

David Charles Collar
Curriculum Vitae

Department of Organismal & Environmental Biology
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CURRENT POSITION

Assistant Professor, Department of Organismal and Environmental Biology (OENB)
Christopher Newport University, August 2015 – present

PROFESSIONAL POSITIONS

Postdoctoral Researcher & Instructor, University of Massachusetts Boston, 2014 – 2015
Assistant Project Scientist, University of California, Davis, 2013 – 2014
Postdoctoral Scholar, University of California, Santa Cruz, 2010 – 2013
Postdoctoral Research Fellow, Harvard University, 2007 – 2010

EDUCATION

University of California, Davis
Ph.D. in Population Biology, September 2007
Dissertation title: *Evolution of morphological and functional diversity in centrarchid fishes*
Advisor: Dr. Peter Wainwright

University of Chicago
B.A. in Biological Science, with honors, June 2000

PUBLICATIONS

- Reynolds, R.G., **D.C. Collar**, S.A. Pasatchnik, M.L. Niemiller, A.R. Puente-Rolon, L.J. Revell. 2016. Ecological specialization and morphological diversification in Greater Antillean boas. *Evolution*, In press.
- Collar, D.C.**, M. Quintero, B. Buttler, A.B. Ward, R.S. Mehta. 2016. Body shape transformation along a shared axis of anatomical evolution in labyrinth fishes (Anabantoidei). *Evolution* 70: 555-567.
- Collar, D.C.**, P.C. Wainwright, M.E. Alfaro, L.J. Revell, R.S. Mehta. 2014. Biting disrupts integration to spur skull evolution in eels. *Nature Communications* 5: 5505.
- Collar, D.C.**, J.S. Reece, M.E. Alfaro, P.C. Wainwright, R.S. Mehta. 2014. Imperfect morphological convergence: variable changes in cranial structures underlie transitions to durophagy in moray eels. *American Naturalist* 183: E168-E184.
- Ord, T.J., **D.C. Collar**, T.J. Sanger. 2013. The biomechanical basis of evolutionary change in a territorial display. *Functional Ecology* 27: 1186-1200.
- Collar, D.C.**, C.M. Reynaga, A.M. Ward, R.S. Mehta. 2013. A revised metric for quantifying body shape in vertebrates. *Zoology* 116: 246-257.
- Holzman, R., **D.C. Collar**, S.A. Price, C.D. Hulsey, R.C. Thomson, P.C. Wainwright. 2012. Biomechanical trade-offs bias rates of evolution in the feeding apparatus of fishes. *Proceedings of the Royal Society B* 279: 1287-1292.
- Holzman, R., **D.C. Collar**, R.S. Mehta, P.C. Wainwright. 2012. An integrative modeling approach to elucidate suction feeding performance. *Journal of Experimental Biology* 215: 1-13.

- Collar, D.C.**, J.A. Schulte II, J.B. Losos. 2011. Evolution of extreme body size disparity in monitor lizards (*Varanus*). *Evolution* 65: 2664-2680.
- Holzman, R.* , **D.C. Collar***, R.S. Mehta, P.C. Wainwright. 2011. Functional complexity can mitigate performance trade-offs. *American Naturalist* 177: E69-E83. (* equal contribution)
- Collar, D.C.**, J.A. Schulte II, B.C. O’Meara, J.B. Losos. 2010. Habitat use affects morphological diversification in dragon lizards. *Journal of Evolutionary Biology* 23: 1033-1049.
- Price, S.A., P.C. Wainwright, D.R. Bellwood, E. Kazancioglu, **D.C. Collar**, T.J. Near. 2010. Functional innovations and morphological diversification in parrotfishes. *Evolution* 64: 3057-3068.
- Collar, D.C.**, B.C. O’Meara, P.C. Wainwright, T.J. Near. 2009. Piscivory limits diversification of feeding morphology in centrarchid fishes. *Evolution* 63: 1557-1573.
- Revell, L.J.* and **D.C. Collar***. 2009. Phylogenetic analysis of the evolutionary correlation using likelihood. *Evolution* 63: 1090-1100. (* equal contribution)
- Collar, D.C.** and P.C. Wainwright. 2009. Ecomorphology of centrarchid fishes. Pp. 70-89. In: Centrarchid fishes: diversity, biology and conservation. S. J. Cook and D. P. Philipp, eds. Blackwell Scientific Press, Cambridge, UK.
- Revell, L.J., L.J. Harmon, **D.C. Collar**. 2008. Phylogenetic signal, evolutionary process, and rate. *Systematic Biology* 57: 591-601.
- Holzman, R., **D.C. Collar**, S.W. Day, K.L. Bishop, P.C. Wainwright. 2008. Scaling of suction-induced flows in bluegill: morphological and kinematic predictors for the ontogeny of feeding performance. *Journal of Experimental Biology* 211: 2658-2668.
- Collar, D.C.**, P.C. Wainwright, M.E. Alfaro. 2008. Integrated diversification of locomotion and feeding in labrid fishes. *Biology Letters* 4: 84-86.
- Wainwright, P.C., A.M. Carroll, **D.C. Collar**, S.W. Day, T.E. Higham, R. Holzman. 2007. Suction feeding mechanics, performance and diversity in fishes. *Integrative and Comparative Biology* 47: 96-106.
- Collar, D.C.** and P.C. Wainwright. 2006. Discordance between morphological and mechanical diversity in the feeding mechanism of centrarchid fishes. *Evolution* 60: 2575-2584.
- Collar, D.C.**, T.J. Near, P.C. Wainwright. 2005. Comparative analysis of morphological diversity: does disparity accumulate at the same rate in two lineages of centrarchid fishes? *Evolution* 59: 1783-1794.
- Carroll, A.M., P.C. Wainwright, S.H. Huskey, **D.C. Collar**, R.G. Turingan. 2004. Morphology predicts suction feeding performance in centrarchid fishes. *Journal of Experimental Biology* 207: 3873-3881.
- Praitis, V., E. Casey, **D. Collar**, J. Austin. 2001. Creation of low-copy integrated transgenic lines in *Caenorhabditis elegans*. *Genetics* 157: 1217-1226.

TEACHING EXPERIENCE

Principal Instructor

- Comparative Anatomy of the Vertebrates*, CNU 2016
- Comparative Anatomy of the Vertebrates Lab*, CNU 2016
- Principles of Biology II: Evolution, Ecology, & Biodiversity*, CNU 2015,2016
- Principles of Biology III: Form and Function in Animals*, CNU 2015, 2016
- Animal Behavior Lab*, UMass Boston, 2014

Instructor in a Team Taught Course

- Workshop in Applied Phylogenetics*, UC Davis, 2007

STUDENT MENTORING

- Dylan Thomson, CNU, undergraduate research, Recovery of morphological and phylogenetic diversity following oyster reef restoration in Chesapeake Bay, 2016

STUDENT MENTORING (continued)

- Samantha Tremaine, CNU, undergraduate research, Evolution of extreme body elongation in Scombroidei, 2016
- Crystal Reynaga, UC Santa Cruz, undergraduate research, Anatomical basis of body elongation in vertebrates, 2011 –2013
- Osub Ahmed, Harvard University, undergraduate research, Morphological diversity in lizards, Spring 2009

GRANTS, FELLOWSHIPS AND AWARDS

- Merton Love Award** for best dissertation in Ecology and Evolution, UC Davis, 2007
- ARCS Foundation Scholarship**, 2003
- Center for Population Biology Research Award**, UC Davis, awarded annually 2002-2005
- Population Biology Graduate Group Fellowship**, UC Davis, awarded annually 2001-2006
- Amos Alonzo Stagg Medal**, University of Chicago, Order of the “C”, awarded to senior male athlete with the best all-around record for athletics, scholarship and character, 2000

PROFESSIONAL SERVICE

- Associate Editor for *American Naturalist*, 2015-present
- Reviewer for *American Naturalist*, *Biological Journal of the Linnean Society*, *Canadian Journal of Fisheries and Aquatic Sciences*, *Copeia*, *Ecology Letters*, *Evolution*, *Evolutionary Biology*, *Evolutionary Ecology*, *Functional Ecology*, *Hydrobiologia*, *Integrative and Comparative Biology*, *Journal of Evolutionary Biology*, *Journal of Experimental Biology*, *Journal of Fish Biology*, *Methods in Ecology and Evolution*, *Molecular Phylogenetics and Evolution*, *Nature Communications*, *PLoS One*, *Proceedings of the Royal Society B*, *Science*, *Systematic Biology*, *Zoology*
- External reviewer for National Science Foundation proposals in Population and Evolutionary Processes, Physiological and Structural Systems, and Systematic Biology and Biodiversity Inventories

NEWS COVERAGE

Coverage of Collar et al. 2009. Piscivory limits diversification of feeding morphology in centrarchid fishes. *Evolution* 63: 1557-1573.

- Editors' Choice. 2009. Evolution: Unable to diversify. *Science* 325:12.
- National Evolutionary Synthesis Center. 2009. Freshwater fish at the top of the food chain evolve more slowly [Press Release]. Available from <http://www.eurekalert.org/pub_releases/2009-07/nesc-ffa072809.php>

INVITED SEMINARS

- The mechanics of morphological evolution in ray-finned fishes*. School of Integrative Biology, University of Illinois
- The mechanics of diversification in eels*. Department of Organismal and Environmental Biology, Christopher Newport University
- The anatomy of ray-finned fish diversity*. Department of Biology, Manhattan College
- Identifying ecological constraints on morphological and functional evolution using phylogenies*. Department of Ecology and Evolutionary Biology, UC Santa Cruz
- Comparative analysis of functional morphology: insights into the diversification of form in teleost fishes*. Department of Biological Science, Florida International University
- Evolution of morphological and functional disparity in fishes*. Department of Ecology and Evolutionary Biology, University of Michigan

INVITED SEMINARS (continued)

What factors affect the evolution of morphological and functional disparity in centrarchid fishes? Merton Love Award Seminar, UC Davis

Testing for shifts in rates of morphological, functional and ecological evolution in centrarchid fishes. Museum of Vertebrate Zoology, University of California, Berkeley

MEETING PRESENTATIONS

Body shape transformation along anatomical lines of least resistance in labyrinth fishes. International Congress of Vertebrate Morphology, Washington, D.C., 2016.

Anatomical basis of body shape diversification in labyrinth fishes. Society for Integrative and Comparative Biology, Palm Beach, FL, 2015.

The morphological and kinematic basis of suction feeding performance evolution. Society for Integrative and Comparative Biology, San Francisco, CA, 2013.

Does feeding mode constrain diversification of the skull in elopomorph fishes? Society for Integrative and Comparative Biology, Charleston, SC, 2012.

Feeding mode affects evolutionary rates and integration of skull modules in anguilliform fishes. Evolution, Norman, OK, 2011.

Rates of morphological evolution vary with habitat use in dragon lizards. Society for Integrative and Comparative Biology, Seattle, WA, 2010.

The effects of habitat use on morphological diversification in dragon lizards. Society for the Study of Evolution, Moscow, ID, 2009.

Correlated evolution of feeding morphology in piscivorous versus non-piscivorous centrarchid fishes. Society for Integrative and Comparative Biology, Boston, MA, 2009.

Complexity in the feeding mechanism mitigates a diet tradeoff in centrarchid fishes. Society for Integrative and Comparative Biology, San Antonio, TX, 2008.

Discordance between mechanical and morphological diversity in the suction feeding mechanism of centrarchid fishes. Society for Integrative and Comparative Biology. Phoenix, AZ, 2007.

Decoupled morphological and mechanical diversity in the suction feeding mechanism of centrarchid fishes. Society for the Study of Evolution, Stony Brook, NY, 2006.

*Testing the bass fisherman's hypothesis: Does reaching an adaptive peak limit diversification of the feeding apparatus in *Micropterus* (Teleostei: Centrarchidae)?* Society for Integrative and Comparative Biology. Orlando, FL, 2006.

Does morphological disparity evolve at the same rate in two lineages of centrarchid fishes? Symposium on *Evolution and Ecology of the Centrarchidae*, American Society of Ichthyologists and Herpetologists, Tampa, FL, 2005

Comparative analysis of morphological diversity: trophic evolution in centrarchid fishes. Society for Integrative and Comparative Biology. San Diego, CA, 2005.

PROFESSIONAL MEMBERSHIPS

American Society of Naturalists

Society for Integrative and Comparative Biology

Society for the Study of Evolution

Society of Systematic Biologists