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., 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)

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 Langauge for R"

Presentations

| 2014 | *American Fisheries Society*, Quebec City, Canada **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 NERSC center, Department of Energy, Grant No. DE-AC02-05CH11231	2011, renewed 2012
	IIASA YSSP fellowship award from the National Academy of Sciences, **NSF** Grant No. OISE-0738129, ($8,000)	2009
	DOE Computational Science Graduate Fellowship Department of Energy, Grant No: DE-FG02-97ER25308, ($144,000)	2008-2012
Honors & **Awards**	*Volterra Award* (Best student talk, ESA Theory)	2011
	Mendeley & PLoS software competition, $1,000	2011
	Elected to Membership in the Society of *Sigma Xi*	2007
	Allen G. Shenstone Prize in Physics, Princeton	2007
	The Class of 1870 Old English Prize, Princeton	2007
	Kusaka Memorial Prize in Physics, Princeton	2006
	Plasma Physics Fellow, 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:

2013   *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*

2012   *Theoretical Ecology*, *Evolution*, *Methods in Ecology and Evolution*, *Proceedings of the Royal Society B*, *PLoS ONE*, *Ecology*, *Conservation Letters*, *Ecology Letters*

2011   *Theoretical Ecology*, *Ecological Modelling*, *Evolution*, *Methods in Ecology and Evolution*, *Ecosphere*,

2010 & prior   *Theoretical Ecology*, *Journal of Mathematical Biology*, *Ecological Modelling*, *Ecology*

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   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

Gershwin, 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 mb-jones.89@gmail.com