

EMILY A. KANE

Assistant Professor
University of Louisiana at Lafayette
PO Box 43602
Lafayette, LA 70504

Office: (337) 482-5246
emily.kane@louisiana.edu
<http://www.thekanelab.com/>
Twitter: [@KaneLabUL](#)

PROFESSIONAL APPOINTMENTS

08/2020 – current	Assistant Professor , Department of Biology, University of Louisiana at Lafayette
01/2017 – 07/2020	Assistant Professor , Department of Biology, Georgia Southern University
09/2014 – 12/2016	NSF Postdoctoral Fellow , Department of Biology, Colorado State University, Mentor: Cameron Ghalambor

EDUCATION

2011 – 2014	Ph.D. , Evolution, Ecology, and Organismal Biology, University of California, Riverside, Advisor: Tim Higham
2009 – 2011	Biological Sciences, Clemson University, Advisor: Tim Higham (moved with advisor in 2011)
2006 – 2009	M.S. , Wildlife and Fisheries Sciences, Texas A&M University, Advisor: Christopher D. Marshall
2002 – 2006	B.S. , Marine Science with Biology concentration, Southampton College of Long Island University

AWARDS

2020	Nominated (by 2 students), GSU Kathryn Grube Faculty and Staff Unsung Hero Award
2020	Nominated (by a colleague), GSU Faculty Development Committee award for excellence in contributions to teaching

GRANTS AND FELLOWSHIPS

Extramural, awarded

2020 – 2021	Steering committee, NSF Research Coordination Network, Undergraduate Biology Education Incubator proposal . PI: Murphy S (U of Denver), Co-PI: Tinghitella R (U of Denver)
2019 – 2020	American Association of University Women Research Publication Grant : Trinidadian guppies as a model for understanding the evolution of complex, integrated organisms. \$15,800 PI: Kane EA
2018 – 2019	Contributor, NSF Conference Grant (IOS-1832822) : Multifunctional structures and multistructural functions: Functional coupling and integration in the evolution of biomechanical systems. \$14,904 to fund participation by speakers in a symposium held during the Society for

- Integrative and Comparative Biology annual meeting in January 2019, PI: Hernandez LP.
- 2018 – 2019 **Society for Integrative and Comparative Biology**, support for symposium received from 3 divisions, The Crustacean Society, and The American Microscopical Society. **\$2,310**. PI: Farina SC, Kane EA, and Hernandez LP.
- 2014 – 2016 **National Science Foundation, Postdoctoral Fellowship in Biology, Broadening participation (DBI-1401560)**: Evolution of complex phenotypes: The role of integration in adaptation along environmental gradients. **\$207,000** for stipend, outreach, and research. PI: Kane EA.

Extramural, not awarded or pending

- 2019 **Whitehall Foundation**, Integrated sensory-motor functions during fish prey capture. \$225,000 over 3 years. PI Kane EA (letter of intent submitted, not selected)
- 2018 Contributor and Co-PI, **USDA Women and Minorities in Science: Planting the STEM: Aquaponics and organic gardening in schools to improve WAM participation**. \$99,847.90 PI: Sendall K (GSU, Biology), Co-PIs: Kane EA, Legee L (GSU Biology), Huffling L (GSU College of Education), Riggs AJ (GSU Waters College of Health Professions)
- 2017 **Mindlin Foundation**: Science Communication Prize. \$5,000 PI: Kane EA
- 2017 **Mindlin Foundation**: I tweet 1% grant to develop a booth for the Statesboro Farmer's Market based on activities in the guppy kit program. Invited for full proposal. \$4,000 PI: Kane EA.

Intramural, awarded

- Spring 2020 **GSU Office of Research**: Undergraduate Student Research Assistant (x2). **\$3,600** to support student researchers to work on a fish swimming project and manage our fish husbandry duties. PI: Kane EA
- 2019 – 2020 **GSU Service Award**: Travel to the Society for Integrative and Comparative Biology annual meeting. **\$1,143.84** PI: Kane EA
- 2019 – 2020 **GSU College of Science and Mathematics Summer Research Support**. **\$6,200** for summer salary and salary for 2 students. Includes professional development and monetary support.
- 2018 – 2020 **GSU Student Sustainability Fee Grant**: Dating, dining, and ducks: Monitoring the recovery of campus lakes after dredging. **\$49,000** for 2 years of graduate student stipends and supplies. PIs: Cohen HE^{GR}, Kane EA, and Cox CL.

PUBLICATIONS

Peer reviewed

- 11 **KANE EA** and Higham TE. 2020. Kinematic integration during prey capture varies among individuals but not ecological contexts in bluegill sunfish, *Lepomis macrochirus*

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- (Perciformes: Centrarchidae). *Biological Journal of the Linnean Society*. DOI: 10.1093/biolinnean/blaa026
- 10 **KANE EA**, Cohen HE^{GR}, Hicks WR^{UG}, Mahoney ER^{UG}, and Marshall CD. 2019. Beyond suction-feeding fishes: Identifying new approaches to performance integration during prey capture in aquatic vertebrates. *Integrative and Comparative Biology* 59: 456-472. DOI: 10.1093/icb/icz094
 - 9 **KANE EA**, Roeder MM^{UG}, DeRue ML^{UG}, and Ghalambor CK. 2019. Integration between swimming and feeding evolves repeatedly in Trinidadian guppies and aligns with suction-feeding fishes. *Journal of Experimental Biology* 222: jeb190165. DOI: 10.1242/jeb.190165
 - 8 **KANE EA**, Broder ED, Warnock A, Butler C, Judish AL, Angeloni LM, and Ghalambor CK. 2018. Small fish, big questions: inquiry kits for teaching evolution. *American Biology Teacher* 80: 124-131. DOI: 10.1525/abt.2018.80.2.124
 - 7 **KANE EA** and Higham TE. 2015. Complex systems are more than the sum of their parts: Using integration to understand performance, biomechanics, and diversity. *Integrative and Comparative Biology* 55: 146-165. DOI: 10.1093/icb/icv033
 - 6 **KANE EA** and Higham TE. 2014. Modelled three-dimensional suction accuracy predicts prey capture success in three species of centrarchid fishes. *Journal of the Royal Society Interface* 11: 20140223. DOI: 10.1098/rsif.2014.0223
 - 5 Marshall CD, Guzman A, Narazaki T, Sato K, **KANE EA** and Sterba-Boatwright BD. 2012. The ontogeny of bite performance in loggerhead sea turtles (*Caretta caretta*): implications for foraging ecology in neritic and benthic habitats. *Journal of Experimental Biology* 215: 4166-4174. DOI: 10.1242/jeb.074385
 - 4 **KANE EA** and Higham TE. 2012. Life in the flow lane: differences in pectoral fin morphology suggest transitions in station-holding demand across species of marine sculpin. *Zoology* 115: 223-232. DOI: 10.1016/j.zool.2012.03.002
 - 3 **KANE EA** and Higham TE. 2011. The integration of locomotion and prey capture in cottid fishes: functional disparity despite morphological similarity. *Journal of Experimental Biology* 214: 1092-1099. DOI: 10.1242/jeb.052068
 - 2 **KANE EA** and Marshall CD. 2009. Comparative feeding kinematics and performance of odontocetes: belugas, Pacific white-sided dolphins, and long-finned pilot whales. *Journal of Experimental Biology* 212: 3939-3950. DOI: 10.1242/jeb.034686
 - 1 **KANE EA**, Olson P, and Gerrodette T. 2008. The commensal barnacle *Xenobalanus globicipitis* on cetaceans in the eastern tropical Pacific. *Fishery Bulletin* 106 (4): 395-404.

Other published works

- 4 Montuelle SJ and **KANE EA**. 2019. Food capture in Vertebrates: a complex integrative performance of the cranial and postcranial systems. In *Feeding in Vertebrates* (ed. V. Bels). Springer, Chapter 4. DOI 978-3-030-13739-7_4
- 3 Farina SC, **KANE EA**, and Hernandez LP. 2019. Multifunctional structures and multistructural functions: Integration in the evolution of biomechanical systems. *Integrative and Comparative Biology* 59 (2): 338-345. (non-peer-reviewed introduction to the symposium papers)

- 2 Broder ED and **KANE EA**. 2017. Teaching evolution using live animals and inquiry-based, self-guided kits. In *Evolution and education in the American South: culture, politics, and resources in and around Alabama* (eds. C. D. Lynne, A. Glaze, L. Reed, W. Evans). Palgrave Macmillan: New York, Chapter 11, p. 191-211.
- 1 **KANE EA**, Olson P, and Gerrodette T. 2006. The commensal barnacle *Xenobalanus globicipitis* Steenstrup, 1851 (Crustacea: Cirripedia) and its relationship to cetaceans of the eastern tropical Pacific. *NOAA/NMFS Administrative Report LJ-06-03*: 47 pp.

In preparation

- 1 Cohen H^{GR} and **KANE EA**. In review. When expectations are not met: A lack of local divergence in biting kinematics in female Trinidadian guppies. Rejected from *Evolutionary Ecology* 02/10/2020, re-submitted to *Zoology* 07/29/2020.

PRESENTATIONS

Invited presentations and seminars

- 2020 **KANE EA**. Fish that suck, suck at swimming: Insights from studying integrated movements during prey capture in fishes. Kennesaw State University Department of Ecology, Evolution & Organismal Biology invited seminar, Kennesaw, GA.
- 2019 **KANE EA**, Cohen HE^{GR}, and Marshall CD. Beyond suction-feeding fishes: diverse strategies for integrating functional systems during prey capture in vertebrates. Invited symposium, Society for Integrative and Comparative Biology. Tampa, FL.
- 2018 **KANE EA**. Small fish, big questions: What tiny, boring fish tell us about how animals work. Stanford University, Hopkins marine lab invited seminar, Monterey, CA.
- 2018 **KANE EA**. Coordination is key, or is it? What a tiny, boring fish is telling us about how animals are built. University of South Florida Department of Integrative Biology Seminar, Tampa, FL.
- 2015 **KANE EA** and Higham TE. Complexity and integration in biomechanics: Using prey capture in fishes to explore a novel approach for understanding organismal performance. Invited symposium, Society for Integrative and Comparative Biology. West Palm Beach, FL.

Contributed oral presentations (as a tenure-track faculty)

- 2021 Marshall CA, Zeller KR, **KANE EA**, Vincent J, Angeloni LM, Ghalambor CK. Salinity performance curves for escape responses in guppies shape distributional patterns of closely-related species along a salinity gradient. Society for Integrative and Comparative Biology. Virtual meeting.
- 2020 **KANE EA**. Is it heritable? Assessing kinematic integration in wild and lab-reared Trinidadian guppies. Evolution. Cleveland, OH [CANCELLED due to COVID-19].
- 2020 Cohen HE^{GR} and **KANE EA**. When the Expected Doesn't Happen: A Lack of Local Adaptation in Trinidadian Guppies. Society for Integrative and Comparative Biology. Austin, TX.

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- 2020 **KANE EA** and Higham TE. Apparent modulation of integration with prey type in bluegill is driven by individual differences in performance and its integration. Society for Integrative and Comparative Biology. Austin, TX.
- 2018 **KANE EA**. Integrating research and teaching: Insights from designing a new course in biomechanics. Society for Integrative and Comparative Biology regional meeting. Clemson, SC.
- 2018 **KANE EA** and Ghalambor CK. An ecological specialization gradient does not lead to performance specialization in suction-feeding guppies. Society for Integrative and Comparative Biology. San Francisco, CA.
- 2016 Broder ED, Angeloni LM, **KANE EA**, and Ghalambor CK. Evolution education in the U.S. benefits from an authentic approach. Animal Behavior Society. Columbia, MO.
- 2016 **KANE EA** and Ghalambor CK. Phenotypic integration of feeding and locomotor performance across divergent locally adapted populations of Trinidadian guppies. Evolution. Austin, TX.

Contributed poster presentations (as a tenure-track faculty)

- 2021 Smith K^{UG}, Evans K, **KANE EA**. Examining the potential for local adaptation in patterns of morphological integration in Trinidadian guppies. Society for Integrative and Comparative Biology. Virtual meeting.
- 2021 Khoriaty M^{UG}, **KANE EA**. Jaw morphology in *Poecilia reticulata* does not differ in high- and low- predation environments. Society for Integrative and Comparative Biology. Virtual meeting.
- 2020 Capilitan ZA^{UG} and **KANE EA**. Modulation of kinematics and integration of Trinidadian guppies capturing functionally similar prey. Society for Freshwater Science Summer of Science virtual conference.
- 2020 **KANE EA**. On designing and implementing a new course as a new professor. Society for Integrative and Comparative Biology. Austin, TX.
- 2019 Cohen HE^{GR} and **KANE EA**. Damaged goods: Do injuries affect swimming performance during prey capture in bluegill? Society for Integrative and Comparative Biology. Tampa, FL.
- 2019 Allred L^{UG}, **KANE EA**, and Oufiero CE. Comparison of swimming energetics between damaged and healthy Bluegill sunfish (*Lepomis macrochirus*). Society for Integrative and Comparative Biology. Tampa, FL.
- 2019 Phillips HA^{UG} and **KANE EA**. Do Generalists Specialize? Potential for Individual Variation in Trinidadian Guppy Feeding Kinematics. Society for Integrative and Comparative Biology. Tampa, FL.
- 2018 Cohen HE^{GR} and **KANE EA**. The role of local adaptation on biting performance in Trinidadian guppies. Society for Integrative and Comparative Biology. San Francisco, CA.
- 2018 Young EB^{UG} and **KANE EA**. Heritability of morphological traits across divergent environments in guppies (*Poecilia reticulata*). Society for Integrative and Comparative Biology. San Francisco, CA.

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- 2017 **KANE EA**, Roeder MM^{UG}, and DeRue MD^{UG}. Swimming while feeding in fishes: What do guppies tell us about the roles of specialization and local adaptation? Society for Integrative and Comparative Biology, New Orleans, LA.
- 2016 **KANE EA**, Broder ED, Warnock AC, Butler CM, Judish AL, Angeloni LM, and Ghalambor CK. Using self-guided “guppy kits” to teach adaptation and evolution using authentic science. Evolution, Austin, TX.
- 2016 **KANE EA**. The role of integration in survival and adaptation of predators. Gordon Research Conference: New Frontiers in Understanding Predator-Prey Interactions in a Human-Altered World. Ventura, CA.
- 2016 Klee TJ^{UG} and **KANE EA**. Comparing capture success of native and invasive cichlids. Colorado State University Front Range Student Ecology Symposium, Fort Collins, CO. **Won first place in undergraduate posters.**
- 2016 **KANE EA**, Broder ED, Warnock AC, Butler CM, Judish AL, Angeloni LM, and Ghalambor CK. Using self-guided “guppy kits” to teach adaptation and evolution using authentic science. Society for Integrative and Comparative Biology, Portland, OR.

TEACHING

Instructor of record at GSU

Lecture	BIOL 1130 General Biology , large non-majors course, 2 semesters
Lecture	BIOL 3131 Physiology , sophomore-level required course, 4 semesters
Lecture	BIOL 4532 Evolution , upper level elective, 3 semesters
Lecture and Lab	BIOL 5241 Comparative Vertebrate Anatomy , upper level elective, 1 semester
Lecture and Lab	BIOL 5099/G Biomechanics , new upper level elective course, 2 semesters
Grad seminar	BIOL 7610 Communicating science to the public , 1 semester

Instructor of record at ULL

Lecture and Lab	BIO 325 General Physiology , revised upper level elective course with virtual lab, 1 semester
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MENTORED RESEARCH STUDENTS

Graduate students

2020 – current	PhD committee	Andrew Buder , Advisor Mark Genung, ULL
2019 – 2020	MS advisor	Anthony Sample , GSU, switched advisors rather than transferring to ULL
2018 – 2018	MS advisor	Rachel Livengood , GSU, left the program
2017 – current	PhD committee	Kassandra Ford , Advisor James Albert, ULL
2017 – current	MS committee	Garret Strickland , Advisor Jamie Roberts, GSU
2017 – 2019	MS advisor	Hannah Cohen , GSU, The role of local adaptation on biting performance in guppies.
2017 – 2018	MS committee	Chase Kinsey , Advisor Lance McBrayer, GSU

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Undergraduate students in organized programs

2020 – current	Melody Khoriaty , Bowdoin College; Friday Harbor Laboratory Blinks/BEACON NSF Research Experiences for Undergraduates, Using CT-scans to quantify guppy jaw morphology
2020 – 2020	Carolyn (Callie) Falciglia , GSU; Incorporation of Freshmen in Research for Early Experience (IFREE) program, Feeding biomechanics in sunfish
2019 – current	Zach Capilitan , Eckerd College; GSU Institute for Coastal Plain Sciences NSF Research Experiences for Undergraduates, Modulation of kinematics and integration in guppies
2017 – 2020	Tinashe Chitoyo , GSU; McNair Scholars Program, Does cranial morphology differ among locally adapted populations of guppies?
2017 – 2019	Lydia Bonnell , GSU, University Honors Program thesis advisor, Do guppies differ in predator accuracy between divergent locally adapted populations?
2014 – 2016	Delaney Laughlin , CSU, University Honors Program thesis advisor; The creation of an interactive early childhood curriculum for the Denver Zoo: the use of Next Generation Science Standards in informal education
2014 – 2015	Dawnetta McGowan , CSU, University Honors Program thesis committee member; The evolution of toad ears: comparing eared vs. earless toads

Undergraduate researchers and technicians

2019 – current	Kristen Smith ; Feeding kinematics in lab born guppies (supported by AAUW research publication grant)
2019 – 2020	Dixie Armstrong ; Feeding biomechanics in sunfish, mentored C Falciglia in IFREE program
2019 – 2020	Nick McKinley ; Toad jumping biomechanics (aligned with Biomechanics course lab)
2019 – 2019	Victoria (Tori) Martin ; Installing and using DeepLabCut, a machine learning technique for automated video analysis
2018 – current	William Ray ; Assisted with pond monitoring project, mentored by MS student H Cohen on bluegill fin damage project
2018 – current	Sofia Perez ; Feeding kinematics in lab born guppies (supported by AAUW research publication grant)
2018 – 2019	Hailey Phillips ; Individual variation in guppy feeding kinematics
2017 – 2020	William Hicks ; Generate 3D printable models of guppies and predators, guppy maternity analysis, amphibious prey capture in a mudskipper
2017 – 2019	Ashley Williamson ; Guppy maternity analysis

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2017 – 2019	Lacy Allred ; Metabolic rate and swimming performance of bluegill with healthy and damaged fins
2017 – 2018	Elizabeth Young ; Heritability of body shape in guppies
2017 – 2018	Emily Mahoney ; Amphibious prey capture in a mudskipper
2015 – 2016	McKenna DeRue ; Differences in integration between locally adapted populations of guppies
2015 – 2016	Megan Roeder ; Differences in integration between locally adapted populations of guppies
2015 – 2016	Travis Klee ; Prey capture in native and invasive cichlids in Trinidad

PROFESSIONAL AND COMMUNITY SERVICE

Ongoing	Reviewer for <i>Royal Society Open Science</i> , <i>Functional Ecology</i> , <i>American Naturalist</i> , <i>Journal of Experimental Biology</i> , <i>Ecology and Evolution</i> , <i>Journal of Morphology</i> , <i>Biology Letters</i>
2017 – 2020	Community and teaching-related outreach <ul style="list-style-type: none"> • Guest speaker, 2 undergraduate and 1 graduate courses for instructor M Knope, University of Hawaii at Hilo (2020) • Establish guppy kit program and use at community outreach events (2017 – 2020) • Contribute to and review instructional materials, Smithsonian Science Education Center (contact Jean Flanagan) (2018) • Compose a video in response to a middle school teacher's solicitation to explain why my science is awesome (2017). The video is hosted on Youtube. I also live-tweeted with the class to answer their questions the day they watched my video. • Hosted a booth at Statesboro First Fridays (2017)
2019 – 2020	Mentor, National Science Foundation Research Experiences for Undergraduates <ul style="list-style-type: none"> • Friday Harbor Laboratory Blinks/BEACON REU (2020) • GSU Institute for Coastal Plain Sciences REU (2019)
2019 – 2020	College of Science and Mathematics, GSU <ul style="list-style-type: none"> • Ambassador for the College Diversity and Inclusion Collaborative • McNair Scholar program and REU Site faculty mentor, led workshop on preparing oral presentations
2017 – current	Society for Integrative and Comparative Biology <ul style="list-style-type: none"> • Elected secretary for the Division of Comparative Biomechanics (serving 2020-2022) • Outreach Associate for the journal <i>Integrative Organismal Biology</i> (serving 2018 – current), 3 blog posts written, 2 blog posts co-written with W. Ray (undergraduate) • Judge, best student talks and posters, Division of Comparative Biomechanics (2020)

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- Session chair at annual meeting (2020)
 - Ask-an-expert booth, Practical skills & support for new & soon-to-be faculty, Division of Phylogenetic and Comparative Biology (2020)
 - Co-organize a symposium at the annual Society for Integrative and Comparative Biology meeting in Tampa, FL (2019): Multifunctional structures and multistructural functions: Functional coupling and integration in the evolution of biomechanical systems.
- 2017 – 2020
- GSU Institute for Interdisciplinary STEM education (i²STEMe)
- Activity leader, Science-to-go event at Dahlonga Science Festival; Dahlonga, GA (2020)
 - Teacher professional development workshop on coastal cultural and natural history; Ossabaw Island, GA [cancelled due to COVID]
 - Activity leader, STEM night at 2 local elementary schools; Statesboro, GA (2020)
 - Activity leader, GA Department of Natural Resources CoastFest (2019)
 - Activity leader, STEM Field Experience (2018 – 2019)
 - Activity leader, GSU STEMfest (2018 – 2019)
- 2017 – 2020
- Department of Biology, GSU
- Departmental Committees: Scholarship committee, Public Relations and Marketing, Undergraduate Research Symposium Diversity and Inclusion
 - Lead discussion of one of my recently published papers with Tri-Beta (2019)
 - Coordinator, GSU Natural History and Collections Club BioBlitz (2018)
 - Panelist for Research Night event hosted by undergraduate students from Sigma Xi and Tri-Beta (2018)
 - Guest speaker for Honors Biology course and GSU chapter of Tri-Beta (2017 – 2018)
 - Host 3 seminar speakers (2017 – 2019)
 - Lead a graduate student workshop on using Twitter (2017)
- 2017 – 2018
- Society for the Study of Evolution
- New Faculty Profile highlighted (2018)
 - Judge for Hamilton Awards for best student presentations (2017)
 - Diversity in Science lunch participant (2017)
 - Volunteered to be matched with students to discuss career paths over lunch

PROFESSIONAL MEMBERSHIPS

2016 – current	Society for the Study of Evolution
2007 – current	Sigma Xi, The Scientific Research Society
2006 – current	Society for Integrative and Comparative Biology
2018 – 2019	National Association of Biology Teachers
2015 – 2017	Society for Experimental Biology
2005 – 2008	Society for Marine Mammalogy