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), 8âĂŞ11. 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
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.

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

PI on **NSF** EAGER 2013-15
The Codemeta Project: A Rosetta Stone for Software Metadata ($165,782)

Co-PI on **Helmsley Trust** Grant 2015-18
For the rOpenSci Project ($2,900,000)

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, Phase II 2014-15
For the rOpenSci Project ($300,000)

Co-PI on **Alfred P. Sloan Foundation** Grant 2013-14
For 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

ASN Speaker Award (Best post-doctoral talk) 2014
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:

2014	*Proceedings of the Royal Society B*, *Ecology Letters*, *Pensoft Biodiversity Data Journal*, *Theoretical Ecology*, emphJournal of Theoretical Biology
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

Mascarelli, A. (2014) "Research tools: Jump off the page." **Nature** 507, 523âĂŞ525. 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

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