Luke M. Bower

Assistant Unit Leader, USGS South Carolina Cooperative Fish & Wildlife Research Unit
Department of Forestry and Environmental Conservation
Lehotsky Hall 234, Clemson, SC, 29634
Phone: (864) 656 4141. Email: lmbower@clemson.edu

Education

August 2013-May 2019 Texas A&M University College Station, TX
PhD Wildlife and Fisheries Sciences GPA 4.0/4.0

August 2011- August 2013 Southeastern Louisiana University Hammond, LA
MS Biology GPA 4.0/4.0

September 2006- May 2010 Erskine College Due West, SC
B.S. Biology GPA: 3.4/4.0

Publications in progress

Grady, J., Johansen, R. B., & **Bower**, L. M. (2021). Drivers of scale shape variation in Etheostomatinae Darters. In progress.

Bower, L. M., Peoples, B. K., Eddy, M. C., Scott, M. C. (2021). Change in fish assemblage structure along hydrologic gradients. In progress.

Bower, L. M., Stoczynski, L., Patrick, C. J., Brown, B. L., & Peoples, B. K. (2021). The Influence of Functional Diversity on β-diversity: A Partitioning Story. *Oikos*. In review.

Bower, L. M., Peoples, B. K., Eddy, M. C., Scott, M. C. (2021). Quantifying Flow–Ecology Relationships across flow regime class and ecoregions in South Carolina. Total Science of the Environment. In review.

Eddy, M. C., Lord, B., Perrot, D., **Bower**. L. M., Peoples, B. K. (2021) Distributed Hydrologic Model Use in Statewide Ecological Flow Development. *Ecohydrology*. In review.

Published Research

Bower, L. M., Saenz, D. E., & Winemiller, K. O. (2021). Wide Spread Convergent in Stream Fishes. *Biological Journal of the Linnean Society*. Accepted 2021.

Bower, L. M., & Winemiller, K. O. (2019). Fish assemblage convergence along stream environmental gradients: an intercontinental analysis. *Ecography*, 42(10), 1691-1702.

Bower, L. M., & Winemiller, K. O. (2019). Intercontinental trends in functional and phylogenetic structure of stream fish assemblages. *Ecology and Evolution*, 9(24), 13862-13876.

Bower, L. M., Andrade, M. C., Arantes, C. C., Bokhutlo, T., Cunha, E. R., Keppeler, F. W., López-Delgado, E. O., Quintana, Y., Saenz, D. E., Mayes, K. B., Roberston, C. R., Winemiller, K. O., (2019). Effects of hydrology on fish diversity and assemblage structure in a Texan coastal plains river. *Transactions of the American Fisheries Society*. 148(1).

Luciano F. A. Montag, Kirk O. Winemiller, Friedrich W. Keppeler, Híngara Leão, Naraiana L. Benone, Naiara R. Torres, Bruno S. Prudente, Tiago O. Begot, Luke M. **Bower**, David E. Saenz, Edwin O. Lopez-Delgado, Yasmin Q. Morales, David J. Hoeinghaus, & Leandro Juen. (2018). Land cover change and stream fish assemblages in the lower Amazon: relationships with riparian and instream habitat. *Ecology of Freshwater Fish.* Accepted.

Bower, L. M., Jawad, L., Gnohossou, P., & Tossou, A. G. (2018). Intraspecific Morphological Divergence in two Cichlid Species from Benin. *African Journal of Aquatic Science*. 43(4).

Peterson, C. C., Keppeler, F. W., Saenz, D. E., **Bower**, L. M., & Winemiller, K. O. (2017). Seasonal variation in fish trophic networks in two clear-water streams in the Central Llanos region, Venezuela. *Neotropical Ichthyology*, 15(2).

Bower, L. M., & Piller, K. R. (2015). Shaping up: a geometric morphometric approach to assemblage ecomorphology. *Journal of Fish Biology*, *87*(3), 691-714.

Winemiller, K. O., Fitzgerald, D. B., **Bower**, L. M., & Pianka, E. R. (2015). Functional traits, convergent evolution, and periodic tables of niches. *Ecology Letters*, *18*(8), 737-751.

Foster, K., **Bower**, L., & Piller, K. (2015). Getting in shape: habitat-based morphological divergence for two sympatric fishes. *Biological Journal of the Linnean Society*, *114*(1), 152-162.

Awards, Fellowships, and Grants Received

- **South Carolina Water Resources Center.** Quantifying the effect of instream flow on larval fish abundance in the Edisto River Basin (originating agency: United States Geological Survey), 2020-2021, $23,449.
- **The Nature Conservancy**, Using Biological Criteria to Develop Water Extraction Standards for Maintaining Ecosystem Services of South Carolina Streams. 2020-2021, $77,000.
- **Wildlife and Fisheries Sciences Graduate Student Scholarship Award** (Texas A&M University; 2018; $391.31)
- **Tom Slick Fellow Professional Development Grant** (Texas A&M University; 2018; $850)
- **Fisheries Student of the year** (American Fisheries Society, 2018)
- **Tom Slick Fellow** (Texas A&M University; 2018; $32,696)
- **National Science Foundation (NSF) Doctoral Dissertation Improvement Grant.** Global Patterns of Fish Functional Diversity and Trait Convergence along Species Richness and Environmental Gradients, 2016, $15,192
- **Student travel grant** (American Society of Ichthyology and Herpetology; 2014; $300)
- **Diversity Fellowship** (Texas A&M University, 2013; $103,800)
- **Excellence Fellowship** (Texas A&M University, 2013; $5,000)
- **Lechner Graduate Grant** (Texas A&M University, (2013; $5,000)
- **South Carolina LIFE Scholarship** 2006
- **Towers Scholarship** (Erskine College)
- **Dean's list** (Erskine College)
- **Eagle Scout** (Boy Scouts of America)
- **Vigil Honor** (Boy Scouts of America)

- **Tri-Beta Award for Service and Achievement** (Erskine College)

Teaching experience

• Fall 2020	Ichthyology (WFB 4770, 4771)	Clemson University
• Fall 2020	Creative Inquiry (FNR 4700)	Clemson University
• Spring 2019	Teaching assistant (BIO 107)	Texas A&M University
• Fall 2018	Teaching assistant (BIO 107)	Texas A&M University
• Fall 2017	Lectured for WFSC 448	Texas A&M University
• Spring 2017	Teaching assistant (RENR 215)	Texas A&M University
• Spring 2016	Teaching assistant (RENR 215)	Texas A&M University
• Spring 2014-Fall 2015	Teaching assistant (RENR 215)	Texas A&M University
• August 2011-2013	Teaching assistant (BIO 101-102)	Southeastern Louisiana University

Relevant Work Experience

- August 2021-present — Assistant unit leader for South Carolina Cooperative Fish and Wildlife Research Unit — Clemson University
- June 2019-June 2021 — Postdoctoral research — Clemson University

  I am currently a Postdoctoral researcher at Clemson University helping inform environmental flow standards for the state of South Carolina.

- Spring 2019 — Teaching assistant — Texas A&M University

  I taught Zoology Lab for Texas A&M University

- Fall 2018 — Teaching assistant — Texas A&M University

  I taught Zoology Lab for Texas A&M University

- Spring 2017 — Teaching assistant — Texas A&M University

  I taught Fundamentals of Ecology Lab for Texas A&M University

- Spring 2016 — Research assistant — Texas A&M University

  I led a two-year project studying the effects of hydrology on fish diversity, populations, and community structure in a Texas coastal plains river.

- Spring 2014-Fall 2015 — Teaching assistant — Texas A&M University

  I taught Fundamentals of Ecology Lab for Texas A&M University

- August 2012-2013 — Collections Manager — Southeastern Louisiana University

  I oversaw the vertebrate collections at Southeastern Louisiana University

- August 2011-2012 — Teaching assistant — Southeastern Louisiana University

  I taught introduction level biology labs 109. Laboratory for Introduction to Biological Sciences I and Laboratory for Introduction to Biological Sciences II

- January 2011-July 2011 — Volunteer Naturalist — San Luis, Costa Rica; UGA campus

Volunteered as a Naturalist for University of Georgia in Costa Rica. I guided natural history hikes, presented talks on various topics, created programs, and interacted with guests and locals, and various tasks.

- May 2010-October 2010 Internship with BLM Pinedale, WY

  Internship through Conservation and Land Management Internship Program with the Bureau of Land Management as a native plant materialist intern. Worked with Seeds of Success program

- January 2010 Internship with SCDNR Charleston, SC

  I participated in fish collection and histological work for South Carolina Department of Natural Resources. I collected preliminary data on the damage done by an isopod to the pectoral fin of Mugi cephalus.

- May 2008-August 2008 Chemical Analyst Greenville, SC

  Temporary position working in Perrigo Company of South Carolina's lab (Greenville, SC) performing chemical assays of vitamins.

Relevant Volunteer work

- **Darwin day: bio-outreach**, 2019 Texas A&M University Texas
  Public outreach, teaching children about fish and convergent evolution.

- **STEMing 4 Greatness**, 2019 Texas A&M University Texas
  Public outreach promoting careers in science to underrepresented high schoolers.

- **Open Source for Open Science Workshop**, 2018 Texas A&M University Texas
  I volunteered to help run a free R based workshop.

- **Bio Outreach**, 2017 Texas A&M University Texas
  Public outreach: I volunteered on the fish team, teaching people about fish and fish biodiversity

- **Aquatic ecology workshop**, 2015 University of Cambodia Cambodia
  Assisted teaching a workshop on low cost methods for addressing important research and management questions

- **Geometric Morphometrics Workshop**, 2015 National Institute of Amazonian Research, Brazil
  I run a workshop on the basics of geometric morphometrics INPA students

- **Bio Outreach** 2016 Texas A&M University Texas
  Public outreach: I volunteered on the fish team, teaching people about fish and fish biodiversity

- **Bio Outreach** 2014 Texas A&M University Texas
  Public outreach: I volunteered on the fish team, teaching people about fish and fish biodiversity

- **Bioblitz** 2013 National Geographic Louisiana
  Bioblitz: public outreach team leader

- **Vertebrate Collection's Volunteer**, 2007- 2010 Erskine College South Carolina
  Temporary work-study position collecting and preserving specimens and managing the museum.

- **Head of Bio-outreach/Volunteer**, 2007- 2010 Erskine College South Carolina
  Volunteer position coordinating programs for 4th grade to K-12 students to teach them about various topics in biology at Erskine College or the student's school. I created lessons on specified topics and taught lesson actively though out my time as a volunteer.

Committees

- Wildlife and Fisheries Science Graduate Student: Texas A&M University
  - Diversity and Climate Committee: 2017-2018
  - Treasurer: 2017-2018
- Ecological Integration Symposium: Texas A&M University
  -Organizer (2013-2014)
  - Texas A&M University
- Ecological and Evolutionary Biology Student Organization: Texas A&M University
  - Event planner (2013-2015)
  - Texas A&M University
- American Society of Ichthyologists and Herpetologists
  - Conservation committee (2012-2014)
- Biological Graduate School Organization: Southeastern Louisiana University
  - Treasurer (2012-2013)
- Member of Beta Beta Beta Biological Honor Society
  - Treasurer (2007-2009)
  - Erskine College

Presentations

Bower, L. M., Peoples, B. K. Quantifying Flow Alteration–Ecology Relationships across South Carolina. South Carolina-American Fisheries Society. March, 2020.

Bower, L. M., Peoples, B. K. Quantifying Flow Alteration–Ecology Relationships across South Carolina. Southern Division-American Fisheries Society. February, 2020.

Bower, L. M., Peoples, B. K. Quantifying Flow Alteration–Ecology Relationships across South Carolina. Water Research Symposium. January, 2020.

Bower, L.M., D. Saenz, & Winemiller, K. Convergence and community assembly of stream fishes: an intercontinental analysis. Clemson University. Forestry and Environmental Conservation Department seminar. September 2019.

Bower, L.M., D. Saenz, & Winemiller, K. Widespread convergence in stream fish. Texas A&M University. Ecology and Evolution Department seminar. December 2018.

Bower, L.M., D. Saenz, & Winemiller, K. Widespread convergence in stream fish. Texas A&M University. Wildlife and Fisheries Science Department seminar. September 2018.

Bower, L.M. & Winemiller, K Fish assemblage convergence along stream environmental gradients: An intercontinental analysis. Ecological Society of America. New Orleans. August 2018.

Bower, L.M. Two lectures on fish locomotion for WFSC 448. Texas A&M University 2017.

Bower, L.M. & Winemiller, K. Fish assemblage convergence along stream environmental gradients: an intercontinental analysis. American Fisheries Society. January 2018.

Bower, L.M. & Winemiller, K. Fish assemblage convergence along environmental gradients and microhabitats in small freshwater streams. American Society of Ichthyologists and Herpetologists. July 2017.

Bower, L.M. & Winemiller, K. Fish assemblage convergence along environmental gradients and microhabitats in small freshwater streams. Wildlife and Fisheries Science Department seminar. March 2017.

Bower, L. M. & Winemiller, K.. Global Patterns of Fish Functional Diversity and Trait Convergence along Species Richness and Environmental Gradients. American Society of Ichthyologists and Herpetologists. August 2016.

Bower, L.M. & Winemiller, K. Global Patterns of Fish Functional Diversity and Trait Convergence along Species Richness and Environmental Gradients. Ecological Integration Symposium. March 2016.

Bower, L. M., Invited seminar speaker on geometric morphometric methods. National Institute of Amazonian Research (INPA) July 2015.

Bower, L. M. & Piller, K. R. Spatial and Temporal Resource Utilization by a Gulf Coast Fish Assemblage. American Society of Ichthyologists and Herpetologists. August 2014.

Bower, L. M. & Piller, K. R. Habitat and Ecomorphological Patterns of Gulf Coastal Plain Fishes: A Geometric Morphometrics Approach. Texas A&M Wildlife and Fisheries Seminar. 2013

Bower, L. M. & Piller, K. R. Shaping up: A Geometric Morphometrics Approach to Community Ecology. American Society of Ichthyologists and Herpetologists. 2013.

Bower, L. M. & Piller, K. R. Shape shifters: A look at fish body shape plasticity though geometric morphometrics. Southeastern Fishes Council. November 2012.

Bower, L. M. & Piller, K. R. Niche position and competitive exclusion in stream fish communities: A geometric morphometric approach. Southeastern Fishes Council. November 2012.

Bower, L. M. & Piller, K. R. Niche position and competitive exclusion in stream fish communities: A geometric morphometric approach. American Society of Ichthyologists and Herpetologists. August 2011.

Bower, L. M. & Roumillat, B. A preliminary assessment of striped mullet (*Mugil cephalus*) pectoral fin tissue damage caused by the parasitic isopod *Nerocila acuminata* (family Cymothiodae). Association Southeastern Biologists. April 2010.

Reviewer for the following journals

Ecography, Science of the Total Environment, Journal of Fish Biology, Copeia, Hydrobiologia

Relevant Classes

Erskine College

-BG110	Concepts of Cellular Biology
-BG110L	LAB: Concepts of Cellular Biology
-MA107	Probability and Statistics
-BG111	Concepts of Organismal Biology
-BG111L	LAB: Concepts of Organismal Biology
-BG222	Medicinal Botany
-CH101	Chemical Principles I
-CH101L	LAB: Chemical Principles I
-BG209	Animal Behavior
-BG309	Ethology Laboratory
-BG322	Cell Biology
-CH102	Chemical Principles II
-CH102L	LAB: Chemical Principles II
-BG202	Genetics

- **-CH214** Organic Chemistry I
- **-CH215** LAB: Organic Chemistry I
- **-J0920LEC**
- **-BG220** Field Botany
- **-BG222** Zoology
- **-BG300** Scientific Statistics
- **-BG407** Ecology
- **-BG222** General Microbiology

Southeastern Louisiana University

- **-GBIO539** Fresh Water Biology
- **-GBIO581** Biogeography
- **-GBIO615** Systematics
- **-GBIO690** Special Topic in Biology
- **-ZOO556** Ichthyology
- **-GBIO610** Biostatistics

Texas A&M University

- **-GEOL 651** Paleo Community Analysis
- **-WFSC 681** Seminar in Ecology
- **-WFSC 689** Community Ecology
- **-WSFC 624** Dynamics of Populations
- **-ESSM 651** Geographic Information System (GIS) for Resource Management
- **-ESSM 689** Quantitative Methods in Ecology and Evolution