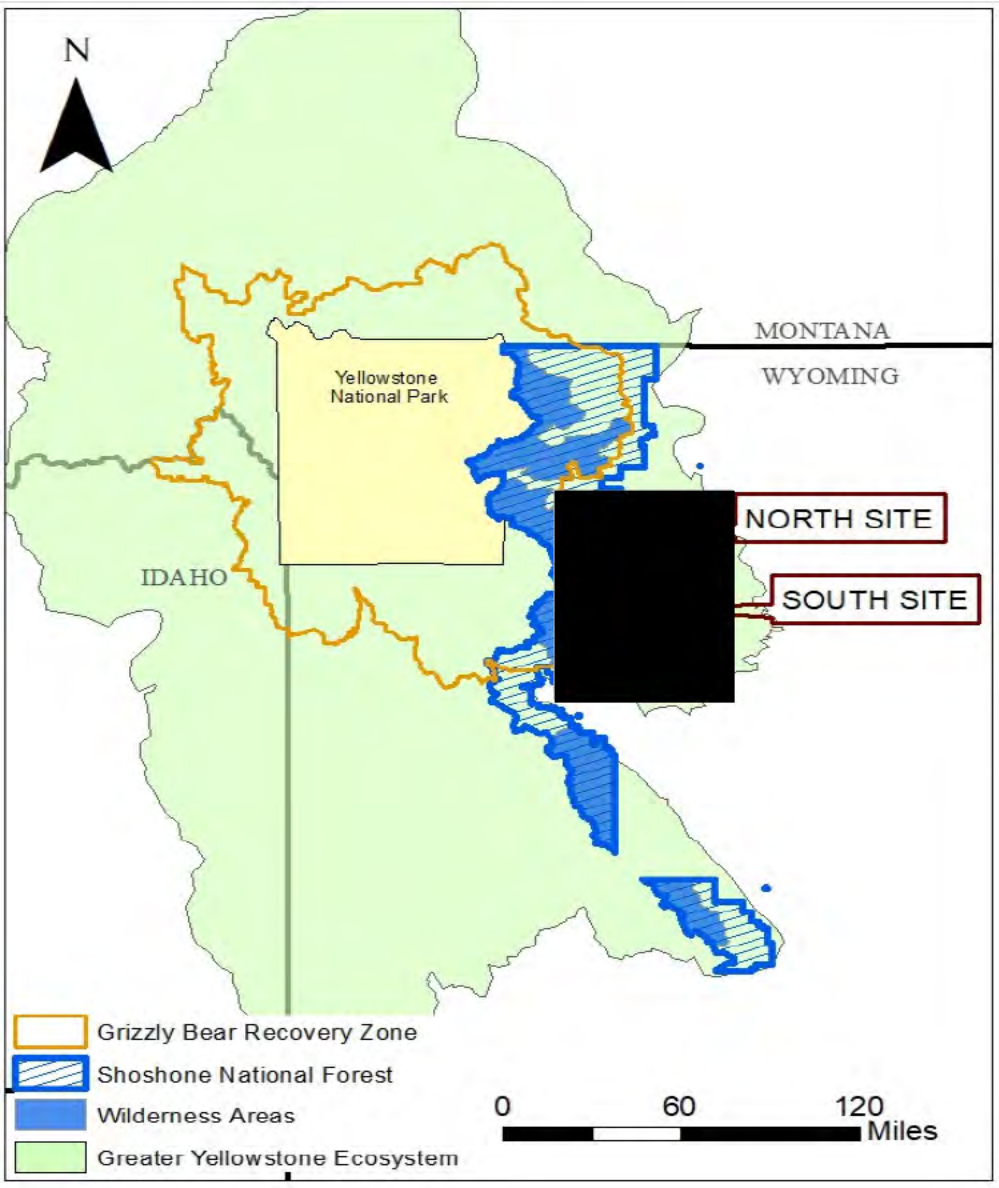
Multiple Food Sources for Grizzly Bears at Moth Aggregation Sites

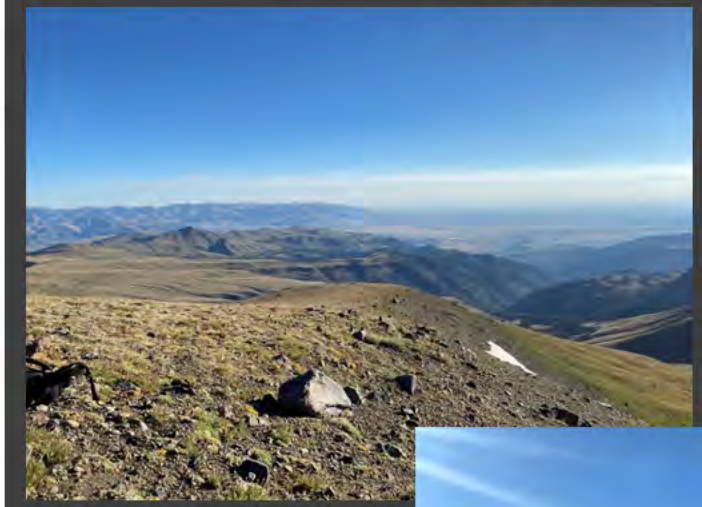
Katerina Lozano

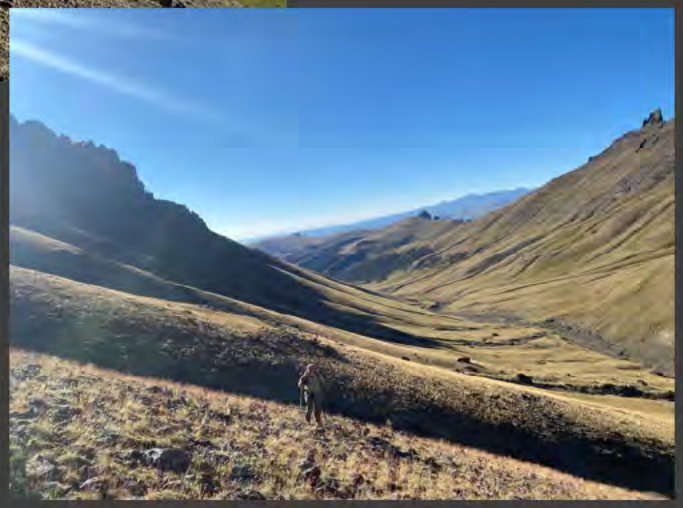
Main food sources for the GYE Grizzly Bear

Opportunistic omnivores


N
MONTANA
WYOMING
Yellowstone
National Park
NORTH SITE
SOUTH SITE
IDAHO
Grizzly Bear Recovery Zone
Shoshone National Forest
Wilderness Areas
Greater Yellowstone Ecosystem
0
60
120
Miles

Study Sites





- **Moth Site Diet Study (Nunlist findings)**
  - ACM 20%
  - Graminoids 33%
  - Forbs 19%
  - Roots and Tubers 27%

Nunlist, E. A. 2020. Grizzly bears and humans at two moth aggregation sites in Wyoming. Thesis, Montana State University, Bozeman, Montana

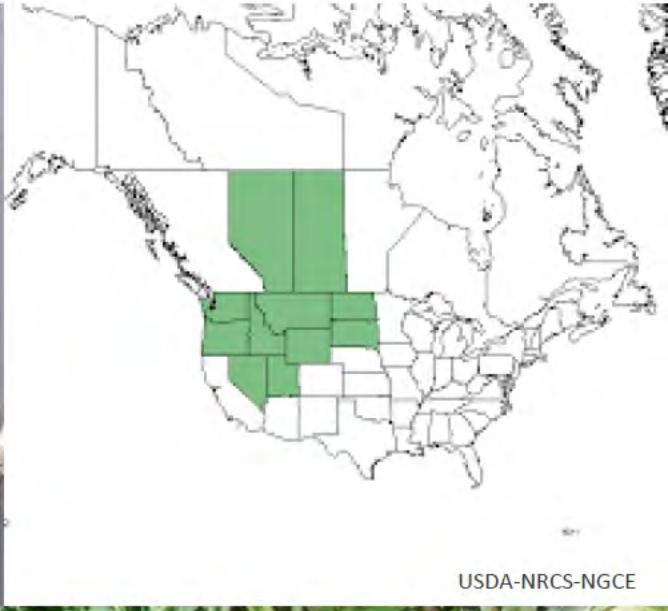
Source of Fat: Army Cutworm Moths

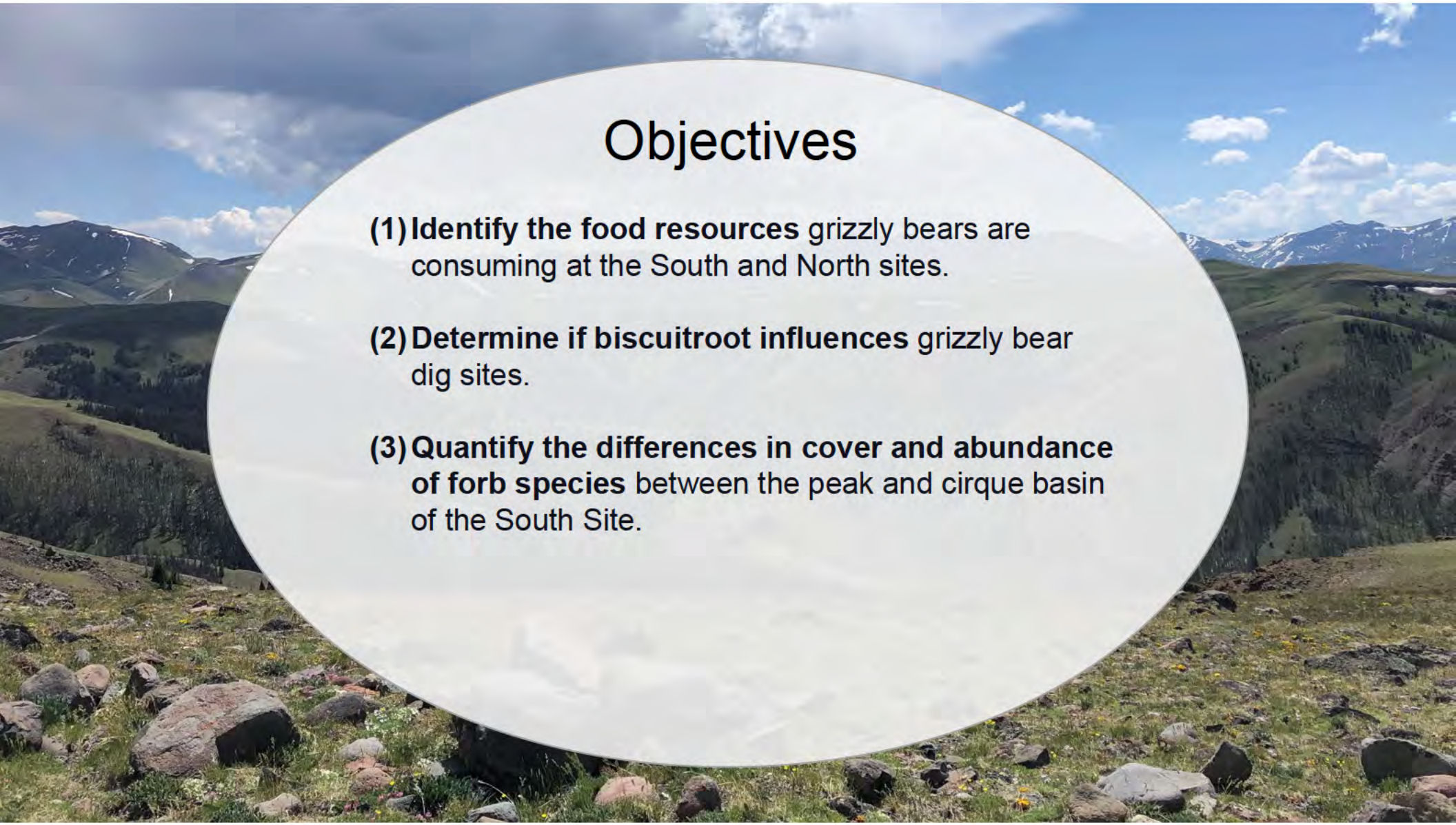
Heather Brown

Source of Starch:

Biscuitroot, *Lomatium cous*

- Perennial species
- Peak bloom mid-May
  - Alpine July and August
- Habitat: Dry, open, and rocky areas
- Not many calories, but provide ±30% starch





Objectives

(1) **Identify the food resources** grizzly bears are consuming at the South and North sites.

(2) **Determine if biscuitroot influences** grizzly bear dig sites.

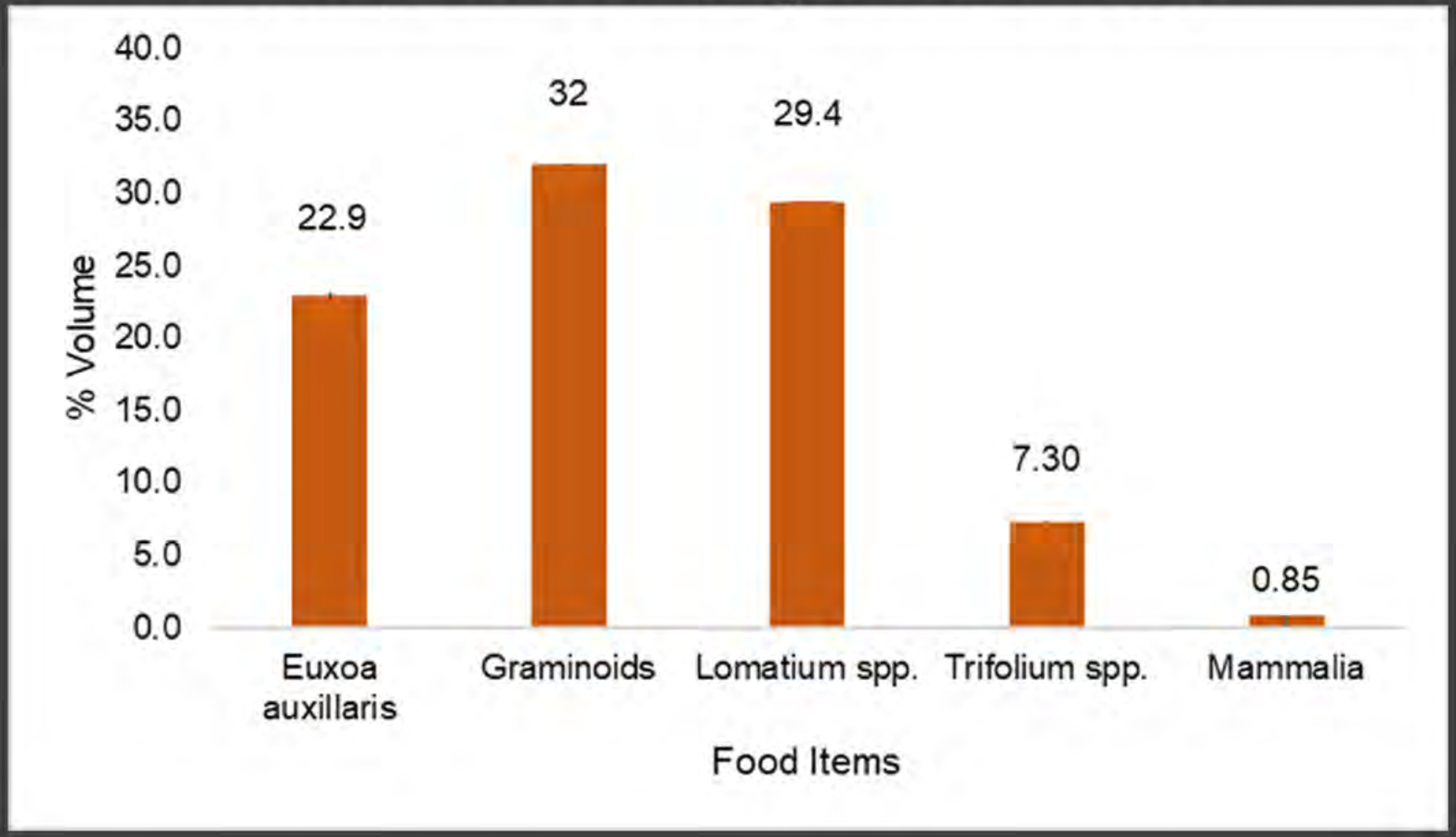
(3) **Quantify the differences in cover and abundance of forb species** between the peak and cirque basin of the South Site.

Objective 1

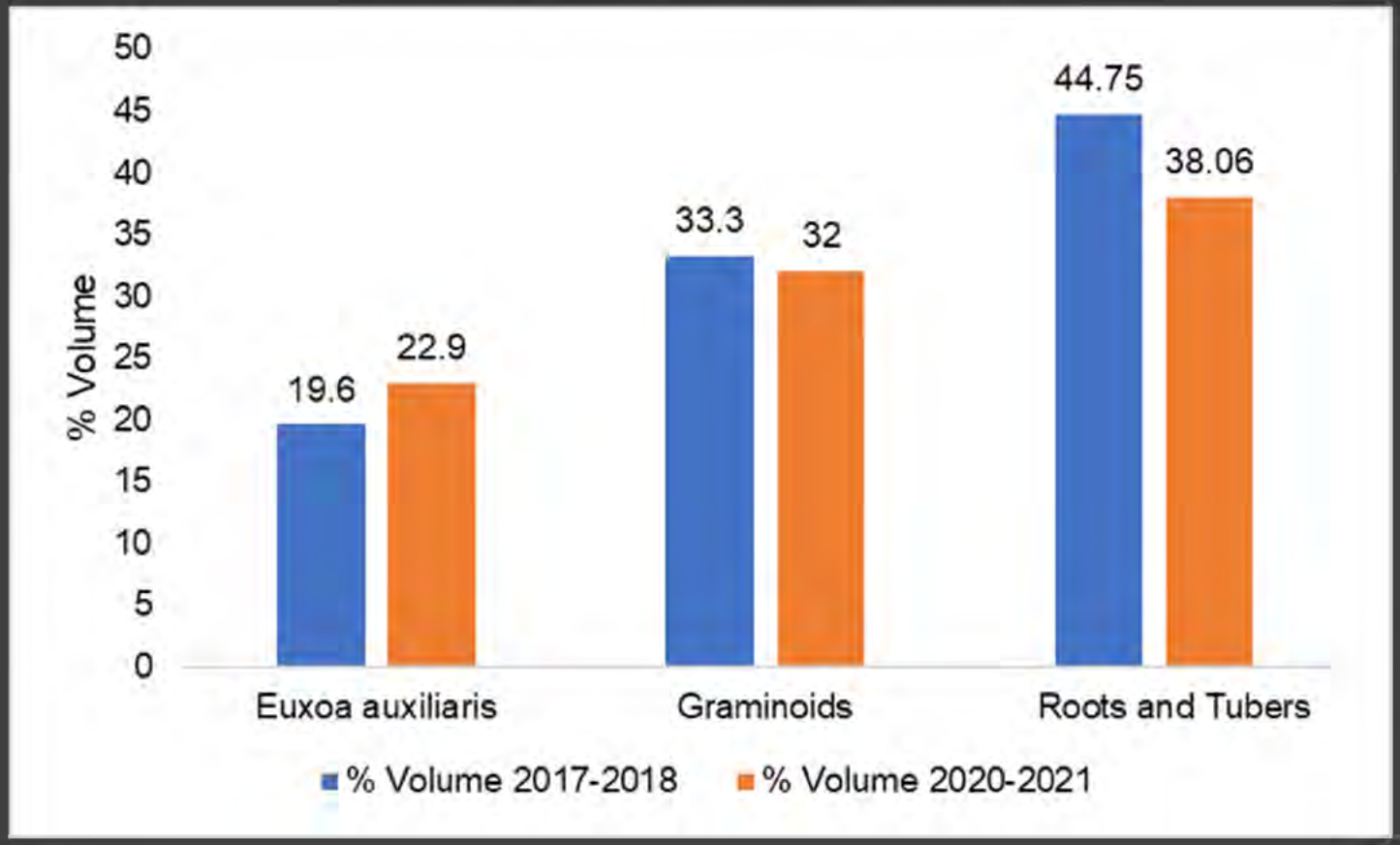
Data Analysis

- Recorded the percentage frequency and volume of each food item.
- Volume was visual, in proportion of scat.
- Compared our data with Nunlists study.

Results: Grizzly Bear Diet



Results: Volume



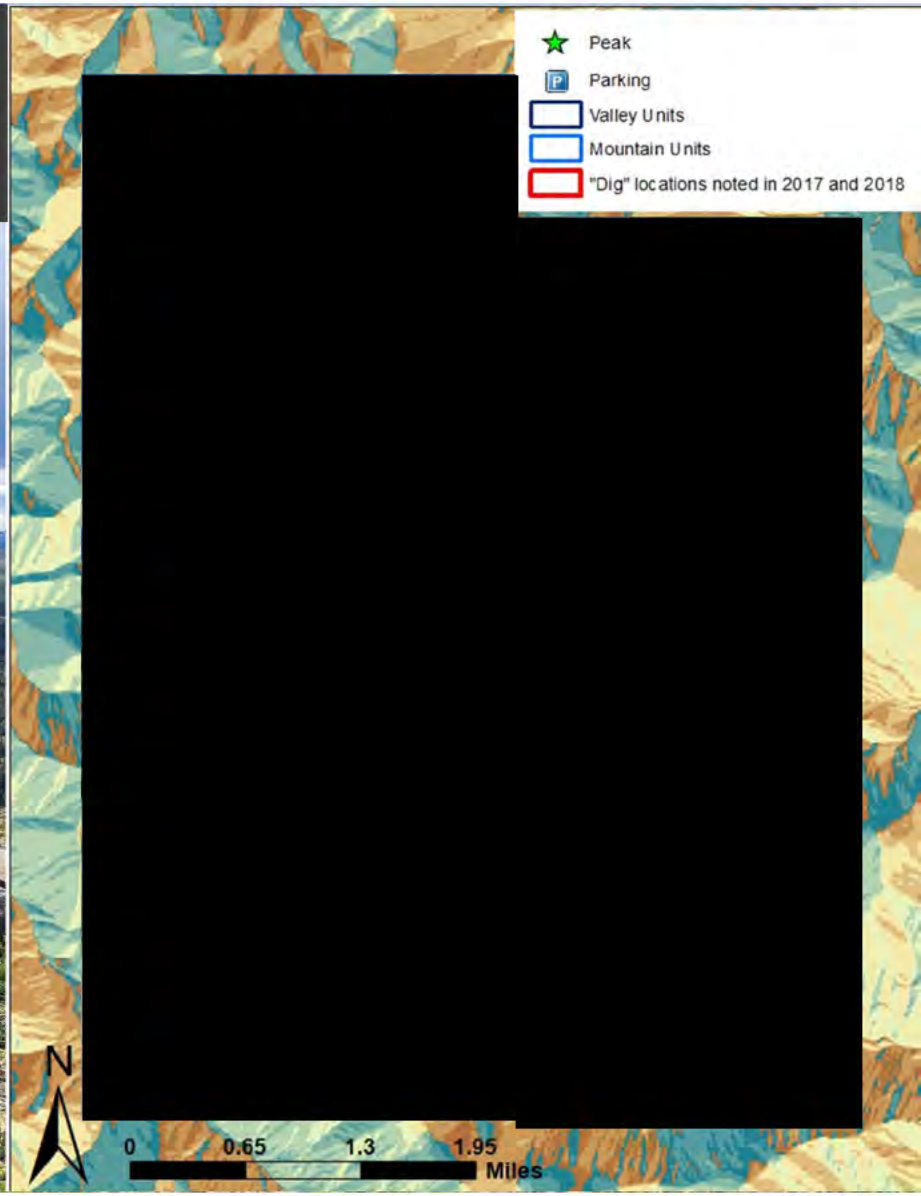
Objectives 2-3

Conducted vegetation surveys in 21 units with random sampling

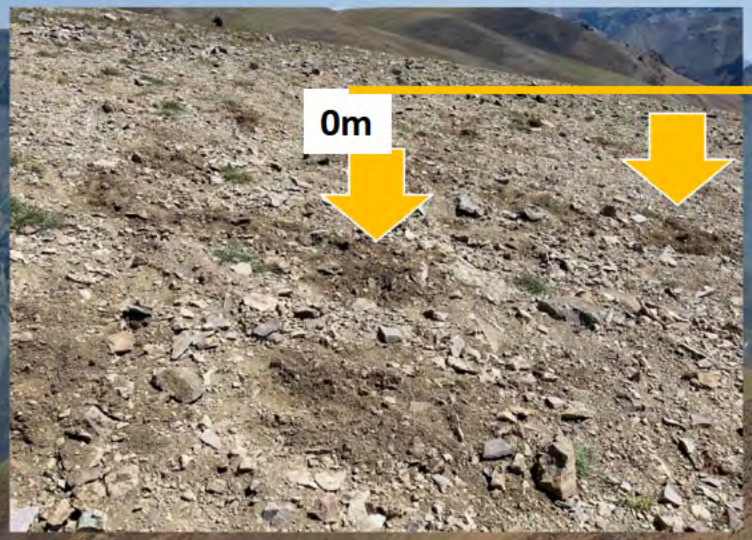
- Elevation range 3000 – 3900 m
- Alpine vegetation and barren landscape types

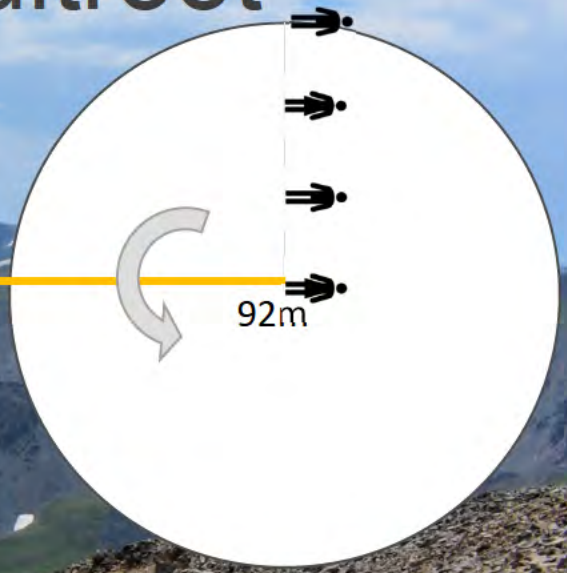
Within each unit, used stratified random sampling along 92 m transects, 5 quadrats per transect

- Peak n = 130
- Cirque basin n = 174



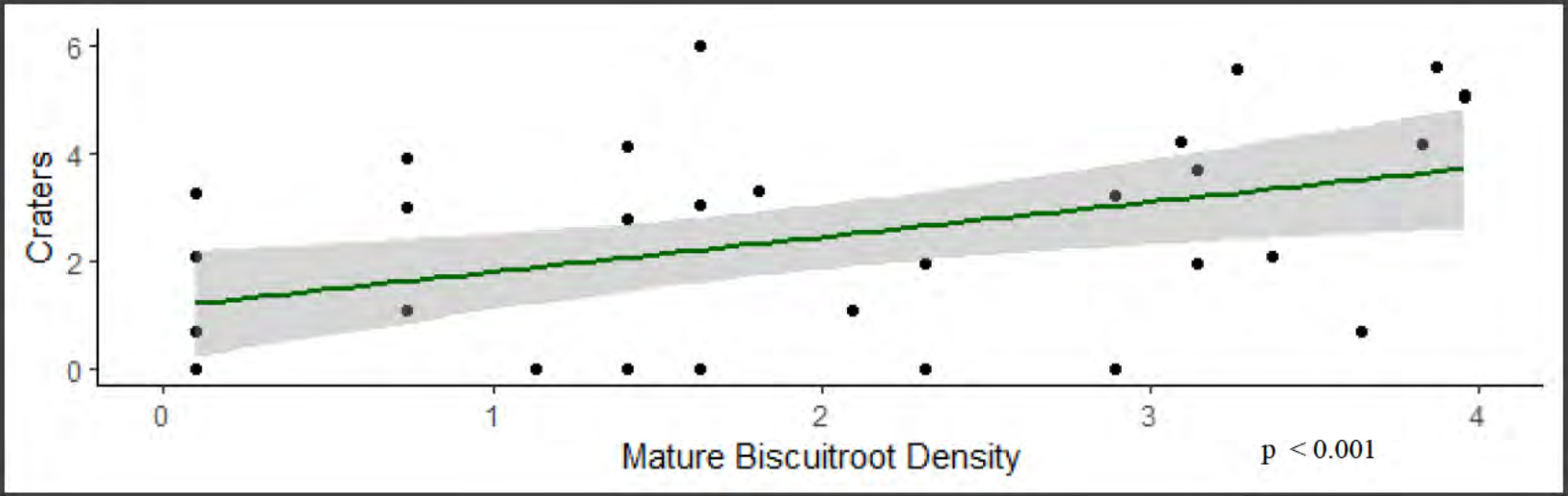
Bear Craters and Biscuitroot





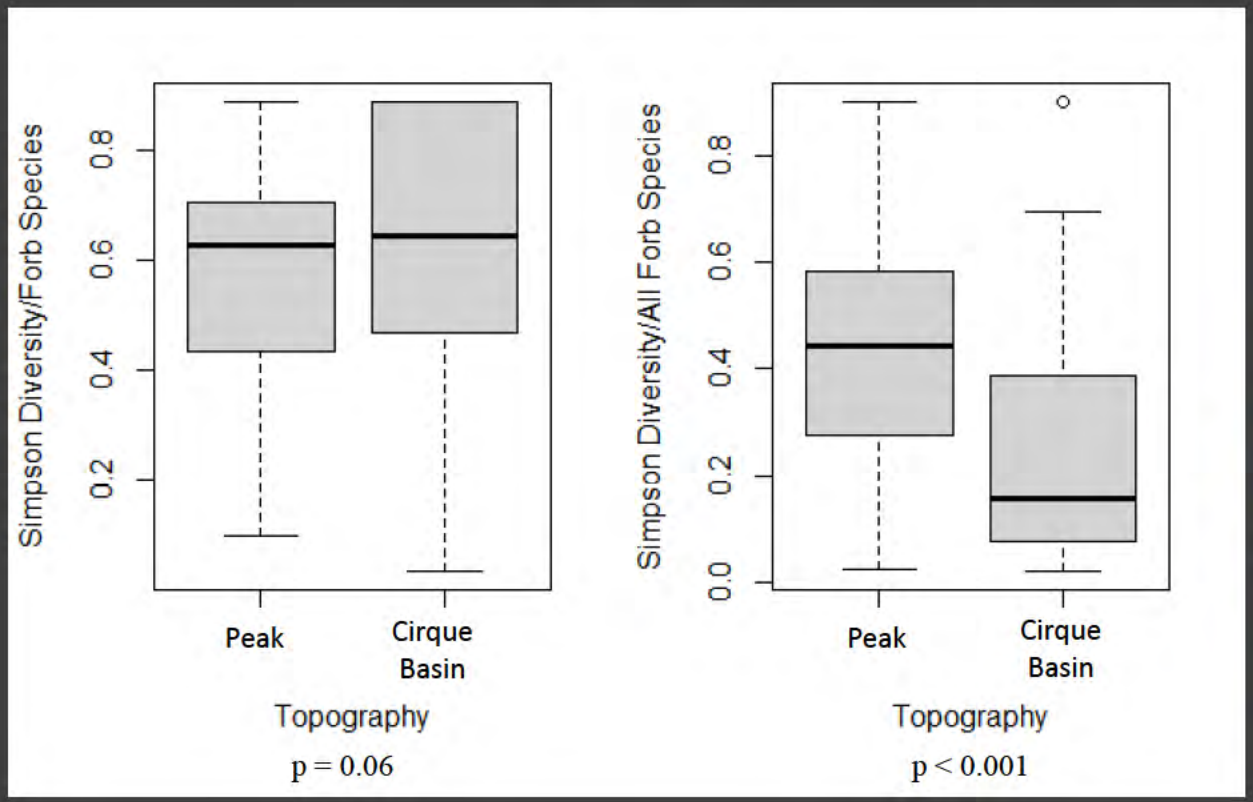
Recorded the density of seedlings and mature biscuitroot to assess influence on bear foraging

Results: Craters and Biscuitroot



Crater Density = 1.77- 0.19*(seedling density) + 0.44*(mature density), $R^2 = 0.20$

Results: Diversity of forb species that grizzly bears consume



All forbs are more diverse on the South Site Peak.

Average Vegetation Coverage

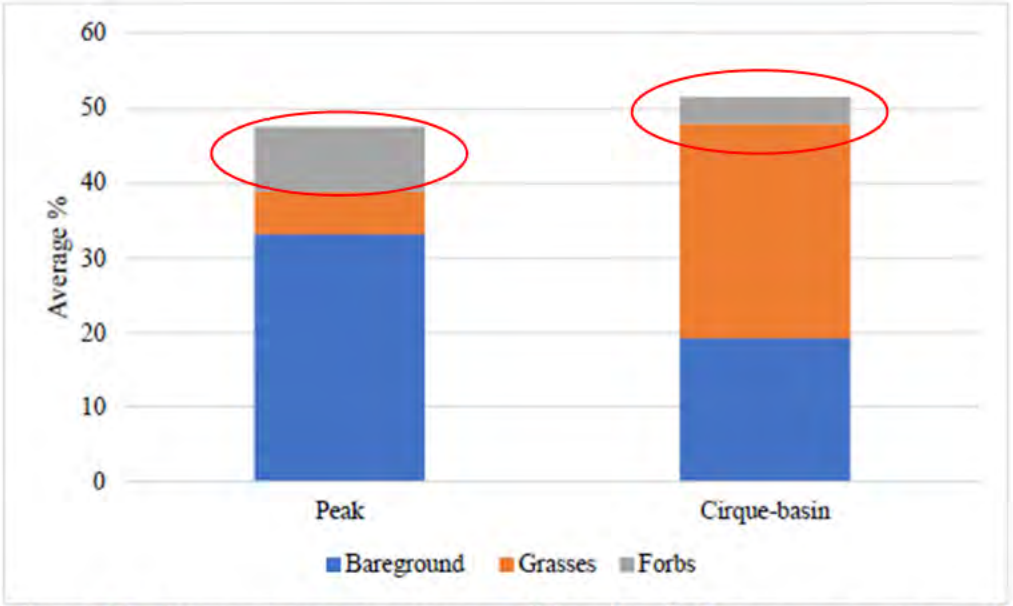
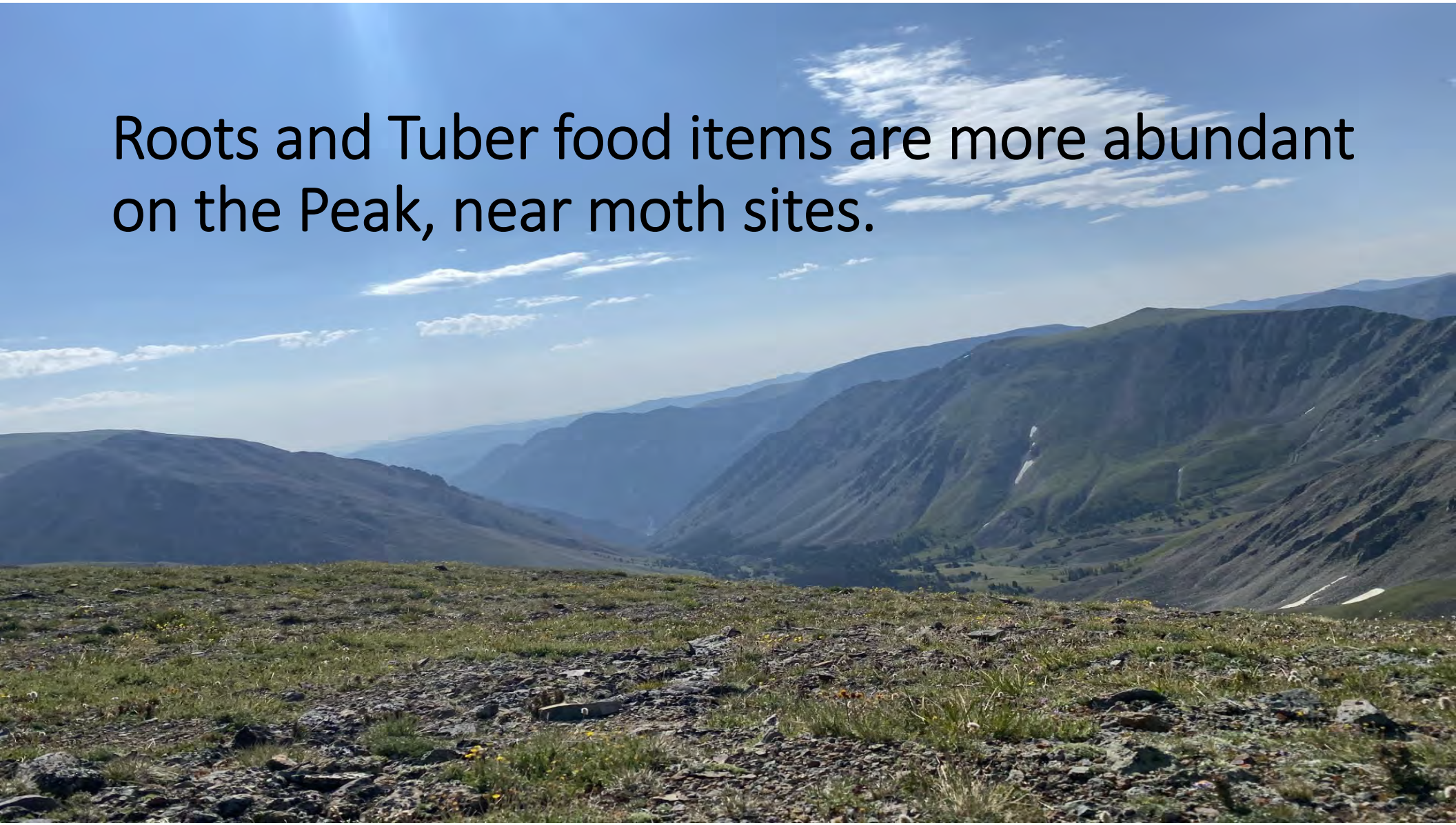
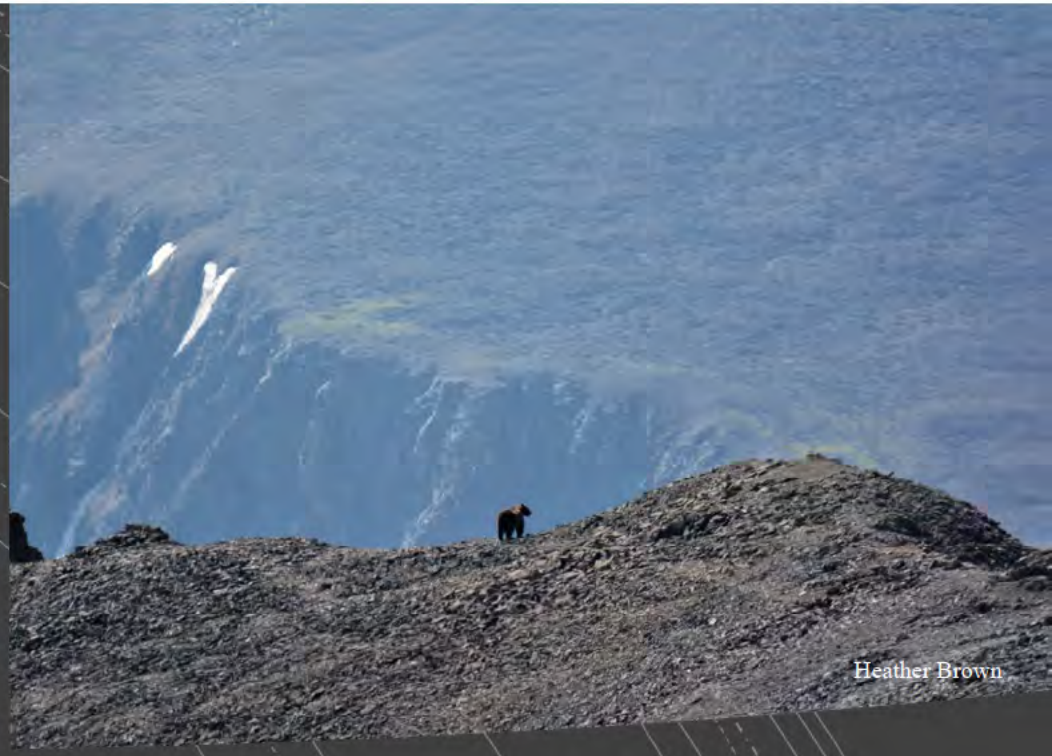


Figure 14. Average percent coverage of the nine-forbs genera, grasses, and bareground within the peak and cirque-basin sampling units.

Results: Relative Forb Abundance

Rank	Peak Forb Species	Relative Abundance	Cirque Basin Forb Species	Relative Abundance
1	*Trifolium* spp.	526	*Trifolium* spp.	347
2	*Lomatium* spp.	244	*Myosotis* spp.	151
3	*Myosotis* spp.	122	*Cerastium* spp.	86
4	*Astragalus* spp.	115	*Mertensia* spp.	72
5	*Cerastium* spp.	92	*Epilobium* spp.	29


Roots and Tuber food items are more abundant on the Peak, near moth sites.



Heather Brown

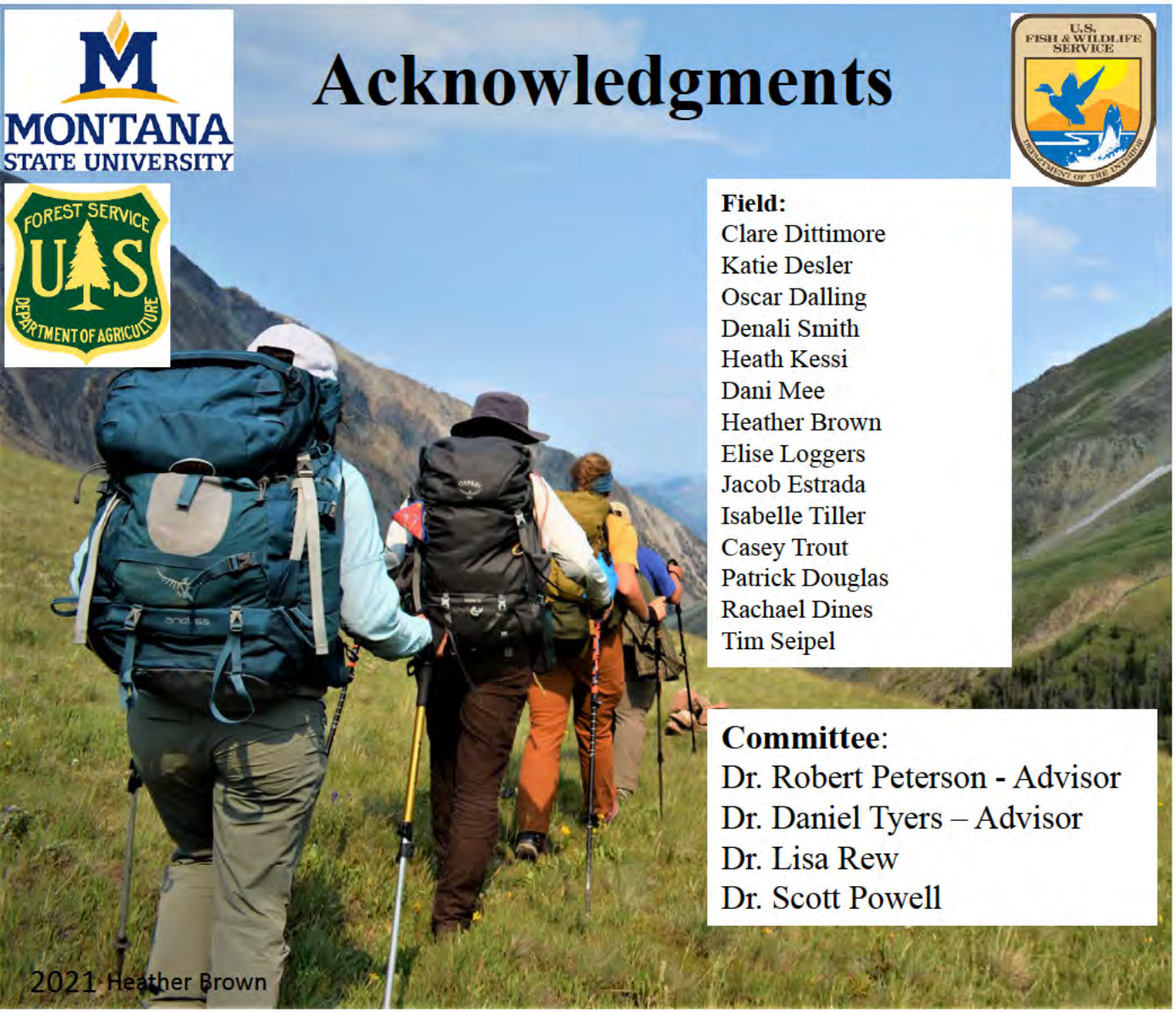
Discussion and Management Considerations

- Vegetation (Biscuitroot) is an important additional food item for grizzly bears at these moth sites and possibly others.
- Grizzly bears are choosing vegetative areas with high density of mature biscuitroot.
- High elevation meadows with high densities of mature biscuitroot attract bears, which affect bear distribution.

Acknowledgments

Field:
Clare Dittimore
Katie Desler
Oscar Dalling
Denali Smith
Heath Kessi
Dani Mee
Heather Brown
Elise Loggers
Jacob Estrada
Isabelle Tiller
Casey Trout
Patrick Douglas
Rachael Dines
Tim Seipel

Committee:
Dr. Robert Peterson - Advisor
Dr. Daniel Tyers – Advisor
Dr. Lisa Rew
Dr. Scott Powell




Questions?