

**Title:** Grizzlies, fire, and climate: Understanding how changing fire regimes may influence grizzly bear foraging habitat

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**Background:** Little is known about the effects of fire on grizzly bear foraging habitat. Incredibly, there has never been a study that specifically addresses how wildfire influences grizzly bear habitat use patterns, and only a few studies address the question obliquely. This is surprising given the important role that fire plays in shaping western ecosystems. Most current climate models predict that our climate will become warmer and drier, thus increasing wildfire frequency. An altered fire regime will fundamentally change the form and function of affected ecosystems. Grizzly bears are opportunistic omnivores and use large home ranges to meet their nutritional needs. Because their home ranges are very large, most grizzlies must utilize burned habitats at some point in their lives.

**Purpose and need:** Grizzly bears are considered 'conservation reliant species', meaning that their preservation requires explicit actions by people. Without such actions, for example limiting human caused mortality and providing secure habitat, bear survival and recruitment declines below sustainable levels. Understanding how bears use or avoid burned areas is crucial to anticipating and planning for an altered climate. If we are to preserve grizzly bears in the face of a changing climate and changing fire frequencies, we must understand this fundamental relationship between grizzly bears and their environment.

**Methods:** The North Fork of the Flathead River valley is one of the few places in the coterminous USA that has an established fire regime that reflects historic fire frequencies and contains a robust population of grizzly bears. As such, it is an ideal laboratory to study grizzly bear/fire relationships. Currently, the Montana Department of Fish, Wildlife and Parks, in cooperation with the US Forest Service and Glacier National Park, maintains a sample of radio marked grizzly bears in the North Fork. Some of these are GPS collars. When combined with habitat and fire maps in a GIS environment, the data garnered from these bears can be used to model how grizzly bears exploit burned and unburned areas within their home ranges. Vegetation sampling and laboratory analysis can be used to compare species composition and nutritional quality between and among habitat types. The results will enable land managers to make informed decisions on how to manage wildfire in a way that maintains suitable habitats for grizzly bears.

**Cost:** \$100,000 x 3 years = \$300,000