

Curriculum Vitae

Patrick Crumrine, Ph.D.

Rowan University, Department of Biological Sciences & Program in Environmental Studies

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APPOINTMENTS

- Assistant Professor of Biology, Rowan University, 2006– present
- Assistant Professor of Biology, Longwood University, 2003 – 2006
- REU Coordinator, Blandy Experimental Farm, University of Virginia, 2004 - present

EDUCATION

- Ph.D., Biology, University of Kentucky, 2003. Advisors, Dr. Philip Crowley, Dr. Andrew Sih
- Graduate Certificate in Environmental Systems, University of Kentucky, 2003 A 10 credit hour cross-disciplinary graduate certificate integrating law, policy, and science
- B.S., Biology (*cum laude*) 1998. State University of New York - Plattsburgh

TEACHING EXPERIENCE

Rowan University

- Principles of Ecology
- Environmental Studies, Physical Perspectives

Longwood University

- Introductory Biology for non-majors
- Biostatistics and Experimental Design
- General Ecology
- Behavioral Ecology
- Freshman Seminar

University of Kentucky

- Graduate Instructor, Senior Seminar in Behavioral Ecology
- Guest Lecturer, Introductory Ecology

RESEARCH ACTIVITIES

- Intraguild predation in pond communities
- Infection dynamics of trematode parasites in amphibian communities (in collaboration with Dr. Jason Rohr, Penn State University)
- Effects of pesticides on aquatic ecosystems (in collaboration with Dr. Jason Rohr, Penn State University and Dr. Melissa Zwick, The Richard Stockton College of New Jersey)
- Life history variation in migratory dragonflies (in collaboration with Dr. Philip Crowley, University of Kentucky and Dr. Linda Fuselier, Minnesota State University – Moorhead)

University of Kentucky Department of Biology (1998 – 2003)

- Ph. D. Research in Biology. The role of size structure in cannibalism and intraguild predation in larval dragonflies.
- Research Assistant, Quantifying crayfish social interactions in streams. (PI's: Dr. Philip Crowley and Dr. Robert Ziemba)
- Research Assistant, The effects of competing demands on sexual selection and mating patterns in the water strider, *Aquarius remigis*. (PI: Dr. Andrew Sih)

Plattsburgh State University, Department of Earth and Environmental Science (1994 – 1998)

- Characterization of chemical and biological parameters of streams and ponds in the Adirondack Park under the supervision of Dr. Gerhard Gruendling

Jug Bay Wetlands Sanctuary Research Fellowship (Lothian, Maryland) (1997)

- Feeding ecology of the mummichog (*Fundulus heteroclitus*) in a freshwater tidal wetland
- Temporal and spatial distribution of the amber marsh snail (*Oxyloma effusa*) in freshwater tidal wetlands with Dr. Katalin Szlavecz of The Johns Hopkins University

PUBLICATIONS

Papers in peer-reviewed publications

- **Crumrine, P. W.** (2006). Age specific behavioral responses of odonate larvae to chemical and visual stimuli from predators. *Journal of Freshwater Ecology*: Vol. 21, pp 9-16.
- **Crumrine, P. W.** (2005). Size-structure and substitutability in an odonate intraguild predation system. *Oecologia*: Vol. 145, pp. 132-139.
- Rohr, J. R. and **P.W. Crumrine** (2005). Effects of an herbicide and an insecticide on pond community structure and processes. *Ecological Applications*: Vol. 15, No. 6, pp. 1135-1147.
- **Crumrine, P. W.** and P.H. Crowley. (2003). Partitioning components of risk reduction in a dragonfly-fish intraguild predation system. *Ecology*: Vol. 84, No. 6, pp. 1588–1597.

Papers in review

- **Crumrine, P. W.** Experimental evidence linking cannibalism to coexistence in intraguild predation systems. Submitted to *Ecology* as part of a special feature on new theoretical and empirical perspective on intraguild predation.

Papers in preparation ⁺undergraduate student

- **Crumrine, P.W.** and A. Miller⁺. Larval odonates reduce survival of trematode cercariae. To be submitted to *Journal of Parasitology*.
- **Crumrine, P.W.**, K. Keeley⁺, and P. Barlow⁺. Multiple stressors in pond communities. To be submitted to *Ecotoxicology*
- **Crumrine, P.W.** and A. Burgett⁺. Intraguild predation in communities with multiple shared prey species. To be submitted to *Freshwater Biology*
- **Crumrine, P.W.**, M. Zwick, and C.J. Wilkerson⁺. Interactive effects of density and pesticides on survival and development in wood frog (*Rana sylvatica*) tadpoles.

Reports/newsletter articles in non-peer reviewed publications

- **Crumrine, P.W.** (1997). From Feast to Famine: The Tidal Cycle of the Mummichog. Marsh Notes: The Newsletter of The Jug Bay Wetlands Sanctuary. Volume 12 No. 3.
- **Crumrine, P.W.** and S. Bartimo (1997). A summary of turtle trapping: Mark's Pond, Jug Bay Wetlands Sanctuary. Technical Report of the Jug Bay Wetlands Sanctuary. 14pgs.
- **Crumrine, P.W.** and S. Bartimo (1997). Two dozen turtles in one little pond. Marsh Notes: The Newsletter of The Jug Bay Wetlands Sanctuary. Volume 12 No. 3.

PROFESSIONAL PRESENTATIONS (*presenter, + undergraduate student)

Oral Presentations

- **Crumrine, P.W.** Examining the role of size structure on intraguild predation in larval odonates, Ecological Society of America Annual Meeting, 2003
- **Crumrine, P.W.** Examining the effects of aerial migration on size structure and cannibalism in dragonfly larvae. Special Session on Odonate Ecology and Evolution, N. American Benthological Society Annual Meeting, 2002
- **Crumrine, P.W.** Behavioral interactions between intraguild predators: Implications for risk reduction and risk enhancement. Ecological Society of America Annual Meeting, 2000
- **Crumrine, P.W.** Behavioral interactions between intraguild predators: Implications for risk reduction and risk enhancement. Ohio Valley Entomological Association, Student Paper Competition, 1999
- Niedzwiecki, J.H.* , **P.W. Crumrine**, T.M. McCarthy, A.M. Walters, R.C. Sargent, A. Sih and P.H. Crowley. Effects of adaptive behavior in models of asymmetrical intraguild predation. Animal Behavior Society Annual Meeting, 1999

Poster Presentations

- Burgett, A.*+, **P.W. Crumrine**. Impacts of shared prey density and diversity on intraguild predation interactions. Ecological Society of America Annual Meeting, 2006.
- Zwick, M.* , A.M. Simmons⁺, J.K. Leonard⁺, and **P.W. Crumrine**. Chronic exposure to endosulfan alters behavioral patterns in woodfrog (*Rana sylvatica*) tadpoles. Society for Neuroscience Annual Meeting to be held in November 2005.
- **Crumrine, P.W.** Impacts of size structure on intraguild predation in pond communities. N. American Benthological Society Annual Meeting, 2005
- Keeley, K.*+, **P.W. Crumrine**, and P.F. Barlow⁺. Multiple contaminant and predatory stressors in pond communities. N. American Benthological Society Annual Meeting, 2005.
- **Crumrine P.W.** *, Moubrey K.L.⁺, and Forrester J.T.⁺ The role of size and sex in cannibalism in larvae of the migratory dragonfly, *Anax junius*. North American Benthological Society Annual Meeting, 2001
- **Crumrine P.W.** Behavioral interactions between intraguild predators. Animal Behavior Society Annual Meeting, 1999
- **Crumrine P.W.** * and Swarth, C. The effects of tides on the feeding patterns of the mummichog (*Fundulus heteroclitus*) in a freshwater tidal wetland. Ecological Society of America Annual Meeting, 1998

INVITED SEMINARS

2005

- Virginia Commonwealth University, Department of Biology, 10/24/05
- Keynote Speaker 20th Anniversary of the Jug Bay Wetlands Sanctuary, 8/7/05
- USDA Natural Resources Conservation Service, Training Seminar on Aquatic Ecosystem Restoration, 4/12/05
- College of William and Mary, Department of Biology, 3/18/05

2004

- Virginia Tech, Department of Biology, 10/29/04
- Old Dominion University, Department of Biological Sciences, 10/19/04
- University of Maryland, Department of Entomology, 10/1/04
- University of Toronto, Department of Zoology, 2/23/04

GRANTS, HONORS, AND AWARDS

2005

- Senior Personnel, Research Experience for Undergraduates (REU) site proposal for environmental biology studies at Blandy Experimental Farm - University of Virginia (funded by NSF, 5/2005)
 - I wrote portions of this proposal and played a central role in editing the final document.
- Faculty Development and Research Grant, Longwood University
- Fund for Faculty-Student Research, Internships, and Public History, Longwood University

2004

- Fund for Faculty-Student Research, Internships, and Public History, Longwood University

2003

- Best Student Talk, Aquatic Ecology Section, Ecological Society of America, 2003 Meeting

2002

- Doctoral Dissertation Improvement Grant, National Science Foundation
- Commonwealth Research Award, University of Kentucky

2001

- Ribble Enhancement Funds for Student Travel and Research, University of Kentucky
- Graduate Student Research Support, University of Kentucky

2000

- Presidential Fellowship, University of Kentucky
- Graduate Student Research Grant, Kentucky Society for Natural History
- Ribble Enhancement Funds for Student Travel, University of Kentucky
- Center for Ecology Evolution and Behavior, Student Research Support, University of Kentucky

1999

- First Place Ph. D. category, Student Paper Competition, Ohio Valley Entomological Association
- Ribble Graduate Fellowship, University of Kentucky
- Ribble Enhancement Funds for Student Research, University of Kentucky
- Graduate Student Research Support, University of Kentucky

UNDERGRADUATE STUDENTS MENTORED

- Andrew Miller, Ursinus College (2006 Summer REU Student) “Impacts of larval odonates and pesticides on the survival of trematode cercariae”
- Amanda Crossett, Longwood University (11/04 – 05/06), “Effects of introduced trout on aquatic invertebrate communities and ecosystem processes”
- Kyle Griffin, Longwood University, Undergraduate Research Assistant, Summer 2005
- Amber Burgett, Denison University (2005 Summer REU Student) “Impacts of multiple shared prey species on intraguild predation interactions”
- Aquil Meeks, Howard University (2005 Summer REU Student) “The impact of mate availability and food level on mating interactions in the fishing spider (*Dolomedes triton*)”
- Angela Owens, Longwood University (11/04 – 05/05), “Effects of trout stocking regimes on community structure in streams”
- Charles J. Wilkerson, Longwood University (1/04 – 5/04), “Indirect effects in pond communities exposed to pesticides”
- Keefe Keeley, Swarthmore College (2004 Summer REU Student), "Multiple stressors in a simplified freshwater pond ecosystem"
 - Tom Callahan Award for Excellence in Undergraduate Research
- Paige Barlow, University of Richmond (2004 Summer REU Student), "Predator prey interactions between dragonfly larvae and snails"
- Cheryl Edge, University of Kentucky (8/02 – 5/03), “The conservation status of Odonata in the United States”
 - Pursuing a masters degree in Natural Resource Sciences at the University of MD
- Andrew Katen, University of Kentucky (4/02 – 8/02), “The effects of top predator population size structure on intraguild predation interactions in odonate larvae”
 - Currently a graduate student at Southwest Missouri State University
- Joe Forester, University of Kentucky (12/00 – 6/01), “Effects of relative and absolute size differences on cannibalism in *Anax junius* larvae”
- Kara Moubray, University of Kentucky (1/00 – 12/00), “Modulation of larval *Anax junius* behavior by predatory and chemical stimuli”
 - First place undergraduate category, Student Paper Competition Ohio Valley Entomological Association (2000)
 - Oral Presentation, National Conference for Undergraduate Research (2001)

PROFESSIONAL SERVICE

- Grant Reviewer, National Science Foundation Directorate for Biological Sciences, Population & Evolutionary Processes and Ecological Biology Clusters
- Grant Reviewer, U.S. EPA Science to Achieve Results (STAR) Program
- Grant Reviewer, Binational Agricultural Research and Development Fund (BARD) United States – Israel
- Reviewer of Species Assessments for Threatened Odonates, Society for Conservation Biology and US Fish and Wildlife Service
- Manuscript reviewer: *Ecological Monographs*, *Ecology*, *Oecologia*, *Archiv fuer Hydrobiologie & Ethology*

UNIVERSITY SERVICE

Rowan University

- Elections Committee, Department of Biological Sciences
- Department of Biological Sciences faculty representative to the Rowan University Library

Longwood University

- Coordinator: Department of Natural Sciences Seminar Series
- University Committees
 - Faculty Development and Research Committee
- Departmental Committees
 - Biological and Environmental Sciences Chair Search Committee
 - Chair of committee
 - Environmental Sciences Faculty Search Committee
 - Environmental Sciences Exploratory Committee
 - Department of Natural Sciences Awards Committee

University of Kentucky

- Coordinator: Ecolunch Seminar Series, University of Kentucky Center for Ecology Evolution and Behavior (1999 – 2001)
- Webmaster, Environmental and Evolutionary Biology Section, Department of Biology, University of Kentucky (1999 – 2003)

OUTREACH AND SERVICE ACTIVITIES

- Advisor/Head Coach, Longwood University Club Soccer Team (2004-2006)
- Judge, Kentucky Science and Engineering Fair, (2003)
- Grand Awards Judge, Intel International Science and Engineering Fair, (2002)
- Aquatic ecology presentations at local elementary schools (1999-2005)
- SUNY Plattsburgh – designer and webmaster: Graduate Resources Web Page (1998)

PROFESSIONAL DEVELOPMENT

- North American Benthological Society Odonate Workshop
- American Fisheries Society Statistics Workshop

PROFESSIONAL MEMBERSHIPS

- Ecological Society of America
 - Education Section
 - Aquatic Ecology Section
- North American Benthological Society
- National Science Teachers Association