

Carl Boettiger

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Employment University of California, Santa Cruz

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

NSF Postdoctoral Researcher
Mentors: Marc Mangel & Stephan 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
06/2007

A.B in Physics with Honors
Certificate in Biophysics; Certificate in Applied and Computational Mathematics
Mentors: Stephen Pacala, Simon Levin, David Huse

Publications

11. Boettiger, C., Hastings, A. (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
10. Boettiger, C.*, Ross, N.*, Hastings, A. (2013) "Early warning signals: The charted and uncharted territories." *Theoretical Ecology* doi: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
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
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
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
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.
4. Beaulieu, J.M., Jhvueng, 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
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
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
1. Wray, J., Bahcall, N., Bode, P., Boettiger, C., Hopkins, P. (2006) "The Shape, Multiplicity, and Evolution of Superclusters in Λ CDM Cosmology." *Astrophysical Journal* 652, 907. doi: 10.1086/508600

* denotes equal contribution.

- Submitted or in preparation**
- Boettiger, C., Mangel, M., Munch, S. “Avoiding tipping points in ecological systems: a Bayesian non-parametric approach to decision making.”
 - Boettiger, C., Lapp, H., Chamberlain, S., Vos, R. “RNeXML: Parsing and Serializing the Next Generation of Phyloinformatic Data in R”
 - Boettiger, C., Temple-Lang, D., Ram, K., Jones, M. “One simple way to share your data: automated generation and parsing of the Ecological Metadata Language for R”

Presentations

- 2014 *Zoology seminar, U Wisconsin-Madison, **invited speaker** American Society of Naturalists Asilomar, CA*
- 2013 *Ecological Society of America Minneapolis, MN
WHOI; Cape Cod, MA **invited speaker**.
UC Davis Dept of Envir Resources and Econ; Davis, CA **invited speaker**.*
- 2012 *Ecological Society of America Portland, OR.
Evolution; Ottawa, CAN. SSB Symposium **invited speaker**.
iEvoBio; Ottawa, CAN.
Computational Science; Washington DC.*
- 2011 *Ecological Society of America; Austin, TX.
Evolution; Norman, OK.
iEvoBio; Norman, OK.
Science Online; Durham, NC.
Society for Integrative and Comparative Biology. Salt Lake City, UT.*
- 2010/2009 *iEvoBio; Portland, OR. 2010
Evolution; Portland OR. 2010
University of Tennessee, Knoxville, TN. 2009
IIASA, Vienna; Austria. 2009*

- Invited Workshops**
- NCEAS Working Group 2014
- A toolbox for analysis of long-term ecological dynamics using the Kepler Workflow System
- Mathematical Biology Institute (MBI), Columbus, OH 2013
- [Sustainable Management of Living Natural Resources](#) Columbus, OH.
- Planning workshops for an NSF software sustainability center 2013
- [Institute for Sustainable Earth and Environmental Software](#). Mtgs in Oakland CA and Santa Barbara, CA
- NIMBioS working group 2011-13
- [Pretty Darn Good Control](#), Knoxville, TN
- American Institute for Mathematics 2011
- [Stochastic and deterministic spatial modeling in population dynamics](#), Palo Alto, CA
- Grants**
- NSF Mathematical Biology Postdoctoral Scholar 2013-15
- Management for an uncertain world: robust decision theory in face of regime shifts Grant No: DBI-1306697 (\$138,000)
- Co-PI on **Alfred P. Sloan Foundation** Grant 2013-15
- For work on the [rOpenSci Project](#) (\$180,000)

	PI 50,000 hrs DOE supercomputing time	2011, renewed 2012
	NERSC center, Department of Energy, Grant No. DE-AC02-05CH11231	
	IIASA YSSP fellowship	2009
	award from the National Academy of Sciences, NSF Grant No. OISE-0738129, (\$8,000)	
	DOE Computational Science Graduate Fellowship	2008-2012
	Department of Energy, Grant No: DE-FG02-97ER25308, (\$144,000)	
Honors & Awards	<i>ASN Speaker Award</i> (Best post-doctoral talk at <i>ASN meeting</i>)	2014
	<i>Volterra Award</i> (Best student talk, ESA Theory)	2011
	<i>Mendeley & PLoS software competition</i> , \$1,000	2011
	Elected to Membership in the Society of <i>Sigma Xi</i>	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)	RNeXML: The semantically rich, next generation phylogenetic standard (NeXML) for R (2013)	
	reml: Interpret, generate and publish Ecological Metadata (EML) files (2013)	
	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 github.com/cboettig and github.com/ropensci	
Reviewer for:		
2014	<i>Proceedings of the Royal Society B</i> , <i>Ecology Letters</i> , <i>Pensoft Biodiversity Data Journal</i> , <i>Theoretical Ecology</i> , <i>emphJournal of Theoretical Biology</i>	
2013	<i>Theoretical Ecology</i> , <i>Francis & Taylor</i> , <i>Ideas in Ecology and Evolution</i> , <i>The R Journal</i> , <i>National Science Foundation</i> , <i>Proceedings of the Royal Society B</i> , <i>Journal of Open Research Software</i> , <i>Canadian Journal of Fisheries and Aquatic Sciences</i>	
2012	<i>Theoretical Ecology</i> , <i>Evolution</i> , <i>Methods in Ecology and Evolution</i> , <i>Proceedings of the Royal Society B</i> , <i>PLoS ONE</i> , <i>Ecology</i> , <i>Conservation Letters</i> , <i>Ecology Letters</i>	
2011	<i>Theoretical Ecology</i> , <i>Ecological Modelling</i> , <i>Evolution</i> , <i>Methods in Ecology and Evolution</i> , <i>Ecosphere</i> ,	
2010 & prior	<i>Theoretical Ecology</i> , <i>Journal of Mathematical Biology</i> , <i>Ecological Modelling</i> , <i>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

Interviews

- Mascarelli, A. (2014) “Research tools: Jump off the page.” *Nature* 507, 523–525. doi:10.1038/nj7493-523a
- Check Hayden E (2013). “Mozilla Plan Seeks to Debug Scientific Code.” *Nature*, 501, pp. 472-472. doi:10.1038/501472a
- Van Noorden R (2013). “Data-Sharing: Everything on Display.” *Nature*, 500, pp. 243-245. doi:10.1038/nj7461-243a
- Gewin, Virginia (2013). “Turning Point: Carl Boettiger” *Nature*, 493 p 711 doi:10.1038/nj7434-711a
- Wald, Chelsea (2010). “Scientists Embrace Openness” *Science*. doi:10.1126/science.caredit.a1000036

References

- Alan Hastings, Dept of Env Sci & Policy, UC Davis amhastings@ucdavis.edu
- Marc Mangel, Dept of Applied Math & Statistics, UC Santa Cruz msmangel@ucsc.edu
- Matt Jones, Director of Informatics, National Center for Ecological Analysis and Synthesis jones@nceas.ucsb.edu