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EDUCATION

- 2005-Present Duke University, University Program in Ecology
 Ph.D. expected Fall, 2009
 “Distribution and movement behavior of spawning blue crabs, *Callinectes sapidus*:
 Decision rules and their mediation by chemical and physical cues”
 Dr. Dan Rittschof, advisor
- 2001-2005 Vanderbilt University, B.S. Biological Sciences, *Magna cum laude*
 Environmental Science minor

PUBLICATIONS

- Darnell, M.Z.**, D. Rittschof, K.M. Darnell, R.E. McDowell. 2009. Lifetime reproductive potential of female blue crabs, *Callinectes sapidus*, in North Carolina. *Marine Ecology Progress Series*. In press.
- Forward Jr., R.B., M.H. Bourla, **M.Z. Darnell**, J.H. Cohen. 2009. Stimuli entraining the circadian rhythm of the supratidal amphipod *Talorchestia longicornis*: mechanisms of detection and hierarchical organization. *Marine and Freshwater Behaviour and Physiology*. In press.
- Ramach, S.M., **M.Z. Darnell**, N.G. Avissar, D. Rittschof. 2009. Habitat use and population dynamics of blue crabs, *Callinectes sapidus*, in a high-salinity embayment. *Journal of Shellfish Research*. 28:635-640.
- Darnell, M.Z.**, M.B. Ogburn, H. Diaz. 2008. A novel running wheel apparatus to monitor locomotor rhythms in land crabs. *Marine and Freshwater Behaviour and Physiology*. 41:205-210.
- Welch, M.E., **M.Z. Darnell**, D.E. McCauley. 2006. Variable populations within variable populations: quantifying mitochondrial heteroplasmy in natural populations of the gynodioecious plant *Silene vulgaris*. *Genetics*. 174: 829-837.
- Forward Jr., R.B., J.H. Cohen, **M.Z. Darnell**, A. Saal. 2005. The circatidal rhythm in vertical swimming of female blue crabs, *Callinectes sapidus*, during their spawning migration: A reconsideration. *Journal of Shellfish Research*. 24:587-590.
- McCauley, D.E., M.F. Bailey, N.A. Sherman, **M.Z. Darnell**. 2005. Evidence for paternal transmission and heteroplasmy in the mitochondrial genome of *Silene vulgaris*, a gynodioecious plant. *Heredity*. 95:50-58.

MANUSCRIPTS IN REVIEW

Darnell, M.Z., K.M. Darnell, R.E. McDowell, D. Rittschof. 2009. Survival, larval viability, and future reproductive potential of ovigerous blue crabs caught in the pot fishery.

Hines, A.H., E.G. Johnson, **M.Z. Darnell**, D. Rittschof, T.J. Miller, L.J. Bauer, P. Rodgers, R. Aguilar. 2009. Predicting effects of climate change on blue crabs.

Rittschof, D., **M.Z. Darnell**, K.M. Darnell, M. Goldman, M.B. Ogburn, R.E. McDowell. 2009. Informing managers: blue crab spawning biology and stock assessment.

CONTRIBUTED PRESENTATIONS

Darnell, M.Z., D. Rittschof. 2009. Informing managers: spawning biology of blue crabs. National Shellfisheries Association Annual Meeting. Savannah, GA. Oral presentation

Darnell, M.Z., D. Rittschof. 2009. Informing managers: spawning biology of blue crabs. Lowell Wakefield Symposium on Biology and Management of Exploited Crab Populations under Climate Change. Anchorage, AK. Oral presentation

Darnell, M.Z., D. Rittschof. 2008. Effects of temperature and body size on clutch production in the blue crab, *Callinectes sapidus*. Benthic Ecology Meeting. Providence, RI. Oral presentation

Darnell, M.Z., D. Rittschof. 2008. Effects of temperature and body size on clutch production in the blue crab, *Callinectes sapidus*. National Shellfisheries Association Annual Meeting. Providence, RI. Poster

Darnell, M.Z., D. Rittschof. 2007. Timing of clutch production in the blue crab, *Callinectes sapidus*. Benthic Ecology Meeting. Atlanta, GA. Poster

Darnell, M.Z., D. Rittschof. 2006. Role of pheromones in initiating the spawning migration of female blue crabs, *Callinectes sapidus*: a preliminary experiment. Gulf of Mexico Graduate Student Symposium. Dauphin Island, AL. Poster

RESEARCH GRANTS

2008-2009 Flow cues in a non-tidal estuary direct the female blue crab spawning migration. Joseph S. Ramus Endowment Fund, Duke University Marine Laboratory. \$2,965

2007-2009 Distribution and movements of spawning blue crabs in non-tidal systems. North Carolina Sea Grant. \$56,205. Co-PIs: D. Rittschof, M.Z. Darnell, R. Golden, G. Cannon

2007-2009 Effects of pot stress on mortality and viability of multiple clutches in the blue crab, *Callinectes sapidus*. NC Sea Grant. \$53,325. Co-PIs: D. Rittschof, T. Ziegler, M.Z. Darnell, R. Golden

TEACHING EXPERIENCE

2009 Teaching Assistant, Experimental Tropical Marine Ecology, Duke University (field course to Smithsonian Tropical Research Institute, Bocas del Toro, Panama)

Teaching Assistant, Physiology of Marine Animals, Duke University

Substitute Lecturer, Marine Biology, Carteret Community College

Guest Lecturer, Biochemistry of Marine Animals, Duke University
Topic: Physiology of Hearing

2008 Teaching Assistant, Experimental Tropical Marine Ecology, Duke University

Guest Lecturer, Physiology of Marine Animals, Duke University.
Topic: Circadian and Circatidal Rhythms

2007 Teaching Assistant, Physiology of Marine Animals, Duke University

Guest Lecturer, Biochemistry of Marine Animals, Duke University
Topic: Physiology of Hearing

Guest Lecturer, Sensory Physiology and Behavior of Marine Animals, Duke University
Topic: Physiology of Hearing

2006 Teaching Assistant, Biological Oceanography, Duke University

HONORS AND AWARDS

2009 Conference Travel Fellowship, Duke University Graduate School

2008-2009 AACU/CGS Preparing Future Faculty Fellowship

2008-2009 Robert W. Safrit Jr. Fellowship

2008 Conference Travel Fellowship, Duke University Graduate School

2006 Best Poster, Gulf of Mexico Graduate Student Symposium

2005-2006 Duke University Marine Laboratory Graduate Fellowship

2005 Biological Sciences departmental honors, Vanderbilt University

2001-2005 Dean's List, Vanderbilt University

2001-2005 College Scholars Program, Vanderbilt University College of Arts and Sciences

2001-2005 Dean's Select Scholarship, Vanderbilt University

UNDERGRADUATES ADVISED

2009 Graham R. Guerin: Entrainment of the circatidal rhythm in vertical swimming of ovigerous blue crabs

Benjamin Castellon: Length of sexual receptivity window in terminal-molt female blue crabs