joint Meeting of Ichthyologists and Herpetologists, New Orleans, LA.
- 3rd Annual SREL Graduate Student Symposium, Aiken, SC.

2006. C.T. Winne, J.D. Wilson & J.W. Gibbons: “Rapid recovery of an aquatic snake community following prolonged drought.”

- Joint Meeting of Ichthyologists and Herpetologists, New Orleans, LA.
- 3rd Annual SREL Graduate Student Symposium, Aiken, SC.

2005. S. J. Price, M. E. Dorcas, A. L. Gallant, R. W. Klaver & **J. D. Willson**: Three decades of urbanization: Estimating the impact of landscape change on stream salamander populations.”

- Joint Meeting of Ichthyologists and Herpetologists, Tampa, FL.
- Association of Southeastern Biologists, Florence, AL.

2005. **J. D. Willson**, C. T. Winne, M. E. Dorcas, & J. W. Gibbons: “Post-drought responses of semi-aquatic snakes inhabiting an isolated wetland: Insights on different strategies for persistence in a dynamic habitat.”

- Joint Meeting of Ichthyologists and Herpetologists, Tampa, FL.
- 2nd Annual SREL Graduate Student Symposium, Aiken, SC.
- Association of Southeastern Biologists, Florence, AL.
- 28th Annual Graduate Student Symposium, Institute of Ecology, University of Georgia, Athens, GA.

2005. **J. D. Willson**, M. E. Dorcas, & J. W. Gibbons: “Population Decline and Demographic changes of a diamondback terrapin population over three decades: causes and potential solutions.” Southeastern Ecology and Evolution Conference, Athens, GA.

2004. J. W. Gibbons, M. E. Dorcas, **J. D. Willson** & J. L. Greene: “Lessons from Two Decades of Tracking Terrapins in Tidal Creeks: Kiawah Island, South Carolina.” 3rd Workshop on the Ecology, Status, and Conservation of Diamondback Terrapins. Jacksonville, FL.

2004. **J. D. Willson**, T. D. Tuberville, M. E. Dorcas & J. W. Gibbons. “How much is enough: Evaluating herpetological Inventories in the Southeast using island biogeography.” 1st Annual SREL Graduate Student Symposium, Aiken, SC.

2004. J. W. Gibbons, **J. D. Willson**, T. D. Tuberville & M. E. Dorcas. “Evaluating Amphibian and Reptile Diversity: Herpetological Inventories of the Southeast Coastal Network National Parks.” Joint Meeting of Ichthyologists and Herpetologists, Manaus, Brazil.

2003. **J. D. Willson** & M. E. Dorcas: “Aspects of the ecology of small fossorial snakes in the western Piedmont of North Carolina.” Association of Southeastern Biologists, Washington D.C.

2002. **J. D. Willson** & M. E. Dorcas: “The effects of habitat disturbance on stream salamanders: implications for buffer zones and watershed management.” Association of Southeastern Biologists, Boone, NC. ***Award Winner**

Poster Presentations

2004. **J. D. Willson**, C. T. Winne & M. E. Dorcas: “Post-Drought Movement Patterns and Demography of Semi-Aquatic Snakes Inhabiting an Isolated Wetland: Different Strategies for Survival in a Dynamic Habitat.” Snake Ecology Group IV Conference, Carbondale, IL.

2002. J. D. Willson & M. E. Dorcas: “The effects of habitat disturbance on stream salamanders: implications for buffer zones and watershed management.” Joint Meeting of Ichthyologists and Herpetologists, Kansas City, MO.

2002. J. D. Willson, D. Stroupe, K. Grayson, L. Halpin & M. E. Dorcas: “Long term assessment of box turtle (*Terrapene carolina*) populations in Davidson, North Carolina.” Association of Southeastern Biologists, Boone, NC.

Other Presentations

2008. J. D. Willson: “Exploring the role of clandestine species within ecosystems: a case study of aquatic snakes within an isolated wetland in South Carolina.” Invited Seminar at the University of South Carolina, Upstate, Spartanburg, SC.

2006. J. D. Willson: “Challenges and rewards of long-term snake population monitoring: a case study from an isolated Carolina bay wetland.” Invited Seminar at Davidson College, Davidson, NC.

2004. J. D. Willson, T. D. Tuberville, M. E. Dorcas & J. W. Gibbons: “How much is enough: Evaluating herpetological Inventories in the Southeast using island biogeography.” Invited Seminar at Davidson College, Davidson, NC.

2004. J. W. Gibbons & J. D. Willson: "Conserving Hidden Biodiversity: Reptiles and Amphibians of Georgia" University of Georgia Student Biology Society, Athens, GA.

2003. J. D. Willson & M. E. Dorcas: “The effects of habitat disturbance on stream salamanders: implications for buffer zones and watershed management.” Invited Seminar at Davidson College, Davidson, NC.

2002. J. D. Willson & M. E. Dorcas: “The effects of habitat disturbance on stream salamanders: implications for buffer zones and watershed management.” Annual Meeting of the North Carolina Herpetological Society, Davidson, NC.

Grants Awarded

2003 - 2007. National Science Foundation - Graduate Research Fellowship.

2007. Potomac Conservancy. “Inventory of Salamanders of Passage Creek, Virginia” – J. D. Willson and S. E. DuRant - \$1533

2006. The Society for Integrative and Comparative Biology – Grants-in-Aid of Research. “Effects of snake predation on the expression of alternative life history strategies: does snake density influence propensity to metamorphose in the salamander *Ambystoma talpoideum*?” - \$1000

2002. Associated Colleges of the South. “Initiation of a Community-Based Conservation Effort: The Effects of Urbanization on Box Turtles” - \$2980

2001. Robert Stone Environmental Fund - “Habitat enhancement and community education about the Davidson College Ecological Preserve” - D. Stroup, J. D. Willson, and K. Grayson. - \$1550

2001. Davidson College Biology Dept - “The effect of pollution and runoff on populations of stream-dwelling salamanders (*Desmognathus* and *Eurycea*) in the Piedmont region of North Carolina” - \$275

Honors and Awards

2007. Student Travel Award. Awarded by the Society for the Study of Amphibians and Reptiles to attend the Joint Meeting of Ichthyologists and Herpetologists, St. Louis, MO.

2007. Student Research Award. Association of Southeastern Biologists, Columbia, SC.

2007. Best Student Paper in Aquatic Biology. Association of Southeastern Biologists, Columbia, SC.

2006. Outstanding Student Paper in Herpetology. Awarded by the American Society of Ichthyologists and Herpetologists, Southeastern Division at the Joint Meeting of Ichthyologists and Herpetologists, New Orleans, LA.

2006. Platform Presentation 2nd place. 3rd Annual Savannah River Ecology Laboratory Annual Graduate Research Symposium. Aiken, SC.

2005. Platform Presentation Honorable Mention. 2nd Annual Savannah River Ecology Laboratory Annual Graduate Research Symposium. Aiken, SC.

2005. Student Travel Award. Awarded by the Society of Wetland Scientists to attend the Association of Southeastern Biologists Meeting, Florence, AL.

2005. Graduate Student Travel Award. Awarded by the University of Georgia 's Institute of Ecology to attend the Joint Meeting of Ichthyologists and Herpetologists in Tampa, FL.

2002. Tom Daggy Biology Award for outstanding academic achievement, leadership, service, and a love of exploring the secrets of life. Davidson College, Davidson, NC.

2002. Best Student Paper in Aquatic Biology. Association of Southeastern Biologists, Boone, NC.

1998 – 2002. Belmont (MA) Garden Club Scholarship. (\$1000/yr - for undergraduate education).

Professional Experience

Visiting Student. Spring 2007.

Virginia Tech – Wildlife Ecotoxicology and Physiological Ecology Program.

Project: Effects of prey type on digestive metabolism in the banded watersnake, *Nerodia fasciata*.

Supervisor: Dr. William Hopkins.

Ecology Teaching Assistant. August 2003 – May 2004.

University of Georgia, Institute of Ecology.

Research Technician III. May 2002 – July 2003.

Savannah River Ecology Laboratory.

Project: Herpetological Inventories of the Southeast Coastal Network National Parks.

Supervisor: Dr. J. Whitfield Gibbons.

Environmental Intern. 2001 – 2002.

Associated Colleges of the South.

Summer Intern. July – August 2001.

School for Field Studies, Center for Coastal Studies, San Carlos, B.C.S. Mexico.

Research Technician. Summer 2000.

Harvard Medical School – Center for Blood Research.

Project: Characterization of novel proteins in RAS signaling pathways.

Supervisor: Dr. Fred Alt and Dr. Worjciech Swat.

Teaching Experience

General Ecology Laboratory Instructor. Spring 2004. University of Georgia, Institute of Ecology.

General Ecology Laboratory Instructor. Fall 2003. University of Georgia, Institute of Ecology.

Students Mentored

Evan A. Eskew. 2006. High School Senior Thesis. Governor's School of Science and Mathematics, South Carolina. Project title: Ambush site microhabitat selection by Cottonmouths, *Agkistrodon piscivorus*.

Andrew M. Durso. 2006. SREL Research Experience for Undergraduates participant. University of Georgia, Athens, GA. Project title: Needle in a haystack: estimating detection probability of aquatic snakes in the Southeastern United States.

Professional Affiliations

Society for the Study of Amphibians and Reptiles (SSAR)

Herpetologists' League (HL)
American Society of Ichthyologists and Herpetologists (ASIH)
Association of Southeastern Biologists
Partners in Amphibian and Reptile Conservation (PARC)
Society for Integrative and Comparative Biology

Reviewer

Journal of Herpetology
The Natural Areas Journal
Canadian Journal of Zoology
Hydrobiologia
Copeia
Herpetological Review
Herpetologica
Journal of Arid Environments
Southeastern Naturalist
Northeastern Naturalist
National Parks Service
Journal of Wildlife Management

Photography Featured In:

BioScience
Journal of Zoology, London (cover photo)
Southeastern Naturalist (2 cover photos)
PLoS Biology
Reptiles Magazine
Charleston Magazine
National Wildlife Magazine
Alabama Wildlife Magazine
North Carolina ALIVE Magazine
J. Jensen, C. D. Camp, J. W. Gibbons, and M. Elliott, editors. 2008. The Amphibians and Reptiles of Georgia. University of Georgia Press. *In press*.
Dorcas, M. E., S. J. Price, J. C. Beane, and S. S. Cross. 2007. The Frogs and Toads of North Carolina. North Carolina Wildlife Resources Commission, Raleigh, NC.
Dorcas, M. E. 2004. A Guide to the Snakes of North Carolina. Belk Printing Technologies, Charlotte, NC.
Gibbons, J. W. and M. E. Dorcas. 2005. Snakes of the Southeast. University of Georgia Press, Athens, GA.
K. Buhlmann, T. Tuberville, and J. W. Gibbons. 2008. Turtles of the Southeast. University of Georgia Press, Athens, GA. (Including cover photo).