

# Samuel R. Borstein

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## CONTACT INFORMATION

2020B Biological Sciences Building  
Dept. of Ecology & Evolutionary Biology  
University of Michigan  
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## EDUCATION

**University of Tennessee**, Knoxville, Tennessee USA

August 2013–May 2019  
Ph.D. Ecology & Evolutionary Biology

- Dissertation Topic: “Macroevolutionary Consequences of Trophic Specialization”
- Advisor: Brian O’Meara
- Committee: Benjamin Fitzpatrick, James Fordyce, Benjamin Keck

**California State University, Sacramento**, Sacramento, California USA

August 2009–May 2013  
B.S., Biology (Ecology, Evolution & Conservation Concentration)

## PROFESSIONAL POSITIONS

**University of Michigan**, Ann Arbor, Michigan USA

NSF Postdoctoral Fellow (PRFB-DBI)  
March 2021–Present

**University of Michigan**, Ann Arbor, Michigan USA

Postdoctoral Research Fellow  
June 2019–February 2021

- Advisor: Hernán López-Fernández

## PEER REVIEWED PUBLICATIONS

**Publications: 10 (5 First author); Citations: 266 (Since 2017: 251); H-index: 7; i10-index: 7 (Google Scholar) \*denotes co-first author**

10. Coronado-Franco, K. V., Tedesco, P. A., Kolmann, M., **Borstein, S. R.**, Evans, K. O., & Correa, S. B. (In Press) Feeding habits influence species habitat associations at the landscape scale in a diverse clade of Neotropical fishes. *Journal of Biogeography*.
9. **Borstein, S. R.**, Lucanus, O., Gajapersad, K., Singer, R. A., Mol, J., & López-Fernández, H. (2022) Fish Diversity of the Upper Tapanahony River, Suriname. *Miscellaneous Publications, Museum of Zoology, University of Michigan*, 210: 1-19. doi: <http://doi.org/10.7302/4816>.
7. McGee, M.\*, **Borstein, S. R.\***, Meier, J. I., Marques, D. A. Mwaiko, S., Taabu, A., Kishe-Machumu, M. A., O’Meara, B., Bruggmann, R., Exoffier, L. & Seehausen, O. (2020). The ecological and genomic basis of explosive adaptive radiation. *Nature*, 586:75-79. doi: <http://doi.org/10.1038/s41586-020-2652-7>.
6. Mueller, L. O., **Borstein, S. R.**, Tague, E. D., Dearth, S. P., Castro, H. F., Campagna, S. R., Bailey, J. K., & Schweitzer, J. A. (2020). Populations of *Populus angustifolia* have evolved distinct metabolic profiles that influence their surrounding soil. *Plant & Soil*, 448:399-411. doi: <http://doi.org/10.1007/s11104-019-04405-2>.
5. **Borstein, S. R.**, Fordyce, J. A., O’Meara, B. C., Wainwright, P. C., & McGee, M. D. (2019) Reef fish functional traits evolve fastest at trophic extremes. *Nature Ecology & Evolution*, 3(1):191-199 doi: <http://doi.org/10.1038/s41559-018-0725-x>.

4. **Borstein, S. R.** & O'Meara, B. C. (2018). AnnotationBustR: An R package to extract subsequences from GenBank annotations where loci names differ among records. *PeerJ*, 6:e5179.
3. Martinez, C. M., McGee, M. D., **Borstein, S. R.**, & Wainwright, P. C. (2018). Feeding ecology underlies the evolution of cichlid jaw mobility. *Evolution*, 72 (8): 1645-1655.
2. McGee, M. D., Faircloth, B. C., **Borstein, S. R.**, Zheng, J., Hulsey, C. D., Wainwright, P. C., & Alfaro, M. E. (2016). Replicated divergence in cichlid radiations mirrors a major vertebrate innovation. *Proceedings of the Royal Society, B.*, 2839(1822), doi: <http://doi.org/10.1098/rspb.2015.1413>.
1. McGee, M. D., **Borstein, S. R.**, Neches, R. Y., Buescher, H. H., Seehausen, O. & Wainwright, P. C. (2015). A pharyngeal jaw evolutionary innovation facilitated cichlid extinction after the Nile perch invasion of Lake Victoria. *Science*, 350(6264): 1077-1079.

PAPERS IN REVIEW  
(MANUSCRIPTS  
AVAILABLE UPON  
REQUEST)

2. **Borstein, S. R.**, Hammer, M. H., O'Meara, B. C., & McGee, M. D. The evolutionary history, genomic basis, and ecological consequences of a classic key innovation. Submitted to *Nature*.
1. Kolmann, M. A., Nagesan, R. S., Andrews, J. V., **Borstein, S.R.**, Figueroa, T. C., Singer, R. A., Friedman, M., & López-Fernández, H. DiceCT for Fishes: Recommendations for pairing iodine contrast agents with  $\mu$ CT to visualize soft tissues in fishes. In review at *Journal of Fish Biology*.

SOFTWARE

**Borstein, S.R.** & B.C. O'Meara. rcatfish: An R interface to the California Academy of Sciences Eschmeyer's Catalog of Fishes. *Beta Available At:* <https://github.com/sborstein/rcatfish>.

**Borstein, S.R.** (2019). dietr: Calculates trophic levels from volumetric diet and food item data. *Available at:* <https://github.com/sborstein/dieter>. *Available on CRAN At:* <https://cran.r-project.org/package=dieter>.

**Borstein, S.R.** & B.C. O'Meara (2018). AnnotationBustR: An R package to extract sub-sequences from GenBank annotations *Available At:* <https://github.com/sborstein/AnnotationBustR>. *Available on CRAN At:* <https://CRAN.R-project.org/package=AnnotationBustR>.

GRANTS &  
FUNDING

**To date: \$250,903 in funding (\$238,968 External)**

2022	University of Michigan Undergraduate Research Opportunity Program Research Mentor Grant	\$1,000
2020	National Science Foundation Post-Doctoral Fellow – Div. Biological Infrastructure	\$207,000
2018	Travel Award, College of Arts & Science, University of Tennessee	\$860
2017	Summer Research Grant, EEB Department, University of Tennessee	\$1,500
2017	American Museum of Natural History Theodore Roosevelt Memorial Grant	\$1,955
2017	National Science Foundation Doctoral Dissertation Improvement Grant	\$19,630
2017	Society for Integrative & Comparative Biology Grant-in-Aid of Research	\$1,000
2016	Travel Award, College of Arts & Science, University of Tennessee	\$450
2016	American Cichlid Association Guy Jordan Fellowship	\$1,200
2016	Summer Research Grant, EEB Department, University of Tennessee	\$1,050
2016	Friday Harbor Laboratories Stephen and Ruth Wainwright Endowed Fellowship	\$1,800
2015	Society of Systematic Biologists (SSB) Graduate Student Research Award	\$1,500

2015	Ohio Cichlid Association Jim Smith Fund	\$2,000
2015	Summer Research Grant, EEB Department, University of Tennessee	\$1,125
2014	Summer Research Grant, EEB Department, University of Tennessee	\$450
2013	American Cichlid Association Guy Jordan Fellowship	\$1,200
2013	Sigma Xi Grant in Aid of Research	\$500
2011	Sacramento State University Summer Undergraduate Research Experience	\$5,500
2010	American Cichlid Association Guy Jordan Fellowship	\$1,183

HONORS & AWARDS	2017	University of Tennessee, Knoxville Chancellor's Fellowship
	2017	University of Tennessee Department of Ecology & Evolutionary Biology Best Progress Toward Dissertation Research Award
	2017	University of Tennessee Graduate Student Senate Outstanding Research Award
	2015	Selected Finalist for the Society for Integrative and Comparative Biology Wake Award for best student presentation in the division of phylogenetics and comparative biology for the 2015 SICB annual meeting
	2013	2nd Place Best Seminar Presentation, California State System Wide Research Competition
	2013	Best Seminar in Marine & Aquatic Biology, West Coast Biological Sciences Undergraduate Research Conference (WCBSURC)
	2009	Greater Chicago Cichlid Association Master Cichlid Breeder
	2009	Selected for the John G. Shedd Aquarium High School Marine Biology Mentorship
	2008	Greater Chicago Cichlid Association Aquarist of the Year
	2008	Selected for the John G. Shedd Aquarium High School Lake Ecology Mentorship

#### TEACHING

##### **University of Michigan, Ann Arbor, Michigan USA**

- EEB 440 Biology of Fishes, Guest Lecturer, Fall 2021
- EEB 441 Biology of Fishes Lab, Guest Lecturer, Fall 2019

##### **University of Tennessee, Knoxville, Tennessee USA**

- EEB 470 Aquatic Ecology, Spring 2017
- EEB 474 Ichthyology Laboratory and occasional lecturer, Falls 2014-2018
- BIO 102 Biodiversity Laboratory for Non-Majors, Springs 2015-2017
- BIO 130 Biodiversity Laboratory for Majors, Fall 2013-Spring 2014

UNDERGRADUATE MENTORSHIP	2022-Present	Maya Hillegonds, University of Michigan Undergraduate Research Opportunity Program.
	2022-Present	Geo Johnson, University of Michigan Undergraduate Research Opportunity Program.
	2022-Present	Kellen Kennedy, University of Michigan Undergraduate Research Opportunity Program.
	2021-Present	Mariana Fernández Correa, University of Michigan Undergraduate Research Opportunity Program.
	2021-2022	Lauren Schaeffer, University of Michigan Undergraduate Research Opportunity Program.
	2021-2022	Milo Neirink, University of Michigan Undergraduate Research Opportunity Program.
	2021-2022	Yongxin Zheng, University of Michigan Undergraduate Research Opportunity Program.
	2020-Present	Paul Fedorowicz, independent undergraduate research, University of Michigan.
	2020-2021	Ethan Bernstein, independent undergraduate research, University of Michigan Museum of Zoology.
	2019-2021	Coen Long, University of Michigan Undergraduate Research Opportunity Program.

- 2020-2020 Bronya Sandorffy, University of Michigan Undergraduate Research Opportunity Program.  
 2019-2020 Katherine Baxter, independent undergraduate research, University of Michigan Museum of Zoology.  
 2019-2020 Katherine Quinlan, University of Michigan Undergraduate Research Opportunity Program.  
 2019-2020 Luke McGill, independent Undergraduate Research, University of Michigan Museum of Zoology.  
 2018-2019 Jeffery Stevens, independent undergraduate research, University of Tennessee. *Currently* MSc. student at University of Arkansas at Pine Bluff.  
 2013-2015 Jasmine Vazin, independent undergraduate research, University of Tennessee. *Completed* MSc. University of California, Santa Barbara. *Currently* Senior Campaign Representative for the Sierra Club.

SERVICE

- University of Michigan Department of Ecology and Evolutionary Biology Graduate Publication Award Committee* **2019–2019**
- University of Tennessee Biological Collections Committee Graduate Representative* **2016–2019**
- Instructor for the University of Tennessee vertebrate zoology KidsU educational summer camp program, presenting on fish diversity* **2018**
- Board of Trustees: American Cichlid Association* **2013–2015**
- Secretary: Federation of American Aquarium Societies* **2010–2015**
- Secretary: California State University, Sacramento Field Biology Group* **2012–2013**
- Web Master: California State University, Sacramento Field Biology Group* **2012–2013**
- Workshop Assistant: Expanding Your Horizons "Fun With Fishes" class* **2012–2013**
- Volunteer Aquarist, Rivers Gallery: John G. Shedd Aquarium, Chicago, IL* **Summer 2009/2010**
- Reviewer for:** *Bioinformatics, Biological Invasions, Hydrobiologia, Molecular Biology & Evolution, Methods in Ecology and Evolution, Neotropical Ichthyology, PeerJ, Royal Society Open Science, Southeastern Naturalist, & Systematic Biology.*

OTHER  
PROFESSIONAL  
TRAINING

- 2016 Fish Functional Morphology: Friday Harbor Laboratories. Organizers: Adam Summers and Alice Gibb.  
 2015 Bodega Bay Phylogenetics Workshop. Organizers: Brian Moore and Peter Wainwright.  
 2014 Phylogenomics Symposium and Software School. Organizer: Tandy Warnow.

CONFERENCE  
PRESENTATIONS

- Borstein, S.**, M.D McGee, & B.C. O'Meara (2019). A classic evolutionary innovation does not lead to increased diversification. Talk presented at the Society for Integrative and Comparative Biology (SICB) Meeting.
- Borstein, S.**, M.D McGee, & J. Fordyce (2017). Diet breadth evolution effects morphology in coral reef fishes. Talk presented at the Society for Integrative and Comparative Biology (SICB) Meeting.
- Borstein, S.**, P. C. Wainwright, & M. D. McGee (2016). Trophic level transitions drive morphological diversity on coral reefs. Talk presented at the Society for Integrative and Comparative Biology (SICB) Meeting.

**Borstein, S.**, M.D. McGee, & P.C. Wainwright (2015). Mouthbrooding does not constrain craniofacial diversity in Lake Tanganyikan cichlids. Talk presented at the Society for Integrative and Comparative Biology (SICB) Meeting.

**Borstein, S.**, M.D. McGee, & P.C. Wainwright (2014). Mouthbrooding does not constrain craniofacial diversity in Lake Tanganyikan cichlids. Talk presented at the Joint Meeting of Ichthyologists and Herpetologists (JMIH).

**Borstein, S.**, M.D. McGee, & P.C. Wainwright (2013). Mouthbrooding does not constrain craniofacial diversity in Lake Tanganyikan cichlids. Talk presented at the California State University System Wide Research Conference.

**Borstein, S.**, M.D. McGee, & P.C. Wainwright (2013). Mouthbrooding does not constrain craniofacial diversity in Lake Tanganyikan cichlids. Talk presented at the West Coast Biological Sciences Undergraduate Research Conference.

**Borstein, S.**, M.D. McGee, & P.C. Wainwright (2013). Mouthbrooding does not constrain craniofacial diversity in Lake Tanganyikan cichlids. Poster presented at the Society for Integrative and Comparative Biology (SICB) Meeting.

**Borstein, S.**, & R.M. Coleman (2013). Can Patterns of Melanophore Development in New World Cichlids be used as Phylogenetic Character. Poster presented at the California State University, Sacramento Natural Science and Mathematics Annual Undergraduate Research reception.

DEPARTMENTAL  
SEMINARS

**Borstein, S.**(2022). Macroevolutionary Perspectives on Speciation and Innovation in Fishes. Oklahoma State University, Department of Integrative Biology.

INVITED POPULAR  
PRESENTATIONS

- 2022 “Fishes of the Tapanahony River, Suriname”, Presented to the Ohio Cichlid Association
- 2021 “Fishes of the Tapanahony River, Suriname”, Presented to the Greater Chicago Cichlid Association
- 2016 “The Lake Victoria Extinction Revisited”, Presented at the Raleigh Aquarium Society’s Carolina Aquarium Workshop XXXI.
- 2016 “Keeping Smaller Heroine Cichlids”, Presented at the Raleigh Aquarium Society’s Carolina Aquarium Workshop XXXI.
- 2016 “The Lake Victoria Extinction Revisited”, Presented to the Ohio Cichlid Association.
- 2014 “The Cichlid Fishes of Costa Rica”, Presented to the Capitol Cichlid Association .
- 2014 “The Lake Victoria Extinction Revisited”, Presented at the Greater Chicago Cichlid Association’s 2014 Cichlid Classic.
- 2014 “Current Cichlid Research”, Presented at the Greater Chicago Cichlid Association’s 2014 Cichlid Classic.
- 2013 “The Cichlid Fishes of Costa Rica”, Presented to the Atlanta Area Aquarium Association.
- 2013 “The Cichlid Fishes of Costa Rica”, Presented to the Greater Chicago Cichlid Association.
- 2013 “Keeping Smaller Heroine Cichlids”, Presented to the Sacramento Aquarium Society.
- 2012 “Keeping Smaller Heroine Cichlids”, Presented at the American Cichlid Association’s 2012 Annual Convention.
- 2011 “Keeping Smaller Heroine Cichlids”, Presented to the Ohio Cichlid Association.
- 2011 “Tropical Fish Research in the Lab and In the Field”, Presented to the San Francisco

Aquarium Society.

2011 “Tropical Fish Research in the Lab and In the Field”, Presented to the Pacific Coast Cichlid Association.

2010 “Keeping Smaller Heroine Cichlids”, Presented to the Pacific Coast Cichlid Association.

2010 “Keeping Smaller Heroine Cichlids”, Presented to the Greater Chicago Cichlid Association.

CERTIFICATIONS

National Association of Underwater Instructors (NAUI) Certified Nitrox Diver.

National Association of Underwater Instructors (NAUI) Certified Diver.