

# ROOSTING BEHAVIOR AND POPULATION DEMOGRAPHICS OF HIGH ALPINE BAT SPECIES

## LARIMER COUNTY(DOUGLAS)



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### PROJECT INTRODUCTION



**Image 1:** picture of a reproductive female MYVO outfitted with a tracker  
**Image 2:** *Myotis volans* being released

*Myotis volans* (MYVO), commonly known as long-legged myotis, are a high-elevation adapted species from the order Chiroptera. They are found throughout western Northern America, ranging from the Canadian Rocky Mountains to Central Mexico. Little is known about roosting behavior because of the cryptic nature of this species. Males and females often roost together, with maternity colonies of 8 to 12 females observed during summer months. Males and females hibernate together. While MYVO is not currently threatened or endangered, there is concern for their future conservation given the rapid movement west of White-nose Syndrome (WNS). WNS is a fungal disease that deleteriously affects bats during hibernation. It has been observed to kill all members of the bat colony if brought into the hibernaculum before hibernation. By understanding more about the roosting behavior of MYVO, management of this species can be improved. Our goal was to capture MYVO and other high-elevation roosting species, affix radio transmitters, and use telemetry to find out more about activity patterns, foraging behavior, and roost sites.

### INTERNSHIP GOALS

#### Project goals

- The main goal was to learn more about the roosting behavior of the high-elevation bat species *Myotis volans*.
- We also observed the flight patterns and distance traveled for foraging of *Myotis Volans*, so that we can understand more about their capabilities.
- In addition to working with *Myotis Volans*, we also did population demographics for the other alpine bat species that we caught.

#### Personal Goals

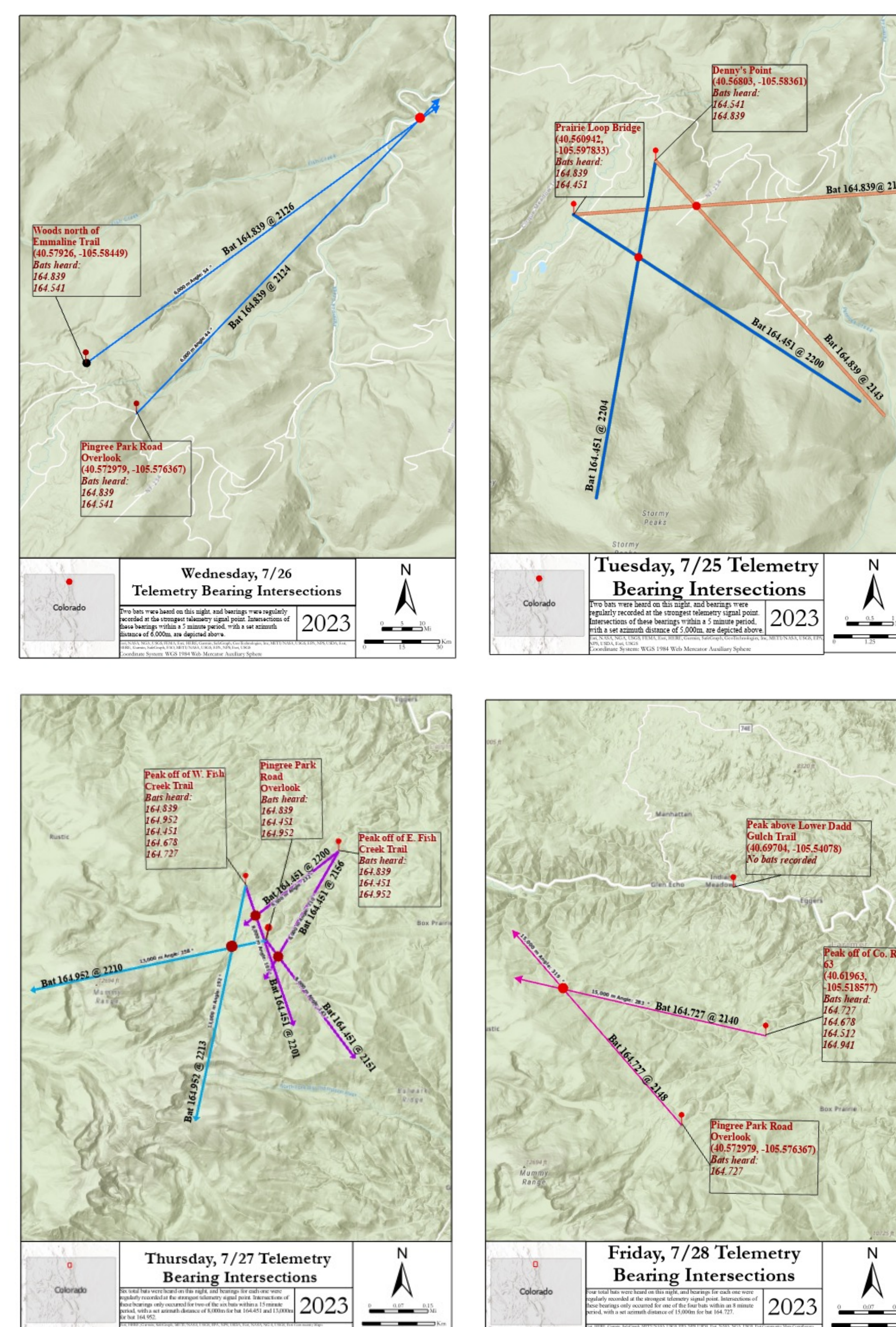
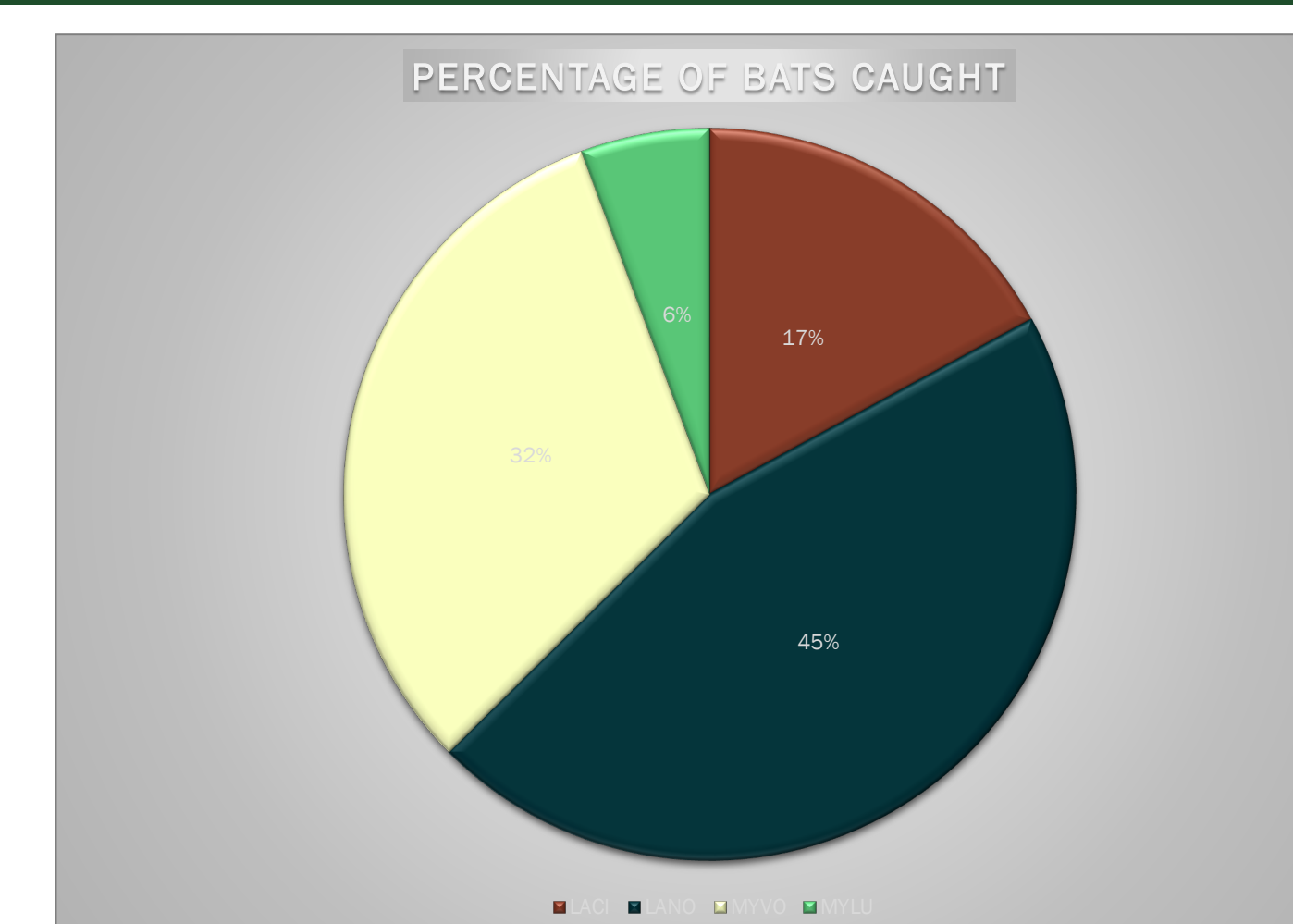
- I was excited to be a part of a project that was trying to prevent a change in conservation status by being proactive about problems that MYVOs could face in the future.
- Gain handling, processing, and sex/reproductive status identification experience in a field setting, working with wild animals.
- I was hoping to be a part of the logistic and planning for the research as to be able to take on a leadership role in future projects.

### METHODS

- Mist nets with a size between 3m and 18m were placed at various places along Fall Creak on CSU mountain campus.
- After capture, bats were processed: left ear forearm and foot were measured, sex and reproductive status were taken, and if necessary, a tracker was placed on their back.
- Upon release, bats that were fitted with transmitters were tracked using telemetry to determine flight direction.

### RESULTES

- *myotis Volans*: 36 in total were caught, all were fully processed, and 20 pregnant or lactating were outfitted with trackers.
- *lasionycteris Noctivagans*: 56 captures
- *lasiurus Cinereus*: 21 were caught, and all were fully processed.
- *eptesicus Fuscus*: 7 were caught, and fully processed



The figures on the right show the data that was collected using telemetry equipment. Approximate locations of radio-tagged bats were determined using bearing triangulation. The combined data demonstrates that radio-tagged bats are travelling from the north to south until their signals were lost. This suggests the location of the maternity roost is north of the trapping area, because the times are consistent with roost departure. This also could mean that there is a day roost south of the trapping area.

### DISCUSSION

Although we were unable to locate the MYVO roost, we were able to identify directional and temporal patterns that will aid our future efforts. By using telemetry, we discovered that tagged MYVO flew inbound from the north. Moving forward, this allows us to set a northern boundary and a time that can be used as a starting reference point for future tracking efforts.

Based on our data, the species diversity coincides with what we would expect in a high alpine elevation environment. There were a few outlier captures, but these did not produce a statistical significance. We implemented the mark-recapture model for population demographics. Since no individual was recaptured, our result is considered undefined.



**Images 7,8,9:** appearing from left to right: *myotis Lucifugus*: Little Brown Bat; *lasiurus Cinereus*: Hoary Bat; *lasionycteris Noctivagant*: Silver Hair Bat

### NEXT STEPS, What I LEARNED

Now that we have a direction that the bats are flying from, we can start placing telemetry groups along a longitudinal gradient from the most northern telemetry reading and work our way south. What we learned during this study is that the most effective time to do this is dusk or before dawn, because that is when the bats are leaving/entering the roosts. Upon finding that roost, we will place a monitor that tracks the population as well as the time that the bats are leaving/entering the roost. This will be able to teach more about the bat's behavior.

I am very grateful to have been a part of this project. I learned valuable logistic skills such as site planning, personal placement, and delegation. In addition, I also got the opportunity to become proficient in technical skills such as handling, processing and sex identification of the animals. I'm sure that the skills that I gained during the project will stay with me and aid in my future career.

### Acknowledgments

I would like to thank CSU Extension for this opportunity to learn and practice skills I will use in my future career. I would also like to thank my mentor Dr. Tanya Dewey her guidance and support in this project and my extension service mentor, Mr. Marvin Reynolds. Thanks to the Field Mammalogy class for helping to mist net and telemetry, and to my fellow Extension Intern Morgan Lynch for helping during bat processing and mist net installation.