

PIETER JOHNSON

Assistant Professor

Ecology and Evolutionary Biology
Ramaley N122, Campus Box 334
University of Colorado
Boulder, Colorado 80309-0334

303.492.5623 (phone)
303.492.8699 (fax)
pieter.johnson@colorado.edu
www.colorado.edu/eeb/facultysites/pieter

EDUCATION

- UNIVERSITY OF WISCONSIN, *Madison, Wisconsin* 2001 – 2006
Ph.D. in Zoology with a focus in aquatic ecology and disease.
Dissertation title: “Causes and consequences of disease in aquatic ecosystems”
Advisor: Dr. Stephen R. Carpenter.
- STANFORD UNIVERSITY, *Stanford, California* 1994 – 1998
Bachelor of Science in Biological Sciences with Honors and Distinction.
Thesis title: “Investigation of abnormalities in amphibian communities”
Advisors: Dr. Paul R. Ehrlich and Dr. Peter M. Vitousek.

AWARDS AND FELLOWSHIPS

- 2002-2005 National Science Foundation Graduate Research Fellowship
2001-2002 Prize Fellowship, University of Wisconsin, Madison
2002 Best Conference Presentation, Society for Northwestern Vertebrate Biology
2000 Sigma Xi Scientific Society, Full Membership
1999 Best Student Presentation, Society for Environmental Toxicology and Chemistry
1998 Excellence in Teaching Award, Stanford University
1998 Fox Award for Most Outstanding Senior in Biological Sciences, Stanford University
1998 Firestone Medal Winner for Excellence in Undergraduate Research, Stanford University
1998 Student Award Winner for Oral Presentation, Society for Conservation Biology
1998 Phi Beta Kappa Member, Stanford University
1997 Excellence in Teaching Award, Stanford University
1997 Cash-Penny Fellowship with the Center for Conservation Biology

RESEARCH AND FIELD EXPERIENCE

- 2005 – 2006 Postdoctoral Researcher: *Center for Limnology, University of Wisconsin*
2001 – 2005 Doctoral Student: *Center for Limnology, University of Wisconsin*
1999 – 2001 Research Associate: *Roberts Environmental Center*
1999 Monitor of Endangered Wildlife: *Camp Pendleton, California*
1996 – 1998 Honors Thesis: *Stanford University, Stanford, California*
1996 Research Assistant: *Wet Tropics and Barrier Reef, Queensland, Australia*
1995 Research Student: *Oregon Institute of Marine Biology, University of Oregon*

TEACHING EXPERIENCE

- 2008 Professor: *EBIO 1220, General Biology, University of Colorado*
2007 Professor: *EBIO 4800, Disease Ecology, University of Colorado*
2007 Professor: *EBIO 1220, General Biology, University of Colorado*
2002 Teaching Assistant: *Limnology Laboratory, University of Wisconsin*
1997 – 1998 Instructor: *Ecology Laboratory Biology 44Y, Stanford University*
1997 Teaching Assistant: *Ecosystems of California, Stanford University*
1999 Teaching Assistant: *Introduction to Biology, Claremont McKenna College*
1997 – 1998 Course Assistant: *Ecology Laboratory, Stanford University*

Guest Lecturer for:

2007	Community Ecology, <i>University of Colorado</i>
2007	Parasitology, <i>University of Colorado</i>
2002 – 2005	Diseases of Wildlife, <i>University of Wisconsin</i>
2002 – 2006	Introduction to Parasitology, <i>University of Wisconsin</i>
2004	Conservation Biology, <i>University of Wisconsin</i>
1997	Ecosystems of California, <i>Stanford University</i>

Advisor for undergraduate research

2007 – 2008	University of Colorado: 6 undergraduates
2001 – 2006	University of Wisconsin: 18 undergraduates

SERVICE AND AFFILIATIONS

Coordinator of special organized session for annual ESA meeting 2007: “Disease emergence and amphibian declines: using ecology to understand patterns and promote restoration” involving 23 participants.

Co-coordinator of workshop on “Disease and Long-Term Research in Ecology” for the LTER All Scientists Meeting in Estes Park, Colorado, September 20-23 (with Mike Antolin, CSU).

Member of the *Ecological Society of America*, the *American Society for Limnology and Oceanography*, *American Society of Ichthyologists and Herpetologists*, and the *American Society of Parasitologists*.

Reviewer for two textbooks, grant proposals from the National Science Foundation (NSF) and the Biotechnology and Biological Sciences Research Center (BBSRC), and manuscripts submitted to *Proceedings of the National Academy of Sciences*, *Applied Herpetology*, *Alytes*, *Amphibia-Reptilia*, *Biological Conservation*, *Biological Invasions*, *Conservation Biology*, *Copeia*, *EcoHealth*, *Ecology*, *Ecological Applications*, *Ecology Letters*, *Ecosystems*, *Estuarine, Coastal and Shelf Science*, *Journal of Parasitology*, *Landscape Ecology*, *Marine Biology*, *Marine and Freshwater Research*, *Oecologia*, *Journal of Zoology* and *Journal of Wildlife Diseases*.

Graduate Student Representative, North Temperature Lakes LTER (2001–2006)

PUBLICATIONS

1. **Johnson, P. T. J.**, Lunde, K. B., Ritchie, E. G. and A. E. Launer (1999). The effect of trematode infection on amphibian limb development and survivorship. *Science* 284: 802-804. *[Featured in *Science* 284: 731].
2. **Johnson, P. T. J.**, Lunde, K. B., Haight, R. W., Bowerman, J. and A. R. Blaustein (2001). *Ribeiroia ondatrae* (Trematoda: Digenea) infection induces severe limb malformations in western toads (*Bufo boreas*). *Canadian Journal of Zoology* 79: 370-379.
3. **Johnson, P. T. J.**, Lunde, K. B., Ritchie, E. G., Reaser, J. K. and A. E. Launer (2001). Morphological abnormality patterns in a California amphibian community. *Herpetologica* 57: 336-352.
4. **Johnson, P. T. J.**, Lunde, K. B., Thurman, E. M., Ritchie, E. G., Wray, S. W., Sutherland, D. R., Kapfer, J. M., Frest, T. J., Bowerman, J. and A. R. Blaustein (2002). Parasite infection linked to amphibian malformations in the western United States. *Ecological Monographs* 72: 151-168. *[Featured in *Science* 286: 2434]
5. Blaustein, A. R. and **P. T. J. Johnson** (2003). Explaining frog deformities. *Scientific American* 288: 60-65.
6. Blaustein, A. R. and **P. T. J. Johnson** (2003). The complexity of deformed amphibians. *Frontiers in Ecology and the Environment* 1: 87-94.
7. Bowerman, J. and **P. T. J. Johnson** (2003). Timing of trematode-related malformations in Oregon spotted frogs and Pacific treefrogs. *Northwestern Naturalist* 84: 142-145.
8. **Johnson, P. T. J.** (2003). Biased sex ratios in fiddler crabs (Brachyura, Ocypodidae): A review and evaluation of the influence of sampling method, size class, and sex-specific mortality. *Crustaceana* 76: 559-580.
9. **Johnson, P. T. J.** and E. G. Ritchie (2003). Macroinvertebrate fauna of an iron-rich stream in the Wet Tropics of Australia: a comparative assessment of communities using a Rapid Bioassessment Protocol. *Memoirs of the Queensland Museum* 49: 331-338.

10. **Johnson, P. T. J.** and D. R. Sutherland (2003). Amphibian deformities and *Ribeiroia* infection: An emerging helminthiasis. *Trends in Parasitology* 19: 332-335.
11. **Johnson, P. T. J.**, Lunde, K. B., Zelmer, D. A. and J. K. Werner (2003). Limb deformities as an emerging parasitic disease in amphibians: Evidence from museum specimens and resurvey data. *Conservation Biology* 17: 1724-1737. *[Featured in *Science* 301: 904].
12. Lannoo M. J., Sutherland, D. R., Jones, P., Rosenberry, D., Klaver, R. W., Hoppe, D. M., **Johnson, P. T. J.**, Lunde, K. B., Facemire, C. and J. M. Kapfer (2003). Multiple causes for the malformed frog phenomenon. In: ATSM STP 1443: G. Linder, Little, E., Krest, S. and D. Sparling (Eds). Multiple stressor effects in relation to declining amphibian populations. ASTM International, West Conshohocken, PA.
13. **Johnson, P. T. J.** and J. M. Chase. (2004). Parasites in the food web: Linking amphibian malformations and aquatic eutrophication. *Ecology Letters* 7: 521-526. *[Featured in *Environmental Science and Technology* 38: 384A-385A].
14. **Johnson, P. T. J.**, D. R. Sutherland, Kinsella, J. M. and K. B. Lunde (2004). Review of the trematode genus *Ribeiroia* (Psilostomidae): Ecology, life history, and pathogenesis with special emphasis on the amphibian malformation problem. *Advances in Parasitology* 57: 191-253.
15. Fried, B. and **P. T. J. Johnson** (2005). In vitro excystment of the metacercariae of *Ribeiroia ondatrae*. *Parasitology Research* 95: 293-294.
16. **Johnson, P. T. J.** and K. B. Lunde (2005). Parasite infection and limb malformations: A growing problem in amphibian conservation. Pp. 124-138 in *Amphibian Declines: the Conservation Status of United States Species*, M. J. Lannoo (ed). University of California Press.
17. Wilson, W. D., **Johnson, P. T. J.**, Sutherland, D. R., Moné, H. and E. S. Loker. (2005). A molecular phylogenetic study of the genus *Ribeiroia* (Digenea): trematodes known to cause limb malformations in amphibians. *Journal of Parasitology* 91: 1040-1045.
18. **Johnson, P. T. J.**, Longcore, J. E., Stanton, D. E., Carnegie, R. B., Shields, J. D. and E. R. Preu. (2006). Chytrid fungal infections of *Daphnia pulex*: development, ecology, pathology and phylogeny of *Polycaryum laeve*. *Freshwater Biology* 51: 634-648.
19. **Johnson, P. T. J.**, Preu, E. R., Sutherland, D. R., Romansic, J., Han, B. and A. R. Blaustein. (2006). Adding infection to injury: Synergistic effects of predation and parasitism on salamander limb malformations. *Ecology* 87: 2227-2235.
20. **Johnson, P. T. J.**, Stanton, D. E., Preu, E. R., Forshay, K. J. and S. R. Carpenter. (2006). Dining on disease: how interactions between infection and environment affect predation risk. *Ecology* 87: 1973-1980.
21. **Johnson, P. T. J.** Amphibian diversity: decimation by disease. (2006). *Proceedings of the National Academy of Sciences*, USA 103: 3011-3012.
22. Carpenter, S. R. B. J. Benson, R. Biggs, J. W. Chipman, J. A. Foley, S. A. Golding, R. B. Hammer, P. C. Hanson, **P. T. J. Johnson**, A. M. Kamarainen, T. K. Kratz, R. C. Lathrop, K. D. McMahon, B. Provencher, J. A. Rusak, C. T. Solomon, E. H. Stanley, M. G. Turner, M. J. Vander Zanden, C. H. Wu and H. Yuan. (2007). Understanding regional change: Comparison of two lake districts. *BioScience* 57: 323-335.
23. Roth, B. M., Kaplan, I. C., Sass, G. G., **Johnson, P. T. J.**, Marburg, A. E., Yannarell, A. C., Havlicek, T. D., Willis, T. V., Turner, M. G. and S. R. Carpenter. (2007). Linking terrestrial and aquatic ecosystems: the role of woody habitat in lake food webs. *Ecological Modelling* 203: 439-452.
24. **Johnson, P. T. J.**, Chase, J. M., Dosch, K. L., Gross, J., Hartson, R. B., Larson, D., Sutherland, D. R. and S. R. Carpenter (2007). Aquatic eutrophication promotes pathogenic infection in amphibians. *Proceedings of the National Academy of Sciences* 104: 15781-15786. [see comments in the Faculty of 1000 Biology <http://www.f1000biology.com/article/id/1091992/evaluation>].
25. **Johnson, P. T. J.** and S. R. Carpenter (2008). Influence of eutrophication on disease in aquatic ecosystems: patterns, processes, and predictions. Chapter 4 (pp. 71-99) in Ostfeld, R. S., F. Keesing, and V. T. Eviner, *Infectious disease ecology: effects of ecosystems on disease and of disease on ecosystems*. Princeton University Press, Princeton, NJ.
26. Perkins, S., Altizer, S., Bjornstad, O., Burdon, J., Clay, K., Gomez-Aparicio, L., Jeschke, J., **Johnson, P. T. J.**, Lafferty, K., Malstrom, C., Martin, P., Power, A., Thrall, P., Strayer, D. and M. Uriarte. Infectious disease in invasion biology (2008). Chapter 8 in Ostfeld, R. S., F. Keesing, and V. T. Eviner, *Infectious disease ecology: effects of ecosystems on disease and of disease on ecosystems*. Princeton University Press, Princeton, NJ.

27. **Johnson, P. T. J.**, Olden, J. D. and M. J. Vander Zanden (2008). Dam invaders: hydrologic impoundments enhance ecosystem invasibility. *Frontiers in Ecology and the Environment* (in press).
28. Lafferty, K. D., Allesina, S., Arin, M., Briggs, C. J., DeLeo, G., Dobson, A. P., Dunne, J. A., **Johnson, P. T. J.** and 10 additional authors. Parasites in food webs: the ultimate missing links. *Ecology Letters* (in press).
29. Refardt, D., Decaestecker, E., **Johnson, P. T. J.**, and J. Vavra. Morphology, ecology and molecular phylogeny of *Binucleata daphnia* n. g., n. sp. (Fungi: Microsporidia), a parasite of *Daphnia magna* Straus 1820 (Crustacea: Branchiopoda). *Journal of Eukaryotic Microbiology* (in press).
30. **Johnson, P. T. J.**, Ives, A. R., Lathrop, R. C. and S. R. Carpenter. Long-term disease dynamics in lakes: causes and consequences of chytrid infections in *Daphnia* populations. Accepted (*Ecology*).
31. Forshay, K. J., **Johnson, P. T. J.**, Stock, M., Penalva, C. and S. I. Dodson. Festering food: parasitic chytridiomycete pathogen reduces quality of *Daphnia* hosts as a food resource. Accepted (*Ecology*).
32. **Johnson, P. T. J.**, Hartson, R. B., Larson, D. J. and D. R. Sutherland. Linking biodiversity loss and disease emergence: amphibian community structure determines parasite transmission and pathology. Accepted (*Ecology Letters*).
33. **Johnson, P. T. J.** and R. B. Hartson. All hosts are not equal: explaining differential patterns of malformations in an amphibian community. Accepted pending minor revisions (*Journal of Animal Ecology*).

Submitted Manuscripts

2. **Johnson, P. T. J.**, Olden, J. D., Solomon, C. T. and M. J. Vander Zanden. Community and ecosystem effects of invasive predators and herbivores in an experimental aquatic system. Submitted.
3. **Johnson, P. T. J.** and V. J. McKenzie. Emerging helminthiasis in amphibians: lessons from *Ribeiroia* and *Echinostoma*. Invited article.
4. **Johnson, P. T. J.**, Townsend, A. R., McKenzie, V. J., Howarth, R., Rejmankova, E. and P. Glibert. Linking environmental nutrient enrichment and disease emergence in humans and wildlife. *Ecological Applications* (submitted).
5. Gross, J. A., **Johnson, P. T. J.**, Prahl, L. K. and W. H. Karasov. Critical period of sensitivity for effects of cadmium on frog growth and development. Submitted.

INVITED PRESENTATIONS

- Johnson, P. T. J.** (2008). "Linking environmental nutrient enrichment and disease in humans and wildlife." Global Water Colloquium 2008: From Conflict to Sustainability Challenges and Opportunities in an Interdependent World, Fort Collins, Colorado. March, 2008.
- Johnson, P. T. J.** (2008). "How community- and ecosystem changes affect disease emergence in freshwaters." Environmental Engineering Seminar, University of Colorado, Boulder. March, 2008.
- Johnson, P. T. J.** (2007). "Nutrient enrichment and disease: direct and indirect effects." International Nitrogen Meeting, Costa de Sauipe, Brazil. October, 2007.
- Johnson, P. T. J.** (2007). "Sick and twisted: using deformed frogs to promote an ecological understanding of disease." Colorado State University Invited Seminar, April 24, 2007.
- Johnson, P. T. J.** (2007). "Effects of aquatic eutrophication on parasite-induced malformations in amphibians." Understanding Agriculture's effects on Amphibians and Reptiles in a Changing World, February 6-8, 2007, St. Louis.
- Johnson, P. T. J.** (2007). "Parasite infection and amphibian limb malformations across US National Wildlife Refuges." USFWS Meeting, February 27th – March 1st, Deland, Florida.
- Johnson, P. T. J.** (2006). "Amphibian malformations and trematode parasite infection." Society for Northwestern Vertebrate Biology, Special Session on Amphibian Diseases. Evergreen College, Washington.
- Johnson, P. T. J.** (2006). "Toward an ecological understanding of disease." UC Santa Cruz Invited Seminar, Santa Cruz, California.
- Johnson, P. T. J.** (2006). "What deformed amphibians and diseased *Daphnia* can teach us about the ecology of disease." UC Irvine Invited Seminar, Irvine, California.
- Johnson, P. T. J.** (2005). "Sick and twisted: using deformed frogs to promote an ecological understanding of disease." University of Wyoming Invited Seminar, Laramie, Wyoming.

- Johnson, P. T. J.**, Chase, J. M., Preu, E. P. Sutherland, D. R. and S. R. Carpenter (2005). "Cross-scale drivers of disease emergence: causes and consequences of amphibians malformations." Organized Oral Session at ESA, Annual Meeting, Montreal, Quebec.
- Johnson, P. T. J.** (2005). "Sick and twisted: 10 years of amphibian deformities." Midwest Herpetological Symposium, Minneapolis, Minnesota.
- Johnson, P. T. J.** (2005). Causes and consequences of disease in aquatic ecosystems: Insights from sick *Daphnia* and twisted frogs. Ph.D. Seminar, Zoology Department, University of Wisconsin, Madison.
- Johnson, P. T. J.** (2005). "Amphibian malformations and parasite infection: ecological drivers across time and space." Canadian Society of Zoology Annual Meeting, Kingston, Ontario.
- Johnson, P. T. J.** and S. R. Carpenter. (2005). "Influence of eutrophication on disease in aquatic ecosystems." Cary Conference on Infectious Diseases, Institute for Ecosystem Studies, Millbrook, New York.
- Johnson, P. T. J.** (2004). "Amphibian malformations: an emerging disease." Michigan Lakes and Streams Association Annual Meeting, Iron River, Michigan.
- Johnson, P. T. J.** (2004). "Spiny water fleas invade Wisconsin: conservation and management implications." Long-Term Ecological Research Meeting, North-Temperate Lakes. University of Wisconsin, Madison.
- Johnson, P. T. J.** (2003). "Parasites in an ecosystem context: causes and consequences of disease in aquatic systems." All Scientists Meeting, Long-Term Ecological Research Program, Seattle, Washington.
- Johnson, P. T. J.** (2003). "Disease dynamics in *Daphnia* populations." Long-Term Ecological Research Meeting, North-Temperate Lakes, University of Wisconsin, Madison.
- Johnson, P. T. J.**, Lunde, K. B. and A. R. Blaustein. (2002). "Conservation significance of amphibian malformations in the Pacific Northwest." Society for Northwestern Vertebrate Biology Annual Meeting, Hood River, Oregon. *Awarded best oral presentation
- Johnson, P. T. J.** (2001). "Deformed amphibians: an emerging phenomenon?" Department of Biological Sciences Seminar. University of Pittsburgh, Pittsburgh, Pennsylvania.
- Johnson, P. T. J.** (2000). "Parasite infection linked to amphibian malformations in the western United States." US Geological Survey, Amphibian Research Monitoring Initiative (ARMI) Workshop. USGS National Center, Reston, Virginia.
- Johnson, P. T. J.** (2000). "Insights from the investigation of amphibian malformations." Sigma Xi Awards Ceremony. Pomona College, Pomona, California. *Keynote presentation.
- Johnson, P. T. J.** (1999). "Parasites and deformed frogs: insights into the molecular mechanism." Ontogeny, Inc., June 1999, Cambridge, Massachusetts.
- Johnson, P. T. J.**, Lunde, K. B., Ritchie, E. G. and A. E. Launer. (1998). "Trematodes and amphibian malformations: synthesis of field and laboratory investigations." National Science Foundation Workshop III: Mechanisms of Developmental Disruption in Amphibians. San Diego Zoo, San Diego, California.

CONTRIBUTED PRESENTATIONS

- Johnson, P. T. J.** (2007). "Deformed amphibians and trematode parasites: the role of community and ecosystem ecology." Rocky Mountain Parasitologists Meeting, Denver, Colorado.
- Johnson, P. T. J.**, Hartson, R. B. and D. J. Larson (2007). "Linking diversity loss and disease emergence: insights from amphibian malformations and parasite infection." ESA, Annual Meeting, San Jose, California.
- Johnson, P. T. J.**, Olden, J. D. and M. J. Vander Zanden (2006). Impoundments as landscape attractors for aquatic invasions. Guild of Rocky Mountain Ecologists and Evolutionary Biologists, Mountain Research Station, Colorado.
- Johnson, P. T. J.** (2005). "Malformations and parasite infection: an emerging problem in amphibian conservation." Declining Amphibian Population Task Force Meeting, University of California, Berkeley.
- Johnson, P. T. J.**, Longcore, J. E., Stanton, D. E., Preu, E. R., Carnegie, R. B. and S. R. Carpenter. (2005). "Understanding the causes and consequences of disease in aquatic ecosystems: insights from chytrid infection in *Daphnia* populations." ASLO Annual Meeting, Salt Lake City, Utah.

- Johnson, P. T. J.**, Stanton, D. E., Forshay, K. J., Darton, K., Carnegie, R. B. and S. R. Carpenter. (2004). "Dining on disease: influence of chytrid fungal infection on predator-prey interactions." ESA Annual Meeting, Portland, Oregon.
- Johnson, P. T. J.** (2004). "Does disease matter? Insights from *Daphnia* populations." Center for Limnology Seminar, University of Wisconsin, Madison, Wisconsin.
- Johnson, P. T. J.**, Lunde, K. B., Werner, J. K. and D. A. Zelmer. (2003). "Limb deformities as an emerging parasitic disease in amphibians." ESA Annual Meeting, Savannah, Georgia. *Featured in *Science* 301: 904.
- Johnson, P. T. J.**, Lunde, K. B., Werner, J. K. and D. A. Zelmer. (2003). "Emergence of amphibian malformations: Implications for conservation." SCB Annual Meeting, Duluth, Minnesota.
- Johnson, P. T. J.** (2001). "Amphibian malformations in North America: parasites, pesticides, or propaganda?" Center for Limnology Seminar, University of Wisconsin, Madison, Wisconsin.
- Johnson, P. T. J.**, Lunde, K. B., Thurman, E. M., Ritchie, E. G., Wray, S. N., Sutherland, D. R., Kapfer, J. M., Frest, T. J., Bowerman, J. and A. R. Blaustein. (1999). "Amphibian deformities in the western states: the role of *Ribeiroia* infection." SETAC Annual Meeting, Philadelphia, Pennsylvania.
- Johnson, P. T. J.**, Lunde, K. B., Ritchie, E. G. and A. E. Launer. (1999). "Trematodes induce severe hind limb deformities in frogs." ESA Annual Meeting, Spokane, Washington. **ESA Buell-Braun Award Runner-up*.
- Johnson, P. T. J.** (1999). "Conservation and health implications of trematode-induced deformities in amphibians." SETAC/AWRA Joint Annual Meeting, Wisconsin. **Best Student Presentation*
- Johnson, P. T. J.**, Lunde, K. B., Ritchie, E. G. and A. E. Launer. (1998). "Evidence for parasite infection as a possible cause of polymely and other limb deformities in *Hyla regilla*." SCB Annual Meeting, Macquarie University, Sydney, Australia. **Student Oral Presentation Award Winner*