

**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* 70: 1882-1895.
- 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 Vertebrates*, CNU 2016
- Comparative Anatomy of 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 – present

**STUDENT MENTORING (continued)**

Samantha Tremaine, CNU, undergraduate research, Evolution of extreme body elongation in Scombroidei, 2016 – present  
 Emma DiPaolo, CNU, undergraduate research, Origins of visual communication signaling in iguanian lizards, 2016 – present  
 Crystal Reynaga, UC Santa Cruz, undergraduate research, Anatomical basis of body elongation in vertebrates, 2011 –2013

**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*, *Scientific Reports*, *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](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