



Pika Inventory in the UCBN

Network parks where resource is being inventoried

- Craters of the Moon National Monument and Preserve

Importance: Species vulnerable to global warming

Recently, localized extirpations of the American pika (*Ochotona princeps*) have been documented in isolated mountain ranges of the Great Basin. The hypothesized mechanism for these extirpations is increased warming resulting from accelerated climate change. Given the current predictions of climate change over the next century, the risk of extinction is now considerable. The lava flow environments found at Craters of the Moon National Monument and Preserve (CRMO) provide a unique and potentially critical habitat type for pikas. The cool microclimates in the deep cracks and crevices of the lava flows allow pikas to survive despite extreme summer surface temperatures. These flows are extensive, which may permit a larger and more genetically diverse population to persist than those in highly fragmented montane environments. Consequently, CRMO could be a regionally significant refugia for pikas if warming over the next century occurs as predicted and the need for establishing a baseline against which future population change can be detected is clear.

Inventory of a focal species

The UCBN monitoring plan identifies pika monitoring as a future project and has not included pikas in its top tier of vital signs for immediate protocol development. However, we recognize the importance of establishing baseline estimates of pika distribution within the park and identifying critical pika habitat. In September 2007, presence/absence surveys were conducted in the northern portion of the Monument, as well as in the southern portion of the Preserve (Wapi lava flow). In June 2008 the Monument was re-surveyed and new Preserve areas of intermediate elevation south (Laidlaw Park) and east (Huddle's Hole) of the Monument were surveyed. Methods involved searching a random sample of 12 m radius circular plots for 20 minutes for direct and indirect sign of pika presence. We used a modeling approach to estimate occupancy, detectability, and habitat selection.

Results

Approximately 20% of the 72 sites in the 2000 ha Monument study area was occupied in September 2007. We developed a model of habitat selection from this sample that suggested pika are more likely to use structurally complex pahoehoe lava flows with relatively moderate forb cover rather than unvegetated Aa lava flows. Approximately 60% of the 600 ha pahoehoe lava flow study area along the northeastern edge of the Preserve was occupied in 2008, but no evidence of active site occupancy was found in the Aa dominated lava along the edge of Laidlaw Park southwest of the Monument. Detectability was high (~90%) in areas with substantial occupancy. Targeted searching in the southern Wapi flow portion of the preserve failed to find any evidence of pika in 2007, and searching along the lava flow edge near Lava Lake also failed to detect pika sign. Separating the influences of elevation and lava type is difficult and will require further investigation, but the emerging picture is one in which pika are restricted to the specific lava flows in the northern tier of the park (Monument and Huddle's Hole areas). This has considerable implications for population viability and the species may face higher extinction risk in CRMO than was initially hypothesized. Model refinement and validation with 2008 data will clarify some of these questions as will additional surveys in the southern (low elevation) portions of the Preserve

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Pika (*Ochotona princeps*)

