

Michael J. Koontz

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EDUCATION

- Ph.D., Ecology; University of California, Davis 2014 - 2019
Committee: Andrew Latimer, Malcolm North, Connie Millar
Dissertation: The effect of vegetation spatial structure on forest resilience to wildfire and bark beetle disturbance in the Sierra Nevada, California
- M.Sc., Ecology; Colorado State University 2012 - 2014
Committee: Ruth Hufbauer, Tom Hobbs, Brett Melbourne
Thesis: The eco-evolutionary consequences of multiple introductions for colonizing individuals
- B.Sc. with highest honors, Biology; University of Hawaii at Hilo 2007 - 2009
Concentration: Ecology, Evolution, and Conservation Biology

PROFESSIONAL EXPERIENCE

- CU Boulder Earth Lab Postdoctoral Research Associate 3/2019 - present
- UC Davis Department of Plant Sciences Graduate Student Researcher 2015 - 2019
- UC Davis Graduate Group in Ecology Fellow 2014 - 2016
- NSF Graduate Research Fellow 2013 - 2018

PUBLICATIONS

- Koontz, Michael J.**, Malcolm P. North, Chhaya M. Werner, Stephen E. Fick, and Andrew M. Latimer. 2019. Local forest structure variability increases resilience to wildfire in dry western U.S. coniferous forests. Accepted in *Ecology Letters*. *EcoEvoRxiv* preprint: <https://doi.org/10.32942/osf.io/k72ye> 2019
- Parks, Sean A., Lisa M. Holsinger, **Michael J. Koontz**, Luke Collins, Ellen Whitman, Marc-André Parisien, Rachel A. Loehman, Jennifer L. Barnes, Jean-François Bourdon, Jonathan Boucher, Yan Boucher, Anthony C. Caprio, Adam Collingwood, Ron J. Hall, Jane Park, Lisa B. Saperstein, Charlotte Smetanka, Rebecca J. Smith, and Nick Soverel. 2019. Giving ecological meaning to satellite-derived fire severity metrics across North American forests. *Remote Sensing*. 11: 1735. <https://doi.org/10.3390/rs11141735> 2019
*Editor's Choice article
- Smithers, Brian V., Meagan F. Oldfather, **Michael J. Koontz**, Jim Bishop, Catie Bishop, Jan Nachlinger, and Seema N. Sheth. 2019. Community turnover by composition and climatic affinity across scales in an alpine system. *American Journal of Botany*. <https://doi.org/10.1002/ajb2.1376> 2019
- Koontz, Michael J.**, Meagan F. Oldfather, Brett A. Melbourne, and Ruth A. Hufbauer. 2018. Parsing propagule pressure: Number, not size, of introductions drives colonization success in a novel environment. *Ecology and Evolution*. 8 (16): 8043-8054. <https://doi.org/10.1002/ece3.4226> 2018
- Steel, Zachary L., **Michael J. Koontz**, and Hugh D. Safford. 2018. The changing landscape of wildfire: Burn pattern trends and implications for California's yellow pine and mixed conifer forests. *Landscape Ecology*. 33 (7): 1159-1176. <https://doi.org/10.1007/s10980-018-0665-5> 2018

- Oldfather, Meagan F., Matthew N. Britton, Prahlad D. Papper, **Michael J. Koontz**, Michelle M. Halbur, Celeste Dodge, Alan L. Flint, Lorraine E. Flint, and David D. Ackerly. 2016. Effects of topoclimatic complexity on the composition of woody plant communities. *AoB Plants*. 8: plw049. <https://doi.org/10.1093/aobpla/plw049> 2016
- Hufbauer, Ruth A., Marianna Szücs, Emily Kasyon, Courtney Youngberg, **Michael J. Koontz**, Christopher Richards, Ty Tuff, and Brett A. Melbourne. 2015. Reply to Wootton and Pfister: The search for general context should include synthesis with laboratory model systems. *Proceedings of the National Academy of Sciences*. 112 (44): E5904. <https://doi.org/10.1073/pnas.1517210112> 2015
- Hufbauer, Ruth A., Marianna Szücs, Emily Kasyon, Courtney Youngberg, **Michael J. Koontz**, Christopher Richards, Ty Tuff, and Brett A. Melbourne. 2015. Three types of rescue can avert extinction in a changing environment. *Proceedings of the National Academy of Sciences*. 112 (33): 10557-10562. <https://doi.org/10.1073/pnas.1504732112> 2015
- Cole, Rebecca J., Creighton M. Litton, **Michael J. Koontz**, and Rhonda K. Loh. 2012. Vegetation recovery 16 years after feral pig removal from a wet Hawaiian forest. *Biotropica*. 44: 463-471. <https://doi.org/10.1111/j.1744-7429.2011.00841.x> 2012

SUBMITTED PREPRINTS

- Koontz, Michael J.**, Andrew M. Latimer, Leif A. Mortenson, Christopher J. Fettig, Malcolm P. North. Differential response of a tree-killing bark beetle to forest structure across a gradient of climatic water deficit. Submitted to *Nature Ecology & Evolution*. 2019
- EcoEvoRxiv* preprint:
GitHub repository: <https://github.com/mikoontz/local-structure-wpb-severity>

FUNDED GRANTS

- U.S. Forest Service Western Wildlands Environmental Threat Assessment Center 2018
- Project:* Using drones to link spatial features of forests and bark beetle-induced mortality at broad spatial scales (\$7,500)
- Collaborators:* Malcolm P. North, Chris J. Fettig, Leif A. Mortenson, Andrew M. Latimer, and Connie I. Millar
- U.S. Forest Service Western Wildlands Environmental Threat Assessment Center 2017
- Project:* Assessing forest spatial structure and bark beetle spread using small, unmanned aerial systems (sUAS) (\$19,420)
- Collaborators:* Malcolm P. North, Chris J. Fettig, Leif A. Mortenson, Andrew M. Latimer, and Connie I. Millar

OPEN EDUCATIONAL RESOURCES

- Michonneau, François, and 104 co-authors. 2019. Data Carpentry R Ecology Lesson v2019.06.1. Zenodo. <https://doi.org/10.5281/zenodo.3264888> 2019
- O'Brien, Lauren, Joseph Stachelek, Tracy Teal, Dev Paudel, Paul Miller, Anne Fouilloux, Chris Prener, Ethan P. White, Katrin Leinweber, **Michael J. Koontz**, and Whalen. 2019. Data Carpentry: Introduction to Geospatial Concepts v2019.06.1. Zenodo. <https://doi.org/10.5281/zenodo.3258814> 2019
- Peek, Ryan A. and **Michael J. Koontz**. 2018. R for Data Analysis and Visualization in Science (R-DAVIS) v1.0.0. GitHub. <https://gge-ucd.github.io/R-DAVIS/> 2018
- Koontz, Michael J.** and Ryan A. Peek. 2017. Data Carpentry Week: Introduction to R. v1.0.0. GitHub. <https://mikoontz.github.io/data-carpentry-week/> 2017

TEACHING EXPERIENCE

Lead or Co-lead Instructor

An Introduction to Google Earth Engine– the planetary-scale GIS for everyone	2020
A 2-hour clinic at the upcoming Community Surface Dynamics Modeling System (CSDMS) meeting using live-coding to teach foundational concepts for using Google Earth Engine for planetary-scale geospatial analyses	
ECL298 R for Data Analysis and Visualization in Science	2018
A quarter-long, 2-credit graduate course at the University of California, Davis teaching scientific computing skills (data/project management, version control, reproducible workflows using the programming language R) to 25+ ecologists	
Data Carpentry: Geospatial Workshop	2018
A 2-day workshop teaching spatial data science skills in Davis, California	
Data Carpentry Week: Introduction to R	2017
A week-long workshop teaching scientific computing skills to 25+ learners as part of the Data Intensive Biology Summer Institute at the University of California, Davis	
ECOL592 Introduction to R	2014
A semester-long, 1-credit graduate course teaching data manipulation and visualization using R to 20+ grad students, professors, postdocs, undergraduates, and local professionals learners at Colorado State University	

Teaching assistant

Data Skills in R, Cornerstone Research	2016
PLS206 Applied Multivariate Modeling; University of California, Davis	2016
R Bootcamp; University of California, Davis	2015
LIFE320 Ecology, Colorado State University	2013
LIFE102 Biology Laboratory, Colorado State University	2012

Guest lecturer

“High quality plots using base R graphics” Davis R Users Group (D-RUG)	2015
“Invasion Biology” LIFE320 Ecology, Colorado State University	2013

Formal training

Educational psychology & instructional design, SoftwareCarpentry	2016
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SKILLS AND PROFICIENCIES

Data manipulation and visualization: R

Version control: git, GitHub

GIS: Google Earth Engine JavaScript and Python APIs, R (**raster**, **sf**, **sp**), QGIS, CloudCompare

Remote sensing: UAVs, multispectral sensors, FAA-licensed Remote Pilot

Inference: Hierarchical modeling in R using maximum likelihood (**lme4**) and Bayesian frameworks (**brms**, **NIMBLE**), simulation modeling in R

Fieldwork: Vegetation plot establishment, tree stem mapping using laser instruments, GLORIA multi-summit approach

Dynamic documents: RMarkdown, L^AT_EX

INVITED TALKS

- Koontz, Michael J.**, Andrew M. Latimer*, Christopher J. Fettig, Leif A. Mortenson, Malcolm P. North. 2019-11-14. Differential response of a tree-killing bark beetle to forest structure across a gradient of climatic water deficit. California Forest Pest Council Annual Meeting. Davis, CA. 2019
*Presenting author
- Koontz, Michael J.**, Andrew M. Latimer, Leif A. Mortenson, Christopher J. Fettig, and Malcolm P. North, 2019-4-30: Differential response of a tree-killing bark beetle to forest structure across a gradient of climatic water deficit. Intermountain Drone Ecology Network workshop, Boulder, CO. 2019
- Koontz, Michael J.**, Malcolm P. North, Christopher J. Fettig, Leif A. Mortenson, Constance I. Millar, Malcolm P. North. 2018-03-22. Using drones to link spatial structure of forests and insect outbreaks. University of California Cooperative Extension North Coast Forest Health Meeting. Eureka, CA. 2018
- Koontz, Michael J.**, Andrew M. Latimer, Christopher J. Fettig, Leif A. Mortenson, Constance I. Millar, Malcolm P. North. 2017-11-15. Using drones to go beyond stand density: Spatial features of western pine beetle-attacked forests. California Forest Pest Council Annual Meeting. Davis, CA. 2017

CURRENT COLLABORATIONS

- Michael J. Koontz**, Victoria Scholl, Anna Spiers, Megan Cattau, and John Adler. [GitHub]
Integrating drone-derived geometric and spectral information with the National Ecological Observatory Network: A framework and guide for self teaching.
- Michael J. Koontz**, Zachary L. Steel, Andrew M. Latimer, and Malcolm P. North. [GitHub]
Initial wildfire suppression efforts select for more extreme fuel and climate burning conditions in Sierra Nevada forests.
- Jennifer Balch, John Abatzoglou, Park Williams, Max Joseph, Joseph McGlinchy, Megan Cattau, **Michael J. Koontz**. The global contribution of nighttime burning to fire regimes in a changing climate.
- Meagan F. Oldfather, **Michael J. Koontz**, Daniel F. Doak, and David D. Ackerly.
Testing the leading-trailing edge paradigm for range shift predictions with experimental demography.
- Emilio A. Laca, Steven P. Lee, Jan Ng, Mikaela M. Provost, Jessica Rudnick, Linda Mendez-Barriento, Derek J. Young, **Michael J. Koontz**, Anne Todgham, Ben Sacks, and Elizabeth Sturdy. Holistic review in graduate admissions for an R1 STEM program: I. Statistical method to weight desirable applicant qualities and minimize reviewer effects.
- Anna Braswell, Virginia Iglesias, Jennifer K. Balch, Max B. Joseph, Caitlin M. Shane, Stefan Leyk, Matthew W. Rossi, Chelsea Nagy, Joseph McGlinchy, Megan Cattau, Lise Ann St. Denis, **Michael J. Koontz**, Adam L. Mahood, Travis M. Williams, Brian R. Johnson, and William R. Travis. Chang
- Yufang Jin, Margarita Huesca Martinez, **Michael J. Koontz**, Yuhang Huang, Andrew Latimer, Susan Ustin, and Simon J. Hook. Tree mortality detection and assessment using AVIRIS imaging spectroscopy data in Sierra Nevada.

AWARDS AND HONORS

- Plant Sciences Graduate Student Travel Award (\$1,000) 2018
- Nominated for Outstanding Graduate Student Teaching Award 2017
- Plant Sciences Graduate Student Travel Award (\$1,000) 2016
- College of Agriculture Ag Day Scholarship (\$1,000) 2014
- Front Range Student Ecology Symposium 3rd Place Oral Presentation 2014

Colorado State Graduate Degree Program in Ecology Travel Award (\$500)	2014
Ynez Morey and Chuck Reagin Memorial Entomology Scholarship (\$1,000)	2013
Colorado State University Graduate Fellowship (\$1,500)	2012
CSU Programs for Research and Scholarly Excellence Fellowship (\$2,339)	2012
University of Hawaii at Hilo Outstanding Senior in Biology	2009
Hawaii Audubon Society Rose Shuster Taylor Scholarship (\$1,838)	2008
AmeriCorps Education Award (\$4,750)	2006

REVIEWING SERVICE

rOpenSci R packages ([ccafs](#)), Journal of Theoretical Biology, Ecography, Oikos, Global Ecology and Biogeography

PROFESSIONAL MEMBERSHIPS

GLORIA Great Basin (https://www.gloriagreatbasin.org/)	
Secretary, Board Member, Data Manager	2017 - 2019
Volunteer	2013 - 2019
Ecological Society of America	2014 - 2019
American Alpine Club	2016 - 2019
Northern California Botanists	2016