

## MODELING PREDICTED DISTRIBUTION AND LANDSCAPE-LEVEL HABITAT SUITABILITY FOR MONTANA WILDLIFE SPECIES

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Models predicting spatial distribution and habitat suitability are critical for natural resource managers making decisions that impact species for which there is limited information. We are using presence-only data in conjunction with pseudo-absences in program Maxent to model the distribution and landscape-level habitat suitability for Montana wildlife species. Our primary goals are to produce (1) continuous statewide outputs as a tool to identify variables that limit species' distributions and areas that need field surveys; (2) binary outputs that can be used to create lists of predicted species for various administrative boundaries and, (3) outputs showing marginal, suitable, and optimal habitat classes at a local landscape-level. To date, models have identified scale dependent responses to environmental variables, opportunities to extend the known ranges of species, areas that support potentially isolated populations in need of conservation efforts, areas that are critical for maintaining landscape connectivity, areas that may provide the best habitat for reintroduction of species that have declined, and areas where exotic and nonindigenous species are most likely to become established. In general, inductively based Maxent models provide realistic depictions of species distributions when survey data is available for a region. However, deductive models will still be important for representing some species distributions in areas lacking survey effort. Models will be used for various planning efforts including Montana Fish, Wildlife, and Parks' Crucial Areas and Corridors Assessment. Model outputs can be obtained from the Montana Natural Heritage Program or the Montana Fish, Wildlife, and Parks' Information Management Bureau.