Northwest Montana Large Mammal Monitoring Research Project

May 2024 Update

Background:

Extensive closed canopy forests in northwest Montana limit FWP's ability to use aerial surveys to monitor deer and elk. The use of remote cameras for monitoring wildlife has developed rapidly in recent years, and this research project is evaluating camera-based methodologies for estimating abundance of elk, white-tailed deer, mule deer, and black bear. The outcomes of this 5-year research project will guide FWP in whether and how to adopt a camera-based approach for monitoring the above species in northwestern hunting districts. If successful, animal density estimates from remote cameras will be used to guide hunting season setting and in evaluation of the outcomes of habitat and predator management actions. The project's duration is July 1, 2023 to June 30, 2028, with field data collected primarily during the first 3 years, followed by analysis, reports, graduate student theses, and recommendations. Each summer (2024-2026) we plan to sample animal densities in 3 hunting districts using roughly 150 randomly placed trail cameras per district. Camera deployments take place in fall and spring, with images collected during summer months. Up to 30 each of white-tailed deer, mule deer, and elk will be GPS collared to provide concurrent information on animal movement and habitat selection. This information will help us understand if animal behavior and distribution is compatible with monitoring via remote camera, and will help inform FWP about alternative possibilities for cost-efficient sampling designs. The research project is being completed as collaboration between FWP research staff, private landowners, federal land management agencies, and faculty and graduate students at the University of Montana.

Field Work Update, May 2024:

Camera deployment

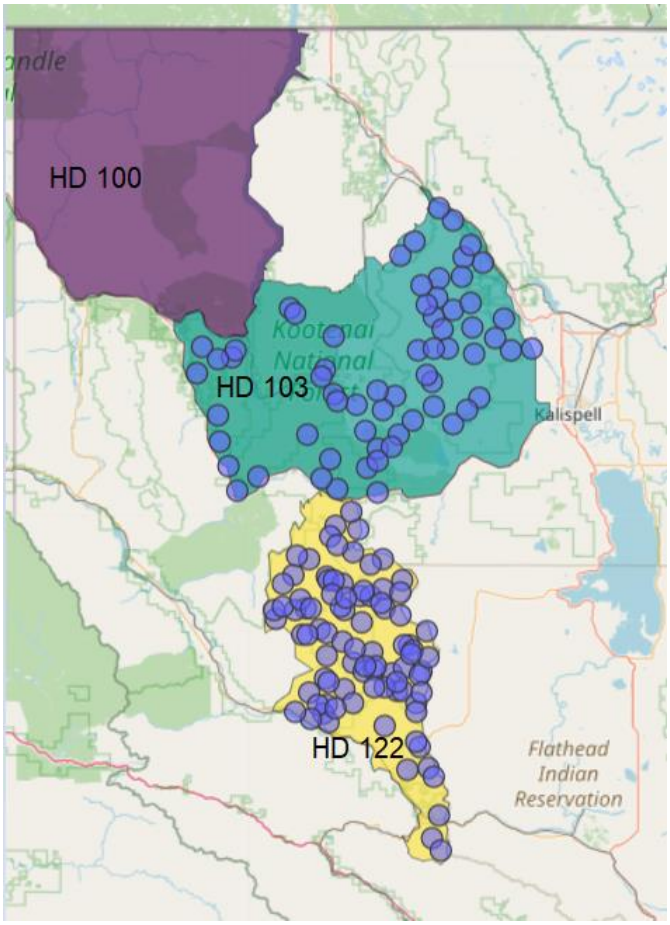
We plan to deploy approximately 450 trail cameras by July 1, 2024 in FWP hunting districts (HDs) 100, 103, and 122 (150 cameras in each district). We deployed 150 cameras in units 122 and 103 during Fall 2023 (Figure 1). Crews resumed cameras deployments in mid-April and are planning to complete districts 122 and 103 during May and will begin deploying HD 100 in June.

Cameras are programmed for synchronized timelapse photography every 10 minutes. They will collect images from July 1 until they are retrieved beginning in September. At each site, camera "viewsheds" are measured. The viewshed is the square footage of each camera's field of view that is unobstructed by vegetation or terrain, out to a maximum of 30 meters. After camera data are collected in fall, animals

are counted in each photograph with the aid of computer software. Each 10-min interval snapshot represents a sample of animal density in the hunting district. Because the cumulative area seen by all camera viewsheds is a small percentage of the total hunting district area, repeated sampling over time (every 10 minutes for >2 months) is necessary to provide adequate samples to infer animal densities for the whole district.

It is important to note that the method relies on timelapse photographs, rather than motion triggered photographs that are generally associated with trail cameras. Use of motion triggered detections for statistical estimation of density is not considered practical at present. Problems include unknown probability that an animal entering a camera's viewshed triggers the motion sensor, and an inability to distinguish unique individuals. Timelapse photography results in fewer images containing animals, but circumvents the above problems.

Remote cameras deployed as of April 1, 2024



For summer 2025, we expect to move camera grids from HDs 100 and 122 to HDs 101 and 110, while leaving cameras in place in HD 103.

Animal capture and GPS collaring

We captured and GPS-collared mule and white-tailed deer in clover traps baited with alfalfa in HDs 103 and 122 between January 1 and March 20. Mule deer were initially targeted, while traps targeting white-tailed deer were not deployed until March 1. Trap line locations were determined via ground and aerial scouting and with the aid of trail cameras. Traps were deployed in areas with high concentrations of deer and setup near, but out of sight of, accessible roads and trails. Mild winter weather and a lack of consistent snow cover created difficult trapping conditions. Deer were reluctant to enter baited traps while other food sources were available during extended periods of above average temperatures and limited snow cover.

In HD103, crews captured 4 mule deer does, 1 mule deer buck, and 4 white-tailed deer does. Capture areas where dispersed mostly along the HWY 2 corridor. Traps deployed near Lost Trail and Haskell passes were unsuccessful.

In HD122, crews captured 6 mule deer does, 1 white-tailed buck, and 5 white-tailed deer does. Traps were mostly distributed in the central area of the unit, with 1 trap located in Henry Creek area outside of Plains. Traps were also deployed around Bend, along the west side of Thompson River, and in Jungle and Deerhorn creeks areas, but were unsuccessful.

Aerial capture of cow elk in HDs 103 and 122 were conducted on Feb 5 and 22 using a contracted helicopter crew experienced in aerial darting and immobilization of elk. In HD 122, 6 elk were captured primarily along the Thompson River corridor between Jungle Creek and Bend. In HD 103, 4 elk were captured north of highway 2 near the Thompson River Rd. junction.

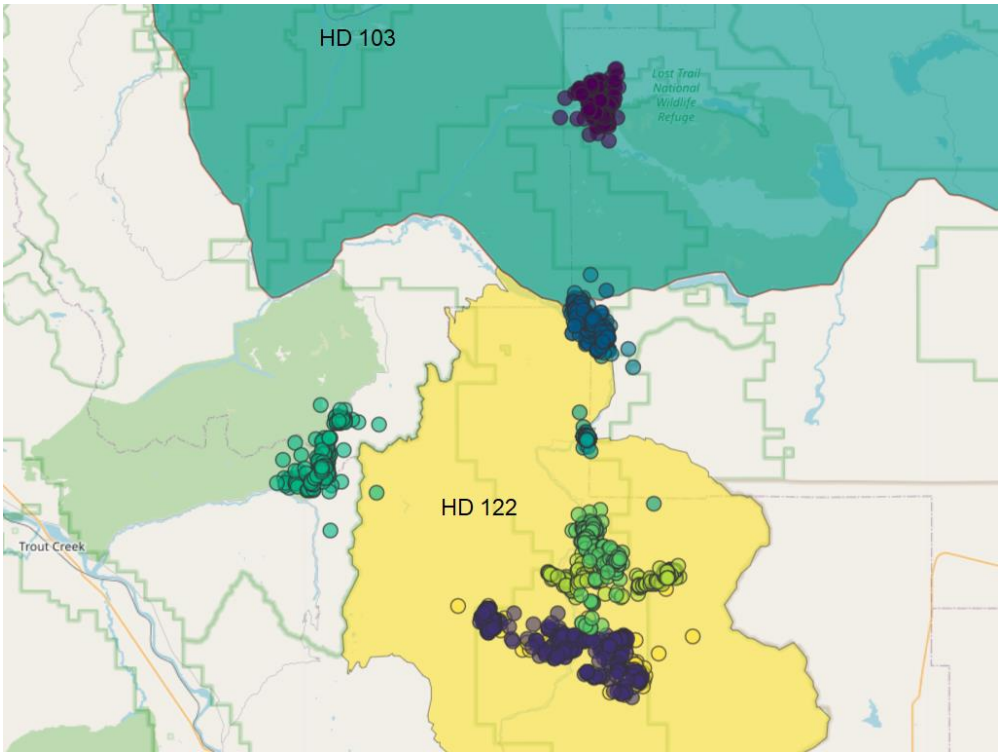
All captured animals were fixed with uniquely colored and numbered tags that will allow for identification of animals in trail camera images. If sufficient animals are resighted in this way, these data can supplement the estimation of density with the remote camera grids.

Deer and elk captured during winter 2023-2024.

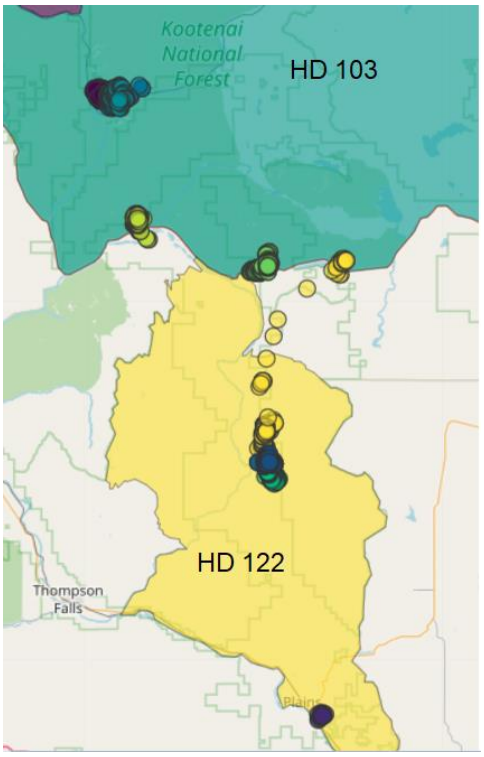
Species	Sex	Ear tag color	Collar tag color	Tag number	Date Marked	Estimated age
Elk	female	pink	white	6	2/5/2024	>3.5
Elk	female	brown	white	8	2/22/2024	>3.5
Elk	female	pink	pink	1	2/22/2024	3.5
Elk	female	orange	white	7	2/5/2024	1.5
Elk	female	white	pink	2	2/22/2024	>3.5
Elk	female	white	white	5	2/22/2024	2.5
Elk	female	white	brown	14	2/22/2024	>3.5
Elk	female	orange	pink	3	2/22/2024	>3.5
Elk	female	orange	orange	9	2/22/2024	>3.5

Elk	female	pink	brown	15	2/22/2024	>3.5
Mule deer	male	Orange	Pink	4	2/20/2024	1.5
Mule deer	female	White	White	14	2/18/2024	3.5
Mule deer	female	Pink	White	16	2/19/2024	2.5
Mule deer	female	White	Pink	2	2/16/2024	>3.5
Mule deer	female	Pink	Pink	1	2/28/2024	3.5
Mule deer	female	Pink	Brown	12	2/20/2024	>3.5
Mule deer	female	Brown	Pink	3	3/13/2024	2.5
Mule deer	female	White	Orange	6	2/20/2024	1.5
Mule deer	female	Orange	Orange	8	3/3/2024	>3.5
Mule deer	female	Orange	Brown	11	2/20/2024	3.5
WT deer	female	White	Orange	1	3/2/2024	2.5
WT deer	female	Brown	Orange	2	3/3/2024	3.5
WT deer	female	Pink	Orange	3	3/13/2024	1.5
WT deer	female	Orange	Orange	4	3/5/2024	>3.5
WT deer	female	Brown	Brown	6	3/5/2024	1.5
WT deer	female	Pink	Brown	7	3/3/2024	1.5
WT deer	female	Orange	Brown	8	3/4/2024	3.5
WT deer	male	Pink	Pink	9	3/4/2024	2.5
WT deer	female	White	White	13	3/13/2024	2.5
WT deer	female	Brown	White	14	3/13/2024	2.5

Cow elk locations April 8 – May 8, 2024. Each color represents a different individual (9 active collars).



Mule deer locations April 8 – May 8, 2024. Each color represents a different individual (10 active collars).



White-tailed deer locations April 8 – May 8, 2024. Each color represents a different individual (9 active collars).