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DIVISION OF GAME
James W. Brooks, Director
Don H. Strode, Federal Aid Coordinator

WOLF REPORT

by

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Richard L. Winters

Volume IV
Annual Project Segment Report
Federal Aid in Wildlife Restoration
Project W-6-R-4, Work Plan K

The subject matter contained within these reports is often fragmentary in nature and the findings may not be conclusive; consequently, permission to publish the contents is withheld pending permission of the Department of Fish and Game.

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STATE: Alaska

PROJECT NO.: W-6-R-4 TITLE: Alaska Wildlife Investigations

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JOB NO.: 2

PERIOD COVERED: July 1, 1962 to June 30, 1963

ABSTRACT

A minimum of 79 wolves frequented the Nelchina wolf-study area between September 17, 1962 and March 29, 1963. During this report segment 218 wolves were sighted; this included repeat observations on various individuals. This minimum estimate of 79 animals was determined by utilizing observations constituting 6 or more animals. Average size of packs consisting of six or more animals increased from 6.5 in 1961 to 11.3 in 1963. Black wolves were dominant during the 1961 census with a ratio of 225 blacks to 100 greys; grey wolves were dominant in the 1963 sample with a ratio of 63 blacks to 100 greys. The data indicate that the population in the study area very likely increased. Sufficient data were not obtained to estimate the total population for this segment.

RECOMMENDATIONS

None relative to management.

WORK PLAN SEGMENT REPORT
FEDERAL AID IN WILDLIFE RESTORATION

STATE: Alaska

PROJECT NO.: W-6-R-4 TITLE: Alaska Wildlife Investigations

WORK PLAN: K TITLE: Wolf Management Investigations

JOB NO.: 2

PERIOD COVERED: July 1, 1962 to June 30, 1963

OBJECTIVES

To trace the year-round activity of wolves on the Nelchina wolf-study area.

To obtain data concerning daily and seasonal movements, productivity, mortality, total numbers, population structure of the various packs, intra- and interspecific behavior, food habits and possible kill selectivity in reference to the prey species.

To determine the effect of the wolf upon big game populations.

TECHNIQUES

This study was de-emphasized during the past year due to limited funds and personnel. The main emphasis during this segment was placed upon obtaining wolf observations in the Nelchina wolf-study area. Conclusions are therefore necessarily tentative; however, the data provide a general understanding of the population status.

Wolf observations were obtained from three sources: caribou reconnaissance flights over the study area, sightings by Departmental and U. S. Fish and Wildlife personnel, and interviews with guides, local residents, pilots, and trappers. Information pertaining to the date of sighting, type of observation, characteristics of the pack, and location were noted and recorded on a "Wolf Sight Record" form.

FINDINGS

The results obtained during the past year were insufficient to accomplish the proposed objectives. A total of 48 wolf observations was obtained. The number of animals observed per sighting ranged from 1 to 15 and totaled 218. In this analysis repeated counts of individual animals were minimized by limiting observations to packs numbering 6 or more animals. Color combination in groups of 6 or more wolves and locations of sightings generally permitted individual pack identification. Of the 218 total wolves observed, 79 were judged to be nonduplicated in the sightings. Of the seven nonduplicated observations made during the 1963 segment, six were from the air.

Data from the previous two years were extrapolated and compared. Table 1 is a summary analysis of the information gathered and contains a comparison with the 1961 and 1962 census of the study area. Larger packs were observed more frequently in 1963 than in the previous two years: in 1961 and 1962 the maximum pack sizes observed were 10 and 7 respectively, whereas in 1963 a pack of 15 was observed once and packs of 13 three times. This greater frequency of large pack sightings can be, in part, attributed to the longer time period covered by the observations for that year, i. e. September 17, 1962 to March 29, 1963. The 1962 data are representative of the February 24-26 period and that of 1961 of the March 6-10 time interval (Atwell, 1962 and 1963). The average size of packs consisting of six or more animals increased over the three year period from 6.5 in 1961 to 11.3 in 1963.

The ratio of black to grey-colored animals observed changed over the three year period from a black:grey ratio of 225:100 in 1961 to a 61:100 ratio in 1963: however, completeness of area coverage and observation conditions could contribute to this variance. It has been suspected by some investigators and observers that blacks predominate in the southern portion of the study area and greys in the northern portion. A black: grey ratio of 1:1 was obtained in the extensive census of 1962; however, this ratio is representative of only 24 animals. The 1963 observations which are more representative of the northern portion, have a ratio of 61 blacks to 100 greys. A wide ratio variance exists in the 79 animals observed in 1963 when segregated by their north-south location in the study area, using the Susitna River - Alphabet Hills as the line of division; the northern animals exhibit a ratio of 15 blacks to 100 greys and the southern 156 blacks to 100 greys. Vegetation cover might have a significant influence upon this ratio variance.

Table 1. Summary of Wolf Observations in the Nelchina Wolf-Study Area 1961-1963.

Year	1961	1962	1963
Total wolves observed (packs w/6+)	13	24	79
Number of packs (w/6+)	2	3	7
Average pack size (w/6+)	6.5	8	11.3
Range of pack size (w/6+)	6-7	7-10	7-15
Most frequent pack size (w/6+)	-	7 (2 packs)	13 (3 packs)
Number blacks	9	12	30
Number greys	4	12	49
Black-Grey ratio	225:100	100:100	61:100
Total nonduplicated wolf sightings	18	33	79
Nonduplicated wolf sightings and nonduplicated track sightings	79	135	79
Estimated total population	100-125	135-160	-

The probability of an observer sighting grey animals in the forested areas of the southern portion during periods of snow cover is less than in the open alpine regions of the northern half.

Information relating to pack population structure was obtained from a sighting made by Game Biologist Ronald O. Skoog on September 17, 1962 in the vicinity of Eureka Creek. A pack of 10 wolves was observed to be composed of one adult and nine pups.

Population estimates of 100-125 animals in 1961 and 136-160 in 1962 were based upon known nonduplicated wolf and track sightings (Atwell, op. cit.). The data obtained in 1963 relating to average pack size implies that the wolf population within the study area did not decline, but rather continued to expand. However, the data are insufficient to compute a sound population estimate for the 1963 segment.

LITERATURE CITED

Atwell, Gerry. 1962. Ecology of the wolf in southcentral Alaska, p. 16-30. In Wolf Management Investigations, Annual Report of Progress, Federal Aid in Wildlife Restoration, Project W-6-R-2, Alaska Department of Fish and Game, Juneau, Alaska, (Unpublished).

_____. 1963. Ecology of the wolf in southcentral Alaska, p. 17-28. In Wolf Investigations, Annual Project Segment Report, Federal Aid in Wildlife Restoration Act, Project W-6-R-3, Alaska Department of Fish and Game, Juneau, Alaska, (Unpublished).

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WORK PLAN SEGMENT REPORT
FEDERAL AID IN WILDLIFE RESTORATION

STATE: Alaska

PROJECT NO.: W-6-R-4 TITLE: Alaska Wildlife Investigations

WORK PLAN: K TITLE: Wolf Management Investigations

JOB NO.: 3

PERIOD COVERED: July 1, 1962 through June 30, 1963

ABSTRACT

Examination of radii and ulnae from 1,114 wolves reveals that the fusion of the epiphysis to the diaphysis is a useable technique for separating immature wolves (less that 14 months old) from other animals. The weight of the os penis also is useful in separating young males from adult males. The dried weight of lenses is not a satisfactory criteria for determining the age of wolves.

During 1959-60, 1960-61, and 1961-62, pups comprised 55, 46.7, and 39.1 per cent of the sample, respectively. Regional differences in production of pups were noted, though the factors affecting the variations are unknown.

RECOMMENDATIONS

Efforts to further restrict the use of aircraft in hunting wolves in Units 23, 24, 25, and 26, should be initiated. Efforts to encourage continued trophy hunting within the foregoing units and throughout the region should be intensified.

WORK PLAN SEGMENT REPORT
FEDERAL AID IN WILDLIFE RESTORATION

STATE: Alaska

PROJECT NO.: W-6-R-4 TITLE: Alaska Wildlife Investigations

WORK PLAN: K TITLE: Wolf Management Investigations

JOB NO.: 3

PERIOD COVERED: July 1, 1962 through June 30, 1963

OBJECTIVES

To determine productivity, survival, population composition, and population identity of wolves in Interior and Arctic Alaska.

To determine wolf population levels and factors influencing these levels.

TECHNIQUES

Specimens consisting of approximately 150 wolf carcasses and 600 wolf radii and ulnae were obtained from cooperators and from pelts presented for bounty. The carcasses and leg bones were utilized in perfecting an age determination technique for wolves. In addition, specimens useful in evaluating population dynamics of the various wolf populations were collected from the carcasses for future analysis.

FINDINGS

A portion of the objectives relating to age determination has been achieved. Analysis of 1,114 wolf radii and ulnae collected between 1959 and 1962 reveals that the junction between the epiphysis and the diaphysis where growth (the lengthening of the long bone) actually takes place is useful in separating wolves-of-the-year from older wolves. The technique was first described for fox by Sullivan (1956, J. Wildl. Mgmt. 20(2):210-212), and centers around the fact that it is in this area that the growth takes place, and during the period that the animal is growing rapidly, the junction is cartilaginous. As the animal approaches skeletal maturity, growth slows, and

the junction ossifies. Ultimately, the junction is no longer discernible. In wolves, the rate of growth is quite rapid, and it would appear from the work reported that they mature skeletally at about one year. Schlotthauer and Janes (1952, Amer. J. Vet. Res. 13:90) found that in some domestic canines, the junction disappears at ten months. The epiphysis, based upon the study of some 1,114 wolf radii and ulnae, indicates that young of the year are clearly discernible on the basis of the junction between epiphysis and diaphysis being open or closed for the first year (from May to May, or June to June, as the case may be). The radius seems to be the best bone to work with, and the junction near its articulation with the foot remains open for the greatest period of time. The technique is simple, easy to use, and does not necessitate cleaning of the leg bones: the age of the wolf can be determined merely by examining the skinned leg bones. I have not used x-ray as did Schlotthauer and Janes (op. cit.).

The technique, of course, has limitations. At the age of one year or shortly thereafter, the epiphysis is completely fused, and will no longer separate when macerated or boiled, and the surface of the bone appears completely smooth; whereas formerly it was porous and sponge-like in appearance. Thus the technique will determine the age of wolves only through the first year of life. The technique will be tested against other techniques and against known age specimens when they become available.

The weights of 127 wolf <u>os penes</u> were plotted using ages determined by the epiphysis technique (Figure 1). In this sample there is no overlap between the weights of the <u>os penes</u> of immature and adult wolves as determined by the epiphysis technique. The test tends to support the tentative conclusion that the epiphysis technique is a valid age determination method.

Dried weight of lenses, another potential age determination technique, was also tested (Figure 2). The results from plotting the dried weights of 196 lenses revealed considerable overlap between the lens weights of immature and mature wolves. The mean of the lens weights for the immature and mature population segments do appear to adequately separate the segments. The usefulness of this information to management is doubtful. The data will be subjected to additional tests. Other potential age determination techniques that will be tested include the ossification and development of cranial sutures and tooth development.

Figure 1 Weights of 127 wolf os penes in grams.

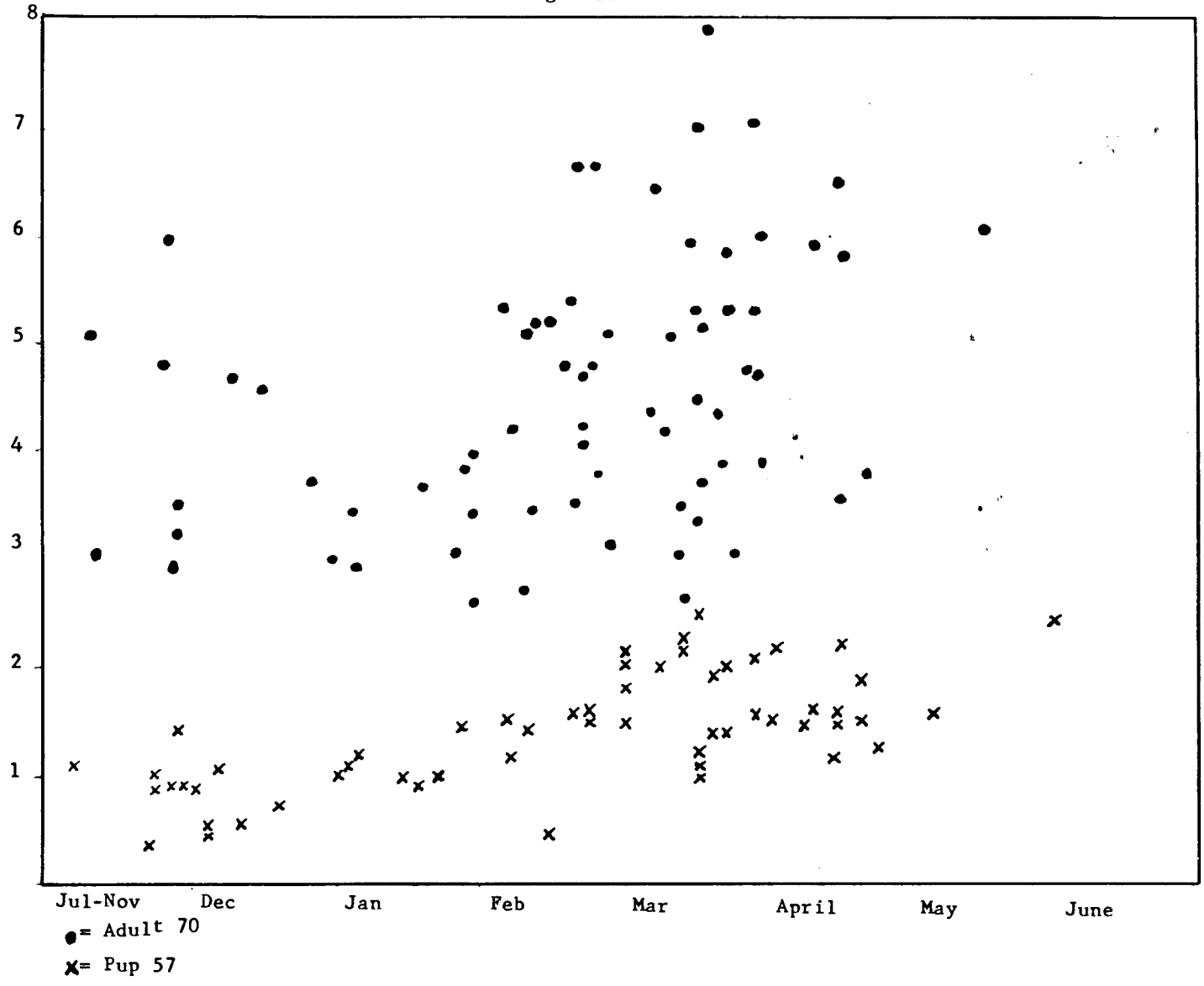
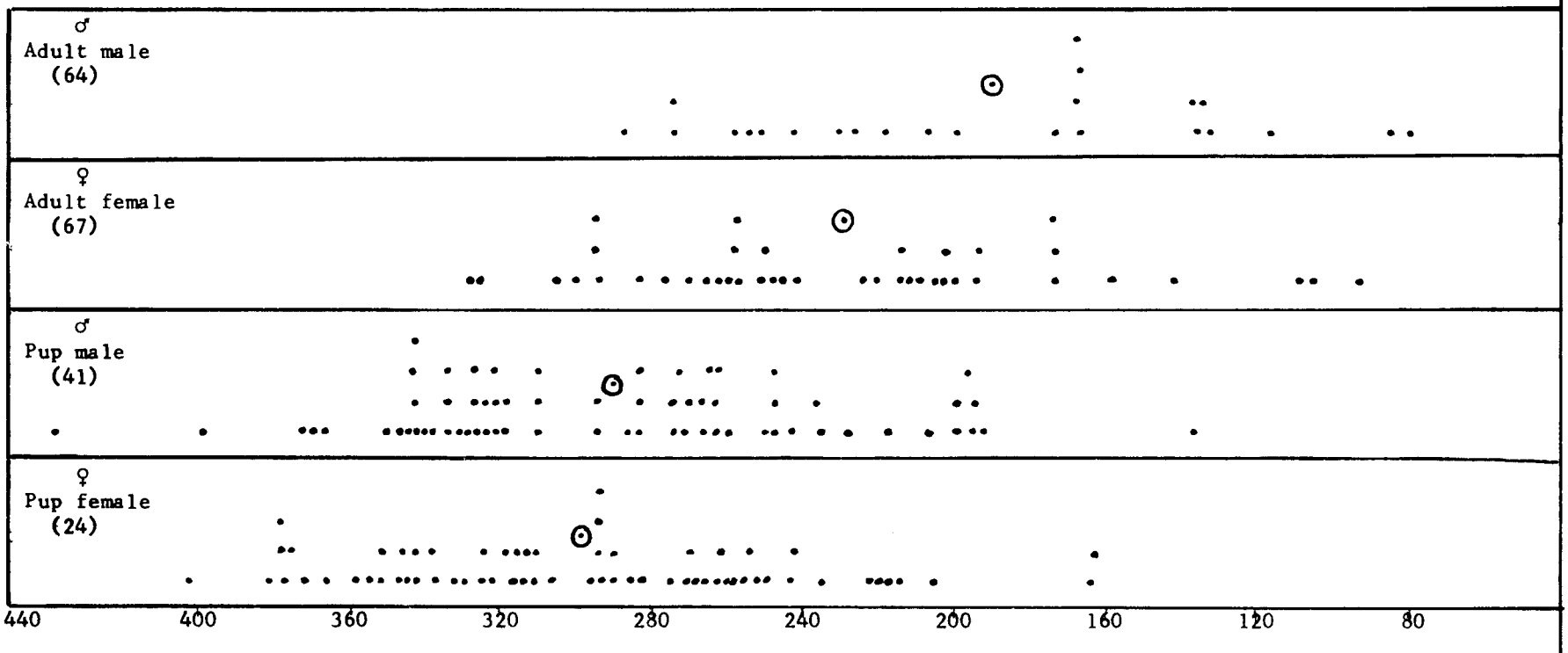


Figure 2 Dried Weights of 196 Wolf Lenses in milligrams.



⊙ = Mean

Age Composition

Table 1 portrays the age composition of 1,114 wolves, the ages of which were determined by the epiphysis technique. The Interior and Arctic areas are arbitrary designations useful in comparing two broadly different ecological regions. The Interior area is that area between the crest of the Alaska range and tree line above the Arctic Circle. The Arctic area is that portion of Alaska beyond tree line. I believe it possible that future work will show the ecology of the wolf populations within the two areas are markedly different. The obvious differences are food habits and coloration. In the Arctic area, the main food for wolves is caribou, and the grey color phase occurs most frequently; wheras in the Interior region moose probably are the most important food source and black the most frequent color. The combined data for the Interior and Arctic areas show that the percentage of pups in the population has decreased consistently since 1959. In terms of this the wolf populations are not known at this time. When broken down to the respective areas, (Tables 2 and 3) production of pups appears somewhat greater in the Interior areas for all years, yet the trend for reduced pup percentages in the wolf population is consistent in both areas.

Harvest

The distribution of the harvest of wolves in the Interior-Arctic region is portrayed in Figures 3, 4, 5. The figures show that the number of wolves harvested in the Interior and in particular along the central Yukon, have increased consistently in the past three years. This harvest has been consistent with reported increases in the wolf population.

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Table 1. Age Composition 1,114 wolves; based of fusion of epiphyses--1959-62.

	Adults	Per cent	Young of Year	Per cent	Totals
1959-60	195	(45)	116	(55)	211
1960-61	209	(53.3)	183	(46.7)	392
1961-62	311	(60.9)	200	(39.1)	511
TOTALS	615	(55.2)	499	(44.8)	1,114

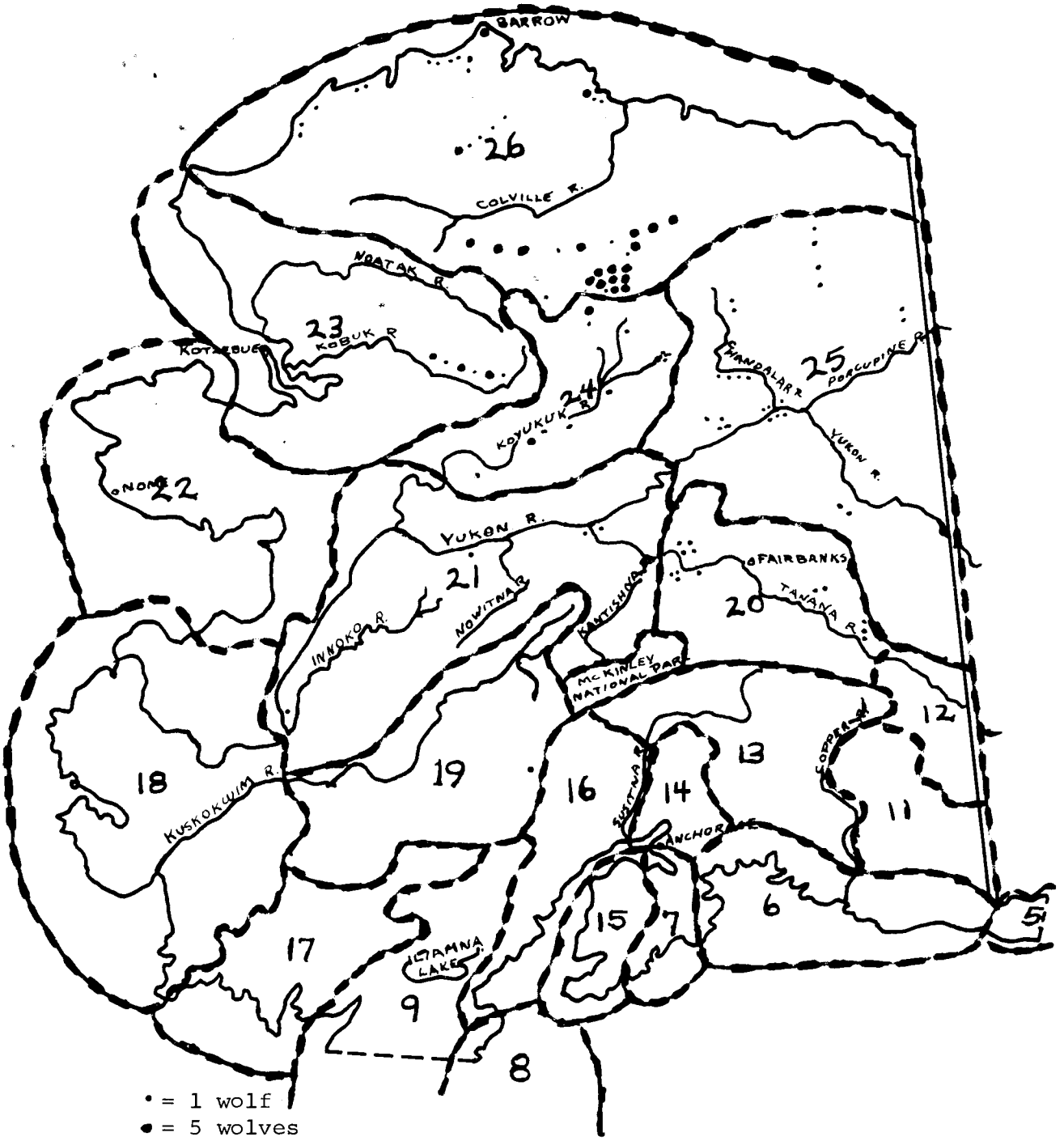
Table 2. Arctic Area Wolf Age Composition 1959-62

	Adults	Per cent	Young of Year	Per cent	Totals
1959-60	78	(45.6)	93	(54.5)	171
1960-61	114	(59.4)	78	(40.6)	192
1961-62	111	(60.3)	73	(39.7)	184
TOTALS	303	(55.4)	244	(44.6)	547

Table 3. Interior Area, Wolf Age Composition.

	Adults	Per cent	Young of Year	Per cent	Totals
1959-60	15	(40.5)	22	(59.5)	37
1960-61	80	(46.8)	91	(53.2)	171
1961-62	200	(59.3)	127	(40.7)	327
TOTALS	295	(54.9)	240	(45.1)	537

Figure 3 Wolf harvest distribution Interior-Arctic region, 1959-60



Total wolves bountied Interior-Arctic Region = 298

Total wolves for which location of take could be determined and that are plotted of figure = 199

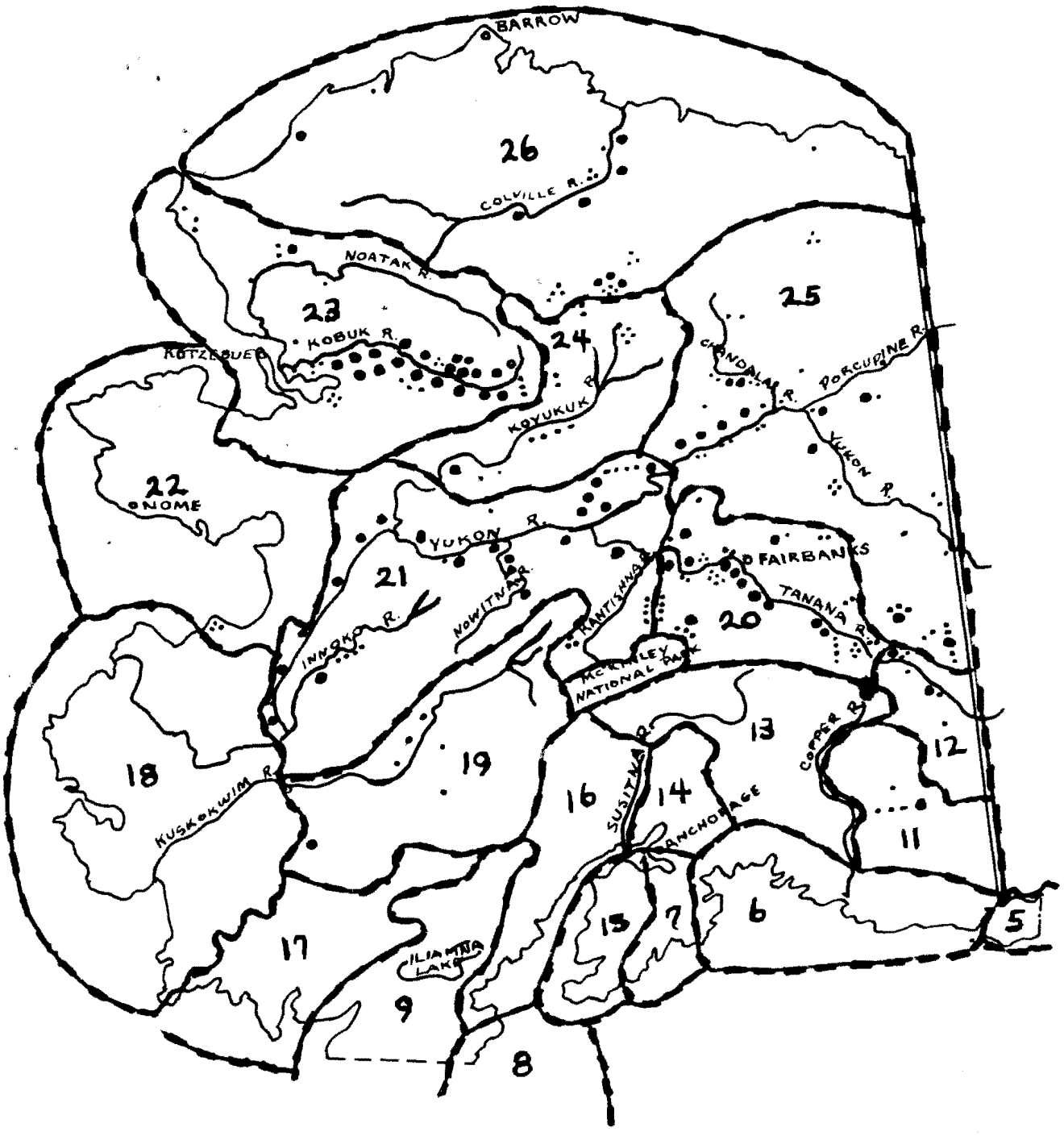
Figure 4 Wolf harvest distribution Interior-Arctic region, 1960-61

• = 1 wolf
● = 5 wolves

Total wolves bountied Interior-Arctic Region = 467

Total wolves for which location of take could be determined and that are plotted on figure = 357

Figure 5 Wolf harvest distribution Interior-Arctic region, 1961-62



• = 1 wolf
● = 5 wolves

Total wolves bountied Interior-Arctic Region = 563

Total wolves for which location of take could be determined and that are plotted of figure = 556