13 April 1979

Kenneth A. Utterback
Gault Hall, Rm 304
Moscow, ID 83843

Dear Ken:

I regret to inform you that your proposal "Beaver Populations in the Idaho Primitive Area" was not selected to receive an undergraduate honorarium.

I compliment you on your efforts and encourage you to try again next year if you are still here.

Sincerely,

Kenneth M. Sowles
Asst. Dean

KMS:bk

cc: S. Peterson

BEAVER POPULATIONS IN THE IDAHO PRIMITIVE AREA

A Research Proposal for the 1979 Season
at the University of Idaho
Wilderness Research Center

College of Forestry, Wildlife
and Range Sciences

Kenneth A. Utterback

Through this project, I plan on determining two things: First I will prepare a present inventory of beavers within the study area. Second, using a vegetative analysis of beaver usage, I will determine how much of the presently unused sections of stream are suitable habitat for beavers.

The census technique to be used will result in the number of active colonies. Novak (1977) found that only approximately 4% of the colonies he studied contained more than two breeding adults; therefore the number of active colonies is directly proportional to the actual breeding population. Leege and Williams (1967) further supported these findings in their work.

STUDY AREA

I intend on concerning myself with Big Creek and its major drainages, within the Idaho primitive area. Streams of interest include; Rush Creek, Crooked Creek, Cabin Creek, Cave Creek, Monumental Creek, Big Ramey Creek and Beaver Creek.

METHOD

The waterways to be studied will be covered on foot to insure that few of the more concealed dens are missed. Where long stretches of trail to be covered do not follow a waterway (e.g. long distances between creeks), however, a horse would be the most efficient use of study time.

Beaver colonies will be counted and mapped as to position on stream sections. Though the territorial boundries of two colonies will not overlap, they are often difficult to distinguish in areas of high concentration by den sitings alone (Bergerud and Miller 1977). At this point, therefor, an important assumption must be made: Due to past trapping activities in the area, I must assume that the area is not at its carrying capacity and therefor the colonies present may be termed "isolated colonies" after Hay (1958). This says that the colonies present will be distinct and seperate in distribution. Based on this assumption, I can then identify a group of bank dens as a single colony with reasonable confidence.

For each colony recorded, observations will be made as to the major vegetation present in the area. It will be noted as to what the animals are utilizing and an estimation of relative importance to the beavers will be made.

DISCUSSION

My estimation of the present population will be based on one breeding pair per colony, ignoring the kits and yearlings still present in the colony. These could later be included, if such information was desired, using Leege and Williams' (1967) average figure of 3.4 fetuses per uterus as a multiplying factor. Two generations per colony would be accurate because the two year olds leave the colony just before the birth of the present years' young (Novak 1977). This would not, however, take into consideration juvenile mortality.

Through my evaluation of the vegetative utilization I will be able to present a value for the relative amount of suitable habitat present. I will not be able to predict the total carrying capacity of the area because colonies will group tighter under high densities and good habitat (Slough and Sadleir 1977). I will, however, be able to put density figures in relationship to animals per utilizable area in addition to animals per total stream coverage.

A major foreseeable problem when dealing with a short-term independent research project by individuals with low experience in such projects is that of following through. I feel I have eliminated many of the scources of difficulty and roadblocks in my project: My census technique does not involve any direct contact with the beavers (thus eliminating the problem of illusiveness). My study area may be expanded, if time permits, to allow for more extensive data; but it will provide what I feel is an accurate coverage of the Big Creek drainage as is. Accessibility of the study area will be provided by the already present trail system that runs along many of the waterways. No equipment, other than standard backpacking gear, will be required. Through these facts and my interest, I feel this is a practicle project and one that I can complete with confidence.

LITERATURE CITED

Bergerud, A.T., and D.R. Miller. 1977. Population dynamics of Newfoundland beaver. Can J Zool. 55: 1480-1492.

Hay, K.G. 1958. Beaver census methods in the Rocky Mt. region. J Wildl Manage. 22(4): 395-401.

Leege, T.A. and R.M. Williams. 1967. Beaver productivity in Idaho. J Wildl Manage. 31(2): 326-332.

Novak, M. 1977. Determing the average size and composition of beaver families. J Wildl Manage. 41(4): 751-754.

Slough, B.G., and R.M.F.S. Sadleir. 1977. A land capability classification system for beaver. Can J Zool. 55: 1324-1335.

INVESTIGATION OF LONG- AND SHORT-TAILED WEASEL (*Mustela frenata* and *M. erminea*) OCCURRENCE IN THE IDAHO PRIMITIVE AREA

A Research Proposal
Submitted by
Barbara Schrader
2 April, 1979

College of FWR
University of Idaho
Moscow, Idaho

INTRODUCTION

The long- and short-tailed weasels (*Mustela frenata* and *M. erminea* respectively) are among the smallest members of the mustelid family in North America. Few studies have been done in the northwest on these two species. Musgrove (1951) studied winter foraging habits at Robinson Lake, Latah Co., Idaho, and later looked at general mustelid foraging patterns in the Bitterroot Mountains (1953). Yaich (1972) studied winter sympatry of long- and short-tailed weasels in eastern Washington. These studies have dealt with winter snow-tracking of weasels. Summer ecology has yet to be documented in the northwest.

Habitat

Studies in various geographic areas have revealed typical short-tailed weasel habitat to include Canadian and Hudsonian zones, with arid and desert areas being avoided (Dalquest 1948). Larrison (1967) reports their presence in lowland areas, forests, and talus slopes, being replaced at higher altitudes by long-tailed weasels. Cowan and Guiguet (1965) also found the short-tailed weasel at lower elevations in rock slides in deciduous forests and coniferous forest edges. Seton (1929) states that the short-tailed weasel is never found in dry, open prairies and rarely in open marshes. In Alberta, Soper (1942) reports lower spruce-aspen parklands, streamside coniferous belts, and grassy semi-wooded swamplands to be favored short-tailed weasel habitat.

The long-tailed weasel is common to virtually all life zones (Dalquest 1948). Larrison (1967) shows widespread distribution in Idaho. Hall (1951) states that the only condition required for long-tailed weasel success is the presence of water during the summer months. Typical habitat for long-tailed weasels in the northwest includes rough, rocky areas in the mountains and subalpine rock slides in semi-open or forested areas (Larrison 1967).

Winter research by Yaich (1972) revealed habitat preference by the short-tailed weasel for wetter lowlands and areas near water, while the long-tailed weasel prefers drier upland and brushy habitats.

Foraging Patterns and Food Habits

Foraging patterns of the short-tailed weasel were found by Yaich (1972) to be up and down brushy ravines near water. The long-tailed weasel foraged parallel to ridge crests, in a manner perpendicular to the short-tailed weasel foraging pattern.

Food habits of the two weasel species are varied but similar (Yaich 1972). Mice, voles, shrews, and chipmunks are major food items. The only dietary difference found by Yaich (1972) was that the long-tailed weasels prey on larger animals such as rabbits, larger birds, and larger members of the rodent family. Yaich (1972) also found voles and shrews were the most abundant in favored short-tailed weasel habitat, while deer mice were most abundant in long-tailed weasel habitat.

Density and Home Range

Musgrove (1953) reports weasel density in the Bitterroots as three to nine short-tailed weasels per mile, and one long-tailed weasel per mile. Long-tailed weasels seem to require roughly three times as much area as short-tailed weasels.

Musgrove (1951,1953) describes foraging patterns of both weasel species within a definite area. A foraging circuit was regularly travelled. Long-tailed weasels stayed within a two square mile area returning over a definite route in from 7 to 12 days (Musgrove 1951, 1953). The short-tailed weasel as described by Seton (1929) could have a 10-mile circuit at its extreme with concentrations up to 10 per square mile, as cited by Musgrove (1953). Musgrove (1951,1953) lists foraging patterns of short-tailed weasels as four miles long and taking 10 to 15 days to complete a circuit.

STUDY AREA

Research is to be based at the University of Idaho Experiment Station, Taylor Ranch. Rugged terrain makes up this roadless area in the Idaho Primitive Area of east-central Idaho. The Taylor Ranch is situated on Big Creek and provides an ecosystem that has been disturbed little by humans.

OBJECTIVES

The objectives of this study are:

1. To find weasel occurrence through trapping
2. To determine cover type of the area of weasel occurrence
3. To determine prey densities in areas of weasel occurrence
4. To determine foraging routes of weasels from two different drainage systems
5. To compare trapping success of live- versus steel-traps

METHODS

The first two weeks of this study will involve reconnaissence work to determine likely trapping sites. When trapping areas have been decided on, traplines will be established along designated riparian sections. Each trapline will consist of five size "0" steel traps, five rat traps, and ten four-inch wide Sherman live traps. Traps will be set 100-300 yards apart (Musgrove 1951) in a best-set fashion. Ideal habitat sampled will be riparian zones at brushy narrow spots where a wildlife "funnel" may exist. Musgrove (1951) stated his best set was a trap under an old yellow pine log in the above habitat.

Once an individual weasel is caught in a Sherman live-trap it will be forced into a cone-shaped wire holder (Erickson 1947) by the investigator. Sex ans age of the weasel will be recorded, and toe clipping and/or tail shaving will be used to mark that individual. The weasel will then be released. When a weasel is caught in a rat trap or steel-trap, sex and age will be recorded, and a study specimen prepared from the skin.

Trapping will take place on Big Creek and Rush Creek since this is where sightings of weasels have occurred (C. Elliott, pers. comm.). Because weasels seem to follow the same route repeatedly, these areas will be intensively trapped. By moving the traps every three days, weasels may be caught at different sections of the foraging routes.

When setting out weasel traps, a 15-meterradius from each trap will be sampled for small mammals. Ten museum specials, four rat traps, and one small Sherman live-trap will be set in best-set fashion. The relative density of small mammals will be determined for that specific area by three consecutive nights of trapping.

A chi-square test will be used to determine if there is a relationship between method of trapping and sex of weasel caught, and between weasel occurrence and habitat. A student's t-test will be used to determine if a correlation exists between weasel occurrence and small mammal species trapped on an area. Density of small mammals will be determined by catch/number of trap nights.

Materials needed for this study include:

10 steel-traps size "0"
25 rat traps
20 Sherman live-traps, 4" by 4"

200 museum specials
20 Sherman live-traps, 2" by 2"
wire for cone trap
meat for traps- obtained by small mammal
trapping at Taylor Ranch

LITERATURE CITED

Dalquest, W.W. 1948. Mammals of Washington. Univ. Kansas Publ., Mus. Nat. Hist. 2:1-444.

Erickson, A.B. 1947. A multiple type tat and mouse holder. J. Wildl. Manage. 11:351.

Hall, E.R. 1951. American weasels. Pub. of the Mus. Nat. Hist., Lawrence, Kansas. vol. 4:1-443.

Larrison, E.J. 1967. Guide to Idaho mammals. Idaho Academy of Science. 166 pp.

Musgrove, B.F. 1951. Weasel foraging patterns in the Robinson Lake area, Idaho. Murrelet 32(1):11.

_____. 1953. Distribution and foraging patterns of the mustelids in part of the Bitterroot Mountains of Idaho. Unpub. M.S. Thesis, Univ. Idaho.

Seton, E.T. 1929. Lives of game animals. vol. 2,4 746pp, 949pp.

Soper, J.D. 1942. Mammals of Wood Buffalo Park, northern Alberta and District of Mackenzie. J. Mamm. 23:119-145.

Yaich, J.A. 1972. Comparitive winter ethology of two mustelids (Mustela frenata and M. erminea) in northeastern Washington. Unpub. M.S. Thesis, Univ. Idaho, 68pp.

University of Idaho
Inter-Office Memorandum

To Faculty and Staff

From Ken Sowles

Subject Undergraduate Summer Honorariums

Date 23 February 1979

Attached is the announcement for this years undergrad independent study at the Taylor Ranch.

Your help is requested in getting this information to the students and assisting them with proposals.

Remember, each advisor gets to spend some time at the ranch for the purpose of directing the students efforts.

Thanks for your help,

Kenneth M. Sowles
Asst. Dean

KMS:bk

OLD

THE WILDERNESS RESEARCH CENTER

COLLEGE OF FORESTRY, WILDLIFE AND RANGE SCIENCES

INVITES APPLICATIONS FOR SUMMER STUDY

UNDER A STUDENT WILDERNESS STUDY PROGRAM

Undergraduate independent study in the Idaho Primitive Area

$600 honorarium plus expenses

Academic course credit

Undergraduates in the College of Forestry, Wildlife and Range Sciences who are interested in spending a summer conducting independent research of their own choosing are invited to submit a research proposal to the Dean, College of Forestry, Wildlife and Range Sciences, for summer field studies at the Taylor facility in the Idaho Primitive Area. Proposals may cover any area of natural resource management/ecology. Awards will be made on a competitive basis to persons submitting the best proposals. Proposals will be judged by a faculty committee on innovation, literature search, detail in methods used, potential for attainment of objectives, and educational value. The emphasis may be resource and/or sociologically oriented.

Students whose proposals are approved will receive academic course credit under FWR 499 (directed studies in fisheries, forest, range, recreation, and wildlife sciences) upon completion of the summer work and acceptance of a research report. Food, housing, air travel to and from the Taylor facility, and most equipment will be provided. An honorarium of $600 will be awarded. Interested students are urged to discuss ideas with advisors and other faculty.

Submit proposals to Mrs. Kaufman, Deans Office by April 2, 1979.