



University of Idaho

Inter-Office Memorandum

To Dean Ehrenreich

From Jim Peek

Subject Research proposal- Chamberlain Basin elk

Date 15 January 1975

This research proposal was originally written for presentation at the 1973 Cooperative Wildlife Research Coordinating Committee meeting but was not used because interest had dropped off. It had been my understanding that this would be a major project I would be concerned with when I first arrived here.

Now the project is very timely and I wish we had been able to get it started. There are several segments to it, all of which are extensions of work completed in the Big Creek - Middle Fork - Chamberlain Basin area. I respectfully request that, if funding should become available for work in this area, this project be given consideration.

Initial Outline - PRIMITIVE AREA ELK STUDIES

December 1975  
Peck

I. INTRODUCTION AND JUSTIFICATION

As the Idaho Primitive Area comes under the intense scrutiny of land planners, recreationists and other economic interests, a more complete understanding of the wildlife resource becomes important. Although reclassification of this area is proceeding, there is as yet insufficient information as to the effect of potential land-use changes on the wildlife resource. For example, if portions of important elk summer range were suddenly made available for logging or mining, what would be the response of elk using the area? Or conversely, if present conditions and trends are to be allowed to continue, can we predict the long-term future for elk? And as hunter interest becomes more intense, how will the inevitable differentials in harvest as related to accessibility modify elk behavior and population?

As presently constituted, the Primitive Area is virtually unique among de facto wilderness in the contiguous 48 states in containing relatively intact and unaltered ecosystems of vegetation, herbivores, and predators. As such, it provides an unprecedented opportunity for investigating ungulate populations in relation to habitats and food sources under natural conditions. Although there have been multitudinous investigations of ungulate-habitat relationships, almost all occur in areas where either the vegetation component or the predator component has been artificially and extensively altered. There is a clear need to investi-

gate the natural regulation of North American ungulates in areas where all trophic levels are relatively intact.

There has already been an extensive amount of work on ungulate habitats in the area. Wing studied compositions and utilization of natural parks commonly used by elk in summer. Claar, Lauer, and Presby investigated forage conditions and utilization on winter range in Big Creek, the main Salmon River, and the Middle Fork areas, establishing a series of permanent study plots. U.S. Forest Service investigations on habitat conditions or trends add basic vegetation information. There are exclosures established in several areas which should be analyzed. The Idaho Fish and Game Department has conducted elk censuses in the area. Two elk traps are present, and limited information from marked elk is available. Long-term investigations of the Idaho Cooperative Wildlife Research Unit on mountain lion ecology have included censuses of deer and elk populations in the Big Creek area. There is obviously a substantial opportunity to integrate an ungulate population study into the variety of vegetation studies and the cougar investigations.

## II. OBJECTIVES

1. To determine migration and movement patterns of elk using the Chamberlain Basin and Big Creek.
2. To relate habitat use to vegetation phenology and food habits, plus other environmental factors as subsequently identified. Use of parks

as compared to adjacent timber areas on summer range will be obtained.

3. To assess conditions and trends of important habitats relative to elk use.
4. To evaluate recruitment and mortality factors of each herd segment.
5. To predict, through assessment of population and habitat criteria, elk population trends.
6. To test the following assumptions:
  - a. That summer range as well as winter range is a limiting factor in elk numbers, since parks, the key summer habitat, are either heavily used or are reserved by specific groups of elk of high social status.
  - b. Mountain mahogany stands were much more productive and provided a major winter forage source for elk and deer during population build-ups of these species.
  - c. Differential hunting pressure on elk at Chamberlain as compared to Cold Meadows is responsible for differences in movements, group sizes, reproductive rates and habitat selection.
  - d. Forages available to elk associated with large burns on winter range along the main Salmon are different than those available in Big Creek and may be responsible for differences in productivity and survival.

### III. METHODS

#### A. Migration and movements: capture of animals.

1. Established traps at Chamberlain and Cold Meadows will be used to capture elk. Traps will be fitted with electronic devices to signal gate closure.
2. Additional traps, possibly including drive traps on specific areas, will be constructed as needed.
3. Initially only adult females and males will be marked to minimize possibilities of obtaining dispersal or other non-representative movements. Preferred individuals will be the largest and most aggressive animals between four and eight years old, if groups are trapped.
  - a. If expandable collars can be obtained, cow:calf units will be radioed and high priority will be placed on recapture of marked individuals. A record of specific individual movements over a period of years will be a unique and invaluable means of ascertaining the mechanism involved in retention of traditional movements.

#### B. Migration and movements: observation.

1. Elk selected for study will be radio-frequency marked with pulsating transmitters with estimated battery life of at least 18 months to cover movement from winter (summer) to summer (winter) range, return, and subsequent movement to summer (winter) range again.

- a. Elk not radio-frequency marked will be ear-tagged but not neck-banded. This will preclude some additional but random observations in the dense cover, but is more acceptable to Primitive Area users and further specifies that concentration of data gathering efforts on radioed animals which may be systematically located with high probability will occur.
2. Systematic aerial and ground searches will be made to relocate individuals according to habitat occupied and specific geographic location. Relocations will be arranged to determine, at appropriate intervals related to changes in phenology and weather conditions, plus logistical considerations, diurnal and nocturnal activity patterns related to habitat use.
3.
  - a. Systematic surveys of the defined study area will be made at regular intervals to record distribution patterns and aggregation patterns of elk.
  - b. Ground observation routes to record presence or absence of elk and elk signs will be established in suitable areas.
  - c. These surveys will be used to supplement and verify data obtained from radio-marked elk.

C. Habitat use: observation.

1. All methods reported in III-B will also obtain data on habitat selection.
2. Food habits data will be obtained primarily by feeding site examinations.

- a. This ensures obtaining a record of use by habitat which rumen analyses may not allow.
  - b. Each feeding site will be analyzed for use and composition. Phenological development of forage species will be considered.
  - c. Rumen collections from hunter hills, predator hills, and other sources will be obtained whenever possible.
  - d. In specific instances as deemed necessary, plots will be established and plant usage will be recorded at intervals.
3. Use will be correlated with weather records and possible behavior patterns.
  4. Particular attention will be paid to use of burns and parks or other particularly key habitats.

D. Habitat condition: trend.

1. Currently established exclosures and permanently marked plots will be analyzed annually for utilization and less frequently for condition or trend in coordination with U.S. Forest Service and Idaho Fish and Game Department personnel.
2. Additional studies will be established as needed.

E. Recruitment and mortality.

1. Aerial search of calving areas, other parks and subsequently winter range to record sex and age distribution in the elk population will be initiated to estimate both recruitment and survival.
2. Reproductive tract collections from the hunter harvest will be attained.

3. Jaw collections from any source available, including hunters and predator hills, will be made.
4. Rectal palpations of live-trapped elk will be used to provide in utero data.

F. Predictions.

1. Estimations of past conditions of mountain mahogany stands, including densities, age structures and productivity, will be made by obtaining data on existing stands and life tables will be established using modelling techniques to estimate past condition, especially during early years of high deer and elk populations.
2. Determination of total mountain mahogany area on winter ranges, and subsequent assessment of carrying capacity at different past intervals assuming different levels of use will be attempted. This will be an effort to determine whether mountain mahogany, a highly palatable forage species, could have served as a major forage source, thereby being responsible for the early increases in deer and elk populations.
3. As trends in habitat and population productivity and/or numbers become apparent, data will be projected with use of modelling techniques in an effort to predict the future status of this population and its habitat.



SALARIES	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Principal investigator, 2 months @1,600	3,200	3,200	3,200	3,200	3,200
Graduate assistants, 2 half-time, @3,500	7,000	7,000	7,000	7,000	7,000
Benefits, 15%	<u>1,530</u>	<u>1,530</u>	<u>1,530</u>	<u>1,530</u>	<u>1,530</u>
Subtotal	11,730	11,730	11,730	11,730	11,730

## CAPITAL OUTLAY

Radiotelemetry receivers, 3 @670	1,110	—	—	—	—
Radio collars, 20/year, @75	1,500	—	1,500	—	—
Miscellaneous telemetry equipment	500	500	500	500	500
4-horse trailer	2,000	—	—	—	—
Saddles, 2 @300	600	—	—	—	—
Backpacks, tents, sleeping bags	1,000	—	—	—	—
Miscellaneous supplies (elk collars, tools, elk trap repair, etc.)	500	200	300	200	200
Subtotal	7,210	700	2,300	700	700

## OPERATING EXPENSE

Airplane rental, 200 hrs/yr, @50/hr	10,000	10,000	10,000	10,000	10,000
Helicopter rental, 20 hrs/yr, @150/hr	3,000	3,000	3,000	3,000	3,000
Vehicle rental, 20,000 mi/yr, @0.15/mi	3,000	3,000	3,000	3,000	3,000
Subsistence, 500 man-days/yr, @5/man-day	2,500	2,500	2,500	2,500	2,500
Computer rental	<u>100</u>	<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>
Subtotal	18,600	18,700	18,700	18,700	18,700

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
IRREGULAR HELP					
Field assistants, 2, 6 months each, @500	6,000	6,000	6,000	6,000	6,000
Benefits, 15%	<u>900</u>	<u>900</u>	<u>900</u>	<u>900</u>	<u>900</u>
Subtotal	6,900	6,900	6,900	6,900	6,900
UNIVERSITY OVERHEAD					
33.45% of salaries	3,412	3,412	3,412	3,412	3,412
SUMMARY					
Salaries	11,730	11,730	11,730	11,730	11,730
Capital outlay	7,210	7,700	2,300	700	700
Operating expense	18,600	18,700	18,700	18,700	18,700
Irregular help	6,900	6,900	6,900	6,900	6,900
University overhead	<u>3,412</u>	<u>3,412</u>	<u>3,412</u>	<u>3,412</u>	<u>3,412</u>
TOTAL	47,852	41,442	43,042	41,442	41,442

5-YEAR TOTAL PROJECT COST: \$215,220