

Readme.txt. Hall 2018. Data from “Behavioural plasticity modulates temperature-related constraints on foraging time for a montane mammal”. *Journal of Animal Ecology*

File generated on 31 Oct., 2018 by Embere Hall (emberehall@gmail.com)

General information

1. **Title of dataset:** Hall, E. 2018. Data from “Behavioural plasticity modulates temperature-related constraints on foraging time for a montane mammal”. University of Wyoming Research Data Repository.
2. **Authors:** L. Embere Hall¹ and Anna D. Chalfoun²

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3. **Dates of data collection:** July – early September, 2013-2015
4. **Geographic location of data collection:** Alpine and subalpine habitats on the Bridger-Teton National Forest in the central Rocky Mountains of western Wyoming, USA. Elevations ranged from 1713 m – 4211 m.
5. **Funding sources that supported data collection:** The Wyoming Game and Fish Department, in cooperation with the Meg & Bert Raynes Wildlife Fund, University of Wyoming Office of Research, Program in Ecology, and Zoology and Physiology Department, and Louise & Ralph Haberfeld, funded our data collection efforts.

Data access

1. **Licenses/restrictions placed on the data:** In accordance with the University of Wyoming Research Data Repository, these data are available under a creative commons license.
2. **Publications that use the data:** Hall and Chalfoun. *In press*. Behavioural plasticity modulates temperature-related constraints on foraging time for a montane mammal. *Journal of Animal Ecology*
3. **Links to other publically accessible locations of the data:** None
4. **Relationships to ancillary datasets:** Publications that reference related datasets include

Hall, E. and A. Chalfoun. 2018. What to eat in a warming world: Do increased temperatures necessitate hazardous duty pay? *Oecologia*. 186: 73-84 DOI: 10.1007/s00442-017-3993-2

Jakopak, R., E. Hall and A. Chalfoun. 2017. Organizing the pantry: cache management improves quality of overwinter food stores in a montane mammal. *Journal of Mammalogy*. 98: 1674-1681 DOI: 10.1093/jmammal/gyx124

Hall, E., A. Chalfoun, E. Beever and A. Loosen. 2016. Microrefuges and the occurrence of thermal specialists: Implications for wildlife persistence amidst changing temperatures. *Climate Change Responses*. DOI: 10.1186/s40665-016-0021-4

5. **Were the data derived from another source:** No
6. **Recommended citation:** Hall, E. 2018. Data from “Behavioural plasticity modulates temperature-related constraints on foraging time for a montane mammal”. University of Wyoming Research Data Repository.
7. **Keywords:** adaptive capacity; behavioural flexibility; climate variability; food cache; foraging behaviour; global warming; pika; reaction norm

File overview

1. **File list**
 - a. 1.TemperatureAvailableForagingTime.csv – data required to analyze the relationship between mean daytime temperature (°C) and the proportion of hours within American pika (*Ochotona princeps*) estimated thermal tolerances [Line 1 of Table 1 in Hall and Chalfoun *in press*]
 - b. 2.NocturnalFoodCollectingActivity.csv – data required to quantify the relationship between mean daytime temperature, the number of hours $\geq 25^{\circ}\text{C}$, and nocturnal food-collecting activity among American pika [Line 2 of Table 1 in Hall and Chalfoun *in press*]
 - c. 3.PopulationAndIndividualResponseToTemperature.csv – data required to measure population and individual activity in response to temperature among American pika [Lines 3 and 4 of Table 1 in Hall and Chalfoun *in press*]
 - d. 4.n.by.vol.csv – % nitrogen in American pika haypiles, relative to the volume of each pile (m^3)
 - e. 4.BootstrapPctNitrogen.csv – coefficient estimates from each of 504 model iterations that tested the relationship between individual flexibility in foraging activity and % nitrogen cached [Line 5 of Table 1 in Hall and Chalfoun *in press*]
 - f. 5.BootstrapThermalStress.csv – coefficient estimates from each of 504 model iterations that tested the relationship between individual flexibility in foraging activity and exposure to temperatures $\geq 25^{\circ}\text{C}$ [Line 6 of Table 1 in Hall and Chalfoun *in press*]
2. **Relationship between files:** These files contain the data necessary to recreate the analyses described in Hall and Chalfoun *in press*. Behavioural plasticity modulates temperature-related constraints on foraging time for a montane mammal. *Journal of Animal Ecology*. The specific analyses that each file supports are summarized in Table 1 of the publication.
3. **Additional related data that are not included in the current package:** None
4. **Are there multiple versions of the dataset:** No

Methodological information

1. **Description of methods used to generate the data:** Please see a full description of data collection, management and analysis methods in Hall and Chalfoun *in press*. Behavioural

plasticity modulates temperature-related constraints on foraging time for a montane mammal. *Journal of Animal Ecology*.

2. **Methods for processing the data:** Data generation and processing are described in Hall and Chalfoun *in press*. Behavioural plasticity modulates temperature-related constraints on foraging time for a montane mammal. *Journal of Animal Ecology*.
3. **Instrument or software-specific information needed to interpret the data:** None
4. **People involved with sample collection, processing or analysis:** Field and data support were provided by: C. Brown, A. Caron, S. Colligan, A. Courtemanch, D. DeLong, M. DeVivo, S. DuBose, S. Fagan, G. Fralick, S. Gaddis, C. Girard, M. Graham, M. Hall, T. Hall, J. Henningsen, R. Jakopak, T. Kepley, A. Mahoney, D. Miller, M. Miller, A. Ruble, C. Tappe, M. Wallace and B. Wise.

Field-specific descriptions

1. 1.TemperatureAndAvailableForagingTime

- a. iButton: Unique alpha-numeric code assigned to each temperature logger (Maxim Integrated Products, model DS1921G, accuracy $\pm 1^\circ\text{C}$, 0.5°C increments). Loggers were deployed within 5 m of each study individual's haypile to examine the relationship between temperature and pika activity.
- b. TempC.mean: Mean temperature ($^\circ\text{C}$) recorded on the surface of the talus during daylight hours (0700 – 2000 h)
- c. count25: Number of events in a 24-hr sample period during which the mean temperature exceeded estimated pika thermal tolerances (-5°C – 25.5°C)
- d. hrcount25: number of daytime hours during which the mean temperature was within estimated pika thermal tolerances (-5°C – 25.5°C)
- e. Prop: the proportion of daytime hours in which the mean temperature was within estimated pika thermal tolerances (-5°C – 25.5°C)

2. 2.NocturnalFoodCollectingActicity

- a. HaypileID: Unique alpha-numeric code assigned to each haypile
- b. h.u.sum.n: number of events during which a pika collected food at night. Pika activity was recorded with infrared-enabled trail cameras (Bushnell Trophy Camera, model 119435) deployed within 3 m of an individual's haypile during a 24-h period. Videos were coded using the software program JWatcherTM.
- c. TempC.mean: Mean temperature ($^\circ\text{C}$) recorded on the surface of the talus during daylight hours (0700 – 2000 h)
- d. hr.g25: number of daytime hours during which the mean temperature exceeded 25°C
- e. site: Unique two-character alpha code assigned to each study site

3. 3.PopulationAndIndividualResponseToTemperature

- a. HaypileID: Unique alpha-numeric code assigned to each haypile
- b. SampleHour: Hour (0-23) over which activity and temperature data are summarized
- c. tot.act.s: Number of events in which pikas engaged in activity at the haypile. This included haying, sitting, eating from the haypile, departing from the haypile and haypile maintenance.
- d. TempC.mean: Mean hourly temperature ($^\circ\text{C}$) recorded on the surface of the talus
- e. h.u.sum: Number of events in which pikas engaged in food collection or manipulation

- f. TempC.cen: Mean hourly temperature recorded on the surface of the talus, and centered on the population mean (i.e. $x_{ij} - \bar{x}_{\text{population}}$, where x_{ij} represented the temperature at measurement i for individual j)
- 4. 4.ny.by.vol**
- a. HaypileID: Unique alpha-numeric code assigned to each haypile
 - b. n.by.vol: % nitrogen / haypile volume (m³)
 - c. hrcount25: number of daytime hours during which the mean temperature was within estimated pika thermal tolerances (-5 °C – 25.5 °C)
 - d. Prop: the proportion of daytime hours in which the mean temperature was within estimated pika thermal tolerances (-5 °C – 25.5 °C)
 - e. site: Unique two-character alpha code assigned to each study site
- 5. 4.BootstrapPctNitrogen**
- a. intercept: intercept value for each of 504 iterations of a model that tested the relationship between individual flexibility in foraging activity and the % nitrogen cached
 - b. beta.plast: coefficient estimate for the effect of individual plasticity on the % nitrogen cached in each of 504 model iterations
 - c. beta.hrs: coefficient estimate for the effect of the amount of suitable foraging time on the % nitrogen cached in each of 504 model iterations
 - d. beta.inxn: coefficient estimate for the effect an interaction between individual plasticity and the amount of suitable foraging time on the % nitrogen cached in each of 504 model iterations
 - e. it: unique sequential number assigned to each model iteration
- 6. 5.BootstrapThermalStress**
- a. intercept: intercept value for each of 504 iterations of a model that tested the relationship between individual flexibility in foraging activity and the number of events ≥ 25 °C in which an individual was active
 - b. beta.plast: coefficient estimate for the effect of individual plasticity on the number of events ≥ 25 °C in which an individual was active
 - c. it: unique sequential number assigned to each model iteration