

Resource Brief

Lassen Volcanic National Park
National Park Service
U.S. Department of the Interior



Pikas-In-Peril Program, 2018

Why are pika important?

American Pika (*Ochotona princeps*) can be found throughout the mountainous regions of western North America inhabiting fields of broken rock, or talus slopes, and neighboring alpine meadows (Figure 1). Pikas are extremely sensitive to heat and can die within as little as an hour if ambient temperatures rise above 75°F (Peri, 2012). In order to deal with this temperature intolerance, pikas seek refuge in rock crevices during the hottest part of summer days. During the winter, they rely on snowpack for insulation from harsh temperatures. The National Park Service stewards pika populations in more than a dozen parks and seeks to understand the vulnerability of pikas and other mountain species to climate change (Rodhouse, 2016).

What are we doing?

Pikas in Peril, funded in 2010, is a collaborative research program directed by scientists from the National Park Service,



Figure 1: American pika (*Ochotona princeps*) at Lake Helen, Lassen Volcanic NP / Wayne Steffes

Oregon State University, University of Idaho, and University of Colorado-Boulder. To help the National Park Service better prepare for the ecological changes anticipated in the coming decades, the team pursued three objectives in eight national parks including LAVO.

Objectives

1. Identify the factors (e.g., temperature, precipitation, habitat connectivity, topography, etc.) that shape contemporary pika distributions.
2. Assess the connectivity and gene flow of pika populations, including how landscape features affect movement of pikas between patches of suitable talus and lava flow habitat.
3. Evaluate climate change vulnerability of pika populations in each park by integrating pika distribution and gene flow models with forecasted regional changes in temperature and precipitation (Rodhouse, 2016).

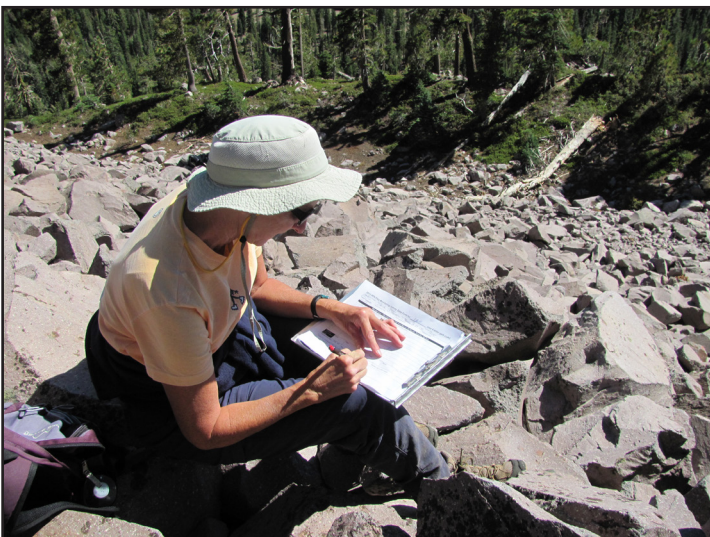


Figure 2: A Pikas-in-Peril volunteer estimates cover class at a plot in Lassen Volcanic NP /NPS

How are pika surveys conducted?

As part of the Pikas in Peril program, the park has established 100 pika monitoring plots placed throughout different elevational gradients (Figure 5). The first round of surveys was conducted 2010-2015. Currently, we are in the second year of the second round of monitoring, which will run from 2017-2021. Following an established protocol, each of these plots are surveyed annually to determine the presence or absence of pikas. Presence or absence of pika is determined after a crew searches the 24 meter plot area for scat and food caches (Figure 3,4). The protocol also includes looking and listening for pika inside monitoring plots. Pika are well known for harvesting and storing vegetation in food caches or “hay piles” which they feed on throughout the winter. When scat or a hay pile are found, the crew characterizes it as old or new and records where in the plot it was found. Along with conducting surveys of the 100 sites, 30 sites are revisited by separate staff than originally conducted the surveys to monitor for quality control among survey crew staff. The data is then forwarded on to staff at the Upper Columbia Basin Monitoring Network and staff from the Oregon State University Cascades HERS Lab who oversees and manages the pika monitoring database.



Figure 4: A fresh hay pile/ NPS

Results

Lassen Volcanic National Park is one of the warmer and wetter of the 8 studied parks, reflecting the maritime influence of the Pacific Ocean. The American pika population is well-distributed throughout the talus boulder fields and lava flows in the park. Current patterns of site occupancy, as determined in 2016, show highest concentrations in the southeastern portion of the park and also north of Lassen Peak. Counterintuitively, relative to general expectations about pikas from previous studies, pika occupancy in LAVO does not show a strong association with elevation. Rather, the configuration and connectivity of habitat patches appear to be most important. Streams and lakes pose significant barriers to dispersal and gene flow. Despite these limitations, results suggest a relatively high degree of movement among habitat patches, and overall genetic diversity in LAVO is moderately high relative to other parks included in Pikas in Peril. These results suggest that habitat connectivity will contribute to long-term persistence of the American pika population in the park (Rodhouse, 2016). While 2018 data has not been analyzed, crews did find fresh scat at 28/100 sites. 47 sites were found to have old scat present. Of the 47, 24 also had fresh scat present. Fresh hay was found at 22/100 sites.



Figure 3: A complex of pika sign, including multiple urine posts and fresh scat / NPS



2018 Pika Monitoring

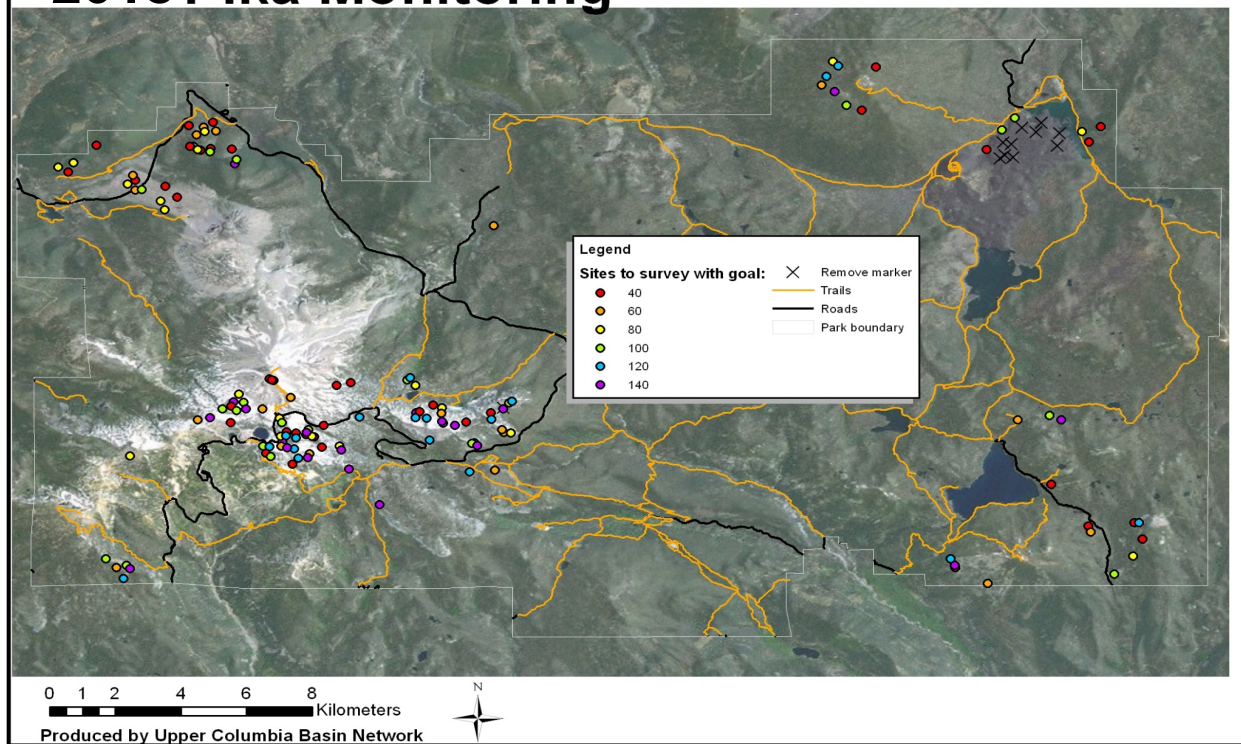


Figure 5: Pika survey sites broken down by stratum, showing top 100 plus 40 additional over-sample points / NPS

Future Direction

Lassen Volcanic National Park will continue to survey the 100 sites from 2019-2021. The park will also continue to survey populations annually after 2021 to continue monitoring this species' status within the park.

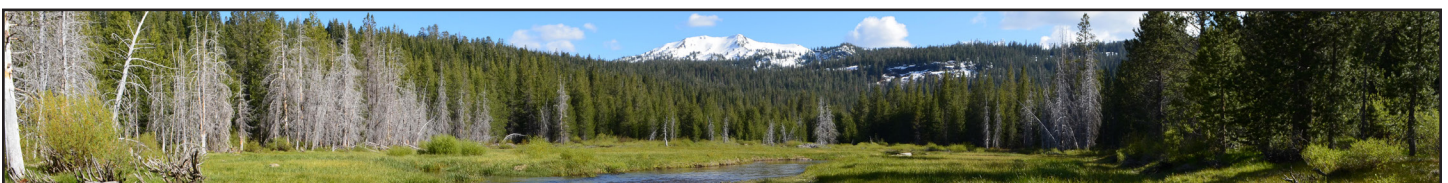
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