

Krista M^CCoy
Integrative Conservation Biologist

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Postdoctoral Research

- 2008 Research Fellow Smithsonian Tropical Research Institute, Panama
Projects:
1) Implications of environmental hormones on amphibian sexual dimorphisms and mating behavior.
2) Determining the effects of pesticide pollution on amphibian reproductive success.

Education

- 2007 Ph.D. University of Florida, Gainesville, Florida
Interdisciplinary Ecology
Graduation: December 2007
Title: Reproductive and renal abnormalities in *Bufo marinus* are associated with human land-use practices.
- 2000 M.S. James Madison University, Harrisonburg, Virginia
Biology, Emphasis on Conservation Biology
Title: An investigation of the efficacy of developmental stability analysis to detect sub-lethal acid stress in the spotted salamander, *Ambystoma maculatum*.
- 1996 B.S. Old Dominion University, Norfolk, Virginia
Major: Biology
Minor: Oceanography
Honors Research Title: Analyzing the nutritional condition of the Caribbean spiny lobster, *Panulirus argus*.

Publications (*indicates undergraduate coauthor, †indicates maiden name)

- In press* **K. A. McCoy** and L. J. Guillette Jr. Endocrine Disruptors Chapter 9 in Volume 8A Conservation and decline of amphibians. For the series **Amphibian Biology**. Editor Harold F. Heatwole.
- *2008 **K. A. McCoy**, L. J. Bortnick*, C. M. Campbell*, H. J. Hamlin, L. J. Guillette Jr. and C. M. St. Mary. Agriculture alters gonadal form and function in *Bufo marinus*. **Environmental Health Perspectives** on line <http://www.ehponline.org/members/2008/11536/11536.pdf>
- *2008 **K.A. McCoy**, Kim Hoang*, L. J. Guillette Jr. and C. M. St. Mary. Renal abnormalities in *Bufo marinus* vary with human land-use. **Science of the Total Environment** on line <http://dx.doi.org/10.1016/j.scitotenv.2008.09.008>
- *2007 **K. A. McCoy**, M. W. McCoy, A. M. Amick*, L. J. Guillette Jr. and C. M. St. Mary. Tradeoffs between somatic and gonadal investments during development in the African clawed frog (*Xenopus laevis*). **Journal of Experimental Zoology** 307(11): 637-646.

Publications Continued

- 2007 M. W. McCoy, **K. A. McCoy** and D. J. Levey. Teaching biodiversity to students in inner-city and under-resourced schools. **American Biology Teacher** 69(8): 473-781.
- *2006 T. Edwards, **K. A. McCoy**, T. Barbeau, M. W. McCoy, J. M. Thro* and L. J. Guillette Jr. Environmental context determines nitrate toxicity in southern toad tadpoles (*Bufo terrestris*). **Aquatic Toxicology** 78: 50-58.
- 2005 T. Knight, M. W. McCoy, J. Chase, **K. A. McCoy** and R. Holt. Trophic cascades across ecosystems. **Nature** 437: 880-883.
- 2005 D. J. Levey, S. Brooks, **K. A. McCoy** and M. W. McCoy. Adding SPICE to Florida classrooms. **Science Scope** April.
- 2003 **K. A. McCoy** and R. N. Harris. Detection of sub-lethal stress by developmental stability analysis in the salamander, *Ambystoma maculatum*: an experimental evaluation and implications for conservation. **Herpetologica** 59(1): 22-36.
- 1998 ⁺**K.A. Madaris**, R. Greenlee, D. Schwab and M. W. McCoy. Virginia's frog and toad monitoring protocol. **Virginia Department of Game and Inland Fisheries**. Richmond, Virginia.
- 1998 ⁺**K.A. Madaris**. Sounding out amphibian declines in Virginia. **Virginia Coastal News**. Summer/Fall.

Manuscripts In Preparation (* indicates undergraduate coauthor)

- K. A. McCoy**, C. M. St. Mary and L. J. Guillette Jr. Sexually dimorphic traits in *Bufo marinus* are biomarkers of endocrine disruption. To be submitted to Biology Letters.
- K. A. McCoy**, L. Ji, L. Albergotti, M. Gunderson, C. M. St. Mary, L. J. Guillette Jr. and C. Helbing. Intersex *Bufo marinus* have feminized gonadal gene expression. To be submitted to Environmental Health Perspectives.
- ***K. A. McCoy**, N. Kontax*, Winnie Nkalubo, L. Chapman and C. M. St. Mary. Intersex Nile perch from Lake Victoria: endocrine disruption in an African fishery. To be submitted to Aquatic Sciences.

Scholarships, Fellowships, and Honors

- 2008 Smithsonian Tropical Research Institute Fellow
- 2005 University of Florida College of Natural Resources and Environment Research Fellowship (\$3000)
- 2003 Institute of Food and Agricultural Sciences Women's Club Fellowship (\$500)
- 2003 NSF G-K12 Science Partners in Inquiry-based Collaborative Education Fellowship (~\$30,000)
- 2001 Jennings Scholarship Department of Wildlife Ecology and Conservation (\$1500)
- 1999 James Madison University Graduate Student Research Fellowship (\$2000)
- 1996 Award for Outstanding Excellence in the Department of Biology Honors Program at Old Dominion University

Awards and Grants

- 2006 Journal of Experimental Biology Research Grant (\$1140)
- 2006 Zoology Department Rewald Research Grant (\$300)
- 2005 Society for Integrative and Comparative Biology (SICB) Grant In Aid of Research (\$1000)
- 2005 Zoology Department Olowo Research Grant (\$300)
- 2004 SPICE Travel Award (Annual meeting of Ecological Society of America Portland, Oregon paid in full)
- 2004 Sigma Xi Grant In Aid of Research (\$200)
- 2003 University of Florida College of Natural Resources and Environment Travel Award (\$1500)
- 2003 University of Florida College of Natural Resources and Environment Research Grant (\$700)
- 2000 Society for the Study of Amphibians and Reptiles Travel Award (\$200)
- 2000 Society for Conservation Biology Travel Award (\$200)
- 1999 Sigma Xi Grant In Aid of Research (\$1000)

Selected Media Coverage**On “Reproductive abnormalities in the giant toad *Bufo marinus* are associated with agriculture.”**

- July 14, 2008 The Environment Report
- July 6, 2008 Transsexual Symposium Inc. (TS-SI)
- July 5, 2008 Science Daily
- July 4, 2008 Environmental Health News
- July 4, 2008 University of Florida News
- July 3, 2008 Science News

On “Trophic cascades across ecosystems.”

- October 5, 2005 University of Florida News

Professional Presentations (¥ indicates a poster, * indicates undergraduate coauthor)

- 2008 **K. A. McCoy**, C. M. St. Mary and L. J. Guillette Jr. Agriculture alters gonadal form and function in *Bufo marinus*. **Invited symposium speaker.** Joint meeting of American Society of Ichthyologists and Herpetologists and Society for the Study of Amphibians and Reptiles, Montreal, Canada.
- ¥*2008 **K. A. McCoy**, L. J. Bortnick*, C. M. Campbell*, H. J. Hamlin, C. M. St. Mary, and L. J. Guillette Jr. Reproductive abnormalities in the giant toad *Bufo marinus* are associated with agriculture. e. Hormone, New Orleans, Louisiana.
- 2008 **K. A. McCoy**. From head lamps to lab coats: Reproductive abnormalities in *Bufo marinus* are associated with agriculture. Virginia Commonwealth University Departmental Seminar in Biology, Richmond, Virginia.
- 2007 **K. A. McCoy**, L. J. Guillette Jr. and C. M. St. Mary. From chemical confusion to chemical castration: Endocrine disruption leads to a range of reproductive abnormalities in *Bufo marinus* living in agricultural areas of South Florida. Society for Integrative and Comparative Biology, Phoenix, Arizona.

Professional Presentations Continued

- *2006 **K. A. McCoy**, M. W. McCoy, A. M. Amick*, L. J. Guillette Jr. and C. M. St Mary. Metamorphosis and reproductive growth and development. Associated Oral Session. Society for Integrative and Comparative Biology, Orlando, Florida.
- *2005 A. M. Amick* and **K. A. McCoy**. Do plastic gonads exist? Joint meeting of American Society of Ichthyologists and Herpetologists and Society for the Study of Amphibians and Reptiles, Tampa, Florida.
- 2005 **K. A. McCoy** and A. M. Amick*. Gonadal plasticity induced by food quantity. University of Florida Graduate Student Symposium, Gainesville, Florida.
- ¥ 2004 **K. A. McCoy**, M. W. McCoy and D. Levey. An inquiry-based educational outreach program about ecosystem health. Ecological Society of America, Portland, Oregon.
- 2003 **K. A. McCoy**, T. Edwards and L. J. Guillette Jr. Effects of nitrate on the southern toad, *Bufo terrestris*. Joint meeting of American Society of Ichthyologists and Herpetologists and Society for the Study of Amphibians and Reptiles Manaus, Brazil.
- ¥ 2002 **K. A. McCoy** et al. Atrazine exposure and the occurrence of reproductive abnormalities in *Bufo marinus*. Society of Environmental Toxicology and Chemistry Salt Lake City, Utah.
- 2001 **K. A. McCoy** and R. N. Harris. Developmental stability analysis as a tool in wildlife conservation. Florida Chapter of the Wildlife Society, Gainesville, Florida.
- 2000 **K. A. McCoy** and R. N. Harris. Amphibian conservation and developmental stability analyses. All Florida Herpetology Conference, Gainesville, Florida.
- 2000 **K. A. McCoy** and R. N. Harris. Developmental stability analysis and sublethal stress in the spotted salamander *Ambystoma maculatum*. Society for Conservation Biology, Missoula, Montana.
- 2000 **McCoy, K.** and R. N. Harris. Efficacy of developmental stability analysis to detect sublethal stress in the spotted salamander *Ambystoma maculatum*. Society for the Study of Reptiles and Amphibians, LaPaz, Mexico.

Research Experience

- Current Post Doctoral Research (Smithsonian Tropical Research Institute Fellow)
Linking morphological, physiological, and behavioral responses to endocrine disrupting chemicals with their ecological and evolutionary consequences using the giant toad (*Bufo marinus*) as a biomarker for endocrine disruption and the túngara frog (*Physalaemus pustulosus*) as a model for studying the reproductive consequences of exposure on sexual selection, mating success, and population health.
- 2003-2008 Dissertation Research (University of Florida)
Used an integrative approach to investigate the effects of agricultural endocrine disrupting chemicals on amphibian reproductive biology. Demonstrated that the occurrence of gonadal abnormalities consistent with endocrine disruption increases with increased agriculture in a dose dependant manner, and explicitly linked morphological abnormalities in both primary and secondary sexual traits to functional alterations at the molecular and cellular levels.
- 2001-2002 Research Assistant (University of Florida)
Conducted eco-toxicological research on amphibians, fish, and alligators.
- 2000-2001 Research Assistant (University of Florida)
Conducted conservation genetics research.

Research Experience Continued

- 1998-2000 Graduate Assistant (James Madison University)
Monitored drift fences around research ponds in George Washington National Forest.
- 1998-2000 Anuran Call Monitoring Survey Coordinator (Virginia Department of Game and Inland Fisheries)
Wrote protocols for conducting a statewide anuran call monitoring program, trained and coordinated volunteers.
- 1996-1998 Volunteer Natural Area Biologist (Va. Department of Game and Inland Fisheries)
- 1996 Volunteer Research Assistant Canebrake Rattlesnake Project (Old Dominion University)
- 1996 Volunteer Natural Area Biologist (Va. Dept of Conservation and Recreation)
- 1995-1996 Honors Research (Old Dominion University)
Contrasted techniques used to analyze the condition of the Caribbean spiny lobster, *Panulirus argus*, so it could be better managed as a harvested resource.
- 1992-1994 Curatorial Intern and Exhibit Interpreter (Virginia Living Museum Newport News, Va.)

Teaching Experience

- 2004 Zoology Department Graduate Student Teaching Award

University of Florida

- 2006 Instructor
Evolution, Behavior, and Ecology for Non-Science Majors (spring and fall)
- Teaching Assistant
- 2007 Anatomy Laboratory (summer and fall)
- 2007 Genetics (spring)
- 2005 Integrative Principles of Biology I Lecture (fall)
- 2005 Animal Behavior Laboratory (spring)
- 2004 Integrative Principles of Biology Laboratory II (fall)
- 2003 Integrative Principles of Biology Laboratory II (spring)

Non-traditional Teaching

- 2003-2004 NSF GK-12 Fellow Science Partners In Inquiry-Based Collaborative Education (SPICE).
Taught science to middle school students using hands on inquiry based techniques two days a week for one year.
- 2000 & 2001 (Summer) Instructor Smithsonian National Museum of Natural History
Monitoring and Assessment of Biodiversity Program (SI/MAB). Taught amphibian monitoring techniques to international biologists via lecturing, discussion groups, and field exercises.
- 1996-1998 Naturalist Instructor Three Lakes Nature Center and Aquarium, Henrico, Virginia.
Conducted school programs for grades K-12, nature center tours, and outreach.

Outreach

- 2002-Present Conservation Committee American Society of Ichthyologists and Herpetologists
- 2004-2006 Coordinator of the Zoology Departments Undergraduate Research Assistant Program (URAP)

Outreach Continued

- 2004 University of Florida's Student Scientists Training Program (SSTP)
- 2004 Ecological Society of America's strategies for ecological education development and sustainability program (SEEDS)

Mentoring

2003-2007

Middle School Students

2 students-Assisted in my dissertation work conducting tadpole husbandry, dissections, and data collection for one summer.

4 students- Were tutored in reading, math, and science.

High School Students

1 student - Completed her science fair project with me -won 1st in the district, 2nd in state, and honorable mention in international competition.

2 students - UF's Student Science Training Program (SSTP). Assisted in my dissertation work conducting tadpole husbandry, dissection, and data collection, conducted and presented independent projects at the SSTP symposium.

3 students - Helped me conduct my dissertation research by collecting and processing animals in the field.

Undergraduates (of approximately 20 students)

5 students - Are co-authors on published or *in press* manuscripts

1 student - Is co-author on a manuscript to be submitted for publication in 2008

4 students - Have completed honors theses with me and graduated with highest honors

1 student - Received an University Scholars Program Research Fellowship

1 student - Received a Howard Hughes Research Fellowship

1 student - Presented our work at a professional meeting (ASIH)

2 students - Presented in the University of Florida Zoology department's undergraduate research symposium and at the undergraduate research symposium