William K. Petry

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Education

2010–2016 Ph.D., Ecology & Evolutionary Biology, University of California at Irvine
"Population and community consequences of ecological differences between the sexes"
Advisor: Kailen Mooney • Committee: Diane Campbell, Steve Frank, Steve Weller

2006–2010 B.S., Biology, Truman State University (Kirksville, Missouri)
with Departmental Honors & Minor in Mathematical Biology
Co-advisors: Stephanie Foré, Laura Fielden, & Hyun-Joo Kim

Academic & Research Appointments

2019– Postdoctoral Research Associate, Princeton University
2016–2019 Postdoctoral Research Associate, ETH Zürich, Switzerland
2017– Science Committee member, COM(P)ADRE matrix population model databases
2012– Research Scientist, Rocky Mountain Biological Laboratory
2015–2019 Research Committee member, Rocky Mountain Biological Laboratory
2011–2014 National Science Foundation Graduate Research Fellow (NSF-GRFP)
2007 Field Technician, Resource Science Division, Missouri Department of Conservation
(in collaboration with US Environmental Protection Agency, US Department of Agriculture, & Missouri Department of Natural Resources)
2005 Field Technician, Fisheries Division, Missouri Department of Conservation

Publications (1st author/joint 1st author n = 6; *mentored undergraduate/graduate student, n = 6)

In advanced preparation (manuscripts available upon request)

(*iii*) **Petry, W.K.** (*in prep.*) Probabilistic forecasting of biodiversity: Coexistence with a chance of competitive exclusion.

(*ii*) **Petry, W.K.**, T.E.X. Miller, J.D. Soule, A. Chicas-Mosier*, & K.A. Mooney (*in prep.*) Sex-specific demographic responses to climatic gradients and climate change skew population sex ratios, and govern population growth rate through mate limitation.

(*i*) Villellas, J., J. Ehrlén, S. Blomberg, E.E. Crone, A.M. Csergő, M.B. Garcia, A-L Laine, D.A. Roach, R. Salguero-Gómez, J. van Groenendael, G.M. Wardle, D.Z. Childs, B.D. Elderd, A. Finn, S. Munné-Bosch, B. Bachelot, J. Bódis, A. Bucharova, C.M. Caruso, J. Catford, M. Coghill, A. Compagnoni, R.P. Duncan, J.M. Dwyer, A. Ferguson, L. Fraser, E. Griffoul, R. Groenteman, L.N. Hamre, A. Helm, R. Kelly, L. Laanisto, M. Lonati, Z. Münzbergová, P. Nuche, S.L. Olsen, A. Oprea, M. Pärtel, **W.K. Petry**, S. Ramula, P.U. Rasmussen, S. Ravetto Enri, A. Roeder, C. Roscher, C. Schultz, O. Skarpaas, A.L. Smith, J.P. Töpper, P.A. Vesk, G.E. Vose, E. Wandrag, A. Wingler, & Y.M. Buckley (*in prep.*) Genetic differentiation is more predictable from observational data for reproductive than vegetative traits in a cosmopolitan short-lived plant.

Published & in press (Google Scholar Profile)

15. Smith, A., T.R. Hodkinson, J. Villellas, J.A. Catford, A.M. Csergő, S.P. Blomberg, E.E. Crone, J. Ehrlén, M.B. Garcia, A-L. Laine, D.A. Roach, R. Salguero-Gómez, G. Wardle, D.Z. Childs, B.D. Elderd, A. Finn, S. Munné-Bosch, M.E.A. Baudraz, J. Bódis, F.Q. Brearley, A. Bucharova, C.M.

Caruso, R.P. Duncan, J.M. Dwyer, B. Gooden, R. Groenteman, L.N. Hamre, A. Helm, R. Kelly, L. Laanisto, M. Lonati, J.L. Moore, M. Morales, S.L. Olsen, M. Pärtel, **W.K. Petry,** S. Ramula, P.U. Rasmussen, S. Ravetto Enri, A. Roeder, C. Roscher, M. Saastamoinen, A.J.M. Tack, J.P. Töpper, G.E. Vose, E.M. Wandrag, A. Wingler, & Y.M. Buckley (*in press*) Global gene flow releases invasive plants from environmental constraints on genetic diversity. Proceedings of the National Academy of Sciences (PNAS).

14. Galmán, A.*, **W.K. Petry,** L. Abdala-Roberts, A. Butrón, M. de la Fuente, M. Francisco, A. Kergunteuil, S. Rasmann, & X. Moreira (2019) Inducibility of chemical defences in young oak trees is stronger in species with high elevational ranges. Tree Physiology 39: 606-614.
DOI: 10.1093/treephys/tpy139

13. Romero, G.Q., T. Gonçalves-Souza, P. Kratina, N.A.C. Marino, **W.K. Petry,** T. Sobral-Souza, & T. Roslin (2018) Climate predicts global patterns and redistribution of predation pressure. Nature Climate Change 8: 1087-1091.
DOI: 10.1038/s41558-018-0347-y

12. Abdala-Roberts, L., A. Galmán*, **W.K. Petry,** F. Covelo, M. de la Fuente, G. Glauser, and Xoaquín Moreira (2018) Interspecific variation in leaf functional and defensive traits in oak species and its underlying climatic drivers. PLoS ONE 13: e0202548.
DOI: 10.1371/journal.pone.0202548

11. **Petry, W.K.,** G.S. Kandlikar, N.J.B. Kraft, O. Godoy, & J.M. Levine (2018) A competition-defence trade-off both promotes and weakens coexistence in an annual plant community. Journal of Ecology 106: 1806-1818.
DOI: 10.1111/1365-2745.13028
>>>Special Issue: Biotic controls of plant coexistence

10. Moreira, X., **W.K. Petry,** K.A. Mooney, S. Rasmann, & L. Abdala-Roberts (2018) Elevational gradients in plant defences and insect herbivory: Recent advances in the field and prospects for future research. Ecography 41: 1485-1496.
DOI: 10.1111/ecog.03184
>>>Finalist for the 2017 Ecography E4 Award competition

9. Roslin, T., B. Hardwick, V. Novotny, **W.K. Petry,** N. Andrew, A. Asmus, I.C. Barrio, Y. Basset, A.L. Boesing, T. Bonebrake, E.K. Cameron, W. Dáttilo, D.A. Donoso, P. Drozd, C.L. Gray, D.S. Hik, S. Hill, T. Hopkins, S. Huang, B. Koane, B. Laird-Hopkins, L. Laukkanen, O.T. Lewis, S. Milne, I. Mwesige, A. Nakamura, C.S. Nell, E. Nichols, A. Prokurat, K. Sam, N.M. Schmidt, A. Slade, V. Slade, T. Teder, S. van Nouhuys, V. Vandvik, A. Weissflog, V. Zhukovich, & E.M. Slade (2017) Higher predation risk for insect prey at low latitudes and elevations. Science 356: 742-744.
DOI: 10.1126/science.aaj1631
>>>Co-wrote paper; contributed both data & statistical analyses

8. CaraDonna, P.J., **W.K. Petry**, R.M. Brennan, J.L. Cunningham, J.L. Bronstein, N.M. Waser, & N.J. Sanders (2017) Interaction rewiring and the rapid turnover of plant-pollinator networks. Ecology Letters 20: 385-394.
DOI: 10.1111/ele.12740

7. **Petry, W.K.,** J.D. Soule, A.M. Iler, A. Chicas-Mosier*, D.W. Inouye, T.E.X. Miller, & K.A. Mooney (2016) Sex-specific responses to climate change in plants alter population sex ratios and performance. Science 353: 69-71.
DOI: 10.1126/science.aaf2588
>>>Selected for Science Perspective by Etterson & Mazer 2016 Science DOI: 10.1126/science.aag1624

>>>*Highlighted research in Nature (7 July 2016)* DOI: 10.1038/535011b
>>>*Dryad featured data package for week of 10 October 2016* DOI: 10.5061/dryad.1cf8p

6. Moreira, X.†, **W.K. Petry**†, J. Hernández-Cumplido, S. Morelon, & B. Benrey (2016) Plant defence responses to volatile alert signals are population-specific. Oikos 125: 950-956.
DOI: 10.1111/oik.02891
>>>†*Authors contributed equally & share first authorship*

5. Moreira, X., K.A. Mooney, S. Rasmann, **W.K. Petry**, A. Carrillo-Gavilán, R. Zas, & L. Sampedro (2014) Trade-offs between constitutive and induced defences drive geographical and climatic clines in pine chemical defences. Ecology Letters 17: 537-546.
DOI: 10.1111/ele.12253
>>>*Featured cover article*

4. **Petry, W.K.**, K.I. Perry, A. Fremgen*, S.K. Rudeen*, M. Lopez*, J. Dryburgh*, & K.A. Mooney (2013) Mechanisms underlying plant sexual dimorphism in multi-trophic arthropod communities. Ecology 94: 2055-2065.
DOI: 10.1890/12-2170.1

3. Mooney, K.A., A. Fremgen*, & **W.K. Petry** (2012) Plant sex and induced responses independently influence herbivore performance, natural enemies and aphid-tending ants. Arthropod-Plant Interactions 6: 553-560.
DOI: 10.1007/s11829-012-9204-5

2. **Petry, W.K.**, K.I. Perry, & K.A. Mooney (2012) Influence of macronutrient imbalance on native ant interactions with aphids, aphid enemies, and host plant flowers in the field. Ecological Entomology 37: 175-183.
DOI: 10.1111/j.1365-2311.2012.01349.x

1. **Petry, W.K.**, S.A. Foré, L.J. Fielden, & H-J. Kim (2010) A quantitative comparison of two sample methods for collecting *Amblyomma americanum* and *Dermacentor variabilis* (Acari: Ixodidae) in Missouri. Experimental and Applied Acarology 52: 427-438.
DOI: 10.1007/s10493-010-9373-9

Media coverage

National Public Radio, interviewed for audio and print coverage of Roslin et al. 2017 Science "*Scientists Glued Fake Caterpillars On Plants Worldwide. Here's What Happened*" (aired 18 May 2017) [link]

BBC News, print story highlighting Petry et al. 2016 Science "*Climate change is disrupting the birds and the bees*" (published 9 August 2017) [link]

Popular Science magazine, print coverage of Roslin et al. 2017 Science "*These scientists made 2,879 tiny clay caterpillars and hid them all over the world*" (published 18 May 2017) [link]

Smithsonian Magazine, print coverage of Roslin et al. 2017 Science "*Sacrificing Fake Caterpillars in the Name of Science*" (published 23 May 2017) [link]

Sveriges Radio (Sweden), audio story on Roslin et al. 2017 Science "*Myrornas aptit håller jorden grön*" [translation: "*The ant's appetite keeps the Earth green*"] (aired 19 May 2017) [link – in Swedish]

Nature Podcast, audio highlight of Petry et al. 2016 Science (aired 7 July 2016) [link]

Science News magazine, interviewed for print coverage of Petry et al. 2016 Science "Warming alters mountain plant's sex ratios" (published 30 June 2016) [link]

Grants & Fellowships (total = $978,772, *extramural = $887,672)

2018-22	$460,511*	"Addressing the missing link: uniting demographic life history theory and pollination biology to understand the ecological consequences of pollinator declines," NSF-DEB (PIs: A.M. Iler & P.J. CaraDonna, **Senior personnel: W.K. Petry**) *Wrote 25% of proposal; institutional rules limited PI status to faculty*
2015–9	$260,183*	"Demographic consequences of sexually dimorphic responses to ongoing and experimental climate change," NSF-DEB (PI: K.A. Mooney, **Senior personnel: W.K. Petry**, T.E.X. Miller) *Wrote >75% of proposal based on Ph.D. research; institutional rules limited PI status to faculty*
2015	$3,000*	BIO-OCE REU Mentor-Student Travel Scholarship *To bring undergraduate student (Ana Chicas-Mosier) to Ecological Society of America Meeting & provide mentoring at the conference*
2015	$2,500*	Langenheim Fellowship, Rocky Mountain Biological Laboratory
2014	$20,083*	Doctoral Dissertation Improvement Grant, NSF-DEB (PI: K. Mooney, **Co-PI: W.K. Petry**)
2011–4	$130,000*	Graduate Research Fellowship, National Science Foundation
2014	$2,100	Mildred E. Mathias Graduate Student Research Grant, University of California Natural Reserve System
2014	$3,000	Ecology & Evolutionary Biology Departmental Fellowship, University of California Irvine
2014	$450*	Research Grant, American Alpine Club
2014	$700*	Grant in Aid of Research (GIAR), Sigma Xi
2014	$650*	Graduate Student Grant, Rocky Mountain Biological Laboratory
2013	$275*	Travel Grant, Ecological Society of America Plant Population Ecology section
2013	$1,000	School of Biological Sciences Graduate Fellowship, University of California Irvine
2013	$1,245*	John W. Marr Fund Research Grant, Colorado Native Plant Society
2013	$800*	Graduate Student Grant, Rocky Mountain Biological Laboratory
2012	$275*	Travel Grant, Ecological Society of America Plant Population Ecology section
2012	$400*	Research Grant, American Alpine Club
2012	$500*	Snyder Graduate Student Grant, Rocky Mountain Biological Laboratory
2011	$500*	Kingsdale Graduate Grant, Rocky Mountain Biological Laboratory
2011	£375*	Hendry Bequest, Alpine Garden Society (~$600)
2010	$10,000	Graduate Dean Recruitment Award, University of California Irvine
2010	$75,000*	NSF-IGERT Comparative Genomics Fellowship, University of Arizona (*award declined*)
2009	$5,000*	NSF-REU fellowship, Rocky Mountain Biological Laboratory

Awards & Honors

2020	Runner-up Best Postdoc Talk The American Society of Naturalists, stand-alone meeting
2019	Graduate Student invited speaker

Duke University Program in Ecology
2017 Plant Population Ecology Postdoctoral Excellence Award
Plant Population Ecology Section of the Ecological Society of America & AoB PLANTS
2016 Early Career Award for Exceptional Presentation
Evolutionary Demography Society

R package development

Creator/maintainer

littletrees (github) Little's 'Atlas of United States Trees' Species Range Maps
ucnrs Data Access Tools for the University of California Natural Reserve System
documentEML Interactive Tools to Produce Ecological Metadata
daltonist Color Identification and Colorblindness Accessibility Tools

Contributor

RCompadre (github) Utilities for working with the COMPADRE/COMADRE Database
Rage (github) Miscellaneous Functions for COMADRE/COMPADRE Matrix Databases
broom.mixed (github) Tidying methods for mixed models
microclimloggers (github) Tools to parse and process various microclimate logger data formats

Presentations

Invited research seminars

2020 University of Pennsylvania (USA), Department of Biology
2019 Rutgers University (USA), Winfree Lab
2019 Duke University (USA), Program in Ecology
2019 University of Houston (USA), Department of Biology & Biochemistry
2019 University of California, Los Angeles (USA), Department of Ecology & Evolutionary Biology
2018 Stanford University (USA), Mordecai Lab
2017 Misión Biológica de Galicia—CSIC (Spain), Department of Forest Genetics & Ecology
2017 University of Sheffield (UK), Department of Animal and Plant Sciences
2016 University of Neuchâtel (Switzerland), Institute of Biology

Contributed conference talks (*mentored [under]graduate co-author)

Petry, W.K., G. Kandlikar, N.J.B. Kraft, E. Merz, & J.M. Levine (2020) How interactions & scale regulate species diversity in spatially-variable environments. American Society of Naturalists, January 3-7, Asilomar, Pacific Grove, California, USA.

Petry, W.K., G. Kandlikar, E. Merz, N.J.B. Kraft, & J.M. Levine (2019) Mechanistic insights into species-area relationships through the lens of coexistence theory. Ecological Society of America, August 11-16, Louisville, Kentucky, USA.

Romero, G.Q., T. Gonçalves-Souza, P. Kratina, N. Marino, **W.K. Petry**, T. Sobral-Souza, & T. Roslin (2018) Climate predicts global patterns and redistribution of predation pressure. British Ecological Society, December 16-19, Birmingham, UK.

Petry, W.K., N.J.B. Kraft, G. Kandlikar, & J.M. Levine (2018) Spatial variation in seed consumption and apparent competition generate mosaics of plant diversity. Ecological Society of America, August 5-10, New Orleans, Louisiana, USA.

Levine, J.M., S.P. Hart, J. HilleRisLambers, **W.K. Petry**, J. Usinowicz, & T. Crowther (2018) The population and community ecology of transient carbon accumulation in terrestrial ecosystems. Ecological Society of America, August 5-10, New Orleans, Louisiana, USA.

Petry, W.K., N.J.B. Kraft, G. Kandlikar, O. Godoy, & J.M. Levine (2018) Coupling of population dynamics via shared resources and consumers reshuffles plant species diversity. Evolutionary Demography Society Meeting, January 8-10, Lyon, France.

Petry, W.K., N.J.B. Kraft, G. Kandlikar, O. Godoy, & J.M. Levine (2017) Apparent competition through granivores impacts plant coexistence. Ecological Society of America, August 6-11, Portland, Oregon, USA.

Petry, W.K., T.E.X. Miller, J.D. Soule, & K.A. Mooney (2016) Partitioning the linear and nonlinear effects of climate change on two-sex populations. Evolutionary Demography Society Meeting, October 2-5, Charlottesville, Virginia, USA.

Petry, W.K., T.E.X. Miller, J.D. Soule, & K.A. Mooney (2015) Intraspecific variation in response to climate drives population patterns and dynamics. Ecological Society of America, August 9-14, Baltimore, Maryland, USA. Part of organized session, "A Century of Structured Population Models in Ecology."

Petry, W.K., T.E.X. Miller, J.D. Soule, & K.A. Mooney (2014) Sexually dimorphic responses to climate variation: Demographic causes and consequences of climate-skewed sex ratios. Evolutionary Demography Society Meeting, November 10-12, Palo Alto, California, USA.

Petry, W.K., T.E.X. Miller, J.D. Soule, & K.A. Mooney (2013) Historical demography along a climatic gradient: Generating predictions of population responses to climate change in the montane dioecious herb *Valeriana edulis*. Ecological Society of America, August 4-9, Minneapolis, Minnesota, USA. Part of organized session, "Informing and Evaluating Climate Change Adaptation Approaches Using Historic Ecological Data Records."

Petry, W.K., A.M. McKinney, D.W. Inouye, K.A. Mooney, & J.D. Soule (2012) Warming up to changing trait frequencies: Rapid, climate change-induced shifts in population sex ratios along an elevation gradient. Ecological Society of America, August 5-10, Portland, Oregon, USA.

Mooney, K.A., **W.K. Petry**, L. Abdala-Roberts, & X. Moreira (2012) Consequences of monarch damage and plant genotype for ant-aphid interactions on the common milkweed *Asclepias syriaca*. Ecological Society of America, August 5-10, Portland, Oregon, USA. Included in organized session, "The Chemical Ecology of Plant-Animal Mutualisms."

Petry, W.K. & K.A. Mooney (2011) Sex-biased and variable herbivory parallel clinal variation in plant sex ratios along an elevational gradient. Ecological Society of America, August 7-12, Austin, Texas, USA.

Petry, W.K., K.I. Perry, & K.A. Mooney (2010) Ant-aphid interactions are mediated by host plant sex and ant colony nutritional status. Ecological Society of America, August 1-6, Pittsburgh, Pennsylvania, USA.

Petry, W.K., L.J. Fielden, S.A. Foré, & H-J. Kim (2009). Modeling the questing behavior of nymphal *Dermacentor variabilis* in response to environmental factors. Truman State University Student Research Conference, April 7, Kirksville, Missouri, USA.

Contributed conference posters

Galmán, A.*, **W.K. Petry**, L. Abdala-Roberts, A. Butrón, M. de la Fuente, M. Francisco, A. Kergunteuil, S. Rasmann, & X. Moreira (2019) Inducibility of chemical defenses in young oak trees is stronger in species with high elevational ranges. Iberian Ecological Society (SIBECOL), February 4-7, Barcelona, Spain.

Petry, W.K., N.J.B. Kraft, G. Kandlikar, O. Godoy, & J.M. Levine (2017) Competition, herbivory, & the structure of plant biodiversity. Gordon Research Conference – Plant Herbivore Interaction, February 12-17, Ventura, California, USA.

Chicas-Mosier, A.*, **W.K. Petry**, & K.A. Mooney (2015) Consequences of pollination neighborhood composition on mating success. Ecological Society of America, August 9-14, Baltimore, Maryland, USA.

Petry, W.K. & K.A. Mooney (2013) *Valeriana edulis*, a system for studying the mechanisms of plant genetic effects on arthropod communities in the context of climate change. Gordon Research Conference – Plant Herbivore Interaction, February 24-March 1, Ventura, California, USA.

Petry, W.K. & L.J. Fielden (2009) Modeling questing height in response to environmental variables in the tick, *Dermacentor variabilis*. National Conference on Undergraduate Research, Lacrosse, Wisconsin, USA.

Petry, W.K., T.A. Dallas, G. Mueller, S.A. Foré, L.J. Fielden (2008) Modeling questing height in response to environmental variables in the tick *Dermacentor variabilis*. Society for Vector Ecology, Ft. Collins, Colorado, USA.

Teaching (*field/lab course n = 5; ‡graduate-level n = 5)

Independent teaching & curriculum development

‡Plant Ecology (Fall 2018, ETH Zurich)
Organized and taught two-week module on herbivory

‡Ecology & Evolution: Term Paper (Fall 2017, ETH Zurich)
Supervised Masters student in a writing-intensive advanced topics course.

‡Quantitative Methods in Ecology & Evolution (Spring terms 2017-2019, ETH Zurich)
Co-developed month-long module on the dynamics of structured populations, including building an interactive web application for teaching environmental sensitivity and life history trade-offs.
https://ecodynamics.shinyapps.io/temperature/

‡Climate Action Program Data Science Workshop (Spring 2016, UC Irvine)
Co-organized and co-taught 3-day interdisciplinary data science workshop for graduate students and postdocs

R Statistical Workshop (Summer 2014, Rocky Mountain Biological Laboratory)
Organized and taught two 2-hour workshops for undergraduates, graduate students, postdocs, and professors

*Experimental Design Workshop (Summer 2012 & 2014, Rocky Mountain Biological Laboratory)
Organized and presented field workshop to undergraduates

Invited guest lectures

Responsible Conduct of Research (Summer 2019, Rocky Mountain Biological Laboratory)
Designed & led workshop on ethical responsibilities that accompany reporting of statistics for federally-funded undergraduates, graduate students, & postdocs

‡Science of Climate Mitigation and Adaptation (Spring 2017, Western State Colorado University)
Panelist discussing biological responses to climate change; M.S. program in Environmental Management

*Field Methods in Ecology (Summer 2013, Rocky Mountain Biological Laboratory)
Designed and taught 2-day field module on population biology

‡Quantitative Methods in Ecology and Evolution (Fall 2014, UC Irvine)
Organized and taught two 1.5-hour lessons on analysis of variance, follow-up testing, and planned comparisons of means

Center for Environmental Biology Internship (Spring 2015, UC Irvine)
Developed and taught 1-hour workshop on R statistical software

Teaching assistance

From Organisms to Ecosystems (Winter 2015, UC Irvine)
Course coordinator for 11 teaching assistants with ca. 800 students

The Idiom & Practice of Science (Fall 2015, UC Irvine)

*Plant Diversity (Spring 2015, UC Irvine)

Global Change Biology (Winter 2015, UC Irvine)
‡Quantitative Methods in Ecology and Evolution (Fall 2014, UC Irvine)
From Organisms to Ecosystems (Winter 2011, UC Irvine)
Three discussion sections, each with ca. 100 students
*Limnology and Freshwater Biology (Spring 2011, UC Irvine)
*Field Methods in Ecology and Evolutionary Biology (Fall 2010, UC Irvine)
*Introduction to Ecology (Fall 2009, Truman State University)

Student Mentoring & Community Outreach

Supervised graduate students
Ewa Merz (M.S. in Environmental Science, 2018, ETH Zürich)

Graduate committees
Diana Jerome (M.S. in Plant Biology and Conservation, expected 2019, Chicago Botanic Garden/Northwestern University)

Undergraduate mentoring
UC Irvine: 6 undergraduate students through the Undergraduate Research Training Program
Rocky Mountain Biological Laboratory: 8 undergraduate students (3 NSF-REU fellows; 4 have gone on to graduate school)

Public participation in science
PlantShift – Public science program engaging high school & undergraduate students in field data collection, >250 volunteer hours (2013-2015)

K-12 education
Sedgwick Reserve & NatureTrack, guest scientist for visiting 10th grade students (2018)
Irvine Unified School District, science fair mentor (2010-2016)

Technical skills transfer
Humanitarian Open Street Map Team & Missing Maps (HOT OSM Zurich), mapper for disaster relief & international development (2017-present)

Academic & Scientific Service

Manuscript referee (most recent 5 years; *multiple assignments)
The American Naturalist*
Ecology Letters*
Ecology*
Journal of Ecology*
Journal of Animal Ecology*
Global Change Biology
Methods in Ecology & Evolution
Evolutionary Ecology
Oecologia
Environmental & Experimental Botany*
Écoscience
Biological Control
Perspectives in Plant Ecology Evolution and Systematics
Alpine Botany*

Grant proposal referee
Swiss National Science Foundation (ad hoc reviewer)

University service
Assistant professor search committee, graduate representative (UC Irvine; 2011-2012)

Resulted in the hire of Sergio Rasmann

Field station service (Rocky Mountain Biological Laboratory)
Research Committee Member—reviewed research applications, guided research policy (2016-2019)
Organized weekly graduate student seminar (2011-2014)
Alumni Reunion field excursion organizer (2012-2013)
Consultation on research facility design (2011)
Photograph contributor to newsletter, 5 featured on the cover (2010-2013)

Conservation assessments
Valeriana edulis ciliata, 2018 species assessment by Committee on the Status of Endangered Wildlife in Canada (data contributor)
Assessment resulted in the listing of *V. edulis ciliata* as Endangered

Professional society membership
Ecological Forecasting Initiative (since 2019)
Ecological Society of America (since 2010)
Plant Population Ecology Section (since 2012)
Natural History Section (since 2012)
Evolutionary Demography Society (since 2013)
Colorado Native Plant Society (2011-2015)
Orange County Society for Conservation Biology (2011-2013)

Advanced Coursework & Workshops

2019 Near-term Ecological Forecasting Initiative
Boston University (1-week workshop)
Instructors: Mike Dietze (Boston University)
Shannon LaDeau (Cary Institute of Ecosystem Studies)
Leah Johnson (Virginia Tech)
Ethan White (University of Florida)

2018 Accelerating Field Research Using UAVs
Rocky Mountain Biological Laboratory (0.5-day workshop)
Instructor: Ian Breckheimer (Harvard University)

2016 Individual Stochasticity: An Introduction to Demographic Models and Analysis
4th Annual EvoDemoS (0.5-day workshop)
Instructor: Hal Caswell (University of Amsterdam)

2016 Analyzing Transient Population Dynamics
4th Annual EvoDemoS (0.5-day workshop)
Instructor: Iain Stott (Max Planck Odense Center, University of Southern Denmark)

2016 Predictive Modeling with Python
UC Irvine Data Science Initiative (1-day workshop)

2015 Philosophy of Biology
University of California, Irvine (10-week graduate course)
Instructor: Cailin O'Connor (UC Irvine)

2015 Software Carpentry – Shell, Python, & Git
UC Irvine Data Science Initiative (2-day workshop)

2014 IPMpack – an R package for Integral Projection Models
2nd Annual EvoDemoS (0.5-day workshop)
Instructors: Cory Merow (Smithsonian Environmental Research Center)
Rob Salguero-Gómez (University of Queensland)

2014 Linux & High Performance Computing
UC Irvine Data Science Initiative (1-day workshop)
Instructor: Harry Mangalam (UC Irvine)

2013 GIS: Geographic Information Systems
University of California, Irvine (10-week graduate course)
Instructors: LuAnna Dobson (UC Irvine)
Bradford Hawkins (UC Irvine)

2012 Models in Biology
University of California, Irvine (10-week graduate course)
Instructor: Steve Frank (UC Irvine)

2011 Quantitative Methods in Ecology & Evolutionary Biology
University of California, Irvine (10-week graduate course)
Instructor: Diane Campbell (UC Irvine)

Skills

Population modeling: integral projection models (IPM), matrix population models, two-sex models, non-linear analysis, sensitivity/elasticity, life table response experiments (LTRE), transient dynamics, stochastic population modeling, analysis of individual stochasticity

Statistics: generalized linear mixed models, randomization/Monte-Carlo simulation, power analysis, optimization, bootstrapping, multivariate statistics, zero-inflated/hurdle models, multiple imputation, Bayesian hierarchical models

Programming: R [statistics, graphics, function writing, optimization, profiling, RMarkdown, Shiny, API], git/version control, shell, Linux computing clusters (HPC), Python

Spatial analysis: ArcGIS/QGIS/R, interpolation, spatial point pattern analysis, zonal statistics, geocoding, mapping, MaxEnt species distribution modeling

Natural languages: English (native), Spanish (upper intermediate proficiency)