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JUNEAU, ALASKA

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REPORT ON LYNX STUDIES

By

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Volume X
Annual Project Segment Report
Federal Aid in Wildlife Restoration
Project W-17-1, Work Plan A, 4 and 6

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(Printed January, 1970)

STUDY PLAN SEGMENT REPORT
FEDERAL AID IN WILDLIFE RESTORATION

STATE: Alaska
PROJECT NO.: W-17-1 TITLE: Small Game and Furbearer Investigations
STUDY PLAN: A TITLE: Furbearers
JOB NO.: 4 TITLE: Lynx: Productivity and Breeding
PERIOD COVERED: July 1, 1968 to June 30, 1969

ABSTRACT

The 1968-69 lynx collection contained 338 lynx; 201 males (59.7%) and 138 females (40.3%); 6.8% were kits, an increase from 2% kits for 1967-1968. Average number of placental scars per female was 2.16, an increase from 1.45 for 1967-1968.

A format was designed for an IBM form 577 Optical Mark Page Reader Sheet for data processing.

Average lynx harvest for 1968-1969 was 3.5 animals per trapper, an increase from 1.63 of 1967-1968. All areas except Glennallen found more hares for the same period. All areas except Fort Yukon found grouse populations high in 1968-1969.

RECOMMENDATIONS

Due to an expected increase in the lynx population throughout the State, it is recommended that lynx carcasses be purchased from specific areas from a selected, reliable group of trappers.

STUDY PLAN SEGMENT REPORT
FEDERAL AID IN WILDLIFE RESTORATION

STATE: Alaska

PROJECT NO.: W-17-1

STUDY PLAN: A

JOB NO.: 4

TITLE: Small Game and Furbearer
Investigations

TITLE: Furbearers

TITLE: Lynx: Productivity and
Breeding

PERIOD COVERED: July 1, 1968 to June 30, 1969

OBJECTIVES

To obtain data on the breeding and physical condition of lynx in Alaska from carcass examinations.

To determine annual productivity and to relate production of young to population trends of lynx.

To assess relationships between lynx numbers and abundance of their prey.

TECHNIQUES

Three hundred and thirty-eight skinned carcasses were purchased from trappers throughout the legal trapping season from November 1, 1968 to March 31, 1969. The carcasses were weighed, standard mammal measurements taken, and the skull, radius, ulna and reproductive tracts were removed for further processing. A fat globule located on the dorsal surface of the ziphoid process was removed and weighed as an index of condition.

The skull, radius, and ulna from each specimen were cleaned to remove flesh. The upper left canine tooth was removed and placed in a 10-dram vial in a 1-5% formalin solution. If the upper left canine tooth was broken, the upper right canine was removed.

Female reproductive tracts were placed in 1-quart capacity freezer bags with about 15 drams of water and frozen. At a later date they were thawed and examined for placental scars. Both uterine horns were slit. Tracts containing placental scars that were considered light in color or old were photographed in order that they could be independently read by other workers. The uterus and ovaries were then placed in 15-dram vials in a solution of 10% formalin for a period of 2 months for hardening. After hardening, ovaries were macroscopically sectioned and the number of corpora albicantia noted. Testes were removed from males (when attached) and preserved in 5% formalin to be processed at a later date.

One hundred and sixty-one canine teeth from data year 1967-1968 and 62 canine teeth from data year 1966-1967 were decalcified in a solution of nitric acid (915 ml H₂O; 10 ml 100% formalin; 75 ml conc. HNO₂). They were rinsed of acid residue and 12-15 longitudinal sections 18 microns in thickness were sectioned on a cryostat. The best four sections were mounted on 25 x 75 mm slides, stained with Paragon multiple stain for frozen sections, and subsequently read by at least two other workers. All data were entered on IBM Optical Mark Page Reader Sheets (IBM form 577).

Eighty-eight pairs of ovaries from the 1967-1968 collection were macroscopically sectioned with a razor blade and the number of corpora albicantia counted. The data were entered on IBM 577 forms.

A format was designed for an IBM form 577 to include parameters (Table 1) essential to the lynx program. An overlay was designed and printed on the scanner sheets in non-photographable blue ink for reduction of error in entering data. The scanner sheet format is designed to be read by an IBM 1231 Scanner which encodes data into assembler language that can be fed directly into a programmed IBM 360 computer.

Three hundred and forty-three radii and skulls from data year 1966-1967, and 161 radii and skulls from data year 1967-1968 were measured and the data entered on IBM 577 forms with other reproductive and autopsy data. The radii were measured for the greatest length. The following skull measurements were taken as parameters of age and growth:

1. Mandible Length - length of horizontal ramus from the anterior face of I¹ alveolus to the most posterior margin of the articular process.
2. Condylbasal Length - from the anterior face of I¹ alveolus to the posterior margin of the occipital condyle.
3. Palatal Length - from the anterior face of I¹ alveolus to the posterior margin of the palatines.
4. Zygomatic Width - greatest width across zygomatic arches.
5. Least Interorbital Width - least width of skull at frontal bones, anterior to the orbital processes.
6. Least Braincase Width - least width of skull at frontal bones, posterior to the orbital processes.
7. Mastoid Breadth - least width of skull between mastoid foramina.
8. Maxillary Tooth Row - from anterior face of C¹ alveolus to posterior face of M¹ alveolus.
9. Palatal Width at Molars - greatest width of palate at M¹ alveolus.
10. Palatal Width at Canines - greatest width of palate at C¹ alveolus.

Two hundred and twenty-seven trapper questionnaires were mailed to trappers who had cooperated with us in the past. The questionnaire provides for observations of density and population trends of lynx, hare, and grouse. Small maps were included with the questionnaire.

Table 1. Parameters entered on the IBM form 577 Optical Mark Page Reader Sheet.

- | | |
|---------------------------------|-------------------------------------|
| 1. Accession Number | 23. Corpora albicantia, right |
| 2. Year | 24. Corpora albicantia, left |
| 3. Month | 25. Cementum layers |
| 4. Day | 26. Placental scars, right |
| 5. Sex | 27. Placental scars, left |
| 6. Age | 28. Weight of ovary/testicle, right |
| 7. Locale | 29. Weight of ovary/testicle, left |
| 8. Contour length | 30. Corpora lutea, right |
| 9. Tail length | 31. Corpora lutea, left |
| 10. Ear length | 32. Embryos, right ♂, ♀ |
| 11. Processer | 33. Embryos, left ♂, ♀ |
| 12. Hind foot length | 34. Radius total length |
| 13. With or without claws (#12) | 35. Mandible length |
| 14. Weight | 36. Condylbasal length |
| 15. Dessication index | 37. Palatal length |
| 16. Height at shoulder | 38. Zygomatic breadth |
| 17. Girth | 39. Least interorbital width |
| 18. With or without claws (#16) | 40. Least braincase width |
| 19. Fat globule weight | 41. Mastoid breadth |
| 20. Stomach contents | 42. Maxillary tooth row length |
| 21. Lactation | 43. Palatal width at the molars |
| 22. Pregnant or not | 44. Palatal width at the canines |

An index has been established to quantify the answers of the questionnaire. Each answer is given the following numerical values: high or more equals nine; medium or same equals five; low or fewer equals one.

RESULTS

Breeding and Physical Condition of Lynx

Results from interpretation of number of cementum layers in sectioned teeth have indicated an approximate 10% error among workers. In cases of error, another canine tooth was utilized to insure accuracy of the technique. It was found that the greatest error resulted from using a low power dissecting scope of poor condition. A Nikon dissecting scope with much greater resolution reduced this source of error considerably, and involved less eye strain on the part of the investigator.

Age determinations were not made using epiphyseal sutures as has been the case in the past. Unpublished tooth data for data years 1964-1965, 1965-1966, and 1966-1967 have revealed that many lynx identified as subadults have as many as three cementum layers, with about 25% of those specimens labeled subadults being adults with two or more cementum layers (Klevezal and Kleinenberg, 1969). A detailed computer analysis of sex and age ratios will be included in the project completion report.

Table 2 lists the sources and basic age breakdown into adults and kits of the 1968-1969 lynx collection.

Table 2. Age and sex composition of 1968-1969 lynx carcass collection.

Fort Yukon Area

	<u>November</u>	<u>December</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>Total</u>
% males*	76.5	60.0	66.6	66.6	66.6	72.5
% females*	23.5	40.0	33.0	33.3	33.0	27.5
% kits**	5.9	20.0	33.0	0.0	0.0	7.8
Total	26M 8F	3M 2F	2M 1F	4M 2F	2M 1F	37M 14F

Fairbanks Area

	<u>November</u>	<u>December</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>Total</u>
% males*	30.7	66.6	80.0	42.1	63.1	53.1
% females*	69.2	33.3	20.0	57.9	36.8	46.8
% kits**	69.2	0.0	0.0	15.8	5.3	14.0
Total	4M 9F	6M 2F	4M 1F	8M 11F	12M 7F	34M 30F

Delta Area

	<u>November</u>	<u>December</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>Total</u>
% males*	50.0	50.0	100.0	0.0	100.0	66.6
% females*	50.0	50.0	0.0	0.0	0.0	33.3
% kits**	0.0	0.0	0.0	0.0	0.0	0.0
Total	1M 1F	1M 1F	1M 0F	0M 0F	3M 0F	6M 3F

Tok Area

	<u>November</u>	<u>December</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>Total</u>
% males*	71.4	56.3	0.0	72.7	63.6	64.5
% females*	28.6	43.7	0.0	27.3	36.4	35.5
% kits**	0.0	0.0	0.0	18.2	0.0	4.4
Total	5M 2F	9M 7F	0M 0F	8M 3F	7M 4F	29M 16F

Glennallen Area

	<u>November</u>	<u>December</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>Total</u>
% males*	40.0	57.2	50.0	71.4	77.8	57.9
% females*	60.0	42.8	50.0	28.6	22.2	42.1
% kits**	0.0	0.0	4.5	0.0	0.0	1.44
Total	4M 6F	8M 6F	11M 11F	10M 4F	7M 2F	40M 29F

Table 2. Age and sex composition of 1968-1969 lynx carcass collection (Cont'd.).

Anchorage-Kenai Area

	<u>November</u>	<u>December</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>Total</u>
% males*	100.0	75.0	66.6	60.0	0.0	66.6
% females*	0.0	25.0	33.3	40.0	0.0	33.3
% kits**	0.0	50.0	11.1	30.0	0.0	25.0
Total	1M 0F	3M 1F	6M 3F	6M 4F	0M 0F	16M 8F

Other Areas

	<u>November</u>	<u>December</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>Total</u>
% males*	42.9	64.3	46.2	50.0	46.4	49.2
% females*	57.1	35.7	53.8	50.0	63.6	50.8
% kits**	0.0	7.1	0.0	0.0	0.0	1.6
Total	3M 4F	9M 5F	6M 7F	9M 9F	4M 7F	31M 32F

* Includes kits

** Includes kits of both sexes of total collection.

NOTE: 14 adult lynx (7M, 7F) are not included as no date of collection is known.

Placental scar information is presented in Table 3. The lynx carcass collection for 1968-1969 contained a ratio of 3:2 males to females, which is a change from the 2:3 male to female ratio of 1967-1968. This resulted in a smaller sample of females than expected. Some female reproductive tracts were lost when a technician misplaced them in the freezer.

The average number of placental scars per adult female from the 1968-1969 collection was 2.16, an increase from 1.45 in 1967-1968.

The corpora albicantia information for 1967-1968 will be included in the project completion report with all other corpora albicantia and reproductive data relevant to the project.

Lynx Numbers and Prey Abundance

Questionnaires have been mailed out to trappers at the close of the trapping season since 1966, with variable responses (Table 4). The increase in 1968-1969 from 1967-1968 is probably the result of more personal contact with trappers.

The area covered by the survey includes the Yukon Valley from the village of Tanana to the Canadian Border; the Tanana Valley from the mouth of the Tanana River to the Canadian border; the Copper River Valley from the headwaters to Chitina; and the Glenn Highway from Anchorage to Glennallen. The area has been broken down into six subareas corresponding to response to questionnaires by trappers. The six subareas are Fort Yukon, Fairbanks, Delta, Tok, Glennallen, and Anchorage. This is a reduction from the seven areas previously used. Minchumina and Rampart have been deleted and the Anchorage area has been added. A miscellaneous area has been established to include a few responses from the general area which do not fit into the six subareas.

Lynx Populations

The average number of lynx harvested per trapper in 1968-1969 was 2.16, an increase from 1.45 per trapper in 1967-1968. This apparent increase is due to the heavy harvest by Fort Yukon trappers, who took 26.4 lynx per trapper in the 1968-1969 season (Table 6). Fort Yukon was the only area that reported an increase. The average number of lynx taken per trapper excluding the Fort Yukon area for 1968-1969 was 1.30, a decrease from 1.45 for 1967-1968. Of a total 40 trappers who had trapped, 5 were from Fort Yukon and had taken 132 (61.6%) of 214 lynx reported caught from all areas (Table 5).

Hare Populations

All areas except Glennallen reported more hare in 1968-1969 than in 1967-1968 (Table 7). Glennallen reported the same population for both 1967-1968 and 1968-1969. All areas except Fort Yukon reported low hare populations in 1968-1969. All five Fort Yukon trappers reported high hare populations for 1968-1969.

Table 3. Average number of placental scars per female from the 1968-1969 lynx carcass collection.*

Fort Yukon	Fairbanks	Delta	Tok
2.5	3.1	2.0	2.0
Glennallen	Anchorage	Other	Total
2.0	1.0	2.0	2.16

* Results from 65 reproductive tracts.

Table 4. Responses to lynx trapper questionnaire, 1966 to 1969.

<u>Year</u>	<u>Number Mailed</u>	<u>Number Answered</u>	<u>Percent Answered</u>
1966	295	109	37
1967	295	63	21
1968	255	83	33
1969	227	85	37

Table 5. Summary of replies to the 1969 questionnaire of lynx harvest.

	<u>No. of Responses*</u>	<u>No. of Lynx Harvested</u>	<u>Average Catch Per Trapper</u>
Fort Yukon	5	132	26.40
Fairbanks	16	20	1.35
Delta	9	20	2.22
Tok	4	2	0.50
Glennallen	16	18	1.11
Anchorage	5	0	0.00
Other Areas	<u>13</u>	<u>22</u>	<u>1.69</u>
TOTAL	68	214	3.5

Largest catch reported - 40

*Trappers not answering the question, "How many lynx did you take?" were considered to have trapped and not caught lynx.

Table 6. Summary of replies to the 1969 questionnaire on lynx populations.

	<u>Abundance in 1968-69 Season</u>				<u>Comparison with 1966-67 Season</u>			
	<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Index*</u>	<u>More</u>	<u>Same</u>	<u>Less</u>	<u>Index*</u>
Fort Yukon	1	4	0	5.80	5	0	0	9.00
Fairbanks	0	1	17	1.22	3	7	7	3.83
Delta	0	0	9	1.00	1	6	2	4.55
Tok	0	0	4	1.00	0	1	3	2.00
Glennallen	0	1	16	1.23	1	5	10	2.75
Anchorage	0	0	5	1.00	0	2	3	2.60
Other Areas	<u>0</u>	<u>0</u>	<u>13</u>	<u>1.00</u>	<u>4</u>	<u>3</u>	<u>6</u>	<u>4.38</u>
TOTAL	1	6	64	1.17	14	24	31	4.01

* See section on techniques for explanation of index.

Table 7. Summary of replies on the 1969 questionnaire on hare populations.

	<u>Abundance in 1968-69 Season</u>				<u>Comparison with 1967-68 Season</u>			
	<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Index*</u>	<u>More</u>	<u>Same</u>	<u>Less</u>	<u>Index*</u>
Fort Yukon	2	3	0	6.60	5	0	0	9.00
Fairbanks	0	6	12	2.33	10	3	4	6.41
Delta	0	5	4	3.22	7	1	1	7.66
Tok	0	1	3	2.00	2	1	1	6.00
Glennallen	0	2	15	1.47	4	5	6	3.80
Anchorage	0	0	5	1.00	1	3	1	5.00
Other Areas	<u>1</u>	<u>4</u>	<u>8</u>	<u>2.84</u>	<u>6</u>	<u>3</u>	<u>4</u>	<u>4.92</u>
TOTAL	3	21	47	2.52	35	16	17	5.44

* See section on techniques for explanation of index.

Table 8. Summary of replies to the 1969 questionnaire on grouse populations.

	<u>Abundance in 1968-69 Season</u>				<u>Comparison with 1967-68 Season</u>			
	<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Index*</u>	<u>More</u>	<u>Same</u>	<u>Less</u>	<u>Index*</u>
Fort Yukon	0	3	2	3.40	0	3	2	3.40
Fairbanks	2	9	7	2.20	7	8	2	6.17
Delta	1	7	1	5.00	7	2	0	8.11
Tok	0	3	1	2.00	3	1	0	7.75
Glennallen	1	5	11	2.64	7	5	3	5.40
Anchorage	0	1	4	1.80	0	5	0	5.00
Other Areas	<u>2</u>	<u>7</u>	<u>4</u>	<u>4.15</u>	<u>4</u>	<u>5</u>	<u>4</u>	<u>5.00</u>
TOTAL	6	35	30	3.64	28	29	8	6.00

* See section on techniques for explanation of index.

The index for hares from Fort Yukon has indicated a progressive increase; 1966-1967 - 4.20; 1967-1968 - 5.89; 1968-1969 - 9.00. Glennallen had the lowest trend index, 3.80.

Grouse Populations

All areas except Fort Yukon indicated more grouse in 1968-1969 than in 1967-1968 (Table 8). Fort Yukon indicated a decrease in 1968-1969. Fort Yukon and Glennallen indicated a low grouse population 1968-1969, while the remaining areas reported medium populations. Delta had the highest trend index (8.11) while Fort Yukon had the lowest trend index (3.40).

Comparable data for the 1967-1968 survey are contained in Volume VIII Annual Project Segment Report, Federal Aid to Wildlife Restoration, Project W-13-R-3, Work Plan A.

Questionnaire form, letter to the trapper and the report of the results of the survey which were sent to the trappers were the same as those used in the 1967 and 1968 surveys and have not been presented in this report.

LITERATURE CITED

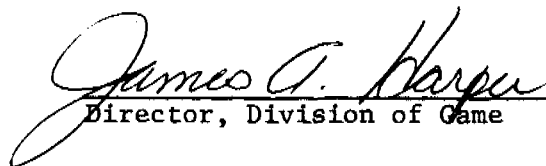
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STUDY PLAN SEGMENT REPORT
FEDERAL AID IN WILDLIFE RESTORATION

STATE:	<u>Alaska</u>	TITLE:	<u>Small Game and Fur-</u> <u>bearer Investigations</u>
PROJECT NO.:	<u>W-17-1</u>	TITLE:	<u>Furbearers</u>
STUDY PLAN:	<u>A</u>	TITLE:	<u>Lynx: Habits, Move-</u> <u>ments, and Mortality</u>
JOB NO:	<u>6</u>		
PERIOD COVERED: July 1, 1968 - June 30, 1969			

ABSTRACT

A study area was selected and closed to trapping near Central, Alaska for live capture and radio tracking of lynx. In 4,178 trap nights 14 individual lynx were caught a total of 25 times. Sernalyn was used for sedation in doses ranging from 2.00 mg/lb. to .085 mg/lb. Males were found to be more susceptible to sernalyn than females. Fourteen recaptured animals traveled an average of 2.59 miles between recaptures (0-12.2). The average frequency of recapture was 45 days (1-147). Radio transmitters were placed on two males and one female. Sixty-three radio fixes were taken.

RECOMMENDATIONS

Continue to develop more efficient radio-location techniques with the use of off-road vehicles; concentrate on installing transmitters on females in the early spring to locate dens; monitor dens and determine kit survival; establish a roadside index for hare and grouse numbers in the study area, and correlate with lynx numbers.

STUDY PLAN SEGMENT REPORT
FEDERAL AID IN WILDLIFE RESTORATION

STATE:	<u>Alaska</u>	TITLE: <u>Small Game and Fur-</u> <u>bearer Investigations</u>
PROJECT NO:	<u>W-17-1</u>	TITLE: <u>Furbearers</u>
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JOB NO:	<u>6</u>	
PERIOD COVERED: July 1, 1968 - June 30, 1969		

OBJECTIVES

To determine breeding and denning habits of lynx and correlate productivity with prey abundance and kit survival.

To learn why trapping is selective for particular sex and age groups at certain times.

To determine seasonal movements and changes of seasonal movement patterns at high and low lynx densities.

STUDY AREA

An area of 146 square miles was set aside for the lynx movement study near Central, Alaska, 65°34'30"N, 144°48'15"W. The study area was closed to trapping by field announcement, effective 22 September 1968. The study area became officially closed for the duration of the study by authority of AS16.05.250(2) as stated in the 1969-70 Alaska Hunting, Trapping and Guiding Regulations, pages 66-67. Article 5 "Areas Closed to Trapping," Section C, "...in the Steese Highway Closed Area (Unit 20), all of the drainages of Ketchum, Deadwood, and Boulder Creeks south of the Steese Highway and Circle Hot Springs Road."

The area is occupied by rolling hills of the Yukon-Tanana upland, as described by Hatler (1967), with elevations ranging from 1000 to 3535 feet.

A detailed treatment of soil types in relation to forest types is described by Wilde and Krause (1960). Climatography data has been described by Watson (1959).

Factors Related to Choice of the Study Area

Densities of snowshoe hares as high as six per mile were seen along Deadwood Canyon Road in late June 1968, indicating a relatively high prey population for lynx. Trails were investigated and hair samples from the bark of trees along the trails were examined to determine the presence of lynx hair. Sufficient hair and other signs were found to warrant a test trapping program. Eight Tomahawk live traps, 20"x26"x60" were placed along the Deadwood Canyon Road on 4 July 1968. Two individual females were caught on 9 and 15 July. The latter was observed to be lactating. It was decided to increase trapping effort with an additional twelve Tomahawk live traps on 3 August 1968. Four more females were caught during August. At this point, it was decided that the Deadwood Canyon area would be suitable for a permanent lynx study.

Other factors related to the choice of Deadwood Canyon for a closed study area were that no one had trapped the area for 14 years, and only one trapper, for recreational purposes, had trapped the Steese Highway and Circle Hot Springs Road bordering the area. Vehicle access for running a lengthy trapline, an Alaska State Highways garage in Central for gas and oil, and the use of the Fairbanks District Bureau of Land Management's Central Fire Guard Station for a field facility were also important factors. The Steese Highway is closed from 10 October to 15 April every year, limiting the amount of traffic to seven vehicles active in Central, Circle, and Circle Hot Springs during the winter months and during the early spring breeding season of lynx.

Signs were constructed of five-eighths inch plywood, 2 by 4 feet, with "CLOSED AREA" printed in red letters six inches high, and "ALASKA DEPARTMENT OF FISH AND GAME, CLOSED TO TRAPPING" in black letters three inches high, all on a yellow background. The signs were placed on trees at one-half to three-quarter mile intervals along the Steese Highway and Circle Hot Springs Road bordering the study area.

TECHNIQUES

Prey Animals

Hares and grouse were counted daily along 5.6 miles of Deadwood Road throughout the duration of field work, using the method described by Lord (1959). Weather and time of day were recorded. The results are not summarized in this segment report, but will be included in the project completion report.

Live Trapping

Seventeen Tomahawk single-door live traps, 20"x26"x60", were placed at half-mile intervals on trails along Circle Hot Springs Road in the study area. Three additional traps were set at one-mile intervals at Miles 155, 156 and

157 Steese Highway near Circle as a result of lynx sightings by local residents. These traps were moved to Boulder Creek on 9 March 1969. Sets were made at junctions of trails paralleling the road and trails coming down the hillsides toward the creeks. The trap line was closed 10 December 1968 and reopened 2 March 1969. Not all traps were continuously operational during trapping.

Traps were baited using combinations of animal "forms" and scents. Hares, grouse and ducks were used for forms. Beaver castor, mink scent, and a mixture of anise oil and catnip were used for scents. Whole hares were used, while only the skins of grouse and ducks (obtained by local hunters), were used as forms. The hare and bird forms were put into life-like positions at the rear of the live-traps. The anise oil and catnip mixture was wrapped in tinfoil and suspended with monofilament from the top of the cage over the treadle.

Twenty-four Thompson Number 2 snares were modified to catch lynx. The bead at the end of the snare designed to prevent the snare wire from pulling through the locking device was removed with a chisel. Nine inches were marked off from the free end of the snare and a 10-32 stove nut was crushed onto the snare wire at the mark with a vise. The free end was then run back through the locking device and another stove nut crushed onto the end to prevent the snare wire from pulling through the locking device. The loop of the snare could subsequently close to a circumference of only nine inches, preventing the strangling of a lynx.

One snare was set at Mile 157 Steese Highway 5 March 1969 on a well-traveled trail for 23 trap nights. Twelve snares were placed around a suspected den site at the mouth of Louie Pup at Boulder Creek for a single night (twelve trap nights). An assistant spent the night within hearing distance of the den snares.

All animals were released from the live traps, including a female that had been snared. Removal procedure involved placing the traps on the end of a pickup truck bed with the door facing away from the truck. A piece of cord was tied to the bottom of the door and run up and over the top of the trap to the rear. A wire coat hanger was bent to pull the bracing section of the door to the rear, allowing the bottom half of the door to be pulled open with the cord. The lynx then had to jump onto the ground, reducing the possibility of an undesirable "U" turn around the trap.

Immobilization and Handling

Immobilization of live-trapped lynx was accomplished with Sarnalyn [1(1-phenylcyclohexyl) piperidine monohydrochloride] of 100 mg/ml, concentration (Parke, Davis and Company, Detroit, Michigan). Injections were made using one 1-ml. Stylex nonpyrogenic disposable syringe with number 18 needle. The effects were recorded (Table 2).

A Thompson Number 2 snare, with the locking device removed, was inserted through the top of the live trap and placed around the animal's neck. A straight, quick pull to the top of the live trap allowed sufficient time and immobility to inject the lynx, usually in the neck. While the animal was tractable, a Number 4 National Ear Tag was placed at the proximal anterior edge of the left ear. In the past, Number 3 tags were placed on the proximal posterior edge of the left ear, making it extremely difficult to recognize a recapture in the traps.

The following standard mammal parameters of size were taken: total length, length of tail, hind foot, ear, and live weight. Seven lynx captured between 15 August and 28 September were offered water, which they drank, before being injected with sernalyn. The live trap was placed at an angle in a creek so that only twelve inches of the floor of the trap was submerged, allowing the animals to drink.

A data form was designed (Table 1) for use in the field and as a permanent record for tagged lynx data.

On two occasions adults with young were seen. These sightings were at the mouth of Louie Pup at Boulder Creek on 26 July 1968; and 250 meters south of Number 4 trap in Deadwood Canyon on 1 October 1968 (Figure 1). Both sightings were of an adult with two young of the year. Suspected den sightings were of an adult with two young of the year. Suspected den sites in the vicinity of animals sighted (5) were investigated.

Picea mariana interspersed with Salix sp. were the dominant plants characterizing both areas. No subsequent lynx sightings nor signs were seen.

Table 1. Format for tagged animal data record.

<u>SPECIES</u>		<u>SEX</u>	<u>DATE TAGGED</u>		
<u>LOCATION CAUGHT</u>		<u>SIZE TAG</u>			
<u>TAG #'s</u>		<u>TAG LOCATION</u>			
<u>TAGGED BY</u>		<u>DRUG DOSE</u>			
<u>WT</u>	<u>TOTAL LENGTH</u>	<u>TAIL LENGTH</u>	<u>EAR LENGTH</u>	<u>HIND FOOT</u>	
<u>GIRTH</u>	<u>HEIGHT AT SHOULDER</u>				
<u>RECAPTURE DATE</u>		<u>LOCATION</u>	<u>CAUGHT BY</u>		
<u>WT</u>	<u>TOTAL LENGTH</u>	<u>TAIL LENGTH</u>	<u>EAR LENGTH</u>	<u>HIND FOOT</u>	
<u>GIRTH</u>	<u>HEIGHT AT SHOULDER</u>				
<u>RECAPTURE DATE</u>		<u>LOCATION</u>	<u>CAUGHT BY</u>		
<u>WT</u>	<u>TOTAL LENGTH</u>	<u>TAIL LENGTH</u>	<u>EAR LENGTH</u>	<u>HIND FOOT</u>	
<u>GIRTH</u>	<u>HEIGHT AT SHOULDER</u>				
<u>RECAPTURE DATE</u>		<u>LOCATION</u>	<u>CAUGHT BY</u>		
<u>WT</u>	<u>TOTAL LENGTH</u>	<u>TAIL LENGTH</u>	<u>EAR LENGTH</u>	<u>HIND FOOT</u>	
<u>GIRTH</u>	<u>HEIGHT AT SHOULDER</u>				
<u>RECAPTURE DATE</u>		<u>LOCATION</u>	<u>CAUGHT BY</u>		
<u>WT</u>	<u>TOTAL LENGTH</u>	<u>TAIL LENGTH</u>	<u>EAR LENGTH</u>	<u>HIND FOOT</u>	
<u>GIRTH</u>	<u>HEIGHT AT SHOULDER</u>				
<u>RECAPTURE DATE</u>		<u>LOCATION</u>	<u>CAUGHT BY</u>		
<u>WT</u>	<u>TOTAL LENGTH</u>	<u>TAIL LENGTH</u>	<u>EAR LENGTH</u>	<u>HIND FOOT</u>	
<u>GIRTH</u>	<u>HEIGHT AT SHOULDER</u>				
<u>REMARKS</u>					

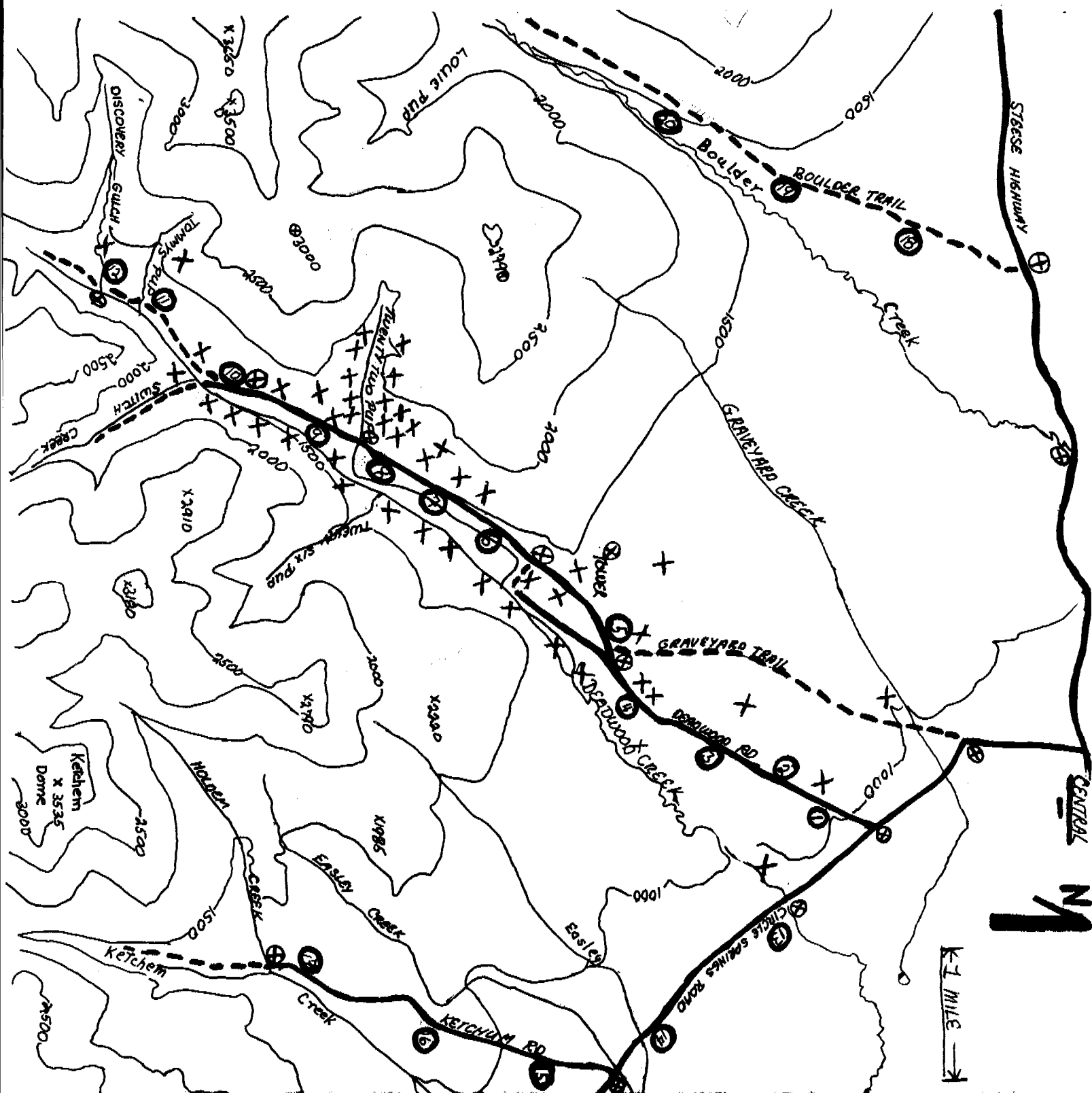


FIGURE 1

Radio fixes of male lynx, 29 March to 5 May 1969
in Deadwood Canyon, Central, Alaska. See text for
description of study area.

⊕ - Antenna site ○ - Trap site X - Radio fix

Radio Tracking

Two 12-channel VHF radio receivers manufactured by Sidney Markusen, Electronic Specialties, 82 West Harney Road, Esko, Minnesota were used for the radio-location phase of the study. The receivers were crystal-controlled, double conversion superheterodyne, made specifically for game tracking in the 150 Mc range. These receivers were used from 29 March to 5 May. A Markusen receiver of the same general specifications, except that it was capacitor controlled for channel reception, was used from 15 April to 25 April, when it ceased to function.

Thermal containers for the receivers were constructed of one-quarter inch plywood and lined with one-inch styrofoam for insulation. The bottom of the containers was of 64 mil aluminum, sealed off with epoxy from the rest of the container to prevent corrosive combustion vapors from the heating source from reaching the components of the receiver. Another section of one-quarter inch plywood with a section of 8-1/2 by 6 inches removed from the center, was attached to the edges of the bottom of the container with epoxy glue, to one-inch square sections of wood. A standard handwarmer was placed in the opening and held into place with hardware cloth.

A container of one-half inch plywood was designed and constructed to fit a packboard that would hold the receiver container and a transceiver.

Crystal controlled, leather collar mounted, constant-send transmitters of Markusen manufacture were installed; one on a male lynx 29 March 1969 and one on a female lynx 7 April 1969. A crystal controlled, epoxy collar mounted, pulse-send transmitter manufactured by The Davidson Company, Electronics Division, 2109 Glenwood Avenue, Minneapolis, Minnesota was installed on a male lynx 19 April 1969.

Two six-element DB286 yagi directional antennas were used for radio direction finding; one mounted on a 12-foot tripod at a fixed location and the other mounted on a pickup truck. A compass rose was constructed and calibrated with the antenna, using a known location radio fix. Eleven mobile tracking sites in the study area were used and the truck-mounted antenna was calibrated for each site, much as the method used by Verts (1963). Azimuths were taken at each site when a signal was received. Transceivers were used to establish communications between the operators in the truck and the tower.

Hand portable, 2-element yagi antennas were used for "blind" areas that could not be read by the larger 6-element antennas. Skis, snowshoes and a snow machine were used to gain access to these areas. A radio fix was verified by completely walking around the signal source and the assumption was made that a lynx was in the center of the circle described. The single radio equipped female was tracked solely by use of a truck near Circle. Radio fixes were determined by taking three azimuths at half-mile intervals along the Steese Highway, and finding the center of the triangle formed by the three crossed azimuth lines.

RESULTS

Live Trapping

Trapping was started on 4 July 1968 and ended on 15 June 1969. All traps were closed from 10 December 1968 to 1 March 1969. Traps were intermittently closed for 2 or 3 days on several occasions throughout the trapping period.

A total of 4,178 trap nights for all areas (Table 2) produced a total of 14 individuals, captured a total of 25 times (Table 3). Three additional captures of tagged animals, caught by a commercial trapper near the study area, were also recorded.

The first 18 captures (Table 3) were females except for one male taken 28 September 1968. Captured males seemed to be more predominant in the winter months. To date, a workable hypothesis has not yet been formulated to explain this sex differential in capture. More information is needed concerning movements and behavior to understand the factors involved, particularly during the trapping season, in order that management policies may be determined. Results of this phase of the study will be compared with data from carcass collections.

The first two lynx caught were females, taken on 9 and 15 July 1968. The latter was observed to be lactating. These lynx were released without marking, as the investigator had to leave the study area due to a vehicle accident. A female taken 26 August was killed in the trap by a wolverine. A female kit captured 28 September, and kept by the Arctic Health Research Laboratory, Department of Health, Education and Welfare, died 25 November as the result of an epidemic that swept through AHRL's animal holding facility at Ft. Wainwright. She had previously been given distemper shots. The kit weighed 3.8 pounds at the time of capture and weighed 8.7 pounds after 14 days in captivity. The kit was not tractable at first, but after considerate handling by AHRL's personnel she became tame during this 2 week period. At the time of death her weight was 10.3 pounds.

Fourteen recaptures in the study area revealed that lynx traveled an average distance between captures of 2.59 miles, ranging from 0 to 12.2 miles. The average time between recaptures for a total of 14 recaptures, including three animals caught by commercial trappers, was 45.12 days ranging from one to 147 days.

A wolverine completely destroyed a trap in Deadwood Canyon on 15 September by pulling the wire apart at the rear of the live trap. A total of 14 wolverine trap depredations were recorded in the period from 26 August 1968 to 13 June 1969. All indications were that wolverines had been caught in the traps except for one that killed a lynx by opening the door of the trap. The remaining depredations were performed by wolverines bending the door and the side of the live trap, then pushing through the resulting hole. It was noted that the Tomahawk Live Trap Company had prudently omitted wolverine from a comprehensive list of animals caught in their traps.

Table 2. Lynx live trapping areas and relative trapping success.

Location	Number Traps	Number Caught	Trap Nights	Success
Circle*	3	1	268	1 per 268.0 TN
Deadwood Creek	9	16	2530	1 per 158.1 TN
Ketchum Creek	2	3	351	1 per 117.0 TN
Circle Springs Road	3	5	843	1 per 168.6 TN
Boulder Creek**	3	0	186	None
Total	20	25	4178	1 per 167.1

* Includes 23 snare trap nights. All traps in the Circle area were moved to Boulder Creek on 9 March 1969.

** Includes 12 snare trap nights, 21 May 1969.

Table 3. Lynx captured in the Central - Circle area, Alaska, between 9 July 1968 and 25 April 1969.

Date	Sex	Milepost Location	Bait	Scent	Distance in Miles Traveled Between Captures	Tag No.	Comments
9 July 1968	♀	4.5D	Hare	Beaver	0	-	
15 July 1968	♀	1.5D	Foal	Catnip	0	-	
15 Aug. 1968	♀	3.2C	Hare	Mink	0	UA4901	
16 Aug. 1968	♀	1.0D	Hare	None	0	ADFG1002	
26 Aug. 1968	♀	2.0D	Grouse	Mink	4.1	UA4901	
26 Aug. 1968	♀	0.5D	Grouse	Mink	-		Killed by Wolverine Kit - Died 25 Nov. 1968
28 Sept. 1968	♀	2.0D	Foal	Catnip	-		
28 Sept. 1968	♀	5.0D	Duck	Beaver	0	ADFG2	
28 Sept. 1968	♂	3.5D	Duck	Beaver	0	UA4903	
2 Oct. 1968	♀	2.0K	Grouse	Beaver	0	UA4914	
13 Oct. 1968	♀	0.5D	Duck	Beaver	.5	ADFG1002	
15 Oct. 1968	♀	2.5D	Hare	Beaver	.5	UA4914	
21 Oct. 1968	♀	4.0C	Grouse	Beaver	3.0	ADFG1002	
23 Oct. 1968	♀	1.0K	Grouse	Beaver	0	UA4904	
24 Oct. 1968	♀	4.0C	Grouse	Beaver	0	ADFG1003	
24 Oct. 1968	♀	.5D	Hare	Beaver	3.0	UA4904	
28 Oct. 1968	♀	3.5D	Grouse	Beaver	1.5	ADFG2	
29 Oct. 1968	♀	4.5D	Hare	Beaver	1.0	ADFG2	
4 Nov. 1968	♂	5.6D	Hare	Beaver	2.1	UA4903	
8 Nov. 1968	♀	1.0K	Grouse	Beaver	-	ADFG5	
16 Nov. 1968	♀*	2.0C	Hare	-	2.3	UA4901	
21 Nov. 1968	♀*	2.0C	Hare	-	2.0	ADFG1002	
24 Feb. 1968	♀*	129.0S	Hare	-	12.2	UA4904	
29 Mar. 1969	♂	2.5D	Hare	None	3.1	UA4903	
5 Apr. 1969	♂	2.5D	Hare	None	0	UA4903	
7 Apr. 1969	♀	157.0S	None	None	-	ADFG6	
19 Apr. 1969	♂	5.0D	Hare	Beaver	-	ADFG7	
25 Apr. 1969	♂	3.0D	Hare	None	1	UA4903	

D - Deadwood Creek Road

C - Circle Springs Road

K - Ketchum Creek Road

S - Steese Highway

* Lynx captured by a commercial trapper outside the closed area.

Hares (9), jays (12), martens (2) and a squirrel were also caught through the trapping period.

During the early spring months of 1969, notably early June, 15 traps had been knocked over by black bears in the study area. The traps were usually pushed along the game trails, where they had been set, until they caught on brush or were wedged between trees. One trap had been "swatted" for a distance of 900 feet along a trail paralleling Deadwood Canyon Road. It is suspected that these bears were just out of hibernation. No traps were disturbed by bears after 13 June 1969.

The one lynx caught in a snare near Circle proved difficult to inject with sernalyn. A hind foot was snared with a length of quarter-inch polypropylene line which the animal bit through three times before being stretched out and restrained enough to be injected in the hip.

Release of the lynx turned out to be a problem because the animals usually faced the investigator from the rear of a live trap. In these cases, the investigator moved toward the front of the trap along its side, directing the animal's attention more toward the open front, which helped the animal make up his mind to leave. Delays in release as long as 10 minutes were experienced. This problem was eventually solved by the investigator's use of a hat and sun glasses (see section on Behavior). No animals were released until they were completely recovered from the effects of the sernalyn.

Immobilization and Handling

Nine individual lynx were injected with sernalyn a total of 21 times (Table 4, Figure 2). The doses ranged from as high as 2 mg/lb. to as low as .085 mg/lb. The "classic" effects of the drug with doses greater than .8 mg/lb. were as those described in Harthoon (1965). No convulsions nor shivering were noted with lesser doses. All animals were kept in a heated cabin or garage during sedation and handling during the winter months. Weight and standard mammal measurements were taken (Table 5).

A snare was used to pull the animals to the top of the live trap to be injected (see section on Techniques). Experimentation had shown that pulling the lynx to the sides of the trap resulted in much rolling and twisting of the animal without a "calm" period. Pulling the lynx with a slow steady pull to the top of the trap had much the same results. A fast, hard pull to the top of the cage resulted in a violent period of 2 to 3 seconds after which the animal "froze," making injection possible.

In four cases, lynx were injected in the hip. This was accomplished by an assistant holding the lynx's attention on one side of the trap while forcing it against the other side so that injections could be made through the wire.

Sernalyn was chosen as the most suitable drug for lynx, on the basis of data available for other felids (Harthoon, 1965), which indicated that sernalyn provided a very wide safety margin and tolerance level. In no case does the

Table 4. Effects of sernalyn on lynx.

Head down - time of prostration to time head is elevated.

Total down - time of prostration to time animal can stand.

Effects - time of injection to time of prostration.

Date	Sex	Number & Weight	Dose Sernalyn Mg./lb.	Effect (Mins.)	Where Injected	Hrs. Head Down	Hrs. Total Down
15 Aug. 1968	♀	UA4901 23.5	2	2	Neck	5.0	12.5
16 Aug. 1968	♀	ADFG1002 23.0	1.0	5	Neck	2.0	4.0
26 Aug. 1968	♀	UA4901 22.0	1.5	10	Shoulder	2.3	5.5
28 Sept. 1968	♀	ADFG2 22.0	1.0	10	Shoulder	4.0	6.0
28 Sept. 1968	♂	UA4903 28.5	1.0	20	Hip	7.0	12.0
2 Oct. 1968	♀	UA4914 22.0	.75	3	Neck	2.0	3.5
13 Oct. 1968	♀	ADFG1002 24.5	.5	7	Neck	.5	.8
15 Oct. 1968	♀	UA4914 22.0	.5	5	Neck	.75	2.0
21 Oct. 1968	♀	ADFG1002 23.5	.8	15	Shoulder	1.0	1.8
23 Oct. 1968	♀	UA4904 23.3	.5	5	Neck	1.0	1.8
24 Oct. 1968	♀	ADFG1003 22.0	.5	5	Neck	1.0	2.0
24 Oct. 1968	♀	UA4904 22.0	.6	17	Shoulder	1.0	2.0
28 Oct. 1968	♀	ADFG2 22.5	1.0	5	Neck	1.0	2.2
29 Oct. 1968	♀	ADFG2 22.5	.25	4	Neck	0.0	.5
4 Nov. 1968	♂	UA4903 29.0	.25	20	Hip	2.0	3.5
8 Nov. 1968	♂	ADFG5 29.0	.085	1	Neck	1.0	3.0
29 Mar. 1969	♂	UA4903 28.0	.90	4	Neck	3.5	8.0
5 April 1969	♂	UA4903 28.5	.5	10	Neck	2.5	5.5
7 April 1969	♀	ADFG6 18.0	.5	10	Hip	1.5	4.0
19 April 1969	♂	ADFG7 22.0	.46	20	Hip	2.4	6.5
25 April 1969	♂	UA4903 28.5	.25	4	Neck	1.5	3.0

Figure 2. Effects of sernalyn on live trapped lynx. X = ♂♂ O = ♀♀
 2 = ADFG 1002♀ 3 = UA 4903♂

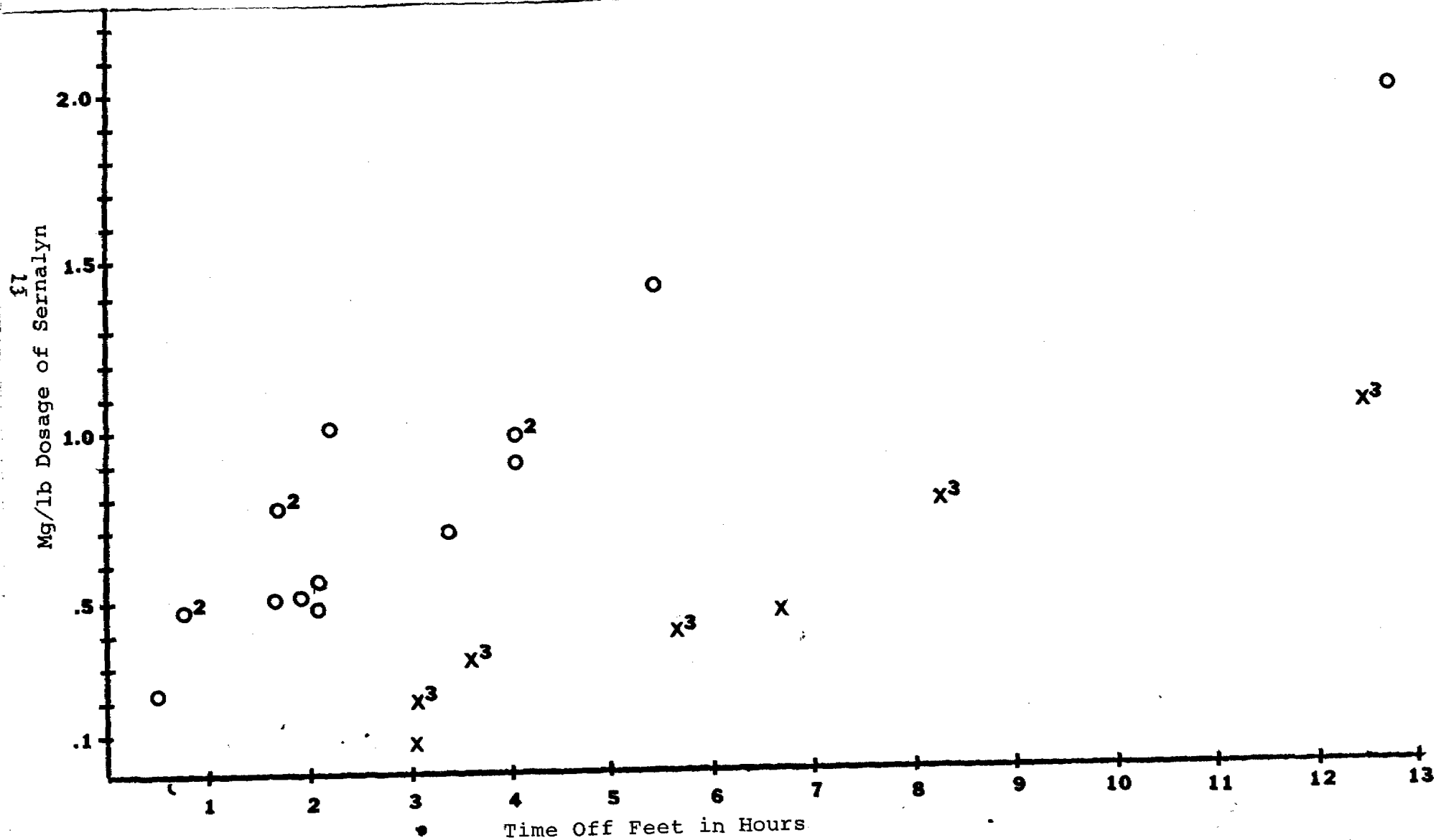


Table 5. Measurements (cm.) and weight (lbs.) of live-trapped lynx,
15 August 1968 - 25 April 1969 in interior Alaska.

Number	Date	Sex	Total Length	Tail	Ear	Hind Foot	Weight
UA4901	15/8/68	♀	99.7	13.5	7.4	24.5	23.5
ADFG1002	16/8/68	♀	99.0	12.8	7.6	23.0	23.0
UA4901	26/8/68	♀	-	-	-	-	22.0
- *	26/8/68	♀	-	12.3	7.5	23.0	-
Kit	28/9/68	♀	-	-	-	-	3.8
UA4903	28/9/68	♂	103.0	14.0	8.5	24.0	28.5
ADFG2	28/9/68	♀	95.3	9.5	8.0	22.3	22.0
UA4914	2/10/68	♀	101.0	9.5	6.5	24.2	22.0
ADFG1002	13/10/68	♀	-	-	-	-	24.5
UA4914	15/10/68	♀	-	-	-	-	22.5
ADFG1002	21/10/68	♀	-	-	-	-	23.5
UA4904	23/10/68	♀	98.5	12.0	7.6	23.3	23.5
UA4904	24/10/68	♀	-	-	-	-	22.0
-	24/10/68	♀	97.7	12.4	7.0	24.2	22.0
ADFG2	28/10/68	♀	-	-	-	-	22.5
ADFG2	29/10/68	♀	-	-	-	-	22.0
UA4903	4/11/68	♂	-	-	-	-	29.0
ADFG5	8/11/68	♂	105.0	15.3	11.5	25.5	29.0
UA4903	29/3/69	♂	105.5	15.3	11.5	26.0	28.5
UA4903	5/4/69	♂	-	-	-	-	-
ADFG6	7/4/69	♀	94.7	9.5	11.5	23.0	18.0
ADFG7	19/4/69	♂	99.5	10.2	11.7	23.0	22.0
UA4903	25/4/69	♂	-	-	-	-	28.5

* Female killed by a wolverine and partially eaten.

literature quote different lengths of knockdown times per comparable dosages between males and females. The field tests with lynx, to date, have indicated a longer knockdown time and a longer time for the drug to take effect for males than for females (Figure 2, Table 4). In one case, a female was on her feet in 6 hours while the male took 12 hours to completely recover. Other 1.0 mg/lb. dosages given to females had knockdown times ranging from 2.2 hours to 6.0 hours.

The animals were not in all cases totally recovered from the effects of the drug at the end of total down time. All animals exhibited considerable lack of coordination and stumbled against the sides of the live trap. During this recovery period, the lynx were removed from the live traps and held so to keep them from injury until such time as it was thought to be prudent to place them back in the traps.

In one case, sernalyn was administered orally to a trapped male. The pupils dilated, but quickly returned to normal. Extreme salivation and licking were noted. After several hours, an injection was given in the neck.

All lynx were offered food (cat food and spam) when caught. The only time lynx were observed to eat was in the period of recovery after total time down. After recovery was complete, no food was eaten, even when the animals were held for several days and left undisturbed.

Radio Tracking Results

Three lynx were equipped with collar-mounted radio transmitters with whip antennas as follows:

<u>Date</u>	<u>Sex</u>	<u>Tag Number</u>	<u>Location</u>	<u>Frequency</u>
29 March 1969	Male	UA4903	Deadwood	150.860 constant
7 April 1969	Female	ADFG6	Circle	150.890 constant
25 April 1969	Male	ADFG7	Deadwood	150.875 pulse

Male UA4903 was located by triangulation a total of 42 times, and by circling (see Techniques section) six times, between 29 March and 5 May 1969. The other male (ADFG7), caught and released in Deadwood, was equipped with a pulse transmitter. On 25 April this lynx climbed up the canyon on Twenty Two Pup and over into Boulder Creek. No radio fixes were made of this animal after this date despite efforts to locate him with the aid of a snow machine and hand-held antennas.

The female (ADFG6), equipped with a constant-send transmitter, that had been caught and released near Circle on 7 April 1969, was located 15 times (7 April - 1 June 1969) by taking azimuths at half-mile intervals along the Steese Highway between Miles 151-159 (see section on Techniques). The area in which the female moved was a canyon on the south side, and bordering the Steese Highway. During the night of 15 April, she was "fixed" a total of six times, all in the canyon, for a total distance of 6.6 miles in 5.3 hours. Only once

had female ADFG6 been "fixed" on the north side of the Steese Highway for the 15 fixes; during the night of 17 April all other fixes were on the south side of the Steese. Movements indicated that this female hunted almost exclusively in the canyon. It is not known if the straight line, back and forth movements of this lynx were the result of breeding activity.

Many technical problems were encountered with the radio equipment during tracking procedures. The crystal controlled receivers proved to be unreliable on several occasions, and repairs were often necessary. Quality of materials and construction were questionable. The single capacitor controlled receiver proved to be extremely unreliable in that a constant retuning was required, even after an animal had been located. A display of the aurora displaced channel receptivity as much as 10 kilocycles on both sides of the tuned frequency. This receiver was returned to the vendor.

Radio-tracking by foot proved to be time consuming with very poor results. The spring of 1970 will afford the opportunity to use more towers and an off-road vehicle to overcome the problems associated with breakup.

All radio tracking was stopped after 5 May because the tracking receivers were used for another study, and also due to poor conditions in the lynx study area.

Some Aspects of Lynx Behavior

Trapped lynx caught for the first time displayed very violent escape oriented behavior when approached by the investigator. All lynx that were recaptured were very quiet when approached, but displayed escape behavior when the truck was seen.

It was discovered that if the investigator wore sunglasses during initial handling, subsequent approaches toward the lynx would produce violent escape behavior. The procedure for handling animals after 28 September has been to approach and inject wearing the sunglasses. Handling under sedation was accomplished without these, and the animals seemed more tractable during the recovery period. Fully recovered animals would remain relatively motionless in the traps, but would again look for an escape route as soon as the sunglasses were put on.

All animals relaxed after the sunglasses were removed. Once the investigator donned the sunglasses again, the animals violently looked for an escape route and release was accomplished in less than 5 seconds from the time the glasses were put on.

Male Number UA4903 repeatedly traveled along the middle section of the trapline on Deadwood Canyon Road. On several occasions, a small amount of fecal material was dropped by this animal at the entrances of the live traps, Numbers 2 through 8. It is not known if this was a territory "stake-out," or an uninhibited criticism of our trapping effort.

Comments

Unpublished data for 1965-66, 1966-67 and 1967-68 have indicated a change in sex ratio of lynx caught by commercial trappers during the trapping season. During high and declining populations, records for the months of February and March indicate that exclusively females and kits are caught. During low populations, males seem to be the predominant sex caught during these months.

A Possible Effect of Trapping Lynx During Low Population Densities

During periods of low lynx populations, it is suspected that individual lynx must establish larger home ranges or territories, because the size of these depends upon the abundance of hares. By doing so, the increased range of individual lynx during a period of low hare abundance could bring an animal in contact with more traps set by commercial trappers, thereby making that animal absolutely more trap prone.

Unpublished sex and age data (1965-66, 1966-67, and 1967-68) indicate that an entire year class, and perhaps two year classes, may be missing as a result of no breeding or low kit survival during this low period.

Lynx caught during this low period would reduce the parent population to a point where the potential for exponential growth of the lynx population would not reach a maximum as a result of being behind the hare population by 2 to 3 years instead of 1 year. This being the case, hare populations will crash 2 to 3 years ahead of lynx populations, with the result of the asymptote of the hare-dependent lynx populations being reached earlier. Maximum lynx population potential would not be realized.

As hare populations increase from a low level, lynx home ranges will shrink, and each individual will become less trap-prone.

With data for a full 10-year cycle available in the next 2 years of the program, indications of when females are most susceptible to capture during the trapping season can be realized, and an effective management program determined as a direct result.

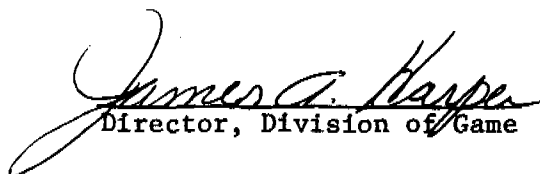
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