

Adam B. Smith, Ph.D.

Center for Conservation & Sustainable Development,
Missouri Botanical Garden, 4344 Shaw Boulevard, Saint Louis, MO 63110 USA
Phone: 314/577-9473 x 76314 | Email: adam.smith@mobot.org | Web: www.earthSkySea.org

Education

Ph.D., Energy and Resources. Energy and Resources Group, University of California, Berkeley, CA.
Advisor: John Harte. Dissertation title: "Facets of biological conservation: Appropriate science, policy, and ethics for ensuring the perpetuity of biodiversity".

M.A., Ecology. Curriculum in Ecology, University of North Carolina at Chapel Hill, Chapel Hill, NC.
Advisor: Seth Reice.

B.A., Biology (major), Math (minor). *Suma cum laude.* McPherson College, McPherson, KS.

Research Interests and Appointments

Research interests: My research addresses the impacts climate change will have on individual species and their communities and means by which human intervention can facilitate adaptive responses. I use computational, simulation, and analytical mathematics to address critical issues in global change conservation. A dominant theme has been the development and application of models that predict the response of species to climate change, habitat loss, and exploitation by humans. A related theme addresses how environmental factors like climate limit species' ranges.

Assistant Scientist in Global Change, Center for Conservation and Sustainable Development, Missouri Botanical Garden, Saint Louis, MO. 2014 to present.

- Conducted research in issues in global change conservation by developing models to understand threats to biodiversity and prioritize conservation efforts at regional and global scales; developed computational tools to manage ecoinformatic data.

Postdoctoral Fellow, Center for Conservation and Sustainable Development, Missouri Botanical Garden, Saint Louis, MO. 2011 to 2014.

- Conducted research evaluating the vulnerability of threatened plant species to climate change and climatic niche conservatism among species in the same clade. Supervisor: Matthew Albrecht.

Postdoctoral Scholar, Museum of Vertebrate Zoology, University of California, Berkeley, CA. 2009 to 2011.

- Validated species distribution models using historic vertebrate data collected by Joseph Grinnell. Assisted field teams in resurveys of historic mammal and bird census sites. Supervisors: Craig Moritz and Steve Beissinger.

Graduate Student Researcher, Energy & Resources Group and Institute of Governmental Studies, University of California, Berkeley, CA. 2005 to 2009.

- Collected field data, analyzed macroecological spatial datasets, compiled manuscripts.
- Compiled annotated bibliographies on biosafety and biodiversity governance, organized international workshops.

Research Assistant, Department of Environmental Science, Policy, and Management, University of California, Berkeley, CA. 2003 and 2005.

- Conducted research on global warming in subalpine meadows; surveyed native forbs; assayed

soil chemistry.

Teaching Appointments

Adjunct Assistant Professor in Biology, University of Missouri at Saint Louis, Saint Louis, MO.
Spring semester, 2015.

- Taught graduate-level Global Change Conservation course.

Graduate Student Instructor, Department of Integrative Biology and Energy & Resources Group,
University of California, Berkeley, CA. 2003 to 2005.

- Taught Introductory Biology laboratory and discussion sections twice.
- Taught discussion sections of Quantitative Aspects of Global Environmental Problems.

Full-Time Volunteer, Trees for Life, Wichita, KS. 2002 to 2003.

- Developed ESL lessons and help system for Global Circle of Knowledge peer-to-peer distance-based education software for villagers in India, Pakistan, and other underserved areas.

Assistant English Teacher, Furen-cho Board of Education, Hokkaido Prefecture, Japan. 1998 to 2001.

- Taught English and international communications to kindergarten, elementary, junior high, and senior high students, and adults. Co-sponsored elementary and high school English clubs; participated in other clubs' activities (soft tennis, volleyball, tea ceremony, ping-pong, Japanese cooking, English). Led home stay with nine students in US for 2 weeks.

Assistant Professor of Biology, McPherson College, McPherson, KS. 1997 to 1998.

- Taught Senior Research, Research Methods, Conservation Biology, Environmental Science, Vertebrate Physiology, Evolution, Genetics, and College Biology I and II. Faculty sponsor for International Student Organization.

Teaching Assistant, University of North Carolina at Chapel Hill, Chapel Hill, NC. 1995 to 1996.

- Taught labs and recitations for Field Ecology once, and Ecology and Population Biology thrice.

Teaching Awards

Outstanding Graduate Student Instructor Award, University of California, Berkeley.

- Usually granted by course's host department only to its own graduate students, but exception made in granting it to me because I was in another department.

Professor of the Year, McPherson College.

- Youngest professor every to receive award.
- Only professor ever to receive award after just one year of service.

Tri-Beta Teaching Excellence Award in Biological Sciences, University of North Carolina at Chapel Hill. Nominated twice more for same.

- Granted to just one teaching assistant per year in a department with 3000 undergraduate majors.

Peer-Reviewed Publications

* Student authors

- 24) **Smith**, A.B., Godsoe, W., Rodríguez-Sánchez, F., Wang, H-H., and Warren, D. 2019. Niche estimation above and below the species level. *Trends in Ecology and Evolution*. doi: 10.1016/j.tree.2018.10.012

- 23) Galliard, M., Bello, N., Knapp, M., Poland, J., St. Amand, P., Baer, S., Maricle, B., **Smith**, A.B., and Johnson, L.J. 2019. Local adaptation, genetic divergence, and experimental natural selection in a foundation grass across the US Great Plains' climate gradient. *Global Change Biology*. In press. doi: 10.1111/gcb.14534
- 22) Frances, A., **Smith**, A.B., and Khoury, C. 2018. Conservation status and threat assessments for North American crop wild relatives. Pp. 189-208 in Greene S., Williams K., Khoury C., Kantar M., Marek L. (eds.) *North American Crop Wild Relatives: Conservation and Use, Volume 1*. (Springer, New York). doi: 10.1007/978-3-319-95101-0_7
- 21) Kunin, W.E., Harte, J., He, Fangliang, Hui, C., Jobe, R.T., Ostling, A., Polce, C., Šizling, A., **Smith**, A.B., Smith, Krister, Smart, S.M., Storch, D., Tjørve, E., Ugland, K-I., Ulrich, W., and Varma, V. 2018. Up-scaling biodiversity: Estimating the species-area relationship from small samples. *Ecological Monographs* 88:170-187. doi: 10.1002/ecm.1284
- 20) Santos, M.J., **Smith**, A.B., Thorne, J.H., and Moritz, C. 2017. The relative influence of change in habitat and climate on elevation range limits in small mammals in Yosemite National Park, California, U.S.A. *Climate Change Responses* 4:7. doi: 10.1186/s40665-017-0035-6
- 19) Kitzes, J., Berlow, E., Conlisk, E., Erb, K., Ihara, K., Martinez, N., Newman, E., Plutzer, C., **Smith**, A.B., and Harte, J. Early View. The global wildlife footprint: linking biodiversity loss to economic consumption. *Conservation Letters* 10:531-538. doi: 10.1111/con4.12321
- 18) **Smith**, A.B., Alsdurf*, J., Knapp, M. and Johnson, L.C. 2017. Phenotypic distribution models corroborate species distribution models: A shift in the role and prevalence of a dominant prairie grass in response to climate change. *Global Change Biology* 23:4365-4375. doi: 10.1111/gcb.13666
- Covered by at least 94 media outlets with a combined subscription/listener/watcher base of 78 million, including [The San Francisco Chronicle](#), [The Seattle Times](#), [US News and World Report](#), [The Topeka Capital Journal](#), [The Manhattan Mercury](#), and numerous other regional newspapers, radio stations (e.g., [KWMU 90.7](#)), TV stations (e.g., [KWCH12](#)), and science and environmental news websites (e.g., [Science News Online](#) and [NRDC](#))
- 17) Hernández-Yáñez*, H., Kos*, J.T., Bast*, M.D., Griggs*, J.L., Hage*, P.A., Killian*, A., Whitmore*, M.B., Loza*, M. L., **Smith**, A.B. 2016. A systematic assessment of threats affecting the rare plants of the United States. *Biological Conservation* 203:260-267. doi: 10.1016/j.biocon.2016.10.009
- Covered by St. Louis Public Radio KWMU 90.7 (20 October 2016).
 - [Featured on Inside Science](#) (3 November 2016).
- 16) Ulrey, C., Quiantana-Ascencio, P.F., Kauffman, G., **Smith**, A.B., and Menges, E.S. 2016. Life at the top: Long-term demography, microclimatic refugia, and responses to climate change for a high-elevation southern Appalachian endemic plant. *Biological Conservation* 200:80-92. doi: 10.1016/j.biocon.2016.05.028
- 15) **Smith**, A.B., Long, Q.G., and Albrecht, M.A. 2016. Shifting targets: Spatial priorities for ex situ plant conservation depend on interactions between current threats, climate change, and uncertainty. *Biodiversity & Conservation* 25:905-922. doi: 10.1007/s10531-016-1097-7
- 14) Karger, D.N., Cord, A.F., Kessler, M., Kreft, H., Kühn, I., Pompe, S., Sandel, B., Cabral, J.S., **Smith**, A.B., Svenning, J-C., Tuomisto, H., Weigelt, P., and Wesche, K. 2016. Delineating probabilistic species pools in ecology and biogeography. *Global Ecology & Biogeography* 25:489-501. doi: 10.1111/geb.12422
- 13) **Smith**, A.B., M.J. Santos, M.S. Koo, K.C. Rowe, K.M.C. Rowe, J.L. Patton, S. Beissinger, and C. Moritz. 2013. Evaluation of species distribution models by resampling of sites surveyed a century ago by Joseph Grinnell. *Ecography* 36:1017-1031. doi: 10.1111/j.1600-0587.2013.00107.x

- 12) **Smith, A.B.** 2013. On evaluating species distribution models with random background sites in place of absences when test presences disproportionately sample suitable habitat. *Diversity & Distributions* 19:867-872. doi: 10.1111/ddi.12031
- 11) **Smith, A.B.** 2013. The relative influence of temperature, moisture, and their interaction on range limits of mammals over the past century. *Global Ecology & Biogeography* 22:334-343. doi: 10.1111/j.1466-8238.2012.00785.x
- 10) **Smith, A.B., B. Sandel, N. Kraft, and S. Carey.** 2013. Characterizing scale-dependent community assembly using the functional-diversity–area relationship. *Ecology* 94:2392-2402. doi: 10.1890/12-2109.1
- 9) Morelli, T.L., A.B. **Smith**, C. Kastely, I. Mastroserio, C. Moritz, and S. Beissinger. 2012. Anthropogenic refugia ameliorate the severe climate-correlated decline of a montane mammal along its trailing edge. *Proceedings of the Royal Society of London B* 279:4279-4286. doi: 10.1098/rspb.2012.1301
 - Covered by: *Science, Conservation Magazine, Science Daily, Grist, and Futurity.*
- 8) Barnosky, A.D., E.A. Hadly, J. Bascompte, E.L. Berlow, J.H. Brown, M. Fortelius, W.M. Getz, J. Harte, A. Hastings, P.A. Marquet, N.D. Martinez, A. Mooers, P. Roopnarine, G. Vermeij, J.W. Williams, R. Gillespie, J. Kitzes, C. Marshall, N. Matzke, D.P. Mindell, E. Revilla, A.B. **Smith.** 2012. Approaching a state-shift in Earth's biosphere. *Nature* 486:52-58. doi: 10.1038/nature11018
 - Served as basis for *Scientific Consensus on Maintaining Humanity's Life Support Systems in the 21st Century*, a policy statement signed by >3400 scientists, presented to the US White House Staff, Secretary of State John Kerry, President Xi Jinping (China), Governor Ichiro Matsui (Osaka, Japan), Energy & Climate Change Minister Gregory Barker, (United Kingdom), Governor Eruviel Avila (Mexico), Right Honourable Datuk Seri Panglima Musa Haji Aman (Minister of Sabah, Malaysia), and others.
 - Served as basis of policy brief requested by Governor Jerry Brown (California). Served as supporting document for MOU on climate change between China's National Development and Reform Commission and California.
 - Covered widely in the national and international press, including *The New York Times, BBC News, Los Angeles Times, WIRED*, and Bill Moyers; critiqued in *Al Jazeera* op-ed.
 - Subject of documentary *Demain* (released as *Tomorrow* in English) by Mélanie Laurent and Cyril Dion, shown in public theaters and UNFCCC COP21, UNESCO, and other diplomatic venues.
 - Reviewed by Faculty of 1000.
 - Used as basis for Consortium for Mathematics' 2013 Contest in Modeling.
- 7) **Smith, A.B.** 2010. Caution with curves: Caveats for using the species-area relationship in conservation. *Biological Conservation* 143:555-564. doi: 10.1016/j.biocon.2009.11.003
- 6) Harte, J., A.B. **Smith**, and D. Storch. 2009. Biodiversity scales from plots to biomes with a universal species-area curve. *Ecology Letters* 12:798-797. doi: 10.1111/j.1461-0248.2009.01328.x
- 5) Sandel, B. and A.B. **Smith.** 2009. Scale as a lurking factor: Incorporating scale-dependence in experimental ecology. *Oikos* 118:1284-1291. doi: 10.1111/j.1600-0706.2009.17421.x
- 4) Harte, J., Z.T. Zillo, E. Conlisk, and A.B. **Smith.** 2008. Maximum entropy and the state variable approach to macroecology. *Ecology* 89:2700-2711. doi: 10.1890/07-1369.1
 - Reviewed by Faculty of 1000 (two recommendations).
- 3) Srinivasan, U.T., S.P. Carey, E. Hallstein, P.A.T. Higgins, A.C. Kerr, L.E. Koteen, A.B. **Smith**, R. Watson, J. Harte, and R.B. Norgaard. 2008. The debt of nations and the distribution of ecological impacts from human activities. *Proceedings of the National Academy of Sciences USA* 105:1768-1773. doi: 10.1073/pnas.0709562104

- Covered by *Nature*, *The Guardian*, and *Monga Bay*.
- 2) Harte, J., E. Conlisk, A. Ostling, J.L. Green, A.B. **Smith**. 2005. A theory of spatial structure in ecological communities at multiple spatial scales. *Ecological Monographs* 75:179-197. doi: 10.1890/04-1388
 - 1) Lloyd-Smith, J.O., P.C. Cross, C.J. Briggs, M. Daugherty, W.M. Getz, J. Latta, M.S. Sanchez, A.B. **Smith**, and A. Sweil. 2005. Should we expect population thresholds for wildlife disease? *Trends in Ecology & Evolution* 20:511-519. doi: 10.1016/j.tree.2005.07.004

Commissioned and Invited Works and Reports

- Huntley, B., Foden, W.B., **Smith**, A.B., Platts, P., Watson, J. and Garcia, R.A. 2016. Chapter 5. Using CCVAs and interpreting their results. In W.B. Foden and B.E. Young, editors. IUCN SSC Guidelines for Assessing Species' Vulnerability to Climate Change. Version 1.0. Occasional Paper of the IUCN Species Survival Commission No. 59. Gland, Switzerland and Cambridge, UK. pp 33–48. doi: 10.2305/IUCN.CH.2016.SSC-OP.59.en
- Huntley, B., Foden, W.B., Pearce-Higgins, J., and **Smith**, A.B. 2016. Chapter 6. Understanding and working with uncertainty. In W.B. Foden and B.E. Young, editors. IUCN SSC Guidelines for Assessing Species' Vulnerability to Climate Change. Version 1.0. Occasional Paper of the IUCN Species Survival Commission No. 59. Gland, Switzerland and Cambridge, UK. pp 49–56. doi: 10.2305/IUCN.CH.2016.SSC-OP.59.en
- Smith**, A.B., Albrecht, M.A., and Hird, A. 2014. “Chaperoned” managed relocation. *BGjournal* 11:19-22.
- Brandt, L., He, H., Iverson, L., Thompson, F., Butler, Patricia, Handler, S., Janowiak, M., Swanston, C., Albrecht, M., Blume-Weaver, R., Dijak, B., Deizman, P., DePuy, J., Dinkel, G., Fei, S., Jones-Farrand, T., Leahy, M., Matthews, S., Nelson, P., Oberle, B., Perez, J., Peters, M., Prasad, A., Schneiderman, J.E., Shuey, J., **Smith**, A.B., Studyvin, C., Tirpak, J., Walk, J., Wang, W., Watts, L., Weigel, D., Westin, S. 2014. Central Hardwoods ecosystem vulnerability assessment and synthesis: A report from the Central Hardwoods Climate Change Response Framework project. General Technical Report NRS-124, Newtown Square, PSA, U.S. Department of Agriculture, Forest Service, Northern Research Station.
- Rowe, K.M.C., C. Moritz, S.J. Beissinger, A.B. **Smith**, and M.S. Koo. 2012. Region-wide planning for resurvey of vertebrate diversity over the last 100 years in the Great Basin and Mojave Desert. 2012 Final Report. Natural Resource Technical Report NPS. National Park Service, Fort Collins, Colorado.
- Smith**, A.B., M. Koo, K.C. Rowe, J., Patton, S. Beissinger, and C. Moritz. 2011. Testing methods for predicting mammalian species' responses to 20th century climate change in California. California Energy Commission, Public Interest Energy Research Program.
- Smith**, A.B. 2011. “Convention on Migratory Species of Wild Animals,” “International Convention for the Regulation of Whaling,” and “Sea Shepherd Conservation Society” in *Encyclopedia of Environmental Issues*, Salem Press, Pasadena (\$85).
- Smith**, A.B. 2009. International biodiversity governance and the outpacing of policy by threats: How can conservation regimes address global climate change? For “Managing Biosafety and Biodiversity in a Global World: EU, US, California and Comparative Perspectives,” Center for Institutions and Governance, UC Berkeley and Centre for Global Governance Studies, Katholieke Universiteit Leuven (€3750).
- Smith**, A.B. 2009. “World Conservation Union” and “Dolphins and Porpoises” in Duchth, S.I (ed.) *Encyclopedia of Global Warming*, Salem Press, Pasadena (\$65).

Grants, Contracts, Fellowships, and Scholarships

Total: \$1,086,286 leveraging \$1,443,023 of assets.

“Collaborative Research: ABI Innovation: Quantifying biogeographic history: a novel model-based approach to integrating data from genes, fossils, specimens, and environments,” National Science Foundation, Advances in Biological Informatics, 2018-2021, \$698,757 (co-PI with Sean Hoban, Allan Strand, Andria Dawson, and John Robinson).

“Inferring the Invisible: Extending the Use of Natural History Museum and Herbarium Specimens Beyond the Locations in which They Were Collected,” Institute for Museum and Library Services, 2015-2018, \$351,579 (co-PI Iván Jiménez).

“Developing General Methods of Inferring Vulnerability to Climate Change Using Well-Known Iconic Species in the American West”, US Geological Survey, 2015-2016, \$23,500.

Graduate Travel Grant (\$500), Summer 2007, University of California, Berkeley Graduate Fellowships Office, Berkeley, California.

Mildred E. Mathias Graduate Student Research Grant (\$1500), Spring 2007. University of California Natural Reserve System, Oakland, CA.

Mildred E. Mathias Graduate Student Research Grant (\$450), Spring 2006. University of California Natural Reserve System, Oakland, CA.

Energy and Resources Block Grant (full tuition and stipend, 1 semester), Fall 2004. Energy and Resources Group, University of California, Berkeley.

Datatel Returning Student Scholarship (\$1,500), 2003. Datatel Scholars Foundation, Datatel, Fairfax, VA.

Graduate Student Fellowship (\$8500, 1 year), 1994-1995, The Graduate School, University of North Carolina at Chapel Hill, Chapel Hill, NC.

Honorary Full-time Scholarship (full tuition, 4 years), McPherson College, McPherson, KS.

Invited Presentations

“Intraspecific variation in species’ responses to climate change: Phenotype, phylogeny, and place.” Washington University in Saint Louis, 2017.

“Rearranging deck chairs on the Titanic amidst low-hanging fruit: A systematic assessment of threats to rare plants of the United States.” Wichita State University, 2016.

“Climate change and biodiversity: Out or up!” Confluence Chapter of the Missouri Master Naturalists, 2016.

“Death by 1000 cuts while being loved to death amidst low-hanging fruit: Threats facing the rare plants of the United States.” University of Missouri at Saint Louis, 2015.

“Global change, climate change, and vulnerability of rare and threatened plants of the North American Interior Highlands.” Kansas State University, 2014.

“Ecological fortunetelling: Validating Predictions of Ecological Change Using Historic Data Collected by Joseph Grinnell.” Saint Louis University, 2013.

“Using GIS to Predict the Vulnerability of Plants to Climate Change.” Missouri GIS Conference, 2013.

“Ecological Fortunetelling: Projecting Species Distribution Models across Time Spans Relevant to Conservation.” Kansas State University, 2012.

“Over Par: Fairways and Sand Traps on the Migration Route to a Favorable Climate.” Saint Louis Consortium for Ecology, Evolution, and Conservation, 2012.

“Biogeographic Vulnerability of Rare Plants of the Central Highlands and Central Basin.” US Forest Service Central Hardwoods Climate Change Vulnerability Assessment Workshop, 2012. (With

Matthew A. Albrecht.)

“California Climate” and “Species’ Responses to Climate Change: Adaptation, Range Shifts, and Extinction” for the Sierra Nevada Climate Change Institute (California Institute of Biodiversity), June 2010 (\$1500).

“Human Impacts on the Global Environment” (three lectures) for Quantitative Aspects of Global Environmental Problems for Policymakers, Monterey Institute of International Studies, Monterey, California, 2010 (\$900).

“Ecological Debt and the Debt of Whaling” for Environmental Science, California College of the Arts, Oakland, California, 2009 and 2010 (\$150 each).

“ $\lim_{a \rightarrow \infty} H \int_r^a \sinh \sqrt{e} d\odot$.” Three Bridges: A Symposium in Honor of John Harte, Rocky Mountain Biological Laboratory, 2009.

“International biodiversity governance and complex problems: How can biodiversity conservation regimes address global warming?” University of Leuven, Belgium. Managing Biosafety and Biodiversity in a Global World – EU, US, California, and Comparative Perspectives, 2009.

Conference Abstracts (selected)

“Extending the ‘species distribution model’ paradigm to ecological phenotypes”, Annual meeting of the Ecological Society of America 2017, Portland, Oregon (with Loretta Johnson, Jacob Alsdurf, Mark Knapp, and Sara Baer).

“Non-stationary control over the range limits of species inferred from spatially-distributed ecological niche models.” International Biogeography Society, Tucson, 2017 (with Erik Beaver, Mimi Kessler, Aaron Johnston, and 72 others).

“Efficient conservation seed banking in light of current threats, threats from future climate change, and uncertainty.” Global Partnership for Plant Conservation, Saint Louis, Missouri, 2016.

“What can global waling negotiations tell us about global warming negotiations?” Saint Louis Ecology, Evolution, and Conservation Symposium, 2015.

“Using species distribution models to infer the importance of factors limiting species’ ranges.” Annual meeting of the Ecological Society of America 2015, Baltimore, Maryland (with Maria J. Santos).

“Networking botanic gardens for conservation – The role of BGCI’s databases in a time of global change.” The 3rd Xishuangbanna International Symposium: Botanical Gardens and Climate Change, 2014, Xishuangbanna, China (with 3 other authors, presented by Suzanne Sharrock).

“Linking biodiversity loss to economic consumption through a global wildlife footprint.” The North American Congress for Conservation Biology 2014, Missoula, Montana (with 9 other authors, presented by Justin Kitzes).

“Botanical gardens as networks for ‘chaperoned’ assisted migration of the world’s flora.” Annual meeting of the Ecological Society of America 2013, Portland, Oregon (with Matthew A. Albrecht).

- Covered by *Nature*: Gewin, V. 2013. Plan seeks ‘chaperones’ for threatened species: Botanical gardens proposed as stopping-off points for plant species as climate warms. (<http://www.nature.com/news/plan-seeks-chaperones-for-threatened-species-1.13538>).
- Featured in *Scitable (Nature Education)* blog: Wittington, K. 2013. Plant pioneers: Assisting the migration of climate-endangered species. (http://www.nature.com/scitable/blog/eyes-on-environment/fleeing_the_effects_of_climate).

“Prediction of Migratory Networks from Climate Change Velocity.” International Biogeography Society meeting, 2013.

“Multivariate Climate Change Velocity of Ecoregions and Threatened Species.” The First North American Congress for Conservation Biology (with Matthew A. Albrecht and Quinn G. Long.)

“Validating species distribution models with data collected a century ago by Joseph Grinnell.” Biennial meeting of the San Francisco Bay Area Society for Conservation Biology, 2011.

“Predicting the ranges of species across time spans relevant to conservation: Species distribution modeling of vertebrates observed by Joseph Grinnell and contemporary resurveys.” Annual meeting of the Ecological Society of America, 2010 (with C. Moritz et al.)

“Comparing explanations for the species-area relationship: What determines diversity across multiple spatial scales?” Annual meeting of the Ecological Society of America, 2008.

“Developing a mechanistic understanding of the species-area relationship from serpentine habitats.” Biennial Mildred E. Mathias Symposium, 2008.

“Comparing theory to data: What, when, and how we explain the species-area relationship.” Annual meeting of the Ecological Society of America, 2007 (with J. Harte).

Academic and Professional Service Affiliations

Fellow, Living Earth Collaborative Biodiversity, Washington University in Saint Louis, since 2018.

Affiliate, Whitney R. Harris World Ecology Center, since 2015.

Adjunct Professor of Biology, University of Missouri, Saint Louis, since 2015.

Member, IUCN Species Survival Commission on Climate Change, since 2016.

Associate Editor, *Biological Invasions*, since 2016.

Computational Proficiencies

Languages: R, MATLAB.

Platforms: Windows, Linux.

Geographical analysis: R, ArcGIS, GRASS, QGIS.

Workshops Led

“Species Distribution Modeling in R: From Start to Finish,” Kansas State University (February 2016), Wichita State University, (April 2016), North American Congress for Conservation Biology (July 2016), Annual meeting of the Ecological Society of America, Portland, OR (August 2017).

“An Introduction to Species Distribution Modeling,” workshop for Missouri Botanical Garden Staff and Affiliates, October 2012.

“An Introduction to Best Practices in Species Distribution Modeling in Conservation,” workshop for Kansas State University, October 2012.

“An Introduction to Best Practices in Species Distribution Modeling in Conservation,” a short course for the Society for Conservation Biology North America Congress for Conservation Biology, July 2012.

Pre-graduate/Graduate/Post-graduate Mentoring

Tom Collins, University of Missouri—Saint Louis: Adapting a cellular automaton model of urban growth to reflect adoption of autonomous vehicles. Mentor.

Renee Klann, Smith College, Missouri Botanical Garden’s Research Experience for Undergraduates: “White hat hacking the biodiversity-base:” How well could would-be poachers use publicly

accessible databases to locate sensitive populations of vulnerable species? Mentor.

Camilo Sanín, Missouri Botanical Garden: Developing next-generation species distribution models for erstwhile unusable data using Bayesian methods. Postdoctoral mentor.

Renata Diaz, Missouri Botanical Garden: Testing the ability of threat mapping to predict actual threats to rare species. Pre-graduate mentor.

Holly Bernardo, Washington University in Saint Louis: Computational tools for conservation of rare plants. Ph.D. committee member.

Jennifer Gruhn, Washington University in Saint Louis: Modeling the present and future distribution of whitebark pine. Ph.D. committee member.

Haydée Hernández-Yáñez, University of Missouri—Saint Louis: Assessing threats to the rare plants of the United States. Student intern and post-master's advisor.

Tânia Mourea, Ph.D. student, post-graduate: Modeling present and future distributions of plants in the genus *Mucuna*. Graduate mentor.

Julieth Serrano, Master's student, Bascom Fellow from Bogota, Colombia: Modeling species diversity of plants endemic to Colombia. Graduate mentor.

Vettes Kamelka, post-graduate AWARD Fellow, University of Kampala, Uganda: Assessing climate change vulnerability of woodlands used for indigenous charcoal production in Nakasongola District, Uganda. Scholarship mentor.

Reviewing

Associate Editor of *Biological Invasions* (since 2016). Managing editor for 17 manuscripts.

Outside reviewer for career advancement, University of California (2018) and Humboldt State University (2018).

Reviewing for scientific journals (listed by number of reviews, re-reviews not counted): *Diversity & Distributions* (7), *Ecology Letters* (5), *Ecography* (4), *Ecological Modeling* (3), *Ecology* (3), *Journal of Biogeography* (3), *Community Ecology* (2), *Global Change Biology* (2), *Global Ecology & Biogeography* (2), *Natural Areas Journal* (2), *Nature Ecology & Evolution* (2), *Natureza & Conservação* (2), *New Phytologist* (2), *Oecologica* (2), *PLoS ONE* (2), *Proceedings of the National Academy of Science USA* (2), *Annals of the Missouri Botanical Garden* (1), *Annales Zoologici Fennici* (1), *Basic & Applied Ecology* (1), *Biodiversity & Conservation* (1), *Biological Journal of the Linnean Society* (1), *Climatic Change* (1), *Conservation Biology* (1), *Current Zoology* (1), *Diversity* (1), *Ecological Applications* (1), *Ecology & Evolution* (1), *Frontiers in Biogeography* (1), *International Journal of Conservation* (1), *Journal of Applied Ecology* (1), *Oikos* (1), *Plant Biology* (1).

Institute for Museum and Library Services (grant field reviewer, 2016, 2017, and 2018).

US Geological Survey (internal white paper reviewing, 2013).

California Energy Commission (internal white paper reviewing, 2012).

National Science Foundation (field review of grant proposal, 2008).

Serrapilheira (environmental grant-making organization of Brazil, field review of grant proposal, 2017).

Continuing Professional Education

“Computing in the Cloud” Tutorial at National Institute for Mathematical and Biological Synthesis (NIMBioS), Knoxville, Tennessee.

“Visual Presentation of Data and Information,” Workshop by Prof. Edward Tufte, Harvard.

“Bayesian Modeling, Inference, and Prediction,” Workshop by Prof. David Draper, UC Santa Cruz. Santa Fe Institute’s Complex Systems Summer School, Qingdao University, Qingdao, Shandong, China.

Project WET Certification: Aquatic resource education workshop for teachers.

Project WILD Certification: Environmental education workshop for teachers.

Public Service, Outreach, and Press

Interviewed for “To Save Endangered Species, Should We Bring Them Into Our Cities?” (Rachel Kaufman, *Smithsonian Magazine*, 2018-10-23). URL: <https://www.smithsonianmag.com/science-nature/save-endangered-species-should-we-bring-them-our-cities-180970611>

Board member of Trees for Life, International, since 2011.

“Climate change and biodiversity: Up or out” talk for Missouri Master Naturalists, St. Charles, St. Louis and Franklin Counties Chapter, 2016.

“Climate and Change” talk to Waterloo Rotary, Waterloo, Illinois, 2014.

“Climate Change and Biodiversity” talk to docents at the St. Louis Zoo, St. Louis, Missouri, January 2014.

“Rowing with the Tide: Species’ Responses to Climate Change” talk for the Webster Groves Nature Study Society, Webster Groves, Missouri, December 2012.

“Climate Change, Climate Science, and Biodiversity” talk for EcoAct high school students, Saint Louis, Missouri, 2012, 2013, and 2014.

“Mapping Biodiversity: From the Species at Your Feet to the Biodiversity of the World” Public outreach talk at University of California’s McLaughlin Natural Reserve, Lower Lake, California, April 2007.

“Fractals: The Shape of Life” display for the Lake County Fair, Lake County, California, August 2007.

“Nature Notes” KBUT weekly summer radio program on ecology and geology co-hosted with Mel Harte. Crested Butte, Colorado, Summer 2005.