2012 San Juan PikaNET Program

Citizen Scientist Manual
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Welcome to the Pika Patrol!

Background
Thank you for volunteering for the San Juan Pika Project! The San Juan Pika Project is a citizen science volunteer program designed to collect data about the American pika (*Ochotona princeps*) in southwest Colorado. The San Juan Pika Project, created by Mountain Studies Institute and the Front Range Pika Project, created by Center for Native Ecosystems (now Rocky Mountain Wild) in partnership with the Denver Zoo were made possible with assistance from pika researchers at the University of Colorado and Colorado Parks and Wildlife. Additionally, the Natural Resource Ecology Laboratory at Colorado State University—which hosts and manages citizen science websites—is an essential partner in this program. We all are working together to ensure consistency, scientific rigor, and usability in the data collected by our volunteers.

Program Goals
As a Pika Patrol volunteer, you will help collect valuable information about the status of pikas in Colorado’s Rocky Mountains. Both the San Juan and Front Range Pika Projects has four overall goals:

- Through long-term monitoring conducted by citizen scientists, determine the status and trends in distribution and habitat associations of the American pika throughout the Southern Rockies.
- Provide accurate, reliable, and useful scientific data for use by both researchers and land managers.
- Educate and engage the public in pika conservation and climate change impacts facing mountainous regions.
- Develop a model for future collaborative citizen science programs to increase public awareness of, and participation in, science and wildlife conservation.

These goals were developed in accordance with the following research questions:

- What is the current pattern of pika occupancy in the Southern Rockies?
- What habitat variables determine current distribution?
  - What are the current lower and upper elevational bounds of *O. princeps*, with respect to aspect and latitude?
  - What vegetation communities surround pika habitat?
  - What are the characteristics of talus patches occupied by pikas?
  - What are the summer maximum and winter minimum temperatures in pika habitat?
  - What are the current patterns of snowpack and precipitation in pika habitat?
- What is the trend in pika occupancy patterns in the Southern Rockies over time?
- Is pika habitat changing?
  - Are the lower and upper elevational bounds of *O. princeps* changing?
o Are the vegetation communities that surround pika habitat changing?
o Are the summer maximum and winter minimum temperatures in pika habitat changing? Is site occupancy related to particular characteristics of talus patches?
o Are the patterns of snowpack and precipitation in pika habitat changing?
  • Do the changes in pika occupancy patterns and pika habitat suggest that pikas are declining in the region in response to global climate change?
  • How can pika populations in the region be expected to respond to global climate change?

Pika Ecology In Brief

Found throughout the mountains of western North America, the diurnal American pika (*Ochotona princeps*) typically resides in talus and boulder fields. Like other members of the lagomorph order (rabbits and hares), pikas are herbivores. They spend much of the warmer months building ‘hay piles’—stashes of green plants, including grasses, sedges, and forbs—for use as food during the winter. Territorial little critters, American pikas vocalize in a variety of ways, including high-pitched calls warning of intruders to their territories.

Because pikas are highly sensitive to warm temperatures and they live in high, cooler ecosystems, it has been suggested that pikas may act as an indicator species for global climate change. Additionally, pikas live in fragmented patches of habitat, and thus, it is likely more difficult for pikas to migrate in search of better/cooler habitat. As a Pika Patrol volunteer, you will help gather data to shed light on these issues.

In January 2010, the U. S. Fish and Wildlife Service issued a 12 month finding on a petition to list the American pika as threatened or endangered. Although they found that listing under the Endangered Species Act was not warranted, the finding contains a great deal of useful information about pikas generally (including biology, taxonomy, and historical distribution); it can be accessed online at: http://www.fws.gov/mountain-prairie/species/mammals/americanpika/
Pika Patrol Volunteer Description

We greatly appreciate your participation in the San Juan Pika Project! This citizen science program would not be possible without the assistance of dedicated volunteers. As a Pika Patrol volunteer, you are asked to:

- Visit your selected field site(s) at least once during the 2012 field season.
- Follow the data collection protocols while visiting your field site.
- Hike with at least one other adult (for your safety).
- Following your field site visit(s), report your data on the www.citsci.org website by October 15, 2012.
- Adhere to the program’s safety policies.
- Sign a liability waiver.

If at any time you have questions about these above description, please contact:
- Emily Olson, Mountain Studies Institute, 970-382-6908, eolson@fortlewis.edu

Equipment

When going out to your field site, you will need:
- GPS unit
- Camera
- Appropriate clothing and footwear
- Volunteer manual, including data forms
- Mobile phone, in case of emergency
- Water and food
- Binoculars
- First aid kit
- Sunscreen
- 1 meter measuring tape
- Leather gloves (to protect your hands on talus)
- Small thermometer
- Flashlight/headlamp
- Watch

If you do not have access to a GPS unit, you can check one out from Mountain Studies Institute. To do this, please contact Emily Olson with MSI

Safety Procedures

Hiking in Colorado’s backcountry, particularly on talus, carries inherent risks. While volunteering for the San Juan Pika Project, your safety is our primary concern. Please follow these measures to ensure your safety and the safety of your field partner:

1) In case of an emergency, immediately call 911.
2) Bring the appropriate equipment (see above) and be adequately prepared for your trip to your field site.
3) Go out with at least one other adult.
4) When walking on talus, try to try to keep your foot on two rocks at the same time with each step. While a single rock can shift easily, keeping your weight centered on two rocks allows for a much more stable surface.
5) Watch the weather and finish your site visit before afternoon thunderstorms set in.

6) If you get caught in a storm, follow this lightning protocol:
   - Do not stand under or near an isolated tree or small group of trees.
   - Avoid projecting above the surrounding landscape, as you would if standing on a mountain top, ridge, or in a meadow. Look for an area of uniformly high objects without water near by.
   - In a forest, seek shelter in a low area under a thick growth of small trees.
   - If caught in an open area and a forest is not near by, seek refuge in a valley or low spot.
   - If you feel your skin tingling, your hair is standing on end, wrappers are crumpling, or metal objects (such as zippers) are ringing, drop to the ground and assume lightning position: squat with your feet together, do not have anything but your feet touching the ground or squat on your backpack, clasp your hands behind your head, and try to keep your head lower than your shoulders.
   - Stay with your partner, but try to be 30 feet apart in lightning position.

7) If you feel that gathering any of the data outlined on the protocol will put you in an unsafe situation (e.g. the talus at the survey site is too steep and you don’t feel comfortable searching it for pikas) then don’t gather the data and just note that you did not feel safe in the comments section on your data sheet.

While you should always dial 911 in case of an emergency, here are some additional phone numbers that may be useful in non-emergency situations:

**Hospitals/Urgent Care Centers**
Mercy Regional Hospital (Durango) – (970) 247-4311
Durango Mountain Resort (9 a.m.-5 p.m. Urgent Care) (970) 259-4553
Durango Urgent Care (970) 247-8382
Pagosa Springs Urgent Care- (970) 731-3700
Southwest Memorial Hospital (Cortez) – (970) 564-2025
Telluride Medical Center – (970) 728-3848

**Search and Rescue**
San Juan County Search and Rescue/Fire Department (970) 387-5523
La Plata County (Durango-Pagosa Area) (970) 382-6274
K-9 Search and Rescue (Cortez & Dolores) (970) 565-8441
San Miguel Search and Rescue/San Miguel Sheriff’s Office (Telluride) (970) 728-1911

Weather forecasts for the area you are visiting are available via websites such as the NOAA site, www.weather.gov. You may also wish to consider purchasing a Colorado Outdoor Recreation Search and Rescue Card, which helps fund the Search and Rescue Fund. More information is available at coloradoSARboard.org.
Pika Patrol Field Protocols

Please follow these instructions to collect data for the San Juan Pika Project.

Field Preparation
1. Assemble all necessary field and personal equipment (see the equipment list above). Check out a project GPS unit if necessary (see above).

2. Review the map of your talus site. Check the weather predictions for your site and review safety guidelines set out in your volunteer manual. *If at any time you decide you would like to choose an alternate or additional site, please contact a staff person.*

3. Ensure that your GPS is set to NAD 83 and is UTM format. Enter the GPS coordinates for your survey site(s) from the sites list.

4. Plan to leave early in the morning with sufficient time to drive and hike to the site and conduct the survey prior to afternoon thunderstorms and high afternoon temperatures.

5. Make sure that you don’t have outstanding questions. Contact Emily Olson if you do have questions that require answers prior to entering the field.

6. Go in a team of two or more. You can go with a friend or relative, or ask us if you would like to be paired with another pika volunteer. This precaution is for safety reasons, as you will be walking off trail and on precarious terrain at high altitudes.

7. Tell someone where you are going and when you plan to return.

8. Make sure you have one copy of the data sheet for each field site that you plan to survey, along with a clipboard and a writing utensil.

Locating Sites
1. Using the map that has been provided, drive and hike to the field site that you have selected. You may have to navigate off trail using the map and GPS coordinates that have been provided. If it is necessary to go off trail to reach the survey site, take GPS waypoints along the way so that you can use them to navigate back to your starting point. In addition, pay close attention to your map and landmarks so that you are confident that you can find your way back.
Recording Basic Site Information
Once you have confirmed that you are at the site, record your **name** (last name, first name or last name first initial), the **date** (mm/dd/year), and your **arrival time** (use military/24 hour/00:00 – 24:00), on your data sheet.

1. Record the **site name** which can be found on your site map (for example, DiamondLakeCPW), on your data sheet.

2. Determine whether or not there is potential pika habitat (talus) within the site.
   i. Pika habitat is defined as any rocky substrate with a fractured surface (i.e., talus, lava, outcrops or other forms of creviced rock that can provide shelter for pikas). For example, a slope of scree with small rock (the kind of slope that is hard to walk up because it keeps sliding out; < 6 inches across) is not target habitat.

See attached sheet: Identifying Talus vs. Scree, found in your field manual

   a. **If there is talus** within the site boundaries, use your GPS to take a waypoint to record the location of the talus. Take this GPS reading at the bottom margin of the talus slope where you will start your survey for pika and pika sign. Record the **datum, and UTM coordinates** on your data sheet. Then **skip step b. below** and conduct a survey according to the steps outlined under **Surveying for Pikas and Pika Sign**

   b. **If there is no talus** within the talus patch boundaries (the area delineated on your map of the site), record that information on your data sheet, and take a GPS waypoint at the site. Record the **Datum, UTM coordinates** on your data sheet.

3. You have recorded your Basic Site Information!

Surveying for Pikas and Pika Sign
1. Immediately after completing the steps described above, and before recording any other data, record the **begin time for your search for evidence of pika activity** (use military/24 hour/00:00 – 24:00), and begin searching for pikas, listening for pika calls, and searching for pika haypiles and scat.

2. Starting at the bottom margin of the talus slope, systematically search the talus. Pikas are most likely to be found near the largest rocks along the lower margin of the talus slope. At the beginning, focus your search in these areas. Carefully look
and listen for pikas while simultaneously searching for haypiles and scat. Search until you see a pika, hear a pika, or find a fresh haypile.

When you see or hear a pika or find a fresh haypile:

3. **Stop searching for pikas and active pika sign as soon as you see or hear a pika or find a fresh haypile.**
   a. **Record the time when you saw or heard a pika or found a fresh haypile and stopped searching for active pika sign.** Use military/24 hour/00:00 – 24:00). If your search for pika and haypiles was interrupted for any reason, you should record multiple start and end times. The time between the start time and end time should reflect the time you spent actively searching for pikas and fresh haypiles at the site).
   b. Indicate that **pikas are present** on your data sheet.
   c. Indicate **how you determined that pikas are present**. You may find more than one indicator of pika presence, circle all that apply on your data sheet:
      i. **Visual** = actual sighting of a pika
      ii. **Auditory** = pika call
      iii. **Fresh Haypile** = Pikas clip their vegetation and place it under rocks. *If you find vegetation that has been ripped/gnawed or is strewn untidily near rocks, it is probably not pika hay.* Fresh green vegetation tucked in a neat pile under a rock will be a positive detection of a pika. You may also find older haypiles.
   d. **You must see or hear a pika or find a fresh haypile before indicating that pikas are present.** Old haypiles do NOT indicate presence.

4. Record the **total time spent searching for active pika and fresh haypiles**. The total time spent searching should reflect the time you spent actively searching for pikas and fresh haypiles. If your search was interrupted, then you should add the times from each segment of your search together to get total search time (e.g. if you searched for 10 minutes and then took a break and then searched again for another 20 minutes, your total search time would be 30 minutes).

5. If you do not see or hear a pika or find a fresh haypile, search until you feel that you have thoroughly searched the entire site. When you have searched for 30 minutes and have not seen a pika, heard a pika or found a fresh haypile (or need to end your search for the reasons outlined below), then:
   a. Indicate that pikas are **not present**.
   b. Record the **end time of your search for pika and pika sign**.
   c. Record the **total time spent searching for pika and pika sign**.
6. Stop searching if the temperature rises above 75 degrees, or there is inclement weather approaching. Note the reason that you stopped searching on your data sheet. Make sure that you stop searching with sufficient time to record the additional site data described below, and return to your vehicle before any afternoon thunderstorms.

7. If you stop searching for a reason other than those listed below, then indicate the reason the search ended on your data sheet.
   1) The search lasted for 30 minutes/you searched the entire site
   2) The temperature rose above 75 degrees
   3) Inclement weather approaching

8. After recording the reason you stopped searching, you may also note whether you found pika scat and/or old haypiles during or after your search for pika and fresh haypiles. Note that scat and old haypiles can be present at a site for a long time even if pikas are no longer present, so the presence of pika scat and old haypiles is not an indication that pikas are currently present at the site. Do not indicate that pikas are present unless you saw or heard a pika or found a fresh haypile.

9. Record the temperature, percent cloud cover, precipitation, and wind speed using the categories below.

   a. Temperature- Record the temperature in degrees Fahrenheit.
   b. Percent Cloud Cover - Determine the percent of the sky that is covered by clouds and record this information on your data sheet using the following categories: [0 – 10%] [11-25%] [25-50%] [50-75%] [76-100%]
   c. Precipitation – Indicate whether there is precipitation and what type, using the following categories: [No Rain] [Mist] [Light Rainfall] [Moderate Rainfall] [Heavy Rainfall]
   d. Wind Speed – Determine the wind speed and record this information on your data sheet using the following categories:
      i. Calm: smoke rises vertically
      ii. Light air: smoke drifts slowly
      iii. Slight breeze: leaves rustle
      iv. Gentle breeze: leaves and twigs move
      v. Moderate breeze: small branches move
      vi. Fresh breeze: small trees sway
      vii. Heavy breeze: treetops bend
      viii. Strong wind: large trees sway
Collecting Habitat Data

When you have completed the survey for pika and pika sign, and recorded weather data, then record the data on site attributes as described below. **Record all of the information below even if you do not find pika sign.**

1. **Vegetation Surrounding the Site** - indicate the types of vegetation that are adjacent to the talus patch using the following categories. There may be more than one type of vegetation adjacent to the talus patch – check the box next to each type that is present on your data sheet.
   a. Meadow
   b. Wetland/Riparian area
   c. Forest
   d. Alpine Tundra

2. **Length of Largest and 10th Largest Boulders** – Locate the largest boulder in the vicinity of where you saw or heard a pika and/or found a fresh hay pile, and estimate the longest axis of this rock in meters. Enter this information on your data sheet. Then locate the tenth largest rock and estimate the longest axis of this rock in meters. Include only loose boulders, and exclude rock outcrops. Enter this information on your data sheet. If you did not see or hear a pika or find a fresh haypile, but did find old pika sign, take these measurements in the vicinity of where you found the old pika sign. If you did not find any sign of pika, take these measurements at the bottom margin of the talus.

3. **Depth of Deepest Talus** – In the same general area where you estimated the length of the largest and tenth largest boulders, estimate the minimum depth for the deepest cracks/crevices available in meters (i.e. you know the talus is at least this deep in its deepest sections, but you can’t measure or see beyond this distance). This can be a very rough estimate.

4. **Features that Indicate Water Under the Talus** – indicate all of the following features that are visible in or immediately adjacent to the talus:
   a. Visible or audible runoff under the rocks in the talus patch
   b. Pools or saturated soils immediately downslope from the talus patch (<100 meters)
   c. Willows in or immediately downslope from the talus patch (<100 meters)
   d. Snow upslope of the talus patch (<100 meters)

5. **Stream Presence and Origin** – If willows are present immediately downslope from the talus, determine whether this is due to the presence of a stream, and indicate this on your data sheet. If so, indicate whether or not the stream originates from
the talus patch. If willows are not present immediately downslope from the talus, then enter ‘N/A’ on your data form for each of the above questions.

6. **Talus Area** – Determine the total area of the talus patch by walking the perimeter of the talus with your GPS unit. If walking the perimeter of the talus is difficult or dangerous due to the size or steepness of the talus etc. then just try to eyeball the talus and determine which of the following size categories it fits in:
   1) Less than 1000 square meters \(^2\) (less than one baseball infield),
   2) 1001-5000 square meters (larger than one baseball in field and smaller than one football field),
   3) 5001-10,000 square meters (one to two football fields),
   4) Greater than 1 hectare ha (two to ten football fields),
   5) Greater than 5 hectares (more than ten football fields).
If you have a range finder you can also use that to calculate the area of the talus patch.

7. **Presence of marmots** – Look for marmots and listen for marmot calls while you are at the site. If you see or hear marmots at the site:
   a. Indicate that **marmots are present** on your data sheet.
   b. Indicate how you determined that marmots are present (circle all that apply):
      - **Visual** = actual sighting of a marmot
      - **Auditory** = marmot call

8. **Site Photos** - Take **photos in the 4 cardinal directions (N, S, E, W)**. The purpose of these photos is to show the vegetation surrounding the talus. You have been provided with laminated cards with N, S, E, and W written on them. Have your partner hold the card that indicates the direction you are facing in front of you, so that it shows up in the corner of the photo, but does not obscure the view of the vegetation around the talus. Take the photos from a location that best shows the vegetation on all four sides of the talus. If you cannot take photos that show the vegetation on all four sides of the talus from one location, you can take photos from more than one location. Make sure your photo shows as much vegetation as possible while still including the skyline. When you enter your data online, upload each photo and add a caption with your name, the site name, and the direction you were facing when you took the photo.

9. Record the **end time of the survey**.

10. Write any **additional comments** that you would like to make in the comments section. For example, if there were parts of the survey process that were difficult or didn’t make sense to you, please make note of that and explain it here.

11. As a final step at the plot, double-check the data entry sheet and make sure that there are no missing fields on the data form.