Heather Rustigian-Romsos

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Heather Rustigian-Romsos is a landscape ecologist/GIS specialist whose work has focused on predicting effects of land management and landscape change on vertebrates with spatially explicit habitat, population, and connectivity models. She has over 20 years of experience in applied ecological GIS analysis and modeling. Heather graduated from Middlebury College with a B.A. in environmental studies, and received master's degrees in biology from William Paterson University and geography from Oregon State University. Her recent work at CBI has focused on statistical modeling of fire occurrence, structure loss from wildfire, and wildlife habitat suitability. She has been the lead analyst on several federally-funded CBI projects to evaluate the status of and support agency efforts to conserve and recover the isolated and imperiled population of fisher (*Pekania pennanti*) in the southern Sierra Nevada, California, which was listed as endangered by the U.S. Fish and Wildlife Service in May, 2020. She developed fisher habitat models which are currently being used by the U.S Forest Service to guide forest management activities throughout the region.

EDUCATION

1999 M.S. Geography, Oregon State University
1998 M.A. Biology, William Paterson University
1994 B.A. Environmental Studies, Middlebury College

EMPLOYMENT HISTORY

2003-present Conservation Biologist/GIS Analyst, Conservation Biology Institute, Corvallis, OR
2002-2003 Research Associate, Department of Ecology, Montana State University, Bozeman, MT
2000-2002 Associate Scientist, Department of Wildlife Ecology, University of Maine, Orono, ME
1999-2000 Environmental Specialist, Charis Corporation, Barstow, CA

PROFESSIONAL SKILLS

Wildlife habitat and species distribution modeling, wildlife connectivity modeling, spatially explicit population modeling, modeling projected impacts of land management

practices and climate change on wildlife, wildfire modeling, modeling projected impacts of climate change and development patterns on wildfire and structure loss risk, multivariate data analysis, GIS analysis.

Software: ESRI ArcGIS, GRASS GIS, Saga GIS, R, Maxent, Linkage Mapper, FRAGSTATS, HexSim

SELECT PROJECT EXPERIENCE

Regional Priority Plan to Reduce Wildlife Risk in Santa Barbara County, CA (in process) – Serving as analyst creating statistical models of regional relative wildfire occurrence and spread risk under current and projected future climate conditions. These models will be incorporated in a decision-support mapping tool to assist community siting and prioritization of fire risk mitigation projects.

Drivers of Chaparral Vegetation Type Conversion in Coastal Southern California (in process) – Serving as analyst on USGS-funded research project to evaluate type conversion in southern California shrublands over the last 60 years. Responsible for data preparation and management and statistical analyses to determine relative contribution of topography, soils, fire history, climate, and human development pattern variables to vegetation type conversion and probabilistic modeling and mapping of suitable environmental conditions for type conversion.

Connectivity for Pacific Marten in the Lassen National Forest (in process) – Serving as co-PI and analyst, in collaboration with NCASI, to identify vegetative and abiotic characteristics correlated with marten occupancy and movement in the Lassen, California region within and adjacent to the 2000 Storrie Fire. We are developing regional habitat suitability connectivity models using fine-scale marten location data to identify areas with reduced connectivity that could be targeted for restoration.

Sage Insurance Holdings/Innovisk (2017-present) – Serving as project manager and analyst modeling risk of structure loss to wildfire in California for private insurance company.

Southern Sierra Nevada Fisher Conservation Assessment and Strategy (2013 – present) – Serving as analyst for multi-agency effort to conserve and recover an isolated an endangered population of Pacific fisher (*Pekania pennanti*). Created predictive habitat models, modeled landscape connectivity, and performed multivariate statistical analyses to define conservation targets to provide science-based guidance for reducing threats and increasing quality and resilience of fisher habitat in the Sierra Nevada region of California.

Developing Updateable Habitat Models for Endangered Stephens' Kangaroo Rats (2018-2020) – Served as analyst to develop the first range-wide habitat suitability model for the Stephens' kangaroo rat, an endangered mammal of grassland habitats in southern California. We incorporated high-resolution satellite imagery-derived predictors quantifying seasonal vegetation patterns with traditional GIS predictors, such as soils, topography, and climate to create reliable statistical models to map habitat suitability across the species' geographic range.

Relative influence of climate and housing patterns on current and projected fire distribution and fire loss (2018) – Developed a modeling framework to compare the importance of climatic and human variables for explaining fire patterns and structure loss for three diverse California landscapes, then projected future large fire and structure loss probability under two climate and two land use scenarios.

Klamath Basin Ecological Connectivity for Pacific Marten and Pacific Fisher (2017-2019) – Served as analyst as part of a team to identify locations important to landscape connectivity for marten and fisher, two species of conservation concern in the Klamath River Basin region. I developed habitat suitability models for marten used to create movement cost surfaces for connectivity analyses and models of large, high-severity wildfire used to evaluate potential impacts on marten and fisher movement corridors.

Mapping Future Fire Probability Under Climate Change, Butte and Plumas Counties, CA (2017) – Served as analyst to develop statistical fire occurrence models for baseline and future climate projections in the northern Sierra Nevada, California. This research project assessed the sensitivity of future fire projections to no, static, or dynamic vegetation predictors in a statistically based fire modeling framework, coupling statistical fire models with a process-based model of vegetation dynamics.

SELECTED PUBLICATIONS

Syphard, A.D., **H. Rustigian-Romsos**, and J.E. Keeley. In review. Multiple-scale vegetation and housing characteristics associated with structure loss to wildfire in California.

Syphard, A.D., **H. Rustigian-Romsos**, M. Mann, E. Conlisk, M. Moriz, and D. Ackerly. 2019. The relative influence of climate and housing pattern on current and projected fire distribution and structure loss across three California landscapes. Global Environmental Change 56: 41-55.

Syphard, A.D., T. Sheehan, **H. Rustigian-Romsos**, and K. Ferschweiler. 2018. Mapping future fire probability under climate change: Does vegetation matter? PloS one 13: e0201680.

Spencer, W.D., **H. Rustigian-Romsos**, K. Ferschweiler, and D. Bachelet. 2015. Simulating Effects of Climate and Vegetation Change on Distributions of Martens and Fishers in the Sierra Nevada, California, Using Maxent and MC1. Chapter 9, pp135-152 In: Bachelet, D. and D. Turner (editors) 2015. Global Vegetation Dynamics: Concepts and Applications in the MC1 Model. AGU Geophysical Monographs 214.

Zielinski, W.J., K.M. Moriarty, J. Baldwin, T. A. Kirk, K.M. Slauson, **H.L. Rustigian-Romsos**, and W. D. Spencer. 2015. Effects of season on occupancy and implications for habitat modeling: the Pacific marten *Martes caurina*. *Wildlife Biology* 21: 56-67.

Scheller, R.M., W. Spencer, **H. Rustigian**, A. Syphard, B.C. Ward, and J. Strittholt. 2011. Using stochastic simulation to evaluate competing risks of wildfires and fuels management on an isolated forest carnivore. Landscape Ecology 26:1491-1504.

Spencer, W., **H. Rustigian-Romsos**, J. Strittholt, R. Scheller, W. Zielinski, and R. Truex. 2010. Using occupancy and population models to assess habitat conservation opportunities for an isolated carnivore population. Biological Conservation 144:788-803.