

## RUTH HERROLD CARMICHAEL

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Senior Marine Scientist III, Dauphin Island Sea Lab  
Professor of Marine Sciences, University of South Alabama  
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### EDUCATION

2004 Ph.D. Biology, Boston University Marine Program, Marine Biological Laboratory  
2000 Shellfish Aquaculture Proficiency Certificate, Sea Grant Fisheries Program  
1998 M.A. Biology, Boston University Marine Program, Marine Biological Laboratory  
1993 B.A. Biology with honors, University of Chicago  
1986 Certified NAUI SCUBA diver  
Certified Diver's Alert Network (DAN) Diving First Aid for Professional Divers  
Bleeding Control Basics v.1.0 Course, American College of Surgeons  
HAZWOPER 24-hr Certification; IRB & Working with Vertebrates, USA IACUC Certification

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### PROFESSIONAL ACTIVITIES

2023-present *Special Advisor to the Executive Director, Research and Ocean Health*, Dauphin Island Sea Lab, Dauphin Island, AL.

2007-present *Senior Marine Scientist*, Dauphin Island Sea Lab, Dauphin Island, AL.  
Responsibilities include research, scholarship, advising, course development and instruction, service and outreach (courses listed below).

2007-present *Professor of Marine Sciences* (2018-present), *Associate Professor of Marine Sciences* (2013-2018), *Assistant Professor of Marine Sciences* (2007-2013), University of South Alabama, Mobile, AL. Responsibilities include research, scholarship, advising, course development and instruction, service and outreach.  
Courses: Marine Mammal Health (MAS478), Marine Invertebrate Zoology (MAS471/BLY471), Marine Conservation Biology (MAS521), Scientific Communication (MAS524), Stable Isotope Ecology Seminar (MAS592), Biological Oceanography (MAS604), Directed Studies (MAS594/MAS694), and Thesis/Dissertation (MAS599/799).

2004-2006 *Assistant Professor of Marine Biology*, University of Maine at Machias.  
Responsibilities included research and creative scholarship, academic, technical, and social committee participation, student advising, course development, and community outreach.  
Courses: Introduction to Oceanography (ENV103), Algal Biology (BIO239/352), Senior Seminar in Marine Biology (BIO482), Special Topics in Mariculture: Natural Products from the Sea (BIO310), Lab and Field Techniques: Horseshoe crab surveys (BIO211).

2003-2004 *Research Associate, Consultant to Barnstable County Cooperative Extension*, Cape Cod, MA. Studied potential of oysters to abate N enrichment.

- 2000-2003 *Teaching Fellow/Research Assistant*, Boston University Marine Program.  
Course: Marine Pollution. Dissertation-independent project: Studied abundance, population structure, and ecology of the Atlantic horseshoe crab.
- 1998-2004 *Consultant*, Cape Cod, MA. Performed analyses and inventories of marine benthic communities and applied biological data to inform assessment of coastal wetlands projects according to municipal, state, and federal regulations. Assessed effects of power plant operations on fish populations in RI and MA. Provided expert testimony at adjudicatory and public hearings.
- 1995-1998 *Teaching Fellow/Research Assistant*, Boston University Marine Program.  
Courses: Global Change, Microbial Ecology, Methods in Cell Biology, Marine Biochemical Ecology.
- 1995-1998 *Visiting Lecturer*, Bridgewater State College, Bridgewater, MA. Course: Applied Biology for the Laboratory (BF506). Abington Home School, Barnstable, MA.  
Course: Laboratory Dissection Series.

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### ACADEMIC APPOINTMENTS

- 2007-present Dauphin Island Sea Lab, Alabama  
Senior Marine Scientist I (2007-2013), II (2013-2018), III (2018-present)
- 2007-present University of South Alabama  
Professor of Marine Sciences (2018-present)  
Associate Professor of Marine Sciences (2013-2018)  
Assistant Professor of Marine Sciences (2007-2013)  
Graduate School of Arts and Sciences
- 2009-present University of Alabama  
Temporary Member of Graduate Faculty  
Adjunct Faculty, Department of Biological Sciences
- 2009-2015 Alabama A&M  
Adjunct Faculty
- 2004-2009 University of Maine  
Adjunct Assistant Professor of Marine Sciences, Orono campus (2007-2009)  
Assistant Professor of Marine Biology, Machias campus (2004-2006)

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### SYNERGISTIC ACTIVITIES

- 2025 Member, Dauphin Island Sea Lab Executive Director Comprehensive Review Committee
- 2025 Session Chair, Coastal and Estuarine Research Federation, Biennial Conference, Richmond, VA
- *Biology and conservation of horseshoe crabs and their essential habitats* (M. Botton, J. Brockmann, R.H. Carmichael Co-conveners)
  - *Estuaries and coasts as wildlife habitat* (E. Darrow, H. Henry, M. Ramirez, M. West, M. Woodrey, R.H. Carmichael Co-conveners)
- 2025 Member, Policy & Advocacy Rapid Response Task Force, Coastal and Estuarine Research Federation (CERF)

- 2023-present Director of Research Coordination, Gulf Coast Environmental Engagement Center, University of South Alabama
- 2023-present Member, Resilience Assessment Plan Environment Advisory Group, City of Mobile, AL
- 2023-present Member, Stokes School of Marine and Environmental Sciences, University of South Alabama
- Community Engagement Committee (2024-present)
  - Diversity, Equity, and Inclusion Committee (2023-2024)
  - Graduate Curriculum Committee (2023-2024)
- 2015-present Member, Megamove Consortium (<https://megamove.org>)
- 2015-present DISL Director, DISL/ FDA joint graduate fellowship program
- 2015-present Technical Review Panelist, NOAA Prescott Grant Program (2015, 2017, 2020)
- 2014-present Director, DISL's Research Experiences for Undergraduates (REU) program
- 2014-present Chair and member, Tenure and Promotion Committees
- Dauphin Island Sea Lab (Department annually)
  - University of South Alabama (Department/ School 2014-present; College of Engineering 2022; University 2020, 2023; CAS 2024)
- 2013-present Steering Committee, Horseshoe crab Species Specialist Group, IUCN (International); Breakout Group leader, Research (5<sup>th</sup> International Horseshoe Crab Workshop, Singapore, 2024)
- 2012-present Editorial Boards
- *Frontiers in Marine Science*, Biology (Review Editor, 2022-present; International)
  - *Gulf & Caribbean Research* (Assoc. Editor, 2019-present; REU section Special Editor; Regional)
  - *Estuarine Coastal & Shelf Science* (Assoc. Editor, 2013-2018; International)
  - *PLoS ONE* (Academic Editor, 2013-2016; International)
  - *Aquatic Biology* (Review Editor, 2012; International)
  - *Coastal and Estuarine Science News* (CESN) (Board member, 2012-2015; International)
- 2010-present Member, Science Advisory Committee, Mobile Bay National Estuary Program (Co-Chair 2014-2018; regional)
- 2007-present Advisor, Ecological Research & Development Group, Lewes, DE (Regional)
- 2007-present Member, Data Management Advisory Committee, DISL; Chair, 2007-2012 (Departmental)
- 2023 Session Chair, "Megafauna: Turtles, dolphins, and sharks, oh my!" Coastal and Estuarine Research Federation, Biennial Conference, Portland, OR
- 2023 Moderator, *Effective Science Communication* workshop, Southeast and Mid-Atlantic Marine Mammal Symposium, Mobile, AL
- 2022-2023 Chair, Awards Committee, Coastal and Estuarine Research Federation
- 2008-2023 Member, Student Recruitment Committee, University of South Alabama

- 2022 Member, Technical Advisory Committee, Dauphin Island West End Habitat Management Plan
- 2022 Mock Interviewer, Alabama School of Mathematics and Science, Mobile, AL
- 2011-2019 Governing Board, Coastal and Estuarine Research Federation (International)
- Chair, Attendee Experience Committee, Biennial Meeting, 2017-2019
  - Member-at-Large, 2015-2019
  - Chair, Publications Committee, 2015-2019; Member 2019-present
  - Affiliate Society Presidents subcommittee, 2014-2015
  - International Relations Committee, 2011-2013
  - Scientific Advisory Committee, CERF Argentina 2012
- 2004, 2019 Horseshoe Crab Stock Assessment Review Panelist, Atlantic States Marine Fisheries Commission (ASMFC) (Regional)
- 2017 Coastal and Estuarine Research Federation Biennial Meeting, Providence, RI, Special Session Co-chair, “*Linking Species and Habitat Conservation for Global Horseshoe Crab Populations*”. Co-chairs Dr. M. Botton, Fordham University; Dr. Dr. P. Shin, City University, Hong Kong; Dr. S.G. Cheung, City University, Hong Kong; Dr. J. Tanacredi, Molloy College, New York (International)
- 2008-2016 Co-Chair, Wiese Distinguished Lecture Series, University of South Alabama (Departmental/ University)
- 2014-2015 Editor, *Changing Global Perspectives on Horseshoe Crab Biology, Conservation, and Management*, Springer, 2015. Co-Editors Dr. M. Botton, Fordham University; Dr. P. Shin, City University, Hong Kong; Dr. S.G. Cheung, City University, Hong Kong (International)
- 2009-2015 Board Member/ President (2011-2013)/ Past President (2013-2015), Gulf Estuarine Research Society (GERS), Coastal and Estuarine Research Federation affiliate (Regional)
- 2013 Coastal and Estuarine Research Federation (CERF) Biennial Meeting, San Diego, CA, Special Session Co-chair, *Comparative approaches to horseshoe crab ecology and conservation in North America and Southeast Asia*. Co-chairs Dr. M. Botton, Fordham University; Dr. P. Shin, City University, Hong Kong; Dr. S.G. Cheung, City University, Hong Kong (International)
- 2008-2013 Co-Chair, DISL Seminar Series, Dauphin Island Sea Lab, AL (Departmental)
- 2012 Host and Planning Committee, Gulf Estuarine Research Society (GERS) Biennial Meeting, Dauphin Island, AL (Regional)
- 2006-2011 Conference Workshops Chair, Estuarine Research Federation/Coastal and Estuarine Research Federation Biennial Conference (ERF/CERF) (National)
- 2009 Coastal Session Moderator, Alabama Fisheries Association annual meeting, Auburn, AL (Regional)
- 2009 Alumni Career Panelist, Taking the Next Step, The University of Chicago, IL (International)
- 2007-2009 Advisor, Auburn University Landscape Architects Curriculum Advisory Committee, Auburn, AL (Departmental)

- 2005-2007 Founding member, Steering Committee, Special Session Chair: *Horseshoe crab culture and captive breeding*. International Symposium on Science and Conservation of Horseshoe crabs, NY (International)
- 2005-2006 Board Member, Downeast Salmon Federation, Machias, ME (Regional)
- 2005-2006 Student Liaison, Woods Hole Marine Science Consortium, University of Maine, Machias (Departmental/ University)
- 2005 Estuarine Research Federation (ERF) Biennial Meeting, Norfolk, VA (National)
- Special Session Co-chair, *Examining effects of nutrient enrichment on estuarine and coastal lagoon ecosystems through comparative ecological approaches*. Co-chairs Dr. S. Nixon, University of RI; Dr. J. Hagy, USEPA, FL; Dr. G. Cicchetti, USEPA, RI (International)
  - Special Session Chair, *Physical and biological factors affecting horseshoe crab abundance and distribution in coastal waters* (National)

2003-present **Peer-review Service** (approximate number of reviews since 2008):

**Scientific manuscripts** (ed = as editor)

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| <i>Aquaculture</i> (4)   | <i>Gulf &amp; Caribbean Research</i> (8; 26 ed)                    |
| <i>Aquaculture &amp; the Environment</i> (1)                       | <i>Gulf Coast Research</i> (1)                                     |
| <i>Aquaculture Research</i> (1)                                    | <i>Gulf of Mexico Science</i> (1)                                  |
| <i>Aquatic Biology</i> (7)   | <i>Journal of Experimental Marine Biology &amp; Ecology</i> (8)    |
| <i>Biogeochemistry</i> (1)   | <i>Journal of Marine Science</i> (1)                               |
| <i>Biological Bulletin</i> (5)                                     | <i>Journal of the Marine Biological Assoc.</i> (1)                 |
| <i>Biological Conservation</i> (1)                                 | <i>Journal of Natural History</i> (1)                              |
| <i>Bulletin of the Southern California Academy of Sciences</i> (1) | <i>Journal of Shellfish Research</i> (8)                           |
| <i>CESN</i> (5, >200 abstracts reviewed)                           | <i>Journal of Threatened Taxa</i> (1)                              |
| <i>Ecological Research Letters</i> (3)                             | <i>Marine Biology</i> (6)  |
| <i>Ecosphere</i> (1)   | <i>Marine Ecology Progress Series</i> (16)                         |
| <i>Environmental Biology of Fishes</i> (1)                         | <i>Marine Environmental Research</i> (1)                           |
| <i>Environmental Pollution</i> (1)                                 | <i>Marine Mammal Science</i> (1)                                   |
| <i>Environmental Science &amp; Technol.</i> (2)                    | <i>Marine Pollution Bulletin</i> (4)                               |
| <i>Estuaries &amp; Coasts</i> (11)                                 | <i>New Zealand Journal of Marine &amp; Freshwater Research</i> (1) |
| <i>Estuarine Coastal &amp; Shelf Science</i> (14; 8 ed)            | <i>North American Journal of Fishery Management</i> (2)            |
| <i>FEMSEC-Microbiol Ecol</i> (1)                                   | <i>PLoS ONE</i> (18; 11 ed)  |
| <i>Fishery Bulletin</i> (2)  | <i>Science of the Total Environment</i> (2)                        |
| <i>Fishery Research</i> (1)  | <i>Virginia Journal of Science</i> (1)                             |
| <i>Frontiers</i> (5)   | <i>World Aquaculture Society Journal</i> (1)                       |
| <i>Frontiers in Marine Science</i> (3; 2 ed)                       |  |
| <i>Geochemica Cosmochemica Acta</i> (1)                            |  |

**Proposals**

Gulf Coast Environmental Engagement Center (22)

National Science Foundation (48)  
 NOAA's Prescott Grant Program (29)  
 CT, NC, NY, VA, WHOI, ME, DE, RI Sea Grant (proposal reviewer 19; panel reviewer 11)  
 ME National Estuarine Research Reserve GRF (3)  
 University of Central Oklahoma On-campus Grant program (3)  
 The Cooperative Institute for Coastal & Estuarine Environmental Technology (2)  
 National Fish & Wildlife Foundation (1)  
 Draft Environmental Impact Report (D-EIR), Mashpee, MA Comprehensive Nitrogen Management Plan (1)  
 Southern New England Collaborative Research Initiative (SNECRI) (1)  
 NOAA's Chesapeake Bay Office (NCBO) Fisheries Science Program (1)  
 Environmental Protection Agency (EPA) (1)  
 National Oceanic and Atmospheric Administration-Hypoxia Panel (1)

### **Scientific editing**

2025 Laurie, K., et al. *C. rotundicauda* Red List Assessment Main Report (in revision).  
 2019 Laurie, K., Chen, C.P., Cheung, S.G., Do, V., Hsieh, H., John, A., Mohamad, F., Seino, S., Nishida, S., Shin, P. and Yang, M. *Tachypleus tridentatus* (errata version published in 2019). The IUCN Red List of Threatened Species 2019: e. T21309A149768986.  
 2015 Louisiana Sea Grant, Oil Spill Research Extension Bulletin.  
 2015 Tanacredi, J., M. Schreiber, K. McDonnell. Questioning Ecosystem Assessment and Restoration Practices in a Major Urban Estuary: Perpetuating Myths of Degradation in Spite of the Facts.

### **Marine Sciences program evaluation**

2023 External evaluator, 7-year program review, Biology and Marine Biology Graduate Programs, University of North Carolina, Wilmington, NC  
 2016 Contributor, 7-year program review, Marine Sciences Graduate Program, University of South Alabama, AL  
 2005 Chair, 5-year program evaluation, Marine Science Undergraduate Program, University of Maine Machias, ME

### **Promotion packages, dissertation/ thesis evaluation**

External reviewer (faculty promotion and/or tenure), University of South Alabama (Medical School: 1; College of Arts & Sciences: 3 Chair, 8 committee; College of Engineering: 4 committee), University of Massachusetts Boston (1), American University of Beirut, NY (1), Florida Institute of Technology (1)  
External reviewer (thesis review), University of South Alabama, AL (2)  
Board of Examiners (dissertation adjudication), Pondicherry University, India (5)

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## PUBLICATIONS

### Peer reviewed journals and books:

- Submitted Payán Arias, D<sup>^</sup>., S. Corde, **R.H. Carmichael\***. Manatee Dock Sign Distribution and Its Influence on Publicly-sourced Sighting Reports in Alabama. *Gulf Caribbean Res.* (I)
- In revision **Carmichael, R.H.** and H. Patterson. Stable isotope composition of weathered MC252 oil: Implications for tracing oil degradation and bioassimilation. *Environ. Sci. Technol.*
- In revision DaCosta, K., Y. Chiari, **R.H. Carmichael**. Effects of range expansion on population structure and connectivity: the example of the Florida manatee. *Mammalian Biol.* (G)
- In revision Cloyed, C., J. Drymon, R. Wells, M. Dance, M. Jargowsky, T. TinHan, A. Dell, **R.H. Carmichael**. Zeta: a simple, new metric to quantify animal movement complexity with ecological and conservation applications. (P)
- In revision Bloodgood, J., E. Cramer, C. Cloyed, M. Staudinger, M. Russell, **R.H. Carmichael**, K. Colegrove, D. Rotstein, W. McFee, N. Stacy, L. Albrittain, D. Boyd. Emaciation and marine debris contribute to sperm whale (*Physeter macrocephalus*) strandings in the southeastern USA: a comparative review of four cases from 2020-2022. *Dis. Aquat. Org.* (P)
- 2026 Hansen J., J. Bloodgood, B. Kiel Reese, T. Waltzek, K. Barry, T. Bouveroux, C. Sinclair, K. Subramaniam, K. Mullin, **R.H. Carmichael**. Novel method for collecting skin microbiome samples from free-ranging bottlenose dolphin. *Mar. Mamm. Sci.* 42: 1-10. doi:[10.1111/mms.70104](https://doi.org/10.1111/mms.70104). (G)
- 2025 VanCompernelle, M., J. Morris, H. Calich, J. Rodriguez, S. Marley, J. Pearce, B. Abrahms, K. Abrantes, A. Afonso, A. Aguilar, A. Agyekumhene, T. Akamatsu, S. Akesson, N. Alawa, J. Alfaro Shigueto, R. Anderson, T. Anker-Nilssen, J. Arata, G. Araujo, A...**R.H. Carmichael**...Sequeira, Ana. Vulnerability of marine megafauna to global at-sea anthropogenic threats. *Conserv. Biol.* doi: [10.1111/cobi.70147](https://doi.org/10.1111/cobi.70147).
- 2025 Cole, Z., M. Russell, **R.H. Carmichael**, M. Ivančić, K. Colegrove, M. Hodanbosi, J. Bloodgood. Postmortem computed tomography and pathology reveal multiple traumatic events in a stranded bottlenose dolphin (*Tursiops truncatus*) in Alabama, USA. *Dis. Aquat. Org.* 164. doi:10.3354/dao03880 (I/P)
- 2025 Sequeira, A., J. Rodríguez, S. Marley, H. Calich, M. van der Mheen, M. VanCompernelle, L. Arrowsmith, L. Peel, N. Queiroz, M. Vedor,... **R.H. Carmichael** et al. Global tracking of marine megafauna space-use reveals how to achieve biodiversity conservation targets. *Science.* 388: 1086-1097. doi:[10.1126/science.adl023](https://doi.org/10.1126/science.adl023)
- 2025 Cloyed, C., E. Hieb, H. Whitehead, **R.H. Carmichael**. Distributional analyses of West Indian manatees in the continental United States under current and future conditions using multiple modeling approaches. *Marine Ecol. Prog. Ser.* 759: 107-122. doi:10.3354/meps14836 (P)

- 2025 Bouveroux, T., C. Sinclair, K. Barry, L. Clance, J. Hansen, K. Mullin, P. Rosel, **R.H. Carmichael**. Abundance and residency patterns of common bottlenose dolphins (*Tursiops truncatus*) in freshwater-influenced estuaries of the northern Gulf of Mexico. *Aquat Conserv: Mar. Freshw. Ecosyst.* 35: e70055. doi: [10.1002/aqc.70055](https://doi.org/10.1002/aqc.70055) (P)
- 2024 Western, J., E. Hieb, M. Russell, C. Díaz Clark, D. Rotstein, S. Perry, A. Ingrisano, **R.H. Carmichael**, J. Bloodgood. Heart failure, esophageal obstruction, and cold stress cause the death of a West Indian manatee (*Trichechus manatus*) in Alabama waters. *Dis. Aquat. Org.* 160: 57-63. doi:[10.3354/dao03824](https://doi.org/10.3354/dao03824) (I/P)
- 2024 Ponti, M., M. Russell, C. Diaz Clark, C. Cloyed, **R.H. Carmichael**, C. Johnson, J. Bloodgood. Stranded marine mammal detection by the public, trained responders, and drones using decoy carcasses. *Mar. Mammal Sci.* 41: e13169. doi: [10.1111/mms.13169](https://doi.org/10.1111/mms.13169) (I/P)
- 2024 Munday, M.R., M. Russell, C. Díaz Clark, M. Delaney, M. Kinsel, **R.H. Carmichael**, J. Bloodgood. Four cases of severed peduncles in bottlenose dolphins (*Tursiops truncatus*) along the Alabama Coast. *J. Zoo Wildl. Med.* 55: 521-530. doi:[10.1638/2023-0126](https://doi.org/10.1638/2023-0126) (I/P)
- 2024 Tucker, L<sup>^</sup>. M. Russell, E. Hieb, **R.H. Carmichael**, C. Cloyed. Stable isotope analysis of manatee vibrissae to investigate individual patterns of resource use in the northern Gulf of Mexico. *Gulf Caribbean Res.* 35: SC12-SC19. doi: [10.18785/gcr.3501.08](https://doi.org/10.18785/gcr.3501.08) (U/P)
- 2024 Carmichael, T. and **R.H. Carmichael**. Braving the elements: Loss of metals from common Mardi Gras beads due to handling and weathering. *Gulf Caribbean Res.* 35: 1-7. doi: [10.18785/gcr.3501.01](https://doi.org/10.18785/gcr.3501.01) (H)
- 2024 Nolen, R., A. Prouse, M. Russell, J. Bloodgood, C. Díaz Clark, **R.H. Carmichael**, L. Peterson, K. Kaiser, D. Hala, A. Quigg. Evaluation of fatty acids and carnitine as biomarkers of PFOS exposure in biota (fish and dolphin) from Galveston Bay and the northwestern Gulf of Mexico. *Comp. Biochem. Physiol. C* 276: 109817. doi: [10.1016/j.cbpc.2023.109817](https://doi.org/10.1016/j.cbpc.2023.109817)
- 2023 Hieb E., S Snow, **R.H. Carmichael**. Identifying microdebris in biodeposits of the eastern oyster, *Crassostrea virginica*. *Gulf Caribbean Res.* 34: SC45-SC39. doi: [10.18785/gcr.3401.22](https://doi.org/10.18785/gcr.3401.22) (T/H)
- 2023 Bloodgood, J., A. Deming, K. Colegrove, M. Russell, C. Díaz Clark, **R.H. Carmichael**. Causes of death and pathogen prevalence in bottlenose dolphins *Tursiops truncatus* stranded in Alabama, USA, between 2015 and 2020, following the Deepwater Horizon oil spill. *Dis. Aquat. Org.* 55: 87-102. doi: [10.3354/dao03746](https://doi.org/10.3354/dao03746) (P)
- 2023 Hieb, E., C. Cloyed, K. DaCosta, A. Garelick<sup>^</sup>, **R.H. Carmichael**, 2023. Thermal microrefugia and changing climate affect migratory phenology of a thermally constrained marine mammal. *Frontiers Ecol. Evol.* 11:1211513. doi: [10.3389/fevo.2023.1211513](https://doi.org/10.3389/fevo.2023.1211513) (T)
- 2023 Smith, D., J. Brockmann, **R.H. Carmichael**, E. Hallerman, W. Watson, J. Zaldivar-Rae. Assessment of recovery potential for the American horseshoe crab

- (*Limulus polyphemus*): An application of the IUCN green status process. *Aquatic Conserv: Mar. Freshw. Ecosyst.* 2023;1–25. doi: [10.1002/aqc.3990](https://doi.org/10.1002/aqc.3990)
- 2023 Frith, A., M. Hayes-Mims, **R.H. Carmichael**, K. Björnsdóttir-Butler. Effect of environmental and water quality variables on histamine-producing bacteria concentration and species in the northern Gulf of Mexico. *Microbiol. Spectrum.* 11(4) doi: [10.1128/spectrum.04720-22](https://doi.org/10.1128/spectrum.04720-22) (G)
- 2023 Marth, E.C.^, C. Cloyed, **R.H. Carmichael**. 2023. Identifying stable isotope patterns among taxa, sites, and environmental variables in the eastern Mississippi Sound. *Gulf Caribbean Res.* 34: SC6-SC12. doi: [10.18785/gcr.3401.02](https://doi.org/10.18785/gcr.3401.02) (U)
- 2023 Hyde-Leard, E., **R.H. Carmichael**, A. Ortmann, J. Jones. Environmental drivers of *Vibrio cholerae* abundances in Mobile Bay, Alabama. *Microbiol. Spectr.* e01733-22. doi: [10.1128/spectrum.01733-22](https://doi.org/10.1128/spectrum.01733-22) (G)
- 2023 Cloyed, C., C. Johnson^, K. DaCosta, L. Clance, M. Russell, C. Díaz Clark, E. Hieb, **R.H. Carmichael**. Effects of tissue decomposition on stable isotope ratios and implications for use of stranded animals in research. *Ecosphere* 4(2):e4385. doi: [10.1002/ecs2.4385](https://doi.org/10.1002/ecs2.4385) (P)
- 2022 **R.H. Carmichael\***, M. Hodanbosi, M. Russell, N. Wingers. Human influence on common bottlenose dolphin (*Tursiops truncatus*) strandings in the northern Gulf of Mexico. *Front. Environ. Sci.* 17. doi: [10.3389/fenvs.2022.951329](https://doi.org/10.3389/fenvs.2022.951329)
- 2022 Cloyed, C., E. Hieb, K. DaCosta, M. Ross, **R.H. Carmichael**. Habitat selection and abundance of West Indian Manatees (*Trichechus manatus*) at the margins of their expanding range. *Mar. Ecol. Prog. Ser.* 696: 151-167. doi: [10.3354/meps14116](https://doi.org/10.3354/meps14116) (P)
- 2022 Russell, M., J. Bloodgood, **R.H. Carmichael**. Spatial, temporal and demographic patterns of cetacean strandings in northcentral Gulf of Mexico. *J. Cetacean Res. Manage.* 23:171-182. doi: [10.47536/jcrm.v23i1.356](https://doi.org/10.47536/jcrm.v23i1.356) (T)
- 2022 Bloodgood, J., M. Russell, C. Clark, E. Hieb, **R.H. Carmichael**. From monitoring to final disposition, collaborative response to the first live sperm whale (*Physeter macrocephalus*) stranding in Alabama, USA. *Aquatic Mammals* 48: 485-494. doi: [10.1578/AM.48.6.2022.485](https://doi.org/10.1578/AM.48.6.2022.485) (P)
- 2021 Frith, A., J. Henseler, S. Badri, K. Calci, A. Stenson, **R.H. Carmichael\***. Multiple indicators of wastewater contamination to shellfish farms near a tidal river. *Est. Coasts.* 1-15. doi: [10.1007/s12237-021-01033-x](https://doi.org/10.1007/s12237-021-01033-x). [CESN highlight article](#) (G)
- 2021 Cloyed, C.S., R. Wilson, B. Balmer, A. Hohn, L. Schwacke, E. Zolman, M. Tumlin, R. Wells, A. Barleycorn, J. Allen, **R.H. Carmichael**. Specialization of a mobile, apex predator affects trophic coupling among adjacent habitats. *Sci. Rep.* 11:19611 (P)
- 2021 Cloyed, C.S., B. Balmer, L. Schwacke, A. Barleycorn, K. Mullin, P. Rosel, T. Rowles, C. Smith, F. Townsend, M. Tumlin, R. Wells, E. Zolman, **R.H. Carmichael**. Interaction between dietary and habitat niche breadth influences cetacean vulnerability to environmental disturbance. *Ecosphere.* 12 :e03759 (P).

- 2021 Cloyed, C.S., Hieb, E., DaCosta, K., Ross, M., **Carmichael, R.H.** West Indian Manatees use partial migration to expand their geographic range into the northern Gulf of Mexico. *Front. Mar. Sci.* 1354. doi: 10.3389/fmars.2021.725837 (P)
- 2021 Gancel, H.N., **R.H. Carmichael**, J. Du, K. Park. Use of settlement patterns and geochemical tagging to test population connectivity of eastern oysters (*Crassostrea virginica*) in a freshwater-influenced estuary. *MEPS*. 673:85-105. doi: 10.3354/meps13796 (G)
- 2021 Groet, T., Hieb, E., Darrow, E., **Carmichael, R.H\***. Our Wastewater Footprint: Protecting Water Quality Through Comprehensive Coproduction of Knowledge. *Case Studies Environ.* 5:1425563. doi: 10.1525/cse.2021.1425563 (G)
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  - Capture, tagging, and tracking of West Indian manatees in Alabama waters
  - Collection of fish species in the Mobile Bay/Mississippi Sound system
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- 2007-2025 **Carmichael, R.H.** Alabama Marine Resources Division Sampling and Research Permit (annual application and report).
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- 2019 Gancel, H., **R.H. Carmichael**. Playing 'tag': Tracking movement of young oysters, *DISL Skimmer*. June/July
- 2019 **Carmichael, R.H.**, A. Levins. The Sea Lab welcomes NSF REU students to campus for 2019 summer, *DISL Skimmer*. May
- 2019 Hieb, E., **R.H. Carmichael**. Community running club supports Alabama Marine Mammal Stranding Network, *DISL Skimmer*. April
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- 2019 Thomason, T., **R.H. Carmichael**, E. Heib. DISL's Our Wastewater Footprint: Water Quality Lessons from Local Estuaries *DISL Skimmer*. March
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- 2018 **Carmichael, R.H.**, A. Frith. Water quality and nutrients data collected in West Fowl River and Coastal Alabama from 2017-07-31 to 2018-05-17 (NCEI Accession 0175941; <https://doi.org/10.25921/cvzv-mb75>).
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- 2022 Hieb, E.E., C. Cloyed, K. DaCosta, **R.H. Carmichael**. Manatee use of thermal refugia and potential for year-round occupancy in the northern Gulf of Mexico. 24<sup>th</sup> Biennial Conference on the Biology of Marine Mammals Book of Abstracts, p. 334.
- 2022 Cloyed, C., E. Hieb, K. DaCosta, **R.H. Carmichael**. Abundance and habitat selection of the West Indian manatee at the northern periphery of their expanding range. 24<sup>th</sup> Biennial Conference on the Biology of Marine Mammals Book of Abstracts, p. 32.
- 2022 Russell, M., J. Bloodgood, C. Diaz Clark, E. Hieb, **R.H. Carmichael**. Live large-whale stranding response in the northern Gulf of Mexico: The importance of preparedness, collaboration, and communication. 24<sup>th</sup> Biennial Conference on the Biology of Marine Mammals Book of Abstracts, p. 326
- 2020 Hieb, E.E., K. DaCosta, **R.H. Carmichael**. A history of causes, patterns, and case studies of manatee mortality in the northern Gulf of Mexico. Sirenews: Newsletter of the IUCN Sirenia Specialist Group. Number 71, April.
- 2020 Hieb, E.E., C. Cloyed, M. Collins, K. DaCosta, **R.H. Carmichael**. Linking use of ship channels by West Indian manatees to seasonal migration and habitat use. Sirenews: Newsletter of the IUCN Sirenia Specialist Group. Number 71, April.
- 2019 Beebe, D., **R.H. Carmichael**, J. Cebrian, M. Cook, B. Dzwonkowski, J. Kudulis, J. Lehrter, S. Smallegan, T. Thibaut, B. Vitor, B.M. Webb. *Fowl River Marsh Study: If You Try Sometimes You Just Might Find You Get What You Need*. Orange Beach, AL: 32nd Annual Alabama Water Resources Conference.
- 2017 **Carmichael, R.H.**, J. Hall, E. Hieb, P. Dimens, E.D. Condon, K. Cressman. Sedimentary records of recurrent phosphate spills to a coastal estuary. *Journal of the Alabama Academy of Sciences*. 88(1):10
- 2017 Hieb, E., C. Nelson-Seely, N. Taylor, **R.H. Carmichael**, A. Aven. Citizen-science provides data on seasonal occupancy of West Indian manatees (*Trichechus manatus*) in the northcentral Gulf of Mexico. *Journal of the Alabama Academy of Sciences*. 88(1):10-11
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- 2017 DaCosta, K.P., **R.H. Carmichael**. Analysis of manatee ear bone chemistry to track West Indian manatee migrations in the northcentral Gulf of Mexico. *A Marine Mammal Odyssey, Eh!*: Abstract Book. p. 28
- 2017 Wingers, N., **R.H. Carmichael**, D. Moore. Freshwater exposure and human interaction: Case history of a twice-stranded bottlenose dolphin in Alabama waters. *A Marine Mammal Odyssey, Eh!*: Abstract Book, p. 306

- 2017 **Carmichael, R.H.**, E. Darrow, A. Knight, C. Kovacs, T. Hattenrath, J. Kinsella, D. Dalrymple. Anthropo-proxy data in bivalves from middens to modern embayments and tropical to temperate systems. *Goldschmidt Abstracts* 2017:557.
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- 2016 Darrow, E., **R.H. Carmichael**, C. Andus, H. Jackson. Organic stable isotopes in ancient oyster shell trace pre-colonial nitrogen sources. *AGU Fall Meeting Abstracts*
- 2014 Krause, J., A. Larson, E. Darrow, **R.H. Carmichael**. Significant biogenic silica retention from reverse weathering in non-deltaic sediments. *AGU Fall Meeting Abstracts*.
- 2013 Colegrove K.M., S. Venn-Watson, J. Litz, M. Kinsel, L. Garrison, K. Terio, C. Mori, A. Rosenstein, **R.H. Carmichael**, E. Fougères, B. Mase-Guthrie, R. Ewing, D. Shannon, S. Shippee, S. Smith, L. Staggs, E. Stratton, M. Tumlin, T. Rowles. Marine mammals, oil, and the Gulf of Mexico: perspectives on the 2010–2013 Northern Gulf of Mexico cetacean unusual mortality event. *Proc. from the 2013 Meeting of the American College of Veterinary Pathologists*, Montreal, Canada.
- 2013 Raghavachari, N., K. Showmaker, P. Liu, N. Jafari, N. Barker, K. L. Willett, J. Corrales, H. K. Patterson, **R.H. Carmichael**, D. Baldwin. Genomics Research Group (GRG): Elucidating the effects of the Deepwater Horizon oil spill on the Atlantic oyster using global transcriptome analysis. *J Biomol Tech* 24(Suppl):S68-S69.
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- 2010 Graham, W., R. Condon, **R.H. Carmichael**, I. D’Ambra, H. Patterson, F. Hernandez, Jr. Entry of oil to the coastal planktonic food web during the Deepwater Horizon spill. *AGU Fall Meeting Abstracts*
- 2009 **Carmichael, R.H.**, C. Pabody, A. Aven, L. Rice, M. Ross. A new sighting network adds to twenty years of historical data on fringe West Indian manatee (*Trichechus manatus*) populations in Alabama waters, 18th Biennial Conference on the Biology of Marine Mammals, Quebec, Canada
- 2009 **Carmichael, R.H.**, T. Hattenrath, R. Alexander, K. Pepperman, I. Valiela, R. Michener. N stable isotopes in bivalve shell trace wastewater inputs to estuaries. *Alabama Fisheries Association, 25<sup>th</sup> Annual meeting, proceedings*. Feb.
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- 2009 Biancani, P., **R.H. Carmichael**, A. Aven, K. Calci, W. Burkhardt III, J. Daskin. An innovative approach to detecting wastewater influence on oysters. *J. Shellfish Res.* 28:683.
- 2009 Patterson, H., A. Boettcher, **R.H. Carmichael**. Effect of dissolved oxygen stress on stable isotope values (C and N) in the Eastern oyster, *Crassostrea virginica*. *J. Shellfish Res.* 28:719.
- 2008 Biancani, P., **R.H. Carmichael**, K. Calci, W. Burkhardt III. Oysters, sewage, and disease. *J. Shellfish Res.* 27:990.
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- 2004 **Carmichael, R.H.** The effects of eutrophication on *Mya arenaria* and *Mercenaria mercenaria*: Growth, survival, and physiological responses to changes in food supply and habitat across estuaries receiving different nitrogen loads. *Dissertation Abstracts International Part B: Science and Engineering* 64 (10):4370.

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**RESEARCH GRANTS AND CONTRACTS** (ordered by end date)

- 2025-2026 Prescott Marine Mammal Rescue Assistance Grant Program, Coastal Connections: Linking Dolphin Health, Zoonotic Pathogens, and Community Engagement in Southern Alabama (Carmichael PI; \$ \$59,708) Collaborators: C. Vendl, Lupercalia Gallery, Africatown community (J. Lewis), Bayou La Batre community (B.H. Piedra), MSU (K. McNulty)
- 2025-2030 US EPA, Gulf of Mexico Division, Tracking wastewater for health and resilience in Alabama (Kiel-Reese PI \$5,865,725; Carmichael portion of award \$2,100,00). Collaborators: USA (B. Kiel-Reese, B. Dzwonkowski, S. Ní Chadhain, Z. Liu), Bishop State Community College (K. Roberts), Alabama A&M University (E. Moss), Bayou Clinic (D. Patterson, J. Taylor), Mobile BayKeeper (C. Kistler). – Rescinded under two EOs, Feb 2025
- 2024-2027 Gulf of Mexico Energy Security Act (GOMESA), Dauphin Island Sea Lab’s Manatee Sighting Network & Research Program (Renewal, Carmichael PI; \$182,461) Collaborators: ADCNR (C. Blankenship)
- 2020-2029 Alabama Restoration Plan II: Enhancing capacity for the Alabama marine mammal stranding network restoration project (Carmichael PI; \$2,432,389, 2020-2025; Extension \$1,881,237, 2025-2029) Collaborators: Alabama Department of Conservation and Natural Resources (ADCNR, A. Hunter, K. Swindle, J. Miller)
- 2024-2028 US EPA, Gulf of Mexico Environmental Justice Grants Program, Gulf Coast Environmental Engagement Center (GCEEC) at the University of South Alabama (Wu PI \$2,499,999; DISL portion of award \$100,879). Collaborators: USA (S. Wu), DISL/DHP (T. Miller-Way)

- 2024-2025 Prescott Marine Mammal Rescue Assistance Grant Program, Stranding response for manatees in the northern Gulf of Mexico (Carmichael PI; \$49,755) Collaborators: USFWS (T. Calleson)
- 2022-2025 US EPA, Healthy and Resilient Gulf of Mexico 2020 RFA, Advanced microbial source tracking for community health in Alabama (Kiel-Reese PI \$498,144; Carmichael portion of award \$185,683). Collaborators: USA (B. Kiel-Reese, S. Ni Chadhain)
- 2021-2025 Alabama Center of Excellence, Monitoring and predicting responses of a sentinel marine megafauna to climate change and implications for the tropicalization of the northern Gulf of Mexico (Carmichael PI: \$496,987). Collaborators: DISL/ USA (C. Cloyed, B. Dzwonkowski), University of Southern Mississippi (N. Phillips), Clearwater Marine Aquarium Research Inst. (M. Ross, J. Powell).
- 2021-2025 Alabama Center of Excellence, Assessing the function and vulnerability of forested wetlands in the Mobile-Tensaw-Apalachee River Delta (Anderson PI: \$459,481; Carmichael portion of award \$195,427). Collaborators: Auburn University (C. Anderson, L. Kalin)
- 2019-2025 Alabama Restoration Plan II: Assessment of Alabama estuarine bottlenose dolphin populations and health (Carmichael PI; \$3,059,229) Collaborators: Alabama Department of Conservation and Natural Resources (ADCNR, A. Hunter, K. Swindle), NOAA NMFS (K. Mullin)
- 2022-2023 Prescott Marine Mammal Rescue Assistance Grant Program, Stranding response for manatees in the northern Gulf of Mexico (Carmichael PI; \$33,209) Collaborators: USFWS (T. Calleson)
- 2022-2023 Prescott Marine Mammal Rescue Assistance Grant Program, Investigating Success of Stranded Marine Mammal Surveillance by the Public, Trained Response Staff, and Unoccupied Aerial Surveys (Carmichael PI, originally Bloodgood PI; \$32,467) Collaborators: NOAA NMFS, USA Theatre Dept.
- 2020-2023 Gulf of Mexico Energy Security Act (GOMESA), Dauphin Island Sea Lab's Manatee Sighting Network & Research Program (Renewal, Carmichael PI; \$120,000) Collaborators: ADCNR (C. Blankenship)
- 2021-2022 Prescott Marine Mammal Rescue Assistance Grant Program, Maintaining and enhancing stranding response for manatees in the northern Gulf of Mexico (Carmichael PI; \$44,881) Collaborators: USFWS (T. Calleson)
- 2020-2022 Prescott Marine Mammal Rescue Assistance Grant Program, Transport capacity for stranded manatees in the northern Gulf of Mexico (Carmichael PI; \$68,097; NCE)
- 2020-2021 Alabama Division of Wildlife and Freshwater Fisheries, State Wildlife Grants, Estimating abundance & distribution of manatees (Cloyed PI \$27,112; Carmichael no-cost Co-PI/ mentor) Collaborators: ADCNR, SWG
- 2018-2021 GoMRI VI, Consortium for Advanced Research on Marine Mammal Health Assessment (CARMMHA) (L. Schwacke PI; \$4,736,265; Carmichael portion of award \$203,464) Collaborators: National Marine Mammal Foundation (L. Schwacke, C. Smith, B. Balmer, S. Venn-Watson), University of St. Andrews (L.

- Thomas), University of Connecticut (S. DeGuise), NOAA NMFS (T. Rowles), Chicago Zoological Society/ Sarasota Dolphin Research Program (R. Wells), University of Illinois (K. Colegrove); NCE 1 year
- 2017-2021 NOAA RESTORE Act Science program, Use of elemental signatures to detect and trace contaminant entry to the northern Gulf of Mexico coastal food web: managing multiple stressors (Carmichael PI; \$231,671) Collaborators: The Nature Conservancy, Alabama Department of Environmental Management (ADEM), ADCNR, NOAA Mussel Watch program; NCE 1 year
- 2017-2021 National Fish and Wildlife Foundation (NFWF), Alabama Marine Mammal Conservation and Recovery Program, Extension (Carmichael PI; \$621,089) Collaborators: NOAA NMFS, ADCNR, USFWS; NCE 1 year
- 2019-2020 Alabama Division of Wildlife and Freshwater Fisheries, Part II: Aerial surveys of manatee abundance and distribution in Alabama waters (Carmichael PI; \$17,907) Collaborators: ADCNR, Sea to Shore Alliance (M. Ross, J. Powell)
- 2018-2020 USA's Center for Environmental Resiliency, Mitigating Wastewater Contamination to Mississippi Sound: A novel partnership for management and education in Marine Science and Chemistry (A. Stenson PI; \$20,000; Carmichael portion of award \$5,000); NCE 1 year
- 2017-2020 Gulf of Mexico Energy Security Act (GOMESA), Dauphin Island Sea Lab's Manatee Sighting Network & Research Program (Carmichael PI; \$120,000) Collaborators: ADCNR (C. Blankenship)
- 2015-2020 National Fish and Wildlife Foundation (NFWF), Alabama Marine Mammal Conservation and Recovery Program (Carmichael PI; \$1,281,600) Collaborators: NOAA National Marine Fisheries Service, Southeast Region Stranding Network, ADCNR, USFWS (D. Ingram), Marine Mammal Commission, The Ocean Conservancy
- 2018-2019 Alabama Division of Wildlife and Freshwater Fisheries, Aerial surveys of manatee abundance and distribution in Alabama waters (Carmichael PI; \$26,326) Collaborators: ADCNR, Sea to Shore Alliance (M. Ross, J. Powell)
- 2017-2018 Mobile Bay National Estuary Program (NEP), West Fowl River marsh restoration study (Carmichael portion of award \$70,538) Collaborators: MBNEP, Vittor Assoc., USA, Cook Hydrogeology
- 2017-2018 Mobile Bay National Estuary Program (NEP), West Fowl River shoreline survey: identification of pollution sources and implications for salt marsh restoration, shellfish propagation, and public health (Carmichael PI: \$44,875) Collaborators: U.S. Food and Drug Administration (K. Calci), ADCNR, ADEM, MBNEP
- 2017-2018 NOAA, National Estuarine Research Reserve (NERR) System, Science Collaborative, Science Transfer project, NSC Science Transfer: Application of data from the Grand Bay estuary system to enhance water quality on the northern Gulf of Mexico coast. (Carmichael portion of award \$44,906) Collaborators: UNCW (E. Darrow), Grand Bay National Estuarine Research Reserve (A. Gray, M. Woodrey), MBNEP (R. Swann), USFDA (K. Calci), University of Southern Mississippi (E. Jackson), Ecotours of South Mississippi (K. Wilkinson)

- 2017 Huinay Scientific Field Station: FONDECYT National Fund for Scientific and Technological Development, Mass mortalities of cold-water corals in Chilean Patagonia: Causes, consequences, recovery and resilience (Carmichael portion of award \$15,000) Collaborators: Pontificia Universidad Católica de Valparaíso (V. Häussermann, G. Försterra), Victoria University of Wellington, NZ (D. Sinclair).
- 2017 U.S. Fish and Wildlife Service, Support for DISL’s Manatee Sighting Network (Carmichael PI; \$5,600) Collaborators: USFWS (P. Harper).
- 2017 Thompson Engineering, Manatee habitat assessment within the proposed area of the Mobile Bay Bridge modification project (Carmichael PI; \$5,159) Collaborators: Thompson Engineering, Shumer Consulting, LLC., USFWS
- 2017 NFWF, Alabama Marine Mammal Stranding Supplements (Carmichael PI; \$138,300; \$355,078) Collaborators: NOAA National Marine Fisheries Service, Southeast Region Stranding Network, ADCNR, USFWS
- 2016-2017 Alabama Division of Wildlife and Freshwater Fisheries, Mapping of manatee thermal refugia in Alabama waters: Enhanced data collection and analyses (Carmichael PI; \$22,500) Collaborators: ADCNR, USFWS (D. Ingram), Pilot (R. Kellogg), Sea to Shore Alliance (M. Ross)
- 2016 U.S. Fish and Wildlife Service, Support for aerial surveys to map thermal refugia in Alabama waters (Carmichael PI; \$9,000) Collaborators: USFWS (D. Ingram)
- 2015-2016 Alabama Division of Wildlife and Freshwater Fisheries, Preliminary aerial mapping of manatee thermal refugia in Alabama waters (Carmichael PI; \$22,500) Collaborators: ADCNR, USFWS (D. Ingram), Sea to Shore Alliance (M. Ross, J. Powell)
- 2015-2016 MS Water Resources Research Institute (MWRRI), Water quality in Bangs Lake—Effects of recurrent phosphate spills to a coastal estuary: Year 2 (K. Dillon PI; \$77,957; Carmichael portion of award \$8,010) Collaborators: Grand Bay National Estuarine Research Reserve, Univ. of Southern Mississippi/ Gulf Coast Research Laboratory, Univ. of West Florida, MS Department of Environmental Quality
- 2015-2016 WHOI Sea Grant, A history of mercury impacts to Waquoit Bay clams (C. Lamborg, WHOI/UCSC PI \$102,955; Carmichael portion of award \$34,200) Collaborators: WHOI/UCSC (C. Lamborg), MA DMR (J. Logan)
- 2014-2016 MS-AL Sea Grant Consortium, A circulation and transport model for fishery management in Mobile Bay and eastern Mississippi Sound (Carmichael PI; \$149,876) Collaborators: The Nature Conservancy, Alabama Marine Resources Division, U.S. Coast Guard, National Estuary Program
- 2015 Gulf Coast ADVANCE, Minority student research opportunity: Determining sources, history, and status of eutrophication at Naval Station Guantanamo Bay (Carmichael PI; \$4,423) Collaborators: Army Corps of Engineers/ U.S. Department of Defense, Florida Atlantic Univ. (B. LaPointe, M. Risk)
- 2015 Seamen’s Foundation, Grant Request to Seamen’s Foundation (Carmichael PI; \$11,290)

- 2014-2015 Alabama Division of Wildlife and Freshwater Fisheries, Monitoring manatee movements and habitat use in Alabama waters (Carmichael PI; \$30,000) Collaborators: ADCNR, USFWS (D. Ingram), Sea to Shore Alliance (M. Ross, J. Powell)
- 2014-2015 US Army Corps of Engineers (USACE), Determining sources, history and status of eutrophication at Naval Station Guantanamo Bay, Cuba (PI Florida Atlantic University \$116,753; Carmichael portion of award \$28,340) Collaborators: Florida Atlantic Univ. (B. LaPointe, L. Herren), Naval Station Guantanamo Bay (J. Jackson, M. McCord, D. Marx, J. Montalvo), McMaster Univ. (M. Risk)
- 2014 National Fish and Wildlife Foundation (NFWF), Support for the Alabama Marine Mammal Stranding Network (Carmichael PI; \$94,000) Collaborators: NOAA NMFS-Pascagoula (K. Mullin, L. Noble)
- 2014-2015 MS Water Resources Research Institute (MWRRI), Water quality in Bangs Lake: Effects of recurrent phosphate spills to a coastal estuary (K. Dillon PI; \$77,957; Carmichael portion of award \$5,513) Collaborators: Grand Bay National Estuarine Research Reserve, Univ. of Southern Mississippi/ Gulf Coast Research Laboratory, Univ. of West Florida, MS Department of Environmental Quality
- 2013-2014 NOAA/Northern Gulf Institute, Support of NOAA's Marine Mammal Health and Stranding Response Program (MMSHRP) in the northern Gulf of Mexico through the NGI: Alabama Marine Mammal Stranding Response (\$3,000)
- 2013-2014 Alabama Division of Wildlife and Freshwater Fisheries, Enhanced monitoring of Alabama's tagged manatees and comparison to the nGOM manatee opportunistic sighting database (Carmichael PI; \$42,429) Collaborators: ADCNR, USFWS (D. Ingram), Sea to Shore Alliance (M. Ross, J. Powell)
- 2012-2015 Alabama Emergency Management Agency, Deepwater Horizon Incident Grant, Alabama Marine Mammal Stranding Network: A Strategy for strengthening and sustaining an efficient stranding response and research unit (Carmichael PI; \$1,262,355) Collaborators: ADCNR (K. Swindle)
- 2012-2013 Alabama Division of Wildlife and Freshwater Fisheries, Monitoring tagged manatees in Alabama waters (Carmichael PI; \$39,899) Collaborators: ADCNR, USFWS (D. Ingram), Sea to Shore Alliance (M. Ross, J. Powell)
- 2012-2013 United States Fish & Wildlife Service, Database management and enhanced tissue sampling to inform West Indian manatee status in Alabama waters (Carmichael PI; \$15,000) Collaborators: USFWS (J. Valade, D. Ingram)
- 2011-2013 NOAA, National Coastal Data Development Center (NCDDC), Data Management in Support of NOAA's Integrated Ecosystem Assessment for the Gulf of Mexico: Dauphin Island Sea Lab's Data Management Center (Carmichael PI; \$140,177) Collaborators: NCDDC (R. Parsons, R. Beard), Louisiana State University (R. Twilley), NGI Award numbers 09-NGI-15 & 12-NGI2-12
- 2010-2013 NOAA, National Estuarine Research Reserve (NERR) System, National Science Collaborative, Legacy effects of land-use change and nitrogen source shifts on a benchmark system: Building capacity for collaborative research leadership at the Grand Bay Reserve (Carmichael PI and Project Manager; \$354,750)

- Collaborators: USFDA (W. Burkhardt III, K. Calci), University of Southern Mississippi/ Gulf Coast Research Laboratory (W. Wu, C. Gong, E. Jackson), Grand Bay National Estuarine Research Reserve (D. Ruple), MS Department of History and Archives (P. Lieb), Ecotours of South Mississippi (K. Wilkinson)
- 2011-2012 NOAA, Prescott Fund, Fisheries Protected Resources Program, Establishing a regionally cooperative dolphin stranding network for Alabama (Carmichael PI; \$74,388) Collaborators: ADCNR (K. Swindle), Institute for Marine Mammal Studies, NOAA NMFS-Pascagoula (K. Mullin, L. Noble)
- 2011-2012 National Fish and Wildlife Foundation (NFWF), A cooperative marine mammal stranding network for Alabama (Carmichael PI; \$175,837) Collaborators: ADCNR (K. Swindle), Institute for Marine Mammal Studies, USFWS (D. Ingram), NOAA NMFS-Pascagoula (K. Mullin, L. Noble)
- 2011-2012 Alabama Division of Wildlife and Freshwater Fisheries, Monitoring manatee habitat and movement patterns in Alabama waters (Carmichael PI; \$43,182) Collaborators: ADCNR, USFWS (D. Ingram), Sea to Shore Alliance (M. Ross, J. Powell), SeaWorld Orlando, University of Florida (M. Walsh)
- 2011-2012 MESC BP-GoMRI, Gulf of Mexico Ecosystem Recovery: Sentinel macrofauna (Carmichael PI and Project Manager; \$243,000; Carmichael portion of award \$42,000) Collaborators: Univ. of South Alabama (A. Boettcher), Univ. of Alabama (F. Andrus, R. Findlay, Y. Lu, M. Jenny, A. Perez-Huerta), Auburn Univ. (W. Walton), Univ. of Alabama Birmingham (R. Watson)
- 2010-2011 Alabama Division of Wildlife and Freshwater Fisheries, Use of tagging and necropsy data to define movements and diet of Alabama manatees (Carmichael PI; \$35,794) Collaborators: ADCNR, USFWS (D. Ingram), Sea to Shore Alliance (M. Ross, J. Powell)
- 2010-2011 Northern Gulf Institute (NGI) BP-GoMRI, Effects of oil contaminants on sentinel benthic and pelagic species in Mobile Bay (Carmichael PI; \$69,355); Phase II (Carmichael PI; \$45,000) Collaborators: Univ. of South Alabama (A. Boettcher, K. Park), Univ. of Mississippi (K. Willett)
- 2010 NOAA, Natural Resource Damage Assessment (NRDA) Program, Proposed data collection plan to assess injury to West Indian manatees from the Deepwater Horizon Oil Spill outside of Florida (Carmichael Co-PI; \$20,761 Carmichael portion of award) Collaborators: NOAA, USFWS (N. Adimey), Sea to Shore Alliance, FL (J. Powell, M. Ross)
- 2009-2011 Alabama Oyster Reef Restoration Program, University of South Alabama, Quantification of direct and indirect nitrogen removal by oysters (*Crassostrea virginica*) (Carmichael Co-PI; Carmichael portion of award \$35,870) Collaborators: Univ. of South Alabama (A. Ortmann), Univ. of Alabama (B. Mortazavi)
- 2009-2011 Richard C. Shelby Center for Ecosystem-based Fisheries Management, From Mobile Bay to nGOM fisheries: The trophic importance of land-derived organic matter (Carmichael PI; \$96,205)

- 2009-2011 NOAA/NCDDC, Data Management in Support of NOAA's Integrated Ecosystem Assessment for the Gulf of Mexico through the NGI Ecosystem Data Assembly Center (Carmichael PI; \$162,604) Collaborators: NCDDC (R. Parsons, R. Beard)
- 2009-2010 Alabama Department of Conservation and Natural Resources, Linking nutrient source to harmful algal blooms in Little Lagoon, AL (Carmichael Co-PI; Carmichael portion of award \$13,000) Collaborators: Dauphin Island Sea Lab (H. MacIntyre), University of Alabama (B. Mortazavi)
- 2009-2010 Alabama Division of Wildlife and Freshwater Fisheries, Population Ecology of West Indian manatees in Alabama waters (Carmichael PI; \$39,307) Collaborators: ADCNR, USFWS (D. Ingram), Sea to Shore Alliance (M. Ross, J. Powell), SeaWorld Orlando, Univ. of Florida (M. Walsh)
- 2008-2010 MS-AL Sea Grant Consortium, Use of stable isotope ratios to link wastewater sources to effects on shellfish and human health: Defining relevant and effective spatial and temporal scales for management (Carmichael PI; \$99,995) Collaborators: U.S. Food & Drug Administration (W. Burkhardt III, K. Calci)
- 2008-2009 Alabama Division of Wildlife and Freshwater Fisheries, Use of telemetry and GPS to monitor West Indian manatee movements in Alabama waters (Carmichael PI; \$38,620) Collaborators: ADCNR, USFWS (D. Ingram), Wildlife Trust (M. Ross, J. Powell), SeaWorld Orlando
- 2008-2009 Mobile Bay National Estuary Program, Study of the West Indian manatee population in Mobile Bay, AL: A model for conservation management by integration of research and public outreach (Carmichael PI; \$25,849) Collaborators: USFWS (D. Ingram)
- 2008-2009 MS-AL Sea Grant Consortium, Collaborator: Assessment of depredation by bottlenose dolphins in the Northwest Florida and Alabama sport fishery (Carmichael No cost Co-PI) Collaborator: Emerald Coast Wildlife Refuge, FL (S. Shippee)
- 2007-2009 NOAA/NCDDC, Development and integration of metadata and research data retention at Dauphin Island Sea Lab (Carmichael Co-PI; \$140,896 Carmichael portion of award) Collaborator: Dauphin Island Sea Lab (G. Crozier)
- 2007-2009 Alabama Oyster Reef Restoration Program, University of South Alabama, Effects of N enrichment on oyster growth and survival via changes in food supply and habitat in Mobile Bay, AL (Carmichael PI; \$145,151)
- 2007-2008 Alabama Division of Wildlife and Freshwater Fisheries, A pilot study of the extralimital West Indian Manatee population in Mobile Bay, AL (Carmichael PI; \$25,171) Collaborators: ADCNR, USFWS (D. Ingram)
- 2006-2011 Maine Technology Institute, Marine Research Fund, Integration of research into training and outreach programs at the University of Maine at Machias: A 5-year study of the effects of human perturbations on commercially important shellfish in Downeast Maine (Carmichael PI; \$283,914) Collaborators: Downeast Institute (B. Beal), Univ. of Maine, Machias (Biology Department)

- 2005-2006 Maine Sea Grant Program, Assessing the potential for successful culture of the Atlantic Horseshoe Crab, *Limulus Polyphemus*, in Maine (Carmichael PI; \$5,925) Collaborator: Downeast Institute (B. Beal)
- 2004-2006 MIT Sea Grant Program, Stable isotope approaches to understand and monitor eutrophication in land-estuary ecosystems (Carmichael Co-PI; Carmichael portion of award \$25,000) Collaborator: Boston Univ./ Marine Biological Laboratory, MA (I. Valiela)
- 2002-2004 WHOI Sea Grant Program, The effects of anthropogenic N loads on commercially important bivalves (Carmichael PI; \$10,000) Collaborator: Boston Univ./ Marine Biological Laboratory, MA (I. Valiela)

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### MENTORSHIP AND EDUCATIONAL GRANTS

- 2025-2028 National Science Foundation, Research Experiences for Undergraduates Program, (Carmichael PI; \$369,976) Collaborators: DISL faculty, MESC schools
- 2024-2025 National Science Foundation, Research Experiences for Undergraduates Program, Supplement (Carmichael PI; \$10,464) Collaborators: DISL faculty
- 2022-2025 National Science Foundation, Research Experiences for Undergraduates Program, (Carmichael PI; \$316,262) Collaborators: DISL faculty, MESC schools
- 2021-2026 US Food and Drug Administration, DISL/FDA joint graduate fellowship program (Carmichael PI; \$150,000 renewable per year; \$750,000 total) Collaborators: USFDA and DISL faculty.
- 2021-2022 US Food and Drug Administration, DISL/FDA joint graduate fellowship program supplement (Valentine PI, Carmichael Co-PI; \$1,000,000).
- 2019-2021 National Science Foundation, Research Experiences for Undergraduates Program, Supplement for meetings and publications (Carmichael PI; \$23,012)
- 2018-2021 National Science Foundation, Research Experiences for Undergraduates Program, (Carmichael PI; \$316,889) Collaborators: DISL faculty, MESC schools
- 2016-2021 US Food and Drug Administration, DISL/FDA joint graduate fellowship program (Carmichael PI; \$150,000 renewable per year; \$750,000 total) Collaborators: USFDA and DISL faculty.
- 2017 National Science Foundation, Research Experiences for Undergraduates Program, DISL program extension (Carmichael PI; \$36,661) Collaborators: DISL faculty

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### AWARDS AND DISTINCTIONS

- 2010-2023 College of Arts and Sciences, University of South Alabama
- Excellence in Graduate Mentorship, Awardee 2023
  - Dean's Award, Nominee 2022
  - Junior Faculty Scholarship and Academic Achievement, Nominee 2010
- 2021 Leadership Alabama, DISL nominee (cancelled due to COVID-19)
- 2019 Distinguished Service Award, Coastal and Estuarine Research Federation
- 2004 Selected Participant, Dissertations Initiative for the Advancement of Limnology and Oceanography (DIALOG) VI, Dauphin Island Sea Lab, AL

- 2001-2002 Palmer-McLeod Fellowship Award, Boston University Marine Program
- 2000 Dean Prize for Best Graduate Student Poster, New England Estuarine Research Society (NEERS)
- 1996, 2000 Hume's Alumni Award for Outstanding Research, Boston University Marine Program
- 1996 Lerner-Gray Marine Research Fund, American Museum of Natural History

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## **AFFILIATIONS**

- American Association for the Advancement of Sciences (AAAS-International)
- Association for the Sciences of Limnology and Oceanography (ASLO-International; Current)
- Coastal and Estuarine Research Federation (CERF-International; Current)
- Gulf Estuarine Research Society (GERS-Regional; Current)
- National Shellfisheries Association (NSA-National)
- New England Estuarine Research Society (NEERS-Regional)
- Society of Environmental Toxicology and Chemistry (SETAC-International)
- The Society for Marine Mammalogy (SMM-International; Current)

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## **MEETINGS AND PRESENTATIONS**

### **Invited oral presentations at conferences & meetings:**

- 2025 National Marine Mammal Conference, Virtual "Comparison of pectoral fin and tooth-based aging in bottlenose dolphins"
- 2018 National Conference on Ecosystem Restoration (NCER), New Orleans, LA "Use of ecological expertise for communicating sound management advice" (Panelist)
- 2018 Gulf and South Atlantic States Shellfish Conference, Mobile, AL "Shellfish, nutrients, and pathogens"
- 2017 Society for Marine Mammalogy's Southeast Student Chapter, 2<sup>nd</sup> Annual Student Research Symposium, University of Southern Mississippi, Hattiesburg, MS "Science, communication and the marine mammal challenge"
- 2015 MS-AL Sea Grant Consortium, Oil spill Science Seminar: Healthy Gulf Seafood, Long Beach, MS "Effects of the Deepwater Horizon oil event on oysters in the northcentral Gulf"
- 2015 University of Southern Mississippi, Deepwater Horizon a Scientists Perspective Seminar Series, Long Beach, MS "Effects of oil contaminants on sentinel species in nGOM"
- 2014 NOAA NERRS National Science Collaborative Stakeholder Workshop, Grand Bay NERR, Moss Point, MS "Grand Bay: Planning the future with an eye on the past" (Workshop co-coordinator, presented Introduction, Example products, Conclusion, Assimilation)
- 2013 Grand Bay National Estuarine Research Reserve Research Symposium, Grand Bay NERR, Moss Point, MS "Legacy effects of land-use change and nitrogen source shifts on Grand Bay: A benchmark for building collaborative research at the Grand Bay NERR"

- 2013 Goldschmidt 2013, Florence, Italy “Nitrogen in bivalve shell and soft tissues: Implications for N sequestration and cycling in coastal waters”
- 2013 Quantifying Nitrogen Removal by Oysters Workshop, VIMS, Eastern Shore Laboratory, Wachapreague, VA “Bivalve enhanced N removal: Cape Cod, MA and Mobile Bay, AL case studies”
- 2012 Regional Aquatics Workshop (RAW), Chicago, IL “Three decades of horseshoe crab rearing: A review of conditions for captive growth and survival”
- 2012 ExxonMobil Research Colloquium, Dauphin Island Sea Lab, AL “Assimilation of oil-derived elements by oysters due to the Deepwater Horizon oil spill”
- 2011 Gulf Coast Student Chapter, The Society for Marine Mammalogy (SMM), Annual Student Research Symposium, Hattiesburg, MS “Marine mammals in the northern Gulf of Mexico: Promoting science & closing a data gap”, Keynote address
- 2011 International Workshop on Science and Conservation of Asian Horseshoe Crabs, Hong Kong “Molts reveal life-history patterns of American horseshoe crab populations in fringe habitats”
- 2009 Shellfish Restoration and Nitrogen Cycling in Estuarine Environments: What is the science? Cape Cod Cooperative Extension, Nutrient Management Conference, Cape Cod, MA “Remediation of eutrophication by oysters, *Crassostrea virginica*”
- 2009 European Geophysical Union (EGU) Assembly, Vienna, Austria “Nitrogen stable isotopes in the shell of *Mercenaria mercenaria* trace wastewater inputs from watersheds to estuarine ecosystems”
- 2009 Alabama Fisheries Association (AFA), 25<sup>th</sup> Annual meeting, Auburn, AL “N stable isotopes in bivalve shell trace wastewater inputs to estuaries”
- 2007 International Symposium on Science and Conservation of Horseshoe Crabs, Long Island, NY “Diet composition of juvenile horseshoe crabs: Implications for growth and survival of natural and cultured stocks”
- 2004 Woods Hole Oceanographic Institution, "Oceans Alive" Conference, Woods Hole, MA “Shellfish and nitrogen: A balancing act”
- 2003 Gulf of Maine Council on the Marine Environment, Barnstable, MA “Horseshoe crab populations in Cape Cod waters”
- 2003 Friends of Pleasant Bay, Annual Meeting, Brewster, MA “A 350 million year question: What’s the real world of the horseshoe crab?”
- 2001 Friends of Pleasant Bay, Annual Meeting, Orleans, MA “Horseshoe crabs in Pleasant Bay waters”

**Submitted oral presentations at conferences & meetings:**

- 2025 Coastal and Estuarine Research Federation (CERF) Biennial Conference, Richmond, VA
- “Changes in latitude and changes in attitude: Shifts in distribution and the culture of conservation for manatees in the U.S. outside of Florida”
  - “Breeding tidal marsh bird abundance estimates: Implications for monitoring and conservation” (M. Woodrey, R. Anderson, R. Iglay, K. Evans, L. Jones; oral, Carmichael gave presentation)

- 2025 Manatee Research Symposium, University of Florida, FL “Changes in latitude and changes in attitude: Shifts in distribution and the culture of conservation for manatees in the U.S. outside of Florida” (virtual)
- 2025 Grand Bay National Estuarine Research Reserve Research Symposium, Grand Bay, MS “Changes in latitude and changes in attitude: Shifts in distribution and the culture of conservation for manatees in the U.S. outside of Florida”
- 2024 Sirenian Symposium, Society for Marine Mammalogy, Perth Australia “Changes in latitude and changes in attitude: Shifts in distribution and the culture of conservation for manatees in the U.S. outside of Florida”
- 2024 Ocean Sciences Meeting, New Orleans, LA “The reciprocal links among marine mammal, ecosystem, and human health in coastal waters”
- 2023 Coastal and Estuarine Research Federation (CERF) Biennial Conference, Portland, OR “The reciprocal links among marine mammal, ecosystem, and human health in coastal waters”
- 2023 North American Workshop on Laser Ablation, Notre Dame, South Bend, IN “First use of LA-ICPMS to analyze trace metals in dolphin skin: informing movement ecology and contaminant exposure risk”
- 2022 Society for Marine Mammalogy, Biennial Conference, West Palm Beach, FL, virtual, “Regional and Ontogenetic Variation of Trace Element Ratios in Periosteal Bone of West Indian Manatees”
- 2021 Association for the Sciences of Limnology and Oceanography, Aquatic Sciences Meeting, virtual, “Testing stable isotope ratios and indices of n-alkane composition in oyster shell as tracers of anthropogenic pollution”
- 2020 Bays & Bayous Symposium, virtual, “Testing oyster shell as a proxy for tissue to detect trace metal pollution”
- 2018 Gulf Estuarine Research Society (GERS) Biennial Meeting, Galveston, TX, “Sources of water quality indicators to shellfish growing areas in the northcentral Gulf of Mexico”
- 2018 Bays & Bayous Symposium, Mobile, AL, “Our Wastewater Footprint: An example of adaptive research and user-driven product development”
- 2017 Coastal and Estuarine Research Federation (CERF) Biennial Conference, Providence, RI “Anthropo-proxy data in bivalves from middens to modern embayments and tropical to temperate systems”
- 2017 Goldschmidt 2017, Paris, France “Anthropo-proxy data in bivalves from middens to modern embayments and tropical to temperate systems”
- 2017 Alabama Academy of Sciences, 94<sup>th</sup> Annual Meeting, Mobile, AL “Sedimentary records of recurrent phosphate spills to a coastal estuary”
- 2016 Bays & Bayous Symposium, Biloxi, MS (2)
- “Use of shipping channels and fairways by the West Indian Manatee (*Trichechus manatus*) in the Northcentral Gulf of Mexico”
  - “Freshwater exposure and human interaction: Case history of a twice-stranded bottlenose dolphin in Alabama waters” (N. Wingers, D. Moore, R. Ewing, R.

Carmichael; oral, Carmichael gave presentation)

- 2015 Society for Marine Mammalogy Biennial Conference on the Biology of Marine Mammals, San Francisco, CA “Use of stable isotope ratios for life-time diet reconstruction in West Indian manatees”
- 2015 Coastal and Estuarine Research Federation (CERF) Biennial Conference, Portland, OR “Sedimentary records of recurrent phosphate spills to a coastal estuary”
- 2014 Bays & Bayous Symposium, Mobile, AL “Planning the future with an eye to the past: Land use and water quality on the Mississippi-Alabama coast”
- 2014 Gulf Estuarine Research Society (GERS), Port Aransas, TX “Understanding Alabama manatees through public sightings, remote sensing, and biological sampling”
- 2013 Coastal and Estuarine Research Federation (CERF) Biennial Conference, San Diego, CA “Nitrogen in bivalve shell and soft tissues: Implications for N sequestration and cycling in coastal waters”
- 2013 Association for the Sciences of Limnology and Oceanography (ASLO), Aquatic Sciences Meeting, New Orleans, LA, “The trophic importance of land-derived organic matter in a freshwater dominated northern Gulf of Mexico estuary”
- 2011 Coastal and Estuarine Research Federation (CERF) Biennial Conference, Daytona Beach, FL “Stable isotope composition of weathered oil: implications for tracing oil degradation and bioassimilation”
- 2010 Bays & Bayous Symposium, Mobile, AL “Seasonal and spatial effects of wastewater on oysters in Mobile Bay, AL”
- 2010 Alabama Chapter of The Wildlife Society (ACTWS) Annual Meeting, Spanish Fort, AL “Alabama manatees: Shallow water phantoms”
- 2009 Coastal and Estuarine Research Federation (CERF) Biennial Conference, Portland, OR “Stable isotope and microbial tracers of wastewater influence on coastal ecosystems”
- 2009 National Shellfisheries Association (NSA) Annual Meeting, Savannah, GA “Nitrogen stable isotopes in the shell of *Mercenaria mercenaria* trace wastewater inputs from watersheds to estuarine ecosystems”
- 2008 National Shellfisheries Association (NSA) Annual Meeting, Providence, RI “Remediation of eutrophication by oysters, *Crassostrea virginica*”
- 2007 First International Sclerochronology Conference, St. Petersburg, FL “N stable isotopes in bivalve shell trace wastewater inputs to estuaries”
- 2007 Estuarine Research Federation (ERF) Biennial Conference, Providence, RI “N stable isotopes in bivalve shell trace wastewater inputs to estuaries”
- 2005 Estuarine Research Federation (ERF) Biennial Conference, Norfolk, VA “Relating eutrophication to bivalve secondary production”
- 2004 DIALOG VI Symposium, Dauphin Island Sea Lab, AL “Effects of nitrogen loading on commercial shellfish”

- 2003 National Shellfisheries Association (NSA) Annual Meeting, New Orleans, LA  
“Effects of eutrophication on *Mya arenaria* & *Mercenaria mercenaria*”
- 2003 American Fisheries Society (AFS) Southern New England Chapter, Worcester, MA  
“Effects of eutrophication on *Mya arenaria* & *Mercenaria mercenaria*”

**Poster presentations (first author):**

- 2024 Society for Marine Mammalogy, Perth Australia “One Ocean One Health: The reciprocal links among marine mammal, ecosystem, and human health in coastal waters”
- 2023 Grand Bay National Estuarine Research Reserve Symposium, Moss Point, MS  
“Ocean and Human Health: Linking water quality to health of bottlenose dolphins and the implications for human health”
- 2021 Coastal and Estuarine Research Federation (CERF) Biennial Conference (virtual)  
“Oyster shell may record human pollution”
- 2021 Ocean Sciences, Spain (virtual) “Testing stable isotope ratios and n-alkane composition in oyster shell as tracers of anthropogenic pollution”
- 2019 World Marine Mammal Conference (WMMC), Barcelona, Spain “Human influence on common bottlenose dolphin (*Tursiops truncatus*) strandings in the northern Gulf of Mexico”
- 2019 Coastal and Estuarine Research Federation (CERF) Biennial Conference, Mobile, AL  
“Sedimentary records of recurrent phosphate spills to a coastal estuary”
- 2019 4<sup>th</sup> International Workshop on the Science and Conservation of Horseshoe Crabs, Guangxi, China. “Horseshoe crab population response to natural and anthropogenic perturbations through time: hurricane, oil spill, and a decade of change”
- 2016 NSF REU Program PI Workshop, Boulder, CO “DISL REU program: Results of targeted recruitment for minority & underserved students”
- 2015 3<sup>rd</sup> International Workshop on Science and Conservation of Horseshoe Crabs, Sasebo City, Nagasaki, Japan “Structure of northern and southern populations of juvenile American horseshoe crabs inferred from molt size frequency analysis”
- 2015 Mississippi Water Resources Conference, Mississippi Water Resources Research Institute (MWRRI), Jackson, MS, “Planning the future with an eye to the past: Land use and water quality on the Mississippi-Alabama coast”
- 2014 Gulf of Mexico Oil Spill and Ecosystem Science Conference, Mobile, AL (2)
- “Assimilation of oil-derived elements by oysters due to the *Deepwater Horizon* oil spill”
  - “Stable isotope composition of weathered oil: Implications for tracing oil degradation and bioassimilation”
- 2012 Coastal and Estuarine Research Federation (CERF) Argentina, Mar del Plata, “Bivalve response to estuarine eutrophication: The balance between enhanced food supply and habitat alterations”

- 2011 Society for Marine Mammalogy Biennial Conference on the Biology of Marine Mammals, Tampa, FL “Were multiple stressors a ‘perfect storm’ for nGOM bottlenose dolphins in 2011?”
- 2009 Society for Marine Mammalogy Biennial Conference on the Biology of Marine Mammals , Quebec, Canada “A new sighting network contributes to 20 years of historical data on manatee populations in Alabama waters”
- 2004 DIALOG VI, Dauphin Island Sea Lab, AL, “Effects of nitrogen loading on commercial shellfish”
- 2003 Estuarine Research Federation (ERF) Biennial Conference, Seattle, WA, “Effects of nitrogen loading on commercial shellfish”
- 2002 American Fisheries Society (AFS) Annual Meeting, Baltimore, MD, “Abundance and population structure of the Atlantic horseshoe crab in Pleasant Bay, MA”
- 2001 Estuarine Research Federation (ERF) Biennial Conference, St. Pete Beach, FL, “Effects of nitrogen loading on commercial shellfish”
- 2000 New England Estuarine Research Society Fall Meeting, Block Island, RI, “The effect of terrigenous nitrogen loading on growth rates of quahogs (*Mercenaria mercenaria*) and softshell clams (*Mya arenaria*) through changes in water column and habitat characteristics” Awarded Best Graduate Student Poster

**Co-authored presentations at meetings or seminars:**

- 2025 Coastal and Estuarine Research Federation (CERF) Biennial Conference, Richmond, VA (6)
- “Blubber thickness as a trophic health indicator in stranded bottlenose dolphins along the Alabama coast” (S. Azadi, M. Russell, C. Diaz Clark, E. Slavich, R.H. Carmichael, C. Vendl; lightning talk)
  - “A comparative assessment of the environmental drivers shaping marine megafauna distributional shifts” (H. Morris, C. Cloyd, R.H. Carmichael; poster)
  - “The hot new accessory: Bottlenose dolphin splenic response to estuarine stressors” (T. Johnson, R.H. Carmichael, M. Russell, C. Vendl; poster)
  - “What gets reported? A novel method for quantifying bias in community-sourced data” (S. Corde, E. Watts, E. Hieb, R.H. Carmichael; lightning talk), Best Graduate Student Presentation Award
  - “Strandings from the sky: Detecting bay, sound and estuarine marine mammal strandings using UASs” (M. Russell, M. Ponti, C. Diaz Clark, C. Cloyd, R.H. Carmichael, J. Bloodgood; lightning talk)
  - “Using citizen-sourced photo-identification data to track repeated and cross-habitat movement and behavior trends in manatees” (E. Watts, S. Corde, E. Hieb, R.H. Carmichael; poster)
- 2025 Manatee Research Symposium, University of Florida, FL “No Wake, Just Woke: Evaluating Dock Sign Placement and Public Reporting of Manatees in Coastal Alabama” (P. D. Payán Arias, S.C. Corde, R.H. Carmichael; virtual poster)
- 2025 DISL REU Poster Symposium, Dauphin Island, AL “No Wake, Just Woke: Evaluating Dock Sign Placement and Public Reporting of Manatees in Coastal Alabama” (P. D. Payán Arias, S.C. Corde, R.H. Carmichael; virtual poster)

- 2025 Wildlife Disease Association, Victoria, BC “Dead but not forgotten: Drivers of cetacean necrobiome and their importance in understanding carcass decomposition and circumstances of death” (C. Vendl, K. Ridge, Y. Hall, J. Bloodgood, C. Diaz Clark, M. L. Russell, L. Hayes-Guastella, B. Kiel Reese, R.H. Carmichael; TBD)
- 2025 International Association for Aquatic Animal Medicine (IAAAM), Biloxi, MS “Biological and Methodological Factors Influencing Blubber Thickness Measurements in Stranded Bottlenose Dolphins (*Tursiops truncatus*) Along the Alabama Coast” (S. Azadi, M. Russel, C. Diaz Clark, R.H. Carmichael, C. Vendl; poster)
- 2024 Gulf Estuarine Research Society (GERS), biennial meeting Fairhope, AL (3)
- “Relationships between freshwater discharge and organic matter movement through the Mobile Bay estuary” (Yuhl, A., Anderson, C.J., Kalin, L., Carmichael, R.H.; oral)
  - “Shrimp depredation can serve as an indicator of death by human interaction in bottlenose dolphins, *Tursiops truncatus*, in Alabama Waters (V. Neve, M. Russell, R.H. Carmichael; poster, Best Undergraduate Student Poster Award)
  - “Dead but not forgotten: Drivers of cetacean necrobiome and their importance in understanding carcass decomposition and circumstances of death” (K. Ridge, Y. Hall, J. Bloodgood, C. Diaz Clark, M. Russell, L. Hayes-Guastella, B. Kiel Reese, R.H. Carmichael, C. Vendl; poster)
- 2024 Society for Marine Mammalogy, Biennial Conference, Perth, Australia (9)
- “Dead but not forgotten - Drivers of cetacean necrobiome and their importance in understanding carcass decomposition and circumstances of death” (C. Vendl, Y. Hall, C. Clark, M. Russell, R.H. Carmichael, B. Kiel Reese, J. Bloodgood; oral)
  - “Predictive indices for magnitude and duration of low salinity exposure leading to freshwater-associated strandings of bottlenose dolphins” (C. Clark, J. Bloodgood, C. Cloyed, M. Russell, A. Deming, R.H. Carmichael; speed talk)
  - “Influence of environmental conditions on the abundance, and habitat selection of common bottlenose dolphins in northcentral Gulf of Mexico” (T. Bouveroux, C. Cloyed, C. Sinclair, K. Mullin, R.H. Carmichael; poster)
  - “Assessing Public Reach and Participation in a Long-Term Citizen Science Program for West Indian Manatees (*Trichechus manatus*) along the Mississippi-Alabama Coast” (S. Corde, E. Hieb, S. Scyphers, R.H. Carmichael; poster)
  - “Stable Isotope Ratios in Common Bottlenose Dolphin (*Tursiops truncatus*) Tissues as Indicators of Diet-driven Habitat Use in Freshwater-Influenced Systems” (M. Hodanbosi, M. Russell, C. Cloyed, R.H. Carmichael; speed talk)
  - “Stranded Marine Mammal Detection by the Public, Trained Responders, and Drones using Decoy Carcasses” (M. Russell, M. Ponti, C. Clark, C. Cloyed, R.H. Carmichael, C. Johnson, J. Bloodgood; poster)

- “Variation in the skin microbiome of free-ranging bottlenose dolphins under ambient environmental conditions” (J. Hansen, J. Bloodgood, B. Kiel Reese, T. Waltzek, K. Barry, T. Bouveroux, C. Sinclair, K. Subramaniam, K. Mullin, R.H. Carmichael; poster)
  - “Stable Isotope Analysis of Manatee Vibrissae to Investigate Individual Patterns of Resource Use in the Northern Gulf of Mexico” (L. Tucker, M. Russell, E. Hieb, C. Cloyed, R.H. Carmichael; poster)
  - “Age determination of stranded bottlenose dolphins in the northern Gulf of Mexico using radiographs of pectoral fins” (E. Brackebusch, M. Russell, C. Vendl, A. Deming, A. Barratclough, R.H. Carmichael; poster)
- 2024 Alabama Water Resources Conference, Orange Beach, AL “An Analysis of Microbial Source Tracking Metadata in Coastal Alabama.” (B. Janssen, D. Bilbrey, B. Kiel Reese, R.H. Carmichael; poster)
- 2024 Mississippi Water Resources Conference, Flowood, MS “An Analysis of Microbial Source Tracking Metadata in Coastal Alabama.” (B. Janssen, D. Bilbrey, B. Kiel Reese, R.H. Carmichael; poster)
- 2024 Wildlife Disease Association 72<sup>nd</sup> Annual Conference, Canberra, Australia (2)
- “Fluid Fingerprint” (A. Brown, J. Bloodgood, R.H. Carmichael; original paintings, installation exhibit)
  - “Dead but not forgotten: Drivers of cetacean necrobiome and their importance in understanding carcass decomposition and circumstances of death” (C. Vendl, K. Ridge, Y. Hall, J. Bloodgood, C. Diaz Clark, M. L. Russell, L. Hayes-Guastella, B. Kiel Reese, R.H. Carmichael; sea shanties)
- 2024 DISL REU Poster Symposium, Dauphin Island, AL “Dead dolphins tell no tales, but their necrobiomes do: Characterizing the necrobiome of bottlenose dolphins” (K. Ridge, Y. Hall, J. Bloodgood, L. Hayes-Guastella, B. Kiel Reese, R.H. Carmichael, C. Vendl; poster)
- 2024 5<sup>th</sup> International Horseshoe Crab Workshop, Singapore “The microbiome of lesioned and non-lesioned shell of captive horseshoe crabs (*Limulus polyphemus*)” (T. Carmichael, P. Demetriades, B. Kiel-Reese, R.H. Carmichael; poster)  
Awarded Best Student Poster Presentation
- 2024 Gulf Coast Graduate Student Symposium, Dauphin Island, AL (4)
- “Molecular microbial source tracking for source-specific management of water quality on the Mississippi-Alabama coast” (P. Demetriades, A. Brown, B. Janssen, R.H. Carmichael, J. Jones, S. Ni Chadhain, B. Kiel Reese; poster)
  - “Relationships between freshwater discharge and organic matter movement through the Mobile Bay estuary” (Yuhl, A., Anderson, C.J., Kalin, L., Carmichael, R.H.; poster)
  - “An analysis of microbial source tracking metadata in coastal Alabama” (B. Janssen, D. Bilbrey, B. Kiel Reese, R.H. Carmichael; poster) Awarded Honorable Mention Poster Presentation
  - “Assessing the ability of a citizen science network to quantify human-wildlife interaction potential” (S. Corde, E. Hieb, R.H. Carmichael, S. Scyphers; poster) Awarded 2<sup>nd</sup> Place Poster Presentation

- “DISL’s Manatee Sighting Network: Manatees in the northern Gulf of Mexico” (E. Hieb, C. Cloyed, K. DaCosta, R.H. Carmichael; oral)
- 2024 Ocean Sciences Meeting, New Orleans, LA “Using isotopic analysis of manatee vibrissae to investigate habitat use in the northern Gulf of Mexico” (L. Tucker, R.H. Carmichael, M. Russell, E. Hieb, C. Cloyed; poster)
- 2023 Trilateral Wildlife Health Webinar Series, the American Association of Wildlife Veterinarians (AAWV), the Wildlife Disease Association (WDA) Wildlife Veterinary Section (WVS) and the Wildlife Society Wildlife Disease Working Group (TWS WDWG) “One ocean One Health: Marine mammal case studies in the northern Gulf of Mexico” (R.H. Carmichael, C. Vendl, M. Russell, E. Hieb, J. Bloodgood; oral)
- 2023 Coastal and Estuarine Research Federation (CERF) Biennial Conference, Portland, OR (3)
- “Trace elements in skin and teeth of bottlenose dolphins (*Tursiops truncatus*) as habitat use indicators” (M. Hodabosi, N. Miller, R.H. Carmichael; oral)
  - “Characterization of the skin microbiome of free-ranging bottlenose dolphins (*Tursiops truncatus*) in a dynamic environment” (J. Hansen, J. Bloodgood, B. Kiel-Reese, K. Subramaniam, T. Waltzek, K. Barry, T. Bouveroux, C. Sinclair, R.H. Carmichael; oral)
  - “Relationships between freshwater discharge and organic matter movement through the Mobile Bay estuary” (A. Yuhl, C. Anderson, L. Kalin, R.H. Carmichael; poster)
- 2023 3MT Competition, MS-level nominee, Stoke’s School of Marine and Environmental Sciences, University of South Alabama, Mobile, AL “A novel technique for determining dolphin skin microbiome” (J. Hansen; oral).
- 2023 University of Florida Aquatic Animal Health Program Manatee Research Symposium, Virtual. (2)
- “Changing climate and thermal refugia affect migratory phenology of West Indian manatees in the northern Gulf of Mexico” (E. Hieb., C. Cloyed, K. DaCosta, R.H. Carmichael)
  - “Using vibrissae to identify manatee diet and habitat use in the northern Gulf of Mexico” (M. Russell, L. Tucker, C. Cloyed, E. Hieb, R.H. Carmichael)
- 2023 Greater Atlantic Region Stranding Conference, Rehoboth Beach, DE “Investigating success of stranded marine mammal surveillance by the public, trained response staff, and unoccupied aerial surveys” (J. Bloodgood, M. Russell, C. Díaz Clark, M. Ponti, R.H. Carmichael; oral).
- 2023 DISL REU Poster Symposium, Dauphin Island, AL “Using isotopic analysis of manatee vibrissae to investigate manatee habitat use in the northern Gulf of Mexico” (L. Tucker, C. Cloyed, M. Russell, R.H. Carmichael; poster)
- 2023 71<sup>st</sup> Wildlife Disease Association, Athens, GA (2)
- “Cetacean Perturbation: Linking freshwater discharge and water quality to health of bottlenose dolphins (*Tursiops truncatus*) and the implications for human health” (A. Brown, J. Bloodgood, R.H. Carmichael; poster)

- “Investigating Success of Stranded Marine Mammal Surveillance by the Public, Trained Response Staff, and Unoccupied Aerial Surveys” (J. Bloodgood, M. Russell, C. Diaz Clark, R.H. Carmichael; oral)
- 2023 International Association for Aquatic Animal Medicine Conference, Salt Lake City, UT “Heart failure, esophageal obstruction, and cold stress cause the death of a West Indian Manatee in Alabama Waters” (J. Western, E. Hieb, M. Russell, C. Díaz Clark, S. Perry, A. Ingrisano, D. Rotstein, J. Bloodgood, and R.H. Carmichael; poster).
- 2023 34<sup>th</sup> Annual Conference of the European Cetacean, Galicia, Spain “Influence of environmental conditions on the occurrence, spatial use, and health of bottlenose dolphins in northcentral Gulf of Mexico” (T. Bouveroux, C. Clark, J. Bloodgood, C. Cloyed, M. Russell, C. Sinclair, K. Mullin, R.H. Carmichael; poster)
- 2023 Spring Research Forum, University of South Alabama, Mobile, AL “Determination of Cd uptake in *Crassostrea Virginica* shell under controlled conditions” (J. Pavelites, X. Wang, D. Beebe, R. Carmichael; poster)
- 2023 Southeast and Mid-Atlantic Marine Mammal Symposium, Mobile, AL (3)
- “Four cases of severed caudal peduncles in bottlenose dolphins (*Tursiops truncatus*) along the Alabama coast” (R. Mundy, M. Russell, C. Clark, J. Bloodgood, R. Carmichael; oral) Awarded 3<sup>rd</sup> place Best Graduate Student Presentation
  - “Characterization of the skin microbiome of free-ranging common bottlenose dolphins (*Tursiops truncatus*) in a dynamic environment using a novel technique” (J. Hansen, J. Bloodgood, C. Sinclair, T. Bouveroux, L. Clance, R. Carmichael; oral)
  - “Use of morphometrics to estimate the total straight length of bottlenose dolphins (*Tursiops truncatus*)” (K. Babiarz, M. Russell, C. Clark, R. Carmichael; poster) Awarded 2<sup>nd</sup> place Best Undergraduate Student Presentation
- 2023 Bays and Bayous Symposium, Mobile, AL (4)
- “Assessing the function and vulnerability of forested wetlands in the Mobile-Tensaw-Apalachee River Delta” (C. Anderson, R. Carmichael, L. Kalin; oral)
  - “Relationships between freshwater discharge and organic matter movement through the Mobile Bay estuary” (A. Yuhl, C. Anderson, L. Kalin, R.H. Carmichael; poster)
  - “Advanced microbial source tracking for source-specific management of waters quality” (P. Demetriades, A. Brown, D. Bilbrey, R.H. Carmichael, S. Ni Chadhain, B. Kiel-Reese; poster)
  - “Abundance and habitat selection of the West Indian manatee at the northern periphery of their expanding range” (C. Cloyed, E. Hieb, K. DaCosta, M. Ross, R.H. Carmichael; oral)
- 2022 Society for Marine Mammalogy, Biennial Conference, West Palm Beach, FL (7)
- “Stranding trends and skin lesion prevalence of bottlenose dolphins (*Tursiops truncatus*) exposed to a freshwater input event in Mobile Bay, AL” (C. Clark, M. Russell, A. Deming, J. Bloodgood, R.H. Carmichael; virtual oral poster)

- “Abundance and habitat selection of the West Indian manatee at the northern periphery of their expanding range” (C. Cloyed, E. Hieb, K. DaCosta, R.H. Carmichael; virtual oral poster)
- “Live large-whale stranding response in the northern Gulf of Mexico: The importance of preparedness, collaboration, and communication” (M. Russell, J. Bloodgood, C. Clark, E. Hieb, R.H. Carmichael; virtual oral poster)
- “Manatee use of thermal refugia and potential for year-round occupancy in the northern Gulf of Mexico” (E. Hieb, C. Cloyed, K. DaCosta, R.H. Carmichael; virtual oral poster)
- “Trace elements in skin and teeth of stranded Bottlenose dolphins (*Tursiops truncatus*) in the northcentral Gulf of Mexico as short- and long-term indicators of habitat use” (M. Hodanbosi, N. Miller, R.H. Carmichael; virtual oral)
- “Site fidelity of bottlenose dolphins in Alabama waters using elemental analyses” (L. Clance, C. Cloyed, C. Sinclair, K. Barry, K. Mullin, R.H. Carmichael; in-person poster)
- “Influence of environmental parameters on group size, occurrence and spatial distribution of bottlenose dolphins in northcentral Gulf of Mexico” (T. Bouveroux, C. Sinclair, K. Barry, L. Clance, C. Cloyed, K. Mullin, R.H. Carmichael; virtual oral poster)

2022

Gulf Estuarine Research Society Biennial Meeting, Ocean Springs, MS (5)

- “Habitat selection and abundance of West Indian Manatees (*Trichechus manatus*) at the margins of their expanding range” (C. Cloyed, E. Hieb, K. DaCosta, M. Ross, R.H. Carmichael; oral)
- “Changing climate conditions and thermal refugia mediate extended West Indian manatee habitat use in the northern Gulf of Mexico” (E. Hieb, C. Cloyed, K. DaCosta, R.H. Carmichael; oral)
- “Demographics, skin lesion prevalence, and developing predictive indices for stranded bottlenose dolphins (*Tursiops truncatus*) exposed to low salinity” (C. Clark, J. Bloodgood, C. Cloyed, M. Russell, A. Deming, R.H. Carmichael; poster)
- “Characterizing the bottlenose dolphin (*Tursiops truncatus*) skin microbiome to inform future sampling efforts” (Y. Hall, M. Russell, C. Clark, R.H. Carmichael, B. Kiel Reese, J. Bloodgood, equal contribution from two last coauthors; poster)
- “A novel technique for sampling the bottlenose dolphin skin microbiome” (J. Hansen, J. Bloodgood, B. Kiel Reese, K. Subramaniam, T. Waltzek, K. Barry, T. Bouveroux, C. Sinclair, R.H. Carmichael; poster) Awarded 1<sup>st</sup> place MS Student Poster Presentation

2022

Graduate Student Research Symposium, Ocean Springs, MS “A novel technique for sampling the bottlenose dolphin skin microbiome” (J. Hansen, J. Bloodgood, B. Kiel-Reese, K. Subramaniam, T. Waltzek, K. Barry, T. Bouveroux, C. Sinclair, R.H. Carmichael; poster).

2021

Coastal and Estuarine Research Federation (CERF) Biennial Conference, virtual (2)

- “Strandings and skin lesions of bottlenose dolphins exposed to prolonged freshwater in Mobile Bay, AL. 2021 (C. Díaz Clark, M. Russell, J. Bloodgood, A. Deming, R.H. Carmichael; anchor oral)
  - “Site fidelity of bottlenose dolphins in Alabama waters using elemental analyses” (L. Clance, C. Cloyed, T. Bouveroux, C. Sinclair, K. Barry, K. Mullin, R.H. Carmichael; oral)
- 2021 Society of Environmental Toxicology and Chemistry (SETAC), virtual “Experimental determination of the isotopic fractionation of cadmium in Eastern oyster shells” (J. Pavelites, R.H. Carmichael, X. Wang, A. Beebe)
- 2021 Gulf of Mexico Graduate Student Seminar Series, virtual (2)
- “Spatial variation in size of stranded bottlenose dolphins (*Tursiops truncatus*) in the northern Gulf of Mexico” (M. Hodanbosi, R.H. Carmichael; oral)
  - “Characterizing site fidelity of bottlenose dolphins using elemental analyses and photo-identification” (L. Clance, T. Bouveroux, C. Cloyed, R.H. Carmichael; oral) Awarded Best MS Student Oral Presentation
- 2021 Wildlife Disease Association, virtual “Skin lesion prevalence and demographic trends of stranded bottlenose dolphins following a freshwater event” (J. Bloodgood, M. Russell, C. Clark, A. Deming, R.H. Carmichael; oral)
- 2021 DISL Student Seminar Series, Dauphin Island, AL “Characterizing site fidelity of bottlenose dolphins using elemental analyses and photo-identification” (L. Clance, T. Bouveroux, C. Cloyed, R.H. Carmichael; oral)
- 2021 The Wildlife Society-Alabama Chapter, Auburn, AL, virtual “Habitat selection and abundance of West Indian manatees (*Trichechus manatus*) at the periphery of their ranges” (C. Cloyed, E. Hieb, K. DaCosta, M. Ross, R.H. Carmichael; oral)
- 2021 International Association of Aquatic Animal Medicine, virtual “Collaboration leads to successful monitoring, sedation and euthanasia, transport, and necropsy of a live stranded sperm whale (*Physeter macrocephalus*) in Mobile Bay, Alabama” (J. Bloodgood, M. Russell, D. Moore, T. Madrigal, C. Clark, E. Hieb, R.H. Carmichael.)
- 2020 Dauphin Island Sea Lab Seminar Series, Dauphin Island, AL “DISL’s Manatee Sighting Network: Understanding Gulf of Mexico manatees” (E. Hieb, R.H. Carmichael, C. Cloyed, K. DaCosta; oral).
- 2020 Bays & Bayous Symposium, virtual (6)
- “Cause of death and prevalence of *Brucella* spp. and morbillivirus spp. in bottlenose dolphins (*Tursiops truncatus*) in Alabama, 2015 – 2020” (J. Bloodgood, A. Deming, K. Colegrove, M. Russell, C. Clark, R.H. Carmichael; oral)
  - “Specialization of a mobile, apex predator affects trophic coupling among adjacent habitats” (C. Cloyed, R. Wilson, B. Balmer, A. Hohn, L. Schwacke, E. Zolman, M. Tumlin, R. Wells, A. Barleycorn, J. Allen, R.H. Carmichael; oral)
  - “Sex identification of stranded bottlenose dolphins (*Tursiops truncatus*) improves with necropsy” (M. Russell, J. Bloodgood, E. Hieb, R.H.

- Carmichael; lightening talk)
  - “Stranding trends and skin lesion categorization of bottlenose dolphins (*Tursiops truncatus*) exposed to a freshwater input event in Mobile Bay, AL (C. Díaz Clark, M. Russell, J. Bloodgood, A. Deming, R.H. Carmichael; oral)
  - “Spatial variation in size of stranded common bottlenose dolphins in the northern Gulf of Mexico” (M. Hodanbosi, R.H. Carmichael; oral).
  - “Impacts of in-water construction on West Indian manatees in the northern Gulf of Mexico” (E. Hieb, R.H. Carmichael; oral)
- 2020 Gulf Estuarine Research Society (GERS), virtual “Spatial Variation in Size of Stranded Common Bottlenose Dolphins (*Tursiops truncatus*)” (M. Hodanbosi, R. Carmichael; oral)
- 2020 Dauphin Island Sea Lab/US Food & Drug Administration Annual Symposium/ thesis defense, Dauphin Island, AL “Environmental Effects on Histamine Production in Decomposing Fish” (A. Frith, K. Björnsdóttir-Butler, K. Calci, R.H. Carmichael; oral)
- 2020 Gulf of Mexico Oil Spill and Ecosystem Science (GOMOSSES), Tampa, FL (2)
  - “Spatial, temporal, and individual-level variation in northern Gulf of Mexico common bottlenose dolphin diet” (C. Cloyed, B. Balmer, M. Tumlin, E. Zolman, A. Barleycorn, T. Rowles, L. Schwacke, R. Carmichael; poster)
  - “Oil-derived trace metal signature in *Crassostrea virginica* shell may provide historical record of oil exposure” (K. Peter, K. DaCosta, R.H. Carmichael; oral)
- 2019 North American Workshop on Laser Ablation, Austin, TX “Using trace element ratios to track lifetime freshwater exposure in bottlenose dolphins (*Tursiops truncatus*)” (M. Hodanbosi, K.P. DaCosta, R.H. Carmichael; poster)
- 2019 9<sup>th</sup> International Sirenian Symposium, Barcelona, Spain (2)
  - “Linking use of ship channels by West Indian manatees to seasonal migration and habitat use” (E. Hieb, C. Cloyed, M. Collins, K. DaCosta, R.H. Carmichael; speed talk)
  - “A history of causes, patterns, and case studies of manatee mortality in the northern Gulf of Mexico” (E. Hieb, K. DaCosta, R.H. Carmichael; poster)
- 2019 Alabama Coastal Foundation, Sustainability Summit, Mobile, AL “Our Wastewater Footprint” (T. Thomason, E. Hieb, E. Darrow, R.H. Carmichael)
- 2019 World Marine Mammal Conference (WMMC), Barcelona, Spain (7)
  - “X Marks the spot: Suspected broadhead arrow injuries in two bottlenose dolphins (*Tursiops truncatus*) along the Alabama Coast” (M. Collins, R.H. Carmichael, D.S. Rotstein, J.H. Byrd, and A.C. Deming; speed talk)
  - “Spatial, temporal, and individual-level variation in northern Gulf of Mexico common bottlenose dolphin diet” (C. Cloyed, R.H. Carmichael; poster)
  - “Linking use of ship channels by West Indian manatees to seasonal migration and habitat use” (E. Hieb, C. Cloyed, M. Collins, K. DaCosta, R.H. Carmichael; speed talk)
  - ‘Ontogenetic changes in trace element ratios track lifetime freshwater

2019

- exposure in bottlenose dolphins (*Tursiops truncatus*)” (M. Hodanbosi, R.H. Carmichael; poster)
- “Analysis of manatee ear bone chemistry as a tool to track West Indian manatee migrations in the northern Gulf of Mexico” (K. DaCosta, R.H. Carmichael; poster)
  - “Four decades of stranding response: Hotspots, coverage gaps, and shifting baselines in North central Gulf of Mexico” (M. Russell, N. Wingers, A. Deming, R.H. Carmichael; poster)
  - “Perinate bottlenose dolphin mortality following the Northern Gulf of Mexico Unusual Mortality Event” (A. Deming, R.H. Carmichael; speed talk)
- Coastal and Estuarine Research Federation (CERF) Biennial Conference, Mobile, AL (14)
- “X Marks the spot: Suspected broadhead arrow injuries in two bottlenose dolphins (*Tursiops truncatus*) along the Alabama Coast” (M. Collins, R.H. Carmichael, D.S. Rotstein, J.H. Byrd, and A.C. Deming; poster)
  - “Detecting oil exposure using trace metal signatures in Eastern Oyster (*Crassostrea virginica*) shells” (K. Peter, R.H. Carmichael; oral)
  - “Spatial, temporal, and individual-level variation in northern Gulf of Mexico common bottlenose dolphin diet” (C. Cloyed, R.H. Carmichael; oral)
  - “Use of geochemical tagging to test Eastern oyster (*Crassostrea virginica*) population connectivity” (H. Gancel, R.H. Carmichael; oral)
  - “Linking use of ship channels by West Indian manatees to seasonal migration and habitat use” (E. Hieb, C. Cloyed, M. Collins, K. DaCosta, R.H. Carmichael; oral)
  - “Ontogenetic changes in trace element ratios track lifetime freshwater exposure in bottlenose dolphins (*Tursiops truncatus*)” (M. Hodanbosi, R.H. Carmichael; poster)
  - “Analysis of manatee ear bone chemistry as a tool to track West Indian manatee migrations in the northern Gulf of Mexico” (K. DaCosta, R.H. Carmichael; oral)
  - “Combining trace elements and stable isotopes to detect human wastewater” (A. Knight, R.H. Carmichael; oral)
  - “Our Wastewater Footprint: Enhancing water quality through scientific communication and public outreach” (T. Thomason, E. Hieb, E. Darrow, R.H. Carmichael; oral)
  - “Four decades of stranding response: Hotspots, coverage gaps, and shifting baselines in North central Gulf of Mexico” (M. Russell, N. Wingers, A. Deming, R.H. Carmichael; oral)
  - “Perinate bottlenose dolphin mortality following the Northern Gulf of Mexico Unusual Mortality Event” (A. Deming, R.H. Carmichael; oral)
  - “Time and temperature effects on histamine and histamine-producing bacteria (HPB) in decomposing fish” (A. Frith, K. Butler, R.H. Carmichael; oral)
  - “Dead or Alive: Elemental Analysis of Stranded Bottlenose Dolphins

- (*Tursiops truncatus*)” (R. Murray, R.H. Carmichael, A. Deming; poster)
- “Comparison of left and right ear bone chemistry in West Indian manatees” (A. Mason, K. DaCosta, R.H. Carmichael; poster)
- 2019 National Estuarine Research Reserve (NERR) Annual Meeting, Charleston, SC “Our Wastewater Footprint: A living resource for science transfer”, (Thomason, T., E. Heib, R. Carmichael, K. Cressman; poster)
- 2019 Dauphin Island Sea Lab/US Food & Drug Administration Annual Symposium, Dauphin Island, AL (2)
- “Effects of time & temperature on histamine & histamine-producing bacteria (HPB) in decomposing Spanish mackerel” (Frith, A., K. Björnsdóttir-Butler, R.H. Carmichael; oral)
  - “Straight to the source: understanding wastewater inputs in a freshwater-dominated system” (Gancel, H.N., R.H. Carmichael, W. Burkhardt III, K. Calci; oral)
- 2019 Dauphin Island Sea Lab REU Symposium, Dauphin Island, AL (2)
- “Dead or Alive: Elemental Analysis of Stranded Bottlenose Dolphins (*Tursiops truncatus*)” (R. Murray, R.H. Carmichael, A. Deming; poster)
  - “Prevalence of *Brucella* in bottlenose dolphins (*Tursiops truncatus*) in Alabama from 2015-2019” (McMahon, V., M. Collins, M. Russell, R.H. Carmichael, A. Deming; poster)
- 2019 National Estuarine Research Reserve System (NERRS/NERRA) Annual meeting, Charleston, SC “Our wastewater footprint: A living resource for science transfer” (T. Thomason, E. Hieb, R.H. Carmichael; poster)
- 2019 4<sup>th</sup> International Workshop on the Science and Conservation of Horseshoe Crabs, Guangxi, China (2)
- “Using community-based conservation programs to protect horseshoe crabs and their habitat: best practices and applications to underserved regions” (Hieb, E., G. Gauvry, R.H. Carmichael; oral)
  - “Airsoft science: A test of horseshoe crab molt durability” (Carmichael, T.O., R.H. Carmichael; poster) Awarded Best Student Presentation
- 2019 Sustainability Summit, Alabama Coastal Foundation, Mobile, AL “Our Wastewater Footprint” (Thomason, T., E. Heib, E. Darrow, R.H. Carmichael; oral)
- 2019 Gulf of Mexico Oil Spill and Ecosystem Science (GOMOSSES), New Orleans, LA (2)
- “The effect of the Deepwater Horizon Oil Spill on bottlenose dolphin diets” (Cloyed, C., M. Tumlin, M. Broadwater, L. Schwacke, B. Balmer, E. Zolman, T. Rowles, C. Smith, R. Carmicahel; poster)
  - “Use of trace metals in oyster shell to detect oil contamination in the marine environment” (Peter, K., K. Dacosta, R.H. Carmichael; poster)
- 2019 International Association of Aquatic Animal Medicine (IAAAM), Durban, South Africa “Case Report: Freshwater exposure, successful relocation and subsequent drowning of subadult Atlantic bottlenose dolphin (*Tursiops truncates*). (Deming,

- A., N. Wingers, D. Moore, D. Rotstein, R. Wells, R. Ewing, M. Hodanbosi, R.H. Carmichael; poster)
- 2019 University of South Alabama, Spring Research Forum, Mobile, AL (2)
- “Drivers of histamine-producing bacteria (HPB) in water samples & decomposing Spanish mackerel” (Frith, A., K. Björnsdóttir-Butler, R.H. Carmichael; poster and oral)
  - “Use of trace metals in oyster shell to detect oil contamination in the marine environment” (Peter, K., K. DaCosta, R.H. Carmichael; poster)
- 2019 DISL Student Seminar Series, Dauphin Island, AL (2)
- “Eastern oysters (*Crassostrea virginica*) as retrospective bioindicators of oil contamination” (K. Peter; oral)
  - Demographics of stranded bottlenose dolphins (*Tursiops truncatus*) along the Alabama coast” (Hodanbosi, M., R.H. Carmichael; oral)
- 2019 Department of Marine Resources, Dauphin Island, AL “Oyster (*Crassostrea virginica*) larval settlement, distribution, and connectivity in Mobile Bay and Mississippi Sound” (Gancel, H.N., R.H. Carmichael; oral)
- 2019 University of West Florida Seminar Series, Pensacola, FL “Oyster (*Crassostrea virginica*) larval settlement and distribution in a freshwater dominated and human influences estuary” (Gancel, H.N., R.H. Carmichael; oral)
- 2019 Dauphin Island Sea Lab 3-minute thesis, Dauphin Island, AL “Eastern oysters (*Crassostrea virginica*) as retrospective bioindicators of oil contamination” (Peter, K., R.H. Carmichael; oral).
- 2019 Alabama Water Resources Conference, Orange Beach, AL (3)
- “*Crassostrea virginica* forgo assimilation of freely dissolved oil indicator elements” (Peter, K., R.H. Carmichael; poster)
  - “An interdisciplinary collaboration leads to an assessment of marsh health in Fowl River, Alabama” (Webb, B., A. Beebe, R.H. Carmichael, J. Cebrian, J. Coogan, M. Cook, B. Dzwonkowski, J. Goff, E. Hieb, H. Horne, J. Kudulis, J. Lehrter, S. Smallegan, T. Thibaut; oral)
- 2019 Florida SeaGrant Seminar Series, Pensacola, FL “Perinate bottlenose dolphin mortalities following the Deepwater Horizon oil spill” (Deming, A., R.H. Carmichael; oral)
- 2018 Bays and Bayous Symposium, Mobile, AL (10)
- “Eastern oyster (*Crassostrea virginica*) settlement and population connectivity in a freshwater dominated estuary” (Gancel, H.N., R.H. Carmichael; oral)
  - “X marks the spot: Case studies of stranded bottlenose dolphins (*Tursiops truncatus*) in the northern Gulf of Mexico” (Collins, M.K., A.C. Deming, M.R. Hondanbosi, R.H. Carmichael; oral)
  - “Florida manatee (*Trichechus manatus latirostris*) diet in the northcentral Gulf of Mexico” (DaCosta, K.P., R.H. Carmichael; oral)
  - “The effects of lipid extraction on liver, muscle, and skin.” (Cloyed, C.S., K. DaCosta, M. Hodanbosi, R.H. Carmichael; oral)

- “Environmental drivers of histamine-producing bacteria in water samples and decomposing Spanish mackerel tissues.” (Frith, A., K. Björnsdóttir-Butler, R.H. Carmichael; oral)
- “Eastern oysters (*Crassostrea virginica*) as retrospective bioindicators to detect oil contamination in the marine environment” (Peter, K., R.H. Carmichael; poster) Awarded 1<sup>st</sup> place Student Poster Presentation
- “Influence of freshwater influx on the diet and body condition of the common bottlenose dolphin, *Tursiops truncatus*, in Mobile Bay, Alabama” (Hondanbosi, M.H., R.H. Carmichael; oral)
- “A history of causes, patterns, and case studies of manatee mortality in the northern Gulf of Mexico” (Hieb, E.E., K.P. Dacosta, R.H. Carmichael; poster)
- “Freshwater exposure, successful relocation, and subsequent drowning of a subadult Atlantic bottlenose dolphin (*Tursiops truncatus*)” (Deming, A.C., N.L. Wingers, D.P. Moore, R. Ewing, D. Rotstein, R.H. Carmichael; poster)
- “Cetacean stranding demographics in Alabama from 1978 to 2017: Coverage gaps, stranding hotspots, and future directions” (Russell, M., N. Wingers, M. Hondanbosi, N. Santini, R.H. Carmichael; poster)

2018

Gulf Estuarine Research Society Biennial Meeting, Galveston, TX (6)

- “Eastern oyster (*Crassostrea virginica*) settlement and population connectivity in a freshwater dominated estuary” (Gancel, H.N., R.H. Carmichael; oral) Awarded 1<sup>st</sup> place Student Oral Presentation
- “Florida manatee (*Trichechus manatus latirostris*) diet in the northcentral Gulf of Mexico” (DaCosta, K.P., R.H. Carmichael; oral)
- “The effects of lipid extraction on liver, muscle, and skin.” (Cloyed, C.S., K. DaCosta, M. Hodanbosi, R.H. Carmichael; oral)
- “Influence of freshwater influx on the diet and body condition of the common bottlenose dolphin (*Tursiops truncatus*) in Mobile Bay, Alabama” (Hondanbosi, M., R. H. Carmichael; oral)
- “Environmental drivers of histamine-producing bacteria in water samples and decomposing Spanish mackerel tissues.” (Frith, A., K. Björnsdóttir-Butler, R.H. Carmichael; poster)
- “Eastern oysters (*Crassostrea virginica*) as retrospective bioindicators to detect oil contamination in the marine environment” (Peter, K., R.H. Carmichael; poster)

2018

Southeastern Association of Fish and Wildlife Agencies, Mobile, AL. “Using telemetry to track manatee habitat use in the northern Gulf of Mexico” (DaCosta, K.P., R.H. Carmichael; oral)

2018

Alabama Water Resources Conference, Orange Beach, AL (3)

- “Sources of water quality indicators to a shellfish growing area in Portersville Bay, AL.” (Frith, A., R.H. Carmichael, K. Calci; oral).
- “Tracking wastewater influence in a freshwater dominated urbanized estuary” (Gancel, H.N., R.H. Carmichael, W. Burkhardt III, K. Calci; oral) Awarded 1<sup>st</sup> place Student Oral Presentation

- “Using NASA Earth observations to monitor salinity changes in the Mobile Bay/Mississippi Sound system and application to manatee movement” (Estes, M., M. Bartkovich, L. Parker, P. Lemieux, R.H. Carmichael; poster)
- 2018 Dauphin Island Sea Lab/US Food & Drug Administration Annual Symposium, Dauphin Island, AL (2)
- “Environmental drivers of histamine-producing bacteria in water samples and decomposing Spanish mackerel tissues.” (Frith, A., K. Björnsdóttir-Butler, R.H. Carmichael; oral)
  - “Riverine influence on wastewater indicators in Mobile Bay and Mississippi Sound” (Gancel, H.N., R.H. Carmichael, W. Burkhardt III, K. Calci; oral)
- 2018 Gulf of Mexico Coastal Ocean Observing System (GCOOS) Animal Telemetry Network (ATN) Workshop, New Orleans, LA. “Tracking manatee habitat use in the northern Gulf of Mexico” (DaCosta, K.P., R.H. Carmichael; oral)
- 2018 University of South Alabama Graduate Research Forum, Mobile, AL (4)
- “Sources of bacterial water quality indicators to shellfish growing areas in the northcentral Gulf of Mexico” (Frith, A., K. Calci, R.H. Carmichael; poster)
  - “Analysis of manatee periotic bone chemistry as a tool to track West Indian manatee migrations in the northcentral Gulf of Mexico” (DaCosta, K., R.H. Carmichael; poster)
  - “Bivalve shells as a method of determining anthropogenic sources to estuarine systems” (Knight, A., J. Kinsella, R.H. Carmichael; poster)
  - “Use of elemental signatures in eastern oyster (*Crassostrea virginica*) shells to assess population connectivity” (Nicholson, H.S., R.H. Carmichael, K. Park).
- 2018 Gulf of Mexico Graduate Student Symposium, Dauphin Island, AL (5)
- “Understanding the mechanism of histamine fish poisoning: Variables affecting histamine-producing bacteria” (Frith, A., K. Björnsdóttir-Butler, R.H. Carmichael; oral) Awarded Honorable Mention student presentation
  - “Use of calcein to understand oyster (*Crassostrea virginica*) larval movements in a freshwater dominated estuary” (Nicholson H., R.H. Carmichael; oral) Awarded Honorable Mention student presentation
  - “Analysis of manatee periotic bone chemistry as a tool to track West Indian manatee migrations in the northcentral Gulf of Mexico” (DaCosta, K., R.H. Carmichael; poster)
  - “Bivalve shells as a method of determining anthropogenic sources to estuarine systems” (Knight, A., J. Kinsella, R.H. Carmichael; poster)
- 2018 Ocean Sciences Meeting, Portland, OR (2)
- “Using NASA Earth observations to monitor salinity changes in the Mobile Bay/ Mississippi Sound system and application to manatee movement” (Estes, M., M. Bartkovich, L. Parker, P. Lemieux, III., R.H. Carmichael; poster)
  - “Chilean mussels reconstruct environmental conditions during two coral die-off events” (H. Togami, A. Knight, R.H. Carmichael; poster)

- 2017 Coastal and Estuarine Research Federation (CERF) Biennial Conference, Providence, RI (4)
- “Applying community sanctuaries to conserve horseshoe crabs and their habitat in underserved regions.” (Hieb, E., G. Gauvry, R.H. Carmichael; oral)
  - “Defining horseshoe crab habitat with sparse data” (Estes, Jr. M., R.H. Carmichael, X. Chen; oral)
  - “Tracking wastewater influence on oysters (*Crassostrea virginica*) in freshwater dominated urbanized estuary” (Nicholson, H.S., R.H. Carmichael, W. Burkhardt, K. Calci; oral)
  - "Analysis of manatee ear bone chemistry to track West Indian manatee migrations in the northcentral Gulf of Mexico" (DaCosta, K.P., R.H. Carmichael; oral)
  - "Mercury bioaccumulation in estuarine food webs with different nitrogen loads" (Fleming, J., J. Logan, C. Lamborg, D. Taylor, R.H. Carmichael, J. Kinsella; poster)
- 2017 Society for Marine Mammalogy Biennial Conference on the Biology of Marine Mammals, Halifax, Nova Scotia (2)
- “Mapping thermal refugia in Alabama waters: Understanding West Indian manatee (*Trichechus manatus*) habitat use in the north central Gulf of Mexico.” (Hieb, E.E., A. Garelick, K. DaCosta, R.H. Carmichael; poster)
  - "Analysis of manatee ear bone chemistry to track West Indian manatee migrations in the northcentral Gulf of Mexico" (DaCosta, K.P., R.H. Carmichael; oral)
- 2017 Dauphin Island Sea Lab REU Symposium, Dauphin Island, AL “Chilean mussels reconstruct environmental conditions during two coral die-off events” (Togami, H., A. Knight, R.H. Carmichael; poster)
- 2017 Dauphin Island Sea Lab/Food & Drug Administration Annual Symposium, Dauphin Island, AL “Microbial concentrations relative to major water flow and oyster larval dispersal patterns in Mobile Bay and Mississippi Sound” (Nicholson, H.S., R.H. Carmichael, W. Burkhardt III, K. Calci; oral)
- 2017 31st Annual Water Resource Conference, Orange Beach, AL “Tracking wastewater influence on oysters (*Crassostrea virginica*) in freshwater dominated urbanized estuary” (Nicholson, H.S., R.H. Carmichael, W. Burkhardt, III, K. Calci; oral) Awarded 2<sup>nd</sup> place Student Oral Presentation
- 2017 University of South Alabama Spring Research Forum, Mobile AL (2)
- “Population connectivity and habitat use of the Florida manatee (*Trichechus manatees latirostris*) in the northcentral Gulf of Mexico” (DaCosta, K., R.H. Carmichael; oral- 3MT, Three Minute Thesis)
  - “Coincidental distribution of wastewater inputs and oyster (*Crassostrea virginica*) larvae in a freshwater dominated estuary” (Nicholson, H., R.H. Carmichael, K. Calci, W. Burkhardt, III; poster)
- 2017 Alabama Academy of Sciences, 94<sup>th</sup> Annual Meeting, Mobile, AL (2)
- “Analysis of manatee periodic bone microchemistry as a tool to track West

- Indian manatee migrations in the northcentral Gulf of Mexico” (DaCosta, K., K. Brill, R.H. Carmichael; oral)
- “Citizen-science provides data on seasonal occupancy of West Indian manatees (*Trichechus manatus*) in the northcentral Gulf of Mexico” (Hieb, E., R.H. Carmichael, A. Aven, C. Nelson-Seely, N. Taylor; oral)
- 2016 Bays & Bayous Symposium, Biloxi, MS (7)
- “Wastewater influence on oyster (*Crassostrea virginica*) larvae distribution in a freshwater and human influenced estuary” (Nicholson, H., R.H. Carmichael, W. Burkhardt III, K. Calci; oral)
  - “Analysis of manatee periodic bone microchemistry as a tool to track West Indian manatee migrations in the northcentral Gulf of Mexico” (DaCosta K., K. Brill, R.H. Carmichael; oral)
  - “Citizen-science provides data on seasonal occupancy of West Indian manatees (*Trichechus manatus*) in the northcentral Gulf of Mexico” (Hieb, E., R.H. Carmichael, A. Aven, C. Nelson-Seely, N. Taylor; oral)
  - “Bivalve shells record anthropogenic effects on water quality in Guantanamo Bay, Cuba” (Knight, A., R.H. Carmichael; oral)
  - “Freshwater exposure and human interaction: Case history of a twice-stranded bottlenose dolphin in Alabama waters” (Wingers, N., D. Moore, R. Ewing, R.H. Carmichael; oral, Carmichael gave presentation)
  - “Aerial thermographic detection of manatee refugia in the northcentral Gulf of Mexico” (Garelick, A., K. DaCosta, R.H. Carmichael; poster)
  - “Water quality in Bangs Lake: effects of recurrent phosphate spills to a coastal estuary: Year 2” (Dillon, K., J. Caffrey, R.H. Carmichael, B. Dzwonkowski, S. Holcomb, T. Berry, G. Baine, J. Sleek, R. Capps, J.G. Hall, E. Hieb, P. Dimens, E. Condon, Y. Li, J. Millwood, K. Cressman, C. Newman, M. Woodrey, W. Underwood; oral)
- 2016 Gulf Estuarine Research Society (GERS) biennial meeting, Pensacola, FL (3)
- “Wastewater influence on oyster (*Crassostrea virginica*) larvae distribution in a freshwater and human influenced estuary” (Nicholson H., R.H. Carmichael, W. Burkhardt III, K. Calci; oral)
  - “Analysis of manatee periodic bone microchemistry as a tool to track West Indian manatee migrations in the northcentral Gulf of Mexico” (DaCosta, K., K. Brill, R.H. Carmichael; oral)
  - “Citizen-science provides data on seasonal occupancy of West Indian manatees (*Trichechus manatus*) in the northcentral Gulf of Mexico” (Hieb, E., R.H. Carmichael, A. Aven, C. Nelson-Seely, N. Taylor; oral)
- 2016 University of South Alabama Spring Research Forum, Mobile, AL (4)
- “Analysis of manatee periotic bone microchemistry as a tool to track manatee migrations in the northern Gulf of Mexico” (DaCosta, K., R.H. Carmichael, W. Patterson; poster)
  - “Use of bivalve shell to trace anthropogenic pollution at Guantanamo Bay, Cuba” (Knight, A., R.H. Carmichael; poster)

- “Photo-identification of West Indian manatee (*Trichechus manatus*) provides data on long distance migrations and repeated occurrence in the northern Gulf of Mexico” (Hieb, E., R.H. Carmichael, A. Aven; poster)
  - “Coincidental distribution of wastewater inputs and oyster (*Crassostrea virginica*) larvae in a freshwater dominated estuary” (Nicholson, H., R.H. Carmichael, K. Calci, W. Burkhardt, III; poster)
- 2016 Association for the Sciences of Limnology and Oceanography, Ocean Sciences Meeting, New Orleans, LA
- “Organic stable isotopes in ancient oyster shell trace pre-colonial nitrogen sources” (E.S. Darrow, R.H. Carmichael, C.F. Andrus, H.E. Jackson; poster)
  - “American horseshoe crab (*Limulus polyphemus*): Population ecology within the northern Gulf of Mexico (Carter, S., R.H. Carmichael, M. Estes, Jr., M. McBarnes; poster)
- 2016 Mississippi Water Resources Conference, Jackson, MS, “Water Quality in Bangs Lake: effects of recurrent phosphate spills to a coastal estuary: Year 2” (Dillon, K., J. Caffrey, R.H. Carmichael, B. Dzwonkowski, S. Holcomb, T. Berry, G. Baine, J. Sleek, R. Capps, J. Hall, E. Hieb, P. Dimens, E. Condon, Y. Li, J. Millwood, K. Cressman, C. Newman, M. Woodrey, W. Underwood; poster)
- 2016 NERRS/NERRA Annual Meeting, Williamsburg, VA "What happens when phosphate spills into an estuary?" (Cressman, K., J. Caffrey, R.H. Carmichael, K. Dillon, B. Dzwonkowski, C. Griffin, M. Posten, M. Woodrey; poster)
- 2016 Dauphin Island Sea Lab REU Symposium, Dauphin Island, AL
- “Aerial thermographic detection of manatee refugia in the northcentral Gulf of Mexico” (Garelick, A., K. DaCosta, R.H. Carmichael; poster)
  - “Use of shipping channels and fairways by the West Indian manatee (*Trichechus manatus*) in the northcentral Gulf of Mexico (Thompson, E., A.M. Aven, E.E. Hieb, R.H. Carmichael; poster)
- 2016 University of South Alabama Biology Student Association, Mobile, AL. “Dauphin Island Sea Lab’s Manatee Sighting Network” (Hieb, E., R.H. Carmichael, A. Aven, K. DaCosta; oral)
- 2015 Society for Marine Mammalogy Biennial Conference on the Biology of Marine Mammals, San Francisco, CA (5)
- “Distribution of stranded bottlenose dolphins (*Tursiops truncatus*) throughout Alabama waters from 2004-2013” (Wingers, N., C. Nelson-Seely, R. Carmichael; speed talk)
  - “Analysis of manatee periotic bone microchemistry as a tool to track manatee migrations in the northern Gulf of Mexico” (DaCosta, K., R.H. Carmichael, W. Patterson; oral)
  - “Sighting demographics of the West Indian manatee (*Trichechus manatus*) in Alabama and Mississippi waters” (Hieb, E. E., R. H. Carmichael, A. Aven, K. DaCosta, C. Nelson-Seely, J. Delo, N. Taylor; poster)
  - “Assigning stranded dolphins to stock using stable isotope ratios” (Hohn, A., L. Thomas, R. Carmichael, S. Holmes, J. Litz, D. Shannon, S. Shippee, C.

- Sinclair, S. Smith, T. Speakman, M. Tumlin, E. Zolman; oral)
- “Long-term, consistent data sets aid in the investigation of bottlenose dolphin strandings in the northern Gulf of Mexico following the Deepwater Horizon oil spill” (Litz, J., K. Colegrove, S. Venn-Watson, R. Carmichael, E. Fougères, L. Noble, D. Shannon, S. Shippee, S. Smith, L. Staggs, S. Stevens, E. Stratton, M. Tumlin, T. Rowles; oral)
- 2015 Coastal and Estuarine Research Federation (CERF) Biennial Conference, Portland, OR (4)
- “Developing a sustainability model for the American Horseshoe Crab in the northcentral Gulf of Mexico” (Estes, M.G., Jr., X. Chen, R.H. Carmichael; poster)
  - “Finding your estuary’s roots: Investigating effects of land-use change with little historical context” (Darrow, E.S., R.H. Carmichael, K. Calci, W. Burkhardt, III; poster)
  - “Oyster settlement patterns in the freshwater dominated estuaries of Mobile Bay and Eastern Mississippi Sound” (Nicholson, H., R.H. Carmichael, K. Park, M. Han; poster)
  - “Genetic diversity and population structure of West Indian manatees in the northcentral Gulf of Mexico” (DaCosta, K.P., M. Hunter, R.H. Carmichael, R. Bonde, E. E. Hieb; oral)
- 2015 Marine Megafauna Movement Workshop, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia, “West Indian manatee tracking reveals novel occupancy patterns in the Gulf of Mexico” (Aven, A., R.H. Carmichael; oral)
- 2015 3<sup>rd</sup> International Workshop on Science and Conservation of Horseshoe crabs, Sasebo City, Nagasaki, Japan
- “Analysis of the dynamics of the American horseshoe crab (*Limulus polyphemus*) in the North Central Gulf of Mexico for developing habitat suitability model” (Estes, M.G. Jr., X. Chen, R.H. Carmichael; poster)
  - “Examination of large exuviae with mating scars: Do adult female American horseshoe crabs, *Limulus polyphemus*, molt after sexual maturity?” (Hieb, E., R.H. Carmichael, G. Gauvry, C.N. Shuster, C. Jr.; oral) Deatured on NHK (Japan Broadcasting Corporation) television
- 2015 Gulf of Mexico Marine Mammal Research and Monitoring Meeting, New Orleans, LA
- “Sighting demographics of the West Indian manatee (*Trichechus manatus*) in Alabama and Mississippi waters” (Hieb, E., R.H. Carmichael, A. Aven, K. DaCosta, C. Nelson-Seely, J. Delo, N. Taylor; poster)
  - “Modeling West Indian manatee movements informs space use patterns and phenology in the northern GOM” (Aven, A., R.H. Carmichael; poster)
  - “Distribution of stranded bottlenose dolphins (*Tursiops truncatus*) in Alabama waters from 2004 – 2013” (Wingers, N., C. Nelson-Seely, R.H. Carmichael; poster)

- 2015 University of South Alabama Spring Research Forum, Mobile, AL (5)
- “Analysis of manatee periotic bone microchemistry as a tool to track manatee migrations in the northern Gulf of Mexico” (DaCosta, K.P., K. McLaughlin, W.F. Patterson, R.H. Carmichael, K. Brill; poster)
  - “Suitability of calcein for mass marking marine bivalve larvae (*Crassostrea virginica*) under different salinity and tank conditions” (Nicholson, H., R.H. Carmichael, S. Rikard; poster)
  - “Sighting demographics of the West Indian manatee (*Trichechus manatus*) in Alabama and Mississippi waters” (Hieb, E., R.H. Carmichael, A. Aven, K. DaCosta, C. Nelson-Seely, J. Delo, N. Taylor; poster)
  - “Distribution of stranded bottlenose dolphins (*Tursiops truncatus*) in Alabama waters from 2004 – 2013” (Wingers, N., C. Nelson-Seely, R.H. Carmichael; poster)
  - “Investigating potential domoic acid exposure in West Indian manatees stranded in coastal Alabama” (Frank, J., A. Robertson, R.H. Carmichael; poster)
- 2015 National Academy of Sciences (NAS) Gulf Research Program, Dauphin Island, AL, “Analysis of manatee periotic bone microchemistry as a tool to track manatee migrations in the northern Gulf of Mexico” (DaCosta, K.P., K. McLaughlin, W.F. Patterson, R.H. Carmichael, K. Brill; poster)
- 2015 Dauphin Island Sea Lab REU Symposium, Dauphin Island, AL “American horseshoe crab (*Limulus polyphemus*): Population ecology in the northern Gulf of Mexico” (Carter, S., R.H. Carmichael, M. Estes, M. McBarnes; poster)
- 2015 Gulf of Mexico Graduate Student Symposium, Dauphin Island, AL, “Analysis of manatee periotic bone microchemistry as a tool to track manatee migrations in the northern Gulf of Mexico” (DaCosta, K.P., K. McLaughlin, W.F. Patterson, R.H. Carmichael, K. Brill; poster)
- 2015 Association for the Sciences of Limnology and Oceanography (ASLO) Aquatic Sciences Meeting, Grenada, Spain, “Bringing together research and management to examining the consequences of repeated phosphorus spill in a coastal estuary” (Caffrey, J., M. Woodrey, K. Dillon, R. Carmichael, K. Cressman, E. Darrow; poster)
- 2015 International Association of Aquatic Animal Medicine (IAAAM) 46<sup>th</sup> Annual Conference, Chicago, IL, “The 2010-2015 northern Gulf of Mexico cetacean unusual mortality event: An update on diagnostic test results and pathologic findings (Colegrove, K., S. Venn-Watson, J. Litz, M. Kinsel, K Terio, J Saliki, S Fire, R Ewing, E Fougères, R Carmichael, et al.; poster)
- 2014 Bays & Bayous Symposium, Mobile, AL (7)
- “Modeling West Indian manatee movements informs space use patterns and phenology in the northern Gulf of Mexico” (Aven, A., R.H. Carmichael; poster)
  - “Analysis of manatee periotic bone microchemistry as a tool to track manatee migrations in the northern Gulf of Mexico” (DaCosta, K.P., W.F. Patterson, R.H. Carmichael, K. Brill; poster)

- “Suitability of calcein for mass marking marine bivalve larvae (*Crassostrea virginica*) under different salinity and tank conditions” (Nicholson, H., R.H. Carmichael, S. Rikard; poster)
  - “Sighting demographics of the West Indian manatee (*Trichechus manatus*) in Alabama and Mississippi waters” (Hieb, E., R.H. Carmichael, A. Aven, K. DaCosta, C. Nelson-Seely, J. Delo, N. Taylor; poster)
  - “Distribution of stranded bottlenose dolphins (*Tursiops truncatus*) in Alabama waters from 2004 – 2013” (Wingers, N.L., C. Nelson-Seely, R.H. Carmichael; poster)
  - “Sedimentary records of recurrent phosphate spills to a Gulf of Mexico coastal estuary” (Hall, J., P. Dimens, E. Darrow, R.H. Carmichael, E. Hieb, K. Cressman; poster)
  - “Investigating potential domoic acid exposure in West Indian manatees stranded in coastal Alabama” (Frank, J., A. Robertson, R.H. Carmichael; poster)
- 2014 Gulf Estuarine Research Society (GERS), Port Aransas, TX (4)
- “Growth of pre-historic oysters and links to nutrient source shifts in the northern Gulf of Mexico” (Darrow, E.S., R.H. Carmichael, C.F. Andrus, H.E. Jackson; oral)
  - “Modeling West Indian manatee movements informs space use patterns and phenology in the northern Gulf of Mexico” (Aven, A., R.H. Carmichael; poster)
  - “Analysis of manatee periotic bone microchemistry as a tool to track manatee migrations in the northern Gulf of Mexico” (DaCosta, K.P., W.F. Patterson, R.H. Carmichael, K. Brill; poster)
  - “Suitability of calcein for mass marking marine bivalve larvae (*Crassostrea virginica*) under different salinity and tank conditions” (Nicholson, H., R.H. Carmichael, S. Rikard; poster)
- 2014 NOAA NERRS National Science Collaborative Stakeholder Workshop, Grand Bay NERR, Moss Point, MS “Grand Bay: Planning the future with an eye on the past”
- “Legacy effects of land-use change and nitrogen source shifts on Grand Bay: A benchmark for building collaborative research at the Grand Bay NERR” (Darrow, E.S., R.H. Carmichael, K. Calci, W. Burkhardt, III; oral)
  - “LULC change in Grand Bay watersheds, landscape metrics, and links to water quality” (Wu, W., H. Huang, E.S. Darrow, R.H. Carmichael; oral)
- 2014 American Geophysical Union Annual Meeting (AGU), San Francisco, CA, “Significant biogenic silica retention from reverse weathering in non-deltaic sediments” (Krause, J., A. Larson, E. Darrow, R. Carmichael; oral)
- 2014 Southeastern Biogeochemistry Symposium at Georgia Institute of Technology, Atlanta, GA “Re-examination of methodologies to determine biogenic silica content in northern Gulf of Mexico continental-shelf sediments” (Larson, A., E.S. Darrow, R.H. Carmichael, J.W. Krause; poster)

- 2014 University of South Alabama Spring Research Forum, Mobile, AL (3)
- “Stable isotope composition of weathered oil: Implications for tracing oil degradation and bioassimilation” (Patterson, H.K., R.H. Carmichael, A. Boettcher; poster)
  - “Are stable isotopes alone sensitive enough to trace small-scale effects of land-use change?” (Darrow, E., R.H. Carmichael, K. Calci, W. Burkhardt III; oral)
  - “Evidence for seasonal site fidelity by Florida manatees (*Trichechus manatus*) in the northern Gulf of Mexico” (Aven, A., R. Carmichael, C. Beck, M. Ross; poster)
- 2013 2013 Meeting of the American College of Veterinary Pathologists, Montreal, Canada “Marine mammals, oil, and the Gulf of Mexico: perspectives on the 2010–2013 Northern Gulf of Mexico cetacean unusual mortality event” (Colegrove, K.M., S. Venn-Watson, J. Litz, M. Kinsel, L. Garrison, K. Terio, C. Mori, A. Rosenstein, R. Carmichael, E. Fougères, B. Mase-Guthrie, R. Ewing, D. Shannon, S. Shippee, S. Smith, L. Staggs, E. Stratton, M. Tumlin, T. Rowles; oral)
- 2013 International Symposium of the Association of Biomolecular Resource Facilities, Palm Springs, CA. “Genomics Research Group (GRG): Elucidating the effects of the Deepwater Horizon oil spill on the Atlantic oyster using global transcriptome analysis” (Raghavachari, N., K. Showmaker, P. Liu, N. Jafari, N. Barker, K. L. Willett, J. Corrales, H. K. Patterson, R. H. Carmichael, D. Baldwin; poster)
- 2013 Coastal and Estuarine Research Federation (CERF) Biennial Conference, San Diego, CA (6)
- “Using protein biomarkers to measure sublethal stress in the Eastern oyster” (Patterson H.K., A. Boettcher, R.H. Carmichael; oral)
  - “Intertidal habitat use by horseshoe crabs during spawning season in the northern Gulf of Mexico” (Estes, M., Jr., R.H. Carmichael, X. Chen; oral)
  - “Are stable isotopes alone sensitive enough to trace small-scale effects of land-use change?” (Darrow, E., R.H. Carmichael, K. Calci, W. Burkhardt III; oral)
  - “Correcting spatial bias in wildlife citizen surveys: Integrating manatee sighting reports with GPS tag data” (Aven, A., R.H. Carmichael, D. Ingram; poster)
  - “Effects of sediment type and tank shape on horseshoe crab growth and survival in culture” (Hieb, E.E., J. Baggett, A. Aven, R.H. Carmichael; poster)
  - “Increased nitrogen removal by native triploid eastern oysters” (Dalrymple, D.J., R.H. Carmichael, W. Walton; poster)
- 2013 Grand Bay NERR Symposium, Grand Bay, MS, “Seasonality of chalky deposits within shells of oysters grown in Grand Bay NERR, MS” (Ellenburg, A., E. Darrow, R.H. Carmichael; poster)

- 2013 Southeast and Mid-Atlantic Marine Mammal Symposium, Jacksonville, FL, “Correcting spatial bias in wildlife citizen surveys: Integrating manatee sighting reports with GPS tag data” (Aven, A., R.H. Carmichael, D. Ingram; poster)
- 2013 College of Arts and Sciences Research Symposium, University of South Alabama, “Sedimentary organic matter source shifts due to land use change in a Northern Gulf of Mexico estuarine system” (Darrow, E., R.H. Carmichael, K. Calci, W. Burkhardt III; poster)
- 2013 Association for the Sciences of Limnology and Oceanography (ASLO) Aquatic Sciences Meeting, New Orleans, LA (2)
- “Sedimentary organic matter source shifts due to land use change in a northern Gulf of Mexico estuarine system” (Darrow, E., R.H. Carmichael, K. Calci, W. Burkhardt III; oral)
  - “The tropic importance of land-derived organic matter in a freshwater dominated Northern Gulf of Mexico estuary” (Dzwonkowski, B., R.H. Carmichael, R. Crim, K. Park, M. Taylor, H. Patterson; oral)
- 2012 Gulf Estuarine Research Society (GERS) Biennial Meeting, Dauphin Island Sea Lab, Dauphin Island, AL (3)
- “Using protein biomarkers to measure sublethal stress in the Eastern oyster” (Patterson H.K., A. Boettcher, R.H. Carmichael; oral)
  - “Sedimentary organic matter source shifts due to land use change in a Northern Gulf of Mexico estuarine system” (Darrow, E., R.H. Carmichael, K. Calci, W. Burkhardt III; poster)
  - “Increased nitrogen removal by native triploid eastern oysters” (Dalrymple, D.J., R.H. Carmichael, W. Walton; poster)
- 2012 Grand Bay National Estuarine Research Reserve (NERR), Division of Marine Resources, Biloxi, MS “Shallow water phantoms: Understanding manatees in the northern Gulf of Mexico” (Aven, A., R.H. Carmichael, N. Taylor; oral)
- 2012 The University of South Alabama's 19th Annual Research Forum, Mobile, AL “Using protein biomarkers to measure sublethal stress response in oysters” (Patterson, H., A. Boettcher, R.H. Carmichael; oral)
- 2012 Gulf of Mexico Graduate Student Symposium (GSS), Dauphin Island, AL (3)
- “Growth patterns of the eastern oyster, *Crassostrea virginica* from the Gulf of Mexico: Records in ancient and modern shell” (Darrow Condon, E., R.H. Carmichael; oral)
  - “Potential for increased nitrogen removal by native triploid Eastern oysters” (Dalrymple, D., R.H. Carmichael, W. Walton; oral)
  - “Evidence for seasonal site fidelity by Florida manatees (*Trichechus manatus latirostris*) in the northern Gulf of Mexico” (Aven, A., R.H. Carmichael, C. Beck, M. Ross; oral)
- 2012 DISL/FDA Joint Program Seminar, Dauphin Island, AL “Historical record of human impacts in a coastal estuary system using chemical and microbial indicators” (Darrow, E., R.H. Carmichael, K. Calci, W. Burkhardt, III; oral)

- 2011 Society for Marine Mammalogy (SMM) Biennial Conference on the Biology of Marine Mammals, Tampa, FL (3)
- “Aerial surveys in Alabama, Mississippi, and eastern Louisiana to locate manatees potentially affected by the Deepwater Horizon oil spill” (J. Powell, M. Ross, A. Aven, R.H. Carmichael; oral)
  - “Evidence for seasonal site fidelity by Florida manatees (*Trichechus manatus latirostris*) in the northern Gulf of Mexico” (Aven, A., R.H. Carmichael, C. Beck, M. Ross; oral)
  - “The northern Gulf of Mexico cetacean UME: Comparisons of UME bottlenose dolphin (*Tursiops truncatus*) strandings with historical data (2000-2011)” (Litz, J., S. Venn-Watson, R.H. Carmichael, et al.; poster)
- 2011 Coastal and Estuarine Research Federation (CERF) Biennial Conference, Daytona Beach, FL (5)
- “Stressed out oysters: Measuring sublethal responses using stable isotopes and protein regulation” (Patterson, H., R.H. Carmichael, A. Boettcher; oral)
  - “C and N stable isotopes as dietary indicators in northern Gulf manatees: Fringe habitat use” (Aven, A., R.H. Carmichael, K. Interlichia; oral)
  - "Historical record of human impacts in a coastal estuary system using microbial indicators" (Darrow Condon, E., R.H. Carmichael, K. Calci, W. Burkhardt III; poster)
  - “Potential for increased nitrogen removal by native triploid Eastern oysters” (Dalrymple, D., R.H. Carmichael, W. Walton; poster)
  - "Molts reveal life-history patterns of American horseshoe crab populations in fringe habitats" (Estes, M., Jr., R.H. Carmichael, A. Mills; poster)
- 2011 Grand Bay National Estuarine Research Reserve Symposium, (NERR) Grand Bay, MS “Tracing historical anthropogenic impacts on the Grand Bay Reserve using microbial indicators” (Darrow Condon, E., R.H. Carmichael, K. Calci, W. Burkhardt, III; poster)
- 2011 DISL Summer Student Symposium, Dauphin Island, AL “The contribution of oil-derived C and N to the diet of oysters due to the *Deepwater Horizon* oil spill” (Jones, A., R.H. Carmichael, H. Patterson, E. Overton; oral)
- 2011 International Workshop on Science and Conservation of Asian Horseshoe Crabs, Hong Kong “Three decades of horseshoe crab rearing: A review of conditions for captive growth & survival” (Brush, E., R.H. Carmichael; poster)
- 2011 Northern Gulf Institute (NGI) 5<sup>th</sup> Annual Conference, Mobile, AL (2)
- “Can we use stable isotopes to measure sublethal stress in the eastern oyster, *Crassostrea virginica*?” (Patterson, H., R.H. Carmichael, A. Boettcher; oral)
  - “Detection of belted manatees using passive acoustic monitors” (Aven, A., R.H. Carmichael; poster, Awarded Best Student Poster, 3<sup>rd</sup> Place)
- 2011 The Society of Environmental Toxicology and Chemistry (SETAC), Gulf Oil Spill Focused Topic Meeting, Pensacola Beach, FL “Assessment of water and sediment for PAH concentrations and embryo toxicity following the *Deepwater Horizon* oil spill” (Dailey, M., R.H. Carmichael, et al.; poster).

- 2011 Benthic Ecology Society Meeting, Mobile AL (2)
- “Can we use stable isotopes to measure sublethal stress in the Eastern oyster, *Crassostrea virginica*?” (Patterson, H., R.H. Carmichael, A. Boettcher; oral)
  - “Detection of belted manatees using passive acoustic monitors” (Aven, A., R.H. Carmichael; poster)
- 2011 AAPG Student Expo, Tuscaloosa, AL “Pretreatment methods for N stable isotope analysis in mollusk shells” (Hansen, J., F. Andrus, R.H. Carmichael; poster)
- 2011 AFA, 27<sup>th</sup> Annual Meeting, Mobile, AL “Manatees in Alabama” (Ingram, D., R.H. Carmichael, A. Aven; oral)
- 2010 American Geophysical Union (AGU) Fall Meeting, San Francisco, CA “Entry of oil to the coastal planktonic food web during the Deepwater Horizon spill” (Graham, W., R. Condon, R.H. Carmichael, I. D’Ambra, H. Patterson, F. Hernandez, Jr.; oral)
- 2010 Bays & Bayous Symposium, Mobile, AL (2)
- “Seasonal changes in water temperature affect manatee movements in Alabama waters” (Aven, A., R.H. Carmichael; oral)
  - “Measuring dissolved oxygen stress in the Eastern oyster, *Crassostrea virginica*” (Patterson, H., R.H. Carmichael, A. Boettcher; poster)
- 2010 Gulf Estuarine Research Society (GERS) Biennial Meeting, Port Aransas, TX (2)
- “Measuring dissolved oxygen stress in the Eastern oyster, *Crassostrea virginica*” (Patterson, H., R.H. Carmichael, A. Boettcher; oral)
  - “Seasonal changes in water temperature affect West Indian manatee (*Trichechus manatus*) movements in Alabama coastal waters” (Aven, A., R.H. Carmichael; oral)
- 2010 Alabama Chapter of The Wildlife Society, Annual Meeting, Spanish Fort, AL “A new sighting network contributes to 20 years of historical data on manatee populations in Alabama waters” (Aven, A., R.H. Carmichael, C. Pabody, M. Ross; poster)
- 2010 DISL Summer Student Symposium, Dauphin Island, AL “Stable isotope ratios in manatee ear bones trace life-time diet shifts” (Interlichia, K., R.H. Carmichael, A. Aven; oral)
- 2009 Geological Society of America (GSA) Annual Meeting, Portland, OR “A comparison of pretreatment methods for  $\delta^{15}\text{N}$  analysis in mollusk shells” (Hansen, J., F. Andrus, R.H. Carmichael; poster)
- 2009 Coastal and Estuarine Research Federation (CERF) Biennial Conference, Portland, OR “Measuring dissolved oxygen stress in the Eastern oyster, *Crassostrea virginica*” (Patterson, H., R.H. Carmichael, A. Boettcher; oral)
- 2009 American Society of Limnology and Oceanography (ASLO) Aquatic Sciences Meeting, Nice, France “Using stable isotopes to assess trophic position of *Aurelia* sp.5 (Cnidaria: Scyphomedusae) in Mljet lakes, Croatia” (D’Ambra, I., R.H. Carmichael, et al.; oral)
- 2009 National Shellfisheries Association Annual Meeting (NSA), Savannah, GA (2)

- “An innovative approach to detecting wastewater influence on oysters” (Biancani, P., A. Aven, R.H. Carmichael, J. Daskin, K. Calci, W. Burkhardt III; oral)
  - “Effect of dissolved oxygen stress on stable isotope values (C & N) in the Eastern oyster, *Crassostrea virginica*” (Patterson, H., R.H. Carmichael, A. Boettcher; oral)
- 2009 Gulf of Mexico Graduate Student Symposium (GSS), Dauphin Island, AL (3)
- “An innovative approach to detecting wastewater influence on oysters” (Biancani, P., R.H. Carmichael, J. Daskin, K. Calci, W. Burkhardt III; oral)
  - “Habitat use by the West Indian manatee in Alabama waters” (Aven, A., R.H. Carmichael; oral)
  - “Effect of dissolved oxygen stress on stable isotope values (C & N) in the Eastern oyster, *Crassostrea virginica*” (Patterson, H., R.H. Carmichael, A. Boettcher; oral)
- 2008 Bays & Bayous Symposium, Biloxi, MS "Pollution and dilution: How do processing and proximity affect wastewater assimilation by local biota?" (Aven, A., P. Biancani, R.H. Carmichael; poster)
- 2008 National Shellfisheries Association (NSA), Providence, RI “Oysters, sewage, and disease” (Biancani, P., R.H. Carmichael, J. Daskin, K. Calci, W. Burkhardt III; poster)
- 2008 Jacksonville State University, Jacksonville, AL “Manatees in Mobile Bay—Who knew?” (Pabody, C., R.H. Carmichael; oral)
- 2007 DISL Summer Student Symposium, Dauphin Island, AL (2)
- “Oysters as sentinels of wastewater influence in Mobile Bay” (Daskin, J., R.H. Carmichael; oral)
  - “A pilot study of the extralimital West Indian Manatee population in Mobile Bay” (Waters, L., R.H. Carmichael, C. Pabody, M. Ross; oral)
- 2006 New England Estuarine Research Society (NEERS) Fall Meeting, Hull, MA “Diet composition of juvenile horseshoe crabs: Implications for growth and survival of natural and cultured stocks” (Mills, A., R.H. Carmichael; poster, Awarded Best Undergraduate Student Poster)
- 2005 Maine Water Resources Research Institute, Maine Water Conference, Augusta, ME “The effects of grazing by *Littorina littorea*, nutrients, and temperature on benthic microalgal biomass along a salinity gradient in the Machias River, Maine” (Haponski, A., T. Hattenrath, R.H. Carmichael, et al.; poster, Awarded Best Undergraduate Student Poster)

**Guest lectures and seminars:**

- 2025 NOAA NMFS Human Interaction Workshop, Dauphin Island, AL, “An introduction to the Dauphin Island Sea Lab and the Marine Mammal Research Program”
- 2025 DISL Research Experiences for Undergraduates (REU) Program Recruitment Seminar, “DISL REU Program 2026” 3 public seminars via Zoom (Oct-Jan)

- 2025 MarVet Mississippi 2025, Marine Animal Medicine Externship course, Mississippi Aquarium, Gulfport, MS, invited speaker/ lecture
- “An introduction to the Dauphin Island Sea Lab”
  - “One Ocean One Health: Marine mammal case studies from northern Gulf”
- 2024 Dauphin Island Sea Lab Summer Programs, Marine Mammal Health, guest lecture “Sharing the Gulf with Manatees!”
- 2024 DISL Research Experiences for Undergraduates (REU) Program Recruitment Seminar, “DISL REU Program 2025” 3 public seminars via Zoom (Nov-Dec)
- 2024 University of South Alabama, Environmental Science & Sustainability (ENV 335), guest lecture “One Ocean One Health: Examples from the northern Gulf of Mexico”
- 2023 University of South Alabama, Environment & Society Open Classroom, guest lecture “Citizen Science: Manatees, Water Quality, and more...” (team lecture: Carmichael/ Hieb)
- 2023 DISL Research Experiences for Undergraduates (REU) Program Recruitment Seminar, “DISL REU Program 2024” 3 public seminars via Zoom (Nov-Dec)
- 2023 University of Alabama Huntsville, DISL Research Experience for Undergraduates (REU) Program Recruitment Seminar, “DISL REU Program 2024”
- 2023 NOAA Science of Oil Spills Class, Mobile, AL “Oil-spill Science in Action on the nGOM coast”
- 2023 University of South Alabama, Introductory Analysis (CH-265), Guest mini-seminar, “The importance of analytical techniques and multidisciplinary studies in STEM”
- 2023 University of Texas, Marine Science Institute, Marine Science Seminar, Port Aransas, TX, “Population ecology of West Indian Manatees in nGOM”
- 2022-2023 ADCNR, Dauphin Island, AL “Marine Mammal Research Program Review” (Dec, Jan)
- 2019-2023 Marine Mammal Health course, University Summer Programs, Dauphin Island Sea Lab, Dauphin Island, AL “DISL’s Manatee Sighting Network: Understanding Gulf of Mexico manatees” (Hieb, E., R.H. Carmichael, C. Cloyed, K. DaCosta)
- 2022 DISL Research Experience for Undergraduates (REU) Program Recruitment Seminar, “DISL REU Program 2023” 3 public seminars via Zoom (Nov-Dec)
- 2022 University of Southern Mississippi, Stennis Space Center, Division of Marine Science, MS “Elemental ratios in shellfish detect and trace contaminant entry to coastal ecosystems”
- 2022 University of Southern Mississippi, Gulfport, MS “Climbing through doors and windows: Collaborative multidisciplinary research in Marine Sciences”
- 2022 Alabama School of Mathematics and Science (ASMS), Mobile, AL “Dauphin Island Sea Lab’s Marine Mammal Research Program”
- 2022 University of West Florida, FL “Population ecology of West Indian manatees in the nGOM!”

- 2021, 2022 University of South Alabama, MAS 332 Marine Sciences II “Horseshoe crab ecology 101”
- 2021 DISL Research Experience for Undergraduates (REU) Program Recruitment Seminar, “DISL REU Program 2022” 4 public seminars via Zoom (Nov-Dec)
- 2021 Auburn University, AL “Use of elemental signatures to detect & trace contaminant entry to the nGOM coastal food web: managing multiple stressors”
- 2021 University of Alabama, Birmingham, virtual seminar “Use of elemental signatures to detect & trace contaminant entry to the nGOM coastal food web: managing multiple stressors”
- 2021 Alabama USFWS Seminar, virtual, “Manatee Research at DISL”
- 2020 USFWS Seminar, virtual, “Manatee Research at the Dauphin Island Sea Lab”
- 2020 Mississippi Aquarium, virtual, “Manatee Research at the Dauphin Island Sea Lab”
- 2020 DISL Research Experience for Undergraduates (REU) Program Recruitment Seminar, virtual, “DISL REU Program 2021”
- Judson College, Marion, AL (October)
  - Stillman College, Tuscaloosa, AL (October)
  - 4 additional public seminars via Zoom (Oct-Nov)
- 2020 Birmingham Southern University, Birmingham, AL “Protecting our Marine Mammals: Manatees, Dolphins, & Whales in the northern Gulf of Mexico” and “DISL REU Program 2020-2021”
- 2020 OneNOAA Science Seminars, RESTORE Program, virtual “Eastern Oysters (*Crassostrea Virginica*) as Retrospective Bioindicators of Trace Metal Contamination”
- 2019 DISL Research Experience for Undergraduates (REU) Program Recruitment Seminar, “DISL REU Program 2020”
- Alabama State University, Montgomery, AL (October)
  - Tuskegee College, Tuskegee, AL (October)
  - Judson College, Marion, AL (October)
  - Stillman College, Tuscaloosa, AL (October)
  - Jackson State University, Jackson, MS (October)
- 2019 Texas A&M University at Galveston, TX “Use of elemental ratios to define habitat and food resource use by marine mammals in the northern Gulf of Mexico.”
- 2019 Odyssey USA, University of South Alabama, Mobile, AL “Manatee research at the Dauphin Island Sea Lab”
- 2018-2019 University of South Alabama, Gulf Shores Campus, Distinguished Lecture Series, Gulf Shores, AL
- “Protecting our sea life from environmental stressors” (2018)
  - “Protecting our marine mammals: Manatees, dolphins & whales” (2019)
- 2018 DISL Research Experience for Undergraduates (REU) Program Recruitment Seminar, “DISL REU Program 2019”

- University of Mobile, Mobile, AL (October)
  - Alabama State University, Montgomery, AL (October)
  - Tuskegee College, Tuskegee, AL (October)
  - Judson College, Marion, AL (October)
  - Stillman College, Tuscaloosa, AL (October)
- 2017 Red Knot Aquaculture Interactions Workshop, Tuckerton, NJ “Review of horseshoe crab ecology and the importance of habitat”
- 2017 Gulf Coast Research Laboratory, Ocean Springs, MS “Anthropo-proxy data in bivalves from middens to modern embayments and tropical to temperate systems”
- 2016 Red Knot Aquaculture Interactions Workshop, Wildwood Crest, NJ “Review of horseshoe crab ecology”
- 2016 DISL Research Experience for Undergraduates (REU) Program Recruitment Seminar, “DISL REU Program 2017”
- University of Mobile, Mobile, AL (October)
  - Alabama State University, Montgomery, AL (October)
  - Huntingdon College, Montgomery, AL (October)
  - University of West Alabama, Livingston, AL (October)
- 2016 Limuli Laboratories, Eldora, NJ “Contributions of Dr. Carl N. Shuster, Jr. to science education through the Green Eggs & Sand curriculum and workshops”
- 2015-2016 DISL Research Experience for Undergraduates (REU) Program lectures, Dauphin Island, AL
- “Orientation to DISL’s REU Summer Program”
  - “Scientific Presentations: Fundamentals of creating and delivering a successful oral and poster presentation”
  - “Scientific Writing: Data display, papers, thesis/dissertation, CVs”
- 2015 Environmental Protection Agency (EPA), Gulf Breeze, FL “Shallow water phantoms: Understanding northern Gulf of Mexico manatees”
- 2015 National Ocean Sciences Bowl (NOSB), Ocean Springs, MS, “Effects of ocean contaminants on sentinel species in the northern Gulf of Mexico”
- 2015 University of Alabama, Marine Sciences Club, Tuscaloosa, AL, “Dauphin Island Sea Lab summer programs & research opportunities”
- 2014 USGS, Manatee Research Seminar, Dauphin Island, AL “DISL’s manatee research program: Public sightings, remote sensing, and biological sampling”
- 2013 USFWS, Daphne, Alabama Field Office, “Status and recovery potential of Alabama manatees: Data from public sightings, remote sensing, and biogeochemistry”
- 2013 National Space Science and Technology Center (NSSTC) Special Seminar, Huntsville, AL “Multiple remote sensing and biogeochemical strategies define manatee movement patterns and habitat use in the northern Gulf of Mexico”
- 2012 Mobile Bay Audubon Society/ Weeks Bay Foundation, Seminar Series, “Perfect storm may have led to high dolphin strandings in spring 2011”

- 2012 Boardwalk Talk, Dauphin Island Sea Lab, AL “Manatees in Alabama”
- 2012 USA/ DISL Summer Program, Marine Mammals, Dauphin Island, AL “Marine mammal research & stranding response in Alabama waters”
- 2012 St. Luke’s Episcopal School, K5 classes, Dauphin Island, AL “Manatees in the northern Gulf of Mexico”
- 2012 Boardwalk Talk, Dauphin Island Sea Lab, Dauphin Island, AL “Horseshoe crabs: Social and ecological relevance, fringe lifestyles, and the BP oil spill”
- 2011 Mississippi Museum of Natural Science, Jackson, MS, Science Seminar Series “Horseshoe crabs: Social and ecological relevance, fringe lifestyles, and the BP oil spill”
- 2011 Coastal Nature Guide Program, Sea Sand and Stars Science and Nature Center, Orange Beach, AL “Alabama manatees: Shallow water phantoms”
- 2010 U.S. Food and Drug Administration, Dauphin Island, AL “Identifying and tracing wastewater influence on coastal ecosystems”
- 2010 Coastal Nature Guide Program, Weeks Bay National Estuarine Research Reserve, Fairhope, AL “Alabama manatees: Shallow water phantoms”
- 2009 Mississippi Museum of Natural Science, Jackson, MS, Science Seminar Series “Living on the edge: Manatees in the nGOM”
- 2009 University of South Alabama/ Dauphin Island Sea Lab, Anthropogenic Impacts on Marine Ecosystems, (for J. Cebrian), “Indicators of wastewater influence on coastal waters”
- 2009 University of Southern Mississippi, Gulf Coast Research Laboratory, Ocean Springs, MS, “Identifying & tracing effects of wastewater on coastal ecosystems”
- 2008 Environmental Studies Center, Secondary Education Training Program, Mobile County Public School System, AL (for L. Scott), “Human activities and coastal marine animals”
- 2007 Dauphin Island Sea Lab, Undergraduate Summer Seminar Series speaker, AL
- 2007 Dauphin Island Sea Lab, COSEE Summer Institute for Scientists and Teachers, Discovery Hall Programs, AL (for J. Dindo), “Application of ecological data to management & conservation of horseshoe crabs”
- 2007 Auburn University, Landscape Architects Studio, AL (for C. Lebleu), “Coastal wetlands projects: design considerations”
- 2007 Green Eggs & Sand curriculum program for teachers, Skidaway Island, GA (for G. Kreamer), “Application of ecological data to management & conservation of horseshoe crabs” and “Natural diet and culture of horseshoe crabs”
- 2007 Dauphin Island Sea Lab, Research Round-up, AL
- 2006 University of Maine-Orono, Biology Department Seminar Series, ME, “Comparison of N inputs and ecosystem responses between Cape Cod and Downeast estuaries”

- 2006 Green Eggs & Sand curriculum program for teachers, Smyrna, DE (for G. Kremer) “Diet composition of juvenile horseshoe crabs: Implications for natural and cultured stocks”
- 2005 University of Maine-Orono, School of Marine Science Seminar Series, ME “The importance of POM to diet of natural & cultured juvenile horseshoe crabs”
- 2005 Green Eggs & Sand curriculum program for teachers, Smyrna, DE and Wellfleet, MA (2 for G. Kremer) “Use of spawning data to inform horseshoe crab management”
- 2005 UMass Boston, Environmental, Earth & Ocean Sciences Department Seminar Series, MA “Effects of nitrogen loading on commercially important shellfish”
- 2004-2006 University of Maine-Machias, Brown Bag Seminar, ME, “Comparison of N inputs and ecosystem responses between Cape Cod and Downeast estuaries”
- 2004 Green Eggs & Sand curriculum program for teachers, Wellfleet, MA (for G. Kremer) “Collection of population data to inform management of horseshoe crabs on Cape Cod, MA”
- 2004 Waquoit Bay National Estuarine Research Reserve, Museum Institute for Teaching Science: Summer Institute, Falmouth, MA (for J. Muller), “Application of ecological data to management & conservation of horseshoe crabs”
- 2004 Boston University Marine Program, Marine Pollution, Woods Hole, MA (for I. Valiela), “Application of ecological data to management & conservation of horseshoe crabs”

**Invited oral presentations for outreach and education:**

- 2025 Fowl River Area Community Association, Theodore, AL “Sharing the Gulf with Manatees”
- 2025 Manatee Habitat Cruise, Blakeley State Park, Mobile Bay, AL (naturalist guide; 3 hour tour)
- 2021-2025 Alabama Species Initiative, Pelican’s Nest Science Lab, Baldwin County, AL “Horseshoe crab ecology”
- 2024 Manatee Habitat Cruise, Blakeley State Park, Spanish Fort, AL (naturalist guide; 3 hour tour)
- 2024 EcoWild Outdoor Expo, Mobile, LA, “Sharing the Gulf with Manatees”
- 2024 Alabama School of Mathematics & Science (ASMS), Mobile, AL, “Careers in STEM” (panelist)
- 2023 Community Action Committee Meeting, Mobile Bay National Estuary Program, Mobile, AL “Improving community health through microbial source tracking”
- 2023 DISL Foundation Annual Meeting, Dauphin Island, AL “One Ocean One Health for Alabama: An Initiative to support community and economic health”
- 2022 Alabama Coast Fishermen’s Association (ACFA), Mobile, AL “Dauphin Island Sea Lab’s Marine Mammal Research Program”

- 2022 GulfChat, Gulf Quest Maritime Museum, Mobile, AL “Manatees in Alabama waters” (<https://www.facebook.com/GulfQuestMaritimeMuseum/videos/660721331638597>)
- 2020 Ten years of discovery: Celebrating the legacy of GoMRI in Alabama, Sea Grant Programs of the Gulf of Mexico “Building Capacity, Training the Next Generation” (Webinar: <https://gulfseagrant.org/oilspilloutreach/alabama-gomri-showcase/>)
- 2020 Sea Grant in the Gulf. Oysters Adapting to a Changing Gulf, Part III: Oysters and Oil Spills “Assimilation of oil-derived elements by oysters” (Webinar: <https://gulfseagrant.org/oilspilloutreach/presentations/oysters-adapting-to-a-changing-gulf/>)
- 2020 University Programs Summer Career Development Program, Dauphin Island, AL “Internships and Grad School” (panelist)
- 2019 Mobile Bay Green Drinks, Alabama Coastal Foundation, Alchemy Tavern, Mobile, AL “Our Wastewater Footprint”
- 2019 Environmental town hall, AL House Democratic Caucus, Fairhope, AL “Issues Impacting Mobile Bay” (panelist)
- 2018 NOAA Gulf of Mexico Regional Collaboration Team Webinar, Three-minute roundup “Summary of ongoing NOAA collaborative research”
- 2017 Mobile Baykeeper, 20<sup>th</sup> Anniversary film screening, Gulf Coast Exploreum, Mobile, AL “The future of marine conservation”
- 2017 Mobile Rotary Club, Mobile, AL “DISL’s Manatee Sighting Network: Understanding Gulf of Mexico manatees”
- 2017 Gulf Coast Research Laboratory, Science Café, Ocean Springs, MS “Shallow water phantoms: Understanding northern Gulf of Mexico manatees”
- 2016 Magnolia Springs Community Association, Magnolia Springs, AL, “DISL’s Manatee Sighting Network: Understanding Alabama manatees & Magnolia Springs!”
- 2015 Mobile Bay Canoe and Kayak Club, Five Rivers Delta Resource Center, Spanish Fort, AL “Shallow water phantoms: Understanding northern Gulf of Mexico manatees”
- 2015 Crepe Myrtle Trail Ride, Mobile, AL “Mobile Bay: A natural coastal resource”
- 2015 Magnolia Springs Community Association, Magnolia Springs, AL “Shallow water phantoms: Understanding Alabama manatees & Magnolia Springs!”
- 2014 Mobile Propeller Club, Mobile, AL “Shallow water phantoms: Understanding Alabama manatees”
- 2014 Dog River Clearwater Revival, Mobile, AL “Shallow water phantoms: Understanding Alabama manatees”
- 2014 Alabama Master Naturalist: Coastal Program, Alabama Bays & Coastal Waters, Dauphin Island, AL “Manatees and other marine mammals in Alabama waters”

- 2014 Philanthropic Educational Organization International, Mobile, AL “Dauphin Island Sea Lab & Manatee Research”
- 2013 MS Department of Marine Resources/ Grand Bay National Estuarine Research Reserve Fall Science Seminar, Oysters: Science on the Half Shell, Biloxi, MS “Using oyster shells to trace historical nitrogen sources to Grand Bay, MS”
- 2012 Mobile Bay Audubon Society/Weeks Bay Foundation “Were multiple stressors a ‘perfect storm’ for nGOM bottlenose dolphins in 2011?”
- 2012 Sunrise Rotary Club of Mobile, Mobile, AL “Alabama manatees: Shallow water phantoms”
- 2011 Mobile Sail and Power Squadron, Mobile, AL “Alabama manatees: Shallow water phantoms”
- 2011 Rotary Club of Fairhope, AL “Alabama manatees: Shallow water phantoms”
- 2011 Rotary Club of Mobile, AL “Alabama manatees: Shallow water phantoms”
- 2011 Alabama Coastal Fisherman’s Association, Mobile, AL “Alabama manatees: Shallow water phantoms”
- 2009 Crichton Optimists Club, Mobile, AL “Mobile manatees”
- 2008 Sierra Bonita Neighborhood Association quarterly meeting, Mobile, AL “Introduction to DISL”, “Human activities and marine animals”
- 2005 Cape Cod Sail and Power Squadron, Harwich, MA “Horseshoe crab populations in Cape Cod waters”
- 2004 Barnstable Association of Recreational Shellfishing, MA “Effects of eutrophication on commercial shellfish”
- 2004 Elder Hostel, MBL, Woods Hole, MA “Shellfish and nitrogen: A balancing act”
- 2004 Bourne Shellfish Working Group, MA “Effects of eutrophication on commercial shellfish”

**Co-authored presentations for outreach & education:**

- 2024 Boardwalk Talk, Dauphin Island Sea Lab, Dauphin Island, AL “How Does The Ocean Impact My Health” (Patterson, H. and R.H. Carmichael; oral)
- 2023 Dauphin Island Sea Lab, Discovery Hall Programs, T.E.A.C.H.: Teaching Educators in Alabama about Critters and Habitats Workshop, Dauphin Island, AL “Dauphin Island Sea Lab’s Marine Mammal Research Program” (Hieb, Russell et al; oral)
- 2023 Student Conservation Association, Gulfcorps, Mobile, AL. “Alabama Marine Mammal Stranding Network” (M. Russell et al.; oral)
- 2023 Fowl River Area Civic Association, Theodore, AL “DISL’s Manatee Sighting Network: Manatees in the northern Gulf of Mexico” (E. Hieb et al.; oral)
- 2023 Chevron Retirees Association, Pascagoula, MS “Dauphin Island Sea Lab’s Marine Mammal Research Program” (E. Hieb et al.; oral)

- 2021 Virtual Boardwalk Talk, Dauphin Island Sea Lab, Dauphin Island, AL “2020 Sperm Whale Stranding” (Bloodgood, J., M. Russell; oral)
- 2022 Pensacola and Perdido Bays Estuary Program, Lunch & Learn, Pensacola, FL (Virtual) “Lunch & Learn: Manatees in the Florida panhandle” (E. Hieb et al.; oral)
- 2022 University of South Alabama, Department of Campus Recreation, Nature Adventures summer camp, Mobile, AL “Marine mammals in the Gulf of Mexico” (E. Hieb et al; oral)
- 2021-2022 University of South Alabama, Marine Biology course, Mobile, AL. “Dauphin Island Sea Lab Marine Mammal Research Program: Marine mammal stranding response, necropsy, and research” (Russell, Bloodgood, et al; oral)
- 2021-2022 Corpus Christi Catholic School, Summer Camp Program, Mobile, AL. “How to be a manatee ambassador” (E. Hieb, J. Bloodgood et al; oral)
- 2021 Chattanooga Zoo, Zoo Club, Chattanooga, TN (Virtual). Keystone species presentation featuring manatees (E. Hieb; oral)
- 2020 University of South Alabama Marine Science Student Association, Mobile, AL (Virtual). “DISL’s Marine Mammal Research Program” (E. Hieb, M. Russell et al; oral)
- 2020 Student Conservation Association, Gulfcorps, Mobile, AL (remote). “DISL’s Manatee Sighting Network: Understanding Gulf of Mexico manatees” (E. Hieb et al.; oral)
- 2020 Virtual Boardwalk Talk, Dauphin Island Sea Lab, Dauphin Island, AL “Dolphins, manatees, and whales, oh my!” (Russell, M., A. Deming; oral)
- 2020 Perdido Key Homeowners Association. Perdido Key, AL, “Sentinels of the Sea: Marine Mammal Stranding Networks Shed Light on Ecosystem Health” (Deming, A.C.; oral)
- 2019 Boardwalk Talk, Dauphin Island Sea Lab, Dauphin Island, AL “Marine Mammal Strandings” (Russell, M.; oral)
- 2019 Bream Fishermen Association, Pensacola, FL. “A decade of data: Dauphin Island Sea Lab’s manatee research in the northern Gulf of Mexico” (Hieb, E., R.H. Carmichael; oral)
- 2019 Science on Tap, Ocean Springs, MS “DISL’s Manatee Sighting Network: Understanding Mississippi manatees” (Hieb, E., R.H. Carmichael; oral)
- 2019 Rotary Club of Mobile, Mobile, AL “Sentinels of the Sea: How marine mammal stranding networks can help understand environmental health” (Deming, A., M. Russell, E. Heib, R.H. Carmichael; oral)
- 2019 Pensacola Singles Sailing Club, Pensacola, FL “DISL’s Manatee Sighting Network” (Hieb, E., R.H. Carmichael; oral)
- 2019 Gulf Coast Research Laboratory Summer Field Program, Marine Mammals course “Dauphin Island Sea Lab’s Marine Mammal Research Program” (Hieb; oral)

- 2019 Fowl River Women's Club, Fowl River, AL "Dolphin Strandings in Alabama" (Russell, M., A. Deming, E. Hieb, R. Carmichael; oral)
- 2019 History Museum of Mobile, Meet the Author series (co-hosted by the Mobile Public Library), Mobile, AL (Hieb)
- 2019 University of South Alabama Marine Science Student Association, Mobile, AL, Dauphin Island Sea Lab informational meeting (Hieb; Invited panelist)
- 2018, 2019 University of South Alabama Biology Student Association, Mobile, AL "Dauphin Island Sea Lab: Research opportunities" (Hieb; oral)
- 2018 Boardwalk talk, Dauphin Island Sea Lab, Dauphin Island, AL "Dolphin doctor's appointment" (Deming; oral)
- 2018 Boardwalk talk, Dauphin Island Sea Lab, Dauphin Island, AL "The elements of dolphin diets" (Cloyed; oral)
- 2017 Lions Club of Mobile, Mobile, AL. "DISL's Manatee Sighting Network: Understanding Gulf of Mexico manatees" (Hieb; oral)
- 2017 Belle Fontaine Garden Club, Theodore, AL. "Dauphin Island Sea Lab's Manatee Sighting Network" (Hieb, E., R.H. Carmichael, A. Aven, K. DaCosta; oral)
- 2016-2017 Pascagoula River Audubon Center, Moss Point, MS "Manatees in Mississippi" (Hieb, E., R.H. Carmichael, A. Aven, K. DaCosta; oral)
- 2016 Historic Ocean Springs Saltwater Fly Fishing Club (HOSSFLY), Ocean Springs, MS. "Dauphin Island Sea Lab's Manatee Sighting Network" (Hieb, E., R.H. Carmichael, A. Aven, K. DaCosta; oral)
- 2016 Fowl River Community Association, Theodore, AL. "DISL's Manatee Sighting Network" (Hieb, E., R.H. Carmichael, A. Aven, K. DaCosta; oral)
- 2016 Unitarian Universalist Fellowship of Mobile, Mobile, AL. "Dauphin Island Sea Lab's Manatee Sighting Network" (Hieb, E., R.H. Carmichael, A. Aven, K. DaCosta; oral)
- 2016 Dog River Clearwater Revival, Mobile, AL. "Dauphin Island Sea Lab's Manatee Sighting Network" (Hieb, E., R.H. Carmichael, A. Aven, K. DaCosta; oral)
- 2016 Boardwalk Talk, Dauphin Island Sea Lab, Dauphin Island, AL. "Dauphin Island Sea Lab's Manatee Sighting Network" (Hieb, E., R.H. Carmichael; oral)
- 2014 NOAA Mississippi Laboratories, Pascagoula, MS "DISL's Manatee Sighting Network" (Hieb, E., R.H. Carmichael, A. Aven, K. Interlichia; oral)
- 2014 Ina Thompson Moss Point Library, Moss Point, MS "Dauphin Island Sea Lab's Manatee Sighting Network" (Hieb, E., R.H. Carmichael, A. Aven, K. Interlichia; oral)
- 2014 Boardwalk Talk, Dauphin Island Sea Lab, Dauphin Island, AL "Manatees in Alabama" (DaCosta, K., R.H. Carmichael; oral)
- 2013 University of Mobile, Mobile, AL "Dauphin Island Sea Lab's Marine Mammal Research Program" (Hieb, E., R.H. Carmichael, A. Aven, K. Interlichia, C. Miller; oral)

- 2013 Boardwalk Talk, Dauphin Island Sea Lab, Dauphin Island, AL “Dauphin Island Sea Lab’s Marine Mammal Research Program” (Hieb, E., R.H. Carmichael; oral)
- 2013 Tuscaloosa County High School Biology, Tuscaloosa, AL, “Manatee ecology and biology” (Aven, A., R.H. Carmichael, E. Hieb; oral via Skype)
- 2012 Boardwalk Talk, Dauphin Island Sea Lab, Dauphin Island, AL “Potential for increased nitrogen removal by native triploid eastern oysters” (Dalrymple, D., R.H. Carmichael, W. Walton; oral)
- 2011 Pelican’s Nest Science Lab, Fairhope, AL “Manatees” (Aven, A., R.H. Carmichael; oral)
- 2010 Boardwalk Talk, Dauphin Island Sea Lab, Dauphin Island, AL, “Manatees in Alabama waters” (Aven, A., R.H. Carmichael; oral)
- 2008 Mobile Bay Kayak Fishing Association, Fiver Rivers Delta Complex, Spanish Fort, AL “Manatees in Alabama waters” (Pabody, C., R.H. Carmichael; oral)
- 2008 Kitty Stone Elementary School, Jacksonville, AL “Manatees in Mobile Bay—Who knew?” (Pabody, C., R.H. Carmichael; oral)

**Television, radio, internet, magazine interviews & other publicity:**

- 2008-present News articles featuring research and outreach activities <https://www.disl.edu/who-we-are/rcarmichael/#in-the-news> (*In the News* link)
- 2025 Alabama Public Radio, Grayce Kilhenny, “Metals on Mardi Gras beads” [interview]
- 2024 FM 106.5 Talk Radio, Sean Sullivan, “Marine Mammals in the Gulf” (1 segment) [Radio interview]
- 2024 WWL Radio, New Orleans, LA, Don Dubuc for the Newell Normand Show, “Sharing the Gulf with Manatees”
- 2023 Creature Comforts, Mississippi Public Radio, “Manatees” <http://creaturecomforts.mpbonline.org/episodes/creature-comforts-manatees> [Radio interview]
- 2022 How Stuff Works? “The Deep Ocean Giant Isopod Looks Like a Huge Roly-poly Bug” <https://animals.howstuffworks.com/marine-life/giant-isopod.htm> [interview]
- 2022 Alabama Public Radio, Guy Busby, “Manatees appear to be trading Florida waters for Alabama’s” (<https://www.apr.org>; 03 Feb) [Radio interview]
- 2020 FM 106.5 Talk Radio, Sean Sullivan, “Update on stranded sperm whale in Mobile Bay, AL” (1 segment) [Radio interview]
- 2020 International Horseshoe Crab Day, videos (re-released annually) <https://youtu.be/rmlOAlodt54> <https://youtu.be/YcIihiEKYr8>
- 2018 BREC Conservation, Nature Explorers Camp, Baton Rouge, LA. “Skype with a Scientist” (Staff: Hieb, Russell, Collins, Deming; skype interview/ Q&A)
- 2018 State of the Bay, Mobile Bay Magazine, January issue (cover feature) [https://issuu.com/mobilebaymagazine/docs/january\\_2018\\_web](https://issuu.com/mobilebaymagazine/docs/january_2018_web)

- 2017 Tri Beta, University of North Alabama chapter, Florence, AL. “DISL’s Manatee Sighting Network: Understanding Gulf of Mexico manatees. (Hieb, E., R.H. Carmichael, A. Aven, K. DaCosta; webinar)
- 2017 Short film: Manatees in Alabama, Save the Manatee Club (youtube.com)
- 2017 Short film: Coastal Alabama Oceans, NASA DEVELOP National Program Summer 2017, (featuring interview with Hieb; youtube.com)
- 2016 WNSP 105.5, Great Days Outdoors, (Featuring research and outreach, Hieb) [Radio]
- 2016 FM 106.5 Talk Radio, Sean Sullivan, “Update on manatees in Alabama” (2 segments) [Radio interview]
- 2016 WPMI, Local 15 Today, “Record number of local manatee sightings,” Hieb [Television]
- 2015-2016 WPMI, Local 15 Today, “Dauphin Island Sea Lab Discovery Day,” Hieb [Television]
- 2015 WHEP 1310, Live from Magnolia Springs Seafood Celebration, Hieb [Radio]
- 2015 WPMI, Local 15 Today (Featuring research and outreach, Hieb/ DaCosta; multiple segments) [Television]
- 2014 WKRG News 5, “The manatees have returned,” Hieb [Television]
- 2013 America's Amazon documentary film (Featuring research of PhD Candidate A. Aven) <https://www.youtube.com/watch?v=8j9coyJeB4Q>
- 2012 Short film: *Restoration Gulf Coast - Alabama Manatees*, Run Riot Films [https://www.youtube.com/watch?v=jd0Cyut\\_Cgo](https://www.youtube.com/watch?v=jd0Cyut_Cgo)
- 2011 AM 1620 News Radio, Rob Williams, Pensacola Morning News, “One year after the oil spill, where do we stand?” (1 program) [Radio]
- 2010 AM 1620 News Radio, Rob Williams, Pensacola Morning News, “Tagged manatee in Apalachicola Bay” (3 programs) [Radio]
- 2009 FM 106.5 Talk Radio, Sean Sullivan, “Manatees in Alabama” (2 programs) [Radio interview]
- 2009 Mississippi Public Radio, *Creature Comforts*, “Manatees in nGOM” [Radio interview]
- 2009 FM 92.1 Zew, Emily and Trey in the morning, “Manatees in Alabama” [Radio interview]
- 2009 Alabama Public Television, *Capital Journal*, “Manatees in Alabama” [Television]
- 2004 Cape and Islands National Public Radio, *The Point*, “Featured local research” [Radio interview]
- 2004 Cape Cod Community Media Center, Public Access Cable Television, *Cape Environmental Connections*, “Horseshoe crabs in Cape Cod waters” [Television]

**Other public outreach and education activities (lead personnel):**

- 2024-present Alabama Aquarium's Research Lab Tours, Dauphin Island, AL (Carmichael/ lab members)
- 2024-present Sea Turtle Half Marathon, The Hangout, Gulf Shores, AL (staff)
- 2023-present University of South Alabama, Stokes School of Marine and Environmental Science, Week of Welcome event, Mobile, AL (Carmichael/ lab members)
- 2020-present Carmichael Lab Instagram account (Carmichael/ lab members)
- 2018-present ALMMSN First Responder Training, Dauphin Island, AL (for public, LE officers; Carmichael/ lab members)
- 2015-present Maintain DISL NSF REU Program Facebook page (Carmichael/TA) (1,545 followers from at least 17 countries)
- 2015-present Alabama Coastal Birdfest Bird and Conservation Expo, Fairhope, AL (staff)
- 2014-present Delta Woods & Waters Expo, Spanish Fort, AL (Carmichael/ lab members)
- 2014-present Biloxi Boat Show, Biloxi, MS (Carmichael/ lab members)
- 2013-present Mobile Boat Show, Mobile, AL (Carmichael/ lab members)
- 2013-present Maintain DISL Marine Invertebrate Zoology Facebook page (Carmichael/TA) (196 Members)
- 2011-present Maintain Alabama Marine Mammal Stranding Network Facebook page (Carmichael/ lab members; 3,700 fans from at least 33 countries)
- 2009-present Maintain DISL's Manatee Sighting Network Facebook page (Carmichael/ lab members; >11,089 followers from at least 49 countries)
- 2009-present DISL Discovery Day, Dauphin Island, AL (Carmichael/ lab members)
- 2009-present DISL Foundation Cocktails with Critters, Mobile, AL (Carmichael/ lab members)
- 2009-present Alabama Deep Sea Fishing Rodeo, Dauphin Island, AL (Carmichael/ lab members; 2009, 2011, 2021, 2023, 2024)
- 2008-present Discovery Hall Programs, student tours (Carmichael/ lab members)
- 2007-present Maintain Carmichael Lab and Manatee Sighting Network webpages (Carmichael/ lab members)
- 2022-2025 Quarterly Stakeholder meeting, EPA Healthy and Resilient Gulf of Mexico 2020 grant program "Advanced microbial source tracking to inform community health in coastal Alabama" (B. Kiel-Reese, S. Ni Chadhain, A. Brown, P. Demetriades, D. Bilbry, B. Janssen; virtual)
- 2024 World Ocean Day, Student Project display, Alabama Aquarium, Dauphin Island, AL (Carmichael/Carmichael)
- 2024 VetFest, Auburn University, College of Veterinary Medicine (Carmichael/Vendl)
- 2023 Mississippi Aquarium Homeschool Days, Gulfport, MS (Russell)
- 2023 ADCNR personnel Protected Species training (Carmichael/ lab members)
- Conservation Enforcement Officers, Dauphin Island, AL

- Biologists/ Fisheries, Gulf Shores, AL
  - Biologists/ Fisheries, Dauphin Island, AL
- 2022-2023 Eastern Shore Fly Fishers Tripletail Classic, Weeks Bay, AL (Clark)
- 2017-2023 Maintain RESTORE: Elemental signatures in oyster shell detect contaminants Facebook page (Carmichael/ Knight/ Peter; 89 fans from 3 countries)
- 2022 Mississippi Aquarium, World Ocean's Day, Gulfport, MS (Russell)
- 2022 Pensacola and Perdido Bays Estuary Program, Gallery After Hours, Orange Beach, AL (Carmichael/Hieb)
- 2022 DISL Discovery Day/ Earth Day Celebration, "Our Wastewater Footprint" recording
- 2020 Sea Turtle Half Marathon, The Hangout, Gulf Shores, AL (Russell)
- 2013-2020 ALMMSN Volunteer Training, Mobile or Dauphin Island, AL (Miller/Wingers/Hieb/Russell/Deming/Collins/Carmichael)
- 2017-2019 The Wharf Boat and Yacht Show, Orange Beach, AL (Hieb/DaCosta)
- 2016-2019 Discovery Day, Bellingrath Gardens, Theodore, AL (Wingers/Collins/Russell)
- 2019 Outreach booth/ presentation, "Our Wastewater Footprint (Thomason)
- Water Utilities of Baldwin County, AL "What can you do to help?"
  - Evonik Fishing Rodeo, Mobile, AL
  - Evonik Industries, Theodore, AL
  - Estuaries Day, DISL, AL
  - Environmental town hall, AL House Democratic Caucus, Fairhope, AL
  - UAH Science and technology open house, Huntsville, AL
  - Great Drift, Dog River Clearwater Revival, Mobile, AL
  - Mudbottom Music Festival, outreach booth, Mobile, AL
  - Peninsula Paddle and Arts festival, Mobile, AL
- 2019 ALMMSN Necropsy Techniques Training, Dauphin Island, AL (Russell/Deming/Hieb/Staff/Volunteers)
- 2019 Veterinary training programs (Russell/Collins/ Deming)
- Marine Mammal Research Program Volunteer Training. Auburn Veterinary Extension Facility, Foley, AL
  - Necropsy Techniques Training for veterinary technician program. Dauphin Island Sea Lab, Dauphin Island, AL
- 2019 Fairhope Elementary School, Fairhope, AL "Dolphins in the Gulf: Surviving After an Oil Spill." (Russell)
- 2019 Fishing for Trash: West Pascagoula River Clean-up, Gautier, MS (Russell)
- 2019 NSF EPSCoR CPU2AL Science & Technology Open House, Gulf Coast Exploreum, Mobile, AL "Our Wastewater Footprint" (Thomason/Hieb)
- 2018-2019 Art Sea Lab, Dauphin Island, AL "Marine mammals" (Hieb/Russell/Collins/Deming)

- 2012-2019 School programs, “DISL’s Manatee Sighting Network” (Hieb/Aven)
  - Fairhope Elementary (2016-2019), Fairhope, AL
  - Baker High School (2015), Mobile, AL
  - Gulf Shores High School Earth Day Extravaganza (2015), Gulf Shores, AL
  - Murphy High School (2014-2015), Mobile, AL
  - Tuscaloosa County High School (2012)
- 2017 Dog River Resident Social presented by Hancock Bank, Mobile Yacht Club, Mobile, AL (Hieb)
- 2015-2017 Tacky Jack’s Hands on Habitat Series, Gulf Shores, AL (Hieb)
- 2016 Mobile Pridefest, Mobile, AL (Carmichael)
- 2016 Mobile Baykeeper’s The Big Float, Spanish Fort, AL (Hieb)
- 2016 Mobile Baykeeper’s Bay Bites Food Truck Festival, Mobile, AL (Hieb)
- 2016 Hurricane Run 5K and Fun Run, Dauphin Island, AL (Hieb/DaCosta)
- 2016 Alabama Marine Mammal Stranding Network Informational Workshop, Spanish Fort, AL
- 2015 Magnolia Springs Seafood Festival, Magnolia Springs, AL (Hieb)
- 2013 DISL’s MSN Volunteer Training, Spanish Fort, AL
- 2013 Orange Beach Festival of Art, Orange Beach, AL (Miller/Hieb)
- 2013 Alabama Water Watch, Water Monitoring Workshop, Mobile, AL (Aven)
- 2013 MSN Manatee tag assembly and approach training, Dauphin Island, AL
- 2011-2013 Maintain Gulf Estuarine Research Society Facebook page (>165 fans from 12 states and 4 countries)
- 2012 Dauphin Island Tourism Board, Back to Nature Weekend, AL (Aven)
- 2011 Sandhill Crane Festival, Gautier, MS
- 2010 Mobile Boat Show, Mobile Convention Center, Mobile, AL
- 2009, 2010 Dog Paddle, Dog River Clearwater Revival, Mobile, AL
- 2009 Bay Fest, Mobile, AL
- 2009 St. Luke’s Episcopal School, Fall Festival, Mobile, AL
- 2009 Environmental Studies Center open house, Mobile, AL
- 2009 Earth Day, Fairhope, AL
- 2008, 2009 Mobile Bay Kayak Fishing Association, Fishing Rodeo, Fiver Rivers Delta Complex, Spanish Fort, AL

**Workshops & Training sessions** (designed and/or led by Carmichael):

- 2022-present DISL Research Experiences for Undergraduates (REU) Program Mentor Training
  - *Program Review & Evaluation*
  - *DEI & Mentoring Underrepresented Students* (with Joel Billingsley, University of South Alabama Office of Diversity, Equity & Inclusion-2024;

NSF Advance-2023; Emma Yackso, VA Center for Inclusive Communities-2022)

- 2018-present DISL Research Experiences for Undergraduates (REU) Program Workshops, Science Communication “Giving an oral or poster presentation” and “Writing scientific papers & data display”; “Creating a competitive CV”; “All Hands Research Summaries” (2019-2025); “Mental Health and Self-care” (2022-2025)
- 2025 DISL REU Program, *REUnion* Panel, Dauphin Island, AL
- 2025 Veterinarian and Pathologist Panel, Marine Mammal Health course, DISL Summer Programs, Dauphin Island, AL
- 2023 Field Safety and Security in Support of Diversity, Equity, and Inclusion, Southeastern Association of Marine Laboratories (SAML) Annual meeting, Dauphin Island, AL
- 2021-2023 Ethics in Scientific Publishing, Research Integrity Workshop, University of South Alabama Department of Marine Sciences, Dauphin Island Sea Lab, AL
- 2018 End-user product unveiling: Our Wastewater Footprint, NOAA NERRS National Science Collaborative Stakeholder Workshop co-hosted with Grand Bay NERR, Moss Point, MS
- 2016 Communicating Science, USFWS, Fiver Rivers Delta Center, Spanish Fort, AL
- 2014 Grand Bay: Planning the future with an eye on the past, NOAA NERRS National Science Collaborative Stakeholder Workshop co-hosted with Grand Bay NERR, Moss Point, MS

**Participant in Workshops, Working Groups, & Training Sessions:**

- 2025 NOAA NMFS Human Interaction & Advanced Necropsy Training, Dauphin Island Sea Lab, AL
- 2025 National Academy of Sciences (NAS) Documentary Filmmaker Retreat, St. Pete Beach, FL
- 2024 Mental Health and Wellness Workshop Series, NOAA NMFS (virtual series)
- 2024 Resilience and Thriving in Marine Science Careers: Cultivating Well-Being for Your Career & Life, Lisa Sullivan Yoga, Dauphin Island, AL
- 2024 NSF GEO, Research Experiences for Undergraduates Mentor Workshop, Phoenix, AZ
- 2024 Excellence in Inclusion, University of South Alabama, Mobile, AL
- 2023 ADVANCEGeo Partnership: Improving our Work Climate: Bystander Intervention Training and Responding to Hostile Behaviors, University of South Alabama, Mobile, AL
- 2023 AI and ChatGPT in Higher Education Discussion, Susan D’Agostino, Technology Reporter, Inside Higher Ed, University of South Alabama
- 2023 Addressing Bias in the Merit Awards Process, Coastal and Estuarine Research Federation, virtual

- 2023 *The Chronicle's* Strategic Leadership Program, The Chronicle of Higher Education
- National Trends in Higher Education
  - Understanding the Higher Ed Business Model
  - Managing Conflict
  - Diversity and the Department Chair
  - The Chair's Role in Enrollment, Retention, and Student Success
- 2022-2023 Responsible Conduct of Research (RCR) Training Series, University of South Alabama, 3 per year minimum
- 2021-2023 Research Integrity Workshop, University of South Alabama Department of Marine Sciences, Dauphin Island Sea Lab, AL
- 2022 *Courageous Conversations*, University of South Alabama LGBTQ+ Ally Training
- 2021-2022 *Elements of an REU*, National Science Foundation, GEO REU workshop series
- 2021-2022 Responsible Conduct of Research (RCR) Training Series, University of South Alabama
- Research Misconduct, Questionable Research Practices
  - Security and Science
  - Mentor-mentee relationships
- 2021 GOMCON, Gulf of Mexico Conference, Virtual Preview
- 2021 Perdido and Pensacola Bays Fish and Wildlife Workshop, virtual
- 2021 Effects of Freshwater on Common Bottlenose Dolphin, NOAA virtual
- 2021 Mississippi Dolphin Research Workshop, Marine Mammal Commission
- 2020 West Indian manatee Species Range Project (SRP). U.S. Fish and Wildlife Service.
- 2019 *It Starts with a Conversation: Faculty Diversity and Inclusion Training*, DISL/ University of South Alabama, Mobile, AL
- 2018 CARMMA dolphin health assessments, Grand Isle, LA and Dauphin Island, AL
- 2018 The Alliance of Marine Mammal Parks and Aquariums (AMMPA)/Dolphin Quest workshop, "Opportunities to Enhance Your Research by Working with Zoos and Aquariums", Sarasota, FL
- 2018 Diversity and Inclusion training, University of South Alabama, Mobile, AL
- 2014, 2018 Safe Zone: LGBTQ Ally training (4 h), University of South Alabama, Mobile, AL
- 2018 Expert elicitation, Oyster Expert Panel, Dauphin Island Sea Lab, AL
- 2016, 2018 NSF GEO, Research Experiences for Undergraduates Mentor Workshop, Boulder, CO
- 2016 Red Knot Aquaculture Interactions Workshop, Wildwood Crest, NJ
- 2016 Conceptual Ecosystem Modeling workshop, NOAA Restore, St. Petersburg, FL
- 2015 Gulf of Mexico Marine Mammal Research and Monitoring Meeting, New Orleans, LA

- 2013 NRDA Dolphin Health Assessments, NOAA, Mississippi Sound, MS
- 2013 Dolphin Safety Workshop, NOAA/ADCNR, Gulf Shores, AL
- 2013 USGS Manatee Health Assessments, Crystal River, FL
- 2013 Coastal Wetlands Grant Program Workshop, USFWS, Five Rivers Delta Complex, Spanish Fort, AL
- 2012 Northern Gulf Institute (NGI) Annual Conference, Stennis, MS
- 2012 Third Alabama Nongame Wildlife Conference, Auburn, AL
- 2011-2013 Prescott Cetacean Stranding Workshop, FWC, Gulf Breeze, FL and Pascagoula, MS
- 2011 5<sup>th</sup> Annual International Sirenian Workshop, Tampa, FL
- 2011 Florida Fish & Wildlife Conservation Commission (FWC) Manatee Stranding and Necropsy Workshop, St. Petersburg, FL
- 2010 Coastal and Estuarine Research Federation (CERF) Biennial Conference Planning Meeting, Daytona, FL
- 2010 Coastal Habitats Coordinating Team Meeting, Mobile, AL
- 2009 U.S. Fish and Wildlife Service (USFWS), Manatee Stranding Workshop, LSU, Baton Rouge, LA
- 2008 Submerged Aquatic Vegetation (SAV) Workshop, Five Rivers Delta Complex, Spanish Fort, AL
- 2008 Marine Mammal Stranding Network, Partnership Training, NMFS, Biloxi, MS
- 2008 Ecological Effects of Sea Level Rise: Research and modeling needs, EPA/NOAA, Pensacola, FL
- 2008 Gulf of Mexico Research Planning Workshop, Biloxi, MS
- 2007 Northern Gulf Institute Conference (NGI), Biloxi, MS
- 2007 Building Capacity for Marine Mammal Conservation and Stranding Response in MS and AL, NMFS, Moss Pt., MS
- 2004 DIALOG VI, Dauphin Island Sea Lab, AL

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## **ADVISEES**

### **Current students:**

Maggie McGuire (PhD/ USA)

Sophia Corde (PhD/USA)

Kayla DaCosta (PhD/USA)

Anika Knight (MS/USA)

### **Current graduate committees:**

Maggie McGuire (PhD/ USA)

Joclyn Villegas (PhD, Lyn/USA)

Penny Demetriades (PhD, Kiel-Reese/USA)

Chelsea Comans (PhD, Tobin/UA)  
Sophia Corde (PhD/USA)  
Kayla DaCosta (PhD/USA)  
Anika Knight (MS/USA)

**Directed study students:**

Levette Tucker (University of South Alabama; spring 2025)  
Vanessa Neve (University of South Alabama; spring 2024)  
Evelyn Brackebush (University of South Alabama; spring 2024)  
Joseph Pavelites (University of South Alabama; spring 2022)  
Dakota Bilbrey (University of South Alabama; spring 2020)  
Tori McMahan (University of South Alabama/ Mitchell College of Business; spring 2019)  
Heather Lane (Auburn University; spring 2018)  
Chris Williams (University of South Alabama; summer 2017)  
Amber Simpson (University of South Alabama; summer 2016)  
Anna Hendrickson (University of South Alabama; summer 2015)  
Emily Baker (Jacksonville State University; summer 2013)  
Marie Barton (University of Alabama; fall 2013)  
Tyler Mason (University of South Alabama; summer 2012)  
John McFadyen (University of Alabama; summer 2011)  
Erik Brush (Auburn University, AL; summer 2010)  
Maury Estes (Alabama A&M; summer 2009)  
Heather Juedes (University of Alabama; summer 2008)  
Lauren Waters (Auburn University, AL; summer 2007)  
Isabella D'Ambra (University of South Alabama; fall 2007)

**Interns:**

Delaney Zimlich (fall 2025-present)  
Jennifer Latusek-Nabholz (Duke University, spring 2025-present)  
Halia Morris (Hampton University, summer 2025-present)  
Levette Tucker (University of South Alabama, summer 2024-fall 2025)  
Vanessa Neve (University of South Alabama, fall 2023-fall 2025)  
Gracie Chouinard (University of South Alabama, fall 2025)  
Lindsey Stallworth (University of South Alabama, fall 2025)  
Emma Rozema (University of South Alabama, fall 2025)  
Lottie Coker (University of South Alabama, fall 2025)  
Sophia Haines (University of Tampa, fall 2025)  
Gabrielle (Bella) Williams (University of North Alabama, summer 2025)  
Claire Calfee (University of Alabama at Birmingham, summer 2025)  
Camryn Griggs (Samford University, summer 2025)  
Sophia Sharp (University of Alabama at Birmingham, summer 2025)  
Sarah Farmer (University of South Alabama, summer 2025)  
Natalie HoltHunter Morris (Jacksonville State University, MS; spring 2025)

Cordelia Gillenwater (University of South Alabama, spring-summer 2025)  
Madison Thornhill (University of South Alabama, spring-summer 2025)  
Eleanor (Ella) Watts (Spring Hill College, spring 2024, fall 2024-spring 2025)  
Mallory Jessee (University of West Florida, spring-summer 2025)  
Mia Ratliff, Louisiana State University, fall 2024  
Karlie Brodzinski (Jacksonville State University, summer 2024)  
Juan (Sebastian) Penagos (Dalhousie University, spring 2024)  
Evelyn Brakebush (University of South Alabama, fall 2023-spring 2024)  
Ashleigh Bock (University of South Alabama, spring 2024)  
Devin Lindsay (Auburn University, fall 2023-spring 2024)  
Briley Rigsby (University of South Alabama, fall 2023)  
Ethan Armour (Hendrix College, summer 2023)  
Claire Marchant (Troy University, summer 2023)  
Blaitney Holcomb (University of Alabama at Birmingham, summer 2023)  
Eleanor Watts (Springhill College, summer 2023)  
Mary Ponti (Louisiana State University, spring-fall 2023)  
Kira Babiarz (Springhill College, fall 2022-spring 2023)  
Madison Thornhill (University of South Alabama, fall 2022-spring 2023)  
Caitlyn Freeman (Spring Hill College, fall 2022)-spring 2023)  
Sarah Rice (University of Alabama, summer 2022)  
Leah Townsead (University of South Alabama, summer-fall 2022)  
Phoebe Stewart (University of Alabama at Birmingham, summer 2022)  
Bailey Walkinshaw (University of West Florida, spring 2022)  
Chloe Ray (University of South Alabama, 2021)  
Emily Strickland (University of South Alabama, fall 2021-spring 2022)  
Maria Tran (University of South Alabama, fall 2021)  
Rebecca Well (University of South Alabama, fall 2021-spring 2022)  
Lillie Black (University of Alabama, summer 2021)  
Harrison Carrell (Auburn University, summer 2021)  
Sarah Thiesan (Wittenburg University, summer 2021)  
Erin Casellas (Florida Institute of Technology, spring 2021)  
Joe Hansen (University of North Carolina, Wilmington, spring 2021)  
Elizabeth Nasharr (University of Alabama, summer 2020-summer 2021)  
Maureen Goretti (North Carolina State, spring 2020)  
Pray Stott (Spring Hill College; fall 2017 - summer 2018; spring 2019-spring 2020)  
Andrea Mason (University of Arizona; summer 2019)  
Bailey Goodwin (University of North Alabama; summer 2018, summer 2019)  
Cayman Travis Gardner (University of North Alabama; summer 2019)  
Tori McMahan (University of South Alabama; spring 2019-spring 2020)  
Kaiya McGhaw (Auburn University; spring 2019)  
Stephanie Bulls (University of South Alabama; winter 2016 – spring 2019)  
Clara Zubrick (University of Mobile; summer/fall 2018; spring 2019)  
Dakota Bilbrey (University of South Alabama; summer 2018; spring 2019)

Matthew Harrison (Texas State University; summer/fall 2018)  
Deryn Hill (Southeast Louisiana University; summer 2015; summer 2018)  
Jesse Harris (University of South Alabama; summer 2018)  
Jorgine Gentry (University of South Alabama; summer 2018)  
Merri Collins (Ohio University; spring/summer 2018)  
Kim Peter (TAMU Galveston; spring/summer 2018)  
Matt Hodanbosi (Ohio State University/ TAMU Corpus Christi; spring 2017-summer 2018)  
Kassey Trahanas (Olivet Nazarene University; spring 2018)  
Grace Forster (University of South Alabama; fall 2017 – spring 2018)  
Ruma Chatterji (TAMU Corpus Christi; summer 2017)  
Catherine Reynolds (University of South Alabama; spring 2016 - summer 2017)  
Beatriz Tintore (University of Vic, Barcelona, Spain; spring 2017)  
Victoria Drumm (Brandeis University; winter 2016 – spring 2017)  
Chris Williams (University of South Alabama; winter 2016 – spring 2017)  
Neil Burglund (Tulane University; fall 2016)  
Audrey Palombo (University of Florida; summer/fall 2016; spring 2020)  
Jamie Thompson (Abilene Christian University; summer 2016)  
Anna Hendrickson (University of South Alabama; winter 2014; spring 2015; spring 2016)  
Kaitlyn Witlicki (University of Southern Mississippi; spring/summer 2016)  
Casey Fulford (Florida State University; summer 2014, fall 2015, spring 2016)  
Kristine Alford (University of South Alabama; fall 2015)  
Autumn Nitz (University of South Alabama; fall 2015)  
Ashley Frith (Brown University; summer/fall 2015)  
Rebecca Dudley (University of Sheffield, UK; summer/fall 2015)  
Yishen Li (University of Miami; summer/fall 2015)  
Jessica Kinsella (University of North Carolina, Wilmington; summer/fall 2015)  
Lauren Willis (University of Alabama; summer 2015)  
Diego Calderon-Arrieta (Rhodes College; summer 2015)  
Anika Knight (Medaille College; summer 2015)  
Joshua Millwood (University of West Alabama; summer 2014; summer 2015)  
Maren Stinson (Texas A&M University-Galveston; spring 2015)  
Alayna Lawson (Spring Hill College; winter 2014; spring 2015)  
Kristen Reints (University of South Alabama; winter 2015)  
Morgan Waites (University of South Alabama; summer/fall 2014/winter 2014; spring 2015)  
Ethan Cantin (University of South Alabama; summer/fall 2014)  
Hailey Boeck (University of North Alabama; summer 2014)  
Hannah Shirley (University of West Alabama; summer 2014)  
Adam Forkner (University of Alabama; summer 2014)  
Emily Parker (University of Alabama; summer 2014)  
Rachel Valencia (University of Mobile; summer 2014)  
James Landry (University of Alabama; spring/summer/fall 2014)  
Haley Nicholson (University of Miami; spring/summer 2014)  
Renee Edwards (University of Illinois-Urbana Champagne; capstone project fall 2013)

Jacob Hall (University of North Alabama; summer/fall 2013; spring/summer/fall 2014)  
Megann Santana (University of South Alabama; fall 2013)  
Amanda Ellenburg (University of South Alabama; summer/fall 2013)  
Holly Bell (University of Mobile, AL; summer/fall 2013; spring/summer/fall 2014)  
Caitlin Collins (Troy University, AL; summer 2013)  
Ariel Reed (University of North Alabama; summer 2013)  
Cara Whalen (University of South Alabama; summer 2013)  
Morgan Frank (University of South Alabama; summer 2013)  
Andrew Morin (Warren Wilson College, NC; winter 2012/spring 2013)  
Ben Nagel (Iowa State; winter 2012/spring 2013)  
Jessica Lajoie (University of Massachusetts-Amherst, MA; fall 2012)  
Kristin Marino (University of Vermont; winter 2012)  
Pavel Dimens (SUNY, NY; fall 2012; summer 2014)  
Margaret Gilroy (MS, Duke University, NC; summer 2012)  
Elizabeth Lauss (Florida Institute of Technology, FL; summer 2012)  
Thomas Bilbo (Denison University, OH; summer 2012)  
Emily Strauss (Spring Hill College, AL; summer 2010)  
Carolyn Kovacs (College of William & Mary, VA; summer 2009)  
Allen Aven (NGI Intern, University of Tennessee; summer 2008)

**REU students:**

Daniela Payán Arias (University of Puerto Rico Recinto Mayaguez Campus; summer 2025)  
KayLee Ridge (University of Evansville; summer 2024, Co-advised with Vendl)  
Levette Tucker (University of South Alabama, summer 2023, Co-advised with Cloyed/ Russell)  
Evan Marth (Athens State University; summer 2022, Cloyed primary mentor)  
Yasmin Hall (Auburn University; summer 2022, Bloodgood/ Kiel-Reese primary mentors)  
Kayhlin Nesbitt (Oakwood University; summer 2021, Bloodgood/ Kiel-Reese primary mentors)  
Che-Isha Johnson (Talladega College; summer 2021, Cloyed primary mentor)  
Ti-Ara Turner (Judson College; summer 2020)  
Ryenne Murray (Eckerd College; summer 2019)  
Hanae Togami (Haverford College; summer 2017)  
Angela Garelick (California State University, CA; summer 2016)  
Elizabeth Thompson (Harding University, AR; summer 2016)  
Sean Carter (Colorado College, CO; summer 2015)  
Amanda Jones (Rutgers University, NJ; summer 2011)  
Katie Interlichia (Vassar College, NY; summer 2010)  
Joshua Daskin (Brandeis University, MA; summer 2007)

**RAMP students:**

Denis Borrero (University of TX-San Antonio, FL; 2026)  
Taniya Johnson (East Carolina University, NC; 2025)

**Undergraduate Career Shadowing:**

Erin Webb (summer 2025)

Peterson (University of Chicago, IL; Spring 2014)

Cody J. Weinberger (University of Chicago, IL; spring 2013)

Steven Vickery (University of Chicago, IL; spring 2011)

**High school interns:**

Maddie Partain (Ezekiel Academy, AL; 2-day shadow, summer 2024)

Thomas Carmichael (Alabama School of Math and Science, AL; 2021-2024)

Sadie Snow (St. Catherine's Montessori School, Houston, TX; Spring 2020)

Sophie Davis (Davidson High School; fall 2016-fall 2017; county and regional science fair)

Nic Klinge (Daphne High School; summer 2013)

Emil Johnson (W. P. Davidson High School, AL; spring 2010)

Jacy Baggett (Murphy High School, AL; summer 2010)

Cameron Welch (Benjamin Russell High School, AL; summer 2007)

**Post-docs:**

Meaghan McCormick (PhD, Texas State University; 2025-present)

Thibaut Bouveroux (PhD, University Catholic of Louvain, Belgium; 2019-present)

Carl Cloyed (PhD, University of Louisville, KY; 2018-present)

Cat Vendl (DVM/PhD, Free University, Berlin, GER/UNSW Sydney, AUS; 2023-2025)

Jennifer Bloodgood (DVM/PhD, University of Georgia; 2020-2023)

Alissa Deming (DVM/PhD, University of Florida; 2018-2020)

Debra Moore (DVM, Tuskegee University, AL; summer/fall 2017)

LaTina Gambles (DVM, Tuskegee University, AL; Tufts University, MA; summer 2012)

Pat Prado (Co-advisor under Dr. K. Heck)

**Preceptorships:**

Charlotte Whitmer (DVM student Auburn University, summer 2025, Russell mentor)

Starla Clifton (DVM student Tuskegee University, spring 2025, Vendl primary mentor)

Kaila Mackie (DVM student Auburn University, summer 2024, Vendl primary mentor)

Reagan Mundy (DVM student Tufts University, summer 2022, Bloodgood primary mentor)

Laurel Siegrist (USCG Marine Industry Training Program, summer 2022)

Savannah Wall (DVM student UGA; spring 2022, Bloodgood primary mentor)

Jill Western (DVM student MSU; spring 2022, Bloodgood primary mentor)

**Technicians (engaged in research):**

Taniya Johnson (BS/East Carolina University, NC, 2025)

Madison Thornhill (BS/University of South Alabama, fall 2024)

Zoe Thomas (BS/MS/University of Miami, fall 2024)

Ella Watts (BS/Spring Hill College, 2024)

Brianna Janssen (MS/USA, 2025)

Maureen Goretti (BS/NC State University, 2018)

Mackenzie Russell (MS/UNC-Wilmington, 2015)  
Cristina Clark (BS/University of San Diego, CA, 2017)  
Merri Collins (MS/Ohio University, 2017)  
Noel Wingers (MS/Loma Linda University, ABD)  
Elizabeth Hieb (MS/University of South Alabama, 2012)  
Jessica Delo (MS/Samford University, AL, 2011)  
Ryan Crim (MS/Univ. of British Columbia, Vancouver, 2010)  
Courtney Miller (BS/USA, 2010)  
Nicole Taylor (BS/Memphis State University, 1993)  
Claire Pabody (MA/University of Alabama, 2008)

**Former students (DISL):**

Sara Azita Azadi (MCRM/ USA/ co-advised with Cat Vendl; 2024-2025)  
Ania Brown (PhD/USA; 2021-2025)  
Matthew Hodanbosi (PhD/USA; 2018-2025); 2023 Knauss Fellow  
Brianna Janssen (MCRM/ USA; 2023-2025)  
Akela Yuhl (MS/USA; 2022-2025)  
Joseph Hansen (MS/USA; 2021-2024); Gareth Nelson Award for Outstanding MS Student,  
Department of Marine and Environmental Sciences, USA; Council of Southern Graduate  
Schools Life Sciences MS thesis award nominee (pending)  
Emily Pepple (MCRM/ USA; 2021-2023)  
Joe Pavelites (MS Ecotox/USA; 2020-2023); Gareth Nelson Award for Outstanding MS Student  
Department of Marine and Environmental Sciences, USA  
Lauren Clance (MS/USA; 2019-2022; [https://jagworks.southalabama.edu/theses\\_diss/49/](https://jagworks.southalabama.edu/theses_diss/49/))  
Kim Peter (MS/USA; 2018-2020)  
Toni Thomason Groet (MCRM/ USA; 2018-2020)  
Ashley Frith (MS/USA; 2017-2020); Gareth Nelson Award for Outstanding MS Student,  
Department of Marine Sciences, University of South Alabama, Mobile, AL  
Julian Henseler (MS/USA, thesis review only, A. Stenson advisor; 2019)  
Haley Nicholson Gancel (PhD/USA; 2014-2020)  
Natalie Santini (MCRM/USA; 2016-2018)  
Jessica Nash (MS, co-advised with J. Jones/FDA and A. Ortmann/USA; 2013-2014, 2016-2018)  
Kim Romine (MS withdrew; 2017)  
Allen Aven (PhD/USA withdrew; 2017)  
Elizabeth Darrow Condon (PhD/USA; 2010-2015)  
Jessica Frank (MS/USA, co-advised with A. Robertson/USA; 2013-2015)  
Heather Patterson (PhD/USA; 2007-2014)  
Renee Edwards (MS capstone/University of Illinois-UC; 2013)  
D. Joseph Dalrymple (MS/USA; 2011-2013)  
Isabella D'Ambra (PhD, co-advised with M. Graham/USA; 2012)  
Peter Biancani (MS/USA; 2007-2010)

**Former student committees:**

Ania Brown (PhD/USA; 2021-2025)  
Matthew Hodanbosi (PhD/USA; 2018-2025)  
Akela Yuhl (MS/USA; 2022-2025)  
Joseph Hansen (MS/USA; 2021-2024)  
Joseph Pavelites (MS Ecotox/USA; 2020-2023)  
Lauren Clance (MS/USA; 2019-2022)  
Kim Peter (MS/USA; 2018-2020)  
Ashley Frith (MS/USA; 2017-2020)  
Haley Nicholson Gancel (PhD/USA; 2014-2020)  
Reid Nelson (PhD, S. Powers/USA; 2019)  
Sarah Bodenstein (MS, W. Walton/AU; 2019)  
Ashley McDonald (PhD, J. Cebrian/USA; ABD)  
Laura West (PhD, J. Cebrian/USA; ABD)  
Jessica Nash (MS, co-advised with J. Jones/FDA and A. Ortmann/USA; 2018)  
Lei Wang (PhD, A. Ortmann/USA, withdrew; 2018)  
Kimberly Romine (MS withdrew; 2017)  
Allen Aven (PhD/USA withdrew; 2017)  
Stephanie Grodeska (MS, co-advisee with W. Walton/AU; 2014-2016)  
MyeongHee Max Han (PhD, K. Park/USA; 2013-2015)  
Elizabeth Darrow Condon (PhD/USA; 2010-2015)  
Jessica Frank (MS/USA, co-advised with A. Robertson/USA; 2013-2015)  
Maury Estes (PhD, X. Chen/Alabama A&M; 2011-2015)  
Whitney Bretana (MA, W. Bennett/University of West Florida; 2012-2015)  
Lindsey Kramer (MS, S. Powers & F. Hernandez/USA; 2014)  
Heather Patterson (PhD/USA; 2007-2014)  
Renee Edwards (MS/University of Illinois-UC; 2013)  
D. Joseph Dalrymple (MS/USA; 2011-2013))  
Justin Liefer (PhD, H. MacIntyre/USA; 2009-2012)  
Isabella D'Ambra (PhD, M. Graham/USA; 2009-2012)  
Jestina Hansen (PhD, F. Andrus/UA; 2010-2011)  
Kelsie Kronmiller (UG/USA, A. Boettcher/USA; 2009-2011)  
Peter Biancani (MS/USA; 2007-2010)  
Marcus Drymon (PhD, S. Powers/USA; 2007-2010)  
Lucie Novoveska (PhD, H. MacIntyre/USA; 2007-2009)

**Past mentorship:**

2004-2006     University of Maine-Machias: 9 undergraduate independent research projects, 6 work-study students, 3 undergraduate summer interns, and attended Career Day at Fort O'Brien middle school.

1999-2004 Boston University: 2 high school interns, 6 undergraduate and 3 master students, coached and judged middle and high school science fairs, and gave invited presentations for Woods Hole Science & Technology Education Partnership.