CURRICULUM VITAE

Margaret Rowan Metz

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PROFESSIONAL APPOINTMENTS

Assistant Professor Department of Biology, Lewis & Clark College, Portland, OR. August 2014-*present.*

Project Scientist Department of Plant Pathology, University of California, Davis. 2014.

Postdoctoral Researcher Department of Plant Pathology, University of California, Davis. 2008-2014.

EDUCATION

Ph.D. University of California, Berkeley, Integrative Biology. 2007.
Spatiotemporal variation in seedling dynamics and the maintenance of forest diversity in an Amazonian forest.
Thesis committee: Drs. Wayne Sousa (advisor), David Ackerly, John Battles, & Carla D'Antonio.

A.B. Princeton University, Ecology and Evolutionary Biology, *cum laude.* 1998.

GRANTS AND FELLOWSHIPS

2017 Center for Tropical Forest Science, Smithsonian Tropical Research Institute $34,500
"Long-term studies of flowering, fruiting and seedling dynamics at Yasuní."

2016-2020 NSF Dimensions of Biodiversity $1,600,000
"Dynamical interactions between plant and oomycete biodiversity in a temperate forest."
PIs: B. Tyler, N. Grunwald, A. Jones, **M. Metz**, J. Lutz, D. Oline.
Subaward to Lewis & Clark College to support undergraduate research experiences $127,355

2011-2017 NSF Long-term Research in Environmental Biology (renewal) $450,000
"Collaborative Research: LTREB Renewal - Long-term studies of flowering, fruiting and seedling recruitment in Neotropical forests: global change, climate variability and mechanisms."
PIs: N. C. Garwood, **M. R. Metz**, H. C. Muller-Landau, N. Swenson, M. Uriarte, S. J. Wright, J. K. Zimmerman.

2011-2016 NSF Ecology of Infectious Diseases $785,398
"Collaborative Research: Interacting disturbances: leaf to landscape dynamics of emerging disease, fire and drought in California coastal forests."
Lead PI D. M. Rizzo with senior personnel **M. R. Metz**.

2008-2011 Center for Tropical Forest Science (Smithsonian) Research Grant $17,850
"Role of seedling functional traits in forest dynamics and community assembly at Yasuní and BCI."
PIs: N. C. Garwood, N. J. B. Kraft, and **M. R. Metz**.

2006-2011 NSF Long-term Research in Environmental Biology $450,000
"Collaborative Research: LTREB - Long-term studies of flowering, fruiting and seedling recruitment in Neotropical forests: global change, climate variability and species coexistence."
N. C. Garwood, **M. R. Metz**, H. C. Muller-Landau, S. J. Wright, J. K. Zimmerman.

2004-2006 NSF Doctoral Dissertation Improvement Grant $15,000

2003-2004 Center for Tropical Forest Science (Smithsonian) Research Grant $12,500

2001-2005 NSF Graduate Research Fellowship. $120,000

PUBLICATIONS

Usinowicz, J., Y. Chen, J. S. Clark, C. Fletcher, N. C. Garwood, J. Johnstone, Y. Lin, **M. R. Metz**, T. Masaki, T. Nakashizuka, I. Sun, R. Valencia, J. K. Zimmerman, A. R. Ives, S. J. Wright. (2017). Temporal coexistence mechanisms contribute to the latitudinal gradient in forest diversity. *Nature*. 550:105-108.

Metz, M. R., J. M. Varner, A. B. Simler, K. M. Frangioso, and D. M. Rizzo. (2017). Implications of sudden oak death for wildland fire management. *Forest Phytophthoras*. 7:30-44.
Invited contribution to special issue on disease management.

Kane, J. M., J. M. Varner, **M. R. Metz**, and P. J. Van Mantgem. 2017. Characterizing interactions between fire and other disturbances and their impacts on tree mortality in western U.S. forests. *Forest Ecology & Management*. 405:188-199.

Cobb, R. C. and **M. R. Metz**. 2017. Tree diseases as a cause and consequence of interacting forest disturbances. *Forests*. 8:art147.
Invited contribution to special issue on forest disease.

Johnstone, J. F., C. D. Allen, J. F. Franklin, L. E. Frelich, B. J. Harvey, P. E. Higuera, M. C. Mack, R. K. Meentemeyer, **M. R. Metz**, G. L. W. Perry, T. Schoennagel, and M. G. Turner. 2016. Changing disturbance regimes, climate warming, and forest resilience. *Frontiers in Ecology and the Environment*. 14:369-378.

Lokvam, J., **M. R. Metz**, G. R. Takeoka, L. Nguyen, and P. V. A. Fine. 2015. Habitat-specific divergence of procyanidins in *Protium subserratum* (Burseraceae). *Chemoecology*. 25(6):293-302.

Chen, G., **M. R. Metz**, D. M. Rizzo and R. K. Meentemeyer. 2015. Mapping burn severity in a disease-impacted forest landscape using Landsat and MASTER imagery. *International Journal of Applied Earth Observation and Geoinformation*. 40:91-99.

Chen, G., **M. R. Metz**, D. M. Rizzo, W. W. Dillon, and R. K. Meentemeyer. 2015. Object-based assessment of burn severity in diseased forests using high-spatial and high-spectral resolution MASTER airborne imagery. *ISPRS Journal of Photogrammetry and Remote Sensing*. 102:38-47.

Beh, M. M., **M. R. Metz**, S. J. Seybold, and D. M. Rizzo. 2014. The novel interaction between *Phytophthora ramorum* and wildfire elicits elevated ambrosia beetle landing rates on tanoak, *Notholithocarpus densiflorus*. *Forest Ecology and Management*. 318:21-33.
Collaboration with UC Davis master's student.

Metz, M. R., J. M. Varner, K. M. Frangioso, R. K. Meentemeyer, and D. M. Rizzo. 2013. Unexpected redwood mortality from synergies between wildfire and an emerging infectious disease. *Ecology*. 94(10):2152-2159.
Featured in Conservation Magazine (http://conservationmagazine.org/2013/07/pathogen-makes-redwoods-more-vulnerable-to-fire/) and NSF's Discovery series (http://nsf.gov/discoveries/disc_summ.jsp?cntn_id=128879).

Queenborough, S. A., **M. R. Metz**, L. R. Valencia, and S. J. Wright. 2013. Demographic consequences of chromatic leaf defence in tropical tree communities - do red young leaves increase growth and survival. *Annals of Botany*. 112(4):677-684.
Part of a special issue focused on seedling herbivory.

Fine, P. V. A., **M. R. Metz**, J. Lokvam, I. Mesones, J. M. Ayarza Zuñiga, G. P. A. Lamarre, M. Vasquez Pilco, and C. Baraloto. 2013. Insect herbivores, chemical innovation and the evolution of habitat specialization in Amazonian trees. *Ecology*. 94(8):1764-1775.

Álvarez Alonso, J., **M. R. Metz**, and P. V. A. Fine. 2013. Habitat specialization by birds in western Amazonian white-sand forests. *Biotropica*. 45(3): 365-372.

Dillon, W. W., R. K. Meentemeyer, J. B. Vogler, R. C. Cobb, **M. R. Metz**, and D. M. Rizzo. 2013. Range-wide risks to a foundation tree species from disturbance interactions. *Madroño*. 60(2):139-150. Special issue in focused on tanoak. Collaboration with North Carolina State PhD student.

Beh, M. M., **M. R. Metz**, K. M. Frangioso and D. M. Rizzo. 2012. The key host for an invasive forest pathogen also facilitates the pathogen's survival of wildfire in California forests. *New Phytologist*. 196(4): 1145-1154.
Collaboration with UC Davis master's student.

Metz, M. R., K. M. Frangioso, A. C. Wickland, R. K. Meentemeyer, and D. M. Rizzo. 2012. An emergent disease causes directional changes in forest species composition in coastal California. *Ecosphere*. 10(3):article86.

Metz, M. R. 2012. Does habitat specialization by seedlings contribute to the high diversity of a lowland rainforest? *Journal of Ecology*. 100(4):969-979.

Queenborough, S. A., **M. R. Metz**, T. Wiegand, and R. Valencia. 2012. Palms, peccaries and perturbations: widespread effects of small-scale disturbances in tropical forests. *BMC Ecology*. 12:article3.

Metz, M. R., K. M. Frangioso, R. K. Meentemeyer and D. M. Rizzo. 2011. Interacting disturbances: Wildfire severity affected by stage of forest disease invasion. *Ecological Applications*. 21(2):313-320.

Metz, M. R., W. P. Sousa, and L. R. Valencia. 2010. Community-wide, density-dependent seedling mortality promotes species coexistence in a highly diverse Amazonian rainforest. *Ecology*. 91(12):375-3685

Kraft, N. J. B*, **M. R. Metz*,** R. S. Condit, and J. Chave. 2010. The relationship between wood density and mortality in a global tropical forest dataset. *New Phytologist*. 188(4):1124-1136.
*equal contribution to authorship

Metz, M. R., L. S. Comita, Y. Chen, N. Norden, R. Condit, S. P. Hubbell, I. Sun, N. Supardi B. M. N., and S. J. Wright. 2008. Temporal and spatial variability in seedling dynamics: a cross-site comparison in four lowland tropical forests. *Journal of Tropical Ecology*. 24(1): 9-18.

Metz, M. R. and F. Keesing, 2001. Dietary choices by the pouched mouse (*Saccostamus mearnsi*) in Central Kenya. *Biotropica*. 33(1): 182-187.

TECHNICAL REPORTS

M. R. Metz, J. M. Varner, R. K. Meentemeyer, K. M. Frangioso, and D. M. Rizzo. 2017. Lessons from 15 Years of Monitoring Sudden Oak Death and Forest Dynamics in California Forests. pp. 2-3 *in* S. J. Frankel, K. M. Harrell, technical coordinators. Proceedings of the Sudden Oak Death Sixth Science Symposium. Gen. Tech. Rep. PSW-GTR-255. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 106 p.

Simler, A. B., **M. R. Metz**, R. K. Meentemeyer, K. M. Frangioso, and D. M. Rizzo. 2017. Novel Interactions between Wildfire and Sudden Oak Death Influence Sexual and Asexual Regeneration in Coast Redwood Forests. pp. 27-28 *in* S. J. Frankel, K. M. Harrell, technical coordinators. Proceedings of the Sudden Oak Death Sixth Science Symposium. Gen. Tech. Rep. PSW-GTR-255. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 106 p.

Beh, M. M., **M. R. Metz**, K. M. Frangioso, and D. M. Rizzo. 2013. Survival of *Phytophthora ramorum* following wildfires in the sudden oak death-impacted forests of the Big Sur region. pp. 62-64 *in* S. J. Frankel, J. T. Kliejunas, K. M. Palmieri, J. M. Alexander, technical coordinators. Proceedings of the Sudden Oak Death Fifth Science Symposium. Gen. Tech. Rep. PSW-GTR-243. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 169 p. collaboration with UC Davis master's student.

Metz, M. R., J. M. Varner, K. M. Frangioso, R. K. Meentemeyer and D. M. Rizzo. 2013. Collateral damage: Fire and *Phytophthora ramorum* interact to increase mortality in coast redwood. pp. 65-66 *in* S. J. Frankel, J. T. Kliejunas, K. M. Palmieri, J. M. Alexander, technical coordinators. Proceedings of the Sudden Oak

Death Fifth Science Symposium. Gen. Tech. Rep. PSW-GTR-243. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 169 p.

Cobb, R. C., J. A.N. Filipe, **M. R. Metz**, R. K. Meentemeyer, and D. M. Rizzo. 2013. Sudden oak death effects on the dynamics of dead wood. pp. 67-68 *in* S. J. Frankel, J. T. Kliejunas, K. M. Palmieri, J. M. Alexander, technical coordinators. Proceedings of the Sudden Oak Death Fifth Science Symposium. Gen. Tech. Rep. PSW-GTR-243. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 169 p.

Metz, M. R., K. M. Frangioso, R. K. Meentemeyer and D. M. Rizzo. 2012. The effects of sudden oak death and wildfire on forest composition and dynamics in the Big Sur ecoregion of coastal California. pp 363-366 *in* R. B. Standiford, T. J. Weller, D. D. Piirto, and J. D. Stuart, technical coordinators. Proceedings of coast redwood forests in a changing California: A symposium for scientists and managers. Gen. Tech. Rep. PSW-GTR-238. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 626 p.

Metz, M. R., K. M. Frangioso, R. K. Meentemeyer and D. M. Rizzo. 2010. Interacting disturbances: did sudden oak death mortality in Big Sur worsen the impacts of the 2008 Basin Complex wildfire? pp 258-261 *in* S. J. Frankel, J. T. Kliejunas, and K. M. Palmieri. 2010. Proceedings of the Sudden Oak Death Fourth Science Symposium. Gen. Tech. Rep. PSW-GTR-229. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 378 p.

TEACHING EXPERIENCE

2014-*present* *Assistant professor*. Lewis & Clark College, Department of Biology.

BIOLOGY 370 – DISEASE ECOLOGY, lecture course (24-28 students) taught most fall semesters.

BIOLOGY 223 – PLANT BIOLOGY AND LAB, taught each spring semester (24 students).

BIOLOGY 141 – INVESTIGATIONS IN ECOLOGY & ENVIRONMENTAL SCIENCE, introductory course in core sequence, lead lecture (105 students) every 3 years and 1-2 lab sections (22 students) every year.

BIOLOGY 335 – ECOLOGY, lecture and field-based lab (24 students), taught some springs.

2010, 2011 *Lecturer*. Environmental Sciences Policy & Management 2, The Biosphere. Fall Program for Freshmen, University of California, Berkeley Extension.

2007 *Graduate Student Instructor*: Integrative Biology 303, Teaching Colloquium. Department of Integrative Biology, University of California, Berkeley.

2006 *Graduate Student Instructor*: Environmental Sciences 100, Introduction to the Methods of Environmental Science, Undergraduate Interdisciplinary Studies, University of California, Berkeley.

2005 *Graduate Student Instructor*: Integrative Biology 153, Population and Community Ecology, Department of Integrative Biology, University of California, Berkeley.

2004 *Outstanding Graduate Student Instructor Award*, awarded by the UC Berkeley Graduate Division for my teaching in IB 153L: Field Methods in Ecology.

2003 *Graduate Student Instructor*: Integrative Biology 153L, Field Methods in Ecology, Department of Integrative Biology, University of California, Berkeley.

2002 *Graduate Student Instructor*: Integrative Biology 154 and IB 154L, Plant Population and Community Ecology, Department of Integrative Biology, University of California, Berkeley.

INVITED PRESENTATIONS

2017 Center for Tropical Forest Science -- Data Analysis Workshop, Puerto Rico

2016 Facultad de Ciencias Naturales, Pontificía Universidad Católica del Ecuador, Quito, Ecuador

2015 Department of Biology, Reed College, Portland, OR

2015 Sciences Seminar, Washington State University, Vancouver, WA

2014 Department of Biology, Lewis & Clark College, Portland, OR

2013 Department of Botany and Plant Sciences, University of California, Riverside, CA

2012 Department of Biology, California State University, Northridge, CA

2012 California Forest Pest Council, 61st Annual Meeting, McClellan, CA

2011 Environmental Sciences, Policy & Management, University of California, Berkeley, CA

2011 Department of Biology, The College of William & Mary, Williamsburg, VA

SPECIALIZED TRAINING

2016 NW Partnership for Undergraduate Life Science Education (PULSE) Vision & Change workshop: Departmental Change via Systems Thinking. Seattle, WA. October 14-16, 2016.

2016 Northwest Biosciences Consortium: High Impact for Introductory Biology for Majors Workshop. Willamette University, Salem, OR. February 26-27, 2016.

2005 Likelihood Methods in Forest Ecology (Course Instructors: Drs. Charles Canham and Maria Uriarte). Institute of Ecosystem Studies, Milbrook, NY. October 18-28, 2005.

2005 Center for Tropical Forest Science Data Analysis Workshop V: *"The Final R Odyssey: Exploring CTFS datasets to Answer Ecological Questions."* Smithsonian Tropical Research Institute, Panama. June 7-26, 2005.

2004 Center for Tropical Forest Science Data Analysis Workshop IV: "*Asking Ecological Questions Using Large Plot Datasets."* Fu-Shan Experimental Forest, Taiwan. August 11-29, 2004.

1998-2001 Research Assistant to Dr. Robin Foster, Environmental and Conservation Programs, The Field Museum, Chicago, IL.

PROFESSIONAL SERVICE & AFFILIATIONS

Member: The Ecological Society of America
Association of Tropical Biology and Conservation

2014-present, Lewis & Clark College
AAUW prize selection committee (2017)
Library & Education Technology standing committee (2016-2017)
Tree Campus USA organizing committee (2016-present)
Kent Swanson Fellowship committee (2015-present)

2002-2007 University of California, Berkeley: Integrative Biology Women in Science group
Faculty Search Committee for ecology professor
Graduate Admissions committee.

Outside reviewer:

California Polytechnic State University McIntire-Stennis program
M. J. Murdock Charitable Trust Natural Sciences Grant Program
NSF LTREB and Population & Community Ecology Programs
Ph.D. thesis, INPA, Manaus, Brazil
USDA-ARS internal manuscript review

Journal peer-reviewer:

Acta Oecologica
Annals of Botany
Biotropica
Canadian Journal of Botany
Ecography
Ecology
Ecology Letters
Ecological Applications
Ecological Monographs
Ecosphere
Forest Ecology & Management
Frontiers in Earth Science
Global Change Biology
Journal of Ecology
Journal of Vegetation Science
Journal of the Torrey Botanical Society
Journal of Tropical Ecology
New Phytologist
Nordic Journal of Botany
Oecologia
Oikos