Distribution, Geomorphology, & Thermal Relationships of American Pika in the Sierra Nevada & Great Basin

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Photo: A. Shcherbina
Geographic Inventory: Sierra Nevada & Great Basin

Site Occurrences confirmed by pellet vouchers

- **76% Current** pika seen, heard, and/or green veg in haypile
- **19% Modern** fresh pellets, fresh urine sign, recent haypile
- **5% Old** pellets white & decomposing; urine sign chalky, no other sign

519 Sites ≥ 50m apart
172 Demes ≥ 3km
95 Regions 5-15 km
12 Mountain Ranges ≥ 15 km

- a. Sierra Nevada North
- b. Monitor Pass Range
- c. Sweetwater Mtns
- d. Wassuk Range
- e. Bodie Mtns
- f. Sierra Nevada Central
- g. Glass Mtn Range
- h. Sierra Nevada South
- i. White/Inyo Mtns
- j. Central NV Ranges

Survey Form: [http://www.fs.fed.us/psw/programs/snrc/staff/millar/](http://www.fs.fed.us/psw/programs/snrc/staff/millar/)

*Millar & Westfall in press, AAAR*
Elevation & Aspects in the Sierra Nevada & W Great Basin

Elevation Range
1827m – 3968 m
(5593’ – 13,020’)

Compare to historic range
2500m considered low

E.g. Grinnell & Storer, 1924
2350m
18% of our sites are lower

Slope aspects

Lundy Cyn, 7608’
White Mtn Plateau, 12,752’
Geomorphologic Relations of Pika Sites

85% Rock-Glacier & Related Rock-Ice Features (RIFs)
14% Non-RIFs (eroding slopes, rockslides, moraines)
1% Anthropogenic (rock wall, house foundation, mine tailing)

RIFs support optimal forage for pika in arid mtns
Persistent RIF seepage = diverse wetland forefields

RIFS in the Sierra Nevada
Millar & Westfall, 2008
Quaternary International
Thermal Environment Studies

Collaring Pika with iButs
Morelli & Clifford

Intensively Instrumenting Taluses
RIFs Buffer Temperatures Relative to Ambient Climate

**SUMMER**: Pika can escape heat by retreating to matrix

Talus Matrix: Temps Low & Buffered Relative to Surface

Positive Lapse Rates: Coolest at Low Elevations both Talus Surface & Matrix!

Minimum Temps, Surface

HighTalus

Low Forefield

Daily Temps, Surface

Daily Temps, Matrix

Chart showing temperature trends over time.
Winter Talus Surfaces Are Warmer

Haypiles are at surface; Warmer for pikas in winter?

Conness Rock Glacier (11,786’)