

Cooperative Mule Deer Project Up-date
25 July 2000

Cooperators:

Major cooperators include **WDFW** (Sci Div, Regions 1, 2, 3, Game Div), **Chelan County PUD**, **Colville Confederated Tribes**, **Colville National Forest**, **Okanogan National Forest**, **Inland Northwest Wildlife Council**, **Inland Empire Chapter of Safari Club International**, **Wenatchee National Forest**, **Northern Okanogan Sports Council**, and **the Mule Deer Foundation**. The Inland Empire Chapter of Safari Club International is expected to join the project as cooperators in the near future.

Graduate Students from **University of Idaho** (Corey Kallstrom studying under Dr. Oz Garton) and **University of Washington** (Ann Gibson studying under Dr. Ken Raedeke).

Major Goals and Objectives:

Population dynamics and regulation

1. Determine herd boundaries, home range sizes, and seasonal use areas.
2. Determine movement and dispersal patterns of mule deer, including their relationships to population density.
3. Determine mortality rates and patterns of mule deer, including relationships to population density.
4. Determine productivity rates for mule deer and their relationships to population density.
5. Determine population regulatory strategies of mule deer (e.g., dispersal vs. density dependence).
6. Determine whether hunting mortality is compensatory or additive to other mortality factors in mule deer in NE and NC Washington habitats.
7. Develop sustainable yield models based on the annual harvestable surplus (as determined by Objectives 1-5).

Landscape level habitat use patterns

8. Determine landscape level habitat association patterns of mule deer.
9. Determine long-term landscape trends in NC and NE Washington and relate these to habitat carrying capacity for mule deer.
10. Develop and validate nutritionally driven carrying capacity models for mule deer (to assist in achieving Objectives 6, 7, and 8).
11. Determine the landscape level habitat association relationships between mule deer, white-tailed deer, elk, bighorn sheep and domestic livestock.
12. Develop a habitat and weather index with a level of sensitivity to allow annual modifications in outputs of the sustainable yield model (Objective 6).

Work Completed to date:

Thirty-eight (38) deer were captured earlier this spring; **34** adult females (**20** in Chelan County) were fitted radio-collars. There were two capture related deaths and two others were males.

Since the initial capture, relocation flights have been flown on a regular basis. Two mortality signals have been received from the 20 collared Chelan County deer. One death in Chelan County appeared to be predation (mountain lion) related while the other death was probably related to initial capture. Observed survival rates for adult female mule deer were 0.89 on the Chelan County study area, compared to 0.77 on the Colville Reservation study area.

The radio-marked deer on the Colville Reservation have remained near the areas where they were originally captured, suggesting these deer are non-migratory. Conversely, deer marked on the Chelan County study area have shown strong migratory patterns; they began leaving the winter ranges in late April and early May. Movements of up to 30 air miles or more have been observed as these deer moved from winter to summer ranges. Some of the observed movement patterns were not expected and have added to the knowledge of mule deer ecology in Chelan County.

In the Chelan County sample, 16 of 19 does (84%) were pregnant. One hundred percent of the Colville Reservation does were pregnant.

Results (number of positive samples) of serology tests of blood samples collected at capture by study area are:

	Colville Reservation	Chelan County
<i>Leptospira bratislava</i>	All negative	2 of 20 positive
Bovine Resp Syncytial Virus	13 of 13 positive	13 of 20 positive
Infect. Bovine Rhino	8 of 13 positive	10 of 20 positive
Bovine Viral Diarrhea	2 of 13 positive	17 of 20 positive
Parainfluenza	6 of 13 positive	13 of 20 positive
Bluetongue	2 of 13 positive	0 of 20 positive
EHD	5 of 13 positive	0 of 20 positive

The antibodies level in the positive samples were low and probably suggest exposure as opposed to disease infection; the first 5 diseases probably reflect the presence and exposure from cattle while the sample reactors for bluetongue and EHD could be from cattle or white-tailed deer.

Results of parasitology analysis (no of samples with organism present) of fecal samples collected at capture by study area are:

	Colville Reservation	Chelan County
Coccidia	2 of 13 Samples	0 of 17 Samples
Capillaria	1 of 13 Samples	0 of 17 Samples
Nematodirus	0 of 13 Samples	1 of 17 Samples
Moniezia	0 of 13 Samples	1 of 17 Samples
Paralephostrongylus	2 of 14 Samples	17 of 22 Samples

**Paralephostrongylus is the lung worm Dr. Briggs Hall, WDFW wildlife veterinarian, has suggested may be associated with the hair loss syndrome observed in western Washington blacktails. Our knowledge of this lung worm and it's association with mule deer and presence/distribution in eastern Washington is limited, so the documentation of it's presence is very significant.

Additional time has been spent collecting data layers, including vegetation coverage, for the Geographic Information System (GIS) of the complete study area. Various meetings have been conducted with WDFW personnel, university staff, individual cooperators, potential cooperators, and other interested parties.

Up-coming Field Activities

Summer and early fall

Sampling of vegetation communities will begin to confirm species presence and relative abundance; this sampling effort will aide in the validation of LANDSAT generated GIS vegetation maps.

Mule deer fecal samples will be collected to identify important forage species; these collections will continue well into the study on a seasonal basis to identify changes in food habits and seasonally important forage species.

Forage plant species will be clipped, dried, and protein and digestible energy levels measured; these measurements will also be continued on a monthly basis to measure changes in protein and energy levels throughout the year.

Ground surveys to classify mule deer by age and sex will begin in mid August. These composition counts will provide additional information on summer survival and reproductive performance.

Weekly flights to monitor locations, movements, and habitat use of radio-marked deer will continue as well.

Fall and early winter

In addition to those mentioned above:

Helicopter surveys to measure age and sex composition post-season.

Additional deer capture and instrumentation with radio collars. By late February 2001, a complete sample of deer should be radio-marked.

