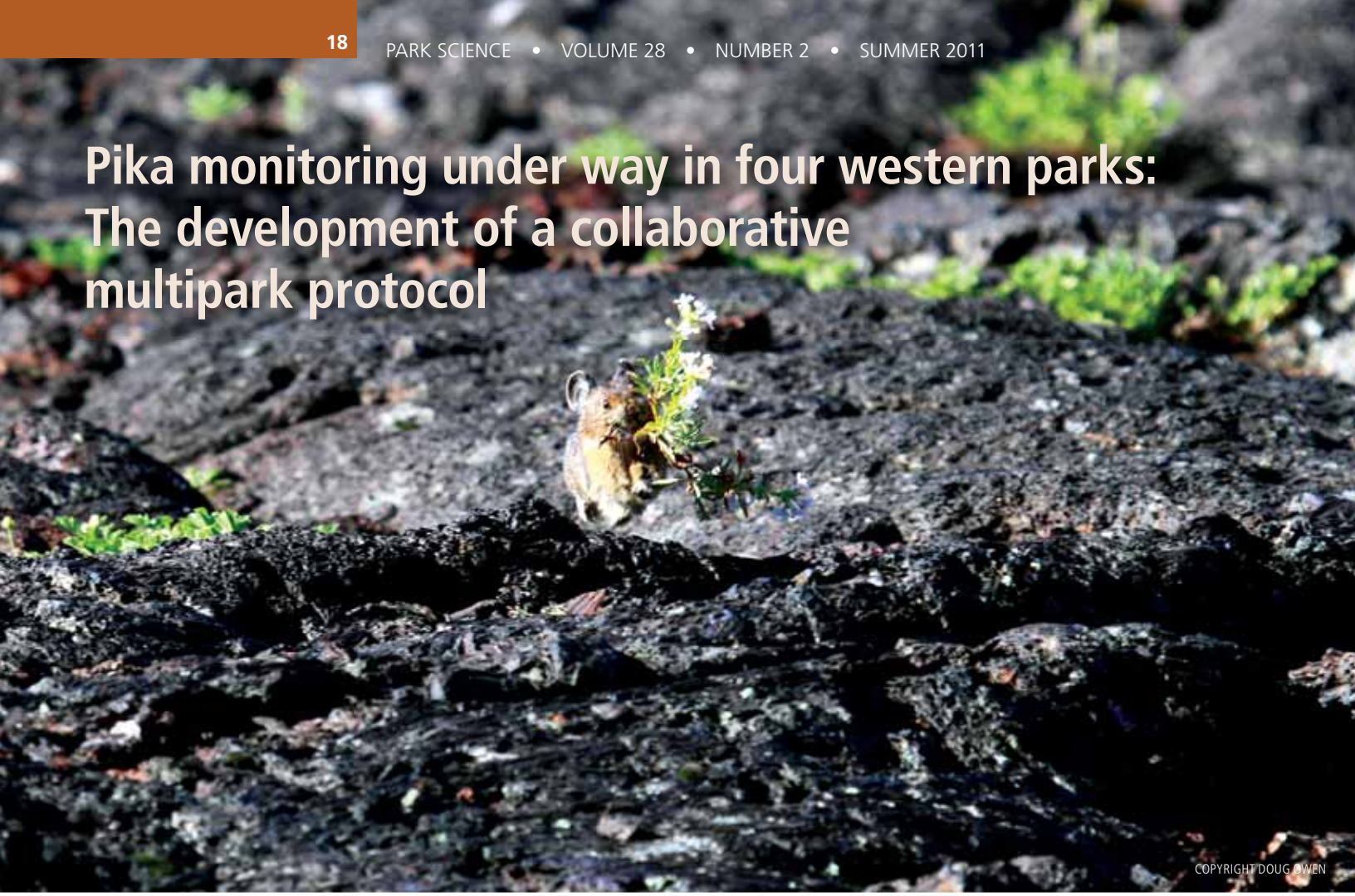
Pika monitoring under way in four western parks: The development of a collaborative multipark protocol



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By Mackenzie Jeffress and Lisa Garrett

Abstract
Several parks and an Inventory and Monitoring network have teamed up to develop and implement a long-term monitoring protocol for the American pika. Repeat surveys of sites to determine pika presence will be used to evaluate the status and trends in pika site occupancy patterns in four national parks.

Key words
American pika, occupancy, *Ochotona princeps*, monitoring, status, trend

RECOGNIZING THE NEED TO UNDER-stand pika population dynamics over time, resource managers from four national parks in the Pacific West Region (Crater Lake National Park, Oregon; Craters of the Moon National Monument and Preserve, Idaho; and Lassen Volcanic National Park and Lava Beds National Monument, California) have formed a partnership with the Upper Columbia Basin Network Inventory and Monitoring Program to develop a long-term monitoring protocol for the American pika (*Ochotona princeps*) (fig. 1). Protocols produced by the Inventory and Monitoring Program follow rigorous guidelines and are expected to withstand the test of time. The objectives of the monitoring protocol are to determine current patterns and long-term trends in pika site occupancy in the four parks. These parks represent a range of habitat types, from classic high-elevation talus and boulder fields to relatively low-elevation lava flow environments (figs. 1 and 2).

Figure 1 (above). Scurrying across lava at Craters of the Moon National Monument, an American pika carries flower clippings that it will use as a winter food source.

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Figure 2 (right). The foreground rocks in this view of Table Mountain at Lassen Volcanic National Park represent high-elevation talus habitat of pika. Lassen Peak rises in the background.

Recent ideas focus on promoting resilience to global warming, such as protecting meadow and foraging zones adjacent to pika taluses and lava, using rock materials and designs to create pika habitat and corridor routes between occupied habitats, and using attractants to lure pikas along corridors to higher-elevation habitats.

The approach for monitoring pika populations on national park lands is based on repeat presence-absence surveys of randomly selected, small, circular plots representing an average territory size that will permit detection of changes in site occupancy patterns over time. Sites are searched for evidence of pika presence, including sighting, and detection of calls, fresh feces, and fresh hay piles (figs. 3 and 4). Site occupancy is an efficient and informative measure of change in animal populations across broad scales (Jones 2011), and occupancy models can be used to examine factors affecting site occupancy and rates of turnover in site occupancy, such as climate and habitat characteristics. Presence-absence surveys have been successfully used to map the distribution of the species at Craters of the Moon (Rodhouse et al. 2010). The Pikas in Peril research project (see previous article) has also adopted this protocol for field surveys.

The initial focus of the protocol is to obtain additional baseline information about the distribution and occupancy of pikas in each of the four parks. As more information becomes available, the focus will shift toward trend detection, in which changes in occurrence patterns will be compared against baseline estimates for each park, and biologically meaningful declines or increases in pika occupancy can be described. Ultimately, data from this monitoring program will contribute to understanding relationships between pika site occupancy patterns and park environmental conditions, which will then inform park management decisions.

NPS/JEFF MURPHY

Figure 3. Fresh pika feces help researchers determine if a site is occupied and are also important for genetic analysis as part of the Pikas in Peril research.

NPS/DEVIN STUCKI

Figure 4. Pikas pile hay in rock crevices as a winter food supply. This animal sign helps researchers determine if a site is occupied.

Not only will this protocol capture changes in the proportion of sites occupied, but also data collected by these methods can inform managers about where high-priority habitat is found and where changes in pika populations are occurring. Although tools for managing pika populations and habitat are not yet well developed, recent ideas focus on promoting resilience to global warming, such as protecting meadow and foraging zones adjacent to pika taluses and lava, using rock materials and designs to create pika habitat and corridor routes between occupied habitats, and using attractants to lure pikas along corridors to higher-elevation habitats (Hobbs et al. 2010). Since these ideas are new and have not yet been tested, our focus has been on designing a rigorous but flexible protocol that will inform park management decisions in the future as climate change response strategies are developed.

The protocol (Jeffress et al. 2011) details the why, where, how, and when of a pika monitoring program and includes specifics for selecting survey sites, training observers, and data analysis and reporting. The protocol was peer-reviewed and recently published as part of the NPS Natural Resource Report series. Pilot data were collected in all four parks in 2010 and protocol implementation began in summer 2011 with data analysis ongoing throughout fall and into winter. Given that 16 units of the National Park System contain confirmed pika populations, the protocol creates an opportunity for collaboration and regional synthesis of broad-scale trends. Other parks, as well as other agencies and groups, including several national forests and the Seventh Generation Institute, are interested in adopting the protocol. For

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>> PIKA MONITORING, CONTINUED FROM PAGE 19

more information, see Jeffress et al. 2011 and the Web site of the Upper Columbia Basin Network at http://science.nature.nps.gov/im/units/ucbn/monitor/pika/pika.cfm.

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About the authors

Mackenzie Jeffress *is a research associate working cooperatively with the University of Idaho and the Upper Columbia Basin Network. She is based in Elko, Nevada, and can be reached at jeffress@uidaho.edu.* ***Lisa Garrett*** *is the Upper Columbia Basin Network program manager in Moscow, Idaho.Basin Network at http://science.nature.nps.gov/im/units/ucbn/monitor/pika/pika.cfm.*

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