

# Christopher M. Martinez

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## Education

- 2014      Ph.D. Marine & Atmospheric Science, Stony Brook University  
**W. Burghardt Turner Graduate Fellow**  
*Dissertation Title:* Diversity of Skates (Batoidea: Rajoidei) and the Spatial Structure of NW Atlantic Communities (*Advisor:* Michael Frisk)
- 2006      B.Sc. Aquatic Biology, University of California, Santa Barbara  
**Distinction in Major**  
*Honors Thesis:* Two-Part Study of a Mutualism Between a New Species of Gammarid Amphipod and Montiporan Corals (*Mentor:* Russell Schmitt)

## Positions Held

- 2018-present **Postdoctoral Associate.** Department of Evolution and Ecology. University of California Davis (*Supervisor:* Peter Wainwright)
- 2016-2018    **UC Davis Chancellor’s Postdoctoral Fellow.** Department of Evolution and Ecology. University of California Davis (*Supervisor:* Peter Wainwright)
- 2014-2016    **Gerstner Scholar & Lerner-Gray Postdoctoral Fellow.** Department of Ichthyology, American Museum of Natural History (*Supervisor:* John Sparks)

## Peer-Reviewed Publications

22. Arroyave J, **Martinez CM**, Martínez-Oriol FH, Sosa E & Alter SE. *In Press*. Regional-scale aquifer hydrogeology as a driver of phylogeographic structure in the Neotropical catfish *Rhamdia guatemalensis* (Siluriformes: Heptapteridae) from cenotes of the Yucatán Peninsula, Mexico. *Freshwater Biology*.
21. Larouche O, Benton B, Corn KA, Friedman ST, Gross D, Iwan M, Kessler B, **Martinez CM**, Rodriguez S, Whelpley H, Wainwright PC & Price SA. 2020. Reef-associated fishes have more maneuverable body shapes at a macroevolutionary scale. *Coral Reefs*. 1-13.

20. Friedman ST, Price SA, Corn KA, Larouche O, **Martinez CM** & Wainwright PC. 2020. Body shape diversification along the benthic-pelagic axis in marine fishes. *Proceedings of the Royal Society B*. 287, 20201053.
19. Burress ED, **Martinez CM** & Wainwright PC. 2020. Decoupled Jaws Promote Trophic Diversity in Cichlid Fishes. *Evolution*. 74(5), 950-961.
18. Price SA, Larouche O, Friedman ST, Corn KA, Wainwright PC & **Martinez CM**. 2020. A CURE for a major challenge in phenomics: a practical guide to implementing a quantitative specimen-based undergraduate research experience. *Integrative Organismal Biology*. 2(1), obaa004, 1-10.
17. Barley AJ, Diesmos AC, Siler CD, **Martinez CM** & Brown RM. 2020. Taxonomic revision of Philippine sun skinks (Reptilia: Squamata: Scincidae: *Eutropis*), and descriptions of eight new species. *Herpetological Monographs*. 34, 39-70.
16. **Martinez CM** & Wainwright PC. 2019. Extending the Geometric Approach for Studying Biomechanical Motions. *Integrative & Comparative Biology*. 59(3), 684-695.
15. **Martinez CM**, Kao B, Sparks JS & Wainwright PC. 2019. Pectoral dimorphism is a pervasive feature of skate diversity and offers insight into their evolution. *Integrative Organismal Biology*. 1(1), obz012, 1-14.
14. Price SA, Friedman ST, Corn KA, **Martinez CM**, Larouche O & Wainwright PC. 2019. Building a body shape morphospace of teleostean fishes. *Integrative & Comparative Biology*. 59(3), 716-730.
13. Friedman ST, **Martinez CM**, Price SA & Wainwright PC. 2019. The influence of size on body shape diversification across Indo-Pacific reef fishes. *Evolution*. 73(4), 1873-1884.
12. Frisk MG, Shipley ON, **Martinez CM**, McKown KA, Zacharias JP & Dunton KJ. 2019. First observations of long-distance migration in a large skate species, *Leucoraja ocellata*: Implications for population connectivity, ecosystem dynamics, and management. *Marine and Coastal Fisheries*. 11(2), 202-212.
11. Arroyave J, **Martinez CM** & Stiassny MLJ. 2019. DNA barcoding uncovers remarkable cryptic diversity in the African long-finned tetra *Bryconalestes longipinnis* (Günther 1864) (Alestidae: Characiformes). *Journal of Fish Biology*. 95, 379-392.
10. **Martinez CM**, McGee MD, Borstein SR & Wainwright PC. 2018. Feeding Ecology Underlies the Evolution of Cichlid Jaw Mobility. *Evolution*. 72(8), 1645-1655.

9. **Martinez CM** & Sparks JS. 2017. Malagasy cichlids differentially limit impacts of body shape evolution on oral jaw functional morphology. *Evolution*. 71(9), 2219-2229.
8. **Martinez CM** & Stiassny MLJ. 2017. Can an eel be a flatfish? Observations on enigmatic asymmetrical heterenchelyid eels from the Guinea Coast of West Africa. *Journal of Fish Biology*. 91, 673-678.
7. **Martinez CM**, Duplisea DE, Cerrato RM & Frisk MG. 2017. Exploration of trends in interspecific abundance-occupancy relationships using empirically derived simulated communities. *PLoS ONE*. 12(1), e0170816.
6. **Martinez CM**, Rohlf FJ & Frisk MG. 2016. Re-Evaluation of batoid pectoral morphology reveals novel patterns of diversity among major lineages. *Journal of Morphology*. 277(4), 482-493.
5. **Martinez CM**, Rohlf FJ & Frisk MG. 2016. Sexual dimorphism in sister species of *Leucoraja* skate and its relationship to reproductive strategy and life history. *Evolution & Development*. 18(2), 105-115.
4. Dunton K, Jordaan A, Secor D, **Martinez CM**, Kehler T, Hattala K, van Eenennam J, Fisher M, McKown K, Conover DO & Frisk M. 2016. Age and growth of Atlantic sturgeon, *Acipenser oxyrinchus oxyrinchus*, in the New York Bight. *North American Journal of Fisheries Management*. 36, 62-73.
3. O'Leary SJ, **Martinez CM**, Bauman H, Abercrombie D, Conover DO, Poulakis GR, Murray CH, Feldheim KA & Chapman DD. 2016. Population genetics and geometric morphometrics of Key silversides, *Menidia conchorum*, a marine fish in a highly fragmented inland habitat. *Bulletin of Marine Science*. 92(1), 33-50.
2. **Martinez CM**, Arroyave J & Sparks JS. 2015. A new species of *Ptychochromis* from southeastern Madagascar (Teleostei: Cichlidae). *Zootaxa*. 4044, 79-92.
1. Bergsma GS & **Martinez CM**. 2011. Mutualist induced morphological changes enhance growth and survival of corals. *Marine Biology*. 158, 2267-2277.

### **Book Chapters**

Vaz DFB, **Martinez CM**, Friedman ST & PP Rizzato. *In press*. Morphological Descriptions and Taxonomy. In S Midway, C Hasler, and P Chakrabarty, editors. *Methods for fish biology*, 2nd edition. American Fisheries Society, Bethesda, Maryland.

## Competitive Grants & Awards

UC Davis Chancellor's Postdoctoral Fellowship. University of California, Davis.  
*Research:* Evolution of Head and Jaw Kinesis in Adaptive Radiations of Cichlid Fishes.  
2016-2018 (\$96,134).

Teddy Roosevelt Memorial Grant. American Museum of Natural History. *Research:* Genetic diversity and connectivity of *Rhamdia guatemalensis* among cenotes of the Yucatán Peninsula, Mexico. 2016 (\$3,500).

Gerstner Scholarship & Lerner-Gray Postdoctoral Fellowship. American Museum of Natural History. *Research:* Diversification of feeding systems in teleost radiations. 2015-2016 (\$100,000).

Woods Hole Oceanographic Institution, Young Scientist Travel Award (ICES Annual Science Conference, Reykjavik, Iceland). Woods Hole Oceanographic Institute. 2013 (\$1,968).

Turner Summer Research Grant. Center for Inclusive Education, Stony Brook University. 2013 (\$2,497), 2011 (\$3,868) & 2009 (\$1,200).

Lerner-Gray Fund for Marine Research. American Museum of Natural History. *Research:* Pectoral fin diversity in Batoid fishes. 2012 (\$1,900).

W. Burghardt Turner Graduate Fellowship. Center for Inclusive Education, Stony Brook University. 2007-2012 (\$50,000).

Presidential Graduate Fellowship. Stony Brook University. 2007 (\$2,500).

## Teaching Experience

*Courses Taught (UG: undergraduate, G: graduate)*

EVE 198, **Biodiversity of Fishes IV** (UG). University of California Davis. Spring 2018.

EVE 198, **Biodiversity of Fishes III** (UG). University of California Davis. Winter 2018.

EVE 198, **Biodiversity of Fishes II** (UG). University of California Davis. Fall 2017.

PHY 119, **Physics for Environmental Studies**, (UG Lab). Stony Brook University. Fall 2009.

BIO 204, **Fundamentals of Scientific Inquiry**, (UG Lab). Stony Brook University. Fall 2007.

*Guest Lectures*

EVE 105, **Phylogenetic Analysis of Vertebrate Structure (UG)**. Title: Respiration. University of California Davis. Spring 2019.

BY 205, **Zoology (UG)**. Title: Morphological research in aquatic biology. Monmouth University. Fall 2015.

MAR 385, **Fisheries Biology and Management (UG)**. Title: Evolution of fishes. Stony Brook University. Fall 2014.

MAR 502, **Biological Oceanography (G)**. Title: Fish biology & upwelling fisheries. Stony Brook University. Fall 2010.

MAR 502, **Biological Oceanography (G)**. Title: Population dynamics. Stony Brook University. Fall 2010.

## Conference Presentations (selected)

**Martinez CM**, Friedman ST, Corn KA, Larouche O, Price SA, Wainwright PC. Large mouths and tapered tails: morphological disparity increases with ocean depth. Society for Integrative and Comparative Biology. 2020. Austin, TX.

**Martinez CM**, McGee MD, Borstein SR, Sparks JS & Wainwright PC. Scaling up kinematics; a geometric approach for studying the evolution of biological motion. Society for Integrative and Comparative Biology. 2019. Tampa, FL.

**Martinez CM**, McGee MD & Wainwright PC. Morphological adaptations for evasive prey capture result in more dynamic and efficient suction feeding in cichlids. Society for Integrative and Comparative Biology. 2018. San Francisco, CA.

**Martinez CM**, McGee MD & Wainwright PC. Evolution of feeding kinesis in African cichlids. Joint Meeting of Ichthyologists & Herpetologists. 2017. Austin, TX.

**Martinez CM**, Rohlf FJ & Frisk MG. Extent and prevalence of sexual dimorphism in skates (Batoidea: Rajoidei). Society for Integrative and Comparative Biology. 2017. New Orleans, LA.

**Martinez CM**, Rohlf FJ & Frisk MG. Have we been underrepresenting the morphological & ecological diversity of skates? Joint Meeting of Ichthyologists & Herpetologists. 2016. New Orleans, LA.

**Martinez CM** & Sparks JS. Covariation of body and oral jaw shapes in Malagasy cichlids. Society for Integrative and Comparative Biology. 2016. Portland, OR.

**Martinez CM**, Rohlf FJ & Frisk MG. Sexual dimorphism in sister species of *Leucoraja* skate and its relation to reproductive strategy and life history. Joint Meeting of Ichthyologists & Herpetologists. 2015. Reno, NV.

**Martinez CM**, Duplisea DE, Miller TJ & Frisk MG. Trends in northwest Atlantic habitat occupation: joint effects of climate variation and harvest removals. International Council for the Exploration of the Sea (ICES) Annual Science Conference. 2013. Reykjavik, Iceland.

**Martinez CM** & Frisk MG. Connecting form and function: ecomorphology of little & winter skate. 2012 Society for Advancement of Chicanos and Native Americans in Science National Conference. 2012. Seattle, WA. **(Best Graduate Presentation, Ecology & Evolution)**.

**Martinez CM**, Duplisea DE, Trenkel VM, Miller TJ & Frisk MG. Environmental and anthropogenic factors affecting community structure within and among northwest Atlantic ecosystems. American Fisheries Society Annual Meeting. 2012. Minneapolis, MN.

**Martinez CM**, Duplisea DE, Trenkel VM, Miller TJ & Frisk MG. Temporal and spatial patterns of interspecific abundance-occupancy relationships across western Atlantic fishery ecosystems. American Fisheries Society Annual Meeting. 2011. Seattle, WA.

## Invited Talks & Seminars

*Title:* Form, function, and lifestyle: evolution of cichlid jaws and its implications. Department of Biology, San Francisco State University. November 2018.

*Title:* Morphological and kinematic evolution of cichlid feeding systems. Life & Environmental Sciences, University of California, Merced. November 2017.

*Title:* Morphological and kinematic evolution of cichlid jaws. Department of Integrative Biology, University of California, Berkeley. April 2017.

*Title:* Morphological and kinematic evolution of oral jaws in cichlids. Institute of Biology, National Autonomous University of Mexico. February 2017.

*Title:* Ecomorphology of fish feeding systems: integrating form, function, and lifestyle. Comparative Biology Seminar Series, Richard Gilder Graduate School, American Museum of Natural History. May 2016.

*Title:* Form, function, & evolution of jaws in Malagasy cichlids. Senate Meeting, American Museum of Natural History. February 2016.

## Students Mentored

**Angelly Tovar** (Undergraduate, UC Davis). *Research Project:* Implications for feeding kinematics of a novel lower jaw joint in the herbivorous characiform fish, *Distichodus sexfasciatus*. 2018-present.

**Analisa Milkey** (Undergraduate, UC Davis). *Research Project:* Evolution of extreme jaw protrusion in the feeding mechanisms of Neotropical cichlids. 2018.

**Jolie Dorman & Jacqueline Abraham** (NYC high school students). Science Research Mentoring Program (SRMP), American Museum of Natural History. *Research Project:* Jaw diversity in the deep-sea order, Stomiiformes (Actinopterygii:Teleostei). 2015-2016.

**Bryan Kao** (Undergraduate, Columbia University). NSF Research Experiences for Undergraduates (REU), American Museum of Natural History. *Research Project:* Sexual dimorphism in skates of the genus *Fenestraja*. Summer, 2015.

**Wesley Robinson, Danielle Francois & Emily Nocito** (Undergraduates, Stony Brook University). *Research Project:* Pectoral fin diversity in batoid fishes. 2013-2014.

## Outreach & Service

Member, Diversity Committee for the American Society of Ichthyologists and Herpetologists. 2017-present.

Member of external advisory board for NSF grant NRT-DESE-1633299; Interdisciplinary Graduate Training to Understand and Inform Decision Processes Using Advanced Spatial Data Analysis and Visualization. 2016-present.

Founder and President, SACNAS Stony Brook University Chapter. *Description:* Started a campus chapter of the national organization, Society for Advancement of Chicanos and Native Americans in Science. Among other duties, I arranged regular meetings, petitioned funds and planned outreach activities. 2013-2014.

Graduate Mentor, Community of Student Mentors, Center of Inclusive Education, SBU. *Description:* As a senior graduate student, I mentored a first-year underrepresented minority graduate student. 2013.

Recruiter, Stony Brook Center for Inclusive Education. *Description:* I volunteered at the SBU booth at national SACNAS meetings in Seattle, WA and San Antonio, NY. 2012 & 2013.

Invited Speaker, Western Suffolk BOCES summer science program. *Description:* I spent one day each year speaking at a summer day-camp for underrepresented minority students from low-income communities. In addition to presenting my research, I assisted students in laboratory exercises. 2008-2014.

Invited Speaker, Career Panel, American Museum of Natural History. *Description:* I participated in a question and answer session for high school and college students volunteering at the AMNH. 2016.

Invited Speaker, Meet the Scientist, American Museum of Natural History. *Description:* Gave three presentations in the AMNH Discovery Room in an ongoing lecture series that exposes the general public to museum research. 2016.

Invited Speaker, Adventures in Ocean Science Camp, American Museum of Natural History. *Description:* Gave a presentation on fish jaws at a day camp for children (5-6 years old), including a hands-on session with specimens from the museum's teaching collection. 2015.

## Research Experience & Expeditions

Expedition Leader: Collections trip to the Yucatán Peninsula, Mexico

*Description:* Co-led an international team of researchers on a field expedition, collecting fishes from cenotes (sinkholes) of southern Mexico. 8-18 February 2017.

Expedition Associate: Research Cruise, SP1610 on R/V Robert Gordon Sproul.

*Description:* Midwater trawling cruise for deep-sea fishes off the coast of San Diego, CA. 15-21 May 2016.

Research Assistant. NSF/NOAA CAMEO Grant. Stony Brook University.

*Description:* Statistical analyses of spatial dynamics in NW Atlantic communities. 2010-2013.

Research Assistant. Hudson River Striped Bass Survey. Stony Brook University.

*Description:* Collection and identification of lower Hudson River fishes. 2008.

Laboratory Assistant. Moorea Coral Reef LTER. UC Santa Barbara.

*Description:* Research diving and field research for Schmitt/Holbrook lab. 2005-2007.

Laboratory Assistant. UC Santa Barbara.

*Description:* Laboratory research on mating systems in plants. 2003-2005.



## **Professional Service**

Journal reviewer: American Museum Novitates; Biological Journal of the Linnean Society; Current Zoology; Cybium; Evolution; Hydrobiologia; Integrative & Comparative Biology; Journal of Animal Ecology; Journal of Fish Biology; Nature Scientific Reports; Proceedings of the Royal Society B; Zootaxa

Reviewer for the Margaret M. Stewart Achievement Award for Excellence in Ichthyology or Herpetology. 2019.

Proposal reviewer: Lerner-Gray Fund for Marine Research, American Museum of Natural History. 2015-2016.

## **Society Membership**

American Society of Ichthyologists & Herpetologists

Society for Integrative and Comparative Biology