

Curriculum Vitae

Nicholas J. Gidmark

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Education

2006-present: Graduate student, Brown University, Department of Ecology and Evolutionary Biology, Brainerd Lab of Biomechanics and Functional Morphology.

2002-2006: B.S. Student, University of Minnesota, College of Natural Resources, Department of Fisheries, Wildlife, and Conservation biology. Graduated 2006. *Summa cum laude*. GPA: 3.836. Honors thesis (under Dr. Andrew Simons) title; “*Character Suites Suggest Frequent, Punctuated Evolution of Herbivorous Morphologies in Minnows (Actinopterygii: Cyprinidae)*.”

Research Interests

Biomechanics, functional morphology, and evolution of fishes. Current projects examine the mechanics of jaw protrusion and pharyngeal processing in common carp, black carp and Asian arowana

Teaching Experience

*Teaching Assistant, unless otherwise noted.

2008

Human Anatomy and Histology, Alpert Medical School of Brown University.
Comparative Biology of the Vertebrates, Brown University. Laboratory director in addition to Teaching Assistant duties.

2007

Biological Design: Structural Architecture of Organisms, Brown University.
The Body: Introduction to Human Anatomy, Brown University.
Comparative Biology of the Vertebrates, Brown University.

2006

Ecological Evaluation of Environmental Problems, University of Minnesota.

2005

Ecological Evaluation of Environmental Problems, University of Minnesota.
Principles of Biology, University of Minnesota.

2004

Principles of Biology, University of Minnesota.

Research Skills and Techniques

Experimental

Animal surgery; videography (both standard and x-ray); sonomicrometry;
radiomicrometry.

Morphological

Laser scanning; CT manipulation; digital model editing (Geo Magic, Microscan Tools, Maya); SEM imaging; double staining & clearing; macro and micro dissection; histological sectioning using low viscosity nitrocellulose embedding; otolith aging.

Molecular

DNA extraction, PCR amplification, DNA sequencing.

Data analysis

XROMM workflow; Matlab, Igor, Kaleidagraph; R; JMP; Image J; phylogenetic treatment of molecular and morphological data using phylogenetics programs (MacClade, PAUP*, MRBAYES, etc.); character optimization.

Visualization

Video production and processing using Combustion, Maya, Cleaner and Virtual Dub; Adobe Illustrator.

Other

Aquarium construction with acrylic; collection and identification of North American freshwater fishes; husbandry of various fish species; radio telemetry; mist netting; orienteering.

Awards & Grants

2005

Phylogenetic Relationships of the North American Minnow Genera *Pimephales* and *Opsopoeodus* (Actinopterygii: Ostariophysi). Undergraduate Research Opportunities Program (UROP) grant, University of Minnesota. \$1700
Comparative Evolution of Trophic Morphology in Three Clades of North American Minnows (Teleostei: Cyprinidae). Sigma Xi Grant-in-Aid of Research. \$220

2004

- Identification of ichthyological specimens from the 1893 Menage expedition, Philippines. UROP grant, University of Minnesota. \$1500
- Dayton Kirkham Foundation for Undergraduate Enhancement, departmental travel grant, and UROP travel grant; for travel to American Society of Ichthyologists and Herpetologists meetings. \$500
- Dayton Kirkham Foundation for Undergraduate Enhancement, for travel to Sigma Xi meetings (Joint with M. R. Bush). \$1000
- “Superior Student Poster Presentation,” Sigma Xi undergraduate student research conference, Montreal, Canada. \$180
- Honors thesis improvement grant; for equipment, supplies, and chemicals. College of Natural Resources and Department of Fisheries, Wildlife, and Conservation Biology, University of Minnesota. \$1324

2003

- Evolution of trophic morphology in *Pimephales* and *Opsopoeodus* (Teleostei: Cyprinidae). UROP grant, University of Minnesota \$1700
- Substrate preferences in breeding of the Topeka shiner, *Notropis Topeka*. UROP grant, University of Minnesota. \$1700

Scholarships

2005

- Ludden Scholarship, for professional commitment and academic achievement. Awarded once annually. College of Natural Resources, University of Minnesota. \$1500
- Robert D. Peterson Writing Skills Award. Awarded once annually. College of Natural Resources, University of Minnesota. \$1000

2004

- Caleb Dorr academic scholarship, for the highest GPA in each year class of the College of Natural Resources. Awarded once annually. College of Natural Resources, University of Minnesota. \$1000
- American Fisheries Society undergraduate scholarship, 1st place winner. \$500

Oral Presentations (15)

2009

- Gidmark, NJ, KL Staab, LP Hernandez and EL Brainerd. XROMM analysis of 3D skeletal movement during premaxillary protrusion in common carp. Society for Integrative and Comparative Biology annual meeting, Boston, MA.

2008

- Gidmark, NJ, JA Strother, JM Horton, AP Summers, and EL Brainerd. The transition from water to sand and its effects on undulatory locomotion in sand lances

- (Actinopterygii: Ammodytidae). American Society of Ichthyologists and Herpetologists annual meeting, Montreal, Canada.
- Gidmark, NJ. XROMM analysis of jaw protrusion kinematics in common carp, *Cyprinus carpio*. Division of Vertebrate Morphology (SICB) regional meeting, Storrs, CT.
- Gidmark, NJ, KL Staab, LP Hernandez and EL Brainerd. Role of the kinethmoid in jaw protrusion of common carp, *Cyprinus carpio*. Society for Integrative and Comparative Biology annual meeting, San Antonio, TX.

2007

- Gidmark, NJ. Anamniotic snakes: how to make a fish move with serpentine locomotion. Brown University seminar series, Providence RI
- Gidmark, NJ, JA Strother, JM Horton, AP Summers, and EL Brainerd. Effects of the water-to-sand transition on the kinematics of burrowing in sand lances. Division of Vertebrate Morphology (SICB) regional meeting, Kingston, RI.
- Gidmark, NJ. On the evolution of trophic morphology in fishes, with comments on the role of pharyngeal arches. Brown University seminar series, Providence, RI.

2006

- Gidmark, NJ. Burrowing kinematics of *Ammodytes hexapterus*, the Pacific sand lance. Division of Vertebrate Morphology (SICB) regional meeting, Providence, RI.
- Gidmark, NJ and AM Simons. Comparative evolution and variation of trophic morphology among and within two clades of North American cyprinids (Actinopterygii: Ostariophysi). University of Minnesota honors retreat seminar series, St. Paul, MN

2005

- Gidmark, NJ. Phylogenetic relationships of major lineages of Cypriniformes (Actinopterygii: Teleostei) based on Ribosomal RNA sequence data. NSF Cypriiform Tree of Life REU symposium, Minneapolis, MN.
- Gidmark, NJ. Comparative evolution and variation of trophic morphology among and within two clades of North American cyprinids (Actinopterygii: Ostariophysi). American Society of Ichthyologists and Herpetologists annual meeting, Tampa, FL.
- Simons, AM and NJ Gidmark. What we know about cypriniform relationships: a review of the evidence. American Society of Ichthyologists and Herpetologists annual meeting, Tampa, FL.
- Gidmark, NJ and AM Simons. Character suites suggest punctuated evolution of herbivorous morphologies in minnows (Teleostei: Cyprinidae). American Fisheries Society annual meeting, Grand Rapids, MN.

2004

- Gidmark, NJ and AM Simons. Evolution of trophic morphology in *Pimephales* and *Opsopoeodus*. American Society of Ichthyologists and Herpetologists annual meeting, Norman, OK.

Gidmark, NJ, E Jorgensen and D Lilja. Effects of gill parasites *Lernaeocera branchialis*, *Clavella adunca*, and *Caligus elongates* on the growth rates and body proportions of Atlantic Cod, *Gadus morhua*, off the coast of Heimaey, Vestmannaeyjar, Iceland. University of Iceland Arctic Biology Research Symposium, Reykjavik, Iceland.

Poster Presentations (5)

2009

Mostafiz, W, NJ Gidmark and SM Swartz. Histology and morphology of cyprinid pharyngeal dentition in relation to diet. Society for Integrative and Comparative Biology annual meeting, Boston, MA.

2007

Gidmark, NJ, J Strother, JM Horton and EL Brainerd. Burrowing kinematics of *Ammodytes hexapterus*, the Pacific Sand Lance. International Congress on Vertebrate Morphology, Paris, France

Gidmark, NJ, J Strother, JM Horton and EL Brainerd. Burrowing Kinematics of *Ammodytes hexapterus*, the Pacific Sand Lance. Society for Integrative and Comparative Biology, Phoenix, Arizona.

2005

Gidmark, NJ Punctuated evolution of herbivorous morphologies in minnows (Actinopterygii: Ostariophysi). National Conference of Undergraduate Research, Lexington, Virginia

Gidmark, NJ Character suites suggest punctuated evolution of herbivorous morphologies in minnows (Teleostei: Cyprinidae). Sigma Xi annual meetings, Montreal, Canada. Received award for "Superior Student Presentation," top prize.

Societies and Professional Memberships

American Society of Ichthyologists and Herpetologists

International Society of Vertebrate Morphologists

Society for Integrative and Comparative Biology

Community Service and Outreach

2003-2005: Community Advisor, Housing and Residential Life, U of MN.

2003-2006: College of Natural Resources Information Technology committee.

2003: Volunteer Intern, Friends of the Boundary Waters Canoe Area Wilderness.

Foreign Language

Conversant in Spanish.

References

Brainerd, Elizabeth

Professor

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Swartz, Sharon

Associate Professor

Department of Ecology and Evolutionary Biology

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Simons, Andrew

Associate Professor

Curator of Ichthyology and Herpetology

Bell Museum of Natural History

Department of Fisheries, Wildlife, and Conservation Biology

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