

RICHARD P. SHEFFERSON

Mailing address:
Odum School of Ecology
University of Georgia
140 E. Green St.
Athens, GA 30602
Phone:
Fax :

Citizenship: United States
Year of Birth: 1976

Web:<http://www.sheffersonlab.com/>
E-mail: dormancy@uga.edu
Skype Name: dormancy6415

RESEARCH INTERESTS

I am an evolutionary ecologist studying demography, life history theory, biological interactions, and conservation in plants. Specific research topics that I focus on include: the evolutionary ecology of interactions, life history trade-offs, demography of aging, mycorrhizal evolution and ecology, and ecological modeling.

EDUCATION

- **Assistant professor** of evolutionary ecology. Univ. of Georgia, Athens, Georgia. Aug 2008 – Present.
- **Post-doctoral scientist**. Univ. of Virginia, Charlottesville, Virginia. Sept 2007 – Aug 2008. Advisor: Deborah A. Roach.
- **NSF-JSPS (Japan Society for the Promotion of Science) Post-doctoral fellow**. Forestry and Forest Products Research Institute, Tsukuba, Japan. Jul 2004 – Jul 2007.
- **Ph.D.** Integrative Biology, Univ. of California, Berkeley, May 2004. Advisor: Ellen L. Simms.
- **M.S.** Range Management, Univ. of California, Berkeley, May 2000. Advisor: Steven R. Beissinger.
- **B.A.** Environmental Studies/Biology, Northeastern Illinois University, Aug 1998. Advisor: Robert Easton.

FELLOWSHIPS, GRANTS, AWARDS, AND HONORS (TOTAL FUNDS AWARDED: \$238,300)

- **AAAS/Science Program for Excellence in Science Membership**. 2008. Membership awarded to outstanding post-doctoral research associates by nomination from the University of Virginia.
- **NSF-JSPS Post-doctoral Fellowship**, Japan Society for the Promotion of Science. \$120,000. 2004-2006. Competitive fellowship screened by NSF and funded by the Japanese government through JSPS.
- **Graduate Research Assistantship**, University of California, Berkeley. \$10,000. 2003-2004. Research assistantship provided for research related to *Rhizobium* evolutionary ecology.
- **Sigma Xi National Research Society**. Full membership. 2003. Membership awarded to American scientists deemed exceptional by their peers. I was the first graduate student awarded this honor at UC Berkeley.
- **American Orchid Society / Furniss Foundation Conservation Research Fellowship**. \$27,000. 2001-2004. Competitive fellowship offered to American graduate students pursuing orchid-related research.
- **Genetics NIH Training Grant**, University of California, Berkeley, \$36,000. 2001-2003. Competitive training grant offered to students at UC Berkeley conducting genetics-related research.

- **Budweiser Conservation Scholarship.** \$10,000. 2001. Competitive scholarship awarded to American graduate students dealing with conservation research.
- **United States Forest Service Research Contract.** \$15,000. 2000. Contract offered to fund research into California state-threatened species occurring on USFS lands.
- **Graduate Research Assistantship,** University of California Botanic Garden. \$5000. 2000. Competitive assistantship offered to botany students at UC Berkeley.
- **Grant-In-Aid,** Sigma Xi, Berkeley Chapter. \$300. 2000. Competitive research grant offered by the Berkeley Chapter of Sigma Xi.
- **ESPM Departmental Research Grant,** University of California, Berkeley. \$5000. 1999. Competitive research grant offered to students of the Dept. of ESPM at UC Berkeley.
- **Regents' Fellowship,** University of California. \$10,000. 1998-1999. Competitive fellowship offered to exceptional out-of-state entrants into the graduate program at UC Berkeley.

TEACHING EXPERIENCE

- **Resource Assessment / Statistical Sampling Design (ESPM102B).** Fall 1999, 2001. UC Berkeley. Prof. Greg Biging, Dept. of Environmental Science, Policy, and Management. Job: Graduate Student Instructor. Course focus: Sampling Theory. I helped to develop labs, and lectured nearly two months in total.
- **Ecological Genetics (IB162).** Fall 2000, 2002. UC Berkeley. Prof. Ellen L. Simms, Dept. of Integrative Biology. Job: Graduate Student Instructor. Course focus: Population and Quantitative Genetics. I developed the material for and taught all Discussion sections, and lectured several times each semester.
- **Demographic Methods for Population Viability Analysis (ESPM284).** Prof. Steven Beissinger, Dept. of Environmental Science, Policy, and Management. Job: Guest lecturer. Course focus: Demographic Methods. I gave a guest lecture on mark-recapture theory and analysis, and developed a computer lab.

SERVICE

- **English language proofreader** for *Mammal Study*, the journal of the Japanese Mammalogical Society.
- **Author help volunteer for non-native English speakers** submitting manuscripts to *Ecology* and other journals of the Ecological Society of America.
- **NSF Merit Reviewer.**
- **Journal Referee:** *American Naturalist*, *Australian Journal of Botany*, *Ecological Applications*, *Ecology*, *Functional Ecology*, *Journal of Applied Ecology*, *Journal of Ecology*.
- **Natural area restoration volunteer.** 1994-1998. Lake County Forest Preserve District, Illinois. Duties included invasive shrub removal, herbiciding, and controlled burns.

SKILLS

Computer programming (Basic, C++), **DNA laboratory skills** (DNA extraction, PCR, RFLP, sequencing, cloning), **Experimental design**, **Foreign languages** (French, Japanese, and Polish), **Laboratory skills** (Microscopy, sterile culture), **Mathematical modeling** (Matlab, Maple, PVA),

Phylogenetic analysis (Clustal, Mesquite, PAUP, Phym, etc.), **Scuba diving** (licensed PADI Open Water Diver), **Statistical analysis** (R, SAS, S+)

FIELD WORK LOCATIONS

Asia: Japan, Russia (Primorskij Kraj, Siberian Far East), Taiwan; **Europe:** Estonia; **North America:** USA (Alaska, California, Illinois, Kentucky, Maryland, Massachusetts, Michigan, New York, Virginia, West Virginia)

PUBLICATIONS

- **Shefferson, R.P.**, T. Kull, and K. Tali. 2008. Mycorrhizal interactions of orchids colonizing Estonian mine tailings hills. *American Journal of Botany* 95:156-164.
- **Shefferson, R.P.**, D.L. Taylor, M. Weiß, S. Garnica, M.K. McCormick, S. Adams, H.M. Gray, J.W. McFarland, T. Kull, K. Tali, T. Yukawa, T. Kawahara, K. Miyoshi, and Y.-I. Lee. 2007. The evolutionary history of mycorrhizal specificity among lady's slipper orchids. *Evolution* 61:1380-1390.
- **Shefferson, R.P.** and E. L. Simms. 2007. Costs and benefits of fruiting to future reproduction in two dormancy-prone orchids. *Journal of Ecology* 95:865-875.
- **Shefferson, R.P.** and K. Tali. 2007. Dormancy is associated with decreased adult survival in the burnt orchid, *Neotinea ustulata*. *Journal of Ecology* 95:217-225.
- **Shefferson, R.P.** 2006. Survival costs of adult dormancy and the confounding influence of size in lady's slipper orchids, genus *Cypripedium*. *Oikos* 115:253-262.
- Simms, E.L., D.L. Taylor, J. Povich, **R.P. Shefferson**, M. Urbina, and Y. Tauszick. 2006. An empirical test of partner choice mechanisms in a legume-rhizobium interaction. *Proceedings of the Royal Society of London Series B, Biological Sciences* 273:77-81.
- **Shefferson, R.P.**, T. Kull, and K. Tali. 2006. Demographic response to shading and defoliation in two woodland orchids. *Folia Geobotanica* 41:95-106.
- **Shefferson, R.P.**, M. Weiß, T. Kull, and D.L. Taylor. 2005. High specificity generally characterizes mycorrhizal association in rare lady's slipper orchids, genus *Cypripedium*. *Molecular Ecology* 14:613-626.
- **Shefferson, R.P.**, T. Kull, and K. Tali. 2005. Adult whole-plant dormancy induced by stress in long-lived orchids. *Ecology* 86:3099-3104.
- Bruns, T. and **R.P. Shefferson**. 2004. Evolutionary studies of mycorrhizal fungi: milestones and future directions. *Canadian Journal of Botany* 82:1122-1132.
- **Shefferson, R.P.**, J. Proper, S.R. Beissinger, and E.L. Simms. 2003. Life history trade-offs in a rare orchid: the costs of flowering, dormancy, and sprouting. *Ecology* 84:1199-1206.
- **Shefferson, R.P.** 2002. Dormancy and survival in rare terrestrial orchids. Pp. 53-64 in P. Kindlmann, J.H. Willems, and D.F. Whigham, editors. Trends and fluctuations and underlying mechanisms in terrestrial orchid populations. Backhuys Publishers, Leiden, the Netherlands.
- **Shefferson, R.P.**, B. K. Sandercock, J. Proper, and S. R. Beissinger. 2001. Estimating dormancy and survival of a rare herbaceous perennial using mark-recapture models. *Ecology* 82:145-156.

Dissertations and Theses

- **Shefferson, R.P.** 2004. Evolutionary ecology of rare geophytes: dormancy and mycorrhizae in *Cypripedium* species. Ph.D. dissertation, University of California at Berkeley, Berkeley, California. 199p.
- **Shefferson, R.P.** 2000. Demographic applications of mark-recapture models to populations of rare herbaceous perennials. M.S. thesis, University of California at Berkeley, Berkeley, California. 95p.

In review

- **Shefferson, R.P.** and D.A. Roach. *In review*. Longitudinal analysis of *Plantago*: testing the benefits of iteroparity in a short-lived, herbaceous perennial. *Ecology*.
- **Shefferson, R.P.** *In review*. Mean phylogenetic breadth and divergence: a general methodology for investigating the breadth of biotic interactions. *Oikos*.
- **Shefferson, R.P.** and D.A. Roach. *In review*. Longitudinal analysis of *Plantago*: experimental test of the effects of annual environmental variation on stage-based population analyses. *Ecology*.
- **Shefferson, R.P.** *In review*. Estimating recruitment in dormancy-prone perennials using mixed mark-recapture models. *Ecology*.
- Mesipuu, M., **R.P. Shefferson**, and T. Kull. *In review*. Weather and herbivores influence fertility in the endangered fern *Botrychium multifidum* (S.G. Gmel.) Rupr. *Plant Ecology*.

CONFERENCE PRESENTATIONS, POSTERS, AND SPEAKING ENGAGEMENTS**Invited Oral Papers**

- 6 Mar 2008. **R.P. Shefferson**. Underground and unseen: long-lived perennials and the costs of sprouting. Kansas State University, Manhattan, Kansas USA.
- 20 Feb 2008. **R.P. Shefferson**. Vegetative dormancy in lady's slipper orchids: the interplay of life history and biotic interaction in a rare plant genus. University of New Orleans, New Orleans, Louisiana, USA.
- 31 Jan 2008. **R.P. Shefferson**. Vegetative dormancy in lady's slipper orchids: life history and biotic interaction in a rare plant genus. University of North Carolina, Wilmington, North Carolina, USA.
- 10 Dec 2007. **R. P. Shefferson**. Underground and unseen: long-lived perennials and the costs of sprouting. Odum School of Ecology, University of Georgia, Athens, Georgia, USA.
- 6 Dec 2007. **R.P. Shefferson**. Life history traits impacted by biological interactions in long-lived perennials. Smithsonian Environmental Research Center, Edgewater, Maryland, USA.
- 1 Feb 2007. **R.P. Shefferson**. Life histories and symbiosis in rare plants: conserving the lady's slipper orchids (genus *Cypripedium*). Bio 203 Seminar Series, Dept. of Biological Sciences, North Dakota State University, Fargo, North Dakota, USA.
- 20 Oct 2006. **R.P. Shefferson**. Dormancy and mycorrhizal specialization in lady's slipper orchids (genus *Cypripedium*). Bio 265 Lunch Bunch Seminar, EEOB Graduate Program, University of California, Riverside, California, USA.
- 6 Nov 2005. **R.P. Shefferson**. Conservation of *Cypripedium* species: the interplay of symbiosis and life history variation on the future viability of a rare plant genus. 1st Int'l Symposium on Diversity and Conservation of Asian Orchids, Tsukuba, Japan.
- 3 Feb 2005. **R.P. Shefferson**. Adult dormancy in geophytes: integrating approaches to explore a complex life history phenomenon. Archbold Research Station, Lake Placid, Florida, USA.

- 1 Dec 2000. **R.P. Shefferson**. Mycorrhizal associations and dormancy in conservation of North American *Cypripedium* species. 2000 US Forest Service Region 5 Annual Botany Meeting. San Diego, CA, USA.

Examples of Recent Oral Papers

- June 2008. **R.P. Shefferson** and D.A. Roach. Is polycarpy adaptive in a short-lived polycarpic perennial, *Plantago lanceolata*. Evolution 2008, Minneapolis, Minnesota, USA.
- Sept 2007. T. Yukawa, Y. Tsujita-Ogura, **R.P. Shefferson**, and J. Yokoyama. Origin and evolution of the orchid mycorrhiza. 2. Mycorrhizal diversity in the genus *Apostasia*. 71st Annual Meeting of the Botanical Society of Japan, Noda, Japan.
- Sept 2006. T. Yukawa, Y. Tsujita-Ogura, **R.P. Shefferson**, and J. Yokoyama. Origin and evolution of the orchid mycorrhiza. 1. Strikingly narrow fungal partnership in *Apostasia nipponica*, the basal orchid clade. 70th Annual Meeting of the Botanical Society of Japan, Kumamoto, Japan.
- Oct 2004. **R.P. Shefferson**. Re-assessing orchid mycorrhizae: the promise of DNA phylogenetic methods, and taxonomic and geographic sampling biases. International Conference on the Evolutionary Botany of Certain Plant-Groups of the East Eurasian Floristic Element Related to Japanese Flora on the Basis of Chromosomes, Hiroshima, Japan.
- Jun 2004. **R.P. Shefferson**, T. Kull, and K. Tali. Effects of reduced photosynthesis on future growth and reproduction of the forest clonal herbs, *Cypripedium calceolus* and *Cephalanthera longifolia*. 3rd International Workshop on Orchid Population Dynamics, Haapsalu, Estonia.
- Aug 2002. **R.P. Shefferson**. Life history interpretations of dormancy to conservation of endangered geophytes. 8th International Congress of Ecology, Seoul, South Korea.
- Aug 2001. Kasmer, J. and **R.P. Shefferson**. Effects of removing an understory shrub on growth of canopy trees in northeastern Illinois. 86th Annual Meeting of the Ecological Society of America, Madison, Wisconsin, USA.
- May 2001. **R.P. Shefferson**. Dormancy and survival in rare terrestrial orchids. 2nd International Workshop on Orchid Population Dynamics, Česke Budějovice, Czech Republic.
- Sept 2000. P.L. Fiedler, E.L. Simms, and **R.P. Shefferson**. Demography in the service of conservation: past achievements and future challenges. Chicago Botanic Garden, Chicago, Illinois, USA.

Examples of Recent Posters

- Aug 2005. **R.P. Shefferson**, D.L. Taylor, and S. Adams. Lady-slipper orchid mycorrhizal associations reveal specificity suggestive of resource fragmentation and resource tracking. The Mycological Society of America / The Mycological Society of Japan Joint Meeting 2005, Hilo, Hawai'i, USA.
- Mar 1999. **R.P. Shefferson**. Rethinking rare plant monitoring with mark-recapture analysis. Population Viability Analysis: Assessing Models for Recovering Endangered Species, San Diego, California, USA.

MEMBERSHIPS

- American Society of Naturalists
- Botanical Society of America
- British Ecological Society

- Ecology Society of America
- Ecological Society of Japan
- European Society of Evolutionary Biology
- International Biometrics Society
- Mycological Society of America
- Mycological Society of Japan
- Sigma Xi
- Society for Conservation Biology
- Society for Integrative and Comparative Biology
- Society for the Study of Evolution