

CURRICULUM VITAE
Matthew E. Neilson

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EDUCATION

Ph.D Biology, University of Toledo, Toledo, OH (*in progress*) 2004-present
M.S. Biology, California State University, Long Beach, CA 2000-2004
B.S. Biology, University of New Hampshire, Durham, NH 1995-1999

RESEARCH INTERESTS

- Population genetics, phylogeography, ecology, systematics and natural history of marine and freshwater fishes
- Use of molecular tools and a population genetics approach to fisheries management and conservation
- Computer simulation and modeling in population genetics and fisheries biology

RESEARCH EXPERIENCE

Dissertation

Title: Systematics and evolution of the neogobiin gobies (Teleostei: Gobiidae).

Advisor – Dr. Carol A. Stepien. Includes two years of RA support through NSF grant #DEB-0456972 to C. Stepien

- Field collection of gobies using a variety of methods (otter trawl, beach seine, fish traps), including international fieldwork in Russia
- Specimen preservation using both ethanol and formalin, and maintenance of collection databases
- DNA isolation, PCR amplification, DNA sequencing and microsatellite analyses
- Analysis of morphological characters from museum specimens
- Analysis of DNA sequence and microsatellite data and morphological characters using various population genetic and phylogenetic software

Master's thesis

Title: Post colonization mitochondrial DNA genetics of two introduced populations of yellowfin goby, *Acanthogobius flavimanus*, in California.

Advisor – Dr. Raymond R. Wilson, Jr.

- Field collection of gobies using a variety of methods (otter trawl, beach seine, fish traps), including international fieldwork in Japan
- DNA isolation, PCR amplification and sequencing
- Analysis of sequence data using various population genetic and phylogenetic software

Volunteer research assistant

CSULB Shark Lab. September 2000 to December 2002. PI: Dr. Christopher Lowe.

- Assisted with population censusing, tagging, and acoustic tracking of the round stingray (*Urobatis halleri*) at Seal Beach, CA.

Intern

Center for Shark Research, Mote Marine Laboratory, Sarasota, FL. January to May 2000. PI's: Drs. Colin Simpfendorfer and Michelle Heupel.

- Husbandry and maintenance of captive bonnethead sharks (*Sphyrna tiburo*) in research aquaria
- Gill netting and tagging of small coastal sharks from laboratory research vessels
- Placement and maintenance of acoustic monitors
- Sectioning and preparation of tiger shark (*Galeocerdo cuvier*) vertebral centra for age and growth study

PUBLICATIONS

M. E. Neilson and C. A. Stepien. 2009. Escape from the Ponto-Caspian: Evolution and biogeography of an endemic goby species flock (Benthophilinae: Gobiidae: Teleostei). *Molecular Phylogenetics and Evolution*. doi:10.1016/j.ympev.2008.12.023

K. A. Feldheim, P. Willink, J. E. Brown, D. J. Murphy, **M. E. Neilson**, and C. A. Stepien. 2009. Eight polymorphic microsatellite loci for the exotic round goby *Neogobius melanostomus* (Teleostei: Gobiidae) with cross-species amplification. *Molecular Ecology Resources*

M. E. Neilson and C. A. Stepien. 2009. Evolution and phylogeography of the tubenose goby genus *Proterorhinus* (Gobiidae: Teleostei): Evidence for new cryptic species. *Biological Journal of the Linnean Society*.

C. A. Stepien, J. E. Brown, **M. E. Neilson**, and M. A. Tumeo. 2005. Genetic diversity of invasive species in the Great Lakes versus their Eurasian source populations: insights for risk analysis. *Risk Analysis* 25: 1043-1060.

M. E. Neilson and R. R. Wilson, Jr. 2005. mtDNA singletons as evidence of a post-invasion genetic bottleneck in yellowfin goby *Acanthogobius flavimanus* from San Francisco Bay, California. *Marine Ecology Progress Series* 296: 197-208.

GRANTS AND AWARDS

2007 Student Exchange Program, Deepfin Project (funded by NSF grant to Dr. Guillermo Orti, University of Nebraska; <http://www.deepfin.org>)

2005 IAGLR Scholarship; International Association for Great Lakes Research

2005 Student Travel Award; American Society of Ichthyologists and Herpetologists

2004 Kenneth L. Johnson Award: Outstanding Thesis in Life Sciences; College of Natural Sciences and Mathematics, CSULB

2004 Boeing Graduate Fellowship; College of Natural Sciences and Mathematics, CSULB

2003 Best Paper in Fisheries Biology; American Institute of Fishery Research Biologists. Awarded at the Southern California Academy of Sciences Annual Meeting, Northridge, CA

2003 Lerner-Gray Fund for Marine Research; American Museum of Natural History

2003 Richard B. Loomis Graduate Research Award; Department of Biological Sciences,

CSULB

2003 Sally Casanova Pre-Doctoral Scholar Award; The California State University

SELECTED PRESENTATIONS (* denotes presenter)

M. E. Neilson* and C. A. Stepien, 2006. Phylogenetic and biogeographic relationships of the neogobiin gobies. American Society of Ichthyologists and Herpetologists Annual Meeting, 12-17 July 2006, New Orleans, LA.

M. E. Neilson* and C. A. Stepien, 2006. Molecular systematics and invasion pattern of the neogobiin fishes in the Great Lakes and Europe. International Association for Great Lakes Research annual meeting, 24-27 May 2006, Windsor, Ontario, Canada.

M. E. Neilson* and C. A. Stepien, 2005. Genetic identity, systematics, and biogeography of invasive neogobiins: patterns in the Ponto-Caspian, the Great Lakes, and beyond. 2nd International Symposium on Invasive Species in the Holarctic, 27 September - 1 October, 2005.

M. E. Neilson* and C. A. Stepien, 2005. Molecular systematics of the neogobiin gobies. American Society of Ichthyologists and Herpetologists Annual Meeting, 7-12 July 2005, Tampa FL.

M. E. Neilson* and R. R. Wilson, Jr. 2004. What mtDNA tells us about the invasion history of yellowfin goby in California -part I: through the bottle's neck? American Society of Ichthyologists and Herpetologists Annual Meeting, 26-31 May 2004, Norman OK.

M.E. Neilson* and R. R. Wilson, Jr. 2003. Mitochondrial DNA genetics of two invasive populations of yellowfin goby (*Acanthogobius flavimanus*) in California. Invited speaker, fall quarterly meeting, American Institute of Fishery Research Biologists, Southern California chapter.

M.E. Neilson* and R. R. Wilson, Jr. 2003. Mitochondrial DNA genetics of an invasive population of yellowfin goby (*Acanthogobius flavimanus*) in San Francisco Bay, California. Southern California Academy of Sciences Annual Meeting, 9-10 May 2003, Northridge, CA.

M.E. Neilson* and R. R. Wilson, Jr. 2002. Mitochondrial DNA genetics in two invasive populations of yellowfin goby (*Acanthogobius flavimanus*) in California: a tale of two bottlenecks? Western Society of Naturalists Annual Meeting, 8-11 November 2002, Monterey, CA.

SELECTED GRADUATE COURSEWORK

Ichthyology	Seminar - Genetics of Invasive Species
Foundations of Ecology	Seminar – Molecular Methods in Ecology
Advanced Population Ecology	Research in Tropical Marine Ecology
Molecular Evolutionary Ecology	Invasive Species: Ecology, Evolution and Biogeography
Understanding Biogeography	Diversity of Fishes (taken at Shoals Marine Laboratory with Dr. Bruce Collete – top student)
Speciation: Concepts and Controversy	
Multivariate Data Analysis	
Computer Modeling in Biology	

SELECTED SKILLS AND CERTIFICATIONS

Proficient with phylogenetic and population genetic data analysis software, including: Arlequin, DnaSP, Genepop, MEGA, Mr. Bayes, PAUP*, Phylip, PhyML, Structure

Competent in univariate and multivariate statistical analyses in SAS and R

Proficient with Windows, OS X, and Linux operating systems

Familiar with office productivity, computer graphics, and bibliographic software

Experienced with compound and stereomicroscopes, and digital image capture systems for microscopes

NAUI SCUBA Diver certification

Familiar with underwater photography and videography

Proficient in the piloting (300+ hours) and transport of small watercraft (17' Boston Whaler, 22' Glacier Bay catamaran, 24' Carolina DLX skiff)

PROFESSIONAL MEMBERSHIPS

American Society of Ichthyologists and Herpetologists
International Association for Great Lakes Research
Sigma Xi

TEACHING EXPERIENCE

2006-2008 Graduate Teaching Assistant, Department of Environmental Sciences, University of Toledo. Courses taught: Biodiversity Laboratory (EEES 2160). Instruction of lower division introductory biology laboratory course for majors and non-majors. Set-up and break down of instructional materials, and laboratory supply ordering. Revision of student lab manual and TA handbook.

2001-2004 Scientific Aide in Marine Education, California Department of Fish and Game, Upper Newport Bay Ecological Reserve, Newport Beach, CA. Designed and implemented marine science education and outreach programs for K-12 and college students, supervised high school and college interns, and performed monthly sampling and identification of estuarine and marine fishes and invertebrates

2000-2003 Graduate Teaching Associate, Department of Biological Sciences, California State University Long Beach. Courses taught: General Genetics (BIOL 370), Biological Sciences I (BIOL 211A), General Biology (BIOL 200). Instruction of teaching laboratories for upper and lower division biology courses. Set-up and breakdown of instructional materials.

1998-1999 Undergraduate Teaching Associate, University of New Hampshire. Courses

taught: Principles of Biology I, II (BIOL 411, 412). Assisted graduate teaching associates with the instruction of introductory biology teaching laboratory.

MENTORING

University of Toledo NSF Research Experience for Undergraduates program

- Ian Hoffman (2006) – population genetics of the monkey goby *Apollonia fluviatilis*
- Jennifer Ohayon (2006) – population genetics of the racer goby *Neogobius gymnotrachelus*
- Mark Sibug (2007) – Population genetics and phylogeography of smallmouth bass *Micropterus dolomieu*

PROFESSIONAL REFERENCES

Dr. Carol Stepien

Director, Lake Erie Center *and* Professor

Department of Environmental Sciences, University of Toledo

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Dr. Raymond Wilson, Jr.

Associate Professor

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