

Position Description: Ph.D. Student in Wolverine Habitat Suitability and Connectivity Modeling

Montana State University is seeking a Ph.D. student for a study of wolverine habitat suitability and connectivity across portions of Montana, Wyoming, Idaho, and Washington. In addition to science goals the study will help guide investments in land conservation by incorporating climate change and the human footprint into connectivity modeling. The project is sponsored by Montana Fish Wildlife and Parks and is in collaboration with the equivalent agencies in the other states in the study area. The position will start in August 2016. Tuition, fees, and a research/teaching assistant stipend will be provided for a two-year period, with an option for funding as a Teaching Assistant for a third year.

Duties:

Work with the project team to:

- Compile predictor data sets including snow, climate, vegetation type, vegetation productivity, land use, and roads;
- Develop habitat suitability functions linking existing wolverine GPS and occurrence data to predictor data and use these as a basis for modeling connectivity among suitable habitats;
- Compile existing projections and use simulation models to project future condition of predictor variables;
- Project habitat suitability and connectivity under future land use and climate scenarios. Interpret results with regards to management strategies aimed at maintaining and enhancing connectivity among suitable habitats under present and potential future conditions.

Required Qualifications:

- M.S. in ecology or related field;
- Training in physiological, population, ecosystem, and/or landscape ecology;
- Training and experience in statistical techniques, spatial analysis, and or simulation modeling.
- Interest and/or experience in working with natural resource managers to translate scientific results to management strategies
- Potential to execute and publish ecological research; and
- Experience in working on integrated science teams.

Project Summary: Wolverines of the contiguous U.S. exist as a high alpine metapopulation where approximately 250-300 individuals currently exist in island-like subpopulations across Montana, Idaho, and portions of Wyoming and Washington. The necessity of successful dispersal among these islands of high-elevation habitats means that landscape connectivity at a multi-state scale is key for the long-term persistence of this species. Core wolverine habitats may shift due to climate change and the essential connectivity among these sky-islands will be influenced by both climate and human land use in valley bottoms. Current models of wolverine connectivity either do not account for climate change or ignore all habitat features between patches of snow, including human infrastructure. We will model change in wolverine habitat suitability and connectivity under scenarios of climate and land use change across the Northern

Rockies in order to evaluate opportunities for conservation actions. We will develop GIS layers representing natural and human features significant in predicting wolverine habitat use at 3 time intervals (current, 2030, and 2050) for the 4-state area of WA, ID, MT, and WY. We will then model wolverine habitat and conduct circuitscape connectivity analyses at each time interval. We will then use a modified centrality analysis to prioritize the areas of greatest significance for maintaining connectivity into the future. At the conclusion of the effort we will provide data layers to land trusts, and government entities to help them achieve regional-level connectivity. The project will develop the first integrated models capable of projecting snow dynamics, forest cover, and wolverine habitat suitability under IPCC future scenarios and forecasts of human land-use change.

Application Procedures:

Send a letter of interest, C.V., G.P.A. and GRE scores, and the names and contact information of three references by April 15, 2016 to:

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406 994-6046.
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The position is contingent upon funding and will remain open until a qualified applicant is recruited.