

# Comparing the Habitat Connectivity of American Marten and Fisher in the Northern Rocky Mountains, USA

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The connectivity of a species is the ability of its individuals to move, and importantly, to move between populations. This project predicts and compares the connectivity of American marten (*Martes americana*), as well as fisher (*Pekania pennanti*) in western Montana and northern Idaho, to determine the presence of wildlife corridors that facilitate the connectivity of both. MaxEnt was used to construct a niche-model for American marten using marten location data coupled with environmental covariates (topography, precipitation, snow, temperature, vegetation). Based on the assumption that identified areas of use also serve to facilitate connectivity, this niche model was transformed into a resistance surface. Connectivity models were then derived from this. This same process was followed using a published niche-model for fisher. Assuming that both fisher and marten might travel between areas of the highest quality habitat, connectivity nodes were located randomly within areas of high quality habitat and Circuitscape was used to infer connectivity paths. To compare these connectivity maps they were then quantiled into ten grading on the value of connectivity, and added together for a total quantile value of twenty. Areas with the top two quantiles of connectivity were define as mutual connectivity. This study identified seven mutual wildlife corridors for these two species, and three areas of high mutual use. These findings may not only advise land management regarding how to better preserve the connectivities of American marten and fisher, but also the connectivities of other similar species.