Biological Sciences

Department Information

- **Department Chair:**
  Julia H. Bowsher, Ph.D.
- **Graduate Coordinator:**
  Steve Travers, Ph.D.
- **Department Location:**
  201 Stevens Hall
- **Department Phone:**
  (701) 231-7087
- **Department Email:**
  ndsu.biological.sciences@ndsu.edu
- **Department Web Site:**
  www.ndsu.edu/biology/ (http://www.ndsu.edu/biology/)
- **Application Deadline:**
  Applications must be submitted by January 15 for full consideration for GTA or GRA positions.*
- **Credential Offered:**
  Ph.D., M.S.
- **English Proficiency Requirements:**
  TOEFL ibt 79; IELTS 6.5; Duolingo 105

*Applicants will not be considered without a department faculty member who has agreed to serve as the major adviser. For e-mail addresses of faculty members and additional information about our programs, please visit our web site at http://www.ndsu.edu/biology/.

Program Description

The Department of Biological Sciences offers graduate study leading to Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees. Master of Science degrees are available in Biology and Environmental and Conservation Sciences.

Doctor of Philosophy degrees are available in Biological Sciences, Genomics, Cellular and Molecular Biology, Environmental and Conservation Sciences, and STEM Education. Advanced work may involve specialized training in the following areas: aquatic biology, behavior, biology education research, cell biology, comparative biochemistry and physiology, cancer biology, conservation biology, ecology, endocrinology, developmental biology, evolution, fisheries biology, molecular biology, plant biology, population biology, prairie pothole ecology, evolutionary ecology and wildlife biology.

Student research and academic programs are tailored to individual needs and interests. Interdisciplinary approaches to biological problems are encouraged.

Research Facilities and Equipment

The Department of Biological Sciences occupies approximately 20,000 square feet of floor space in Stevens Hall for research. The NDSU Library has extensive holdings of journals, monographs, books, and other reference materials covering various fields in biology. The library offers full access to online catalogs and databases.

Faculty in the department have research programs ranging from molecular biology to ecosystem ecology and work with a wide variety of organisms across multiple levels of organization, from cellular mechanisms to ecosystem function. Modern equipment is available for conducting research in cell and molecular biology and field ecology and behavior. The department has access to a vascular plant herbarium with 240,000 specimens emphasizing Northern Great Plains flora, a lichen herbarium consisting of about 15,000 specimens with a worldwide representation of taxa, and a vertebrate collection with approximately 10,000 specimens.

The department offers access to a range of equipment and facilities necessary for laboratory research, including greenhouses, animal rooms, growth chambers, tissue culture facilities, ultracentrifuges, spectrophotometers, electrophoresis, light microscopes, gas chromatography, GC-mass spectrometry, and high performance liquid chromatography. Facilities are available for protein and DNA sequencing, oligonucleotide synthesis, interactive laser cytometry, scanning transmission and electron microscopy, and confocal microscopy.

The graduate programs in the Department of Biological Sciences are open to all qualified graduates of universities and colleges of recognized standing. To be admitted with full status to the program, the applicant must meet all Graduate School admission requirements.

Applications should be submitted directly to the Graduate School. For full consideration for GTA or GRA positions, applications must be submitted by January 15. Applicants will not be considered without a department faculty member who has agreed to serve as the major adviser. Correspondence

with one or more departmental faculty members before and during the application process is essential. For email addresses for faculty members and for additional information about our programs, please visit our website at www.ndsu.edu/biology/ (https://www.ndsu.edu/biology/).

Financial Assistance

A student must first be accepted by the Graduate College before consideration for financial assistance. Graduate research assistantships (GRA) and graduate teaching assistantships (GTA) are available. Applicants are considered based on scholarship, potential to undertake advanced study and research, as well as financial need.

In addition to the stipend, graduate assistants receive a graduate tuition waiver. Tuition waivers cover base tuition for NDSU graduate credits only. Students are responsible for differential tuition, student fees, and tuition for non-graduate level credits taken or Cooperative Education credits.

In addition to research and teaching assistantships, there are other types of financial support. A limited number of fellowships are available through the Graduate College. Outstanding scholarship and financial need are primary considerations for these fellowships. Scholarships in specific areas are also available through the Department of Biological Sciences. These are generally supplemental and do not include tuition waivers. Students are considered for these awards after enrollment, with primary considerations being scholastic performance and research at NDSU.

Students must select a major adviser prior to their arrival for graduate studies.

The M.S. program generally requires a minimum of 24 months of full-time study, during which an overall GPA of 3.0 or better must be maintained. The M.S. degree may be earned by either of two options. The Plan A: Thesis Option emphasizes completion of a research project. The Plan B: Comprehensive Study Option requires more course work, and instead of conducting research and presenting a thesis, the candidate presents a paper or papers approved by the adviser to the examining committee, demonstrating ability for scholarly study and written expression. Candidates under both options must present a seminar on the thesis research or comprehensive study and must pass an oral examination.

Code	Title	Credits
Master of Science (M.S.)		**30**
Basic Research Principles		
BIOL 790	Graduate Seminar	
UNIV 720	Scientific Integrity (or equivalent as approved by committee)	
BIOL 842	Quantitative Biology (or equivalent as approved by committee)	
Biological Content Courses to be approved by the advisory committee.		
BIOL 798	Master's Thesis	

The Ph.D. program generally requires a minimum of 36 months of full-time study, during which an overall GPA of 3.0 or better must be maintained. Candidates for the Ph.D. are required to take a preliminary written and oral examination directed to academic subject matter and an oral final examination of the dissertation.

Code	Title	Credits
Ph.D. Program		90
BIOL 790	Graduate Seminar	
BIOL 842	Quantitative Biology (or equivalent as approved by committee)	
BIOL 884	Biological Research Principles	
Biological Content Courses to be approved by the advisory committee		
UNIV 720	Scientific Integrity (or equivalent as approved by committee)	
ZOO 899	Doctoral Dissertation	

Laura Aldrich-Wolfe, Ph.D.
Cornell University, 2006
Research Interests: Community Ecology, Mycorrhyza and Plant-fungal Interactions

Julia H. Bowsher, Ph.D.
Duke University, 2007
Research Interests: Evolutionary and Developmental Biology of Insects

Ned A. Dochtermann, Ph.D.
University of Nevada, 2009
Research Interests: Evolutionary and Behavioral Ecology

Erin H. Gillam, Ph.D.
University of Tennessee-Knoxville, 2007

Research Interests: Evolution and Behavioral Function of Communication Signals Using Bats as a Model

Kendra J. Greenlee, Ph.D.
Arizona State University, 2004
Research Interests: Comparative Physiology, Insect Respiration and Immunology

Timothy J. Greives, Ph.D.
Indiana University, 2009
Research Interests: Hormones and Behavior, Seasonality, Biological Rhythms, Reproductive Eco-physiology

Britt Heidinger, Ph.D.
Indiana University, 2007
Research Interests: Physiological Ecology, Senescence, Stress Physiology

Angela Hodgson, Ph.D.
University of Minnesota, 2010
Research Interests: Ecosystem Biology and Wildlife Conservation Biology

Jiha Kim, Ph.D.
University of Georgia, 2006
Research interests: Tumor Microenvironment

Jennifer L. Momsen, Ph.D.
Rutgers, 2007
Research Interests: Biology Education at the Undergraduate Level

Lisa M. Montplaisir, Ph.D.
University of Arizona, 2003
Research Interests: Science Education, Teaching and Learning, Curriculum Development

Marinus L. Otte, Ph.D.
Vrije Universiteit, 1991
Research Interests: Wetland Science, Biogeochemistry, Plant Ecophysiology

Katie M. Reindl, Ph.D.
North Dakota State University, 2006
Research Interests: Cancer Cell Biology, Identification and Validation of New Drug Targets

Sarah Signor, Ph.D.
University of California-Davis, 2013
Research interests: Insect Evolutionary Genomics

Matthew Smith, Ph.D.
University of Arkansas, 2012
Research Interests: Patterns of Phenotypic Variation in Natural Populations

Craig A. Stockwell, Ph.D.
University of Nevada, 1995
Research Interests: Evolutionary Ecology of Vertebrate Populations, Conservation Biology, Fisheries Biology

Steven E. Travers, Ph.D.
University of California-Santa Barbara, 1998
Research Interests: Plant Evolutionary Ecology

Emeritus

William J. Bleier, Ph.D.
Texas Tech University, 1975
Research Interests: Blackbirds, Animal Depredation, Avian Ecology

Malcolm G. Butler, Ph.D.
University of Michigan, 1980
Research Interests: Aquatic Ecology, Limnology, Fisheries, Water Quality, Wildlife Management

Gary K. Clambey, Ph.D.
Iowa State University, 1975

Research Interests: Ecology and Biogeography, Environmental Analysis and Planning, Structure Function Relations in Midwestern Ecosystems, Human Ecology

Theodore L. Esslinger, Ph.D.
Duke University, 1974
Research Interests: Lichenology; Taxonomy, Chemosystematics, and Floristics of Lichens; Emphasis on the Parmeliaceae and Physciaceae

James W. Grier, Ph.D.
Cornell University, 1975
Research Interests: Eagles and Other Birds of Prey, Herpetology, Aquatic Organisms, Fossils, Animal Population Dynamics, Habitat Ecology

Gary L. Nuechterlein, Ph.D.
University of Minnesota, 1980
Research Interests: Behavioral Ecology of Birds; Wildlife Ecology, Particularly of Nongame Species

Adjunct

Michael J. Anteau, Ph.D.
Louisiana State University, 2006

Mark E. Clark, Ph.D.
University of Tennessee, 1996

Ned H. Euliss, Jr., Ph.D.
Oregon State University, 1989

Mark A. Hanson, Ph.D.
North Dakota State University, 1990

Douglas H. Johnson, Ph.D.
North Dakota State University, 1986

George M. Linz, Ph.D.
North Dakota State University, 1982

Daniel C. McEwen, Ph.D.
North Dakota State University, 2008

David M. Mushet, Ph.D.
North Dakota State University, 2010

Wendy L. Reed, Ph.D.
Iowa State University, 2000

Marsha A. Sovada, Ph.D.
North Dakota State University, 1993

Steve K. Windels, Ph.D.
Michigan Technological University, 2008

Brian Wisenden, Ph.D.
University of Western Ontario, 1993