

Carl Boettiger

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Employment University of California, Berkeley

Berkeley, CA 94720
07/01/2015 - present

NSF Postdoctoral Researcher
Mentors: Marc Mangel & Stephan Munch

University of California, Santa Cruz

Santa Cruz, CA 95064
10/15/2012 - 06/30/2015

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

16. Boettiger, C., Chamberlain, S., Hart, E., Ram, K. (2015) "Building Software, Building Community: Lessons from the rOpenSci Project" *Journal of Open Research Software* 3: e8, doi:10.5334/jors.bu
15. Boettiger, C., Bode, M., Sanchirico, JN., LaRiviere, J., Hastings, A., and Armsworth PR. (2015) Optimal management of a stochastically varying population when policy adjustment is costly. *Ecological Applications*. doi:10.1890/15-0236.1
14. Boettiger, C., Chamberlain, S., Vos, R., and Lapp, H. (2015) "RNeXML: a package for reading and writing richly annotated phylogenetic, character, and trait data in R." *Methods in Ecology and Evolution* doi:10.1111/2041-210X.12469
13. Carl Boettiger, C. (2015) "An introduction to Docker for reproducible research." *ACM SIGOPS Operating Systems Review*, Special Issue on Repeatability and Sharing of Experimental Artifacts. 49(1), 71-79. doi:10.1145/2723872.2723882
12. Boettiger, C., Mangel, M., Munch, S. (2015) "Avoiding tipping points in fisheries management through Gaussian process dynamic programming." *Proceedings of the Royal Society B*. 282(1801), 8â&§11. doi:10.1098/rspb.2014.1631
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](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., 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](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 Λ CDM Cosmology.” *Astrophysical Journal* 652, 907. doi: [10.1086/508600](https://doi.org/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

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|------|--|
| 2014 | <i>Zoology seminar, U Wisconsin-Madison, invited speaker American Society of Naturalists Asilomar, CA</i> |
| 2013 | <i>Ecological Society of America Minneapolis, MN
WHOI; Cape Cod, MA invited speaker.
UC Davis Dept of Envir Resources and Econ; Davis, CA invited speaker.</i> |
| 2012 | <i>Ecological Society of America Portland, OR.
Evolution; Ottawa, CAN. SSB Symposium invited speaker.
iEvoBio; Ottawa, CAN.
Computational Science; Washington DC.</i> |
| 2011 | <i>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.</i> |

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	
Invited Workshops	NCEAS Working Group A toolbox for analysis of long-term ecological dynamics using the Kepler Workflow System Mathematical Biology Institute (MBI), Columbus, OH Sustainable Management of Living Natural Resources Columbus, OH. Planning workshops for an NSF software sustainability center Institute for Sustainable Earth and Environmental Software . Mtgs in Oakland CA and Santa Barbara, CA NIMBioS working group Pretty Darn Good Control , Knoxville, TN American Institute for Mathematics Stochastic and deterministic spatial modeling in population dynamics , Palo Alto, CA	2014 2013 2013 2011-13 2011
Grants	NSF Mathematical Biology Postdoctoral Scholar 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 For work on the rOpenSci Project (\$180,000) PI 50,000 hrs DOE supercomputing time NERSC center, Department of Energy, Grant No. DE-AC02-05CH11231 IIASA YSSP fellowship award from the National Academy of Sciences, NSF Grant No. OISE-0738129, (\$8,000) DOE Computational Science Graduate Fellowship Department of Energy, Grant No: DE-FG02-97ER25308, (\$144,000)	2013-15 2013-15 2011, renewed 2012 2009 2008-2012
Honors & Awards	<i>ASN Speaker Award</i> (Best post-doctoral talk at ASN meeting) <i>Vollterra Award</i> (Best student talk, ESA Theory) <i>Mendeleev & PLoS software competition</i> , \$1,000 Elected to Membership in the Society of <i>Sigma Xi</i> <i>Allen G. Shenstone Prize in Physics</i> , Princeton <i>The Class of 1870 Old English Prize</i> , Princeton <i>Kusaka Memorial Prize in Physics</i> , Princeton <i>Plasma Physics Fellow</i> , PPPL	2014 2011 2011 2007 2007 2007 2006 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, Ecology Letters, Pensoft Biodiversity Data Journal, Theoretical Ecology, Journal of Theoretical Biology</i>	
2013	<i>Theoretical Ecology, Francis & 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	Mascarelli, A. (2014) "Research tools: Jump off the page." <i>Nature</i> 507, 523-525. doi:10.1038/nj7493-523a	
	Check Hayden E (2013). "Mozilla Plan Seeks to Debug Scientific Code." <i>Nature</i> , 501, pp. 472-472. doi:10.1038/501472a	
	Van Noorden R (2013). "Data-Sharing: Everything on Display." <i>Nature</i> , 500, pp. 243-245. doi:10.1038/nj7461-243a	
	Gewin, Virginia (2013). "Turning Point: Carl Boettiger" <i>Nature</i> , 493 p 711 doi:10.1038/nj7434-711a	
	Wald, Chelsea (2010). "Scientists Embrace Openness" <i>Science</i> . 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	