

Pika Monitoring in the Pacific West Region



American pika
on lava flow
Photo:
Doug Owen

Parks where protocol is being implemented

- Crater Lake National Park (CRLA)
- Craters of the Moon National Monument and Preserve (CRMO)
- Lassen Volcanic National Park (LAVO)
- Lava Beds National Monument (LBE)

Importance: Species vulnerable to climate change

Localized extirpations of the American pika (*Ochotona princeps*) have recently been documented in isolated mountain ranges of the Great Basin. The hypothesized mechanism for these extirpations is increased warming resulting from accelerated climate change. Pikas do not have the ability to tolerate heat, and studies have shown that extended exposure to temperatures of only 80°F can be fatal. Given the current predictions of climate change over the next century, the risk of extinction is now considerable, and the species is currently being reviewed for listing under the Endangered Species Act. Long-term monitoring of pikas in these four parks will provide urgently needed information on population trends and will serve as an early-warning system for declining populations. Because each of these four parks provide large amounts of potential habitat, they may become increasingly important as long-term refugia, furthering the need for a well-established monitoring program.

Objectives

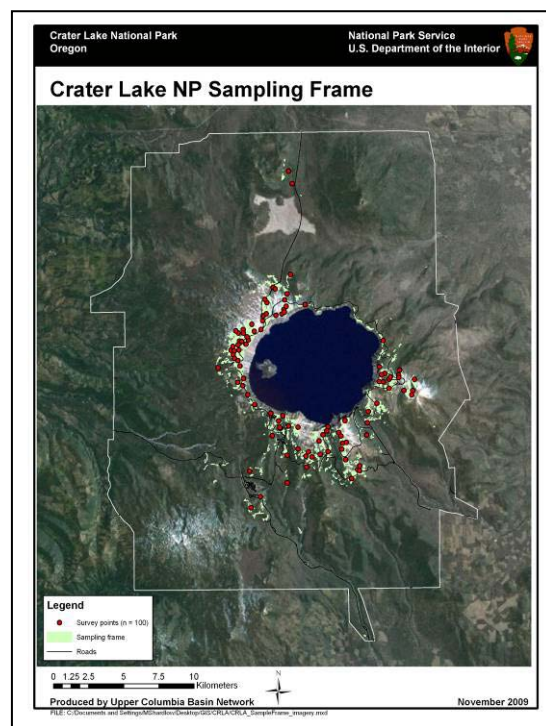
1. Determine patterns of pika site occupancy (status) in CRLA, CRMO, LBE, and LAVO along park elevational gradients.
2. Determine dynamics in pika site occupancy patterns (trend) in CRLA, CRMO, LBE, and LAVO along park elevational gradients.

Monitoring Methods

The UCBN is developing an occupancy modeling-based approach to pika monitoring in which trends in percent of area occupied and local extinction and colonization rates are assessed. This approach allows for inclusion of key environmental predictor variables, particularly elevation, providing an ideal framework for testing hypotheses about environmental drivers of pika population dynamics and for improving the precision of trend estimates. Occupancy of sites will be determined by surveying for pika activity via direct and indirect sign (i.e., visuals, calls, fresh haypiles, and fresh scat) following methods applied in published studies and LBE and CRMO inventories. Pika surveys will occur at sample locations selected through a spatially-balanced sampling procedure known as the Generalized Random Tessellation Stratified (GRTS) approach (Stevens and Olsen 2004) and will be stratified by elevation. Each survey location will consist of a 12-m radius plot, and given high detectability when using both direct and indirect sign (~1), one survey per site per season will be sufficient.

Future Plans

A draft pika monitoring protocol was submitted for peer review in December 2009. The peer-reviewed protocol will be used for pilot work in CRLA and LAVO in 2010 and will be submitted for final approval in January 2011. Annual inventory reports for CRLA and LAVO will also be submitted to the parks by December 2010.



Example of a proposed sampling frame map for CRLA with 100 survey points.

Contact Information

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