

CURRICULUM VITAE

John D. Reeve

Contact Information

Zoology Program

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Education

- 1980. BS Biology, Case Western Reserve University, Cleveland, Ohio. Highest Honors.
- 1984. MA Statistics, University of California, Santa Barbara.
- 1985. PhD Biology, University of California, Santa Barbara. William W. Murdoch, adviser.

Professional Experience

- 1980-1983. NSF Graduate Fellowship.
- 1989-1991. Postdoctoral Fellow, NSF Environmental Biology Program.
- 1991-2000. Research Entomologist, USDA Forest Service, Southern Research Station.
- 2000-2005. Assistant Professor, Dept. of Zoology, Southern Illinois University Carbondale.
- 2005-current. Associate Professor, Dept. of Zoology, Southern Illinois University Carbondale.

Programming Skills

- SAS 9.4 - 20+ years experience in data handling and statistical analyses. The types of analyses include ANOVA, ANCOVA, MANOVA, mixed models, multiple regression, nonlinear regression, logistic regression, probit analysis, model

selection methods, various types of repeated measures analysis, and power analysis. I also have experience using SAS macros for resampling techniques like randomization tests and bootstrapping.

- R - 10+ years developing analogs of the SAS 9.4 analyses listed above. I've also used R for the numerical solution of ordinary differential equations and wavelet analysis of time series data.
- Matlab, COMSOL - numerical solutions of partial differential equations.
- Latex - 10+ years experience typesetting technical documents that combine equations and graphics, including a biostatistics textbook (see below).

Teaching Experience

Courses

- I have developed two graduate courses (ZOOL/PLB 557 and 558) for the Dept. of Zoology, Southern Illinois University, titled 'Biostatistics' and 'Advanced Biostatistics'. These courses form part of the core curriculum for graduate students in Zoology, but are also taken by students from Animal Science, Anthropology, Forestry, Geography, Plant Biology, and Plant, Soil, and Agricultural Systems. I have also developed a biostatistics course (PLB 360) for upper division undergraduates.
- Developed an open source textbook (Biostatistics: Data and Models, 793 pages) for graduate students in the life and agricultural sciences as well as advanced undergraduates. A unique feature of this text is an emphasis on likelihood approaches to estimation, testing, and model selection, a topic omitted from introductory textbooks but essential for graduate students. This textbook was published through the SIUC Open Textbook program, and is located at OER Commons (see (<https://oercommons.org/courseware/lesson/101759/student/>)). This website includes complete SAS programs and output plus their R equivalents.

Graduate students/consulting

I have served as adviser or co-adviser for five MS students (Natalie M. Heck, Robyn D. Thessing, Scott B. Chism, Natalie R. Nash, and Elliot A. Zieman) and three PhD students (Arnaud Costa, Zuyi Chen Gooley, Rufayda Adam) in the Dept. of Zoology, and co-adviser for three PhD students (Min A, Xiuquan Wang, and Rong Fan)

in the Dept. of Mathematics. *I have also served on the committees 60+ graduate students in various departments, basically functioning as a statistical consultant on their projects.* These departments include Anthropology, Geography, Health Education, Plant Biology, Plant Soil and Agricultural Systems, and Zoology.

Consultation and Service

- Editorial Boards, *Ecology* and *Oecologia*.
- Panelist, NSF DEB Population and Community Ecology Program, 2008-2009, 2011, 2017.
- Numerous statistical consultations (75+ per year) to graduate students and faculty in the Dept. of Zoology, as well as Animal Science, Anthropology, Forestry, Geography, Plant Biology, and Plant, Soil and Agricultural Systems.

Grants (NSF)

- 1995-1998. NSF, Division of Environmental Biology. P. Turchin and J. D. Reeve. 'Testing reaction-diffusion theory: spatial dynamics in a bark beetle-predator system.' \$270,000.
- 2003-2008. NSF, Division of Environmental Biology, LTREB. K. F. Raffa, J. D. Reeve et al. 'Interaction of below- and above-ground herbivory in forest gap formation: long-term analysis of underlying mechanisms and spatio-temporal patterns.' \$299,999.
- 2005-2009. NSF, Division of Environmental Biology. J. T. Cronin and J. D. Reeve. 'Collaborative research: linking dispersal to landscape-level dynamics of a predator and prey.' \$407,237.
- 2010-2015. NSF, Division of Environmental Biology, Mathematical Biology. J. D. Reeve, D. Xu, and M. Xiao. 'Collaborative Research: Vulnerable host stages, development time and host-parasitoid stability - The first experimental test.' \$650,000.

Publication Record

Highlights

- $n = 68$, 5300+ citations, H-index = 31
- Ranked in the top 2% of scientists (see Ioannidis JPA, Boyack KW, Baas J (2020) Updated science-wide author databases of standardized citation indicators. PLoS Biol 18(10): e3000918. <https://doi.org/10.1371/journal.pbio.3000918>)

List of Publications

*Publications with substantial statistical/mathematical content.

†Publications where I served as a statistical consultant.

1. *Murdoch, W. W., J. D. Reeve, C. B. Huffaker, and C. E. Kennett. 1984. Biological control of scale insects and ecological theory. *American Naturalist* **123**: 371-392.
2. *Reeve, J. D., and W. W. Murdoch. 1985. Aggregation by parasitoids in the successful control of the California red scale: a test of theory. *Journal of Animal Ecology* **54**: 797-816.
3. *Reeve, J. D., and W. W. Murdoch. 1986. Biological control by the parasitoid *Aphytis melinus*, and population stability of the California red scale. *Journal of Animal Ecology* **55**: 1069-1082.
4. *Reeve, J. D. 1987. Effects of patch density and host instar on the foraging behavior of the parasitoid *Aphytis melinus*. *Ecology* **68**: 530-538.
5. *Murdoch, W. W., and J. D. Reeve. 1987. Aggregation by parasitoids and the detection of density dependence in field populations. *Oikos* **50**: 137-140.
6. *Murdoch, W. W., R. M. Nisbet, S. P. Blythe, W. S. C. Gurney, and J. D. Reeve. 1987. An invulnerable age class and stability in delay-differential parasitoid-host models. *American Naturalist* **129**: 263-282.
7. *Reeve, J. D. 1988. Environmental variability, migration, and persistence in host-parasitoid systems. *American Naturalist* **132**: 810-836.
8. *Reeve, J. D., B. L. Kerans, and P. L. Chesson. 1989. Combining different forms of parasitoid aggregation: effects on stability and patterns of parasitism. *Oikos* **56**: 233-239.

9. Murdoch, W. W., R. F. Luck, S. J. Walde, J. D. Reeve, and D. S. Yu. 1989. A refuge for red scale under control by *Aphytis*: structural aspects. *Ecology* **70**: 1707-1714.
10. *Reeve, J. D. 1990. Stability, variability, and persistence in host-parasitoid models. Special Features, *Ecology* **71**: 422-426.
11. *Waite, T. A., and J. D. Reeve. 1992. Caching behaviour in the gray jay and the source-departure decision for rate-maximizing scatterhoarders. *Behaviour* **120**: 51-68.
12. *Waite, T. A., and J. D. Reeve. 1992. Gray jay scatterhoarding behavior, rate maximization, and the effect of local cache density. *Ornis Scandinavica* **25**: 175-182.
13. *Reeve, J. D., and P. Turchin. 1993. A mechanistic approach to understanding and predicting southern pine beetle dynamics. In A. and H. Barrett, editors. *Proceedings: Spatial Analysis and Forest Pest Management*. USDA Forest Service General Technical Report NE-175.
14. Reeve, J. D. 1993. Book review of *Natural Enemies: The Population Biology of Predators, Parasites, and Diseases*, edited by M. J. Crawley. *American Scientist* **83**: 290.
15. *Waite, T. A., and J. D. Reeve. 1993. Food storage in gray jays: source type and cache dispersion. *Ethology* **93**: 326-336.
16. *Reeve, J. D., J. T. Cronin, and D. R. Strong. 1994. Parasitoid aggregation and the stabilization of a salt-marsh host-parasitoid system. *Ecology* **75**: 288-295.
17. *Reeve, J. D., J. T. Cronin, and D. R. Strong. 1994. Parasitism and generation cycles in a salt-marsh planthopper. *Journal of Animal Ecology* **63**: 912-920.
18. Rossi, A. M., J. D. Reeve, and J. T. Cronin. 1994. The effects of plant-induced egg mortality and parasitism rate on the interspecific distribution of the oligophagous leafhopper *Carneocephala floridana*. *Oecologia* **100**: 89-93.
19. *Waite, T. A., and J. D. Reeve. 1994. Cache dispersion by grey jays exploiting adjacent sources. *Animal Behaviour* **47**: 1232-1234.
20. Reeve, J. D., M. P. Ayres, and P. L. Lorio. 1995. Host suitability, predation, and bark beetle population dynamics. Pages 339-357 in N. Cappuccino and P. Price, editors. *Population Dynamics: New Approaches and Synthesis*. Academic Press, Inc., San Diego, CA.

21. *Waite, T. A., and J. D. Reeve. 1995. Source-use decisions by hoarding Gray Jays: effects of local cache density and food value. *Journal of Avian Biology* **26**: 59-66.
22. Murdoch, W. W., R. F. Luck, S. L. Swarbrick, S. Walde, D. S. Yu, and J. D. Reeve. 1995. Regulation of an insect population under biological control. *Ecology* **76**: 206-217.
23. Reeve, J. D., J. A. Simpson, and J. S. Fryar. 1996. Extended development in *Thanasimus dubius* (F.) (Coleoptera: Cleridae), a predator of southern pine beetle. *Journal of Entomological Science* **31**: 123-131.
24. *Reeve, J. D. 1997. Predation and bark beetle dynamics. *Oecologia* **112**: 48-54.
25. *Waite, T. A. and J. D. Reeve. 1997. Multistage scatter-hoarding decisions in the gray jay (*Perisoreus canadensis*). *Bird Behavior* **12**: 7-14.
26. *Turchin, P., J. D. Reeve, J. T. Cronin, and R. T. Wilkens. 1997. Spatial pattern formation in ecological systems: bridging theoretical and empirical approaches. Pages 199-213 in J. Bascompte and R. Sole, editors. *Modelling Spatiotemporal Dynamics in Ecology*. Springer-Verlag, Berlin.
27. *Reeve, J. D., D. J. Rhodes, and P. Turchin. 1998. Scramble competition in southern pine beetle (Coleoptera: Scolytidae). *Ecological Entomology* **23**: 433-443.
28. Turchin, P., A. D. Taylor, and J. D. Reeve. 1999. Dynamical role of predators in population cycles of a forest insect: an experimental test. *Science* **285**: 1068-1071.
29. *Cronin, J. T., J. D. Reeve, R. Wilkens, and P. Turchin. 2000. The pattern and range of movement of a checkered-beetle predator relative to its bark-beetle prey. *Oikos* **90**: 127-138.
30. Lombardero, M. J., M. P. Ayres, B. D. Ayres, J. D. Reeve. 2000. Cold tolerance of four species of bark beetle (Coleoptera: Scolytidae) in North America. *Environmental Entomology* **29**: 421-432.
31. Reeve, J. D. 2000. Complex emergence patterns in a bark beetle predator. *Agricultural and Forest Entomology* **2**: 233-240.
32. *Reeve, J. D., and P. Turchin. 2002. Evidence for predator-prey cycles in a bark beetle. Pages 92-108 in Alan A. Berryman, editor. *Population Cycles: Evidence for Trophic Interactions*. Oxford University Press, New York, NY.

33. †Lips, K. R., J. D. Reeve, and L. R. Witters. 2003. Ecological traits predicting amphibian population declines in Central America. *Conservation Biology* **17**: 1078-1088.
34. Reeve, J. D., M. G. Rojas, and J. A. Morales-Ramos. 2003. Artificial diet and rearing methods for *Thanasimus dubius* (Coleoptera: Cleridae), a predator of bark beetles (Coleoptera: Scolytidae). *Biological Control* **27**: 315-322.
35. Moser, J. C., J. D. Reeve, J. M. S. Bento, T. M. C. Della Lucia, R. S. Cameron, and N. M. Heck. 2004. Eye size and behaviour of day- and night-flying leafcutting ant alates. *Journal of Zoology* **264**: 69-75.
36. *Reeve, J. D. and B. L. Strom. 2004. Some statistical problems encountered in semiochemical trapping studies of scolytids and associated insects. *Journal of Chemical Ecology* **30**: 1575-1590.
37. *Cronin, J. T. and J. D. Reeve. 2005. Host-parasitoid spatial ecology: a plea for a landscape-level synthesis. *Proceedings of the Royal Society of London Series B-Biological Sciences* **272**: 2225-2235.
38. Heck, N. M., J. D. Reeve, and F. A. Anderson. 2005. Mitochondrial DNA analysis of the bark beetle predator *Thanasimus dubius* F. (Coleoptera: Cleridae) reveals regional genetic differentiation. *Molecular Ecology* **14**: 3317-3324.
39. †Stone, M. L., M. R. Whiles, J. A. Webber, K. W. J. Williard, and J. D. Reeve. 2005. Macro-invertebrate communities in agriculturally impacted Southern Illinois streams: patterns with riparian vegetation, water quality, and in-stream habitat quality. *Journal of Environmental Quality* **34**: 907-917.
40. †Lips, K. R., F. Brem, R. Brenes, J. D. Reeve, R. A. Alford, J. Voyles, C. Carey, L. Livo, A. P. Pessier, and J. P. Collins. 2006. Emerging infectious disease and the loss of biodiversity in a Neotropical amphibian community. *Proceedings of the National Academy of Sciences* **103**: 3165-3170.
41. Schrey, N. M., A. W. Schrey, E. J. Heist, and J. D. Reeve. 2007. Microsatellite loci for the southern pine beetle (*Dendroctonus frontalis*) and cross-species amplification in *Dendroctonus*. *Molecular Ecology Notes* **7**: 857-859.
42. Schrey, N. M., A. W. Schrey, E. J. Heist, and J. D. Reeve. 2008. Fine-scale genetic population structure of southern pine beetle (Coleoptera: Curculionidae) in Mississippi forests. *Environmental Entomology* **37**: 271-276.

43. *Reeve, J. D., J. T. Cronin, and K. J. Haynes. 2008. Diffusion models for planthopper movement incorporating heterogeneity among substrates, individuals, and edge behaviors. *Journal of Animal Ecology* **77**: 898-904.
44. †Kamm, A. A., G. A. Feldhamer, and J. D. Reeve. 2008. Pelage spotting and staining in eastern moles (*Scalopus aquaticus*). *Northeastern Naturalist* **15**: 303-308.
45. Reeve, J. D., B. L. Strom, L. K. Rieske-Kinney, B. D. Ayres, and A. Costa. 2009. Geographic variation in prey preference in bark beetle predators. *Ecological Entomology* **34**: 183-192.
46. †Whiles, M. R., A. D. Huryn, B. W. Taylor, and J. D. Reeve. 2009. The influence of stress, starvation, and incubation period on excretion estimates obtained with the fluorometric ammonium method: a case study using tadpoles. *Limnology and Oceanography: Methods* **7**: 1-7.
47. *Reeve, J. D., and J. T. Cronin. 2010. Edge behaviour in a minute parasitic wasp. *Journal of Animal Ecology* **79**: 483-490.
48. *Xu, D., J. D. Reeve, X. Wang, and M. Xiao. 2010. Distributed development times and stability in continuous-time host-parasitoid models. *Theoretical Population Biology* **78**: 1-11.
49. Costa, A., and J. D. Reeve. 2011a. Upwind flight response of the bark beetle predator *Thanasimus dubius* towards olfactory and visual cues in a wind tunnel. *Agricultural and Forest Entomology* **13**: 283-290.
50. Costa, A., and J. D. Reeve. 2011b. Olfactory experience modifies semiochemical responses in a bark beetle predator. *Journal of Chemical Ecology* **37**: 1166-1176.
51. Schrey, N. M., A. W. Schrey, E. J. Heist, and J. D. Reeve. 2011. Genetic heterogeneity in a cyclical forest pest, the southern pine beetle (*Dendroctonus frontalis*), is differentiated into east and west groups in the southeastern United States. *Journal of Insect Science* **11**: 1536-2442.
52. Reeve, J. D. 2011. Predators of southern pine beetle. Pages 153-160 in Robert N. Coulson and Kier D. Klepzig, editors. *Southern Pine Beetle II*. General Technical Report SRS-140, Southern Research Station, USDA Forest Service, Asheville, NC.
53. Costa, A., and J. D. Reeve. 2012. The effect of larval predators *Thanasimus dubius* (Coleoptera: Cleridae), produced by an improved system of rearing, against

- the southern pine beetle *Dendroctonus frontalis* (Coleoptera: Curculionidae). *Biological Control* **60**: 1-6.
54. *A, Min, J. D. Reeve, M. Xiao, and D. Xu. 2012. Identification of diffusion coefficient in nonhomogeneous landscapes. *International Conference on Neural Information Processing* 290-297.
 55. *Reeve, J. D., Anderson, F. E., and S. T. Kelley. 2012. Ancestral state reconstruction for *Dendroctonus* bark beetles – evolution of a tree killer. *Environmental Entomology* **41**: 723-730.
 56. *Costa, A., Min A, C. K. Boone, A. P. Kendrick, R. Murphy, W. Sharpee, K. F. Raffa, and J. D. Reeve. 2013. Dispersal and edge behavior of the predator *Thanasimus dubius* relative to bark beetle prey in a red pine system. *Agricultural and Forest Entomology* **15**: 1-11.
 57. *Xiao, M., J. D. Reeve, D. Xu, and J. T. Cronin. 2014. Estimation of the diffusion rate and returning probability for biased edge movement between two different habitat types. *Journal of Mathematical Biology* **67**: 535-567.
 58. *Cronin, J. T., and J. D. Reeve. 2014. An integrative approach to understanding host-parasitoid population dynamics in real landscapes. *Basic and Applied Ecology* **15**: 101-113.
 59. †Jackson, K. E., M. R. Whiles, W. K. Dodds, J. D. Reeve, J. M. Vandermyde, and H. M. Rantala. 2015. Patchburn grazing effects on the ecological integrity of tallgrass prairie streams. *Journal of Environmental Quality* **44**: 1148-1159
 60. Zieman, E. A., J. D. Reeve, W. E. Braswell, and F. A. Jimenez. 2015. Pathology, distribution, morphological and genetic identity of *Deladenus proximus* (Tylenchida: Neotylenchidae) a parasitic nematode of the woodwasp, *Sirex nigricornis* in the eastern United States. *Biological Control* **15**: 14-22.
 61. *Cronin, J. T., J. D. Reeve, D. Xu, M. Xiao, and H. N. Stevens. 2016. Variable prey development time suppresses predator-prey cycles and enhances stability. *Ecology Letters* **19**: 318-327.
 62. *Reeve, J. D. 2018. Synchrony, weather, and cycles in southern pine beetle (Coleoptera: Curculionidae). *Environmental Entomology* **47**: 19-25.
 63. †Fulton, C. A., K. E. H. Hartz, R. D. Fell, C. C Brewster, J. D. Reeve, and M. J. Lydy. 2019. An assessment of pesticide exposures and land use of honey bees in Virginia. *Chemosphere* **222**: 489-493.

64. †Fulton, C. A., K. E. H. Hartz, J. D. Reeve, and M. J. Lydy. 2019. An examination of exposure routes of fluvalinate to larval and adult honey bees (*Apis mellifera*). *Environmental Toxicology and Chemistry* **38**: 1356-1363.
65. †Gooley, Z. C., A. C. Gooley, and J. D. Reeve. 2021. Neonicotinoid-contaminated diet causes behavior changes in forager honey bees (*Apis mellifera*) that may reduce colony survival during late fall. *Journal of Apicultural Research* DOI: 10.1080/00218839.2021.1908739
66. McNichol, B. H., S. R. Clarke, M. Faccoli, C. R. Montes, J. T. Nowak, J. D. Reeve, and K. J. K. Gandhi. 2022. Relationships between drought, coniferous tree physiology, and *Ips* bark beetles under climatic changes. Pages 153-194 in Kamal J. K. Gandhi and R. Hofstetter, editors. *Bark Beetle Management, Ecology, and Climate Change*. Academic Press, San Diego, CA.
67. †Derby, A. P., K. E. H. Hartz, N. W. Fuller, P. F. Landrum, J. D. Reeve, H. C. Poynton, R. E. Connon, and M. J. Lydy. Effects of temperature and salinity on bioconcentration and toxicokinetics of permethrin in pyrethroid-resistant *Hyalella azteca*. *Chemosphere* 299: 134393.
68. *Reeve, J.D. (2022) Biostatistics: Data and Models. (<https://oercommons.org/courseware/lesson/101759/student/>). This book is licensed under the CC BY 4.0 license (<http://creativecommons.org/licenses/by/4.0/>).