

Adaptive Elk and Carnivore Management

May 2023 Project Update

Background:

FWP and the Montana Fish & Wildlife Commission are statutorily obligated to manage elk population sizes within ranges specified in the Montana elk management plan. The efficacy of FWP management prescriptions and Commission decisions to meet this obligation is hampered by uncertainty about the drivers of elk populations and distributions in different ecological systems. Additionally, FWP and the Commission only have partial control over elk populations and distributions because individual decisions by landowners and hunters also affect elk populations and distributions. Therefore, the outcomes of FWP management prescriptions and Commission decisions are not always completely predictable. This project will focus on developing the necessary components for an adaptive management program focused on management of elk populations and distributions in northwest Montana, which will be used to help FWP and the Commission manage elk populations and meet statutory obligations. Adaptive management plans aim to increase knowledge and decrease uncertainty through a data driven decision-making process that incorporates new information as it becomes available.

The purpose of this five-year project is to assess how habitat treatments, carnivores and other factors impact elk population vital rates and distributions and use this information to develop recommendations for meeting elk population objectives in NW Montana. We are also developing camera-based methods to estimate elk and carnivore abundance in hunting district (HD) 121, which is a difficult district to survey due to heavy tree cover that obstructs visibility. Our goal in this first year of the project is to collect baseline data on elk vital rates, distributions, and habitat conditions, and deploy a grid of cameras. HD 121 was selected as the study area in part due to the abundance of elk and feasibility of capture, as well as the ongoing and potential forest management activities occurring in this area. Elk harvest has declined in HD 121, raising concerns from FWP and stakeholders regarding this elk population. FWP is partnering with the University of Montana to complete this project.

Results to date:

Elk collaring and monitoring

We captured and fitted 71 elk with GPS collars in the HD 121 study area during winter 2022-2023 (54 adult females, 7 adult males, and 10 calves). Captures included a combination of ground clover trapping and chemical immobilization delivered from helicopter. Clover trapping was the primary method of capturing elk on lower elevation private lands and helicopter capture was the primary method of capturing elk on higher elevation public lands. The collars are satellite-linked to allow location and mortality data to be collected remotely and are programmed to collect locations every 2 hours until dropping off the animal during winter 2026.

We have collected a total of 71987 elk GPS locations to date (Fig 1, Fig 2). There has been 1 elk collar malfunction and 1 elk mortality. The mortality was a calf that died of natural causes. We are currently monitoring the locations and survival of 69 elk (53 females, 7 males, 9 calves).

During captures, we obtained blood serum samples from 48 of the adult female elk for pregnancy testing. Of those tested, 42 (87.5%) were classified as pregnant (Fig 3), similar in percentage to the state-wide average (87%). Pregnancy tests were based on levels of a pregnancy-specific protein (PSPB) released in higher quantities when a fetus is present conducted by the Herd Health Diagnostics/BioTracking Testing Lab (Pullman, WA). We also screened adult females for exposure to *Brucella abortus* ($n = 48$), and did not detect any evidence of serological exposure.

Carnivore collaring and monitoring

Additionally, during winter 2022-2023, we worked with hound handlers to capture and collar 3 female mountain lions. Mountain lion collars are satellite-linked to allow location and mortality data to be collected remotely and are programmed to collect locations every 4 hours until dropping during winter 2026. We have collected a total of 1635 mountain lion locations to date. We currently have one wolf collared in the area and will be working to get additional collars out this spring and summer. We will also be collaring black bears. Information obtained from the carnivore collaring effort will improve population estimates in HD 121.

Acknowledgements:

We thank the landowners that allowed access to their properties for elk trapping and capture operations, and we thank the Forest Service for providing logistical support. We also thank the winter field crew (Brandon Davis, Nate Jourdonnais, Shane Petch), hound handlers (Ryan Castle, Cody Hensen, LeRee Hensen, Casey Stutzman) and Quicksilver Air capture crew for their hard work. Funding for this project was provided by a Federal Aid in Wildlife Restoration grant to Montana Fish, Wildlife, and Parks and a grant from Rocky Mountain Elk Foundation.

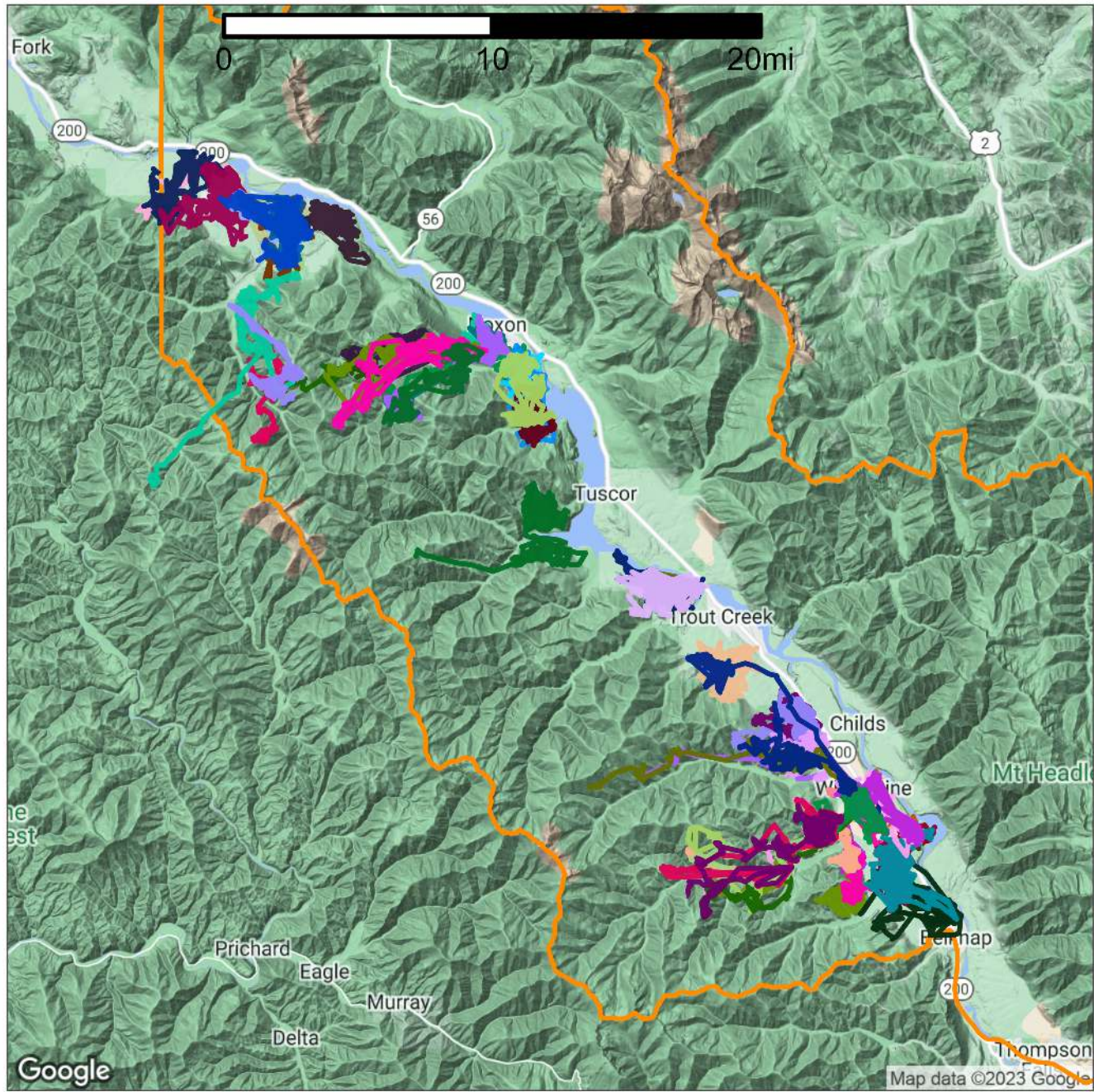


Figure 1: Map of female elk movements to date. Colors represent individual animals. The orange boundary represents Hunt District 121.

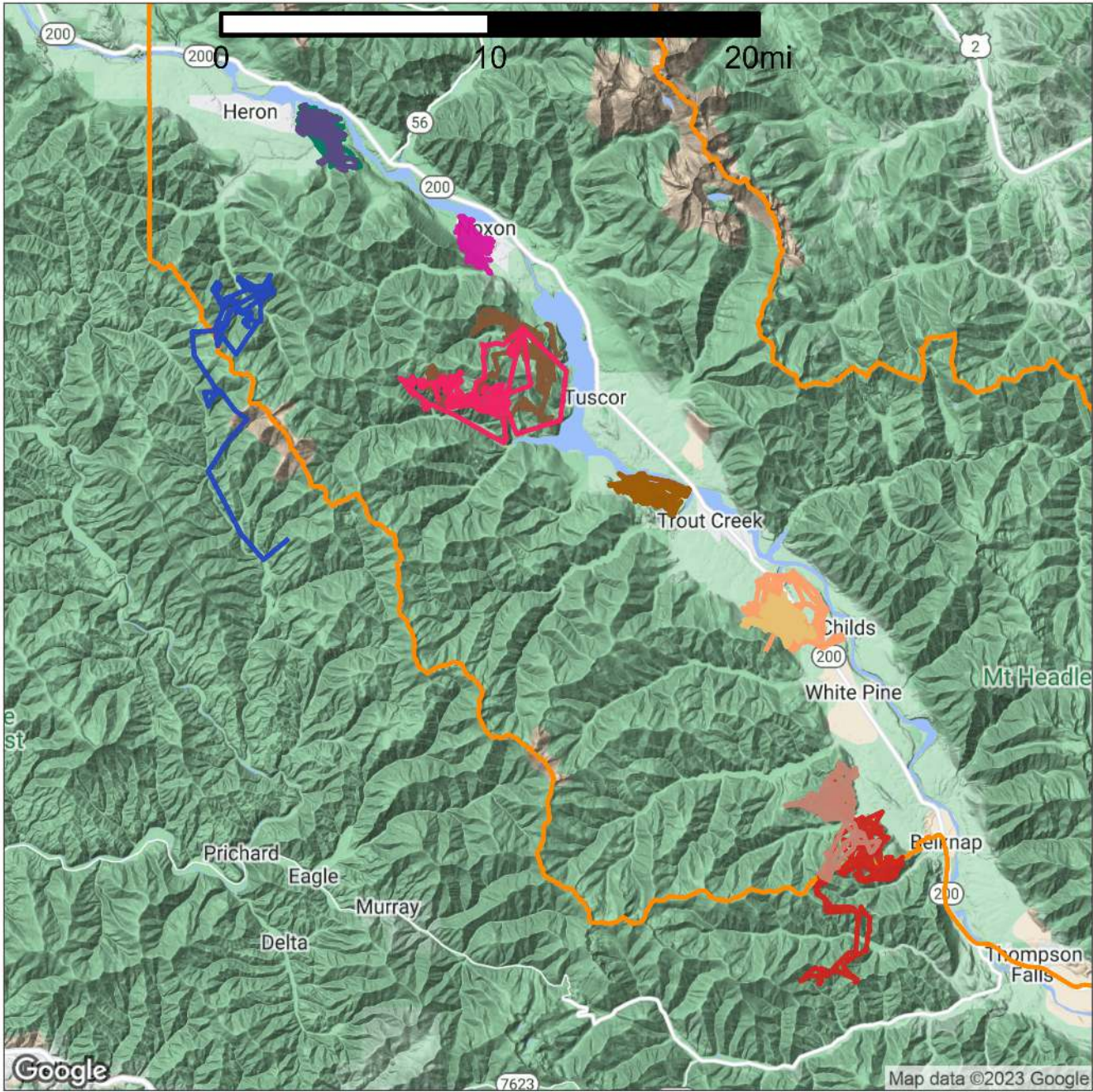
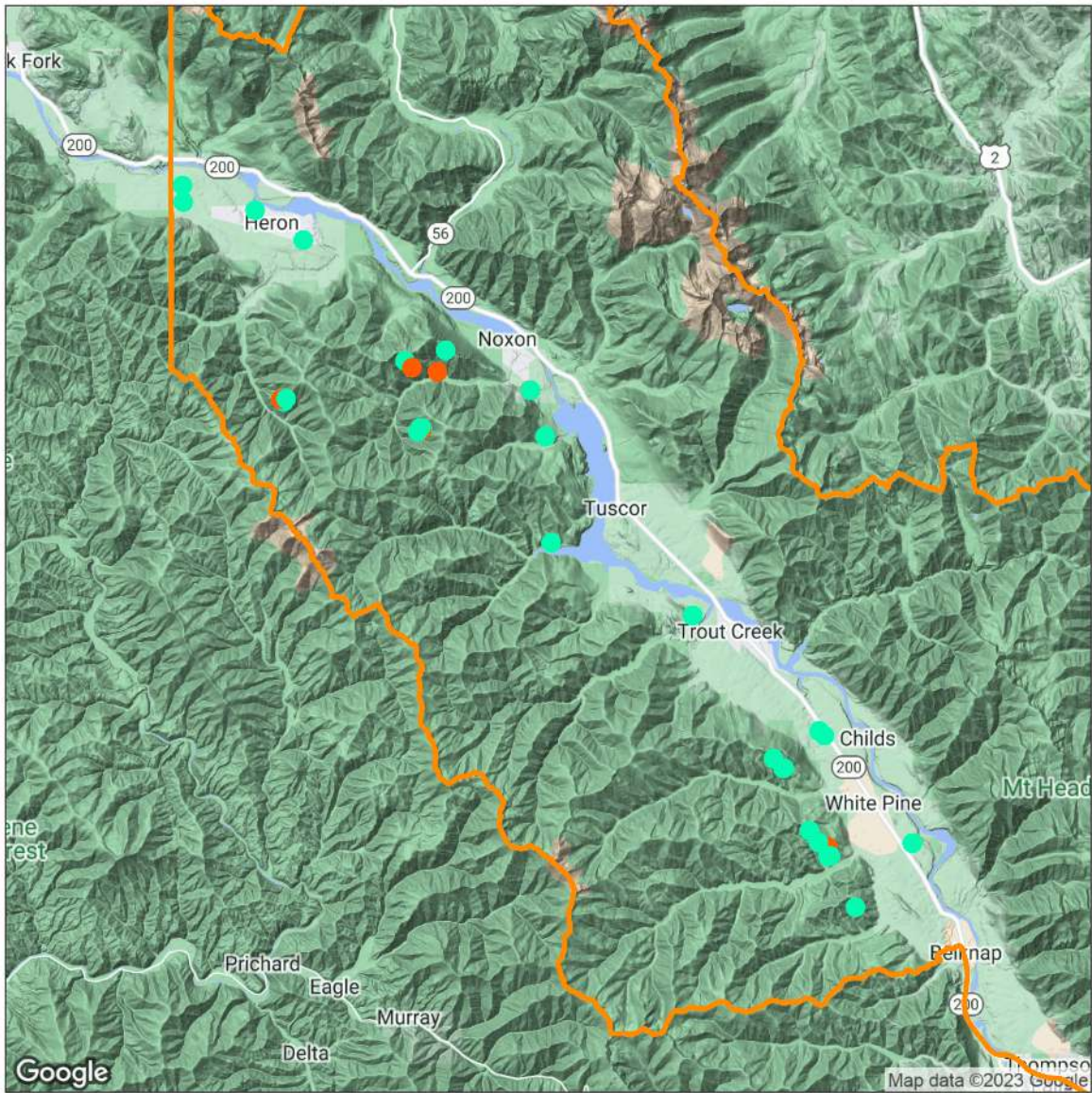


Figure 2: Map of male elk movements to date. Colors represent individual animals. The orange boundary represents Hunt District 121.



Pregnant status:

- Yes
- No

Figure 3: Adult female elk pregnancy status mapped by capture location. Some locations have overlapping pregnancy results where more than one female was captured and sampled. The orange boundary represents Hunt District 121.