

## Carl Boettiger

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**Home:** 2534 Bombadil Lane,  
Davis CA 95616, USA  
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### **Employment**      **University of California, Santa Cruz**

Santa Cruz, CA 95064  
10/15/2012 - Present

NSF Postdoctoral Researcher  
Mentors: Marc Mangel & Stephen Munch

### **Education**      **University of California, Davis**

Davis, CA 95616  
Ph.D. 09/18/2012

Ph.D Population Biology,  
Mentor: Alan Hastings

### **Princeton University**

Princeton, NJ 08544  
6/2007

A.B in Physics with Honors  
Certificate in Biophysics, Certificate in Applied and Computational Mathematics  
Mentor: Stephen Pacala

### **Publications**

11. Carl Boettiger, Alan Hastings. (2013) No early warning signals for stochastic transitions: insights from large deviation theory. *Proceedings of the Royal Society B*. doi:[10.1098/rspb.2013.1372](https://doi.org/10.1098/rspb.2013.1372)
10. Carl Boettiger\*, Noam Ross\*, Alan Hastings. (2013) Early warning signals: The charted and uncharted territories. *Theoretical Ecology* doi:[10.1007/s12080-013-0192-6](https://doi.org/10.1007/s12080-013-0192-6)
9. Boettiger, C., Hastings, A. (2013) "Tipping points: From patterns to predictions." *Nature*. 493, 157-158. doi:[10.1038/493157a](https://doi.org/10.1038/493157a)
8. Boettiger, C., Hastings, A. (2012) "Early Warning Signals and the Prosecutor's Fallacy." *Proceedings of the Royal Society B*. 279(1748) 4734-4739. doi: [10.1098/rspb.2012.2085](https://doi.org/10.1098/rspb.2012.2085)
7. Boettiger, C., Temple-Lang, D., Wainwright, P.C. (2012) "rfishbase: exploring, manipulating and visualizing FishBase data from R" *Journal of Fish Biology*. 81(6) 2030-2039. doi: [10.1111/j.1095-8649.2012.03464.x](https://doi.org/10.1111/j.1095-8649.2012.03464.x)
6. Boettiger, C., Temple-Lang, D. (2012) "Programmatic access to TreeBASE phylogenies in R." *Methods in Ecology and Evolution* doi: [10.1111/j.2041-210X.2012.00247.x](https://doi.org/10.1111/j.2041-210X.2012.00247.x)
5. Boettiger, C. Hastings, A (2012) "Quantifying limits to detection of early warning for critical transitions." *Journal of The Royal Society Interface*, 9(75), 2527-2539. doi: [10.1098/rsif.2012.0125](https://doi.org/10.1098/rsif.2012.0125).
4. Beaulieu, J.M., Jhwueng, D., Boettiger, C., O'Meara, B. (2012) "Modeling Stabilizing Selection: Expanding the Ornstein-Uhlenbeck Model of Adaptive Evolution," *Evolution*. 66(8) 2369-2383. doi: [10.1111/j.1558-5646.2012.01619.x](https://doi.org/10.1111/j.1558-5646.2012.01619.x)
3. Boettiger, C., Coop, G., Ralph, P. (2012) "Is your phylogeny informative? Measuring the power of comparative methods." *Evolution*. 66(7) 2240-51. doi: [10.1111/j.1558-5646.2012.01574.x](https://doi.org/10.1111/j.1558-5646.2012.01574.x)
2. Boettiger, C., Dushoff, J., Weitz, J. S. (2010) "Variation in the phenotypic dynamics of evolving populations," *Theoretical Population Biology* 77, 6-13. doi: [10.1016/j.tpb.2009.10.003](https://doi.org/10.1016/j.tpb.2009.10.003)
1. Wray, J., Bahcall, N., Bode, P., Boettiger, C., Hopkins, P. (2006) "The Shape, Multiplicity, and Evolution of Superclusters in  $\Lambda$  CDM Cosmology." *Astrophysical Journal* 652, 907. doi: [10.1086/508600](https://doi.org/10.1086/508600)

### **Presentations**

2013	ESA Minneapolis, MN WHOI; Cape Cod, MA <b>invited speaker</b> .	
2012	ESA Portland, OR. <i>Evolution</i> ; Ottawa, CAN. SSB Symposium <b>invited speaker</b> . <i>iEvoBio</i> ; Ottawa, CAN. <i>Computational Science</i> ; Washington DC.	
2011	<i>Ecological Society of America</i> ; Austin, TX. <i>Evolution</i> ; Norman, OK. <i>iEvoBio</i> ; Norman, OK. <i>Science Online</i> ; Durham, NC. <i>Society for Integrative and Comparative Biology</i> . Salt Lake City, UT.	
2010/2009	<i>iEvoBio</i> ; Portland, OR. 2010 <i>Evolution</i> ; Portland OR. 2010 <i>University of Tennessee</i> , Knoxville, TN. 2009 <i>IIASA</i> , Vienna; Austria. 2009	
<b>Workshops</b>	<b>MBI invited speaker</b>	2013
	<a href="#">Sustainable Management of Living Natural Resources</a> Columbus, OH.	
	NIMBioS working group	2011-13
	<a href="#">Pretty Darn Good Control</a> , Knoxville, TN	
<b>Grants</b>	American Institute for Mathematics	2011
	<a href="#">Stochastic and deterministic spatial modeling in population dynamics</a> , Palo Alto, CA	
	<i>NSF Mathematical Biology Postdoctoral Scholar</i> , DBI-1306697	2013-15
	Management for an uncertain world: robust decision theory in face of regime shifts ( <b>\$138,000</b> )	
	<i>Co-PI on Sloan Foundation Grant</i>	2013-15
	For work on the <a href="#">rOpenSci Project</a> ( <b>\$180,000</b> )	
	<i>Short-term visitor grant to NIMBioS</i>	2012
	For research in optimal control	
	<i>PI on DOE Grant No. DE-AC02-05CH11231</i> 50,000 hr supercomputing on NERSC machines	2011, renewed 2012
	<i>NAS IIASA YSSP fellowship</i> National Academy of Sciences, NSF Grant No. OISE-0738129, (\$8,000)	2009
<b>Honors &amp; Awards</b>	<i>DOE Computational Science Graduate Fellowship</i> Department of Energy, Grant No: DE-FG02-97ER25308, (\$144,000)	2008-2012
	<i>Volterra Award</i> (Best student talk, ESA Theory)	2011
	<i>Mendeleev &amp; PLoS software competition</i> , \$1,000	2011
	Elected to Membership in the Society of Sigma Xi	2007
	<i>Allen G. Shenstone Prize in Physics</i> , Princeton	2007
	<i>The Class of 1870 Old English Prize</i> , Princeton	2007
	<i>Kusaka Memorial Prize in Physics</i> , Princeton	2006
	<i>Plasma Physics Fellow</i> , PPPL	2006

**Authored  
Software  
(selected)**

wrightscape: Infer adaptive landscapes from phylogenetic trees (2012)  
knitcitations: Dynamic citation manager for R. (2012)  
pmc: Phylogenetic Monte Carlo tools to quantify uncertainty in comparative methods. (2011)  
treeBASE: An R interface to the TreeBASE API (2011)  
rfishbase: An R interface to the fishbase database (2011)  
BranchingTime: Individual based simulations for adaptive dynamics. (2011)  
populationdynamics: Gillespie algorithms for exact simulation of common ecological models (2011)  
More software at <http://github.com/cboettig>

**Service****Reviewer for:**

2013	<i>Theoretical Ecology, Francis &amp; Taylor, Ideas in Ecology and Evolution, The R Journal, National Science Foundation, Proceedings of the Royal Society B, Journal of Open Research Software, Canadian Journal of Fisheries and Aquatic Sciences</i>
2012	<i>Theoretical Ecology, Evolution, Methods in Ecology and Evolution, Proceedings of the Royal Society B, PLoS ONE, Ecology, Conservation Letters, Ecology Letters</i>
2011	<i>Theoretical Ecology, Ecological Modelling, Evolution, Methods in Ecology and Evolution, Ecosphere,</i>
2010 & prior	<i>Theoretical Ecology, Journal of Mathematical Biology, Ecological Modelling, Ecology</i>

**Other Service:**

Student member for the CBS Dean search.	2011
Co-chaired the student group on Open Science	2010-12
Co-chaired the Graduate Teaching Community	2009-10
Student member for the CPB program review.	2010

**Teaching  
Experience**

ESA Workshop Instructor	Aug 2012
Mentor for Google Summer of Code, R-Project	Summer 2012
Instructor, Bodega Phylogenetics Workshop	Winter 2011
Student Mentor, CLIMB program	Spring, Summer 2008
Teaching Assistant: Introductory Zoology	Winter 2008

**Interviews**

My somewhat uncommon approach to my own research occasionally attracts attention of those outside my own field. I have recently been interviewed by various journals asking to share my perspective and motivation:

Check Hayden E (2013). "Mozilla Plan Seeks to Debug Scientific Code." *Nature*, 501, pp. 472-472. [doi:10.1038/501472a](https://doi.org/10.1038/501472a)

Van Noorden R (2013). "Data-Sharing: Everything on Display." *Nature*, 500, pp. 243-245. [10.1038/nj7461-243a](https://doi.org/10.1038/nj7461-243a)

Gershwin, Virginia (2013). "Turning Point: Carl Boettiger" *Nature*, 493 p 711 [10.1038/nj7434-711a](https://doi.org/10.1038/nj7434-711a)  
Wald, Chelsea (2010). "Scientists Embrace Openness" *Science*. [10.1126/science.caredit.a1000036](https://doi.org/10.1126/science.caredit.a1000036)

## References

Alan Hastings, Dept of Env Sci & Policy, UC Davis [amhastings@ucdavis.edu](mailto:amhastings@ucdavis.edu)  
Simon Levin, Dept of Ecology & Evolution, Princeton [slevin@princeton.edu](mailto:slevin@princeton.edu)  
Marc Mangel, Dept of Applied Math & Statistics, UC Santa Cruz [msmangel@ucsc.edu](mailto:msmangel@ucsc.edu)