



Pikas (*Ochotona princeps*)

Resource Brief

Background Information

Glacier carved peaks, waterfalls, mountain goats, and grizzly bears all define the alpine country of Glacier National Park. What many people do not see are the smaller, less obvious members of this dramatic environment. Take the potato-sized, furry, North American pika (*Ochotona princeps*) for instance, found among talus slopes in the park. Pikas are in the order Lagomorpha, related to rabbits, and have evolved to live in cold climates on the fringe of talus slopes and meadows with suitable vegetation.

Through scent-marking and aggression, individual pikas defend home territories of approximately 4,300 square feet. Pikas are generalized herbivores that also eat their caecal pellets, or protein-filled fecal droppings, typical of all lagomorphs. Not only do pikas feed directly on plants and pellets, but they collect and store them as well. Since pikas do not hibernate, these storage caches, known as hay-piles, provide supplemental nutrients to help the pika survive the nine-month alpine winter. Excellent cold-climate survivalists, their thick, furry coat and high metabolism keeps their body temperature at 104°F. These attributes benefit pikas in the winter, but are ineffective for staying cool in warmer weather. In fact, a pika begins to experience potentially fatal stress levels when its body temperature reaches 109°F. Predicted warming, due to climate change, may pose problems for pikas, especially if the areas they inhabit are experiencing consistently hotter summer days. A succession of hot days may force pikas to spend more time underneath the talus to regulate their body temperature, which would mean less time spent above ground foraging for food.

Status and Trends

Prior to the Early Holocene Era, over 8,000 years ago, pikas lived in valley bottoms and grassland habitats in North America rather than the colder alpine areas of today. This long-term shift in habitat preference is important for understanding how the pika is likely to respond to global warming. Scientists in the Great Basin of Nevada found that seven out of 25, or 28% of documented pika populations have gone extinct within the past 30-80 years. Evidence from the Great Basin shows that during the past 8,000 years, as the climate has



Photo by Chris Peterson

Pikas rely on vegetation found near talus slopes year-round. During summer, they eat the plants directly, but they also collect and store plants that will provide much needed sustenance during the long alpine winter.

Threats

Glacier National Park has garnered attention due to its receding glaciers, but climate change may also have an impact on alpine species like the pika. Climate models predict that the average temperature in North America will rise by 2-10 °F by the end of the 21st century. Northwest Montana's average temperature has already risen 2.34 °F (1.8 times the global average) in the last century, with high elevation areas warming at an even faster rate. Increasing temperatures could reduce the amount of suitable pika habitat. Encroaching conifers into alpine or subalpine meadows could reduce available forage as well as obstruct a pika's ability to detect predators. Since pikas do not hibernate, they rely on the insulating effect of ample snow to survive harsh winter temperatures. A reduced snowpack or earlier snowmelt, due to a changing climate, may also limit their habitat range and ability to survive.

generally warmed, pika populations have become extinct in lower elevations and have grown increasingly isolated on mountaintops. The effects of climate change on the pika in Glacier National Park are unknown. If the alpine warms at predicted rates, even the mountain summits may not be cold enough to sustain pika populations. Warming temperatures may also affect pika reproduction. Averaging only 2-3 offspring per litter, a pika's first (and most successful) of two litters, is conceived one month prior to the melting alpine snow pack. Timing is critical because it provides the lactating female pika with an abundance of food when she needs it most. Earlier snow melt and unpredictable winter snow pack depths may disrupt natural timing, potentially leaving the offspring and mother susceptible to starvation.

In 2007, a University of Wisconsin PhD candidate, Lucas Moyer-Horner, began a three-year study monitoring pikas in Glacier National Park. Moyer-Horner and his research assistants identified 400 sites within the park as suitable pika habitat. Throughout the summers of 2008 and 2009, he and his team monitored and collected data from these sites. From this data, he estimated that there are between 1,800 and 3,600 pika in Glacier.

Management Strategy

Due to their vulnerability to high temperatures, increasingly isolated populations, and low reproductive rates, scientists are concerned about how climate change will affect the North American pika. Although Glacier's climate is currently cool enough to support its pika population, additional monitoring will greatly improve our understanding of how pika distribution may be

affected by climate change. In addition to the Moyer-Horner's research, the Crown of the Continent Research Learning Center coordinates a citizen science program that monitors mountain goats and pikas, both alpine species of concern throughout Glacier. Pika surveys are conducted by volunteers to determine distribution of pikas in the park and to monitor any changes in that distribution. Glacier is one of eight national parks conducting these surveys as part of a larger pika inventory and monitoring program led by the National Park Service's Upper Columbia Basin Inventory & Monitoring Network. The data collected will complement Moyer-Horner's study and establish a foundation for long-term monitoring of this charismatic creature of the alpine and its relation to a changing climate.



Researchers and citizen scientists look for scat piles such as this one to determine if pikas are present. Fresh scat shows that a pika is currently using the location, while older scat indicates the area was recently used by pikas.

Resources For More Information

Glacier National Park Staff

- Tara Carolin, Director, Crown of the Continent Research Learning Center
- Jami Belt, Citizen Science Coordinator

Documents and web sites

- National Park Service Inventory & Monitoring "Pikas in Peril" webpage – http://science.nature.nps.gov/im/units/ucbn/monitor/pikas_in_peril.cfm
- The International Union for Conservation and Nature Red List – <http://www.iucnredlist.org/details/41267/0>
- American pika webpage on Arkive – <http://www.arkive.org/american-pika/ochotona-princeps/>

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