

MATTHEW D. KENWORTHY

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ACADEMIC HISTORY:

- 2019 Ph.D Ecology (Dr. Joel Fodrie, Advisor) University of North Carolina at Chapel Hill; Institute of Marine Sciences, Morehead City, NC
- 2011 M.S. Marine Science (Dr. Sean Powers, Advisor) Dauphin Island Sea Lab; University of South Alabama; Mobile, AL
- 2007 B.S. Biological Oceanography with emphasis in Marine Science, North Carolina State University; Raleigh, NC

PROFESSIONAL EXPERIENCE:

- Current NOAA Living Marine Resources Cooperative Science Center Post-Doctoral Fellow; Savannah State University, Savannah GA
- 2011 - 2019 Research Specialist, Lab Manager, and PhD student in the Coastal Fisheries and Oceanography Lab (Dr. Joel Fodrie) at UNC Chapel Hill's Institute of Marine Sciences Morehead City, NC (Developing grant proposals, data analysis, writing manuscripts, writing project reports, collaborating with state, federal, and non-profit agencies on multiple research projects, leading field research, mentoring graduate students and technicians)
- 2008 - 2011 Graduate Student and Research Assistant, Fisheries Ecology Lab (Dr. Sean Powers), Dauphin Island Sea Lab, Dauphin Island, AL; Thesis title: Effects of temporal variation in predation risk on predator-prey interactions
- 2007 - 2008: Research Technician, Fisheries Ecology Lab (Dr. Sean Powers), Dauphin Island Sea Lab, Dauphin Island, AL (leading a variety of field and laboratory research projects, assisting graduate students with field research)
- 2006 REU (Research Experience for Undergraduates) fellow in Fisheries Ecology Lab (Dr. Sean Powers), Dauphin Island Sea Lab, Dauphin Island, AL (Funded by National Science Foundation)
- 2005 Research Technician, The Center for Marine Sciences and Technology (Dr. Chris Taylor and Dr. Kevin Craig), NCSU, Morehead City, NC

PUBLICATIONS (only completed draft manuscripts listed as in prep):

- Kenworthy, M.D.**, Bell, G.W., Grabowski, J.H., Layman, C.A., Peterson, C.H., Fodrie, J.F. Comparing acoustic telemetry and traditional gears to maximize spatiotemporal resolution in estuarine fish research at individual, species, and community levels (In Prep)
- Kenworthy, M.D.**, Grabowski, J.H., Gittman, R.K., Danielle A. Keller, Scharf, F.S., Hollensead, L.D., Scheffel, T.K., Fodrie, J.F. Restoration goals, spatial-scale, and species identity influence how cultch shell enhancement and artificial reefs provide habitat subsidies for estuarine fishes (In Prep)
- Kenworthy, M.D.**, Grabowski, J.H., Layman, C.A., Sherwood, G.D., Powers, S.P., Peterson, C.H., Fodrie, J.F. Spatial configuration of habitat within an estuarine seascape more influential than identity and availability in determining selectivity by a mobile predatory fish. (In Prep)
10. Keller, D.A., Gittman, R.K., Brodeur, M.C., **Kenworthy, M.D.**, Ridge, J.T., Yeager, L.A., Rodriguez, A.B., Fodrie, J.F. (2019) Salt marsh shoreline geomorphology influences the development of constructed oyster reefs and use by associated fauna. *Restoration Ecology*. DOI:<https://doi.org/10.1111/rec.12992>
 9. **Kenworthy, M.D.**, Grabowski, J.H., Layman, C.A., Sherwood, G.D., Powers, S.P., Peterson, C.H., Gittman, R.K., Keller, D.A., Fodrie, J.F. (2018). Movement ecology of mobile predatory fish reveals limited habitat linkages within a temperate estuarine seascape. *CJFAS*, 75(11), 1990-1998. DOI: <https://doi.org/10.1139/cjfas-2017-0308>
 8. Mahoney, R.D., **Kenworthy, M.D.**, Geyer, J.K., Hovel, K.A., Fodrie, J.F. (2018). Distribution and relative predation risk of nekton reveal complex edge effects within temperate seagrass habitat. *JEMBE*, 503, 52-59. DOI: <https://doi.org/10.1016/j.jembe.2018.02.004>
 7. Gittman, R.K., Fodrie, F.J., Baillie, C.J., Brodeur, M.C., Currin, C.A., Keller, D.A., **Kenworthy, M.D.**, Morton, J.P., Ridge, J.T., Zhang, Y.S. (2018). Living on the Edge: Increasing Patch Size Enhances the Resilience and Community Development of a Restored Salt Marsh. *Estuaries and Coasts*, 41, 884-895. DOI: <https://doi.org/10.1007/s12237-017-0302-6>
 6. Ajemian M.J., **Kenworthy M.D.**, Sanchez-Lizaso J.L. Cebrian J. (2016). Aggregation dynamics and foraging behavior of striped red mullet *Mullus surmuletus* in the western Mediterranean Sea. *Journal of Fish Biology*, 88, 2051-2059. DOI: <https://doi.org/10.1111/jfb.12932>
 5. Fodrie J.F, Yaeger L.A., Grabowski, J.H., Layman C.A., Sherwood G.D., **Kenworthy M.D.** (2015). Measuring individuality in habitat use across complex landscapes: approaches, constraints, and implications for assessing resource specialization. *Oecologia*, 178, 75-87. DOI: <https://doi.org/10.1007/s00442-014-3212-3>
 4. Fodrie J.F., Rodriguez A.B., Baillie C., Brodeur M.C., Coleman S.C. Gittman R.K., Keller D.A., **Kenworthy M.D.**, Poray A., Ridge J.T., Theuerkauf E.J., Lindquist, Niels. (2014). Classic paradigms in a novel environment: Inserting food-web and productivity lessons from rocky shores and saltmarshes in to biogenic reef restoration. *Journal of Applied Ecology*, 51, 1314-1325. DOI: <https://doi.org/10.1111/1365-2664.12276>
 3. Rodriguez A.B., Fodrie F.J., Ridge J.T. Lindquist N., Theuerkauf E.J., Coleman S.E., Grabowski, J.H., Brodeur M.C., Gittman R.K., Keller D.A., **Kenworthy M.D.** (2014). Oyster reefs can outpace sea-level rise. *Nature Climate Change*, 4, 493-497. DOI: <https://doi.org/10.1038/nclimate2216>
 2. Johnson M., Powers S., Hightower C. & **Kenworthy M.** (2010). Age, Growth, Mortality, and Diet Composition of Vermilion Snapper from the North-Central Gulf of Mexico. *Transactions of the American Fisheries Society*, 139, 1136-1149. DOI: <https://doi.org/10.1577/T09-179.1>

1. Fodrie F.J., **Kenworthy M.D.** & Powers S.P. (2008). Unintended facilitation between marine consumers generates enhanced mortality for their shared prey. *Ecology*, 89, 3268-3274. DOI: <https://doi.org/10.1890/07-1679.1>

PRESENTATIONS (LEAD PRESENTER ONLY):

- 2018 “Monitoring the movement and habitat use patterns of bonnethead sharks (*Sphyrna tiburo*) in North Carolina and Georgia estuaries” (oral presentation) NC Aquariums Shark Symposium, Pine Knoll Shores, NC
- 2018 “Evaluating the function of constructed habitats in New River Estuary” (Oral Presentation) American Fisheries Society, Tidewater Chapter, Beaufort, NC
- 2017 “Living on the edge of seagrass: Can it be a good thing?” (Oral Presentation) Benthic Ecology Meeting, Myrtle Beach, SC.
- 2016 “Habitat restoration and potential impacts on finfish in NC” (Oral Presentation) North Carolina Coastal Conservation Association annual board meeting, Beaufort, NC
- 2015 “Movement ecology of a mobile predatory fish reveals limited landscape-scale linkage within a temperate estuary” (Oral Presentation) AFS meetings, Portland, OR.
- 2015 “Following the fish to find the edge: Delineating habitat boundaries using high resolution acoustic tracking data” (Oral Presentation) ESA Meetings, Baltimore, MD
- 2015 “Movement Ecology of a mobile predatory fish reveals limited landscape-scale connectivity within a temperate estuary” (Oral Presentation) AFS-Tidewater Chapter Meeting, Atlantic Beach, NC.
- 2014 “Evaluating the function of estuarine habitats: Understanding links between habitat and fish behavior” (Oral Presentation) New River Environmental Conservation board meeting, Jacksonville, NC.
- 2013 “Landscape setting and connectivity drive fine-scale habitat use and movement behaviors of fish in a temperate estuary” (Oral Presentations) CERF Meeting, San Diego, CA.
- 2013 “Evaluating the function of estuarine habitats: A fish tale through the eyes of the elusive red drum” UNC’s Institute for the Environment seminar series, Morehead City, NC.
- 2013 “Understanding habitat connectivity through monitoring the movement of red drum” (Oral Presentation) Benthic Ecology Meeting, Savannah, GA.
- 2012 “Fine-scale habitat utilization of red drum (*Sciaenops ocellatus*) and sheepshead (*Archosargus probatocephalus*) in a structurally complex intertidal ecosystem” (Oral Presentation) Benthic Ecology Meeting, Norfolk, VA.
- 2011 “Uncertainty enhances cascading effects of top predators: A test of the Risk Allocation Hypothesis” (Oral Presentation) Benthic Ecology Meeting, Mobile, AL.
- 2010 “Understanding the effects of temporal variations of predation risk on prey behavior: A test of the Risk Allocation Hypothesis” (Oral Presentation) Bays and Bayous, Mobile, AL.

- 2009 “Unintended facilitation between marine consumers generates enhanced mortality for their shared prey” (Oral Presentation) South Eastern Ecology and Evolution Meeting, Gainesville, FL.
- 2007 “Multiple predator effects within oyster reefs: foraging behavior of oyster drills and stone crabs on a common resource” (Oral Presentation) Benthic Ecology Meetings, Atlanta, GA.

RESEARCH INTERESTS:

My research interests have focused on behavioral ecology of fish and crustaceans in coastal North Carolina and Alabama. My PhD research in North Carolina explored linkages between the abundance and characteristics of coastal estuarine habitats and fish populations that rely on these habitats. This research has focused on both natural and restored habitats along the North Carolina Coast and specifically within the Rachel Carson National Estuarine Research Reserve. I utilized acoustic telemetry to monitor spatial and temporal patterns of fish behavior to better understand their dependence on a variety of estuarine habitats. Resources for protecting and restoring coastal estuarine habitats are limited and the research I conduct aims to further our knowledge of the value of individual habitats and their essential role in contributing to healthy fish populations. My master’s research at the Dauphin Island Sea Lab investigated the behavioral response of two species of crabs to temporally varying predation risk and their subsequent impacts on the resources they consume. In addition to my master’s research, I contributed to a variety of projects answering questions about general life history and specific behaviors of various fish, sharks, and rays along Alabama’s Gulf Coast.

SERVICES:

- 2016 – 2019 Chair of student lead Thursday Think Tank at UNC-CH Institute of Marine Sciences
 - Recruit student and invited speakers to present at the semi-monthly seminar series during spring and fall semesters
- 2019 Submitted manuscript reviewer: [Marine and Coastal Fisheries](#)
- 2018 Submitted manuscript reviewer: [ICES Journal of Marine Science](#)
- 2016 Submitted manuscript reviewer: [Aquatic Invasions](#)
- 2015 Submitted manuscript reviewer: [Journal of Ecology](#)
- 2014 Speaker, “Evaluating the function of estuarine habitats: Understanding links between habitat and fish behavior” Jacksonville, NC New River Round Table Committee Monthly Meeting
- 2009 - 2011 President of Graduate Student Organization in Department of Marine Sciences at the University of South Alabama

OUTREACH:

- 2018 Brad Sneed Marine Sciences Academy outreach event at UNC CH Institute of Marine Sciences (~40 middle school students); Morehead City, NC
 - Display table “Habitats and Inhabitants of North Carolina Estuaries”
- 2017 – 2018 University of North Carolina at Chapel Hill IDEA (Increasing Diversity and Enhancing Academia) summer program (12 undergraduate students); Morehead City, NC
 - Took students from IDEA program out for a day of field sampling experience
- 2015 - 2017 North Carolina Seafood Festival event “Be Seafood Smart” (~500 middle school students); Morehead City, NC
 - Co-organized display table “Estuarine habitats are critical for our fisheries”
- 2016 Coastal Conservation Association Annual Cobia Fishing Tournament
 - Display table of live otolith removal from cobia for research
- 2013-2014 Coastal Conservation Association weekend fishing rodeo

- Organized local fisherman during multiple weekends to volunteer their time to catch fish for telemetry fish tracking study
- 2014 National Estuaries Day at the Beaufort Farmers Market (~50 visitors)
 - Co-organized display table “Where do baby fishes live”
- 2013 Harkers Island Middle School (~20 middle school students)
 - Took students from Harkers Island Middle school out for a day of field sampling experience

CERTIFICATIONS AND MEMBERSHIPS:

- 2015 - Present American Fisheries Society
- 2013 - Present Coastal and Estuarine Research Federation
- 2012 - Present Divers Alert Network (DAN)
- 2012 - Present AAUS Diving Certification (60ft certification)
- 2006 - Present NAUI Diving Certification (Open Water and Nitrox certified)
- 1998 - Present Small boat Operator (Near shore and Offshore operator experience) (North Carolina and Alabama Boaters License)

SKILLS:

- GIS (ArcView: Spatial analysis of fish movement behaviors and map making)
- Acoustic fish tracking: eight years of experience leading multiple acoustic tracking projects utilizing a variety of technologies and methods: Experience with both Lotek and VEMCO technologies and officially trained in surgical implantation of acoustic transmitters in fish
- Otolith processing and analysis (age and growth: red drum, red snapper, vermilion snapper, spanish mackerel, pompano)
- ROV surveys of artificial reefs
- Statistical analysis: R, JMP, XLstat, Primer (moderate experience)
- Field Sampling Techniques: ichthyofauna surveys (gill netting, seining, trawling, fish tagging, telemetry tracking, manipulative field and laboratory experiments, hook and line, and fish traps)
- Microsoft Word, Excel, Power Point, Movie Maker
- Teamwork and Leadership: (NOLS) “National Outdoor Leadership School” experience.

REFERENCES:

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