

**Title:** Pika population vulnerability in Glacier National Park and the role of climate change

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**Background:** Glacier National Park has received prominent climatological attention due to the receding glaciers, but climate change may also have an impact on numerous species within the park...particularly alpine species like the pika. American pikas (*Ochotona princeps*), small (150-200g) relatives of rabbits, have evolved to live in cool climates near the interface of talus slopes and meadows. Temperature is a crucial factor in determining pika habitat. In warmer climates, pikas live at higher elevations. In colder climates, they are able to live in lower elevations. Due to their vulnerability to high temperatures, increasingly isolated populations and low reproductive rates, scientists are concerned how climate change will affect the North American pika. Climatology models predict that the average temperature in North America will rise by 2 – 10 °F by the end of the 21st century. If the alpine warms at the predicted rates, even the mountain summits may not be cold enough to sustain pika populations.

**Purpose and Need:** Among the several mammalian species occurring at higher elevations within GLAC, the pika stands out as particularly vulnerable to climate change and particularly amenable to efficient monitoring. Recent research was completed to develop a mechanistic model to test the hypothesis that climate change increases the risk of pika extirpation. However, long term in-depth monitoring and data collection of occupied pika habitat is not in place. This project seeks to utilize baseline information from the recent study to test alternative hypotheses about current determinants of species distributions as well as to monitor future population change.

**Methods:** Multiple talus slopes known to provide refugia for pika will be targeted from spring through fall. Data on population density, presence or absence of young animals, vegetation cover, species diversity, elevation, and climatological data will be collected. Use of hair snares to collect samples for subsequent biogeographic analyses may be utilized. Data related to the presence or absence of anthropogenic structures (roads, trails, buildings, etc) near occupied slopes and reactions of the pika to the presence of these structures and associated human presence and use will also be collected to determine if pika movement is related to climate or human activities. This project will identify severity of population declines observed throughout the Rocky Mountain West, establish a monitoring protocol, and allow managers to incorporate findings into a park planning documents.

**Cost:** \$50,000/yr x 3 yrs = \$150,000