

## 2022 CSU Extension Internship Application for Campus-Based and Experiment Station Faculty and Staff

### Title: Small Mammal Communities as Indicators of Ecosystem Health in Light of Extreme Climate Events

- 1. Faculty mentor name, department, college, and contact information:** Dr. Lise M. Aubry, Fish, Wildlife, and Conservation Biology, Warner College of Natural Resources, [lise.aubry@colostate.edu](mailto:lise.aubry@colostate.edu)
- 2. Are there any other identified mentors (e.g. field-based Extension agent) associated with this project?**  
Karen Crumbaker, Ag/Natural Resources CSU Extension Larimer County, [crumbakm@co.larimer.co.us](mailto:crumbakm@co.larimer.co.us)  
Dr. Caitlin Wells, Fish, Wildlife, and Conservation Biology, Warner College of Natural Resources, [caitlin.wells@colostate.edu](mailto:caitlin.wells@colostate.edu)
- 3. In what region(s) will the student be working (county/region)?** Larimer County, Colorado State University Mountain Campus and its vicinity.
- 4. Please describe the proposed internship goals, scope, and objectives.**  
The western United States is on fire, with a record-breaking number of megafires that collectively burned more than 6.6 million acres of land. Extreme climate events (ECE) such as megafires - defined as those outside the range of typical weather fluctuations - are expected to become more frequent with ongoing climatic change. The ability of animal species to withstand increasingly common ECEs will be key to the long-term persistence of biodiversity in the Anthropocene. Although it has been widely recognized in recent years that behavioral plasticity will be key for animals to adapt to climate change, intraspecific behavioral responses to extreme environmental disasters, and the fitness trade-offs that are adopted in light of such events, have rarely been studied. The objectives of this project are to answer some of the following questions: how do hibernators adjust their behavior to cope with a decimated landscape post-hibernation? Is behavioral plasticity \*enough\* to avoid extirpation? How did the fire affect small mammal community abundance and how does this scale up to affect ecosystem health (e.g. prey abundance available to meso- and top-carnivores). Ryan Black, CSU 2021 Extension intern, has already established that two species of ground squirrels (i.e. the asocial golden mantled ground squirrel and the colonial Wyoming ground squirrel) adopt different foraging strategies and differ in their life history responses to the Cameron Peak fire. The new intern would leverage 5 years of existing data collected at the Mountain Campus pre- (2018-2020) and post-fire (2021-2022) to contrast reproductive rates, body mass gains, over-winter survival and abundance pre- and post-fire for these two species.
- 5. How was this applied research project identified?** Understanding how anthropogenic change, such as climate change and habitat fragmentation, affect mammal hibernator life history has been an integral part of my research program for the past 8 years (see [here](#)).
- 6. With which stakeholder group(s) will the intern work?** The intern will work with Colorado K-12 teachers and students, as well as CSU University educators, undergraduate, and graduate students that conduct research, teaching/learning, and outreach activities at the CSU Mountain Campus each summer. We are happy to engage beyond these groups with the help of our extension mentor.
- 7. What student learning outcomes do you anticipate and are there opportunities for professional development?** The selected student will have the opportunity to practice and master a number of field techniques (e.g. mark-recapture, pit-tagging), lab techniques (e.g. stress assays from fecal samples), research skills (this project will likely evolve into an undergraduate Honors' thesis), outreach and education (e.g. interventions for NR 220 Natural Resource Ecology and Measurements and BZ 340 Field Mammalogy classes).

8. **Do you have a specific mentor style that you would like to share with potential interns?** I adapt and tailor my mentoring style to the needs of the student. If they need constant feedback and require my presence at all times, I will be there for them. If they prefer independence, I will trust their ability and check in with them regularly without too much interference while ensuring internship goals are met and safety rules are applied.

9. **Are travel funds available? Opportunities to provide student assistance with housing?**

Lodging = \$1,032. i.e. 4 nights per week over 6 weeks at a negotiated rate of \$43 per night which includes lodging and a meal plan)

Gas reimbursement = \$356. i.e. 6 trips - CSU-Mountain Campus, 106 miles each, mileage rate = 56 cents per mile.

Note that we are prepared to secure matching funds to help with these expenses (e.g. FWCB summer internship program).