Gap Analysis Models: a Conservation Tool for Predicting the Distribution of Amphibians and Reptiles in Montana[TWS]

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The goal of the Gap Analysis Program is to provide broad geographic information on the distribution and status of species and their habitats in order to provide land managers, planners, scientists, and policy makers with the information they need to make better-informed decisions. This goal is particularly relevant to the conservation of herptiles, which have experienced declines around the world and in Montana over the past few decades. Models for Montana's 14 amphibian and 17 reptile species were created by (1) reviewing distribution records in the Montana Natural Heritage Program's database and compiling all relevant literature on the species' habitat use and distribution in Montana and surrounding states and provinces, (2) constructing models within a database spreadsheet, and (3) applying the models in ARC/INFO using digital elevation models, land cover types derived from satellite images, and digital line graphs of hydrography. Amphibian and aquatic reptile models typically consisted of buffering hydrographic features into appropriate cover types (at appropriate elevations) by distances typical of the maximum migration the species is known to undergo. Terrestrial reptile models were based largely on turning on appropriate cover types at appropriate elevations. Models, modeling approaches, and model assumptions/caveats for each species were included as metadata for user reference. Predicted distribution maps, species accounts, and key references for each species represent the most comprehensive and up to date understanding of the distribution and habitat requirements of Montana's herpetofauna.