

CLIMATE CHANGE IMPACTS TO AMPHIBIANS AND REPTILES

Stephen COHN, USDI Geological Survey, Aldo Leopold Wilderness Research Institute,
790 E. Beckwith Avenue, Missoula, MT 59801

Amphibians and reptiles may show greater responses to climate change than will other terrestrial vertebrates because, as ectotherms, life history, particularly reproduction, growth, and development, are directly affected by temperature. All species will be faced with indirect effects of climate change, such as changes in habitat due to changing hydrology or vegetation, but herpetofauna are less vagile than birds and mammals and will be less able to shift their distributions to match changing climates. For amphibians, effects that have been documented often involve changes in phenology. The timing of snowmelt is the primary influence on when montane amphibians breed. In the northern Rocky Mountains and the Pacific Northwest, amphibians are likely breeding earlier than in 1950. Climate models predict reduced extent and duration of future snow packs and increasing summer temperatures, which may alter the hydrology of the small wetlands that most species require for breeding. Increasing temperature has been hypothesized to facilitate the spread of a pathogenic fungus into some populations of tropical frogs. The relevance to Montana's amphibians is uncertain. For reptiles, particularly those with temperature-dependent sex determination, increasing temperatures may have large demographic effects. Specific predictions about effects of climate change are difficult and reflect the complexity of the issue. Montana herpetofauna occur mostly at the extremes of their climate envelopes, and some species may benefit from climate change.