

**Final Report to the Audubon Society of Greater Denver
from the Front Range Pika Project (FRPP)**

15 October 2013

Introduction

The U.S. Fish and Wildlife Service denied Endangered Species Act protection to the cold-loving American pika, citing insufficient evidence of its decline. Meanwhile, researchers are documenting declines and localized extinctions of this alpine mammal along the lower-elevation bounds of its habitat. As the West warms, there is a pressing need to better understand the impacts of climate change on American pika, and develop management strategies to help the American pika persist into the future. That's where the Front Range Pika Project comes in.

The Front Range Pika Project is a long-term study documenting changes in the distribution of the American pika in the Southern Rocky Mountains. This small herbivorous mammal inhabits high elevation regions of western North America, and the Rockies provide a large amount of high-elevation pika habitat relative to other portions of the species' range, which may be particularly important in allowing the species to persist in the face of global warming. Pikas are very susceptible to temperature extremes, and scientists who study these alpine mammals predict that many populations may become extinct as a result of global climate change.

In partnership with Rocky Mountain Wild, Colorado Parks and Wildlife, the University of Colorado, and the Natural Resources Ecology Lab at Colorado State University, Denver Zoo carried out the fourth season of the Front Range Pika Project in 2013. (Our field season officially ends in late October; FRPP will provide an appendix with a summary of our 2013 data after that time.) Trained volunteer citizen scientists conducted field surveys at sites historically occupied by pika in the Front Range. This data will contribute to ongoing research at the University of Colorado, Colorado Parks and Wildlife, and elsewhere. Citizen scientists enjoyed spending time in the high country, becoming empowered to educate others about pika ecology and the impacts of climate change on alpine ecosystems, and contributing to our scientific understanding of this important native species.

All of us at the Front Range Pika Project are extremely grateful to the Audubon Society of Greater Denver for its support of our project in 2013. Thank you!

FRPP 2013 Field Season

Sites Visited

The 2013 FRPP season continues until our end-of-season celebration on October 28th. We continue to receive data from volunteers; thus far, we have received 35 completed data sheets. Each sheet represents a full day of data collection at one site. Volunteers conducted surveys at 32 sites at least once in 2013; many sites were visited twice so that we can compare results between volunteer teams. This leaves 14 sites to visit before the end of the 2013 season. Our goal is to visit at least seven of these sites, but we believe the other seven cannot be visited due to road closures from the September flooding and the current National Park moratorium on research (compounded by the closure of Rocky Mountain National Park due to the federal government shutdown). However, it is worth noting that all of the remaining sites are part of our 'Tier 2' list (new sites that were added to our program this year) and every one of our 'Tier 1' sites (sites for which we have data from previous years, and thus are more important) was surveyed. The Tier 1 and Tier 2 lists combined consist of 45 Front Range field sites.

Volunteer Trainings

This year, we conducted one classroom training and one field training for our new volunteers, as well as an online refresher course for returning volunteers. These trainings gave our volunteers the necessary background on American pika ecology and adequate knowledge to collect sufficiently-rigorous data. We trained a total of 50 volunteers.

We held our classroom training at Denver Zoo on 31 July 2013, with assistance from Dr. Chris Ray of the University of Colorado, and our field training at the top of Loveland Pass on 4 August 2013, with assistance from Liesl Erb. Twenty-seven new volunteers attended these trainings, and 19 have completed their site surveys thus far.



Image 1: Pika Patrol volunteers at the 2013 field training on Loveland Pass. Photo by Amy Masching.

Online Quiz

The 2013 field season began with the creation and implementation of a new online volunteer refresher quiz for returning volunteers. Training returning volunteers online freed up resources to conduct classroom and field trainings for new volunteers. Using this method, we were able to increase our volunteers from 35 last year to 50 this year. As a direct result, we also increased the number of survey sites we aimed to visit this year, and in future years, from 23 to 45. The returning volunteer quiz can be accessed by going to our website, www.pikapartners.org, and then navigating to the 'Resources' tab. (Data, photos, maps, and project information are also available on the website.)

We received positive feedback on the online training from returning volunteers. We plan to expand this program next year with online videos reminding volunteers of the Pika Patrol protocols: how to collect scat, place the temperature data loggers, and collect data. (To watch a video on placing temperature loggers, please visit this YouTube link: <http://youtu.be/NbwglD0wDwk>.) In person trainings for new volunteers certainly will continue, but returning volunteers now have the option to take the refresher quiz in lieu of the in person trainings.

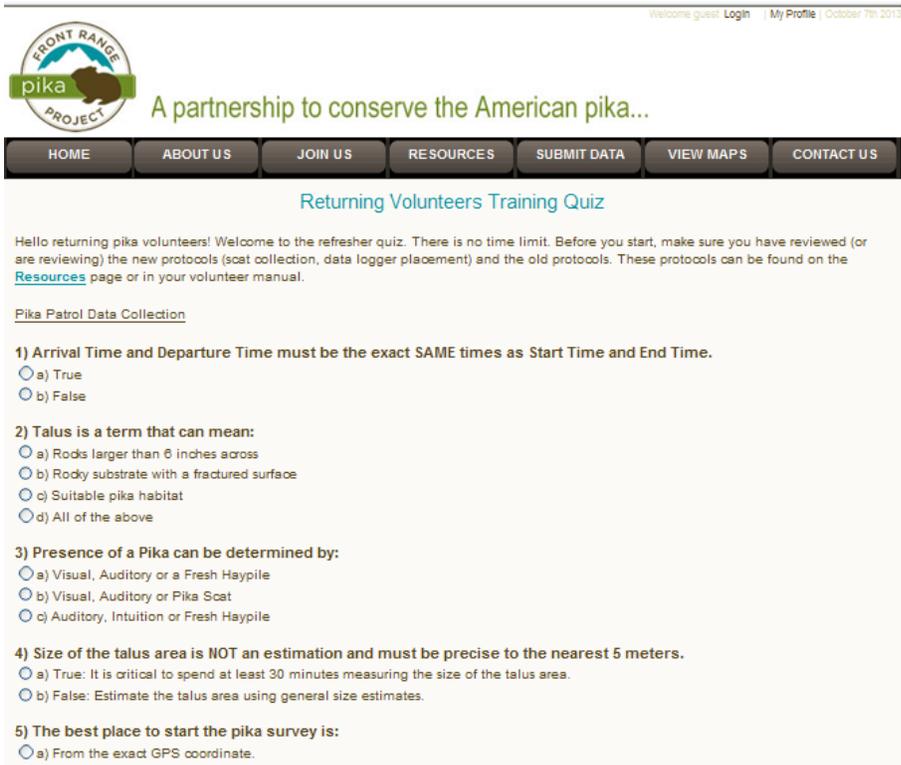


Image 2: Snapshot of the newly-developed quiz to assess the knowledge of returning volunteers.

Data Loggers

This year, for the first time, volunteers retrieved remote temperature recorders, called data loggers, that Brian Fauver placed at all of our 2012 field sites. These temperature recorders were in place under rocky slopes from October 2012 to September 2013; loggers with fresh batteries were swapped out for the old ones. Once an hour, the data loggers turn on to record the temperature at that time. We are very excited about this data! This information tells us the temperature at 'pika-level' for the entire year at each of our field sites.

Below are data logger readouts from two of our sites, one called Chalk Mountain (Figure A) and the second called Blue Lakes (Figure B). These sites are both in between Breckenridge and Leadville, as the crow flies. Both sites are above timberline, and both have had pika occupying the sites in the past. Both sites were selected from Colorado Parks and Wildlife historical records as part of our randomized site selection method. Chalk Mountain is 11,240 feet above sea level, and Blue Lakes is 12,800 feet above sea level.

As you can see on the graphs, the temperature fluctuates regularly with the day. When there is adequate snowpack, the temperature flat lines at around 17 degrees Fahrenheit. Chalk Mountain (Figure A) did not receive adequate snowpack until late in the season. As a result, it experienced temperatures down to -18 degrees. This is very dangerous to pikas, as they struggle to live below 0 degrees. Neither site experienced temperatures higher than 65 degrees. In future data analysis, this information will be compared to the results of the pika surveys.

Figure A. Chalk Mountain Temperature 2012-2013

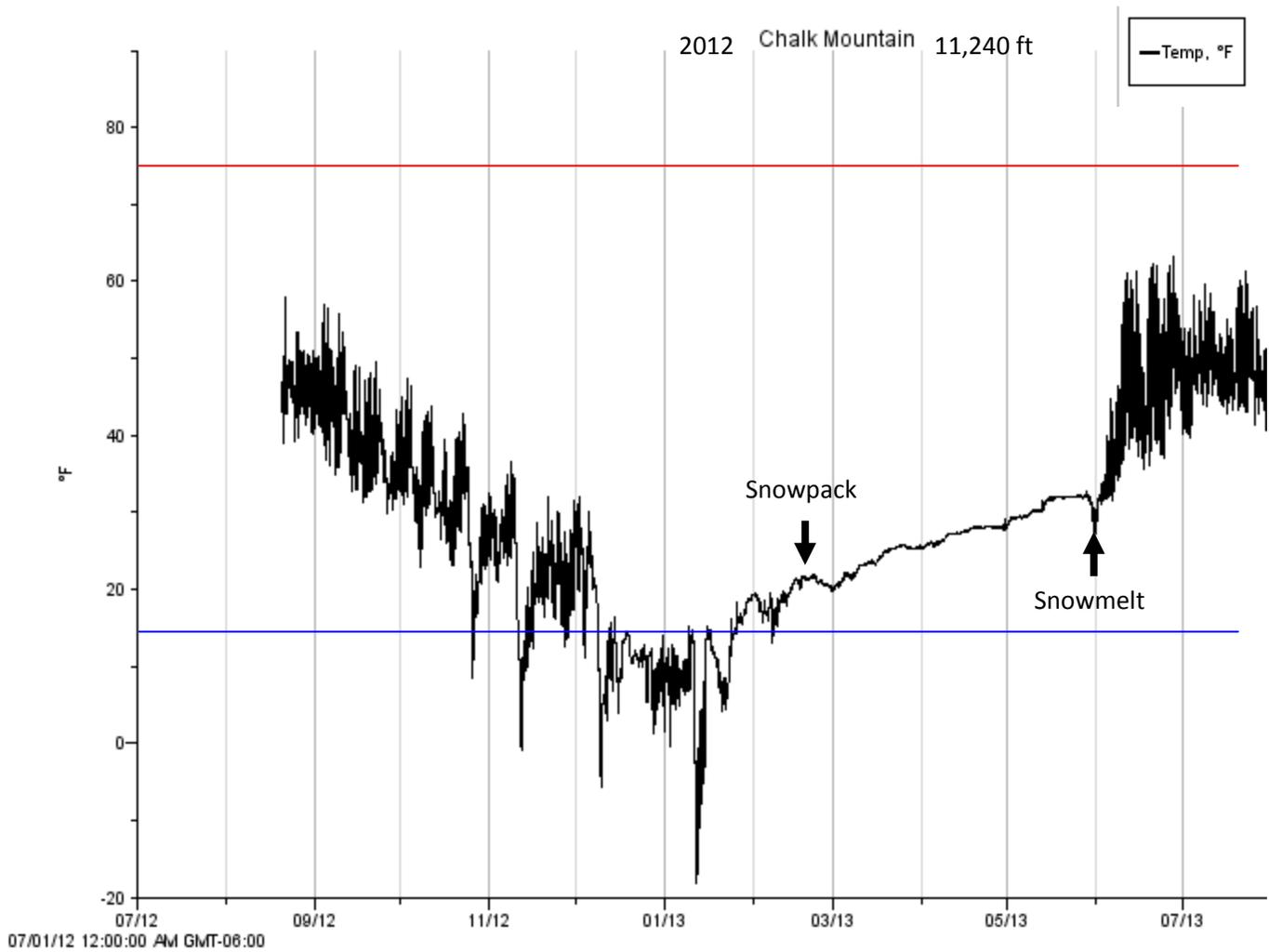
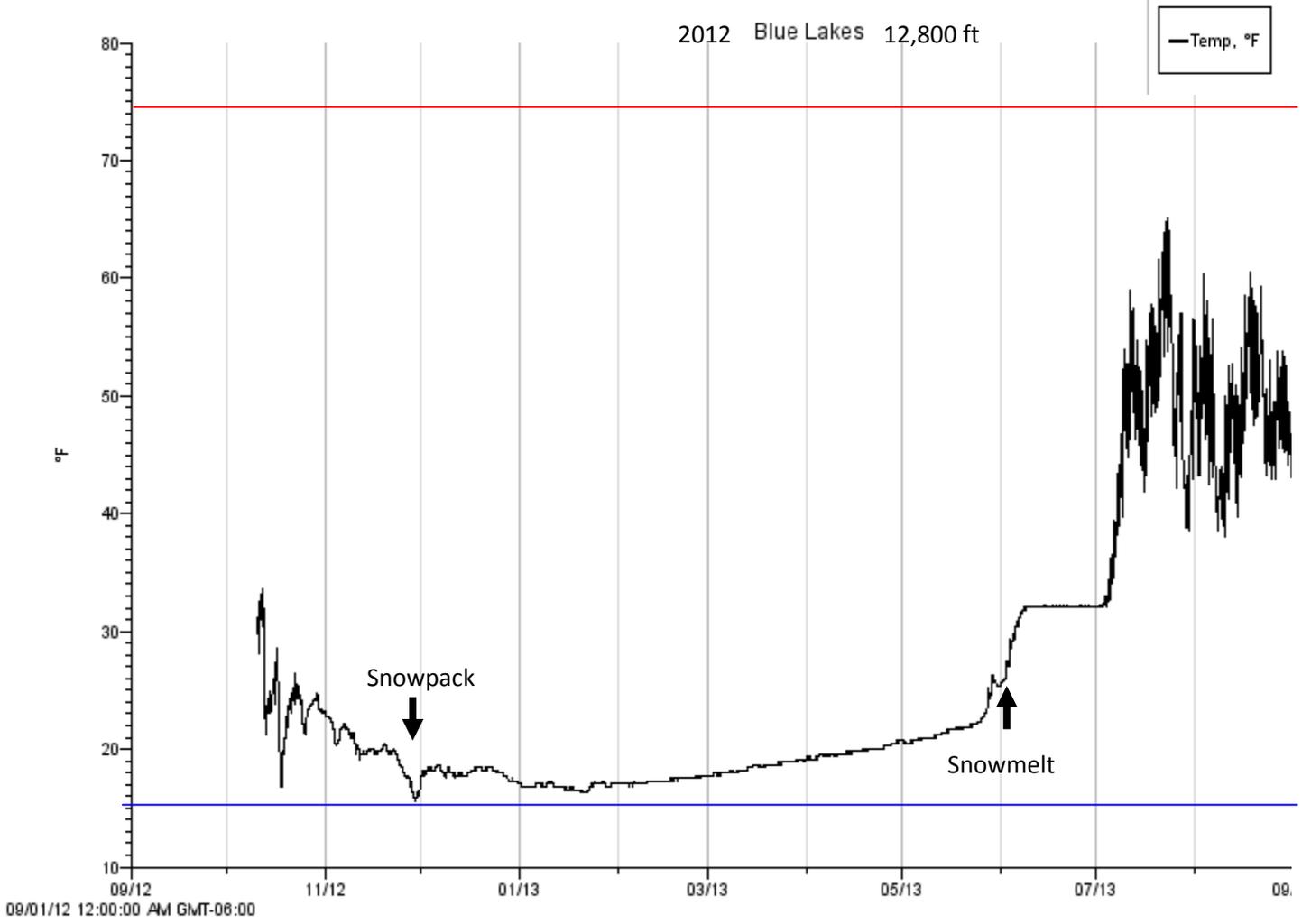


Figure B. Blue Lakes Temperature 2012-2013



Scat Collection

Among the preeminent pika researchers we are privileged to work with is Jennifer Wilkening. Having studied pikas for years, Nifer (as she is known) is currently researching hormonal levels in pika scat, from which she is able to ascertain stress levels among individual pika. As yet another first for the FRPP in 2013, this year Pika Patrol volunteers began collecting pika scat to help with Nifer's study. This required the development of and training on additional field protocols for each of our volunteers. As with all of the data collected by FRPP citizen scientists, this information will be extremely valuable in determining the health of pika populations within Colorado's Front Range.

Thank you again!

As mentioned previously, a full summary of Front Range Pika Project data for 2013 will be provided once our field season is complete. More detail about FRPP research questions, program goals, field site locations, and data collection protocols can be found at www.pikapartners.org. We appreciate your support.