

MICHAEL ZACHARY DARNELL

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EDUCATION

2009 **Ph.D.** Ecology, Duke University
2005 **B.S.** Biological Sciences (*magna cum laude*), Vanderbilt University

PROFESSIONAL EXPERIENCE

2018–Present **Nina Bell Suggs Assistant Professor**, Division of Coastal Sciences, School of Ocean Science and Engineering, The University of Southern Mississippi
2014–Present **Adjunct Assistant Professor**, Division of Marine Science and Conservation, Nicholas School of the Environment, Duke University
2016–2018 **Assistant Professor**, Division of Coastal Sciences, School of Ocean Science and Engineering, The University of Southern Mississippi
2013–2016 **Assistant Professor**, Department of Biological Sciences, Nicholls State University
2013–2016 **University Affiliate Research Fellow**, Marine Science Institute, The University of Texas at Austin
2013 **Research Associate**, Marine Science Institute, The University of Texas at Austin
2011–2013 **Lecturer**, Department of Marine Science, The University of Texas at Austin
2010–2013 **Postdoctoral Fellow**, Marine Science Institute, The University of Texas at Austin

PUBLICATIONS

* indicates undergraduate student co-author, # indicates graduate student co-author

Published:

Kemberling#, A.A., **M.Z. Darnell**. *In press*. Distribution, relative abundance, and reproductive output of spawning female blue crabs, *Callinectes sapidus*, in offshore waters of the Gulf of Mexico. *Fishery Bulletin*.

Shakeri#, L.M., K.M. Darnell, T.J.B. Carruthers, **M.Z. Darnell**. 2020. Blue crab abundance, biomass, and survival in a fragmenting coastal marsh system. *Estuaries and Coasts*. DOI: 10.1007/s12237-020-00738-9.

Darnell, M.Z., P.R.Y. Backwell, P. Munguia. 2020. Frequency and latency of autotomy of a sexually selected fiddler crab appendage. *Journal of Experimental Marine Biology and Ecology* 523:151255.

Darnell, M.Z., M.L. Dyson, J. Stockbridge*, P.R.Y. Backwell, P. Munguia. 2019. Thermal and desiccation constraints drive territory preference in fiddler crabs. *Journal of Experimental Marine Biology and Ecology* 518:151173.

Kuhn#, A.A., **M.Z. Darnell**. 2019. Elevated temperature induces a decrease in intermolt period and growth per molt in the lesser blue crab, *Callinectes similis* Williams, 1966 (Brachyura: Portunidae). *Journal of Crustacean Biology* 39:22–27.

- Darnell, M.Z.**, C.C. Rittschof, J. Rittschof, C. Beach*, D. Rittschof. 2018. Autotomy of the major claw stimulates molting and suppresses feeding in fiddler crabs. *Journal of Experimental Marine Biology and Ecology* 509:66–70.
- Darnell, M.Z.**, A.A. Kemberling#. 2018. Large-scale movements of postcopulatory female blue crabs *Callinectes sapidus* in tidal and non-tidal estuaries of North Carolina. *Transactions of the American Fisheries Society* 147:716-728.
- Darnell, M.Z.**, K.M. Darnell. 2018. Geographic variation in thermal tolerance and morphology in a fiddler crab sister-species pair. *Marine Biology* 165:26.
- Munguia, P., P.R.Y. Backwell, **M.Z. Darnell**. 2017. Thermal constraints on microhabitat selection and mating opportunities. *Animal Behaviour* 123:259–265.
- Cunningham, S.R.*, **M.Z. Darnell**. 2015. Temperature-dependent growth and molting in early juvenile blue crabs, *Callinectes sapidus*. *Journal of Shellfish Research* 34:505–510.
- Darnell, M.Z.**, H.S. Nicholson*, P. Munguia. 2015. Thermal ecology of the fiddler crab *Uca panacea*: Thermal constraints and organismal responses. *Journal of Thermal Biology* 52:157–165.
- Darnell, M.Z.**, K.K. Fowler*, P. Munguia. 2013. Sex-specific thermal constraints on fiddler crab behavior. *Behavioral Ecology* 24:991–1003.
- Kronstadt, S.M.*, **M.Z. Darnell**, P. Munguia. 2013. Background and temperature effects on *Uca panacea* color change. *Marine Biology* 160:1373–1381.
- Darnell, M.Z.** 2012. Ecological physiology of the circadian pigmentation rhythm in the fiddler crab *Uca panacea*. *Journal of Experimental Marine Biology and Ecology* 426–427:39–47.
- Darnell, M.Z.**, T.G. Wolcott, D. Rittschof. 2012. Environmental and endogenous control of selective tidal-stream transport behavior during blue crab *Callinectes sapidus* spawning migrations. *Marine Biology* 159:621–631.
- Darnell, M.Z.**, P. Munguia. 2011. Thermoregulation as an alternate function of the sexually dimorphic fiddler crab claw. *The American Naturalist* 178:419–428.
- Hines, A.H., E.G. Johnson, **M.Z. Darnell**, D. Rittschof, T.J. Miller, L.J. Bauer, P. Rodgers, R. Aguilar. 2010. Predicting effects of climate change on blue crabs in Chesapeake Bay. In: Kruse, G.H., G.L. Eckert, R.J. Foy, R.N. Lipcius, B. Sainte-Marie, D.L. Stram, D. Woodby (eds) *Biology and Management of Exploited Crab Populations Under Climate Change*. Alaska Sea Grant College Program, University of Alaska Fairbanks, Fairbanks.
- Rittschof, D., **M.Z. Darnell**, K.M. Darnell, M. Goldman, M.B. Ogburn, R.E. McDowell. 2010. Estimating relative abundance of the female blue crab spawning stock in North Carolina. In: Kruse, G.H., G.L. Eckert, R.J. Foy, R.N. Lipcius, B. Sainte-Marie, D.L. Stram, D. Woodby (eds) *Biology and Management of Exploited Crab Populations Under Climate Change*. Alaska Sea Grant College Program, University of Alaska Fairbanks, Fairbanks.
- Darnell, M.Z.**, K.M. Darnell, R.E. McDowell, D. Rittschof. 2010. Postcapture survival and future reproductive potential of ovigerous blue crabs *Callinectes sapidus* caught in the central North Carolina pot fishery. *Transactions of the American Fisheries Society* 139:1677–1687.
- Darnell, M.Z.**, D. Rittschof, R.B. Forward Jr. 2010. Endogenous swimming rhythms underlying the spawning migration of the blue crab, *Callinectes sapidus*: ontogeny and variation with ambient tidal regime. *Marine Biology* 157:2415–2425.
- Darnell, M.Z.**, D. Rittschof. 2010. Role of larval release pheromones and peptide mimics in abdominal pumping and swimming behavior of ovigerous blue crabs, *Callinectes sapidus*. *Journal of Experimental Marine Biology and Ecology* 391:112–117.
- Darnell, M.Z.**, D. Rittschof, K.M. Darnell, R.E. McDowell. 2009. Lifetime reproductive potential of female blue crabs *Callinectes sapidus* in North Carolina, USA. *Marine Ecology Progress Series* 394:153–163.

- Forward Jr., R.B., M.H. Bourla*, **M.Z. Darnell**, J.H. Cohen. 2009. Entrainment of the circadian rhythm of the supratidal amphipod *Talorchestia longicornis* by light and temperature: mechanisms of detection and hierarchical organization. *Marine and Freshwater Behaviour and Physiology* 42:233–247.
- 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. (Note: Featured as Editor's Choice paper in *Science* 314:1050.)
- 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.

In Review or Revision:

- Darnell, M.Z.**, T.G. Yeghissian#, Z.M. Lane#. *In review*. Balancing risk and reward: mating opportunity influences thermal refuge use in fiddler crabs. Submitted to *Animal Behaviour*.
- Darnell, M.Z.**, T.J.B. Carruthers, **M.Z. Darnell**, A. Kemberling, L.C. Moss, L.M. Shakeri#. *In revision*. Changes in aspects of emergent and submerged vegetation cover, richness, and diversity in a fragmenting marsh system. Submitted to *PLoS One*.

PRESENTATIONS (% contribution MZD)

* indicates undergraduate student co-author, # indicates graduate student co-author

Invited:

- Darnell, M.Z.** 2020. Large-scale movements of spawning female blue crabs in the Gulf of Mexico. Blue Crab Subcommittee, Gulf States Marine Fisheries Commission, Gulf Shores, AL.
- Darnell, M.Z.** 2019. Update on Gulf-wide blue crab tagging project. Blue Crab Subcommittee, Gulf States Marine Fisheries Commission, Biloxi, MS.
- Darnell, M.Z.** 2018. Large-scale movements, spawning locations, and structure of the Gulf of Mexico blue crab spawning stock. Blue Crab Subcommittee, Gulf States Marine Fisheries Commission, South Padre Island, TX.
- Darnell, M.Z.** 2018. Blue crab tagging research in the Gulf of Mexico. Mississippi Blue Crab Task Force. Biloxi, MS.
- Darnell, M.Z.** 2017. Large-scale movements, spawning locations, and structure of the Gulf of Mexico blue crab spawning stock. Blue Crab Subcommittee, Gulf States Marine Fisheries Commission, Mobile, AL.
- Darnell, M.Z.** 2017. The blue crab spawning migration in a changing Gulf of Mexico. Institute for Marine and Environmental Technology, University System of Maryland, Baltimore, MD.
- Darnell, M.Z.** 2017. Fiddler crabs of the Gulf of Mexico. Grand Bay National Estuarine Research Reserve, Moss Point, MS.

- Darnell, M.Z.** 2017. Thermal constraints on reproduction in marine and intertidal crabs. Loyola University New Orleans, New Orleans, LA
- Darnell, M.Z.** 2016. Large-scale movements, spawning locations, and structure of the Gulf of Mexico blue crab spawning stock. Blue Crab Subcommittee, Gulf States Marine Fisheries Commission, New Orleans, LA.
- Darnell, M.Z.** 2016. Blue crab tagging research in the Gulf of Mexico. Mississippi Blue Crab Task Force. Biloxi, MS.
- Darnell, M.Z.** 2016. Blue crab tagging research in the Gulf of Mexico. Louisiana Blue Crab Task Force. New Orleans, LA.
- Darnell, M.Z.** 2015. Linking movement ecology to fisheries management: Decision rules and behavioral plasticity underlying blue crab migrations. USGS Wetland and Aquatic Research Center, Lafayette, LA.
- Darnell, M.Z.** 2014. Large-scale movements of the blue crab spawning stock in the Gulf of Mexico: a Gulf-wide mark-recapture effort. Blue Crab Subcommittee, Gulf States Marine Fisheries Commission, Gulfport, MS.
- Darnell, M.Z.** 2014. Sexually dimorphic thermal constraints on fiddler crab behavior and morphology. LSU Museum of Natural Science, Baton Rouge, LA.
- Darnell, M.Z.** 2012. Blue crab recruitment monitoring in the Mission-Aransas National Estuarine Research Reserve. Texas Commission on Environmental Quality Surface Water Quality Monitoring Workshop, San Marcos, TX.
- Darnell, M.Z.** 2011. Blue crab biology in Texas estuaries. Mission-Aransas NERR Blue Crabs and Texas Coastal Ecosystems Workshop, Port Aransas, TX.
- Darnell, M.Z.** 2010. Blue crab life history, ecology, and potential responses to altered salinity and freshwater inflow. Guadalupe-San Antonio Basin and Bay Expert Science Team Blue Crab Workshop, Port Aransas, TX.
- Darnell, M.Z.** 2010. Spawning biology and lifetime reproductive potential of female blue crabs. Harte Research Institute for Gulf of Mexico Studies, Texas A&M University-Corpus Christi, Corpus Christi, TX.

Contributed:

- Yeghissian#, T.G., **M.Z. Darnell**. 2020. Impacts of thermal-hydric stress on surface activity and waving behavior of fiddler crabs. Society for Integrative and Comparative Biology Annual Meeting, Austin, TX. Oral presentation.
- Lane#, Z.M., **M.Z. Darnell**. 2020. A home worth fighting for: Burrows as a thermoregulatory resource in the fiddler crab *Uca pugilator*. Society for Integrative and Comparative Biology Annual Meeting, Austin, TX. Poster presentation.
- Yeghissian#, T.G., **M.Z. Darnell**. 2019. Impacts of thermal-hydric stress on surface activity and waving behavior of fiddler crabs. Coastal & Estuarine Research Federation Biennial Meeting, Mobile, AL. Poster presentation.
- Belgrad, B., D.L. Smee, K. Correia#, K.M. Darnell, **M.Z. Darnell**, C.T. Hayes#, M.O. Hall, B. Furman, C. Martin. 2019. Deconstructing environmental drivers of seagrass community composition and fish abundances across the Gulf of Mexico. Coastal & Estuarine Research Federation Biennial Meeting, Mobile, AL. Oral presentation.
- S. Smith, C.T. Hayes#, **M.Z. Darnell**, K.M. Darnell. 2019. Temporal patterns in turtlegrass habitat use by larval and juvenile nekton at Chandeleur Islands, Louisiana. Coastal & Estuarine Research Federation Biennial Meeting, Mobile, AL. Poster presentation.
- Hayes#, C.T., **M.Z. Darnell**, D.L. Smee, C.W. Martin, M.O. Hall, B.T. Furman, K.M. Darnell. 2019. Regional variation in turtlegrass complexity drives changes in community structure across

- Northern Gulf of Mexico. Coastal & Estuarine Research Federation Biennial Meeting, Mobile, AL. Poster presentation.
- Marshall#, E.M., P. Biber, **M.Z. Darnell**. 2019. Evaluating functional equivalence of restored marshes on Deer Island, MS. Coastal & Estuarine Research Federation Biennial Meeting, Mobile, AL. Poster presentation.
- Olmi#, H.D., **M.Z. Darnell**. 2019. Migratory movements of spawning female blue crabs in Louisiana. American Fisheries Society/The Wildlife Society Joint Meeting, Reno, NV. Oral presentation.
- Belgrad, B., D.L. Smee, K. Correia#, K.M. Darnell, **M.Z. Darnell**, C.T. Hayes#, M.O. Hall, B. Furman, C. Martin. 2019. Environmental factors that drive seagrass community composition and fish abundances across the Gulf of Mexico. Benthic Ecology Meeting, St. Johns, Newfoundland. Oral presentation.
- Darnell, K.M., **M.Z. Darnell**. 2018. Seagrass status, distribution, and community composition at the Chandeleur Islands. Gulf Estuarine Research Society Meeting, Galveston, TX. Oral presentation.
- Hayes#, C.T., **M.Z. Darnell**, D.L. Smee, C.W. Martin, M.O. Hall, B.T. Furman, K.M. Darnell. Nekton use of turtlegrass across the Northern Gulf of Mexico. Gulf Estuarine Research Society Meeting, Galveston, TX. Oral presentation.
- Darnell, M.Z.**, A.A. Kemberling#. 2018. Distribution and reproductive output of female blue crabs in offshore waters of the Gulf of Mexico. 148th Annual Meeting of the American Fisheries Society, Atlantic City, NJ. Oral presentation.
- Olmi#, H.D., **M.Z. Darnell**. 2018. Seasonal and spatial variation in reproductive status and fishing mortality of the Louisiana blue crab spawning stock. 148th Annual Meeting of the American Fisheries Society, Atlantic City, NJ. Oral presentation.
- Darnell, M.Z.**, A.A. Kemberling#, H. Olmi#. 2018. Large-scale movements of spawning female blue crabs in the Gulf of Mexico: A Gulf-wide mark-recapture study. Benthic Ecology Meeting, Corpus Christi, TX. Oral presentation.
- Darnell, M.Z.**, A.A. Kemberling, A.A. Kemberling#, H. Olmi#. 2018. Tagging blue crabs to understand migrations and movements. Louisiana Fisheries Forward Summit, New Orleans, LA
- Hayes#, C.T., **M.Z. Darnell**, D.L. Smee, C.W. Martin, M.O. Hall, B.T. Furman, K.M. Darnell. 2018. Nekton habitat use and habitat-specific production estimates for turtlegrass across the Gulf of Mexico. Benthic Ecology Meeting, Corpus Christi, TX. Oral presentation.
- Kemberling#, A.A., **M.Z. Darnell**. 2018. Estimating presence and abundance of spawning female blue crabs offshore in the Gulf of Mexico using fishery-independent survey data. Benthic Ecology Meeting, Corpus Christi, TX. Oral presentation.
- Olmi#, H.D., **M.Z. Darnell**. 2018. Seasonal and spatial variation in fishing mortality of the Louisiana blue crab spawning stock. Benthic Ecology Meeting, Corpus Christi, TX. Oral presentation.
- Darnell, M.Z.**, L.M. Shakeri#, K.M. Darnell, T.J.B. Carruthers. 2017. Effects of marsh fragmentation on juvenile and adult blue crab abundance. Coastal & Estuarine Research Federation Biennial Meeting, Providence, RI. Oral presentation.
- Shakeri# L.M., **M.Z. Darnell**. 2017. A look at benthic invertebrates in coastal Louisiana. Coastal & Estuarine Research Federation Biennial Meeting, Providence, RI. Oral presentation.
- Carruthers, T.J.B., K.M. Darnell, L.M. Shakeri#, **M.Z. Darnell**, L. Moss, A. Jerabek. 2017. Refining the blue crab habitat suitability index for fragmenting marshes. Coastal & Estuarine Research Federation Biennial Meeting, Providence, RI. Oral presentation.
- Olmi#, H.D., **M.Z. Darnell**. 2017. Migratory movements and fishing mortality of the Louisiana blue crab spawning stock. 147th Annual Meeting of the American Fisheries Society, Tampa, FL. Oral presentation.
- Munguia, P., P.R.Y. Backwell, **M.Z. Darnell**. 2017. Thermal constraints on microhabitat selection and mating opportunities in fiddler crabs. Society for Integrative and Comparative Biology Annual Meeting, New Orleans, LA. Oral presentation.

- Kemberling#, A.A. and **M.Z. Darnell**. 2017. Regional migration patterns of mature female blue crabs in the Gulf of Mexico. Society for Integrative and Comparative Biology Annual Meeting, New Orleans, LA. Oral presentation.
- Kuhn#, A.A. and **M.Z. Darnell**. 2017. Long-term effects of temperature on growth and maturation rates in blue crabs (*Callinectes sapidus*). Society for Integrative and Comparative Biology Annual Meeting, New Orleans, LA. Oral presentation.
- Olmi#, H.D. and **M.Z. Darnell**. 2017. Spatial and temporal variation in migration movements and fishing mortality of the Louisiana blue crab spawning stock. Society for Integrative and Comparative Biology Annual Meeting, New Orleans, LA. Oral presentation.
- Chen#, J., J. Hench, **M.Z. Darnell**, and D. Rittschof. 2016. Decision rules of blue crab movement in a canal connecting Lake Mattamuskeet to the Pamlico Sound. Restore America's Estuaries Summit. New Orleans, LA.
- Hicks#, S. and **M.Z. Darnell**. 2016. Proximate cues underlying maternal care behavior in blue crabs, *Callinectes sapidus*. Gulf Estuarine Research Society Meeting, Pensacola, FL. Oral presentation.
- Kemberling#, A.A. and **M.Z. Darnell**. 2016. Regional migration patterns of mature female blue crabs in the Gulf of Mexico. Gulf Estuarine Research Society Meeting, Pensacola, FL. Oral presentation.
- Kuhn#, A.A. and **M.Z. Darnell**. 2016. Long-term effects of temperature on growth and maturation rates in blue crabs (*Callinectes sapidus*). Gulf Estuarine Research Society Meeting, Pensacola, FL. Oral presentation.
- Olmi#, H.D. and **M.Z. Darnell**. 2016. Spatial and temporal variation in migration movements and fishing mortality of the Louisiana blue crab spawning stock. Gulf Estuarine Research Society Meeting, Pensacola, FL. Oral presentation.
- Shakeri#, L.M., K.M. Darnell, T.J.B. Carruthers, **M.Z. Darnell**. 2016. A bad break-up?: Linkages between marsh fragmentation, prey availability, and blue crab (*Callinectes sapidus*) abundance, growth, and mortality. Gulf Estuarine Research Society Meeting, Pensacola, FL. Oral presentation.
- Darnell, M.Z.**, K.M. Darnell. 2016. Latitudinal gradients in thermal tolerance and morphology in a fiddler crab species pair. Benthic Ecology Meeting, Portland, ME. Oral presentation.
- Hicks#, S. and **M.Z. Darnell**. 2016. Proximate cues underlying maternal care behavior in blue crabs, *Callinectes sapidus*. Benthic Ecology Meeting, Portland, ME. Oral presentation.
- Kemberling#, A.A. and **M.Z. Darnell**. 2016. Regional migration patterns of mature female blue crabs in the Gulf of Mexico: Where did all the ladies go? Benthic Ecology Meeting, Portland, ME. Poster presentation.
- Kuhn#, A.A. and **M.Z. Darnell**. 2016. Effects of temperature on growth and maturation in blue crabs. Benthic Ecology Meeting, Portland, ME. Poster presentation.
- Olmi#, H.D. and **M.Z. Darnell**. 2016. Migratory movements and mortality of the Louisiana blue crab spawning stock. Benthic Ecology Meeting, Portland, ME. Poster presentation.
- Shakeri#, L.M., **M.Z. Darnell**. 2016. Linkages between marsh fragmentation and blue crab (*Callinectes sapidus*) abundance, growth, and mortality. Benthic Ecology Meeting, Portland, ME. Poster presentation.
- Darnell, M.Z.** 2015. Temperature, growth, and size at maturity: Global patterns and implications for crab fisheries under climate change. American Fisheries Society Annual Meeting, Portland, OR. Oral presentation.
- Rittschof, C.C., J. Rittschof, D. Rittschof, C. Beach*, **M.Z. Darnell**. 2015. Costs of autotomy: Major claw autotomy causes cessation of feeding in male fiddler crabs. Benthic Ecology Meeting, Quebec City, Canada. Oral presentation.
- Darnell, M.Z.** 2014. Evidence for an offshore blue crab spawning stock in the Gulf of Mexico and implications for fisheries management. Gulf Estuarine Research Society, Port Aransas, TX.
- Darnell, M.Z.** 2014. Temperature-dependent growth and size-at-maturity in the blue crab *Callinectes sapidus*. Louisiana Chapter of the American Fisheries Society, Thibodaux, LA.

- Darnell, M.Z.** 2014. Temperature-dependent growth and size-at-maturity in the blue crab *Callinectes sapidus*. Texas Bays and Estuaries Meeting, Port Aransas, TX.
- Darnell, M.Z.** 2014. Size-at-age vs. size-at-stage: Environmental control of blue crab growth rates. Benthic Ecology Meeting, Jacksonville, FL.
- Darnell, M.Z.** 2014. Size-at-age vs. size-at-stage: Environmental control of blue crab growth rates. Society for Integrative and Comparative Biology Annual Meeting, Austin, TX.
- Darnell, M.Z.** 2013. Predicting spawning schedules and lifetime reproductive potential of female blue crabs. Benthic Ecology Meeting, Savannah, GA.
- Darnell, M.Z., P. Munguia.** 2012. Sex-specific thermal constraints on surface activity of fiddler crabs. Benthic Ecology Meeting, Norfolk, VA.
- Darnell, M.Z., K.K. Fowler*, P. Munguia.** 2012. Carapace coloration constrains fiddler crab surface activity through effects on body temperature. Society for Integrative and Comparative Biology Annual Meeting, Charleston, SC.
- Darnell, M.Z., S. Kronstadt*, P. Munguia.** 2011. Thermoregulation as an alternate function of the sexually dimorphic fiddler crab claw. Benthic Ecology Meeting, Mobile, AL.
- Darnell, M.Z., S. Kronstadt*, P. Munguia.** 2010. Thermoregulation as an alternate function of the sexually dimorphic fiddler crab claw. Gulf Estuarine Research Society Biennial Meeting, Port Aransas, TX.
- Darnell, M.Z., D. Rittschof, K.M. Darnell, R.E. McDowell.** 2010. Lifetime reproductive potential of female blue crabs *Callinectes sapidus* in North Carolina. Benthic Ecology Meeting, Wilmington, NC.
- Darnell, M.Z., D. Rittschof.** 2009. Informing managers: spawning biology of blue crabs. National Shellfisheries Association Meeting, Savannah, GA.
- Darnell, M.Z., D. Rittschof.** 2009. Informing managers: spawning biology of blue crabs. 25th Lowell Wakefield Symposium on Biology and Management of Exploited Crab Populations under Climate Change, Anchorage, AK.
- 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.
- Darnell, M.Z., D. Rittschof.** 2008. Effects of temperature and body size on clutch production in the blue crab, *Callinectes sapidus*. National Shellfisheries Association Meeting, Providence, RI.
- Darnell, M.Z., D. Rittschof.** 2007. Timing of clutch production in the blue crab, *Callinectes sapidus*. Benthic Ecology Meeting, Atlanta, GA.

RESEARCH GRANTS (amount of funding to MZD)

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| 2020–2022 | Mississippi-Alabama Sea Grant Consortium: Abundance, reproductive output, and fishing mortality of the Mississippi blue crab spawning stock. PI . \$147,525 (\$147,525). |
| 2019–2020 | National Geographic Society: Balancing risk vs. reward: thermal risk taking behavior in the pursuit of mating opportunities in fiddler crabs. PI . \$13,932 (\$13,932). |
| 2019–2020 | Coypu Foundation: Establishing a network of continuous water quality monitoring sensors at the Chandeleur Islands, LA. PI (Co-PI K.M. Darnell). \$80,869 (\$40,435). |
| 2019 | Mississippi Department of Marine Resources: 2019 Bonnet Carré Spillway Impacts. Lead Investigator for Fishery Resources Subcomponent. (PI R. Hendon, Co-PIs J. Wiggert, J. Hendon). \$500,000 (\$30,017). |
| 2018–2022 | National Science Foundation, Biological Sciences–Integrative Ecological Physiology: An integrative field and biophysical model of thermal stress, physiological performance, and reproductive fitness. PI (Co-PIs J.S. Levinton, W.P. Porter). \$1,045,674 (\$357,577). |

- 2018–2021 Mississippi-Alabama Sea Grant Consortium: Evaluating success of beneficial use restoration on Deer Island. **Co-PI** (PI P. Biber; Co-PIs K. Dillon, S. Altman). \$129,999 (**\$57,227**).
- 2017–2021 NOAA RESTORE Science Program: Gulf-wide assessment of habitat use and habitat-specific production estimates of nekton in turtlegrass (*Thalassia testudinum*). **Co-PI** (PI K. Darnell; Co-PIs D.L. Smee, C.W. Martin, M.O. Hall). \$1,147,674 (**\$573,837**).
- 2017–2018 Coypu Foundation: Acquisition of a small research vessel to support ecological and fisheries research at the Chandeleur Islands, Louisiana. **PI** (Co-PI K.M. Darnell). \$77,500 (**\$38,750**).
- 2016–2019 U.S. Army Corps of Engineers: Evaluating success of beneficial use restoration at Deer Island, Mississippi. **Co-PI** (PI P. Biber; Co-PIs K. Dillon, S. Altman). \$131,000 (**\$9,553**).
- 2016–2019 Louisiana Sea Grant: Migratory movements and fishing mortality of the Louisiana blue crab spawning stock. **PI**. \$141,375 (**\$141,375**).
- 2015–2019 NOAA/NMFS, Saltonstall Kennedy: Large-scale movements, spawning locations, and structure of the Gulf of Mexico blue crab spawning stock. **PI** (Co-PIs E. North, Q. Fontenot). \$230,237 (**\$146,808**). *Note: awarded to MZD while at Nicholls State University. When MZD moved to USM, QF took over PI role with subaward issued to USM.*
- 2015–2018 NOAA/NMFS, Saltonstall Kennedy: Linking blue crab abundance, growth, and mortality to marsh fragmentation and submerged aquatic vegetation cover. **Co-PI** (PI T.J.B. Carruthers; Co-PI K.M. Darnell). \$283,578 (**\$78,880**).
- 2015–2016 Louisiana Board of Regents: Acquisition of a controlled environmental system to enhance biophysical ecology research and education at Nicholls State University. **PI** (Co-PI J. Carlson). \$58,697 (**\$50,000**).
- 2014–2015 Disney Worldwide Conservation Fund: Crane-crab conservation coupling: 2014. **PI** (Co-PI D. Rittschof). \$25,000 (**24,000**).
- 2014–2015 Nicholls State University Research Council: Development of a novel biotelemetry system for transformative studies of behavioral thermoregulation in free-ranging mobile intertidal animals. **PI**. \$5,885 (**\$5,885**).
- 2013–2014 Disney Worldwide Conservation Fund: Crane-crab conservation coupling: 2013. **Co-PI** (PI D. Rittschof; Co-PI J.L. Hench). \$25,000 (**\$17,723**).
- 2012–2013 Disney Worldwide Conservation Fund: Cranes and crabs: conservation coupling. **Co-PI** (PI D. Rittschof; Co-PI J.L. Hench). \$24,750 (**\$6,645**).
- 2012–2013 Oak Foundation: Whooping cranes and blue crabs: a marine conservation coupling. **Co-PI** (PI D. Rittschof; Co-PI J.L. Hench). \$89,083 (**\$15,000**).
- 2008–2009 Duke University Marine Laboratory, Ramus Endowment Fund: Flow cues in a non-tidal estuary direct the female blue crab spawning migration. **PI**. \$2,965 (**\$2,965**).
- 2007–2008 North Carolina Sea Grant: Effects of pot stress on mortality and viability of multiple clutches in the blue crab, *Callinectes sapidus*. **Investigator** (PI D. Rittschof). \$53,325 (**\$40,000**).
- 2007–2009 North Carolina Sea Grant: Distribution and movements of spawning blue crabs in non-tidal systems. **Investigator** (PI D. Rittschof). \$56,205 (**\$50,000**).

TEACHING EXPERIENCE

- 2019 COA 690/790 Special Topics: Aquatic Physiology. Division of Coastal Sciences, The University of Southern Mississippi. Graduate-level.

- 2018, 2020 COA 690/790 Special Topics: Global Change Biology. Division of Coastal Sciences, The University of Southern Mississippi. Graduate-level.
- 2017, 2019 COA 742 Topics in Fisheries Ecology. Division of Coastal Sciences, The University of Southern Mississippi. Graduate-level.
- 2017 COA 490/590 Special Topics: Marine Animal Behavior. Division of Coastal Sciences, The University of Southern Mississippi. Undergraduate-level.
- 2016 Marine Invertebrate Ecology. Louisiana Universities Marine Consortium (Co-taught with Dr. Kelly Darnell). Undergraduate-level.
- 2016 BIOL 560 Marine and Environmental Regulation, Law, and Policy Workshop. Department of Biological Sciences, Nicholls State University. Graduate-level.
- 2014 Marine Field Ecology. Louisiana Universities Marine Consortium (Co-taught with Dr. Frank Jordan) Undergraduate-level.
- 2014–2016 BIOL 354 Invertebrate Zoology. Department of Biological Sciences, Nicholls State University. Undergraduate-level.
- 2014–2015 BIOL 551 Marine and Environmental Biology I. Department of Biological Sciences, Nicholls State University. Graduate-level.
- 2013–2015 BIOL 283/284 Introduction to Marine Biology (with lab). Department of Biological Sciences, Nicholls State University. Undergraduate-level.
- 2013 MNS 354 Marine Invertebrates. Department of Marine Science. The University of Texas at Austin. Undergraduate-level.
- 2013 MNS 348 Training Cruise: Research in Biological Oceanography. Department of Marine Science. The University of Texas at Austin. Undergraduate-level.
- 2011–2012 MNS 120L Laboratory Studies in Marine Ecology. Department of Marine Science. The University of Texas at Austin. Undergraduate-level.
- 2011 MNS 354Q Marine Environmental Science. Department of Marine Science. The University of Texas at Austin (Co-taught with Dr. Zhanfei Liu). Undergraduate-level.

MENTORING

Graduate Advisor:

Talene Yeghissian, The University of Southern Mississippi (Ph.D.)
 Emelia Marshall, The University of Southern Mississippi (M.S.)
 Zachary Lane, The University of Southern Mississippi (Ph.D.)
 Christian Hayes, The University of Southern Mississippi (Ph.D.)
 Helen Olmi, The University of Southern Mississippi (Ph.D.).
 Lennah Shakeri, The University of Southern Mississippi (M.S. awarded 2018)
 Adam Kemberling, The University of Southern Mississippi (M.S. awarded 2018)
 Abby Kuhn, The University of Southern Mississippi (M.S. awarded 2017)
 Samantha Hicks, Nicholls State University (M.S. awarded 2016)

Committee Member:

Kathleen Hemeon, The University of Southern Mississippi (Ph.D.)
 Branden Kohler, The University of Southern Mississippi (M.S.)
 Jaime Smith, The University of Southern Mississippi (M.S.)
 Apryle Panyi, The University of Southern Mississippi (M.S.)
 Jeremy Johnson, The University of Southern Mississippi (M.S. awarded 2019)

Thomas Fayton, The University of Southern Mississippi (Ph.D. awarded 2017)
Frank Yrle, Nicholls State University (M.S. awarded 2017)
Ashley Booth, Nicholls State University (M.S. awarded 2016)
Stacy Calhoun, Nicholls State University (M.S. awarded 2016)

Undergraduate Research Mentor:

Ashley Steele, The University of Southern Mississippi (2019)
Andrew McGregor, The University of Southern Mississippi (2017)
Andrew Harris, The University of Southern Mississippi (2017)
Andrew Cumberland, Nicholls State University (2015–2016)
Erika Nuss, Nicholls State University (2014)
Madison Moon, The University of Texas at Austin (2013)
Sarah Cunninham, The University of Texas at Austin (2013)
Haley Nicholson, The University of Texas at Austin (2012)
Kenna Fowler, The University of Texas at Austin (2011)
Stephanie Kronstadt, The University of Texas at Austin (2010)

INTRAMURAL SERVICE

The University of Southern Mississippi:

2020–Present **Chair**, Seminar Committee, Division of Coastal Sciences
2020–Present **Small Vessel Operations Coordinator**, Division of Coastal Sciences
2020–Present **Member**, Small Vessel Operations Committee, School of Ocean Science and Engineering
2019–Present **Chair**, Estuarine/Coastal Ecologist Search Committee, Division of Coastal Sciences
2019–Present **Member**, Policy and Procedures Committee, School of Ocean Science and Engineering
2019 **Member**, Coastal Operations Review Team
2018–2019 **Co-Chair**, Small Vessel Operations Working Group, School of Ocean Science and Engineering
2016–Present **Faculty advisor**, Marine and Estuarine Graduate Student Organization

Nicholls State University:

2015–2016 **Member**, Molecular/Cellular Biologist Search Committee, Department of Biological Sciences
2013–2016 **Member**, Inventory Committee, Department of Biological Sciences

EXTRAMURAL SERVICE

2020–Present **Co-Chair**, Student Judging Committee, 2021 Biennial Meeting of the Coastal and Estuarine Research Federation
2020–Present **Co-Chair**, Scientific Program Committee, 2020 Bays and Bayous Symposium
2017–2019 **Co-Chair**, Student Judging Committee, 2019 Biennial Meeting of the Coastal and Estuarine Research Federation
2015–Present **Secretary-Treasurer**, Gulf Estuarine Research Society
2015–Present **Associate Editor**, *Gulf and Caribbean Research*

- 2017 **Session Convener**, *Relationships Between Commercially Fished Invertebrates and their Habitats*, 2017 Meeting of the Coastal and Estuarine Research Federation
- 2015 **Symposium Convener**, *Relationships Between Commercially Fished Invertebrates and their Habitats*, 2015 Annual Meeting of the American Fisheries Society
- 2014 **Assistant Editor**, *Deep-Sea Research II* special issue: The Northern Chukchi Sea Benthic Ecosystem: Characterization, Biogeochemistry, and Trophic Linkages

Review panelist:

National Science Foundation, Biological Sciences–Animal Behavior
National Science Foundation, Biological Sciences–Integrative Ecological Physiology
Georgia Sea Grant

Grant reviewer:

National Science Foundation, Biological Sciences–Integrative Ecological Physiology
Georgia Sea Grant
Maryland Sea Grant
North Carolina Sea Grant
South Carolina Sea Grant
Illinois Water Resources Center

Journal Reviewer:

Animal Behaviour, Aquaculture Research, Aquatic Biology, Behavioral Ecology, Biology Letters, Comparative Physiology and Biochemistry-Part C: Toxicology & Pharmacology, Diseases of Aquatic Organisms, Ecosphere, Estuaries and Coasts, Evolutionary Ecology, Global Ecology and Biogeography, Hydrobiologia, Invertebrate Reproduction and Development, Journal of Animal Ecology, Journal of Aquatic Animal Health, Journal of Crustacean Biology, Journal of Experimental Marine Biology and Ecology, Marine and Freshwater Behaviour and Physiology, Marine Ecology Progress Series, Northeastern Naturalist, Oecologia, Revista de Biología Tropical, Scientific Reports, Transactions of the American Fisheries Society, Turkish Journal of Fisheries and Aquatic Sciences,

HONORS AND AWARDS

- 2020 Aubrey Keith Lucas and Ella Ginn Lucas Endowment for Faculty Excellence Award (\$5000), The University of Southern Mississippi
- 2019 Supplemental Travel Grant (\$1000), Southern Miss Fund for Academic Excellence
- 2018 Nina Bell Suggs Endowed Professorship, The University of Southern Mississippi
- 2016 Top 10 Grantsmanship Award, Nicholls State University (for 2nd highest annual grant funding university-wide)
- 2015–2017 Early-Career Research Fellowship, Gulf Research Program, National Academies of Sciences, Engineering, and Medicine (\$76,000)
- 2015 Travel Grant for Emerging Faculty, Louisiana Board of Regents
- 2008–2009 Preparing Future Faculty Fellowship, AACU/CGS
- 2008–2009 Robert W. Safrit Jr. Fellowship, Duke University
- 2006 Best Poster, Gulf of Mexico Graduate Student Symposium
- 2005–2006 Graduate Fellowship, Duke University Marine Laboratory