

Justin Kitzes

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Education

Ph.D.	University of California, Berkeley	Environmental Science, Policy and Management	2012
M.S.	Stanford University	Earth Systems	2005
B.S.	Stanford University	Earth Systems	2005

Professional Experience

Data Science Fellow, UC Berkeley Institute for Data Science	2014–2017
Postdoctoral Scholar, Energy and Resources Group, University of California, Berkeley	2013–2017
Lecturer, Energy and Resources Group, University of California, Berkeley	2013
Manager, Research and Standards Department, Global Footprint Network	2006–2008

Grants and Fellowships

UC Berkeley Institute for Data Science, Data Science Fellow <i>Spatial biodiversity modeling, acoustic sensors, reproducible research</i>	\$150,000	2014–2017
National Science Foundation (co-author 50% with PI J. Harte) <i>Advancing and applying a maximum entropy theory of ecology</i>	\$672,000	2011–2015
National Science Foundation, Graduate Research Fellowship	\$121,000	2009–2012
University of California, Berkeley, ESPM Departmental Fellowship	\$16,600	2008–2009
University of California, Santa Barbara, Chancellor's Fellowship (declined)	\$63,000	2008–2014

Books

- **Kitzes, J.** *The Essentials of Quantitative Ecology: A Problem-Driven Introduction*. University of Chicago Press: Expected publication Fall 2018.
- **Kitzes, J.**, Turek, D., & Imamoglu, F. (Eds.) *The Practice of Reproducible Research: Case-Studies and Lessons from Data-Intensive Science*. University of California Press: Expected publication Fall 2017.

Publications

[Google Scholar](#) (citations: 2,351, h-index: 15). Student and mentee authors are underlined.

31. **Kitzes, J.**, Berlow, E., Conlisk, E., Erb, K., Iha, K., Martinez, N., Newman, E. A., Plutzer, C., Smith, A. B., & Harte, J. (*in press*) Consumption-based conservation targeting: Linking biodiversity loss to economic consumption through a global wildlife footprint. *Conservation Letters*. [[pdf](#)]
30. Kelly, R., **Kitzes, J.**, Wilson, H., & Merenlender, A. (2016) Habitat diversity promotes bat activity in a vineyard landscape. *Agriculture, Ecosystems and Environment*, 223, 175–181. [[pdf](#)]

29. **Kitzes, J., & Wilber, M.** (2016). macroeco: Reproducible ecological pattern analysis in Python. *Ecography*. [[pdf](#)]
28. **Kitzes, J., & Shirley, R.** (2016). Estimating biodiversity impacts without field surveys: A case study in northern Borneo. *Ambio*, 45(1), 110–119. [[pdf](#)]
27. **Kitzes, J., & Harte, J.** (2015). Predicting extinction debt from community patterns. *Ecology*, 96(8), 2172–2136. [[pdf](#)]
26. **Wilber, M., Kitzes, J., & Harte, J.** (2015). Scale collapse and the emergence of the power law species-area relationship. *Global Ecology and Biogeography*, 24(8), 883–895. [[pdf](#)]
25. McGlinn, D., Xiao, X., **Kitzes, J., & White, E.** (2015). Exploring the spatially explicit predictions of the Maximum Entropy Theory of Ecology. *Global Ecology and Biogeography*, 24(6), 675–684. [[pdf](#)]
24. **Harte, J., & Kitzes, J.** (2015). Inferring regional-scale species diversity from small-plot censuses. *PLoS ONE*, 10(2), e0117527. [[pdf](#)]
23. **Kitzes, J., & Harte, J.** (2014). Beyond the species-area relationship: Improving macroecological extinction estimates. *Methods in Ecology and Evolution*, 5(1), 1–8. [[pdf](#)]
22. **Kitzes, J., & Merenlender, A.** (2014). Large roads reduce bat activity across multiple species. *PLoS ONE*, 9(5), e96341. [[pdf](#)]
21. **Kitzes, J., & Merenlender, A.** (2013). Extinction risk and tradeoffs in reserve site selection for species of different body sizes. *Conservation Letters*, 6(5), 341–349. [[pdf](#)]
20. **Kitzes, J.** (2013). An introduction to environmentally-extended input-output analysis. *Resources*, 2(4), 489–503. [[pdf](#)]
19. **Harte, J., Kitzes, J., Newman, E., & Rominger, A.** (2013). Taxon categories and the universal species-area relationship. *The American Naturalist*, 181(2), 282–287. [[pdf](#)]
18. **Ramage, B. S., Kitzes, J., Marshalek, E. C., & Potts, M. D.** (2013). Optimized floating refugia: A new strategy for species conservation in production forest landscapes. *Biodiversity and Conservation*, 22(3), 789–801. [[pdf](#)]
17. **Ramage, B. S., Marshalek, E. C., Kitzes, J., & Potts, M. D.** (2013). Conserving tropical biodiversity via strategic spatiotemporal harvest planning. *Journal of Applied Ecology*, 50(6), 1301–1310. [[pdf](#)]
16. **Harte, J., & Kitzes, J.** (2012). The use and misuse of species-area relationships in predicting climate-driven extinction. In L. Hannah (Ed.), *Saving a Million Species: Extinction Risk from Climate Change* (pp. 73–86). Washington, DC: Island Press. [[pdf](#)]
15. **Barnosky, A. D., Hadly, E. A., Bascompte, J., Berlow, E. L., Brown, J. H., Fortelius, M., Getz, W. M., Harte, J., Hastings, A., Marquet, P. A., Martinez, N. D., Mooers, A., Roopnarine, P., Vermeij, G., Williams, J. W., Gillespie, R., Kitzes, J., Marshall, C., Matzke, N., Mindell, D. P., Revilla, E., & Smith, A. B.** (2012). Approaching a state shift in Earth's biosphere. *Nature*, 486, 52–58. [[pdf](#)]
14. **Leach, A. M., Galloway, J. N., Bleeker, A, Erisman, J.W., Kohn, R., & Kitzes, J.** (2012). A nitrogen footprint model to help consumers understand their role in nitrogen losses to the environment. *Environmental Development*, 1, 40–66. [[pdf](#)]
13. **Galli, A., Kitzes, J., Niccolucci, V., Wackernagel, M., Wada, Y., & Marchettini, N.** (2012). Assessing the

global environmental consequences of economic growth through the Ecological Footprint: a focus on China and India. *Ecological Indicators*, 17, 99–107. [[pdf](#)]

12. Khagram, S., Nicholas, K. A., Bever, D. M., Warren, J., Richards, E. H., Oleson, K., **Kitzes, J.**, Katz, R., Hwang, R., Goldman, R., Funk, J., & Brauman, K. A. (2010). Thinking about knowing: conceptual foundations for interdisciplinary environmental research. *Environmental Conservation*, 37(4), 388–397. [[pdf](#)]
11. **Kitzes, J.**, & Wackernagel, M. (2009). Answers to common questions in Ecological Footprint accounting. *Ecological Indicators*, 9(4), 812–817. [[pdf](#)]
10. **Kitzes, J.**, Moran, D., Galli, A., Wada, Y., & Wackernagel, M. (2009). Interpretation and application of the Ecological Footprint: A reply to Fiala (2008). *Ecological Economics*, 68(4), 929–930. [[pdf](#)]
9. **Kitzes, J.**, Galli, A., Bagliani, M., Barrett, J., Dige, G., et al. (2009). A research agenda for improving national Ecological Footprint accounts. *Ecological Economics*, 68(7), 1991–2007. [[pdf](#)]
8. Moran, D. D., Wackernagel, M. C., **Kitzes, J. A.**, Heumann, B. W., Phan, D., & Goldfinger, S. H. (2009). Trading spaces: Calculating embodied Ecological Footprints in international trade using a Product Land Use Matrix (PLUM). *Ecological Economics*, 68(7), 1938–1951. [[pdf](#)]
7. **Kitzes, J.**, Wackernagel, M., Loh, J., Peller, A., Goldfinger, S., Cheng, D., & Tea, K. (2008). Shrink and share: humanity's present and future Ecological Footprint. *Philosophical Transactions of the Royal Society B*, 363(1491), 467–475. [[pdf](#)]
6. Wackernagel, M., & **Kitzes, J.** (2008). Ecological Footprint. In S. Jorgensen & B. Fath (Eds.), *Encyclopedia of Ecology* (pp. 1031–1037). Amsterdam, The Netherlands: Elsevier. [[pdf](#)]
5. Moran, D. D., Wackernagel, M., **Kitzes, J. A.**, Goldfinger, S. H., & Boutaud, A. (2008). Measuring sustainable development – Nation by nation. *Ecological Economics*, 64(3), 470–474. [[pdf](#)]
4. Niccolucci, V., Galli, A., **Kitzes, J.**, Pulselli, R., Borsa, S., & Marchettini, N. (2008). Ecological Footprint analysis applied to the production of two Italian wines. *Agriculture, Ecosystems & Environment*, 128(3), 162–166. [[pdf](#)]
3. Galli, A., **Kitzes, J.**, Wermer, P., Wackernagel, M., Niccolucci, V., & Tiezzi, E. (2007). An exploration of the mathematics behind the ecological footprint. *International Journal of Ecodynamics*, 2(4), 250–257. [[pdf](#)]
2. Wackernagel, M., **Kitzes, J.**, Moran, D., Goldfinger, S., & Thomas, M. (2006). The Ecological Footprint of cities and regions: comparing resource availability with resource demand. *Environment and Urbanization*, 18(1), 103–112. [[pdf](#)]
1. **Kitzes, J. A.**, & Denny, M. W. (2005). Red algae respond to waves: morphological and mechanical variation in *Mastocarpus papillatus* along a gradient of force. *The Biological Bulletin*, 208, 114–119. [[pdf](#)]

Selected Presentations

25. The changing face of field ecology: Remote sensing, software, and big data. Invited. Climate Sciences Department BrownBag, Lawrence Berkeley National Laboratory. March 21, 2016.
24. Predicting future extinction debt from present-day community patterns. American Society of Naturalists, Pacific Grove, California. January 11, 2016.

23. Feedback analysis and life cycle assessment. Guest Lecture. Modeling Ecological and Meteorological Phenomena, University of California, Berkeley. November 19, 2015.
22. Deriving spatially-explicit beta diversity metrics from spatially-implicit, plot-based data. Ecological Society of America, Baltimore, Maryland. August 12, 2015.
21. Stop using the power-law species-area relationship (and what to do instead). Invited. Ecological Society of America, Baltimore, Maryland. August 10, 2015.
20. Predicting extinction rates across space and time: A macroecological approach. Ecological Society of America, Sacramento, California. August 13, 2014.
19. Linking biodiversity loss to economic consumption through a global wildlife footprint. Society for Conservation Biology North America Congress, Missoula, Montana. July 14, 2014.
18. Predicting future extinction debt from present-day community patterns. Mathematics of Planet Earth 2013+ Global Change Workshop, University of California, Berkeley. May 21, 2014.
17. Conserving biodiversity with limited data: Insights from macroecology. Invited. Environmental Studies Seminar, University of California, Santa Cruz. December 2, 2013.
16. Linking biodiversity loss to economic consumption with a global wildlife footprint. Invited. Energy and Resources Group Colloquium, University of California, Berkeley. October 2, 2013.
15. Practicing conservation with limited data: Insights from macroecology. Invited. Wildlife Seminar, Department of Environmental Science, Policy and Management, University of California, Berkeley. September 6, 2013.
14. A simple dynamic model for predicting variation in species spatial patterns. Poster. Workshop on Frontiers of Macroecological Theory, University of California, Berkeley. February 1, 2013.
13. California bats avoid roads. The Wildlife Society Western Section Annual Conference, Sacramento, California. January 13, 2013.
12. A tale of two strategies: Conservation as adaptation and mitigation. Guest Lecture. Ecology and Society, University of California, Berkeley. October 2, 2012.
11. The tradeoff between patch size and clustering in designing reserve networks. Society for Conservation Biology North America Congress, Oakland, California. July 17, 2012.
10. Linking biodiversity loss to global consumption behavior. Poster. National Academies Keck Futures Initiative Conference on Ecosystem Services, Irvine, California. November 12, 2011.
9. Combinatorics and analysis of species spatial distributions. Guest Lecture. Modeling Ecological and Meteorological Phenomena, University of California, Berkeley. October 18, 2011.
8. Designing reserve networks for biodiversity persistence: An allometric community approach. Poster. Ecological Society of America Annual Meeting, Austin, Texas. August 12, 2011.
7. National ecological footprint accounts: Measuring global demand for ecosystem goods and services. Bay Area Conservation Biology Symposium, Stanford, California. January 31, 2009.
6. Sustainability accounting with the ecological footprint. Invited. GIIF GeoLunch, University of California, Berkeley. March 21, 2008.

5. Ecological Footprint accounting principles. Invited. International Symposium on Global Sustainability, Kyoto University, Japan. November 26–27, 2007.
4. A constant global hectare method for representing ecological footprint time trends. International Ecological Footprint Conference, Cardiff University, United Kingdom. May 8–10, 2007.
3. A research agenda for improving national Ecological Footprint accounts. International Ecological Footprint Conference, Cardiff University, United Kingdom. May 8–10, 2007.
2. National footprint accounting: Russia as a case study. Invited. International Workshop on Sustainable Resource Use, Doshisha University, Kyoto, Japan. March 16, 2007.
1. Sustainability accounting with the Ecological Footprint. Invited. UNU-Zero Emissions Symposium 2006: Contemplating on Sustainability, United Nations University, Tokyo, Japan. October 20, 2006.

Teaching

University of California, Berkeley – Lecturer Modeling Ecological and Meteorological Phenomena (1 semester)	2013
Software Carpentry – Instructor Scientific Computing Intensive Workshop (9 workshops, 2 days each)	2012–
University of Phoenix, Online – Faculty Ecology and Evolution (2 courses, 5 weeks each) Principles of Biology (3 courses, 5 weeks each)	2010–2011
Global Footprint Network – Technical Trainer Ecological Footprint Technical Training Course (7 workshops, 2 days each)	2006–2009
Stanford University – Teaching Assistant Introduction to Earth Systems (2 quarters) Earth Systems Senior Seminar (2 quarters) Goldman Undergraduate Honors Program (1 academic year)	2003–2005

Mentored Students

- James Dunn – Undergraduate student (thesis), University of California, Berkeley (2015–2016)
- Rochelle Kelly – Undergraduate student (thesis), University of California, Berkeley (2012–2013)
- Mark Wilber – Associate specialist, University of California, Berkeley (2012)
- Benjamin Wheeler – Undergraduate student (thesis), University of California, Berkeley (2011–2012)
- Bryan Frossard – Undergraduate student, University of California, Berkeley (2011–2012)
- Alessandro Galli – Ph.D. student, University of Siena and Global Footprint Network (2006–2008)
- Katsunori Iha – Research fellow, Global Footprint Network (2006–2008)

Other Activities and Affiliations

Reviewer for *Nature*, *Ecology Letters*, *Ecology*, *Ecological Monographs*, *The American Naturalist*, *Methods in Ecology and Evolution*, *Theoretical Ecology*, *Ecology and Evolution*, *Journal of Biogeography*, *Ecography*, *Conservation Letters*, *Conservation Biology*, *Basic and Applied Ecology*, *PLoS ONE*, *Environmental Research*

Letters, Earth's Future, Biometrics, Ecological Modelling, Heredity, Journal of Fish and Wildlife Management, Journal of Environmental Management, Ecological Economics, Land Use Policy, Journal of Cleaner Production, Environmental Monitoring and Assessment, Environment and Development Economics, Sustainability.

Advisory Council, Software Carpentry Foundation	2015–
Organizer, BIDS Symposium “The Future of Open Science and Publishing”	2015
Organizer, ESA Symposium “Advancing Ecological Theory for Conservation Biology”	2014
Lead Author, Biodiversity Chapter, UNEP GEO-5 Report	2010–2012
Member, North American 2012 Congress Committee, Society for Conservation Biology	2010–2012
Member, Dept. of ESPM Ecosystem Sciences Admissions Committee (UC Berkeley)	2010–2012
Member, Ecological Footprint Committee, Society for Conservation Biology	2008–2016
Adjunct Senior Scientist, Global Footprint Network	2008–

Active professional memberships include the Ecological Society of America, Society for Conservation Biology (North America Section), and the American Society of Naturalists.