DEVELOPING METHODS FOR SPATIAL AND TEMPORAL MONITORING OF AMERICAN PIKA IN CALIFORNIA

A WORKSHOP OF THE CALIFORNIA PIKA CONSORTIUM

California Department of Fish and Game – Wildlife Branch
Sacramento, CA
July 1, 2010

Hosted by:
US Forest Service – Pacific Southwest Research Station
University of California, Berkeley
California Department of Fish and Game

SUMMARY REPORT

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Scott Osborn (DFG)

October 21, 2010

Contents

Executive Summary

The American pika (*Ochotona princeps*) is a small lagomorph that occurs at mid to high elevations in western North America. Although several montane and alpine small mammal species in California may be at risk due to the predicted effects of climate change, pikas are of particular conservation concern. It is thought that pikas' specialized physiology and behavior may make them particularly susceptible to upward vegetation shifts, warmer daytime summer temperatures, decreased winter snow cover, and decreased and more highly fragmented habitat availability.

The California Pika Consortium (CPC) is a multi-stakeholder group of scientists, managers, and other persons with an interest in pika and small montane mammal conservation in California. The group formed in the fall of 2009 during the California Pika Summit, a meeting convened to review and summarize available information on pika distribution, status, and life history in California. In addition, the CPC hosted a symposium entitled "The American Pika's Capacity for Resilience in the Face of Climate Change" at the Western Section of The Wildlife Society's annual conference in January 2010. The focus of the CPC is on California pika research and conservation, but it also draws on and provides information to groups working in other areas of the American pika's geographic range. Efforts of the California Pika Consortium are the responsibility of the CPCC (California Pika Consortium committee) and the consortium work groups, which are comprised of volunteers with specific expertise and interest areas. Initial work groups formed are: Health, Conservation, Database Coordination, Education and Outreach, Geomorphology and Habitat Mapping, Protocols, Regional Coordination, and Research Coordination. The CPC's website is hosted by the California Department of Fish and Game at http://www.dfg.ca.gov/wildlife/nongame/CPC/.

The CPC convened a workshop in Sacramento on July 1, 2010, to develop greater standardization in pika survey and handling methods. The workshop goals included:

1. Present updated map of American pika sites presently documented in California and assess the quality of input.
2. Develop a standard rapid-assessment method for use by CPC scientists to survey spatial extent of recent populations of American pika (suitable also for similar small montane mammals) in California.
3. Develop a standard method for use by CPC scientists to monitor temporal status of select populations of American pika (suitable also for similar small montane mammals) in California.
4. Identify key gaps in the California extent of spatial and temporal mapping of American pika, and highlight priority regions for upcoming survey and monitoring.
5. Present current developments on animal handling methods for American pika opportunities and challenges.

Expected products from the workshop included:

- Input from discussion on best or standard practices for various levels (intensities) of monitoring
- Attendees share information on their current and upcoming field work, especially as related to monitoring (i.e., types of monitoring and locations)
- Identify, at least informally, spatial or methodological gaps in research and monitoring
- Explore occupancy modeling approaches
- Assess handling needs and discuss anesthesia options

Using the email mailing list developed by the CPCC over the past several months, about 50 persons were invited to attend the workshop. Twenty-seven persons participated in the workshop, including five remote attendees who used a telephone conference line to converse with the local participants and the WebEx meeting utility to view images.

As summarized in the meeting notes included in this report, notable conclusions from the workshop include:

- Several gaps exist in the known distribution of pikas in California. These gaps occur within the currently-defined pika geographic range or just outside the range but in areas with apparently suitable habitat. At least one such area outside the defined range (Marble Mountains) had previously-unreported pika observations in the 1980s (Rob Klinger, USGS).
- Input was provided on how to define categories of site occupancy by pikas in a rapid assessment/survey protocol developed by Connie Millar, USFS. CM intends to refine the protocol and post it on the CPC website and elsewhere as appropriate.
- Use of an occupancy-modeling approach is recommended by the CPC to track changes in distribution of pika through time.
- Citizen Science monitoring of pika in California should be facilitated by a CPC member. The Department of Fish and Game should develop a website to allow members of the public to report pika sightings.
- Information is needed on the best methods for handling pika, including the use and safety of different anesthesia drugs.
- More interaction and information sharing between the CPC and similar organizations, especially the North American Pika Group, are encouraged. The Science Locator website should be used by researchers working on pika to inform others of the types and location of their work.

CA Pika Consortium Meeting Notes
Workshop: Developing Methods for Spatial and Temporal Monitoring of American Pika in California

July 1, 2010
DFG Wildlife Branch

List of Attendees

Beever	Erik	ebeever10@gmail.com	USGS, Alaska
Callas	Richard	rcallas@dfg.ca.gov	DFG-Northern Region
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Willy	Elizabeth	Elizabeth_Willy@fws.gov	USFWS-Klamath Falls Field Office
Wolf	Shaye	swolf@biologicaldiversity.org	Center for Biological Diversity

Notes from Presentations

1) Scott Osborn - Welcome, Intro, Logistics, Meeting Goals and Products

Goals:

- Review existing maps of pika sites and study areas
- Develop a standard rapid assessment method to survey spatial extent of recent populations of pika
- ID key gaps in the CA extent of spatial and temporal mapping of pika
- Develop standard methods to monitor status of pika
- Present current developments on animal handling methods

- Better quality data and standardization to increase comparability and range-wide applicability of information.

Products:

- Recommend best management practices for various levels (intensities) of monitoring
- Determine who is doing what type of monitoring and where.
- ID spatial or methodological gaps in research
- Explore occupancy modeling approaches
- Assess handling needs and goals

2) Sean Finn - Updated Map and Databases for American Pika Sites in CA: Science Locator Project

Great Basin Research and Management Partnership

- Synthesizes existing info on Great Basin issues to determine the state of existing knowledge, evaluate current research and management approaches, and identify research needs and questions that can be addressed in a collaborative framework.

A) Science locator http://jester.wr.usgs.gov/scilocator_ims/viewer.htm

- Free internet mapping tool to show what kinds of projects are going on where in the western US
- Simplified GIS
- Click Go, then Science Locator allows for querying by class (subject), agency, or scientist
- Allows for querying of project info by location, and provides contact info and research information with abbreviated abstracts
- Science Locator can be used for any taxon and any class (subject)
- Suggestion: needs a way to update scientists' study information, to see if research is still actively ongoing.
- Question: How to quality control the information? Not a lot of restrictions on data submission, most submissions are from researchers affiliated with universities, tribes and non-profits.

B) Great Basin Metadata Server

- Search in a similar way for metadata records
- More powerful searching tool, at the federal level
- Searches 29 metadata clearinghouses

C) Participants and Experts Database

- Resource that allows you to find experts in a given field and gives contact info with research interests

D) Consortia Database
- Gives information on ~70 different interdisciplinary partnerships with contact info, mission statement and website address
- The California Pika Consortium is a logical group to add to the database
- Contains "the brain" that networks agencies with different consortia

E) Great Basin Bibliography

Darlene McGriff - California Natural Diversity Database (CNDDB)
- Natural Heritage Program that tracks species locations in CA
- Data refresh occurring this week and all pikas in California will now be mapped as the newly-designated single subspecies (*O. princeps schisticeps*).
- Pika Locations from: MVZ specimen records, historical records from early 1900s, Craig Moritz (Grinnell resurvey project), et al.
- Presumed extant is the default designation for an occurrence until information exists that the species is extirpated from the site
- Observations of pikas (or other species tracked in CNDDB) may be submitted on the CNDDB form or in other formats, including electronic spreadsheets. Information on what, where, and when animals are seen are the essential minimum fields (and more information, per the CNDDB form, is preferred). Data should be as specific as possible and contact information for the observer should be provided.
- Data owners can request that their data be suppressed from general public, but government will be able to see full detail. Suppression is at the quad level.

Kristi Fein- BIOS
- 650 datasets in BIOS
- BIOS is different than CNDDB in that CNDDB has one additional level of oversight (more accurate)
- Consider: Develop a pika dataset to input into BIOS
- Positive Locations:
    - Lassen
    - Rob Klinger- says he saw pikas in the Marble Mountains in early 1980s
- Connie Millar listed apparent gaps in pika records within the general geographic range of the species in California, or outside the designated range but in apparently suitable habitat. These areas should be targeted for survey efforts to determine whether pikas are present:
    - Northwestern CA
    - Northern Sierra
    - Warner Mountains and Modoc Plateau

    - Inyo Mountains and SW Great Basin Ranges (Glass and Sweetwater Mountains) – apparently there are pika sightings in the Sweetwaters, but they're not yet in CNDDB
    - Lake Tahoe Basin to Bridgeport Basin in Alpine County (Rob Klinger and DFG have field sites there this year)
- Discussion:
    - The Consortium should encourage DFG to host a website that can track pika records (possibly through BIOS) and allow the public to submit pika sightings online. (Similar to an existing site on the DFG website for Sierra Nevada red fox).
    - Point of contact: Pikanet (Chris Ray)?
    - Shay Wolf– need to focus on gaps where there are no records at all, and resurveys where there is historical information but no current information.
    - Scott Osborn- BIOS points can be symbolized by date to distinguish historical vs. current record.

Connie Millar- Surveying Spatial Distribution: Developing a Standard Rapid Assessment Method for American Pika

- Wide range of observation types/quality have been available (citizen-science, layperson observations, anecdotal sightings by biologists, ranging up to intensive studies by experts)
- Connie's initial thought for the meeting was to recommend a set of methods for observational studies all along this continuum
- A more realistic goal is to solicit opinions about appropriate standards along the spectrum and revise protocols after the meeting
- For rapid assessments: relatively opportunistic, may not include repeat visits. Rob: rapid assessments may be biased to hear/see animals – CM disagrees
- Some existing protocols include Connie's protocol, the "Pikas in Peril" NPS protocol, and others.
- Includes indirect sign (pellets, urine)
- Rapid, spatially-extensive methods:
    - Site designation (how large, boundaries, distance between sites)
    - Timing (season, how long on site)
    - Scoring of sites (currently occupied, likely occupied, once occupied/currently uncertain, no current pika sign)
    - Examples with designation classes:
        - See a pika = Currently Occupied
        - Hear a pika = Currently Occupied
        - Green haypiles = Currently Occupied (Lyle Nichols: What about interactions with Bushy-tailed Woodrats? May lead to confusion in less experienced observers. CM: Agreed, may need interpretation by experienced observer in areas where woodrats

occur. LN has used the presence of pencil-diameter sticks as an indicator for non-pika activity. Need to include this in guidance on standard methods; include photodocumentation of haypile-only observations. Acknowledge uncertainty and need for follow-up on interpretation in database. Other criteria should be included in a "Currently Occupied" designation (e.g., lots of fresh pellets)

- Older haypiles: "Likely Current, but Not Definitive"
  What is current? Likely occupied this season.
- One-year-old haypile: CM documented the haypile as 1 yr old via photos but it looks several to many years old. Determining time scale is very difficult. Need the best multiple indirect signs to verify.
- In open arid environments, pellets can persist for 40 years.
- Pellet Ages
  - Crush Test= if you crush them, fresher pellets hold together better and contain 0.5-1mm fibers inside. Older pellets don't hold together as well, and lack discernable fibers.
  - Fresher=Lighter colors, greener, mounded
  - Older=White coloration, mold present
  - Action Item for CPC: Post pictures on website to better define age of pellets.
    - Need to include scale reference in photos and comparison to other species' pellets that pika pellets could be confused with.
    - Report pellet count at reported site, to help determine number of pikas present.
- Urine Post Ages:
  - Older: "white out", has flakey edge
  - Fresher: urine post has smooth edge

Site Recording Discussion

- Patch size varies
- Dispersal (3-5 km)
  - 3 Levels
    - 50 m = basic unit/animal
    - 3 km distance = deme
    - topological feature (canyon/mountain)

Mackenzie Jeffress: National Park Service

- generally most points >50 m apart
- 100 sites/park, revisit 50 next year
- early and late season surveying

- must define site use vs. site occupancy if there is movement between patches within a season
- CM: what to do with multiple observers in one survey, and how long to wait at a site (30 min?)
- MJ: one person surveys for 15 min, then stop and the next person surveys and then compare.

Urine Differences by region and species

- LN: in Bodie Hills, pika whitewash is hard to find.
- CM: Red lichen forms around *Neotoma* sp., but not around pika urine.

Recording Vegetation Present at Sites:

- CM hesitant at accuracy of recording percent cover but a species list would be interesting

Seasonality/Time of Day

- MJ: start surveying earlier rather than later. In the lava beds, focusing on indirect sign. Early morning and evening is best.

Temperature Logging Protocol Needed

- Forefield below the talus is significantly colder than the rocks
- Complex microclimate
- Joseph Stewart: looking for a single place to place a temperature logger to compare occupancy. CM: suggests haypile or rock perch.
- Bob Westfall: The eastern Sierra is not warming as fast as the W. Sierra (no compressional warming in the eastern Sierra)

Rob Klinger and Toni Lyn Morelli - Monitoring Temporal Status of American Pika Populations: Developing a Standard Approach

- Occupancy modeling (OM): goal of recording absences as well as presences.
- D. MacKenzie wrote Occupancy Estimation and Modeling
- Basic tenets of Occupancy Modeling (OM)
  - From population of S sampling units, s are selected and surveyed for species
  - Units are closed to changes in occupancy during a common "season"
  - Units must be repeatedly surveyed within a season (works best if there is very little time between observations) – this is CRITICAL but often not done.
  - Units may be surveyed over multiple seasons
  - 1=occupied, 0=unoccupied. Ex. 101 (surveyed 3 times, animal was observed at visits 1 and 3, but not at visit 2)
  - Occupancy can be based on visual or auditory cues,

    - ** each visit needs to be independent of the 1st visit! Can be an issue if you are using sign, as this possibly/likely would not change between visits.
- Single season model
    - Two layers:
        - true presence/absence
        - observed data conditional upon species distribution
    - Uses likelihood approach
- Multiple season data can be used to look at probabilities of population extinction/colonization
    -
- State-space approach
    - Where the species was not detected
    - Advantages: Can be used for finite/small populations
- Covariates
    - Season-Specific
    - Survey-Specific
    - Occupancy and detection probabilities can vary
- OM Assumptions:
    - Closure: Units are closed to changes in occupancy during a common 'season'
    - Surveys are independent
    - No unmodeled heterogeneity
    - Species identified correctly (no false detections)
- If occupancy changes:
    - If species occupies the patch at random, occupancy parameter relates to probability the patch is *used* by the species.
- A Second Method: Removal Method
    - Works well with sign

- Metapopulation Dynamics
    - OM can be used for direct probabilities of P/A
- Multiple Species
    - 2- Species, where one species is used as a covariate.

Rob Klinger - Sampling Design for estimating Density, Occupancy and Habitat Assoc. of Alpine Mammals in the Sierra Nevada and White Mountains

1) Outline:
    - Background
    - Overview of Process of where we are now
    - Outline of pilot study

2) Huge gap in Alpine Section of Sierra Nevada
    - Remote sensing data
    - Climate data
    - Transects
    - Habitat Sampling
    - Exclosures
    - Seeding

3) Lack of data on demography and population dynamics

4) Extensive vs Intensive surveys
    - Extensive good for generality, but not for demographics
    - Intensive not good for generality but good for demographics

5) Mark-recapture
    - Too impractical with pika
    - Mark-resight with ear tags more practical with pika

6) Pilot study
        - Need to test multiple protocols
        - Test random transects vs. routes and established trails
            - Random transects/points were too impractical
        - Occupancy estimation = 65% points occupied
        - Occupancy, 3-4 visits per point was adequate
        - Rangewide and Regional Abundance Estimates:
            - Density in White mountains 3x greater than Sierra Nevada
        - Occupancy and Patch Abundance
            - 55% of sites unoccupied by any species

7) Sampling Issues Still to be Resolved
    - Bias analysis
    - Tradeoff between number of point locations and repeat surveys
    - Synchrony in spatial variation in abundance?
    - Microhabitat sampling

8) Current Methods
    - Rangewide and regional density and habitat use
        - 24 variable distance line transects
    - Occupancy local and patch scale density and habitat use
        - 180 variable distance point count locations

9) Questions:
CM: How have you determined closure?
RK: Ten day sampling period accounts for that, sampling occurs over a short period of time

CM: You haven't addressed seasonality.
RK: Not as important for pika, but for other species, could be more of an issue.
CM: How do you deal with snow year and time of start of season?
RK: Time of start of field seasons is adjusted for differences in weather each year.

Chris Stermer: Is there any value in using audio recorders or playback machines in surveys?
RK: Plans to try that in the future.
CM: What are the best times of day to record?
RK: Within a few hours of sunrise.
CM: They are more active in the evening around Bodie

CS: How to appropriately incorporate all of theses studies into land managers' hands? What types of data do agencies need?
CM: From the Forest Service's perspective, questions such as whether assisted migration will be appropriate.

Sara Stock (NPS): What habitat features are available that cause pika to be more resilient?
CM – This is a question of refugia areas – and networks of interconnected patches – could those be managed differently.
RK – Look to Inyo NF example.

Janet Foley, Deana Clifford, Katryna Fleer, Toni Lyn Morelli - CPC Pika Handling and Anesthesia Protocols

- Justification for getting the data we need to collect:
  - Fewer safe drugs available to use on lagomorphs
  - Pikas susceptible to heat stress and idiosyncratic drug reactions?
  - As the pika becomes a more regulated species (e.g., listed at state or Federal levels), the bar for what we should and can do for pika will only get higher and higher
  - Urgent need for data require hands-on technique: genetics and disease studies

- Considerations:
  - Safety
  - Efficacy: analgesia (relief from pain), sedation, immobilization, anesthesia for handling and minimizing stress, pain, and suffering
  - "Easy" to deliver
  - Non-controlled substances (DEA)
  - Expense

- Isoflurane

- Rapid acting inhalant "ether"-class anesthetic with some analgesia, already used in pikas
- Generally requires administration via calibrated vaporizer (but has seen application using a jar with a cotton wick in the field)
- Typically used with premedication sedative
- Suppresses swallow reflex, profound respiratory depressant EASILY overdosed, rare malignant hyperthermia (death)
- Very rapid induction and recovery, inexpensive/not controlled

- Portable Vaporizer, should we use this in the field? It's heavy, but very precise dosage of drug. (Deana has one ~$5000)
- Chris Ray: I put pikas in a clear container while I anesthetize them. If I cannot rotate the chamber, then I cannot judge the pika's response to anesthesia and whether the pika has received a dosage appropriate for handling. The amount of anesthetic required appears to vary with ambient conditions and among individuals.

- Dexmedetomidine
  - Injectable sedative (not anesthetic); only sedates unless additional drugs are used
  - Analgesic – has pain relief properties
  - Its effects an be reversed quickly with atipamezole
  - No respiratory depression, peripheral vasoconstriction reduces risk of hyperthermia
  - Given as injection, not controlled, relatively expensive, but small dose needed (Deana Clifford: ~$100/bottle, 1 bottle could last dozens of animals in a season)

  CR: invasive-putting collars on neck, retraorbital bleeding
  CM: Sexing is also complicated, can be very invasive
  RK: Should pikas be anesthetized to insert an ear tag?
  CR: Depends on ear tag; some require more handling than others and do require the animal be sedated or anesthetized

- Ketamine
  - Injectable dissociative anesthetic, (hallucinogenic in people)
  - Optimally used with sedative (xylazine or valium), quite safe, delivered by injection
  - Relatively prolonged (rocky) recovery, controlled substance (drug of abuse in humans), inexpensive.

- Xylazine:
  - Sedative or anesthetic, analgesic
  - Can cause vomiting and heart rate depression (reduced blood pressure)
  - Delivered by injection, inexpensive, not controlled

- Plans
  - Goal: Develop optimal anesthesia protocols for members of CPC and Western Pika working group
  - Randomly assign pikas as available over the summer in collaborative studies to 3 different anesthetic regimens (isoflurane, dexmedotomidine, dexmedetomidine combined with low-dose ketamine)
  - Anesthetize, evaluate anesthesia, perform mildly noxious stimuli (exam, bleeding, ear tag, collar), recover and monitor
  - CR: Note Itah 2003 paper talks about Isoflurane with propylene glycol.
  - Question: Where will this happen?
  - JF: In CA in conjunction with other researchers already handling pika

- Feedback
  - Value and need for hands-on work, costs vs. benefits
  - Importance of: safety, cost, non-controlled, route, need for other equipment
  - Input into experimental design?
  - Goals for handling?
  - CR: if n=only 12 pikas for the study, sample size is too small to say much about pika handling. Hopes sample size will be larger in reality.
  - DC: We are collaboratively doing this study; not much funding has been established. N=12 is the minimum. We would like to have more animals, maybe 10 per treatment. Portable vaporizer would be much more practical than carrying a heavy one into the field.
  - CM: Study impact needs to be distributed over many study sites and a large area.
  - CR: It might be helpful to have someone present that has a lot of pika handling experience, and I am available.

TLM: What would you do with an animal in hand? Are we leaving anything out?
- LG: Conductivity/fat testing can be done relatively easily, fecundity data
- CM: Body mass
- C. Stermer: Have you considered capture myopathy?
  - JF: We have CR's many years (over 750 animals) of experience and her use of mark-release with eartags/collars that have/will be used to verify the safety of the techniques.
- C. Stermer: Perhaps doing a longer study throughout the season?
- TLM: There isn't funding to do a longer term behavioral study.
- DC: This is only a pilot study, to find the best option available.
- As or if listing progresses the bar gets set higher for handling and care and currently we have little data.

Deanna Clifford- Diseases and the info you can get from not handling the animal

- Different levels of health data you can get, invasive to non-invasive.
- Climate change can change vector communities and disease emergence.
- There is no data on what diseases and parasites pika in CA have been exposed to.
- CM: Important point: sympatry with *Neotoma*, and collapse of *Neotoma* and plague.
- Need for dovetailing health research with pika research
- Janet – Ab, PCR, culture, need for identifying the fleas from pika
- Send JF your ticks!!

Wrap Up Summary

- Need to post on CPC website:
    - Meeting notes and report
    - CM's pictures of rating pellet freshness
    - Science Locator link: http://jester.wr.usgs.gov/scilocator_ims/viewer.htm
    - Great Basin Research and Management Partnership website: http://greatbasin.wr.usgs.gov/GBRMP/charter.html
    - Location of 5 Gaps in pika research in CA as listed above
- Sending out JF's health protocols on listserv (allows for more internal distribution) CM: We could include cautionary language, and send out to pika researchers.

Unmet Needs-

- Need for Citizen Science project to get off the ground
    - Conference call in July for citizen science?
    - R. Callas- perhaps multi-state grant would be able to work (SWG with CA/NV/CO)
    - S. Wolf- volunteered to be the coordinator/liaison between agency people.
- Shaye Wolf– big need for protocols/recommendations for placing recording thermometers
- Mackenzie – would like to see more coordination with Teton pika group.

California Pika Consortium

Workshop: Developing Methods for Spatial and Temporal Monitoring of American Pika in California

DRAFT GOALS & AGENDA

July 1, 2010
9:30am – 4:30 pm
California Department of Fish & Game
Sacramento Wildlife Branch Office
1812 9th Street, Sacramento, CA

Goals:

1. Present updated map of American pika sites presently documented in California and assess quality of input;
2. Develop a standard rapid-assessment method for use by CPC scientists to survey spatial extent of recent populations of American pika (suitable also for similar small montane mammals) in California;
3. Develop a standard method for use by CPC scientists to monitor temporal status of select populations of American pika (suitable also for similar small montane mammals) in California;
4. Identify key gaps in the California extent of spatial and temporal mapping of American pika, and highlight priority regions for upcoming survey and monitoring;
5. Present current developments on animal handling methods for American pika, opportunities and challenges.

Conveners & Contacts:

Deanna Clifford, California Department of Fish & Game, dclifford@dfg.ca.gov
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Scott Osborn, California Department of Fish & Game, sosborn@dfg.ca.gov

Meeting Coordinator:

Sara Lowry, California Department of Fish & Game, slowry@dfg.ca.gov

Remote Access:

A conference call line will be available for remote participants. We are working on setting up a web-based videoconference to share presentations.

RSVP: Please RSVP to Sara Lowry by Tuesday June 22 if you plan to attend. Remote participants should provide email address, and a primary and alternate phone number.

Preliminary Agenda:

9:30-10:00am	*Welcome, Introductions, Meeting Goals & Products* Scott Osborn, California Department of Fish & Game
10:00-11:00am	*Updated Map and Databases for American Pika Sites in California; The Science Locator Project* Sean Finn, US Geological Survey
11:00am-Noon	*Surveying Spatial Distribution: Developing a Standard Rapid Assessment Method for American Pika* Connie Millar, USDA Forest Service
Noon-1:30pm	*Working Lunch* (Sandwiches ordered & brought onsite or bring your own) Continue discussions to develop rapid assessment method
1:30-3:00pm	*Monitoring Temporal Status of American Pika Populations; Developing a Standard Approach* Toni Lyn Morelli, University of California, Berkeley Presentations & discussion on occupancy models: Rob Klinger, US Geological Survey Toni Lyn Morelli, University of California, Berkeley
3:00pm-4:00pm	*Updates on Methods for Handling American Pika in Native Environments; Opportunities and Challenges for Research and Monitoring* Deanna Clifford, California Department of Fish and Game Toni Lyn Morelli, University of California, Berkeley
4:00-5:00pm	*Wrap-Up and Follow-Up* Toni Lyn Morelli with other CPC Conveners

Note: This agenda is subject to change. Updates and additional information will be sent to CPC members around June 14.