

Edmund M. Hart

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Education

University of Vermont, Burlington, VT 2005 – present

PhD. in Biology, concentration in community ecology, advisor Dr. Nicholas Gotelli

University of Massachusetts, Amherst, MA 1997 - 2001

B.S. in Biology, concentration in ecology and evolution, *Cum Laude*

B.A. in History, *Cum Laude*

Research Experience

Doctoral Research: Department of Biology, University of Vermont 2005- present

- Conduct manipulative field experiments to understand the impact of climate change on community-level processes in aquatic mesocosms
- Build statistical models based on empirically derived parameters to predict community shifts with climate change.
- Mentor undergraduate assistants in both field and laboratory work

Graduate Research Fellow, Univ. of Vermont Complex Systems Group, Burlington, VT June 2009-Present

- Build statistical models of toxic algal bloom population dynamics based on historical monitoring data.
- Meet weekly and collaborate with a diverse group of engineers, computer scientists and biologists on using complex systems methods to analyze ecological data.

Ecological Data Analyst, USDA Forest Service Research Station, Burlington, VT May 2006 – August 2007

- Analyze spatial modeling data in ARCGIS and create maps of model data for presentations and conferences
- Maintain large databases in Access and perform data manipulation by programming data handling applications in Visuas Basic
- Perform statistical analysis on field experiments from Hubbard Brook Research Forest

Assistant Biologist, National Park Service Delaware Water Gap, Milford, PA, February 2004 – December 2004

- Collect and process water samples for two water quality projects on the Delaware river and its tributaries
- Oversee water quality lab and maintain laboratory and field equipment to quality assurance standards
- Monitor breeding bald eagle populations throughout the entire park
- Analyze and manage water quality data collected and write reports summarizing findings

Field Technician, U.S. Geological Survey Pacific Island Ecosystem Field Station, Volcano, HI, Fall 2003

- Collected and field identified mosquitoes throughout Hawaiian rainforests as part of a large

- scale avian disease study
- Caretaker of an aviary containing rare Hawaiian birds for mosquito experiments

Field Technician, Colorado Natural Heritage Program, Fort Collins, CO, Summer 2003

- Captured, tagged and collected data on endangered high elevation boreal toad populations.
- Surveyed remote areas in the Rocky Mountains for possible toad populations, navigating with compass, GPS, and map.

Research Assistant, University of Minnesota, Bethel, MN, Summer 2001

- Designed and implemented an experiment on Blue Jay vocalizations
- Collected and analyzed Blue Jay vocalization data
- Created Powerpoint presentation and presented experiment findings at Cedar Creek Summer Research Symposium

Grants and Awards

2009-2010 Graduate Research Assistantship in Complex Systems, Vermont EPSCoR (\$31,000 salary)

2009-2010 Doctoral Dissertation Improvement Grant, National Science Foundation (\$13,500)

2008 - 2009 Pilot Grants for UVM Research in Complex Systems, Vermont EPSCoR (\$24,500)

2006 Travel grant, Graduate College, University of Vermont (\$400)

2005 Lake Champlain Research Consortium Student Research Grant (\$500)

2001 Research Experience for Undergraduates Fellowship, National Science Foundation

Publications

Hart, E.M., N. J. Gotelli, R. Gorney, M. Watzin (in prep) "Population dynamics of toxic algal blooms in Lake Champlain: A tale of two phases"

Hart, E. M., N.J. Gotelli (in review) "The effects of climate change on density-dependent population dynamics of aquatic invertebrates" *Oikos*

Collins, A. R., E.M. Hart, J. Molofsky, (Available in "online first" edition) "Quantifying the extent of frequency dependence: An experimental test using genotypes of an invasive grass" *Oecologia*

Presentations

2010 "Population dynamics of toxic algal blooms in Lake Champlain" Presented at the Vermont EPSCoR / NSF Annual meeting

2009 "Modeling Metacommunities: A comparison of matrix and agent-based methods with empirical data" Presented at Ecological Society of America Annual Meeting, Contributed Oral Sessions.

2008 "The impact of variable precipitation on vernal ponds: Community structure, population size, and density dependence" Presented at Ecological Society of America Annual Meeting, Contributed Oral Sessions.

2008 "The impact of variable precipitation on vernal ponds: Community structure, population size, and density dependence" Presented at The Northeast Natural History Conference X

2007 "Macroinvertebrate Communities in Ephemeral Ponds: Effects of Competition, Landscape, and Hydroperiod on Species Richness" Presented at Ecological Society of America Annual Meeting, Contributed Oral Sessions.

2001 "Quantitative analysis of blue jay vocalizations" Presented at the annual Cedar Creek Research Seminar.

Reviews

Journal Reviews: Ecological Monographs, Oikos, Austral Ecology, Journal of Ecology, Global Ecology and Biogeography.

University Service

EPSCoR Undergraduate mentor University of Vermont 2008 – Present

- Mentor to undergraduates and highschool students in the Vermont EPSCoR Streams Project

Graduate Student Senate Vice-President University of Vermont 2006 – 2009

- Serve on the university committee on graduate education, scholarship and research
- Chair and organize monthly senate meetings addressing needs and concerns of graduate community
- Organize annual university wide graduate research conference

Graduate Student Senate Senator University of Vermont 2005 – Present

- Attend monthly senate meetings addressing needs and concerns of graduate community
- Serve on outreach committee to develop graduate student community

Teaching Experience

Graduate Teaching Fellow University of Vermont 2005 – Present

- Teach and develop lectures for laboratories in ecology and evolution and introductory biology
- Lead field trips and help with the development of insect collections for advanced field zoology

Undergraduate mentor University of Vermont EPSCoR Streams Project 2008 - Present

- Mentor undergraduates in personalized research projects using data on *E. coli* and nutrients from streams around the state

- Assist undergraduates in preparation for presenting posters at an annual undergraduate research conference

Guest Presenter Lake Champlain Community Sailing Center 2009,2010

- Give presentations to sailing day camps about the food web in Lake Champlain as part of the WAVES speaker series.

Guest Lecturer University of Vermont 2006 – 2007

- Presented lecture on aquatic entomology to field zoology class
- Gave talk and lead discussion on grant writing success for undergraduate evolution class

Guest Presenter Leahy Echo Center for the Environment 2006

- Lead environmental discovery session on aquatic insects during “Mud Fest 2006” for children and parents