

CHRISTOPHER J. DUGAW

CONTACT INFORMATION Department of Mathematics
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RESEARCH INTERESTS Mathematical modeling, ecological and population models, dynamical systems, stochastic processes, and statistics.

EDUCATION Doctor of Philosophy, **University of California, Davis**, Applied Mathematics
September 2003.
Dissertation Title: *Dynamics of a Soil-Dwelling Parasite and its Insect Host*
Adviser: Alan Hastings
Master of Science, **University of Washington**, Applied Mathematics
August 1999.
Bachelor of Science, **Western Washington University**, Biology/Mathematics
December, 1997 (Magna Cum Laude).

ACADEMIC POSITIONS Associate Professor August 2010 - Present
Humboldt State University. Mathematics Department.
Assistant Professor August 2005 - August 2010
Humboldt State University. Mathematics Department.
Faculty Fellow July 2003 - July 2005
University of California, Davis. Mathematics Department.
Taught upper and lower division mathematics courses and conducted research.
Teaching Assistant September 2001 - April 2002
University of California, Davis. Mathematics Department.
Led small discussion sections and graded exams for calculus, linear algebra, and upper-division courses.
Associate Instructor July - August 2001
University of California, Davis. Mathematics Department.
Taught a small calculus course.

Research Assistant September 1999 - June 2001
University of California, Davis. Institute of Theoretical Dynamics.
Participated in a multi-disciplinary research group focusing on the role of non-linear dynamics in various areas of biology.

Math Tutor July - August 1999
Garfield High School. Seattle, Washington.
Tutored an ethnically diverse group of students in basic algebra.

Teaching Assistant September 1998 - June 1999
University of Washington. Mathematics Department.
Led small discussion sections, and graded exams for calculus courses.

COURSES
TAUGHT

- Data Collection & Analysis
- Graduate Mathematical Modeling Practicum
- Probability and Mathematical Statistics
- Graduate Stochastic Processes
- Mathematical Computing
- Graduate Dynamical Systems
- Probability Theory
- Mathematical Modeling
- Partial Differential Equations
- Ordinary Differential Equations
- Special Topic Course in Mathematical Ecology
- Math Modeling Graduate Seminar
- Elements of Linear Algebra
- Calculus I & II
- Short Calculus II
- Calculus for the Life Sciences I & II

PUBLICATIONS

Engber, E. A., J. M. Varner, **C. J. Dugaw**, L. Quinn-Davidson, and J. K. Hiers. *Utility of an instantaneous moisture meter for duff moisture prediction in long-unburned longleaf pine forests*, **Southern Journal of Applied Forestry**, *in press*.

Dugaw, C. J. 2012 *Birth-death Models* in *Encyclopedia of Theoretical Ecology* (A. Hastings and L. Gross, eds.) University of California Press: Berkeley.

Dugaw, C. J., K. Ram. 2011 *Individual Heterogeneity in Mortality Mediates Long-term Persistence of a Seasonal Microparasite*, **Oecologia**, 166(2), 317-325.

Dugaw, C. J., R. Honeyfield, C. M. Taylor, and D. W. Verzi. 2009 *Modeling activity rhythms in fiddler crabs*. **Chronobiology International**, 26(7), 1355-1368.

Melbourne, B. A., H. V. Cornell, K. F. Davies, **C. J. Dugaw**, et. al. 2007 *Invasion in a heterogeneous world: resistance, coexistence or hostile takeover?* **Ecology Letters**, 10(1), 77-94.

Priesser, E. L., **C. J. Dugaw**, D. R. Strong, and B. Dennis. 2006. *Plant facilitation of a below ground predator*, **Ecology**, 87(5), 1116-1123.

Dugaw, C. J., A. Hastings, E. L. Priesser, and D. R. Strong. 2005. *Windows of persistence in seasonal microparasite-host systems*. **Theoretical Population Biology**, 68, 267-276.

Priesser E. L., **C. J. Dugaw**, B. Dennis, and D. R. Strong. 2005. *Long-term survival of the entomopathogenic nematode *Heterorhabditis marelatus**. **Environmental Entomology**, 34(6), 1501-1506.

Hastings A., K. Cuddington, K. Davies, **C. J. Dugaw**, et. al. 2005. *The spatial spread of invasions: new developments in theory and evidence*. **Ecology Letters**, 8, 91-101.

Dugaw, C. J., A. Hastings, E. L. Priesser, and D. R. Strong. 2003. *Seasonally limited host supply generates microparasite population cycles*. **Bulletin of Mathematical Biology**, 66, 583-594.

Haefner, J. W., and **C. J. Dugaw**. 2000. *Individual based models solved using fast Fourier transforms*. **Ecological Modelling**, 125, 159 - 172.

CONFERENCE PRESENTATIONS *Watts, C. M., J. Cao, and **C. J. Dugaw**. Student Poster, *Modeling the Effects of Predator Exclosure on the Western Snowy Plover*, **Joint Mathematics Meetings**, 2011.

*Perryman, H. A., **C. J. Dugaw**, J. M. Varner, and D. L. Johnson. Poster, *A mathematical model of a surface fire incorporating spot fire ignition and propagation*, **4th International Fire Ecology & Management Congress: Fire as a Global Process**, 2009.

Dugaw, C. J. *Radioactive π ?*, Contributed Talk, **Mathematical Association of America, Mathfest**, 2009.

***Dugaw, C. J.** and E. A. Hobelmann. *Models of road-facilitated biological invasions*, Contributed Talk, **Annual Meeting of the Society for Mathematical Biology Joint with Japan Association of Mathematical Biology**, 2007.

Brown, S. L. and **C. J. Dugaw**. *An approach to population and biological modeling for pre- and post-calculus students*, Minicourse, **Annual Meeting of the Pacific Northwest Section of the MAA**, 2007.

*Marvit, S. and **C. J. Dugaw**. *Stabilizing the population dynamics of a host-parasite system by host immigration*, Student Talk, **Allegheny Mountain Section of MAA**, 2007.

*Walker, S. M., G. B. Crawford, **C. J. Dugaw**, C. Fenton, and F. J. Shaughnessy. *Factors Affecting Turbidity in Humboldt Bay*, Poster, **California Estuarine Research Society Annual Meeting**, 2007.

Dugaw, C. J. *What epidemic models tell us about vaccination policies*. Invited Talk, **State of Jefferson Mathematics Congress**, 2006.

Dugaw, C. J., E. L. Priesser, and D. R. Strong. *Consequences of heterogeneous survival rates of an entomopathogenic nematode*. Contributed Talk, **World Conference on Natural Resource Modeling**, 2005.

Dugaw, C. J., A. Hastings, and D. R. Strong. *A mechanistic model of entomopathogenic nematodes and their hosts*. Poster, **Annual Meeting of the Society for Mathematical Biology Joint with Japan Association of Mathematical Biology**, 2001.

Note: A * indicates research done jointly with a student.

MASTERS
STUDENT
THESES

Anna Morgante, 2011, *Incorporating spotting into a simple fire perimeter model*, **Humboldt State University**, Environmental Systems: Mathematical Modeling Program.

Kyle Falbo, 2011, *An individual based larval dispersion model for the Hawaiian hawksbill sea turtle in the Hawaiian archipelago*, **Humboldt State University**, Environmental Systems: Mathematical Modeling Program.

Amber Buntin, 2010, *A tritrophic model of the bush lupine, the ghost moth caterpillar and its nematode parasite*, **Humboldt State University**, Environmental Systems: Mathematical Modeling Program.

Holly Perryman, 2009, *A mathematical model of spot fires and their management implications*, **Humboldt State University**, Environmental Systems: Mathematical Modeling Program.

Steven Walker, 2009, *Using transfer functions to explain turbidity in Humboldt Bay, California*, **Humboldt State University**, Environmental Systems: Mathematical Modeling Program.

Thé Thé Kyaw, 2008, *Modeling the effect of marine snow fragmentation by Euphausia pacifica on carbon flux*, **Humboldt State University**, Environmental Systems: Mathematical Modeling Program.

Daniele Rosa, 2008, *Implementing a dynamic allocation scheme for the Lund-Potsdam-Jena dynamic global vegetation model*, **Humboldt State University**, Environmental Systems: Mathematical Modeling Program.

Emily Hobelmann, 2007, *Plant invasion models - road effects*, **Humboldt State University**, Environmental Systems: Mathematical Modeling Program.

Chris Panza, 2007, *A model to assess the use of nest enclosures for local population recovery of the western snowy plover (*Charadrius alexandrinus nivosus*)*, **Humboldt State University**, Environmental Systems: Mathematical Modeling Program.

GRANTS

- Joint Fire Science Program: Development and Validation of a Moisture-Dependent Forest Floor Fire Behavior Model, PI, 2010-2013 (\$292,000)
- NSF REU Site: Role Models in Science, PI, 2010 (\$100,000)

FELLOWSHIPS & AWARDS

- University of California Davis Dissertation Year Fellowship, 2002-2003.
- NSF Training Grant in Non-linear Dynamics and Biology Trainee, 1999-2002.
- Achievement Awards for College Scientists Fellowship, 1998-1999.
- Dr. Milton Smith Teaching Scholarship, 1995.

ACADEMIC SERVICE

- Statistics Committee, 2011-present.
- Mathematics Department Personnel Committee, 2010-present.
- Mathematics and Computer Science Administrative Support Coordinator Hiring Committee, 2011.
- Dean of Research and Sponsored Programs Foundation Hiring Committee, 2011.
- Mathematics department Scholarship Committee, 2010-2011.
- Moodle Support Specialist Hiring Committee, 2010.
- Lamberson Lecture Series Committee, 2009-present.
- Environmental Systems graduate program coordinator, 2008-present.
- Environmental Systems graduate program, Mathematical Modeling option coordinator, 2007-2008.
- Co-organizer of the North Coast Student Research Conference, 2008-2009.
- Curriculum Committee, HSU Math Dept., 2007 - 2009.
- University Classroom Priority Scheduling Committee, HSU, 2007 - 2009.
- Judge for North Coast Regional Graduate conference, 2007.
- Ad hoc committee to assess students' ability communicate about mathematics, HSU Math Dept., 2006.
- Faculty Mentor for Research Experience for Undergraduates at HSU, 2006, 2009.

- Graduate Program Committee, HSU Math Dept., 2005-present.
- Technology Committee, HSU Math Dept., 2005-2011.
- Referee for *Ecological Modelling*, *Ecology*, *Mathematical Biosciences*, *Theoretical Population Biology*, *Journal of Biological Dynamics*, *Environmetrics* and *Journal of Mathematical Biology*.
- Member of the MAA and the Society for Mathematical Biology.

COMMUNITY
SERVICE

- Big Brothers Big Sisters of the North Coast, 2010-2011.
- Humboldt County Science Fair Judge, 2006, 2007, and 2009.
- Volunteer for Make-a-Wish Foundation, 2005-2006.
- Volunteer for Yolo County SPCA, 1999-2004.

COMPUTER
SKILLS

C/C++, Matlab, Mathematica, SAS, **R**, Linux, L^AT_EX, HTML, and TI graphing calculators.

PERSONAL
INTERESTS

Mountain biking, trail running, rock climbing, hiking, cross-country skiing, snowshoeing, animal welfare, fair trade, and environmental conservation.