

Wyoming Range Mule Deer Project

April 2013 Project Update



Photo by Teal Wyckoff

Project Background

The Wyoming Range mule deer herd—one of the largest mule deer herds in the West and a premier destination for mule deer hunting in the country—underwent a marked population decline in the early 1990s and population growth has remained stagnant ever since. In the late 1980s, the population was estimated to consist of >50,000, but in the last decade, has struggled to exceed 30,000 animals. This begs the question of why the population has apparently failed to increase in abundance to historical levels and what could be done to enhance population growth. Population declines in recent decades are not unique to the Wyoming Range herd unit, but has been a common pattern throughout the West. In response to concerns of mule deer populations in Wyoming, in 2007, the Wyoming Game and Fish Commission adopted the *Wyoming Mule Deer Initiative* (MDI) with the intent to develop individual management plans or strategies for key herd units. In accordance with the MDI, and following the Wyoming Range Mule Deer Initiative, the Wyoming Range Mule Deer Project was initiated. This study seeks to investigate the nutritional relationships between mule deer population dynamics, energy development and disturbance, habitat conditions, and climate to provide a mechanistic approach to monitoring and management of mule deer.

Accomplishments

With the help of numerous research partners, we raised adequate funds to cover first year costs and to initiate the Wyoming Range Mule Deer Project. After 2 years of preparation, we officially commenced the project in March with helicopter captures of 70 adult female mule deer. Captured females will be monitored closely over the next 2 years.



Capture

On March 12 through 14, we captured 70 adult female mule deer across the critical winter range occupied by the Wyoming Range mule deer herd. We partitioned our sample to 35 deer on the northern winter range and 35 on the southern winter range (Fig. 1). In the northern area we captured females on the Big Piney/La Barge winter range with targeted sampling in Yose and Wildcat Canyons, along Piney Creek, and along the east side of Hogsback Ridge. In the southern area, we spread our capture effort from north of Highway 30 along Boulder and Rock Creek ridges, south of the highway in Collett Creek and Sillem ridge, and captured deer as far south as the Whitney Canyon area (Table 1).

Each captured female was ferried by helicopter to a central staging area where they were equipped with a GPS collar and data was collected on the individual. Key bits of data collected were various morphometric measurements, body mass, extraction of an incisiform canine, blood sample, fecal sample, pregnancy, number of fetuses, and nutritional condition. We determined pregnancy status and number of fetuses by transabdominal scanning with ultrasonography.

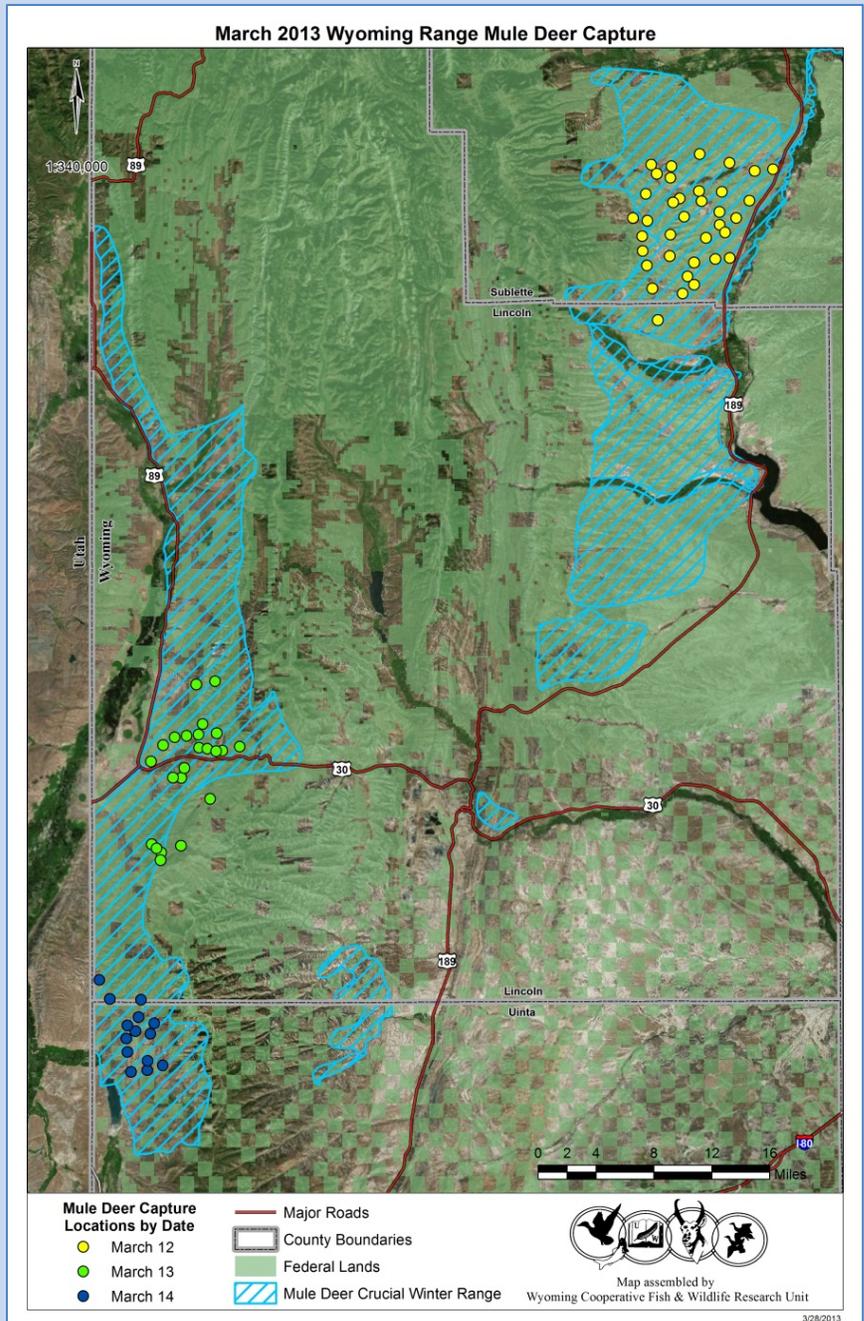


Figure 1. Locations of mule deer helicopter net-gunned in the Wyoming Range during March 2013 captures.

Table 1. Sample distribution of captured mule deer in the northern and southern portions of winter ranges in the Wyoming Range.

Date	Capture Area	Staging Location	Deer Captured
12-Mar-2013	Yose & Wildcat Canyons	Yose Canyon	18
12-Mar-2013	East Hogsback Ridge	Wall Street	17
13-Mar-2013	Collett Creek & Sillem Ridge	Collett Creek	8
13-Mar-2013	Boulder & Rock Creek Ridges	Thoman Ranch	14
14-Mar-2013	Whitney Canyon	Whitney Canyon Rd	13

N = 70

Collars were deployed with various GPS tracking capabilities: Argos satellite uplink, Iridium satellite uplink, and store-on-board. Fix rates among collars ranged between 2 to 5 hours and collar types were distributed evenly among sample areas (Table 2).

Table 2. GPS collar types and fix rates.

Make	Type	Fix Rate (hours)	Number Deployed
ATS	Iridium Satellite Tracking	2.75	19
ATS	Store-on-board	2	30
Telonics	Argos Satellite Tracking	5	21

Collars with satellite uplink capabilities will provide us with “real-time” data on movements and habitat use, and will prove invaluable for monitoring and understanding migration patterns throughout the course of the study (Fig. 2).

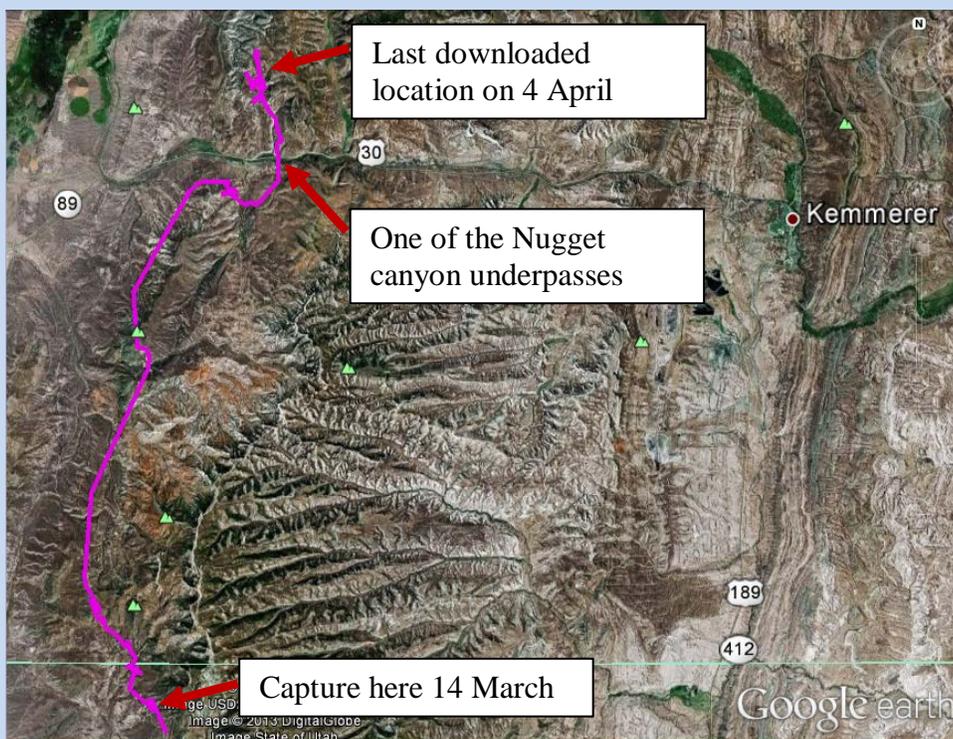


Figure 2. Image of data downloaded from an Iridium satellite uplink collar deployed on a Wyoming Range female mule deer. The pink line represents the path used by the collared individual as she began her migration from Whitney Canyon, through Nugget Canyon and north of Highway 30. A trek of 21 air miles.

Nutritional Condition

Investigating how habitat use influences nutritional condition of mule deer will help us identify which resources are most important to mule deer in the Wyoming Range. We quantified nutritional condition (% body fat) using ultrasonography by measuring thickness of rump fat in combination with a body condition score. Although the open winter with very little snowfall should have allowed deer to retain fat reserves, body fat levels were low for females departing winter range and entering the third trimester of gestation in preparation for provisioning and rearing offspring. As a comparison, average fat levels measured during this initial capture effort were markedly lower than the average measured during a 13 year study in a population of mule deer that winters on the east side of the Sierra Nevada, California (Fig. 3). Although these levels of body condition appear to be very low for mule deer exiting winter, this study will reveal how these fat levels translate to individual and population performance and whether summer ranges are sufficiently robust to compensate for departing winter in such poor condition.

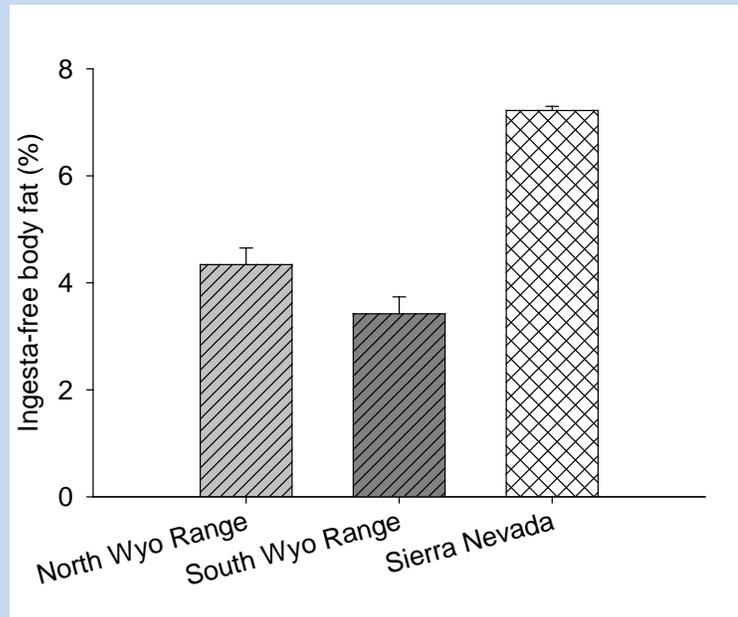


Figure 3. Average percent body fat measured among mule deer in the Wyoming Range and Sierra



Photo by Teal Wyckoff

Dr. Kevin Monteith, of the Wyoming Cooperative Fish and Wildlife Research Unit, uses ultrasonography to measure the thickness of rump fat to quantify percent body fat and overall nutritional condition.

Reproduction

We measured pregnancy and fetal rates to better understand what influences reproductive success and population dynamics. Although pregnancy rates among mule deer tend to be very high, there are many factors, including maternal nutritional condition, that influence the survivorship of fawns after birth.

As expected, pregnancy and fetal rates were relatively high. Overall pregnancy rate was 98.6%. There was little variation among the northern and southern capture areas, and results were similar to fetal rates measured during a long-term study in the Sierra Nevada (Fig. 4).

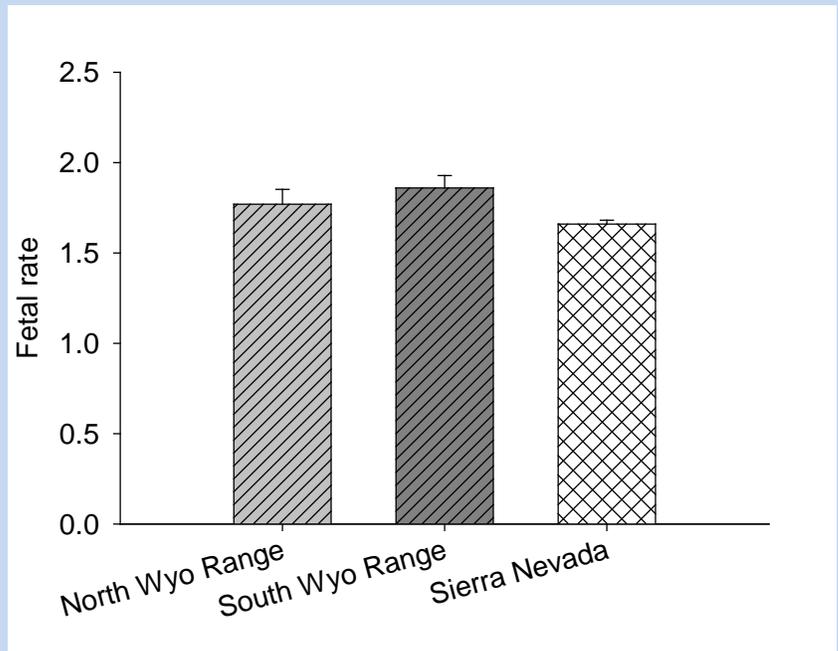


Figure 4. Fetal rates of mule deer in the Wyoming Range and Sierra Nevada.



Drs. Kevin Monteith and Matthew Kauffman, with Melia Devivo, measure pregnancy and fetal rates using in-field ultrasonography.



Photograph of a single fetus captured while using ultrasonography to measure fetal rates of Wyoming Range mule deer.



Wyoming Game and Fish Department, Bureau of Land Management, and Wyoming Cooperative Fish and Wildlife Unit personnel collect various samples and deploy GPS collars on female mule deer at a staging area near La Barge.

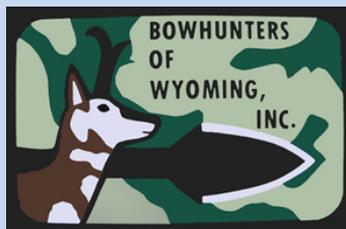
Next steps

During the next 2 years, each collared female will be closely monitored. We will recapture each study animal in December and March to provide longitudinal data. These data will allow us to relate patterns of survival, fawn recruitment, and seasonal change in body fat levels to migratory patterns and habitat use. Collars will be retrieved from mortalities and redeployed on new individuals during future capture efforts.



Acknowledgments

The Wyoming Range Deer Project would not have been possible without the financial and logistical contributions of our research partners. Funds have been provided by the Wyoming Game and Fish Department, Muley Fanatic Foundation, Bureau of Land Management, Knobloch Family Foundation, Wyoming Governor's Big Game License Coalition, Boone and Crockett Club, Animal Damage Management Board, Bowhunters of Wyoming, Sportsmen for Fish and Wildlife, Wyoming Outfitters and Guides Association, and the Wyoming Cooperative Fish and Wildlife Research Unit at the University of Wyoming. Special thanks go to all who were able to assist with March 2013 captures. Your support made for a successful capture to initiate the project.



Mark Gocke, WGF