

BIOGRAPHICAL SKETCH

Cheryl J. Briggs

Duncan and Suzanne Mellichamp Chair in Systems Biology
Department of Ecology, Evolution, and Marine Biology and
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Research Area:

Theoretical ecology, population dynamics, systems biology, disease ecology

University Address:

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Education:

Imperial College Silwood Park, Ascot, Berks, UK: Postdoctoral researcher in population modeling, 1993-1995
University of California, Santa Barbara, CA: Ph.D. Biology, 1993
Princeton University, Princeton, NJ: M.S. Electrical Engineering, 1988
Michigan Technological University, Houghton, MI: B.S. Electrical Engineering, 1985
B.S. Biology, 1985

Professional Positions and Appointments:

2007- present Professor, Ecology, Evolution and Marine Biology and Biomolecular Science and Engineering, UCSB
2006-2008 Vice Chair (2006-2007) and Chair (2007-2008) of the Theoretical Ecology Section of the Ecological Society of America.
2006-2007 Miller Research Professorship, Miller Institute for Basic Research in Science, Berkeley, CA.
2002-2007 Associate Professor, Dept. of Integrative Biology, U.C. Berkeley
1997-2002 Assistant Professor, Department of Integrative Biology, U.C. Berkeley
1995-1997 Professional Research Biologist, Department of Biological Sciences, UCSB
1993-1995 Post-Doctoral Research Assistant, Department of Biology, Imperial College, Silwood Park, England
1988-1993 Graduate Teaching Assistant, and Graduate Research Assistant: Dept. of Biological Sciences, UCSB
1986-1988 Senior Technical Associate and Member of Technical Staff I: Computer Architectures Research Department, AT&T Bell Laboratories, Murray Hill, NJ

Grants and Awards:

2007-2012 NSF Ecology of Infectious Diseases Program grant, "Collaborative Research: After the crash: factors allowing host persistence following outbreaks of a highly virulent disease", \$2,497,210 (PIs: C. Briggs, R. Knapp, C. Moritz, V. Vredenburg, E. Rosenblum).

- 2005-2010 NSF Ecology of Infectious Diseases Program grant, “Collaborative research: Ecological interactions between Sudden Oak Death and Lyme disease in California”, \$1,778,000 (lead PI: R. Ostfeld, co-PIs: C. Briggs and R. Lane; \$1,267,057 to UC Berkeley).
- 2005-2007 UC Davis, Exotic/Invasive Pests and Diseases Research Program, “Investigating the differential pathogenicity of an emerging fungal disease of amphibians in California” (PI: C. Briggs), \$86,738.
- 2002-2007 NIH National Institute of Environmental Health Sciences, Ecology of Infectious Disease Program Grant, “Amphibian disease dynamics in a fragmented landscape” (lead PI: C. Briggs, co-PIs: R. Knapp, J. Taylor, and C. Moritz), \$2,250,000.
- 2003-2006 USDA CREES grant, “Productivity and intraguild predation in orchard crop systems” (PIs: C. Briggs and E. Borer), \$200,000.
- 2003-2005 UC Water Resources Center grant, “Hydrologic regimes, pond morphology and habitat use: predicting the impact of an emerging aquatic pathogen” (PI: C. Briggs), \$60,000.
- 2001-2003 NSF grant: “Analysis of control and regulation of an insect by its parasitoids”, \$28,788 subcontract on a \$300,000 grant to W. W. Murdoch.
- 2001 University of California College Prep Initiative: AP Environmental Sciences Course Development grant, Co-PI: J. Latto, \$25,000.
- 2001 Hellman Family Faculty Award: “Indirect Effects of Colonization of Native Insects onto Non-native Plant Species in California”, \$30,000.
- 1998-2002 NSF Grant, “The effects of dispersal on the population dynamics and parasitoid diversity of a multiparasitoid-host system” (PI: C. Briggs), \$294,878.
- 1998-2001 USDA NRI grant, “Parasitoid diversity: Effects of competition and seasonality” (PI: C. Briggs), \$165,000.
- 1995-1998 NSF Research Grant, "General Theory for Population Dynamics of Parasitoid-Host Systems", Co-PI's: W. Murdoch, R. M. Nisbet, \$225,000.

Recent Seminar Presentations:

- Aug. 2007: Ecological Society of America Annual Meeting, San Jose, CA
- Aug. 2007: Invited Symposium Presentation, Society of Mathematical Biology Annual Meeting, San Jose, CA
- Apr. 2007: Invited Speaker, University of Arizona, Tucson, AZ
- Feb. 2007: Invited Symposium Presentation, Society of Northwest Vertebrate Biologists Annual Meeting, Victoria, BC
- Feb. 2007: Invited Speaker, University of Utah, Salt Lake City, UT
- Nov. 2006: NSF/NIH Ecology of Infectious Diseases PI meeting, Atlanta, GA
- Nov. 2006: Integrative Research Challenges in Environmental Biology grant meeting, Arizona State Univ., Tempe, AZ
- Oct. 2006: Miller Institute, University of California, Berkeley, CA
- Aug. 2006: Ecological Society of America Annual Meeting, Memphis, TN
- May 2006: Department of Ecology, Evolution, and Marine Biology, University of California, Santa Barbara, CA
- Mar. 2006: University of California, Santa Barbara, CA

- Jan. 2006: Workshop: Restoration Plans for the Mountain Yellow-Legged Frog, Yosemite National Park, CA
- Nov. 2005: Integrative Research Challenges in Environmental Biology grant meeting, Arizona State Univ., Tempe, AZ
- July 2005: Invited Symposium Presentation, International Union of Microbiological Societies, San Francisco, CA
- May 2005: Invited Seminar, Ecology and Evolution of Infectious Diseases Meeting, Fort Collins, CO
- May 2005: Invited Seminar, San Francisco State Univ., Biology Dept, San Francisco, CA
- Jan. 2005: California/Nevada Declining Amphibian Population Task Force Meeting, University of California, Berkeley, CA
- Nov. 2004: Integrative Research Challenges in Environmental Biology grant meeting, Arizona State Univ., Tempe, AZ
- Nov. 2004: Invited Seminar, Arizona State University, Dept. of Mathematical Biology, Tempe, AZ
- Oct. 2004: Invited Seminar, Oregon State University, Zoology Department, Corvallis, OR
- Aug. 2004: Ecological Society of America Annual Meeting, Portland, OR
- Mar. 2004: Panel member for panel discussion, Colorado State University
- Mar. 2004: Keynote speaker for Front Range Student Ecology Symposium, Colorado State University
- Jan. 2004: California/Nevada Declining Amphibian Task Force Meeting, Reno, NV

Publications:

- Daugherty, M. P., Welter, S. C., and C. J. Briggs. 2007. Top-down and bottom-up control of pear psylla (*Cacopsylla pyricola*): Plant quality and the efficacy of the predator *Anthocoris nemoralis*. *Biological Control* (online early).
- Woodhams D.C., V.T. Vredenburg, M.A. Simon, D. Billheimer, B. Shakhtour, S. Yu, C.J. Briggs, L.A. Rollins-Smith, and R.N. Harris. 2007. Symbiotic bacteria contribute to innate immune defences of the threatened mountain yellow-legged frog, *Rana muscosa*. *Biological Conservation*, 138:390-398.
- Morgan J.A.T., V.T. Vredenburg, L.J. Rachowicz, R.A. Knapp, M.J. Stice, T. Tunstall, R.E. Bingham, J.M. Parker, J.E. Longcore, C. Moritz, C.J. Briggs, and J.W. Taylor. 2007. Population genetics of the frog-killing fungus *Batrachochytrium dendrobatidis*. *Proceedings of the National Academy of Science* 104:13845-13850.
- Rachowicz, L.J. and C.J. Briggs. 2007. Quantifying the disease transmission function: Effects of density on *Batrachochytrium dendrobatidis* transmission in the mountain yellow-legged frog (*Rana muscosa*). *Journal of Animal Ecology*, 76: 711–721.
- Boukili, V.K.S., M.F. Hoopes, and C.J. Briggs. 2007. Effect of microenvironment on development of a gall midge. *Environmental Entomology* 36:441-450.
- Daugherty, M. P., J. P. Harmon, and C. J. Briggs. 2007. Trophic supplements in intraguild predation. *Oikos* 116: 662-677.
- Murdoch, W.W., Swarbrick, S.L., & Briggs, C.J. 2006. Biological control: lessons from a study of California red scale. *Population Ecology*, 48: 297-305.
- Rachowicz, L.J., R.A. Knapp, J.A.T. Morgan, M.J. Stice, V.T Vredenburg, J.M. Parker, and C. J. Briggs. 2006. Emerging infectious disease as a proximate cause of amphibian mass mortality in *Rana muscosa* populations. *Ecology*, 87(7):1671-1683.

- Darrouzet-Nardi, A., M.F. Hoopes, J.J. Walker, and C.J. Briggs. 2006. Dispersal and foraging behavior of *Platygaster californica*: Hosts can't run, but they can hide. *Ecological Entomology*, 31:298-306.
- Rollins-Smith, L.A., D.C. Woodhams, L.K. Reinert, V.T. Vredenburg, C.J. Briggs, P.F. Nielsen, and J.M. Conlon. 2006. Antimicrobial peptide defenses of the mountain yellow-legged frog (*Rana muscosa*). *Developmental & Comparative Immunology*, 30(9):831-842.
- Briggs, C.J., Vredenburg, V.T., Knapp, R.A., and L. J. Rachowicz. 2005. Investigating the population-level effects of chytridiomycosis, an emerging infectious disease of amphibians. *Ecology*, 86(12): 3149–3159
- Rachowicz, L.J., J.M. Hero, J.M., Alford, J.W. Taylor, J.A.T. Morgan, V.T. Vredenburg, J.P. Collins, and C. J. Briggs. 2005. The novel and endemic pathogen hypotheses: Competing explanations for the origin of emerging diseases of wildlife. *Conservation Biology*, 19(5): 1441-1448.
- Lloyd-Smith, J.O., P.C. Cross, C.J. Briggs, M. Daugherty, W.M. Getz, J. Latta, M.S. Sanchez, A. B. Smith, and A. Swei. 2005. Should we expect population thresholds for wildlife disease? *Trends in Ecology and Evolution*, 20(9): 511-519.
- Murdoch, M., C. J. Briggs, and S. Swarbrick. 2005. Host suppression and stability in a parasitoid-host system: Experimental demonstration. *Science*, 309 (5734): 610-613.
- Briggs, C.J. and E.T. Borer. 2005. Why short-term experiments may not allow long-term predictions about intraguild predation. *Ecological Applications*. 15(4): 1111-1117.
- Kendall, B.E., S.P. Ellner, E. McCauley, S.N. Wood, C.J. Briggs, W.W. Murdoch, and P. Turchin. 2005. Population cycles in the pine looper moth: dynamical tests of mechanistic hypotheses. *Ecological Monographs*. 75(2): 259-276.
- Briggs, C.J. and M.F. Hoopes. 2004. Stabilizing effects in spatial parasitoid-host and predator-prey models: a review. *Theoretical Population Biology*. 65: 299-315.
- Murdoch, W.W., C.J. Briggs, and R. M. Nisbet. 2003. *Consumer Resource Dynamics*, Princeton Monograph in Population Biology #36, Princeton University Press.
- Borer, E. T., C.J. Briggs, W.W. Murdoch, and S.L. Swarbrick. 2003. Testing intraguild predation theory in a field system: does numerical dominance shift along a gradient of productivity? *Ecology Letters*. 6: 929-935.
- Murdoch, W.W., C.J. Briggs, R.M. Nisbet, B.E. Kendall, and E. McCauley. 2003. Natural enemy specialization and the period of population cycles - Reply. *Ecology Letters*. 6: 384-387.
- Turchin, P., S.W. Wood, S.E. Ellner, B.E. Kendall, W.W. Murdoch, A. Fischlin, J. Casas, E. McCauley, and C.J. Briggs. 2003. Dynamical effects of plant quality and parasitism on population cycles of larch budmoth. *Ecology*. 84: 1207-1214.
- Murdoch, W. W. and C.J. Briggs. 2002. Spatial dynamics of measles epidemics. *Trends in Ecology & Evolution*. 17: 399-401.
- Murdoch, W. W., B.E. Kendall, R.M. Nisbet, C.J. Briggs, E. McCauley, and R. Bolser. 2002. Single-species models for many species food webs. *Nature*. 417: 541-543.
- Turchin, P. T., C.J. Briggs, S.P. Ellner, A. Fischlin, B.E. Kendall, E. McCauley, W.W. Murdoch, and S.N. Wood. 2002. Population cycles of the larch budmoth in Switzerland. Pages 130-141 in A. Berryman, Ed. *Population Cycles: The Case for Trophic Interactions*, Oxford University Press.
- Briggs, C. J. and T.R. Collier. 2001. Autoparasitism, interference, and parasitoid-pest population dynamics. *Theoretical Population Biology* 60: 33-57.

- Ellner, S. P., E. McCauley, B. Kendall, C. J. Briggs, P. R. Hosseini, S. Wood, A. Janssen, M. W. Sabelis, P. Turchin, R. M. Nisbet, and W. W. Murdoch. 2001. Habitat structure and population persistence in an experimental community. *Nature* 412: 538-543.
- Briggs, C. J. and J. Latto. 2001. Interactions between the egg and larval parasitoids of a gall-forming midge and their impact on the host. *Ecological Entomology*. 26: 109-116.
- McCauley, E., B. Kendall, A. Janssen, W. W. Murdoch, P. Hosseini, C. J. Briggs, S. Ellner, P. Turchin, and S. Wood. 2000. Inferring colonization processes from population dynamics in spatially-structured predator-prey systems. *Ecology* 81: 3350-3361.
- Briggs, C. J. and J. Latto. 2000. The effects of dispersal on the population dynamics of a gall-forming midge and its parasitoids. *Journal of Animal Ecology* 69:96-105.
- Briggs, C. J., S. M. Sait, M. Begon, D. J. Thompson, and H. C. J. Godfray. 2000. What causes generation cycles in populations of stored product moths? *Journal of Animal Ecology* 69:352-365.
- Berlow, E. L., S. A. Navarrete, C. J. Briggs, M. E. Power, and B. A. Menge. 1999. Quantifying variation in the strengths of species interactions. *Ecology* 80:2206-2224.
- Kendall, B. E., C. J. Briggs, W. W. Murdoch, P. Turchin, S. P. Ellner, E. McCauley, R. M. Nisbet, and S. N. Wood. 1999. Understanding complex population dynamics: a synthetic approach. *Ecology* 1789-1805.
- Briggs, C. J., R. M. Nisbet, and W. W. Murdoch. 1999. Delayed-feedback and multiple attractors in a host-parasitoid system. *Journal of Mathematical Biology* 38:317-345.
- Murdoch, W. W., C. J. Briggs, and R. M. Nisbet. 1999. Dynamics of consumer-resource interactions: importance of individual attributes. Pages 521-550 in H. Olff, V.K. Brown and R.H. Drent, editors. *Herbivores: Between Plants and Predators*, Blackwell Scientific.
- Godfray, H. C. J., C. J. Briggs, T. A. Jackson, M. O'Callaghan, T.R. Glare, and N.D. Barlow. 1999. A model of insect-pathogen dynamics in which a pathogenic bacterium can also reproduce saprophytically. *Proceedings of the Royal Society of London, Series B* 266:233-240.
- Bonsall, M. B., H. C. J. Godfray, C. J. Briggs, and M. P. Hassell. 1999. Does host self-regulation increase the likelihood of insect-pathogen population cycles? *American Naturalist* 153:228-235.
- Briggs, C. J., W. W. Murdoch, and R. M. Nisbet. 1999. Recent developments in theory for biological control of insect pests by parasitoids. Pages 22-42 in B. A. Hawkins and H. V. Cornell, editors. *Theoretical Approaches to Biological Control*, Cambridge University Press.
- Godfray, H. C. J. and C. J. Briggs. 1999. The dynamics of insect-pathogen interactions. Pages 307-326 in B. A. Hawkins and H. V. Cornell, editors. *Theoretical Approaches to Biological Control*, Cambridge University Press.
- Murdoch, W. W., C. J. Briggs, and T. R. Collier. 1998. Biological control of insects: Implications for theory in population ecology. Pages 167-186 in J. Dempster and I. McLean, editors. *Insect Populations in Theory and Practice*, Kluwer Academic Publishers, Dordrecht, 19th Symposium of the Royal Entomological Society.
- Murdoch, W. W., C. J. Briggs and R. M. Nisbet. 1997. Dynamical effects of parasitoid attacks that depend on host size and parasitoid state. *Journal of Animal Ecology*. 66: 542-556.
- Ellner, S. P., B. E. Kendall, S. E. Wood, E. McCauley and C. J. Briggs. 1997. Inferring mechanism from time-series data: delay differential equations. *Physica D*. 110:182-194.

- Godfray, H. C. J., D. R. O'Reilly, and C. J. Briggs. 1997. A model of nuclear polyhedrosis (NPV) population genetics applied to co-occlusion and the spread of the few plaque phenotype. *Proceedings of the Royal Society of London. Series B.* 264: 315-322.
- Barlow, N. D., J. M. Kean, and C. J. Briggs. 1997. Modelling the relative efficacy of culling and sterilisation for controlling populations. *Wildlife Research.* 24: 129-141.
- Briggs, C. J. and H. C. J. Godfray. 1996. The dynamics of insect-pathogen interactions in seasonal environments. *Theoretical Population Biology* 50:149-177.
- Briggs, C. J. and J. Latto. 1996. The window of vulnerability and its effect on relative abundance. *Ecological Entomology* 21:128-140.
- Murdoch, W. W. and C. J. Briggs. 1996. Theory for biological control: Recent developments. *Ecology* 77:2001-2013.
- Murdoch, W. W., C. J. Briggs, and R. M. Nisbet. 1996. Competitive displacement and biological control in parasitoids: a model. *American Naturalist* 148:807-826.
- Briggs, C. J., W. W. Murdoch, R. M. Nisbet, T. R. Collier, and J. A. J. Metz. 1995. Dynamical effect of host-feeding in parasitoids. *Journal of Animal Ecology* 64:403-416.
- Briggs, C. J. and H. C. J. Godfray. 1995. Models of intermediate complexity in insect-pathogen interactions: Population Dynamics of the microsporidian pathogen, *Nosema pyrausta*, of the European Corn Borer, *Ostrinia nubilalis*. *Parasitology* 111:S71-S89.
- Briggs, C. J. and H. C. J. Godfray. 1995. The dynamics of insect-pathogen interactions in stage-structured populations. *American Naturalist* 145:855-887.
- Godfray, H. C. J. and C. J. Briggs. 1995. The population dynamics of pathogens that control insect outbreaks. *Journal of Theoretical Biology* 176:125-136.
- Latto, J. and C. J. Briggs. 1995. Factors affecting the distribution of the gall-forming midge *Rhopalomyia californica*. *Environmental Entomology* 24:679-686.
- Briggs, C. J., R. S. Hails, N. D. Barlow, and H. C. J. Godfray. 1995. The Dynamics of Insect-Pathogen Interactions. Pages 295-326 in B. T. Grenfell and A. P. Dobson, editors. *Population Biology of Infectious Diseases in Natural Populations*, Cambridge University Press, Cambridge, UK.
- Briggs, C. J., R. M. Nisbet, and W. W. Murdoch. 1993. Coexistence of competing parasitoids on a host with a variable life cycle. *Theoretical Population Biology* 44:341-373.
- Briggs, C. J. 1993. Competition among parasitoid species on a stage-structured host, and its effect on host suppression. *American Naturalist* 141:372-397.
- Nisbet, R. M., C. J. Briggs, W. S. C. Gurney, W. W. Murdoch, and A. Stewart-Oaten. 1993. Two-patch metapopulation dynamics. Pages 125-135 in S. A. Levin, J. Steele, and T. Powell, editors. *Patch Dynamics*, Springer-Verlag, Berlin.
- Murdoch, W. W., C. J. Briggs, R. M. Nisbet, W. S. C. Gurney, and A. Stewart-Oaten. 1992. Aggregation and stability in metapopulation models. *American Naturalist* 140:41-58.

Publications In Press:

- Borer, E., C.J. Briggs, and R. Holt. (In Press) Predators, parasitoids, and pathogens: a cross-cutting examination of intraguild predation theory. *Ecology*.
- Woodhams, D.C., R.A. Alford, C.J. Briggs, M. Johnson, and L.A. Rollins-Smith. (In Review) Life-history trade-offs influence disease in changing climates: strategies of an amphibian pathogen. *Ecology*.