

Michael J. Koontz

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Graduate Group in Ecology
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EDUCATION

- Ph.D., Ecology; University of California, Davis 2014 - 2019
Committee: Andrew Latimer, Malcolm North, Connie Millar (expected)
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

FELLOWSHIPS

- Plant Sciences Departmental Graduate Student Research Award (\$185,803) 2015 - 2019
UC Davis Graduate Group in Ecology Fellowship (\$58,172) 2014 - 2016
NSF Graduate Research Fellowship (\$132,000) 2013 - 2018

PUBLICATIONS

- 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

FUNDED GRANTS

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

OPEN EDUCATIONAL RESOURCES

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 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 |
| Michonneau, Francois, <i>et al.</i> 2017. Data Carpentry R Ecology Lesson v2017.04.3. Zenodo. https://doi.org/10.5281/zenodo.569875 | 2017 |
| 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

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| Data Carpentry: Geospatial Workshop | 2018 |
| A 2-day workshop teaching spatial data science skills in Davis, California | (upcoming) |
| 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 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

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| 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

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

Formal training

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| Educational psychology & instructional design, SoftwareCarpentry | 2016 |
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AWARDS AND HONORS

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| 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 |

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 using maximum likelihood (**lme4**) and Bayesian frameworks (**brms**, **NIMBLE**)

Fieldwork: Vegetation plot establishment, tree stem mapping using laser instruments

Dynamic documents: RMarkdown, L^AT_EX

INVITED TALKS

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| Koontz, Michael J. , Malcolm P. North, Christopher J. Fettig, L. 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, L. 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 |

CONTRIBUTED TALKS

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| Koontz, Michael J. , Andrew M. Latimer, L. A. Mortenson, Christopher J. Fettig, Constance I. Millar, and Malcolm P. North. 2018-09-20. The effect of spatial variability of forest structure on severity of a tree-killing insect. MtnClim Conference. Gothic, CO. | 2018 |
| Koontz, Michael J. , Andrew M. Latimer, Chhaya M. Werner, Stephen E. Fick, and Malcolm P. North. 2018-08-09. Greater variability in local vegetation structure increases forest resilience to wildfire. Ecological Society of America Annual Meeting. New Orleans, LA. | 2018 |

- Lee, Stephen P., Jan Ng, Ash T. Zemenick, Mikaela M. Provost, Carlos A. Ruvalcaba, Derek J. N. Young, Emilio Laca, **Michael J. Koontz**, Jessica Rudnick, and Elizabeth J. Sturdy. 2018-03-03. Evolution toward holistic review in the Ecology Graduate Program at University of California, Davis – Part I: Design and implementation of a system to evaluate applicants. 10th Annual Understanding Interventions Meeting. Baltimore, MD. 2018
- Ng, Jan, **Michael J. Koontz**, Jessica Rudnick, Elizabeth J. Sturdy, Ash T. Zemenick, Steven P. Lee, Mikaela M. Provost, Carlos A. Ruvalcaba, Derek J. N. Young, and Emilio Laca. 2018-03-03. Evolution toward holistic review in the Ecology Graduate Program at UC Davis – Part II: Methods for evaluating progress. 10th Annual Understanding Interventions that Broaden Participation in Science Careers Meeting. Baltimore, MD. 2018
- Oldfather, Meagan F., Brian Smithers, **Michael J. Koontz**, Jan Nachlinger, Catie Bishop, Jim Bishop, and Constance I. Millar. 2018-02-02. Alpine plant community-climate relationships across elevation gradients in the White Mountains, California. California Native Plant Society Conservation Conference. Los Angeles, CA. 2018
- Koontz, Michael J.**, Malcolm P. North, and Andrew M. Latimer. 2016-10-17. Spatial heterogeneity of vegetation increases forest resistance to wildfire, and modern forests have a high potential for large, stand-replacing events. MtnClim Conference. Leavenworth, WA. 2016
- Koontz, Michael J.**. 2014-09-24. The eco-evolutionary consequences of multiple introductions for colonizing individuals. BSPM Departmental Seminar and Thesis Defense. Fort Collins, CO. 2014
- Koontz, Michael J.** and Ruth A. Hufbauer. 2014-08-08. The consequences of multiple introductions for colonizing individuals. Ecological Society of America Annual Meeting. Sacramento, CA. 2014
- Koontz, Michael J.** and Ruth A. Hufbauer. 2014-02-19. Parsing propagule pressure: The role of multiple introductions in the colonization of novel habitats. Front Range Student Ecology Symposium. Fort Collins, CO. 2014

CURRENT COLLABORATIONS

- Michael J. Koontz**, Chhaya M. Werner, Stephen E. Fick, Malcolm P. North, and Andrew M. Latimer. Local variability of vegetation structure increases forest resilience to wildfire. [\[GitHub\]](#)
- Michael J. Koontz**, Andrew M. Latimer, Leif A. Mortenson, Chris J. Fettig, Connie I. Millar, and Malcolm P. North. The effect of spatial variability of forest structure on the severity of a tree-killing insect. [\[GitHub\]](#)
- Michael J. Koontz** and Jeff C. Schank. An agent based model simulation of the outbreak behavior of the western pine beetle during the 2012 to 2016 Sierra Nevada megadrought. [\[GitHub\]](#)
- Oldfather, Meagan F., Brian Smithers, **Michael J. Koontz**, Jan Nachlinger, Catie Bishop, Jim Bishop, and Connie I. Millar. Alpine plant community-climate relationships across elevation gradients in the White Mountains, California.
- Jens T. Stevens, **Michael J. Koontz**, and Chhaya M. Werner. Local effects of aspect on vegetation productivity in California.
- Michael J. Koontz** and Ruth A. Hufbauer. Several, small introductions of individuals to a novel environment facilitate adaptation by mitigating genetic load. [\[GitHub\]](#)

REVIEWING SERVICE

rOpenSci R packages ([ccafs](#)), Journal of Theoretical Biology

PROFESSIONAL MEMBERSHIPS

GLORIA Great Basin (<https://www.gloriagreatbasin.org/>)

Secretary, Board Member, Data Manager

2017 - 2018

Volunteer

2013 - 2018

Ecological Society of America

2014 to 2018

American Alpine Club

2016 to 2018

Northern California Botanists

2016