ALASKA DEPARTMENT OF FISH AND GAME

JUNEAU, ALASKA

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ANNUAL REPORT OF SURVEY-INVENTORY ACTIVITIES

PART XIV. FURBEARERS

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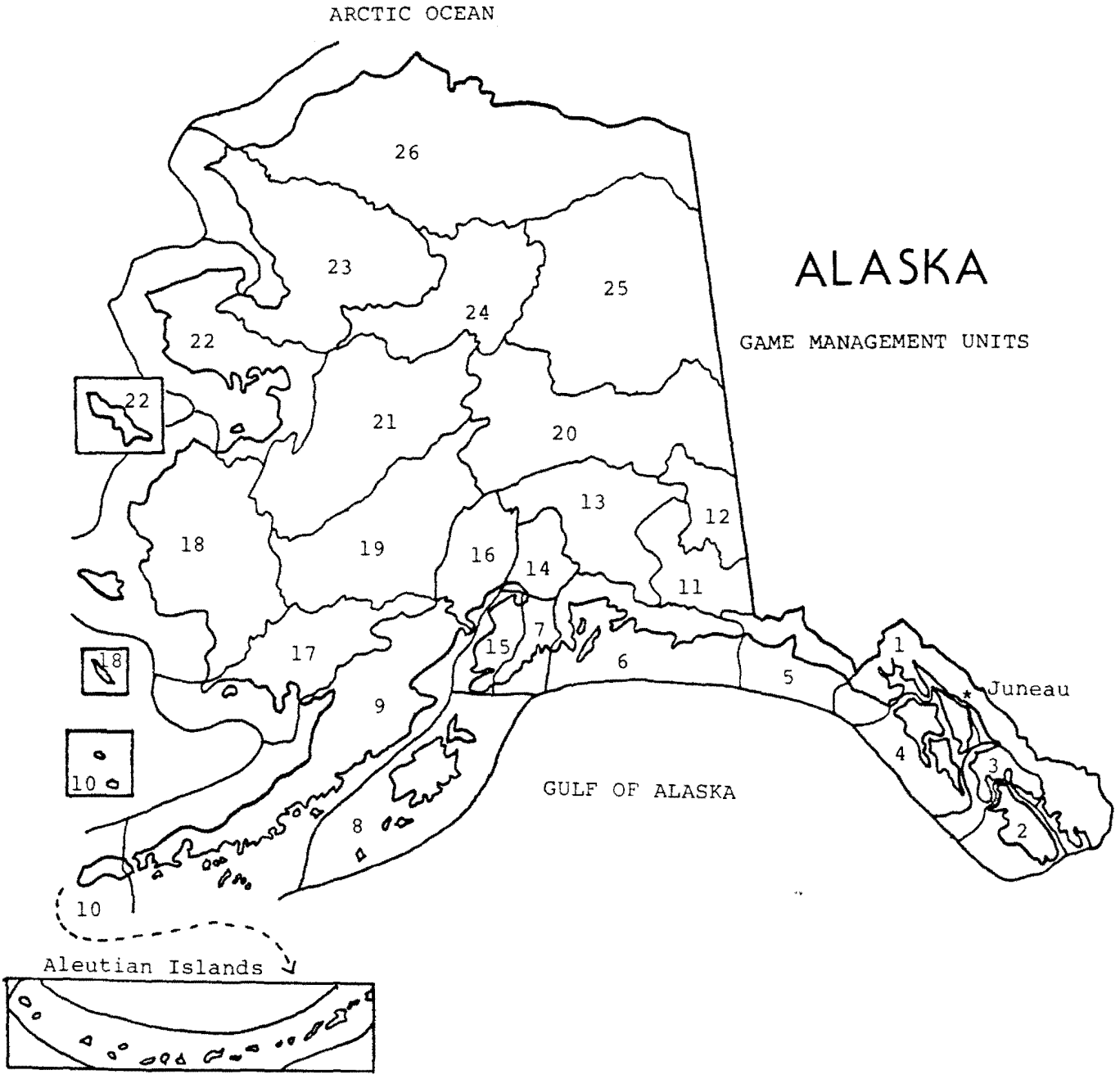
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STATEWIDE HARVEST SUMMARY

Estimates of Alaska's annual statewide furbearer harvests are derived from 3 sources: furbearer sealing certificates, fur export reports, and reports of acquisition of furs. Because furs kept for personal use often are not reported, actual harvests exceed those estimated from these data sources.

Of the 3 sources, pelt sealing gives us the most accurate and complete information, but only for the 5 species (beaver, lynx, otter, wolf, and wolverine) that must be sealed statewide, plus marten taken in Units 1-5. However, sealing data presently underestimate harvests in some rural areas of Alaska, especially in communities lacking a Department office or sealing agent. Also, beaver, wolf, and wolverine are often home-dressed and utilized without being sealed. The number of animals sealed for each Game Management Unit is presented in Table 1. Sealing data for wolves is presented in a separate Wolf Survey and Inventory Report (Alaska Department of Fish and Game, 1985).

Since data from all 3 sources are available for beaver, lynx, and otter, it is possible to calculate a ratio between the number sealed and the number reported purchased and/or exported. If we assume that species which do not need to be sealed are similar to the species that are sealed, we can use this ratio to develop estimates of the harvest of unsealed furbearers (Table 2).

In Alaska, 19 species of mammals are classified as furbearers by the Board of Game; however, only 13 of these species are normally harvested and enter the fur trade. No harvest information is gathered for the arctic ground squirrel, flying squirrel, Alaskan and hoary marmots, least weasel, or raccoon.

Although Alaska does not require information from the public on the price paid for raw pelts, a crude estimate of the average prices paid for pelts can be derived from information obtained from major North American fur auction houses. Many factors such as primeness, size, color, market demand, etc., affect the actual price paid, so it is not possible to develop an accurate estimate of the prices being paid for Alaskan raw furs. Thus, the average price paid for pelts, presented in Table 2, should be regarded only as a rough estimate for Alaskan fur sold at auction houses (primarily Seattle, Washington; North Bay and Toronto, Ontario).

Statewide harvests for several species were lower in 1983-84 than in the previous season. Harvests of Arctic fox and lynx, species that naturally fluctuate widely in numbers, declined. Beaver harvest was also low but not because of any statewide

decline in the population. In fact, beaver populations throughout most of the state are high; low pelt prices appear to explain the low harvest. Harvest and population levels for the remaining furbearers appear to be stable in most areas of the state.

Herb Melchior
Statewide Furbearer Coordinator

Table 1. Number of beaver, lynx, otter, and wolverine sealed statewide during the 1983-84 regulatory year.

Unit	Species			
	Beaver	Lynx	Otter	Wolverine
1	191	15	119	26
2	214	--	160	--
3	25	--	43	1
4	--	--	117	--
5	4	2	4	2
6	45	1	36	6
7	31	2	7	8
8	86	--	146	--
9	182	26	115	51
10	--	--	--	--
11	29	111	5	25
12	41	150	4	21
13	102	153	52	54
14	237	6	32	12
15	77	37	46	8
16	371	10	27	39
17	1,360	12	174	14
18	964	23	616	3
19	532	54	59	58
20	767	368	47	56
21	984	121	103	32
22	38	440	8	35
23	27	85	7	43
24	508	430	28	36
25	235	1,092	7	59
26	--	2	--	12
Unk	67	--	--	--
Total	7,117	3,140	1,962	601

Table 2. Reported dealer purchases, trapper exports, estimated harvests, and estimated raw fur values, 1983-84.

Species	Dealer purchases	Trapper exports	Estimated harvests	Average pelt prices[e]	Estimated values
Beaver	2,347	813	7,108[b]	$ 22.00	$ 156,376
Coyote	NA	NA	200[c]	45.00	9,000
Lynx	976	1,018	3,140[b]	312.00	979,680
Marten	6,257	6,585	24,913[d]	51.00	1,270,563
Mink	11,982	1,515	26,184[d]	27.00	706,968
Muskrat	1,595	1,876	6,734[d]	3.50	23,569
Otter (land)	622	337	1,962[b]	32.00	62,784
Red fox[a]	2,787	1,201	7,737[d]	75.00	580,275
Red squirrel	575	117	1,342[d]	1.00	1,342
Weasel (Ermine)	148	110	501[d]	2.00	1,002
White (Arctic) fox	323	48	720[d]	22.00	15,840
Wolf	NA	NA	731[b]	262.00	191,522
Wolverine	NA	NA	601[b]	230.00	138,230
Totals	27,612	13,620	81,873		$4,137,151

[a] Includes black, cross, and silver fox.

[b] Number sealed.

[c] Estimate.

[d] Estimated number taken = 1.94 x sum of dealer purchases and trapper exports (1.94 = mean number sealed divided by number purchased plus number exported for beaver, lynx, and otter).

[e] Average pelt prices derived from Seattle and Toronto auction prices.

FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS: 1A AND 2

GEOGRAPHICAL DESCRIPTION: Ketchikan and Prince of Wales Island

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 24.

Beaver

Beaver populations are good and probably increasing as colonies begin to utilize some of the new habitat created by clear cutting. Populations will probably continue to increase until canopy closure in these clear cuts eliminates the understory. Trapping pressure is sporadic and light due to low pelt prices. Should prices increase, overharvesting may occur, particularly in Unit 2 where access is good.

The beaver harvest from Subunit 1A was 95, of which 39% came from the Unuk River. Ten trappers took the 95 beaver.

In Unit 2, 19 trappers took 215 beaver, 59% of which came from the Thorne River System. One trapper took 85 of the Thorne River beaver. The past winter was extremely mild with little or no ice cover, and these conditions made beaver trapping easy compared with normal years.

Marten and Mink

It appears, based on discussions with trappers, that mink and marten populations are staying at a steady moderate to high level. Populations in the easily accessible areas are generally lower than those in less accessible areas because of concentrated trapping pressure. This applies more to marten than mink because of the ease of trapping marten and the relatively high marten and low mink prices. This has been true for the past several years.

Otter

The otter harvest for Subunit 1A remained about the same as last year's harvest, while the Unit 2 take increased 31%. In

Subunit 1A, 50 otter were taken, while trappers in Unit 2 harvested 153 otters. The sex ratio in the harvest of otters from Subunit 1A was 48% males; in Unit 2 it was 58% males. Trappers shot 2% of the otters taken in Subunit 1A and 11% of those taken in Unit 2; the balance were taken with traps.

In Subunit 1A, 11 trappers reported taking otters. Twenty-four trappers took otters in Unit 2 this year, an increase from the 16 trappers harvesting otters last year. Otter prices remain very low; this is the principal reason for the low harvest and trapper participation.

Otter populations are probably still below the level of the early 1970's but are increasing. Lower fur prices and less trapper interest are the primary reasons for the relatively low harvest. Several experienced otter trappers did not trap otters this year because of the low demand for pelts.

Wolverine

Wolverine populations are in good condition. This species occurs only on the mainland and is seldom taken, particularly during mild winters when they tend to range away from the more easily trapped beach areas.

Only 1 wolverine was taken in Subunit 1A this year, as in each of the last 3 years. No wolverines were taken in Unit 2 in 1983-84.

Management Summary and Recommendations

Trapping pressure appears to have stabilized at a fairly low level as a result of low fur values. The more dedicated trappers seem to be more affected than the recreational-type trapper.

No changes in seasons or bag limits are recommended.

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FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1B and 3

GEOGRAPHICAL DESCRIPTION: UNIT 1B - Southeast mainland from Cape Fanshaw to Lemesurier Point

UNIT 3 - Islands of the Petersburg, Wrangell, and Kake areas

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 24.

Beaver

Mortality data were obtained from the sealing program established for beaver (Table 1). Sealing records indicated 25 beaver were taken in Unit 3, an increase of 10 from the 1982-83 season. Conversely, the Subunit 1B harvest dropped from 2 in 1982-83 to zero in 1983-84. Although some trappers sought beaver for wolf bait, the continued low price offered for beaver provided trappers with little incentive.

Mink and Marten

Fur export reports indicated that 26 residents of Petersburg and Wrangell shipped a total of 291 mink and 256 marten out of the state. Beginning in 1984-85, marten will need to be sealed in Southeast. The sealing program will provide much needed information on this species.

Otter

Mortality and sex composition data for otter were obtained from the otter sealing program. In Subunit 1B, otter harvest has declined for the 2nd year, from 29 during the 1981-82 season to 15 during the 1983-84 season (Table 2). The otter harvest in Subunit 1B (n = 15) was composed of 67% males, 20% females, and 13% undetermined. In Unit 3, the harvest dropped from 77 otters in 1981-82 to 42 otters in 1983-84. The sex ratio was 62% male, 36% female, and 2% undetermined (Table 3). The decline in otter harvest seemed to have resulted from the low

price offered rather than a decline in population numbers. The decline in otter take should be watched closely, and the cause of the decline should be determined.

Wolverine

Wolverine are present throughout most of the area, but they are usually caught in wolf sets incidentally. Sealing records provided harvest information. Only 1 wolverine, a female, was taken in Unit 3; 2 males and 1 female were taken in Subunit 1B (Table 4).

Other Furbearers

Fur export reports indicated that 26 residents of Petersburg and Wrangell shipped a total of 12 muskrat, 11 weasel, and 3 squirrels out of the state. Squirrels and weasels were taken incidental to mink and marten trapping. Raccoons and red fox are not known to exist in Subunit 1B or Unit 3. Lynx may occur in major drainages of Subunit 1B. Muskrats are found in low numbers throughout Subunit 1B and Unit 3. Marmots are not trapped, but occur in mainland alpine areas and on a few of the larger islands.

Management Summary and Recommendations

In Subunit 1B and Unit 3, the sets made for wolf will also take coyote or wolverine. The periods 10 November to 1 December and 15 February to 30 April are open for wolf trapping, but closed for coyote and wolverine. The trapping season for coyote and wolverine could be extended to coincide with the wolf season. No other changes in season or bag limits are recommended.

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Table 1. Furbearer harvest from sealing records, 1983-84.

GMU	Beaver	Lynx	Otter	Wolverine
Subunit 1B	0	0	15	3
Unit 3	25	0	42	1
Total	25	0	57	4

Table 2. Subunit 1B otter harvest chronology, method of take and sex, 1983-84.

Harvest: Males = 10 Females = 3 Unknown = 2 Total = 15

Chronology by month:

Month	Number	Percent
December	3	20
January	9	60
February	3	20
Total	15	100

Method of take:

Ground shooting	4	27
Trapping	11	73
Snaring	0	0
Other	0	0
Total	15	100

Table 3. Unit 3 otter harvest chronology, method of take and sex, 1983-84.

Harvest: Males = 26 Females = 15 Unknown = 1 Total = 42

Chronology by month:

Month	Number	Percent
December	8	19
January	24	57
February	10	24
Total	42	100

Method of take:

Ground shooting	8	19
Trapping	32	76
Snaring	2	5
Other	0	0
Total	42	100

Table 4. Wolverine harvest, 1978-84.

Season	Subunit 1B				Unit 3			
	Male	Female	Unk	Total	Male	Female	Unk	Total
1978-79	2	4	0	6	1	0	0	1
1979-80	2	1	0	3	0	1	0	1
1980-81	1	0	1	2	0	0	1	1
1981-82	0	4	0	4	0	1	0	1
1982-83	2	2	0	4	1	0	1	2
1983-84	2	1	0	3	0	1	0	1
Total	9	12	1	22	2	3	2	7

FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1C

GEOGRAPHICAL DESCRIPTION: Southeast mainland north of Cape Fanshaw to the latitude of Eldred Rock

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations, No. 24.

Beaver

The harvest of beavers in Subunit 1C increased from 26 in 1982-83 to 96 in 1983-84 (Table 1). This substantial increase can be attributed to increased trapping pressure. Although it is too early to objectively assess the impacts of the increased harvest, future trapping pressure and harvest levels will be closely watched for indications of decline in the number of beavers. In particular, the harvest from the Berners River drainage in Berners Bay will be monitored because of the known importance of beavers to that system. Through dam building, beavers along the Berners River have created pools which are used extensively by several species of rearing salmonids. Of the 96 beavers harvested during 1983-84, 22 were in the 0-52 inch size class, 16 in the 53-59 inch size class, 26 in the 60-64 inch size class, and 31 in the 65 inch and larger size class (1 pelt size was not recorded).

Lynx

Harvest levels of lynx have been low, as indicated by sealing records (Table 1) and export documents (Table 2). Conversations with trappers suggest, however, that more lynx sign was encountered during the 1983-84 season than in previous years. It is not known at this time whether a viable lynx population is being established; the increase may simply represent a short-term influx, possibly related to prey abundance and availability.

Marten, Mink, and Otter

Harvest levels of marten, mink, and otter tend to fluctuate annually as a result of changes in fur values. Dealer purchase

reports and export documents showed a nearly 95% increase in the number of marten taken, a 32% decrease in the number of mink taken, and a 37% increase in the number of otter taken during 1983-84 compared with 1982-83 (Tables 1 & 2). The Alaska Board of Game promulgated a regulation making it mandatory for trappers in GMU's 1-5 to seal marten pelts, effective at the outset of the 1984-85 trapping season.

Red Fox

Red foxes are relatively unimportant in relation to the total number of pelts purchased by dealers or exported by trappers in Subunit 1C (Table 2). Four red fox pelts were exported in 1983-84, the largest export in the past 5 seasons.

Wolverine

The number of wolverines sealed in Subunit 1C has remained fairly constant during the past 5 seasons (Table 1).

Management Summary and Recommendations

No regulatory changes are recommended at this time.

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SUBMITTED BY:

Steven R. Peterson
Acting Management Coordinator

Table 1. Number of furbearers sealed in Subunit 1C and numbers of trappers, 1979-84. Data were obtained from furbearer sealing documents.

Season	Beaver	Lynx	Otter	Wolverine	No. of trappers
1979-80	--[a]	0	37	3	15
1980-81	--	0	34	5	20
1981-82	10	0	19	6	12
1982-83	26	2	30	8	16
1983-84	96	1	41	5	15

[a] No data available.

Table 2. Reported harvest of furbearers purchased from trappers and/or exported by trappers in Subunit 1C, 1979-84.

Season	Beaver	Lynx	Marten	Mink	Muskrat	Red fox	Squirrel	Weasel	No. of trappers
1979-80	18	0	365	235	12	0	0	12	29
1980-81	1	0	288	170	0	0	0	0	18
1981-82[a]	--	0	95	73	0	1	0	7	8
1982-83	0	1	99	90	0	0	0	0	11
1983-84	17	3	193	61	0	4	0	10	21

[a] Data from trapper exports only.

FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1D

GEOGRAPHICAL DESCRIPTION: Upper Lynn Canal

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 24.

Beaver

The beaver population in GMU 1D remains low. The only information received for this period was a trapper report of recent beaver activity in the Red Slough-Turtle Rock area along the upper Chilkat River.

Lynx

Eleven trappers took 14 lynx (7 male, 6 female, 1 unknown) in 1983-84. Lengths of skins ranged from 35 to 44 inches and 1 frozen skin was estimated at 45 inches. Eleven lynx were trapped and 3 were shot; no natural mortality was documented.

Lynx were more abundant than normal in 1983-84; this conclusion is based on numbers sealed and trapper reports. However, there seems to be a general downward trend in lynx numbers. This observation is based on the paucity of lynx taken in previous years and the high number taken in 1982-83 (Table 1). The high harvest of 1982-83 was attributed to dispersal of animals from southern Yukon Territory. The 1983-84 harvest is probably composed largely of animals from the same source.

Otter

Six trappers took 10 otters (7 male, 3 female) during the period covered by this report. Eight otters were trapped; method of take was not recorded for 2. No natural mortality was recorded. This represents the highest recorded harvest in at least 5 years (Table 1).

Wolverine

Eight license holders took 18 wolverines (14 male, 4 female) during the report period. Seventeen animals were trapped,

and 1 was shot. This harvest represents a substantial increase over previous years (Table 1), yet the number of successful trappers remained the same.

Management Summary and Recommendations

Overall, the greatest management problem with furbearers in GMU 1D is loss of habitat and the accompanying increase in trapper access. Because land-use plans call for large scale logging throughout Subunit 1D, furbearer harvest and populations should be monitored closely. No changes in seasons or bag limits are recommended at this time.

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Steven R. Peterson
Acting Management Coordinator

Table 1. Numbers of furbearers from GMU 1D sealed from 1979-80 to 1983-84.

Year	Lynx	Otter	Wolverine
1979-80	1	6	11
1980-81	0	8	3
1981-82	0	3	6
1982-83	37	2	9
1983-84	14	10	18

FURBEARER

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 4

GEOGRAPHICAL DESCRIPTION: Admiralty, Baranof, Chichagof, and adjacent Islands

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 24.

Beaver

No beaver were reported taken in Unit 4 during the 1983-84 regulatory year (Table 1).

Marten

Fur export report data show 657 marten were taken during the 1983-84 season. Marten fur prices were high, and there was a high level of trapper effort. Thus, the reported harvest is probably considerably below the actual take (Table 1).

Mink

Fur export report data show a harvest of 221 mink in 1983-84 (Table 1).

Otter

One hundred seventeen otter were presented for sealing. These otters were taken by 20 trappers. The 1983-84 catch is considerably lower than the 6-year average (Tables 1 and 2). The reduced take is probably a reflection of low prices.

Management Summary and Recommendations

As has been noted in the past, an accurate, timely, easily applied and readily interpreted technique for measuring fur harvests is needed if we are to properly manage the furbearer resource. A sealing program for marten taken from Units 1-5 was approved by the Alaska Board of Game for the 1984-85 trapping season. It was a timely action.

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Steven R. Peterson
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Table 1. Location and chronology of historic otter harvest, and historic harvest of other furbearers, Unit 4, 1972-84[a].

Regulatory year	Otter									Other species			
	Location of % of harvest				Chronology of harvest by %					Harvest			
	Admiralty	Baranof	Chichagof	Unk/ other	Nov	Dec	Jan	Feb	Unk	Mink	Marten	Weasel	Beaver
1972-73	--	--	--	--	--	--	--	--	--	121	301	0	0
1973-74	--	--	--	--	--	--	--	--	--	408	662	0	0
1974-75	--	--	--	--	--	--	--	--	--	167	458	0	0
1975-76	--	--	--	--	--	--	--	--	--	256	797	0	0
1976-77	--	--	--	--	--	--	--	--	--	--	--	--	--
1977-78	--	--	--	--	1	22	34	40	3	271	811	0	8
1978-79	9	24	56	11	1	39	27	3	30	489	801	1	2
1979-80	16	39	46	0	1	38	28	11	23	475	1,074	3	1
1980-81	23	24	46	7	6	35	55	1	4	--	--	--	2
1981-82	26	15	51	7	2	55	29	14	1	--	--	--	9
1982-83	26	24	14	36	0	31	21	15	33	291	553	0	0
1983-84	21	34	29	16	0	23	32	--	45	221	657	0	0

[a] All beaver and otter data after 1977-78 are from mandatory sealing. All other data derived from Dealer Purchase From Trapper, Fur Dealer Export and Trapper Export Reports.

Table 2. Historical otter harvests, Game Management Unit 4, 1972-84[a].

Regulatory year	Otter							
	Harvest				% Statewide	Harvest method by %		Number of persons presenting otter for sealing
	M	F	Unk	Total		Shot	Trapped	
1972-73	--	--	--	90	--			
1973-74	--	--	--	121	--			
1974-75	--	--	--	44	--			
1975-76	--	--	--	113	--			
1976-77	--	--	--	0	--			
1977-78	78	77	0	160	7	25	75	24
1978-79	84	70	0	157	--	67	33	26
1979-80	95	78	0	173	8	23	77	36
1980-81	81	63	10	155	7	27	73	27
1981-82	82	91	11	184	10	46	54	28
1982-83	94	69	0	163	11	51	49	23
1983-84	61	55	1	117	6	61	39	20

[a] Data 1972-76 computed from Dealer Purchases From Trappers, Personal Use Export, and Trapper Export Reports; data 1977 to present are from mandatory sealing records.

FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 5

GEOGRAPHICAL DESCRIPTION: Cape Fairweather to Icy Bay, eastern Gulf Coast

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 24.

Beaver

Four beavers, taken by 1 trapper, were sealed during the report period. All 4 animals were taken in the Dry Bay area. It is not known whether other trappers were successful.

Beaver populations appear to be stable in Subunit 5A, although the population may be expanding in the western portion of the subunit. The status of beaver in Subunit 5B is unknown.

Lynx

Three lynx were shot in Subunit 5A in 1983-84; 2 were taken in November and 1 in March. One animal was taken along Forest Highway 10 while 2 came from the Dry Bay area.

Lynx numbers may be up slightly in Subunit 5A; their status is unknown in Subunit 5B. Sightings of both lynx and hare were more frequent in 1984 than in 1983.

Otter

Four land otter were reported taken from Subunit 5A, 2 each in December and February. All 4 animals were trapped; 2 from the Lost River system and 2 from Dry Bay. This number compares to the previous 5-year average harvest of 3 otter.

No change in otter numbers was apparent compared with past years.

Wolverine

Two trappers took 2 wolverines from Subunit 5A in 1983-84; 1 in December and 1 in February. Both animals came from the Dry

Bay/Alsek River area. This harvest is down from the 1971-72 through 1982-83 average of 3.6 wolverines taken per year.

While no data are available on population trends, wolverine numbers are probably stable in Subunits 5A and 5B.

Coyote

One coyote was taken from Subunit 5A during this reporting period. Coyote numbers are stable or increasing, both in the Harlequin Lake/Dangerous River area of Subunit 5A and generally in Subunit 5B.

Marten

While data are sketchy, at least 75 marten were taken by 4 trappers in 1983-84. One trapper interviewed stated that less than 30% of his take was male animals while a 2nd trapper said approximately 60% of his harvest was male animals. The general impression gained through trapper interviews was that marten numbers are generally reduced from the recent past in the portion of Subunit 5A close to Yakutat because this area receives most of the trapping pressure for the unit.

While no changes in seasons or bag limits are recommended at this time, the 1984-85 harvest will be monitored closely. Sealing, required in 1984-85, should provide much-needed information on this furbearer. Habitat-related information on marten is a high priority in this GMU.

Mink and Weasel

Trapper interviews indicated at least 50 mink were trapped in 1983-84. This harvest is probably an average take and mink populations are apparently stable.

During the 1983-84 trapping season 1 mink carcass with external lesions at the tailbase was obtained from a local trapper. This carcass was examined by an ADF&G parasitologist in Fairbanks but no disease pathogen was identified.

Management Summary and Recommendations

No changes in seasons or bag limits are recommended at this time; however, the 1984-85 harvest of marten should be carefully monitored.

Data summarizing the 1971-84 furbearer harvest in GMU 5 are found in Table 1.

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Table 1. Historical furbearer harvest for GMU 5[a].

Year	Beaver	Lynx	Marten	Mink	Otter	Weasel	Wolverine
1971-72	0	--[b]	--	--	--	--	8
1972-73	0	--	9	40	36	21	7
1973-74	13	1	40	13	8	8	14
1974-75	6	2	9	21	0	1	1
1975-76	0	--	--	--	--	--	0
1976-77	0	--	--	--	--	--	1
1977-78	0	0	--	--	3	--	1
1978-79	0	1	--	--	5	--	2
1979-80	0	0	13	6	2	--	3
1980-81	0	1	200	120	4	--	2
1981-82	0	0	200	100	4	--	3
1982-83	3	5	30	8	1	0	1
1983-84	4	3	75	50	4	0	2

[a] Data from sealing certificates, trapper interviews, trapper export reports, and Survey and Inventory Progress reports.

[b] No data available.

FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 9

GEOGRAPHICAL DESCRIPTION: Alaska Peninsula

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 24.

Beaver

Beaver numbers in Unit 9, except in Subunit 9D, remained high. In Subunit 9D, large areas of poor habitat limit beaver densities. Throughout Unit 9, beaver ponds in marginal habitat freeze to the bottom under prolonged subzero temperatures. In Subunit 9C, biologists and trappers noted that many active beaver ponds froze out in marginal habitat during the winter of 1983-84. Beavers that live in bank lodges on major creeks where flowing water prevents total freezing are able to recolonize this marginal habitat until another freezeout.

Beaver harvest in Unit 9 has fluctuated in response to fur prices, weather conditions that affect access, and fluctuations in local beaver populations. Annual harvests were high from the mid-1970's until 1981, but during the past 3 years, the harvest averaged only 48% of the previous 7-year mean (Table 1). The 1984 beaver harvest in Unit 9 was the lowest recorded since 1969. Beaver fur prices since 1982 have been low.

During the past 10 years, 1974-84, beaver trapping in Subunit 9B accounted for 48% of the harvest and 49% of the trappers in Unit 9; Subunit 9C accounted for 21% of the harvest with 24% of the trappers, while in Subunit 9E, the largest subunit, only 14% of the harvest was taken by 15% of the trappers. Percent kits in the unit-wide harvest was 11% in 1983 and 12% in 1984. During the past 10 years, 1974-84, percent kits in the harvest averaged 20% unit-wide. Some localized overharvest has occurred in the past, as indicated by a high percentage of kits in the harvest. However, during the past 2 years, percent kits has been below 20% in even the most heavily harvested areas (Table 2).

Lynx

Lynx occur in suitable habitat in Subunits 9B, 9C, and 9E. Lynx population size in Unit 9 undoubtedly fluctuates with prey abundance; however, no data were available concerning population trends.

The department began sealing lynx in December 1977. During the period 1978-80, annual Unit 9 harvest averaged 148 lynx (Table 3). In 1980, ANILCA (Alaska National Interest Lands Conservation Act) closed some of the most productive lynx habitat in Subunits 9B and 9C to hunting and trapping. In the 3-year period following that closure (1981-84), lynx harvest in Unit 9 averaged 54 lynx annually. On lands not affected by the ANILCA, lynx harvest was relatively stable between 1978 and 1983 ($\bar{x}$ = 72.5, SD = 14.0). The 1984 Unit 9 harvest, however, dropped to 26 lynx, probably because warm weather hampered trapper mobility.

In Subunit 9E, unaffected by the ANILCA closures, harvests have consistently alternated from high to low in consecutive years (Table 3). Those fluctuations are probably not due to natural population changes. During the high harvest years of 1981 and 1983, 37 and 22 lynx, respectively, were taken in the Cinder River drainage alone. In the low harvest years of 1982 and 1984, only 2 and 4 lynx, respectively, were taken in the Cinder River drainage. During all 4 years, other areas of Subunit 9E were lightly harvested. The 1981 Subunit 9E harvests apparently represented a localized overharvest in the Cinder River area, resulting in a low harvest during 1982. Immigration from adjacent untrapped areas and reproduction by the remaining animals repopulated the Cinder River drainage in 1982, allowing the larger harvest in 1983. During all 4 years, trapping pressure remained relatively constant. Chronology of the lynx harvest is given in Table 4. January and February appear to be the most productive months for lynx harvest.

Otter

Other than observations made during big game surveys, there are few data available on the population status of otters in Unit 9. Observations made during winter when otter and their tracks are most visible indicate otter are well-distributed and abundant throughout Unit 9. Otter numbers during the winter of 1982-83 appeared to be higher than normal; this assessment is based on trapper reports and observations by biologists.

The department began sealing otter in December 1977. Since then, otter harvests in Unit 9 have been relatively stable, except during the 1983-84 season when the harvest was 56% higher than the previous 5-year average (Table 5).

Most otters in Unit 9 were taken during January and February. Average chronological distribution of the harvest from 1978-84 was 8%, 21%, 27%, 31%, and 13% for the months November through March, respectively. Males have composed 50%, or more, of the harvest each year since 1978 and averaged 54% of the 1978-84 harvests.

Wolverine

Fifty-one wolverines (32 males, 16 females, and 3 of undetermined sex) were reported killed in Unit 9 during the 1983-84 season. The annual harvest during the last 10 years ranged from 39 to 115 wolverines; the average take for the 1974-84 period was 73 (Table 6). Fluctuations in annual harvest probably reflect varying weather conditions that affect access and trapping efficiency.

Seventy-six percent of the harvest occurred during the winter months (December-February); the January harvest alone was 38% of the total reported kill. Only 3 wolverines were killed by hunters before the trapping season opened. Seventy-one percent of the 1983-84 harvest was taken by trapping, 25% by shooting, and the method of take was unspecified for 4% of the harvest.

Within Unit 9, the greatest proportion of the wolverine harvest has occurred in Subunit 9E. However, during the 1983-84 season, 37% of the harvest came from Subunit 9B and 31% from Subunit 9E (Table 7). Weather conditions were probably responsible for the greater harvest in Subunit 9B. The sex ratio of the harvest was 1.9 males:1.0 females; that is consistent with the previous 10-year mean of 2.0, but higher than the 1982-83 sex ratio of 1.4 males per female. The long term stability of annual harvests and high male:female ratios in the harvest suggest the current rate of exploitation is not excessive.

Management Summary and Recommendations

Variable fur prices and weather conditions will continue to cause fluctuations in annual beaver harvests. Beaver numbers remained high in Unit 9 and, during the past 2 years, this furbearer has been underharvested. Higher fur prices could increase trapper interest and localized overharvest may occur near villages. To document trends in beaver numbers, stream cache survey routes need to be established in the most heavily trapped areas. Current seasons and bag limits provide ample opportunity for an increased harvest.

Information is lacking on lynx population size and trends in Unit 9. Harvests on lands not closed by ANILCA were relatively stable from 1978-83. However, the 1984 harvest was 67% below the previous 2-year average. Reduced trapper mobility caused

by adverse weather probably curtailed the 1984 harvest. If the 1985 harvest falls well below past harvest levels, season and bag limit adjustments should be considered.

Techniques to accurately estimate otter abundance are not currently available. Observations of otters and otter track abundance made by department biologists and by trappers suggest otter numbers are stable in Unit 9. Current trapping pressure and harvest levels have resulted in stable annual harvests.

No changes in season or bag limit are recommended at this time.

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Table 1. Historical beaver harvest and number of trappers in Unit 9, by subunit, 1974-84.

Year	9A		9B		9C		9E		Total 9[a]		Beavers per trapper
	Trapper numbers	Beaver harvest	Trapper numbers	Beaver harvest	Trapper numbers	Beaver harvest	Trapper numbers	Beaver harvest	Trapper numbers	Beaver harvest	
1974-75	4	126	20	321	3	15	7	66	35	439	12.5
1975-76	1	40	18	173	5	44	8	80	43	451	10.5
1976-77	--[b]	--	--	--	--	--	--	--	--	686	--
1977-78	1	40	34	355	19	196	10	132	65	724	11.1
1978-79	1	1	24	191	6	46	8	92	40	332	8.3
1979-80	4	47	40	448	10	85	7	68	66	660	10.0
1980-81	0	0	23	271	15	119	5	57	53	508	9.6
1981-82	2	6	11	76	14	116	6	64	37	286	7.7
1982-83	0	0	16	138	17	171	3	7	37	315	8.5
1983-84	1	2	9	84	9	79	7	17	26	182	7.0

[a] Total includes trapper numbers and harvest for which a location was not specified on sealing certificate.

[b] No data available.

Table 2. Beaver harvest and percent kits in the harvest in Subunits 9B and 9C, 1979-84.

Year	Subunit 9B		Subunit 9C		Kvichak drainages 9B		King Salmon Creek 9C	
	Harvest	% Kits	Harvest	% Kits	Harvest	% Kits	Harvest	% Kits
1979-80	445	22	56	13	164	24	24	17[a]
1980-81	271	31	77	19	156	31	13	62[a]
1981-82	76	33	79	22	21	47[a]	26	12
1982-83	89	13	160	12	43	19	91	7
1983-84	84	11	71	18	28	11	30	7

[a] Note small sample sizes.

Table 3. Lynx harvest in Game Management Unit 9.

Year	Subunit 9B	Subunit 9C	Subunit 9E	Unknown	Total harvest	Lynx taken on ANILCA lands[a]
1977-78	104	57	11	0	172	98
1978-79	36	48	45	0	129	49
1979-80	60	61	23	0	144	78
1980-81	41	25	52	0	118	39
1981-82	32	18	10	0	60	12
1982-83	40	12	45	1	97	9
1983-84	16	0	10	0	26	1

[a] Includes lynx take on or immediately adjacent to lands closed to hunting and trapping by the ANILCA, December 1980.

Table 4. Chronology of lynx harvest in Game Management Unit 9.

Year	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unknown
1977-78	0	0	7	53	60	27	12	19
1978-79	0	1	3	10	31	47	37	0
1979-80	0	0	9	26	39	37	32	0
1980-81	3	0	12	56	28	14	5	0
1981-82	0	1	0	8	15	21	13	0
1982-83	1	0	17	20	27	19	14	0
1983-84	0	0	10	0	7	4	5	0

Table 5. Historical otter harvest in Game Management Unit 9, 1978-84.

Year	Harvest by subunit 9A	9B	9C	9D	9E	Unknown	Total harvest
1977-78	6	46	17	2	49		120
1978-79	4	48	5	0	46		103
1979-80	6	42	36	8	45		137
1980-81	0	46	23	8	67	1	145
1981-82	5	35	58	15	38		151
1982-83	0	75	46	23	61		205
1983-84	1	31	16	28	44		120

Table 6. Game Management Unit 9 wolverine harvest, 1973-84.

Season	Males	Females	Sex unknown	Males:Females	Total harvest
1973-74	54	33	2	1.6	89
1974-75	48	18	6	2.7	72
1975-76	49	27	39	1.8	115
1976-77	32	13	1	2.5	46
1977-78	43	23	20	1.9	86
1978-79	46	22	11	2.1	79
1979-80	38	25	1	1.5	64
1980-81	26	11	2	2.4	39
1981-82	42	20	10	2.1	72
1982-83	39	28	1	1.4	68
1983-84	31	16	4	1.9	51

Table 7. Subunit wolverine harvest in Unit 9, 1983-84.

Subunit	Males	Females	Unknown sex	% of Total
9A	5	2	0	14
9B	12	6	1	37
9C	4	2	0	12
9D	1	1	1	6
9E	9	5	2	31
Total	31	16	4	100

FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 12

GEOGRAPHICAL DESCRIPTION: Upper Tanana and White River drainages

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 24.

Beaver

Beavers exist at moderate to low density throughout most of Unit 12 with areas of high density in the eastern portion of the Northway-Tetlin Flats. The total reported harvest during this reporting period was 41 beavers, compared with a harvest of 15 beavers in the 1982-83 season and 18 in the 1981-82 season. Only 7 trappers reported taking beaver in the 1983-84 season, which reflects low pelt value in relation to the work required to trap beaver through the ice.

One former concentration of beaver in the Scottie Creek drainage was noticeably less dense by spring of 1984. Illegal hunting and predation are suspected causes for the decline. If wolf control is approved for Unit 12, beaver density is expected to increase as it did in a similar situation observed in adjacent Subunit 20E. Unless the market for beaver pelts increases, interest in beaver trapping is expected to remain low.

Land Otter

Five land otters were reported taken, compared with 6 in 1982-83 and 4 in 1981-82. Otters exist at low densities in Unit 12 and receive only incidental trapping pressure.

Lynx

The lynx population and harvest declined during this reporting period. One hundred sixty-seven lynx were reported taken this period compared with 205 in 1982-83 and 198 in 1981-82. Lynx numbers and harvest increased during the past 4 years. Unless the snowshoe hare population increases unexpectedly, lynx

harvests will probably continue to decline for the next 4 or 5 years. Only 5 pelts (3%) were 35 inches or less in length. These were believed to have been kittens which suggests poor production and a declining population. The sex ratio of the harvest (79 males:71 females) was essentially even. Most of the catch occurred in the Tanana Valley at low elevations.

Wolverine

Trappers reported taking 22 wolverines during the reporting period, compared with 31 in 1982-83, 10 in 1981-82, and 29 in 1980-81. The composition of the harvest was 12 males, 6 females, and 4 wolverines of unknown sex. This sex ratio is similar to that of the harvest during the 1982-83 season. Little is known about wolverine numbers in Unit 12.

Other Furbearers

Red fox numbers and harvests increased dramatically during this reporting period, particularly in the Northway-Tetlin Flats. Microtine populations were also extremely high in the same area. Coyotes were also abundant, but few trappers took them. Marten remained scarce in Unit 12.

Muskrat numbers are increasing in Unit 12. Muskrats were extremely scarce in the mid-1970's, but they are now reaching moderate densities in most of the unit. As a result, the catch is increasing. The 20 September season opening allowed trappers to take advantage of peak fall numbers, but few trappers were aware of the new opportunity.

Management Summary and Recommendations

Furbearers, particularly lynx dependent on snowshoe hares, are expected to continue to decline. Muskrats and furbearers dependent primarily on microtines are expected to do well during the 1984-85 season.

To simplify the trapping regulations and to gain greater compliance with the regulations, the season closing date for most terrestrial furbearers should be 15 March.

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FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 13

GEOGRAPHICAL DESCRIPTION: Nelchina Basin

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Fur Animal Hunting Regulations No. 24 and Trapping Regulations No. 24.

Wolverine

Sealing records indicate 50 wolverines were killed; of these, 13 were taken by ground shooting, 36 by trapping, and 1 by snaring. This harvest represents a substantial decrease from last year's near-record kill of 98 wolverines. In addition, it is a reversal of the trend of increased harvest levels seen over the past 4 years. This year's harvest consisted of 27 (54%) males, 19 (37%) females, and 4 (8%) sex unknown. The harvest chronology shows 1 wolverine was taken in October, 1 in November, 6 in December, 8 in January, 24 in February and 10 in March.

Historically, there has been considerable variation in wolverine harvests. The reason for this past year's decline in harvest is unknown. Recent research data for the upper Susitna Basin suggest harvest levels in that area have not caused an unbalanced sex ratio, and reproduction and recruitment into the population is occurring (Whitman and Ballard 1983). It is unknown if annual recruitment is sufficient to maintain the current wolverine population.

Management Summary and Recommendations

No changes in season dates or bag limits are recommended at this time. Wolverine research should continue to explore the ecology of this valuable furbearer. Harvest should be closely monitored. Should a downward trend develop, a reduction in season length and bag limit may be necessary.

Literature Cited

Whitman, J. S. and W. B. Ballard. 1983. Big Game Studies. Vol. VII. Wolverine. Phase II Prog. Rep. Susitna Hydroelectric Proj. Alaska Dep. Fish and Game. Juneau. 25pp.

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FURBEARER

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 16

GEOGRAPHICAL DESCRIPTION: West side of Cook Inlet

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Fur Animal Hunting Regulations No. 24 and Trapping Regulations No. 24.

Wolverine

Thirty-eight wolverines, including 23 males, 14 females, and 1 of unknown sex, were reported harvested. Trapping was the means of take for 27, ground shooting 10, and 1 wolverine was reported taken by other means. As in the past, most (71%) wolverines were taken during January and February.

Management Summary and Recommendations

Mild winters since 1981 have restricted trapper mobility and efficiency and recent harvest levels remain below those of the 1970's. No changes in seasons or bag limits are recommended.

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FURBEARER

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 17

GEOGRAPHICAL DESCRIPTION: Northern Bristol Bay

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Fur Animal Hunting Regulations No. 24 and Trapping Regulations No. 24.

Beaver

Beaver caches were surveyed on 8 streams in October. Cache counts indicate a slight decline in the population, due primarily to above-normal rainfall which occurred in October 1982, prior to freeze-up. Many caches from main channel houses washed away during the period of high water and many beavers died. The 1983 average of 1.3 caches/mile of stream surveyed is significantly lower than the high of 1.6 caches/mile observed during the 1980 counts when the beaver population reached its peak. Results of beaver cache counts flown from 1977 through 1983 are presented in Table 1.

A total of 137 trappers reported taking 1,360 beavers. Of these, 18.7% were kits, 15.2% were yearlings, and 66.1% were adults. The villagers of Manokotak and Aleknagik took a high percentage of kits. Both the harvest and number of trappers were lower than in previous years due to an emergency order which closed the season along the lower drainages of the Nushagak and Wood Rivers.

Wolverine

The wolverine population in Unit 17 appears to be relatively stable. While there are reportedly fewer wolverines in the Wood-Tikchik drainages, there were no reported changes in abundance in other portions of the unit.

Fourteen wolverines (10 males and 4 females) were reported taken during the 1983-84 season. This harvest was the lowest in 20 years and is well below the preceding 12-year average annual kill of 45 wolverines. Nine wolverines were reported taken with traps and 5 were shot. As has been the pattern in previous years, most (57%) wolverines were taken in February.

Management Summary and Recommendations

In 1983, the Board of Game increased the Subunit 17A beaver season from 15 days to all of January and the Subunit 17B and 17C season was changed from 1 month to 2 months (15 January-15 March). The bag limit in all of Unit 17 was increased from 10 to 20 beavers. These increases were made to allow management flexibility by emergency order closures of those areas that have historically been overtrapped, while allowing liberal seasons and bag limits in those portions of the unit that could sustain more trapping pressure.

This system of management was poorly understood by villagers in the unit. Many trappers were unaware of the probable closure in their area and started trapping late due to cold weather during the 1st weeks of the season. Thus fewer beavers than normal were caught. Aerial surveys were flown during the season in an attempt to determine trapping pressure; however, these surveys were unsuccessful and served only to delineate which areas were trapped. Next year, greater effort will be made to contact trappers to discuss the emergency closure system and to monitor the take as the season progresses.

The exceptionally low wolverine harvest can be attributed to poor snow conditions for hunting and trapping throughout the unit. The trend since 1971-72 has been toward an increasing sex ratio of males to females in the harvest. The ratio is usually in excess of 2 to 1. As long as the major portion of the harvest is males, the potential for overharvest is low.

No changes in seasons or bag limits are recommended.

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Table 1. Annual fall beaver cache counts in Unit 17, 1977-83.

River	Miles of river surveyed	Number of caches, 1983	Caches/mile						
			1983	1982	1981	1980	1979	1978	1977
Klutuk	47	59	1.26	--[a]	1.42	1.38	1.36	1.36	0.87
Kokwok	30	71	2.37	1.23	2.43	2.53	1.40	1.83	1.00
Iowithla	62	74	1.19	1.02	1.48	1.56	1.24	1.19	1.10
Sunshine	12	32	2.67	1.83	2.33	2.92	2.08	2.17	2.42
Togiak	60	59	0.98	--	1.02	0.82	0.63	1.07	0.87
Ongivinuck	32	49	1.53	1.69	1.97	1.66	1.00	1.38	1.47
Harris	29	31	1.07	--	1.69	1.24	1.03	1.00	--
Mosquito	29	--	--	--	--	2.79	--	1.62	1.55
Mulchatna	65	--	--	--	--	2.49	--	1.32	1.25
Stuyahok	40	--	--	--	2.20	1.88	1.13	.90	.75
North Fork Napotoli	30	--	--	--	0.43	0.60	0.37	0.47	--
South Fork Napotoli	27	--	--	--	0.56	0.59	0.33	0.70	--
King Salmon	72	70	0.97	--	--	1.57	--	1.28	0.76
Tikchik	70	--	--	--	--	--	1.27	--	--
Nushagak	87	--	--	--	--	--	--	0.91	0.77
Weary	20	--	--	--	--	1.45	--	--	--
Total caches			445	176	549	905	462	729	545
Total survey miles			344	136	369	555	439	622	536
Unit 17 average cache/mile			1.29	1.29	1.49	1.63	1.05	1.17	1.02

[a] No data available.

FURBEARER

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 18

GEOGRAPHICAL DESCRIPTION: Yukon-Kuskokwim Delta

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 24.

Beaver

Observations by Department personnel and reports from the public indicate that beavers continue to be abundant throughout Unit 18. Beaver populations near coastal areas do not appear to be as dense as those further inland. Coastal beaver populations will probably never attain densities observed elsewhere in the unit due to a scarcity of willows and other hardwood shrubs. Although the population as a whole is probably increasing throughout the unit, the rate of increase may have slowed in some areas. Due to low temperatures and a scarcity of snow during winter 1983-84, we believe many beaver colonies in small ponds and sloughs were frozen out by unusually thick ice.

Aerial cache surveys of the East and North Forks of the Andreafsky River and the Kashunak River were conducted during October 1983 (Table 1). Increases in cache densities over those of the initial 1981 survey were observed in all 3 drainages, but particularly in the lightly-trapped Kashunak drainage. Although the reliability of cache surveys as an indicator of population trend has been increasingly questioned in recent years (Swenson et al. 1983), we believe the observed increase in cache densities represents an actual increase in population size. Most local trappers (80%) who responded to our annual 1983-84 Trapper Questionnaire reported that beavers were increasing in their trapping areas. Only about 7% of responding trappers reported decreasing numbers of beavers. Local fishermen frequently complain about increasing densities of beavers and beaver dams that interfere with their subsistence harvest of blackfish.

Sealing certificates indicate that trappers harvested 940 beavers from Unit 18 during winter 1983-84. This is lower than

the reported 1982-83 harvest of 1,177 beavers and is substantially lower than the 1981-82 harvest of 1,613 beavers (Table 2). Because most trappers do not seal domestically used beaver pelts, data interpretation is difficult. Nevertheless, we believe the observed reduction in harvest reflects a lack of interest in beaver trapping. Shallow snow during winter 1983-84 made travel by snowmachine difficult and resulted in unusually thick ice on beaver ponds. These factors, in combination with low pelt prices, account for the lack of interest in beaver trapping and the resultant low harvest.

The percentage of kits (under 54 inches) in the 1983-84 reported harvest (21%) is similar to values reported during the last 2 years. Only in the Kashunak drainage is the observed percentage of kits (51%) unusually high. Cache survey data indicate that the Kashunak population is rapidly expanding and so contains a large proportion of young animals. Therefore, the high catch of kits and small animals is not surprising because many trappers do not make their sets selective for larger animals; the catch often reflects actual population composition.

As observed in the past, relatively few individuals appeared to take advantage of the spring shooting season. Most seem to prefer to take beavers on an opportunistic basis while engaged in other activities such as fishing, muskrat trapping, or waterfowl hunting. Because sealing certificates currently do not differentiate between snaring and shooting, the actual harvest attributable to shooting is not known with certainty.

In summary, beaver populations continue to remain abundant throughout Unit 18. Cache survey data and reports from Department personnel and the public indicate that populations are increasing or stable in virtually all areas of the Yukon-Kuskokwim Delta. Numerous individuals, particularly those dependent on the subsistence harvest of blackfish, believe that beavers are too numerous. Additional studies focusing on the relationship between beaver and blackfish populations are recommended. Because beaver populations are high throughout the unit and trapping effort is minimal, additional liberalization of seasons and bag limits north of the Yukon River is justified. Although beavers are not fully prime during November, many people use beavers as a subsistence food item and would benefit from an earlier season opening.

The cache survey program should be continued. Presently, we are on a 2-year schedule of resurveying streams previously surveyed. Additional studies to assess accuracy and utility of cache surveys are recommended at this time.

Fox

Although arctic foxes are found along the entire coastline of Unit 18, numbers are subject to abrupt annual fluctuations and vary considerably from area to area. These variations are not surprising because Unit 18 is very near the southern limit of arctic fox distribution in Alaska. Arctic foxes appear to be most common from Nunivak and Nelson Islands north to the Yukon Delta. Increasingly common reports of fox depredation on nesting waterfowl near the coast suggest that fox populations may be increasing in many areas. Results of the Trapper Questionnaire indicate that fox numbers vary widely throughout the unit, although most trappers reported fox densities to be the same as those of last year.

Only 93 arctic foxes were reported harvested and sold in Unit 18 according to dealer purchase records. Because pelt prices are currently very low and domestic use is high, we believe the actual harvest approached 200-300 foxes, somewhat less than last year's take. With the exception of Nunivak Island, snow was shallow along the coast, and travel and trapping conditions were difficult. We believe these factors were responsible for the reduced harvest observed during winter 1983-84.

Red foxes are common throughout Unit 18 and are observed in nearly all habitat types. Willow-covered and riparian zones containing abundant microtines, ptarmigan, and snowshoe hares appear to be the favorite haunts of red foxes. According to our Trapper Questionnaire, red fox numbers are stable in the Yukon and Kuskokwim drainages. However, most trappers residing in tundra and coastal villages reported a reduction in fox abundance. Although fox densities appear to be somewhat higher than those of last year, they are substantially lower than the high of 3 years ago.

Dealer purchase records indicate that 736 red foxes were trapped and sold in Unit 18 during the 1983-84 season. Because red foxes are utilized for domestic and handicraft purposes, we believe the actual harvest is 900-1,100 foxes. Although available harvest information is scanty, the 1983-84 harvest was probably slightly higher than that of 1982-83.

Lynx

Athough lynx are widely distributed throughout the northern and eastern portions of Unit 18, they are abundant only in highly localized pockets. Distribution of lynx appears to reflect distribution and abundance of snowshoe hares. Currently, snowshoe hares are uncommon in most areas of Unit 18, particularly in the Yukon drainage, and we believe lynx are uncommon as well. Results of the 1984 Trapper Questionnaire indicate moderate-to-low numbers of lynx compared with last year.

Sealing certificate data indicate that only 21 lynx were harvested in Unit 18 during 1983-84. Assuming no change in rate of compliance with sealing requirements, the 1983-84 harvest was only 1/3 of the 1982-83 harvest. We believe lower numbers of lynx, in combination with poor snow conditions for trapping and travel, at least partially account for the reduced harvest. The lynx harvest near the boundary of Unit 18 and Subunits 21E and 19A complicates data analysis. Trappers from Holy Cross, Kalskag, Nyac, and Lower Kalskag often trap on both sides of the boundary but may not correctly report the location of their catch. Because the proportion of the Unit 18 harvest reported from this area can be substantial, conclusions regarding harvest trend should be viewed with caution.

Although lynx are highly valued by trappers throughout Unit 18 due to high pelt prices, trapping pressure is not uniformly distributed, and many refugia exist in remote portions of the unit. The northern portions of the Andreafsky and Chuilnak drainages, and wooded drainages in the more remote sections of the Kilbuck Mountains see little trapping activity and provide fair-to-good lynx and showshoe hare habitat. Because lynx are easily trapped and often eliminated from accessible areas near villages, refugia with productive populations of lynx and hares are necessary to repopulate other more depleted areas.

Mink

Mink are commonly observed throughout Unit 18, particularly in the lowlands south of the Andreafsky Mountains and west of the Kilbuck Mountains. Highest densities occur in the Kashunak, Black, and Johnson River drainages, and near Baird Inlet. According to results of the annual Trapper Questionnaire, mink populations were stable or increasing in the Yukon and Kuskokwim River drainages. Reports from trappers residing in coastal and tundra villages were consistent, although we believe mink populations in those areas are stable.

According to Dealer Purchase records, approximately 11,000 mink were trapped and sold in Unit 18 during the 1983-84 season. Because mink command a good price we believe most trappers sell their pelts, and so dealer purchase records fairly accurately indicate actual harvest levels. The 1983-84 harvest was approximately twice the harvest of the previous winter. We believe this increase reflects excellent ice conditions for trapping during November and December 1983 rather than a large population increase. Mink are economically the most important furbearer in Unit 18. Delta mink are internationally famous due to large body size, fur quality, and uniformity of color. Consequently, they consistently command high prices. Although current harvest levels are substantially lower than those of 20-30 years ago, such high harvests may occur again if fur

prices increase. A survey technique for assessing population trends needs to be developed if we are to intelligently manage mink populations under a more intensive harvest regime.

Muskrat

Although muskrats are found throughout Unit 18, highest densities occur in the flat lowland of the Yukon-Kuskokwim Delta. Results of the Trapper Questionnaire and reports from local residents indicate that muskrat densities remain very low throughout Unit 18. Only a small minority of trappers reported increases in their areas. Department personnel observed few muskrat pushups in spring 1984, as has been the case since winter 1981-82. Unusually thick ice on lakes and sloughs during January-April 1984 probably resulted in substantial overwinter mortality, particularly in smaller ponds.

Dealer purchase records indicate that only 800 muskrat were trapped and sold in Unit 18. Because domestic use of muskrats is very high and many pelts are not sold, the actual harvest is not known with certainty. We believe the actual harvest was at least 1,500-2,500 muskrats, which is certainly much lower than the harvests of 20,000-30,000 observed in past decades. Low populations and low prices probably discouraged intensive trapping.

Otter

River otters are very abundant throughout Unit 18, particularly in the vast lowland of the Yukon-Kuskokwim Delta. Greatest otter densities are found in the Yukon Delta, the Kasunak, Black, and Johnson River drainages, and in the vicinity of the Big Lake country near Baird Inlet and Dall Lake. Results of our 1984 Trapper Questionnaire indicate that otter densities have not changed significantly since last year.

During winter 1983-84, trappers harvested record numbers of otters; 587 otters were submitted for sealing compared with 171 in 1982-83. Because ice conditions during November and December were favorable for using "taluyaks" (underwater traps) for catching mink and otter, the high harvest is not surprising. Due to unusually thick ice after January, most of the harvest occurred during November and December.

Wolverine

Wolverines remain very uncommon throughout Unit 18. Only in the Andreafsky and Kilbuck Mountains are wolverines sighted with any degree of regularity. Although people occasionally report sightings of wolverines in the flat lowland of the Yukon-Kuskokwim Delta, we believe densities there are extremely

low due to a relative scarcity of prey compared with the mountainous country to the north and east. According to results of the Trapper Questionnaire, wolverine numbers appear to be similar to or lower than last year throughout the unit. No trapper reported wolverines as being more abundant than last year.

Only 3 wolverines were sealed, compared with 9 in 1982-83. Because domestic demand for wolverine pelts is very high, we believe the actual harvest is 2 to 3 times higher than the reported harvest. Although wolverines are highly valued by local hunters, most are taken opportunistically by individuals engaged in other activities.

Management Summary and Recommendations

Furbearers are present throughout most of Unit 18, although abundance and status of each species vary greatly. Population fluctuations appear to be much more dependent on environmental factors such as weather and ice thickness than on trapping pressure. Trapping pressure only appears to affect furbearer densities near villages.

Mink, otter, and fox predation on coastal nesting geese and their young is a potentially controversial management problem. Currently, much effort is being directed toward increasing the populations of black brant, cackling Canada, emperor, and white-fronted geese. Furbearers, particularly foxes, have been implicated as one of several major sources of mortality among nesting birds. Opportunistic predators such as foxes are certainly capable of preventing recovery of depressed goose populations. The situation is aggravated by the fact that several goose species concentrate their nesting and rearing activities on a narrow coastal fringe which provides an ideal situation for predators. Increased research into waterfowl-furbearer interactions and possible management actions is recommended.

Efforts by Department personnel to establish village sealing agents should continue. Establishment of sealing agents should help alleviate the problem of noncompliance with sealing requirements. We need to continue to encourage fur buyers to comply with reporting requirements as well. Development of survey techniques to assess furbearer population trends needs to be given priority. An increase in trapping effort, accompanied by greater harvests, would necessitate a more intensive management effort as well as better population information.

Literature Cited

Swenson, J. E., S. J. Knapp, P. R. Martin, and T.C. Hinz. 1983. Reliability of aerial cache surveys to monitor beaver population trends on prairie rivers in Montana. J. Wildl. Manage. 47:697-703.

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Table 1. Comparison of Game Management Unit 18 beaver cache aerial surveys, 1981 and 1983.

River	River miles	Number of caches, 1983	Caches/mile (C/M) 1981	Caches/mile (C/M) 1983	% Change in C/M from 1981
East Fork Andreafsky	89[a]	63	1.17	1.70	+45
North Fork Andreafsky	69[b]	39	0.81	1.08	+33
Kashunak	97	94	0.55	0.97	+76

[a] Only 37 miles of the original 89 were surveyed in 1983 due to inclement weather.

[b] Only 36 miles of the original 69 were surveyed in 1983 due to inclement weather.

Table 2. Game Management Unit 18 beaver harvest by drainage, 1982-84.

Location	Year	No. of trappers	No. (%) taken by pelt size		Totals	Mean number of beavers harvested per trapper
			0-54 in.	54 in.+		
Andreafsky River	1981-82	9	6(11)	49(89)	55	6.1
	1982-83	4	5(28)	13(72)	18	4.5
	1983-84	11	3(9)	32(91)	35	3.2
Eek River	1981-82	11	8(9)	84(91)	92	8.4
	1982-83	3	3(17)	15(83)	18	6.0
	1983-84	4	15(34)	29(66)	44	11.0
Goodnews River	1981-82	6	14(30)	32(70)	46	7.7
	1982-83	6	17(31)	37(69)	54	9.0
	1983-84	5	8(30)	19(70)	27	5.4
Johnson	1981-82	20	62(27)	164(73)	226	11.3
	1982-83	11	23(16)	118(84)	141	12.8
	1983-84	15	11(09)	105(91)	116	7.7
Kanektok	1981-82	4	10(32)	21(68)	31	7.8
	1982-83	3	20(57)	15(43)	35	11.7
	1983-84	1	0(0)	14(100)	14	14.0
Kashunak	1981-82	10	21(18)	99(82)	120	12.0
	1982-83	6	11(20)	44(80)	55	9.2
	1983-84	5	37(51)	36(49)	73	14.6
Kisaralik/ Kwethluk River	1981-82	36	61(18)	274(82)	335	9.3
	1982-83	16	35(18)	160(82)	195	12.2
	1983-84	7	15(18)	70(82)	85	12.1
Reindeer River	1981-82	3	15(50)	15(50)	30	10.0
	1982-83	2	6(26)	17(74)	23	11.5
	1983-84	4	5(22)	18(78)	23	5.8
Other drainages, Unit 18	1981-82	73	124(18)	554(82)	678	9.3
	1982-83	62	135(21)	503(79)	638	10.3
	1983-84	59	99(19)	424(81)	523	8.9
Totals	1981-82	172	321(20)	1,292(80)	1,613	9.4
	1982-83	113	255(22)	922(78)	1,177	10.4
	1983-84	111	193(21)	747(79)	940	8.5

FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 19

GEOGRAPHICAL DESCRIPTION: Upper and middle Kuskokwim River drainages

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 24.

Beaver

Beaver populations appear to be increasing throughout nearly all of Unit 19 and in many drainages beavers are more abundant than in recent years.

Only 532 beavers were reported taken by 74 trappers during the 1983-84 season. The previous season's take was 566 beavers. For the last 2 trapping seasons the Unit 19 beaver catch has been less than one-third the previous 27-year average.

Land Otter

Otter sign was widespread, particularly in Subunit 19D, but most otter trapping continued to occur incidental to other activities. Thirty trappers reported a total take of 58 otters, slightly below the previous 5-year average of 65 otters. The 1983-84 harvest was composed of 29 males, 17 females, and 12 of undetermined sex. Over 56% of the catch was from Subunit 19A, where two-thirds of the successful otter trappers resided. Only 1 trapper made a concerted effort to trap otters, and he caught 11. During March, he took 2 male albino otters from the same location in the Big River drainage. The 1st otter taken was a large adult male and the 2nd one, taken about 1 week later, appeared to be an immature male.

Lynx

Lynx populations declined markedly in Unit 19 during 1983. Lynx have a spotty distribution in the unit and occur along the South Fork of the Kuskokwim River near the Alaska Range, on the upper Stony River, and in the Kilbuck Mountains. Lynx remain at low levels along the main Kuskokwim River.

The harvest of only 52 lynx was down from the previous 5-year average of 212. This reflects a sharp decline in the population. Similarly, the number of trappers declined from 48 (1982-83) to 28 (1983-84). The lynx harvest was almost evenly distributed among Subunits 19A, C, and D.

Marten

Nearly all trappers reported lower than normal marten catches and I was aware of only 1 trapper in Unit 19 who took more than 250 marten during the 1983-84 season. Most marten trapping occurs near villages. Lack of snow during November and December discouraged many trappers from taking advantage of the productive early portion of the marten season. The unitwide marten harvest in 1983-84 probably did not exceed 2,500 marten.

Wolverine

Fifty-eight wolverines (34 male, 18 female, and 6 of unknown sex) were taken in Unit 19 by 43 trappers. This harvest was close to the prior 12-year average of 55 wolverines. Most wolverines (23) were taken in Subunit 19A, followed by 16 in 19D, 13 in 19C, and 6 in 19B. Trapping was the most common method of take (79%), followed by shooting from the ground (14%). December, January, February, and March were the most productive months for wolverine trappers.

Management Summary and Recommendations

Overall, 1983-84 was a poor year for trappers in Unit 19; the take of the 3 major species: marten, beaver, and lynx, was much lower than normal.

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FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 20

GEOGRAPHICAL DESCRIPTION: Central Tanana Valley

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 24.

Beaver

Sealing documents indicated that 761 beaver were harvested from Unit 20 during the 1983-84 season. The reported harvest, by subunit, was as follows: 20A, 55; 20B, 341; 20C, 281; 20D, 33; 20F, 47; unknown location, 4. In all Subunits, less than 20% of the beaver take was kits (pelt size less than 53 inches), and more than 50% had a pelt size of 60 inches or more. The total beaver harvest for Unit 20 was composed of 73% adults, 18% yearlings, and only 9% kits.

Most beaver that were taken in Subunit 20A were trapped in the Tanana Flats and Dry Creek area. In 20B, the greatest number of beavers (180) came from the Chena River and its tributaries, while the next largest take (91 beaver) was from the Tolovana drainage.

The Kantishna River drainage produced the highest beaver harvest (163) in Subunit 20C. The Nenana River drainage, also in 20C, yielded 51 beavers.

More than two-thirds (24) of the beavers harvested in Subunit 20D were taken from the Goodpaster River drainage, and in 20F the Tozitna River drainage produced 29 of 47 beaver taken.

Land Otter

According to sealing records, 48 otters (26 males, 19 females, and 3 of unknown sex) were trapped in Unit 20 during the 1983-84 season. The number of otters taken in each Subunit was as follows: 20A, 6; 20B, 18; 20C, 18; 20D, 4; and 20F, 2.

The otter harvest occurred throughout the season; 18 otters (38%) were taken in November, 9 (19%) in December, 8 (17%) in

January, 6 (13%) in February, 5 (10%) in March, and 2 (4%) in April.

Lynx

Sealing records indicated that 367 lynx were caught in Unit 20 during the 1983-84 season. The reported harvest, by subunit, was as follows: 20A, 62; 20B, 83; 20C, 94; 20D, 54; 20E, 23; and 20F, 51.

The lynx harvest was distributed throughout the season as follows: 91 (25%) taken in November; 123 (34%) in December; 73 (20%) in January; 57 (16%) in February; and 20 (5%) in March. The dates of take for 3 lynx were not known.

Wolverine

Sealing documents indicated that 57 wolverines (39 males, 12 females, and 6 of unknown sex) were harvested from Unit 20 during the 1983-84 season. The number of wolverines taken in each subunit was as follows: 20A, 8; 20B, 11; 20C, 13; 20D, 9; 20E, 9; and 20F, 7.

The wolverine catch occurred throughout the season with 1 (2%) taken in September; 12 (21%) in November; 11 (19%) in December; 12 (21%) in January; 11 (19%) in February; and 10 (17%) in March.

Management Summary and Recommendations

Almost twice as many beavers were taken during 1983-84 in Unit 20 as were taken from the unit in 1982-83. Trappers reported moderate to high numbers of beavers in the unit. The proportion of kits in the harvest was only 9%, which indicates that beavers are not being overharvested. If the harvest consists of more than 20% kits, a closer look at the population may be needed to prevent overharvest. As the human population increases in Unit 20, conflict between beaver and human activities has increased also. Beavers inhabiting sloughs in the greater Fairbanks area damage shrubs and plug culverts. Although many urban and suburban homeowners enjoy watching these animals, it may be necessary to harvest more beavers in trouble spots.

The land otter harvest doubled in the 1983-84 season compared with 1982-83. The otter population in Unit 20 has remained fairly stable over the past several years. However, trappers reported moderate to high numbers this year and some trappers felt that the number of otters had increased. Weather conditions may be an important factor affecting otter harvest.

The Unit 20 lynx harvest in 1983-84 (367) was considerably reduced from that of 1982-83 when 906 lynx from the unit were

sealed. Trappers responding to the Trapper Questionnaire reported low lynx numbers and they felt there had been a decline from the previous year. The decline, which probably resulted from low hare populations, was in contrast with the preceding year when many trappers felt that lynx had increased in number.

The catch of wolverines in 1983-84 (57) decreased to about 60% of that in 1982-83 (91) but was the same as in 1981-82 (57). Trappers, in their response to the questionnaire, reported that wolverine populations had remained much the same in 1983-84 as in the 2 previous years. The reasons for these harvest fluctuations are unknown, but weather may have been a factor.

In local situations, trapping may influence the abundance of certain species of furbearers, and as trapping pressure increases in Unit 20, it may become necessary to restrict the take of furbearer populations.

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FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 21

GEOGRAPHICAL DESCRIPTION: Middle Yukon

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 24.

Trapping Conditions

Snowfall was variable in Unit 21 during the trapping season. The northern and western parts of Subunit 21B, 21C, and 21D received enough snowfall to allow trappers to gain access to their areas by 1 November. In Subunits 21A and 21E, adequate trapping conditions did not exist before mid-December. At Galena, the Yukon River froze on 23 October 1983. The weather for most of the trapping season was moderate until 1 February 1984, when temperatures fell below -30 F and remained low for a month.

Hare populations were low throughout the unit except in a few willow communities along the Koyukuk River. Rodent densities remained high in the Yukon and Koyukuk lowlands.

Beaver

Nine hundred fourteen beavers were sealed in Unit 21 during the report period. Subunit 21D had the highest harvest (540), half of which was from the Kaiyuh Flats. The overall harvest of beavers was low compared with the estimated population. This may be because very cold temperatures hindered trappers during February and March. During the 1983-84 season, 93 beavers were caught along the Yuki River, but in the 1982-83 season only 54 beavers were reported taken in this drainage. This indicates that the majority of beaver houses were not trapped. Fur prices control beaver harvests more than regulations, and stocks are more than adequate to support the present harvests.

Land Otter

Otter, which were all taken incidental to beaver trapping, have been very numerous in recent years. The number harvested was

greater than normal (Table 1), even though beaver harvests were down.

Lynx

Harvest data indicate that lynx populations throughout Unit 21 (Table 1) continued to decline following the peak in 1981-82. Populations have not reached the low level recorded during the mid-1970's. Although a decline occurred in Subunit 21E, the decline was delayed 1 year compared with the rest of Unit 21 (Table 2).

Wolverine

The wolverine harvest (27) was less than the average annual catch of 40 (Table 1). This was probably due to reduced activity by trappers using aircraft in the Innoko drainage.

Other Furbearers

Coyotes, which are rare throughout Unit 21, continued to be numerous on the outskirts of Galena. Two were caught during the trapping season.

Fox populations were high along the major rivers, but low pelt prices were probably responsible for the low harvest. Four fox heads from Subunit 21D were tested for rabies by the Virology-Rabies Unit at Fairbanks; all tests proved negative.

Early in the season, prices for marten were low which discouraged some trapping. Poor snow conditions also hampered trapping effort. In February, prices rose dramatically, but cold weather effectively ended the season early.

Mink continue to be of minor interest to trappers in Unit 21.

Management Summary and Recommendations

Present seasons and bag limits are adequate to maximize the resource without impairing conservation of the furbearer stocks. Fur prices are generally low and trapper conflicts are infrequent, which contributes to a moderate self-regulated harvest in the unit.

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Table 1. Reported lynx, land otter, and wolverine harvests, Unit 21, 1979-84.

Species	1979-80	1980-81	1981-82	1982-83	1983-84[a]
Lynx	66	120	480	357	114
Land otter	60	82	55	33	101
Wolverine	38	39	43	72	27

[a] Hand count of sealing certificates in Galena.

Table 2. Unit 21 reported lynx harvests, by subunit, 1979-84.

Subunit	1979-80	1980-81	1981-82	1982-83	1983-84[a]
21A	5	4	18	16	2
21B	19	15	92	49	5
21C	3	0	9	13	0
21D	39	98	350	236	86
21E	0	3	11	43	21
Totals	66	120	480	357	114

[a] Hand count of sealing certificates in Galena.

FURBEARER

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 22

GEOGRAPHICAL DESCRIPTION: Seward Peninsula

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 22.

Beaver

Beaver densities within the unit have steadily increased over the past 10 years and documentation of new lodges each year suggests that beavers are continuing to disperse westward. Trapping effort has been minimal in the past and is expected to remain so until densities and/or fur prices increase to a point where beaver trapping becomes profitable.

Six trappers reported a harvest of 23 beavers from Subunit 22A during the past year. Of these, 83% (19) were taken from the Egavik River drainage (Table 1).

Fox

Arctic foxes are commonly observed along the entire coastline of the Seward Peninsula during winter, as well as on the major offshore islands of St. Lawrence, Sledge, King, and Little Diomede. However, sightings were somewhat less frequent than in recent years. The population appears to have remained relatively stable over the years, and those hunters and trappers interested in catching foxes have normally been quite successful. Trapping and hunting effort and success appear to be limited more by the price of furs than by the availability of arctic foxes. Fur dealer and trapper export runs indicate that 218 arctic foxes were harvested in Unit 22 during 1983-84 (Table 2).

Red and cross foxes are normally common in all drainages within the unit. This year was an exception. Because the density of prey species was very low during the reporting period, little fox sign was evident. Few hunters and trappers were successful in harvesting foxes during the past year. Fur dealer and trapper export runs indicated a Unit 22 harvest of 192 red foxes in 1983-84 (Table 2).

Lynx

Except for a dramatic decline during winter 1980-81, the lynx harvest within Unit 22 rose steadily between the implementation of a sealing program in 1977 and winter 1982-83 when trappers took an all-time record harvest of 820 lynx. Noticeable declines in numbers of hare and densities of other lynx prey have occurred during the past 2 winters. These declines appear to have directly affected lynx numbers within the unit. Sealing certificates indicate that trappers on the Seward Peninsula harvested 443 lynx from 9 drainages within Subunits 22A and 22B during the reporting period (Tables 1 and 2). A chronology of the known harvest is given in Table 3. Sex composition of the lynx harvested was as follows: 255 (58%) males, 134 (30%) females, and 54 (12%) of unknown sex. The Shaktoolik and Ungalik River drainages proved to be the most productive with 40% of the reported harvest coming from these 2 areas (Table 1). Lynx were taken by trappers during every month of the season, and as in past years, December through March produced the highest catches (Tables 3 and 4).

Marten

Marten are primarily limited to Subunit 22A with the Shaktoolik and Unalakleet Rivers having the highest densities. Trapping effort has been relatively light in the past and is expected to remain so because marten are uncommon. Fur dealer and trapper export runs indicate a Unit 22 harvest of 103 marten in 1983-84 (Table 2).

Mink and Weasel

Little is known about the distribution and densities of mink and weasel on the Seward Peninsula. Although tracks have been observed in most major drainages of the unit in past years, mink densities are probably quite low. Fur dealer and trapper export runs indicate a Unit 22 harvest of 68 mink and no weasels in 1983-84 (Table 2).

Otter

Land otter tracks have been observed in most major drainages where a source of thermal ground water prevents the formation of a solid ice cover. Their relatively low numbers probably account for low trapper success in the past.

Eight otters (5 males, 1 female, and 2 of unknown sex) were reported to have been harvested in 1983-84. Distribution and harvest by month is given in Tables 1 and 4. The Shaktoolik River produced 63% of this year's harvest with most of the take occurring in April.

Wolverine

Wolverines occur throughout virtually all habitat types within the unit. As in past years, tracks were reportedly observed in all major drainages on the Seward Peninsula. Mean recorded harvest of wolverines taken by Unit 22 trappers over the last 11 years was 18. This year's recorded harvest was considerably higher (35 wolverines) and exceeds the previous high of 33 animals taken during winter 1975-76. As in past years, males composed most (54%) of the reported harvest, presumably because males are more nomadic than females. In addition, 12 females and 4 of unknown sex were taken.

Geographic distribution of the recorded Unit 22 wolverine harvest for the reporting period is given in Tables 1 and 5. Chronology of the wolverine harvest is given in Table 4. Unlike past years when the highest harvest occurred in March (presumably because of warmer weather and longer days), this year's harvest was rather stable during December-April. This change in harvest chronology may have been due to unusual winter weather (sunshine and very little wind) on the Seward Peninsula during the trapping season.

Management Summary and Recommendations

Because a large portion of Unit 22 is open tundra, furbearer habitat is primarily limited to Subunits 22A and 22B. Research has never been conducted on any furbearer population on the Seward Peninsula, and all available distribution and density information comes from management biologists, hunters, and trappers. It appears that only slight changes in furbearer densities have occurred over the years. It is not known whether these changes were caused by human activities or by natural environmental factors. Because furbearer hunting and trapping pressure has always been low in Unit 22, long-term effects are believed to have been minimal in the past and are expected to remain so.

Accurate furbearer harvest data for Unit 22 is nonexistent because many pelts are not sealed or sold but are kept for personal use. As in previous years, data on lynx, wolverine, otter, and beaver harvests were gathered from sealing certificates and not from computer runs. Because trappers are not required to seal mink, muskrats, marten, foxes, or weasels, harvest values for those species were compiled from 1983-84 furbearer and trapper export runs. Because these runs only indicate the number of furs exported and not the date on which they were taken or the total number taken, it is not known whether these values reflect true harvests.

Our primary management effort within Unit 22 has been to obtain accurate harvest data. Village sealers are currently employed

in all villages to assist and encourage hunters and trappers to seal furs. Even though our efforts have been partially successful, accuracy of harvest data still needs to be improved. Many people still refuse to seal furs they plan to use for ruffs, hats, and other garments. Additional public contact is greatly needed in rural areas to emphasize the management benefits of our sealing program. An effective law enforcement program is also needed if we are to obtain satisfactory compliance with current hunting and trapping regulations. Also, reliable data collection needs to be implemented for those species not required by law to be sealed and the information made available to area managers in a timely manner.

Because densities of most furbearer species in Unit 22 are low, I believe hunting and trapping pressure will also remain low during the coming year. Present regulations appear to be adequate and meet the needs of most local hunters and trappers.

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Table 1. Game Management Unit 22 lynx, wolverine, otter, and beaver harvest, by drainage, 1983-84.

Subunit	Drainage	Lynx	Wolverine	Otter	Beaver
22A	Pikmiktalik	0	0	1	0
	Golsovia	5	0	0	0
	Unalakleet	57	1	1	1
	Egavik	32	1	0	19
	Shaktoolik	115	9	5	0
	Ungalik	102	5	0	0
	Unknown	0	0	0	3
Subtotals		311	16	7	23
22B	Inglutalik	60	2	0	0
	Koyuk	64	6	0	0
	Kwik	4	4	0	0
	Topkok	4	2	1	0
	Unknown	0	2	0	0
Subtotals		132	16	1	0
22C	Sinuk	0	1	0	0
Subtotals		0	1	0	0
22D	Kuzitrin	0	1	0	0
	Unknown	0	1	0	0
Subtotals		0	2	0	0
Totals		443	35	8	23

Table 2. Game Management Unit 22 furbearer harvest from sealing certificates, fur dealer, and trapper export runs, 1983-84.

Species	Harvest
Lynx	443[a]
Wolverine	35[a]
Mink	68[b]
Muskrat	0[b]
Marten	103[b]
Otter	8[a]
White fox	218[b]
Other fox	192[b]
Weasel	0[b]
Beaver	23[a]

[a] Compiled from sealing certificates.

[b] Compiled from fur dealer and trapper export runs.

Table 3. Game Management Unit 22 lynx harvest, 1982-83.

Subunit	November			December			January			February			March			April			Subtotals			Totals	
	M	F	Unk	M	F	Unk	M	F	Unk	M	F	Unk	M	F	Unk	M	F	Unk	M	F	Unk	No.	%
22A	9	13	0	37	16	6	50	25	0	30	17	32	36	14	3	14	8	1	176	93	42	311	(70)
22B	4	1	0	8	6	6	34	16	5	16	14	0	15	4	1	2	0	0	79	41	12	132	(30)
Totals	13	14	0	45	22	12	84	41	5	46	31	32	51	18	4	16	8	1	255	134	54	443	(100)

Table 4. Percent of Game Management Unit 22 lynx, wolverine, and otter harvest, by month, 1983-84.

Species	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Lynx	0	0	6	18	29	25	16	6
Wolverine	3	3	0	20	17	20	17	20
Otter	0	0	0	13	13	13	13	48

Table 5. Game Management Unit 22 wolverine harvest, 1983-84.

Subunit	Male	Female	Unknown	Totals	
				No.	%
22A	8	6	2	16	46
22B	11	5	0	16	46
22C	0	1	0	1	2
22D	0	0	2	2	6
Totals	19	12	4	35	100

FURBEARER

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 23

GEOGRAPHICAL DESCRIPTION: Kotzebue Sound

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 24.

Beaver

Results of the 1984 Unit 23 Trapper Survey (ADF&G files, Kotzebue) indicated relatively high beaver populations in the Kobuk and Selawik River drainages. These high populations were reported as being either the same as last year or as having increased. A low number of beavers, however, was reported for some areas of the Buckland River drainage. Results of an August 1983 beaver cache aerial survey of the Selawik drainage were consistent with trapper reports. Survey results, also reported in 1982-83, were similar to those of the 1981 and 1982 surveys. No survey was conducted in 1984. Frequent incidental sightings of beaver activity, made during aerial surveys and flights between villages, further supported the conclusion that beavers are numerous in the Kobuk and Selawik drainages.

Twenty-seven beavers were sealed during the 1983-84 season. Prices for beaver fur were very low; hence trappers had little if any monetary incentive to sell pelts. However, beaver pelts and meat are an important locally used resource, so it is probable that a substantial number were taken for this purpose but not reported.

Fox

A continued cyclic low in the arctic fox population was indicated by Trapper Survey results. Only 2 furs were reported from dealer purchase records and none from trapper export records (Table 1).

Results of the Trapper Survey indicated low to medium red fox abundance, as was generally the case last year. Red fox observations, per hour of late winter moose survey, increased from 0.1 in 1983 to 0.3 in 1984 and may indicate the beginning of a population increase (Table 2). Estimated harvest was 255 (Table 1), which is comparable to the 1982-83 harvest.

Lynx

Results of the Trapper Survey indicated relatively low numbers of lynx throughout Unit 23, although moderate numbers were reported in the upper Buckland River and near the village of Deering. These observations were in agreement with the expectation that the lynx population should decrease dramatically because its primary prey, snowshoe hares, was in at least the 2nd year of its cyclic low.

The reported harvest of 84 lynx (Table 3) was substantially lower than the previous year's harvest of 275 and the previous 6-year average of 348. This was also indicative of a relatively low lynx population. I expect a decrease in lynx trapping effort to accompany the widespread perception by trappers that few lynx will be available for the next few seasons. Harvest, therefore, will probably remain low until the cyclic increase of snowshoe hares is well underway.

Mink

Results of the Trapper Survey indicated that mink are moderately abundant, with a few localized areas of either low or high abundance. The reported harvest was 201 (Table 1).

Muskrat

Survey results indicated that the muskrat population remained low, as was the case last year; however, 1 trapper reported medium abundance in part of the Buckland River drainage. Fur dealer purchase records showed no muskrat pelt transactions, and trapper export records indicated that 22 muskrats (Table 1) were shipped out of the state. The decline of the muskrat population is often mentioned by trappers and hunters. Fur dealer purchase and trapper export records provide further evidence; the harvest declined from 12,718 in 1978-79 to 0 in 1982-83. Until other evidence is available, I assume that the decline resulted primarily from ecological changes and not from overharvest.

Otter

Results of the Trapper Survey indicated medium land otter abundance throughout Unit 23. Survey results corroborated my own incidental observations (made during aerial surveys and flights to villages) that signs of otter activity were numerous and widespread.

Eight otters were reported taken (Table 3). The low market value of otter fur undoubtedly was a factor in the apparent low sealing rate, and commercial trapping effort was probably

light. Otter fur is widely used locally, however, so the actual harvest was probably much higher than 8.

Wolverine

Results of the Trapper Survey indicated medium abundance of wolverine in northern areas of Unit 23, but low to medium abundance in the southern part of the unit. Circumstantial evidence, such as my own observations, suggested that hunting and trapping pressure over much of the Selawik and Buckland drainages may be holding the population at a lower than desirable level. Conclusive data were not available and probably will not be available in the near future. Therefore, the situation will continue to be monitored in an attempt to assimilate additional information.

Forty-three wolverine pelts were sealed, 60% of which were males (Table 3). This level of reported harvest was similar to that of the past 5 years. The actual harvest was probably higher because many unsealed wolverine pelts are normally sold or traded locally.

Management Summary and Recommendations

Relative abundance of furbearer populations in Unit 23 ranged from low to high. Species believed to be low were lynx and wolverine in some areas, arctic fox, muskrat, and red fox in other areas. These species did not appear to be in any danger of extirpation as a result of overharvest or other causes. No regulatory changes are appropriate at this time.

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SUBMITTED BY:

David A. Anderson
Survey-Inventory Coordinator

Table 1. Unit 23 arctic fox, red fox, marten, mink, and muskrat harvests from trapper export reports and reports of dealer purchases from trappers, 1974-84.

Species	Year	Harvest areas: Pt. Hope/ Kivalina	Noatak	Kobuk	Selawik	Seward Peninsula	Unknown	Totals
Arctic fox	74-75	0	0	0	0	0	2	2
	75-76	0	1	5	0	0	0	6
	76-77	12	6	7	2	0	5	32
	77-78	13	0	0	0	0	0	13
	78-79	81	10	3	5	0	76	175
	79-80	3	2	1	0	3	6	15
	80-81	0	2	2	1	5	4	14
	81-82	--	--	--	--	--	--	--
	82-83	0	0	0	0	0	0	0
	83-84	--	--	--	--	--	--	2
Red fox	74-75	0	1	31	34	4	16	86
	75-76	0	58	122	74	5	49	308
	76-77	2	107	171	154	54	122	610
	77-78	31	27	68	79	32	37	274
	78-79	111	115	287	103	147	577	1340
	79-80	23	127	412	113	189	424	1288
	80-81	11	78	259	129	117	367	961
	81-82	--	--	--	--	--	--	--
	82-83	0	49	46	80	59	62	296
	83-84	--	--	--	--	--	--	255
Marten	74-75	0	0	6	0	0	0	6
	75-76	0	0	3	0	0	0	3
	76-77	0	0	1	1	7	0	9
	77-78	1	0	13	0	0	0	14
	78-79	0	0	0	0	0	1	1
	79-80	1	0	31	0	0	0	32
	80-81	0	0	20	3	0	1	24
	81-82	--	--	--	--	--	--	--
	82-83	0	0	21	0	0	9	30
	83-84	--	--	--	--	--	--	0

Table 1. Continued.

Species	Year	Harvest areas: Pt. Hope/ Kivalina	Noatak	Kobuk	Selawik	Seward Peninsula	Unknown	Totals
Mink	74-75	0	0	87	25	0	0	112
	75-76	0	0	6	59	0	0	65
	76-77	0	3	94	102	0	0	199
	77-78	0	0	50	57	0	16	123
	78-79	0	1	28	12	0	30	71
	79-80	0	5	51	35	3	8	102
	80-81	0	2	254	957	13	213	1439
	81-82	--	--	--	--	--	--	--
	82-83	0	7	7	110	0	16	140
	83-84	--	--	--	--	--	--	201
Muskrat	74-75	0	0	0	0	0	0	0
	75-76	0	0	86	0	0	0	86
	76-77	0	0	16	90	22	0	128
	77-78	0	0	30	266	0	73	369
	78-79	0	520	5849	5320	172	857	12,718
	79-80	0	29	1901	133	0	171	2,234
	80-81	0	187	1327	321	8	118	1,961
	81-82	--	--	--	--	--	--	--
	82-83	0	0	0	0	0	0	0
	83-84	--	--	--	--	--	--	22

Table 2. Red fox observations during Unit 23 moose surveys, and recorded cases of fox rabies, 1976-84.

Report period	Hours of observation	Foxes observed	Foxes/ hour	Reported cases of rabies in red foxes
76-77	32.9	14	0.4	3
77-78	28.7	12	0.4	1
78-79	26.7	34	1.3	0
79-80	37.0	29	0.8	11
80-81	21.7	22	1.1	0
81-82	40.8	61	1.5	2
82-83	47.1	4	0.1	0
83-84	62.5	19	0.3	--

Table 3. Unit 23 lynx, otter, and wolverine harvests from sealing certificates, 1977-84.

Species	Total take	% male	Method of take				Chronology						Area[a]				
			Shot	Trapped	Snared	Unk	Nov	Dec	Jan	Feb	Mar	Apr	1	2	3	4	5
Lynx																	
1977-78	230	55	0	223	5	2	11	28	60	67	61	0	0	31	166	27	6
1978-79	385	53	2	341	3	39	12	48	81	117	127	0	0	117	147	120	1
1979-80	407	54	14	378	3	12	19	53	96	110	110	13	1	128	139	136	3
1980-81	306	60	3	254	1	41	30	45	62	72	80	17	1	17	128	143	14
1981-82	483	54	7	444	0	32	23	68	77	145	148	19	1	77	133	238	34
1982-83	275	--	6	263	1	5	24	36	38	69	70	33	4	5	34	149	81
1983-84	84	--	3	80	0	1	9	23	17	21	8	5	0	10	14	27	28
Otter																	
1977-78	12	--	1	11	0	0	0	4	5	1	2	0	0	1	4	3	4
1978-79	15	--	2	13	0	0	0	12	2	0	1	0	0	5	1	8	1
1979-80	19	--	10	9	0	0	5	9	2	1	2	0	0	4	2	13	0
1980-81	29	--	0	27	2	0	21	4	2	0	0	2	0	3	6	20	0
1981-82	9	--	0	9	0	0	5	0	1	3	0	0	0	0	4	4	1
1982-83	7	--	1	5	0	1	4	1	1	0	1	0	0	2	2	2	0
1983-84	8	--	1	7	0	0	3	3	2	0	0	0	0	1	5	1	0
Wolverine																	
1977-78	75	67	26	49	0	0	9	8	29	17	12	0	4	10	40	15	6
1978-79	45	73	9	34	0	0	4	4	13	7	17	0	2	8	18	2	6
1979-80	26	63	12	14	0	0	2	4	4	6	9	1	2	8	10	4	2
1980-81	18	76	11	7	0	0	3	6	1	1	5	2	0	10	5	3	0
1981-82	48	75	13	35	0	0	2	3	8	7	23	5	1	28	14	5	0
1982-83	34	68	16	17	1	0	3	2	3	13	10	3	2	21	6	3	2
1983-84	43	60	17	24	1	1	2	8	17	4	5	3	0	23	9	6	4

[a] 1 = Pt. Hope-Kivalina (drainages west of Noatak R. drainage), 2 = Noatak R. drainages, 3 = Kobuk R. drainages, 4 = Selawik R. drainages, 5 = Buckland R. drainages and northern Seward Peninsula drainages.

FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 24

GEOGRAPHICAL DESCRIPTION: Koyukuk River above Dulbi River

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 24.

Trapping Conditions

Weather and snow conditions were excellent for trapping from mid-October until 1 February. Very low temperatures prevailed throughout February. Hares remained abundant in the eastern section of the Brooks Range in Unit 24, but were low elsewhere. The status of rodent populations is unknown for most of the unit. In the Hog River burn, rodents, which had been abundant following the burn, declined to low numbers.

Beaver

Five hundred eight beaver from Unit 24 were sealed. Only 19 were taken in the Koyukuk drainage above Allakaket.

Land Otter

Almost all otter were taken incidental to beaver trapping. The harvest (Table 1) was average.

Lynx

Based on reported harvest, lynx numbers declined (Table 1) in Unit 24, but the rate of decline was not as fast as in Unit 21. Lynx are still abundant in the northeastern section of Unit 24.

Wolverine

The wolverine harvest was average (Table 1).

Management Summary and Recommendations

No changes in season or bag limits are recommended at this time.

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Table 1. Reported furbearer catches in Unit 24.

Species	1979-80	1980-81	1981-82	1982-83	1983-84[a]
Land otter	54	47	11	14	31[a]
Lynx	262	432	797	693	434[a]
Wolverine	30	45	24	46	41[a]

[a] Hand counts of sealing certificates in Galena.

FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 25

GEOGRAPHICAL DESCRIPTION: Yukon Flats, Chandalar, Porcupine, and Black River drainages; Birch and Beaver Creeks

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 24.

Beaver

Sealing records indicate that 232 beavers were harvested in Unit 25 (Table 1). Most were harvested in Subunit 25B (54%) and in Subunit 25D (28%). Only 9 beavers were taken in the other 2 subunits combined. Harvest location was unknown for 32 beavers. Pelt size indicated the harvest consisted primarily of adults. Kits (0-52 inches) composed only 18% of the total harvest, while adults (>60 inches) made up 64% of the take.

Land Otter

Harvest of only 7 otter was reported; 5 were taken from Subunit 25B and 1 each were taken from Subunits 25A and 25C. This was an increase of 4 otters over last year's take. Six otters were trapped, and 1 was taken by snaring. Most were taken during December and February (2 and 3, respectively).

Incidental observations indicate that otter density is low in most of Unit 25. The exception is Subunit 25D where density is probably moderate, reflecting higher quality habitat. The larger harvest in Subunit 25B is probably due to greater trapping pressure in that area.

Lynx

Harvest of 1,027 lynx was reported on sealing forms (Table 2). This was 531 fewer than the 1982-83 season's take. The decline occurred mostly in Subunit 25B, where the harvest was 396 fewer than it was last year. Most of the current harvest came from Subunit 25D (44%) and Subunit 25B (43%). Relatively few lynx were taken in the other subunits.

Numbers of lynx harvested by various methods were: 662 (64%) by trapping, 312 (30%) by snaring, and 1 by ground shooting. Method of take was unknown for 52 (5%) of the animals. The catch was distributed over the entire season, but November and December were the most important months, with 197 (19%) and 384 (38%) lynx taken, respectively.

Incidental observations and harvest indicate that lynx populations are variable in Unit 25. In Subunit 25B, density is probably highest in the Little Black and Porcupine drainages. The decline in lynx numbers along the Black River, which began in 1982-83, continued. This was reflected by a dramatically reduced harvest. Density in eastern Subunit 25D is probably high and populations may be increasing. Other portions of Unit 25 probably contain low to moderate density populations which may be slowly increasing.

Wolverine

Harvest of 55 wolverines was reported on sealing forms (Table 2). This was 40 fewer than last year's reported take. Most harvest occurred in Subunit 25D (40%) and in Subunit 25A (24%). Trapping, snaring, and shooting from the ground accounted for 78%, 8%, and 1% of the wolverine harvest, respectively. The harvest was distributed over the entire season but most of the take occurred (75%) during December through February.

Incidental observations indicate that wolverine populations are stable in Unit 25. Density is probably moderate in Subunits 25A and 25B and is low in Subunits 25C and 25D.

Management Summary and Recommendations

Most beavers were harvested from Subunit 25B and were adults. The land otter take was small. Harvest of lynx was substantially less than it was last year, with most taken in Subunit 25D. Much of the decline in harvest was in Subunit 25B and reflects a downward population trend in that area. Wolverine harvest was also less than it was last year, and most came from Subunit 25D. No season changes are recommended.

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Table 1. Size composition of beaver harvest in Unit 25, 1983-84.

Subunit	Size (inches) 0-52	53-59	60-64	>65	Subunit total
25A	2	2	3	1	8
25B	30	26	33	37	126
25C	0	0	0	1	1
25D	3	11	26	25	65
Unknown	7	4	7	14	32
Unit total	42	43	69	78	232

Table 2. Wolverine and lynx harvest from Unit 25, 1983-84.

Subunit	Wolverine Male	Female	Unknown	Subunit total	Lynx
25A	7	6	0	13	62
25B	4	6	1	11	446
25C	6	3	0	9	55
25D	15	5	2	22	456
Unknown	0	0	0	0	8
Unit total	32	20	3	55	1,027

FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 26A

GEOGRAPHICAL DECRIPTION: Arctic Slope west of the Itkillik River

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Fur Animal Hunting Regulations No. 24 and Trapping Regulations No. 24.

Arctic Fox

Harvest data are not available for this species. Arctic foxes appear to have increased in abundance since the last reporting period, according to reports from trappers at Barrow and Colville Village (L. Dalton, J. Helmericks; pers. commun.).

Lynx

A solitary lynx was observed in November 1983 by fox trappers east of Barrow at Iko Bay (J. C. George, pers. commun.). Wintering flocks of willow ptarmigan may have been a food source for this lone animal. Lynx are not normally observed on the arctic coast, although some are occasionally taken in the foothills south of Wainwright and Pt. Lay.

Red Fox

No information on harvest or mortality is available for the reporting period. In 35 hours of moose surveys flown on the Colville River and its tributaries in early May 1984, 11 red foxes were observed, as well as 11 wolverines, 3 wolves, and 7 brown bears.

Wolverine

Seven wolverines were sealed in Subunit 26A compared with 6 in 1982-83. The actual harvest was certainly much higher. Magoun (unpubl. data) estimated that sealing represents less than 10% of the wolverines taken in Subunit 26A in some years, and that the number sealed rarely represents more than 50% of the actual harvest. Based on carcasses purchased in 1977-78, Magoun (unpubl. data) estimated a minimum harvest of 48 wolverines

when actually only 12 (25%) had been sealed. The harvest for the 1983-84 reporting period was probably less than 100.

Management Summary and Recommendations

Magoun (unpubl. data) estimated a minimum fall population of 821 wolverines in Subunit 26A. This estimate is based on a wolverine density of 1/48 km^2 (1/19 mi^2) in the foothills and 1/139 km^2 (1/54 mi^2) for the entire subunit. A population model developed by Magoun suggests that the population could sustain an annual harvest of nearly 300 wolverines. Based on an observed yearly reproductive rate of 0.60 kits per female in the Driftwood study area, less than 90 adult females should be included in that harvest of 300 animals. The data presented by Magoun strongly suggest that overharvest of wolverines is not occurring in Subunit 26A at this time.

The wolverine study by Magoun (unpubl. data) also underscores the inadequacy of wolverine sealing as a reliable management tool in this part of Alaska. The failure of the fursealing program in rural communities is due to a complex of social, cultural, and logistic factors that will not be discussed in this report. The most direct way to solve the problem for wolverines may be to buy skulls from trappers. Magoun (unpubl. data) points out that wolverine skulls provide reliable data on sex and age composition (condylobasal measurements show relatively little overlap between males and females) and that heads are fairly easy for trappers to transport. A purchase price of about $25 per skull should elicit participation by most trappers and hunters living in the subunit.

I recommend that a skull-buying program be started as soon as possible in Anaktuvuk Pass, Atqasuk, Pt. Hope, Pt. Lay, Nuiqsut, Barrow, and Wainwright. The primary goal of this program should be to develop a stable and systematic pattern of fur harvest reporting for each of these communities. Additional information, such as the number of foxes caught per trip could be obtained in conjunction with skull purchases. No immediate prospect of increased voluntary compliance is foreseen.

I also recommend development of a research project to determine current patterns of fur harvest and and use on the North Slope, principally in Subunit 26A. The intent of this research would be to give managers, planners, and others a broader understanding of how people are presently using fur resources, and of the technologies and pressures being brought to bear on arctic fox, wolf, wolverine, and lynx.

No changes in seasons or bag limits are recommended at this time.

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FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 26B and 26C

GEOGRAPHICAL DESCRIPTION: Arctic Slope east of and including the Itkillik drainage and east of the Colville River

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Trapping Regulations No. 24 and Fur Animal Hunting Regulations No. 24.

Arctic Fox

Arctic fox numbers in Subunits 26B and 26C were low to moderate during winter 1983-84. Numbers had increased from winter 1982-83, but weather was extremely cold for long periods, which reduced trapping success. Kaktovik residents report little movement of foxes during extreme cold. Winter 1982-83 was the low point in the 3- to 5-year population cycle (E. Follmann, pers. commun.).

Lynx

Lynx are extremely rare in Unit 26, due to an almost total lack of lynx habitat and snowshoe hares. Two lynx were reported taken in Subunit 26B during February 1984 (data from computer printouts; no sealing certificates received). The lynx that were caught presumably moved from areas of moderately high but declining densities south of Atigun Pass. Incidental sightings of lynx have been reported as far north as the arctic coast. Such sightings just south of the Brooks Range usually occur during periods following high lynx populations.

Wolverine

The reported wolverine harvest was 6 from Subunit 26B and 1 from Subunit 26C (data from computer printouts; sealing certificates for only 3 wolverines received). Unreported harvest was at least 1 in Subunit 26C and probably not more than 5 in Subunits 26B and 26C. Sealing requirements are often ignored when wolverines are locally tanned and utilized, particularly in Nuiqsuit (S. Pedersen, pers. commun.).

Wolverines are currently scarce in Subunits 26B and 26C. During about 30 hours of low-level moose surveys in April 1984, no wolverines were observed. Also, during hundreds of hours of low-level fixed-wing and helicopter flights in Subunit 26C during this reporting period, U.S. Fish and Wildlife Service biologists saw only 1 or 2 wolverines.

Illegal use of snow machines for driving, herding, or molesting wolverines has likely contributed to the scarcity of the species in Subunits 26B and 26C, but the extent to which this occurs is unknown. The regulation prohibiting shooting from a snow machine unless the motor has been completely shut off may also be frequently disregarded by wolverine hunters. Biological data are insufficient to assess the cause of low wolverine numbers.

Management Summary and Recommendations

No changes in seasons or bag limits for arctic fox are recommended. Trapping, particularly at current low levels, is having little effect on population trends. Similarly, no changes are recommended for wolverine seasons or bag limits, but information and education programs are needed in Kaktovik and Nuiqsuit to reduce the incidence of illegal use of snow machines by wolverine hunters.

To obtain accurate harvest information, communication between area residents and Department staff is required. Subsistence Division personnel spent several days interviewing residents in both Nuiqsuit and Kaktovik this past winter, but furbearer harvest data were not collected. In the future, such data should be collected during interviews.

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Appendix A. 1983-84 Trapper Questionnaire Results

FURBEARERS

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS: 12, 19, 20, 21, 24, 25

GEOGRAPHICAL DESCRIPTION: Interior Alaska

PERIOD COVERED: 1 July 1983-30 June 1984

Trapper Questionnaire

The trapper questionnaire was sent to 516 trappers in Units 12, 19, 20, 21, 24, and 25 during spring 1984. Although no reminder letters were sent, 217 questionnaires (42%) were returned. Of these, 51 respondents indicated they had not trapped and provided no other information. One hundred sixty-six responses provided data regarding harvest and population trends (Tables 1-15).

Questionnaire Results: Harvest and Population Levels

Beaver

Trappers generally reported moderate numbers of beavers, with a slight increase from 1982-83. Responses from the Galena-Ruby, Aniak, Beaver, Hughes-Huslia, Circle-Central, and Healy areas indicated high numbers of beavers. Trappers from these areas, except Circle-Central, reported an upward trend in beaver populations.

Coyote

Less than half the respondents had comments regarding coyote abundance, and few trappers, except those from Delta and Tok, reported catching coyotes. Delta trappers reported catching 47 coyotes (average 6 coyotes per trapper), and Tok area trappers reported catching 21 coyotes (average 4 coyotes per trapper). Coyote populations were reported to be moderately high in the Delta area and at moderate levels near McGrath. Trappers from Delta, Circle-Central, Manley, and McGrath reported some increase in numbers of coyotes. Generally, however, populations were reported to be low or nonexistent, with little change from 1982-83.

Fox

Interior trappers reported an average harvest of 8 red foxes per trapper in 1983-84, about the same as in 1982-83. The total number of foxes reported taken in the Interior was higher, 848 compared with 795 the previous year. Delta trappers again reported taking the most foxes (157) and they had the highest average number per trapper (17.4). This represented a slight decrease from the average harvest of 18.4 foxes per trapper in 1982-83.

Fox populations were reported to be moderate to moderately low regionwide with a slight decrease from 1982-83 levels.

Grouse

Grouse populations were reported to be moderately low to moderate in the Interior, and slightly less abundant than in 1982-83. The Aniak and Central-Circle areas were the only areas where increases were reported. Grouse populations were thought to have remained much the same around McGrath, Healy, Mt. McKinley, and Delta.

Hare

Snowshoe hare populations were low throughout the Interior with a decline in numbers reported in every area covered by the questionnaire. Some trappers thought populations in their areas had not changed, but few observed any increase in numbers.

Lynx

According to questionnaire responses, lynx catches in the Interior generally declined in 1983-84 compared with 1982-83. Trappers answering the questionnaire reported catching 625 lynx in 1983-84 compared with 887 in 1982-83. We acknowledge that many trappers do not reveal their actual catch, because 2,150 lynx were sealed in units covered by the questionnaire. Although fewer lynx were reported taken in the Fort Yukon area than in 1982-83, the average number of lynx per trapper increased. Fairbanks area trappers also reported lower catches of lynx in 1983-84, as did trappers from most other areas (Table 1).

Lynx populations were reported to be in the low to moderately low range throughout the Interior, except for the Brooks Range where trappers reported moderate lynx numbers. All cooperators reported decreasing lynx population levels compared with 1982-83.

Marten

Regionwide, the total marten harvest remained almost the same as in 1982-83, but the average catch of martens per trapper decreased slightly compared with 1982-83. Beaver, Eagle, Chicken, Boundary, Fairbanks, Manley, and Tok area trappers reported increases in the number of marten taken, although in some cases the average number of marten taken, per trapper, was lower.

Marten populations were reported to be moderately low in the Interior and declining slightly. Fairbanks, Galena, and Tok area trappers reported moderate numbers of marten with little change from the previous year.

Mink

Mink populations were reported to be moderately low and declining in the Interior. Only Aniak, Tanana, Huslia, and Hughes area trappers reported moderate numbers of mink. Mink numbers were thought to have increased slightly in these areas compared with 1982-83.

Muskrat

Muskrat populations were reported as low to moderately low in the Interior and little changed from 1982-83. Trappers in Beaver reported increased numbers of muskrats and Tok area trappers reported moderate but increased muskrat numbers. In most other areas, cooperators reported low muskrat numbers and no change, or a slight decline, from 1982-83.

Otter

Land otter abundance was reported to be moderately low to moderate throughout the Interior during 1983-84, and reports from most areas indicated little change or a slight increase in otter numbers. Trappers in the Brooks Range, Delta, Eagle, and Chicken areas reported the number of otters to be low and little changed from 1982-83. Healy and Nenana area trappers reported otter population increases.

Ptarmigan

Trappers indicated low ptarmigan populations throughout the Interior, with a decline from 1982-83 levels. The only exception was the Arctic Village area where cooperators reported high ptarmigan numbers.

Squirrel

Numbers of red squirrels were thought to be moderately high and increasing throughout the Interior. Only the Aniak area reported a decline in the squirrel population.

Wolf

Cooperators felt that wolf populations in the Interior were moderately low, and that numbers were unchanged or slightly lower than in 1982-83. Trappers from Circle-Central, Galena-Ruby, and McGrath reported moderate numbers of wolves. Trappers from these areas and Nenana, Tanana, Fairbanks, Manley, and the Brooks Range reported some increase in the numbers of wolves. Elsewhere in the Interior, wolf numbers were reported to be little changed.

Wolverine

Trappers indicated that wolverine populations were moderately low to low throughout the Interior with little change or a slight decline in numbers from 1982-83.

Management Summary and Recommendations

The annual trapper questionnaire has indicated that many furbearer poulations fluctuate naturally from year-to-year in the Interior.

Lynx populations were reported low throughout the Interior in 1983-84. Beaver were moderately abundant and land otter populations remained moderately low to moderate and stable. Marten populations were reported moderately low, as were mink, muskrat, and red fox.

In most rural areas, over-trapping is not considered to be a problem for most species, but there should be further study on the effect of trapping lynx during population lows on the magnitude of lynx populations in later years. Some change in seasons for lynx and other species may be necessary to prevent overharvest around urban areas where trapping pressure is heavy.

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Table 1. Lynx, fox, and marten harvests as indicated by the Trapper Questionnaire, 1983-84.

Area	Number of trappers responding[a]	Number lynx taken	Number lynx/ trapper[a]	Number fox taken	Number fox/ trapper[a]	Number marten taken	Number marten/ trapper[a]
Aniak	8	3	3.0	97	16.2	328	46.9
Beaver	5	26	6.5	36	7.2	408	81.6
Brooks Range	9	143	8.0	32	4.6	133	22.2
Circle-Central	3	78	39.0	15	7.5	31	15.5
Delta	11	16	2.0	157	17.4	38	7.6
Eagle, Chicken, Boundary	7	9	3.0	28	9.3	246	41.0
Fairbanks	32	46	3.3	133	6.3	363	17.3
Fort Yukon	13	200	22.2	114	12.7	411	45.7
Galena-Ruby	12	7	1.1	13	2.2	359	71.8
Hughes-Huslia	7	5	1.7	30	6.0	49	12.3
Healy, Mt. McKinley	4	10	5.0	29	9.7	40	40.0
Manley	7	6	3.0	2	1.0	305	51.0
McGrath	10	13	2.6	14	2.0	233	33.6
Nenana-Clear	8	6	1.5	32	8.0	96	16.0
Tanana	6	7	3.5	12	3.0	105	17.5
Tok-Northway	17	40	5.0	85	9.4	316	39.5
Miscellaneous other	6	10	10.0	19	6.3	180	45.0
Interior totals	165	625	7.6	848	8.1	3,641	33.7

[a] Not all trappers trapped for lynx, fox, and marten and some who did, did not indicate their catch. Therefore, these figures represent only the harvest indicated on the questionnaire divided by the number of trappers listing any catch.

Table 2. Interior Alaska beaver population abundance and trend indices based on Trapper Questionnaire.

Area	Abundance in 1983-84 season[a]				Compared with 1982-83[a]			
	Low	Mod	High	Index[b]	Fewer	Same	More	Index[b]
Aniak	0	3	3	7.0	0	3	2	6.6
Beaver	0	1	2	7.7	0	2	±	6.3
Brooks Range	0	3	1	3.0	0	2	1	6.3
Circle-Central	0	0	1	9.0	0	1	0	5.0
Delta	0	6	0	5.0	0	5	1	5.7
Eagle, Chicken	1	3	0	4.0	1	3	0	4.0
Fairbanks	3	12	5	5.4	0	15	4	5.8
Fort Yukon	4	5	1	3.8	3	6	1	4.2
Galena, Nulato to Ruby	1	3	5	6.8	0	4	3	6.7
Healy, Mt. McKinley	0	1	1	7.0	0	1	1	7.0
Hughes, Huslia	0	2	5	7.9	0	5	1	5.7
Manley, Cosna River	0	4	1	5.8	0	3	2	6.6
McGrath	0	6	1	5.6	0	6	0	5.0
Nenana, Clear	1	2	2	5.8	0	3	2	6.6
Tanana, Rampart	2	1	2	5.0	1	2	2	5.8
Tok, Northway	2	6	2	5.0	0	5	3	6.5
Miscellaneous other	1	0	1	5.0	0	0	1	9.0
Interior totals	15	58	33	5.8	5	66	25	5.8

[a] Based on the number of answers to each question; not all cooperators answered all questions.

[b] Index values range from 1.0 through 9.0 and were derived by giving an arbitrary value of 9.0, 5.0, and 1.0 to each "High" (More), "Moderate" (Same), and "Low" (Fewer) answer, respectively. The total value of the answers to each question for each species was divided by the number of answers to that question. An index of 9.0 indicates High (More), 5.0 indicates Moderate (Same), and 1.0 indicates Low (Fewer).

Table 3. Interior Alaska coyote population abundance and trend indices based on Trapper Questionnaire.

Area	Abundance in 1983-84 season[a]				Compared with 1982-83[a]			
	Low	Mod	High	Index[b]	Fewer	Same	More	Index[b]
Aniak	2	0	0	1.0	2	0	0	1.0
Beaver	3	0	0	1.0	0	4	0	5.0
Brooks Range	2	0	0	1.0	0	2	0	5.0
Circle-Central	2	0	0	1.0	0	1	1	7.0
Delta	1	4	5	6.0	0	5	5	7.0
Eagle, Chicken	4	0	0	1.0	1	2	0	3.7
Fairbanks	12	0	0	1.0	0	6	1	5.6
Fort Yukon	3	0	0	1.0	1	2	0	3.7
Galena, Nulato to Ruby	3	0	0	1.0	--	--	--	--
Healy, Mt. McKinley	1	1	0	3.0	1	1	0	3.0
Hughes, Huslia	4	0	0	1.0	0	4	0	5.0
Manley, Cosna River	3	0	1	3.0	0	3	1	6.0
McGrath	1	1	1	5.0	0	2	1	6.3
Nenana, Clear	2	0	0	1.0	1	1	0	3.0
Tanana, Rampart	2	0	0	1.0	0	2	0	5.0
Tok, Northway	9	2	2	2.8	4	3	3	4.6
Miscellaneous other	--	--	--	--	--	--	--	--
Interior totals	54	8	9	2.5	10	38	12	5.1

[a] Based on the number of answers to each question; not all cooperators answered all questions.

[b] Index values range from 1.0 through 9.0 and were derived by giving an arbitrary value of 9.0, 5.0, and 1.0 to each "High" (More), "Moderate" (Same), and "Low" (Fewer) answer, respectively. The total value of the answers to each question for each species was divided by the number of answers to that question. An index of 9.0 indicates High (More), 5.0 indicates Moderate (Same), and 1.0 indicates Low (Fewer).

Table 4. Interior Alaska red fox population abundance and trend indices based on Trapper Questionnaire.

Area	Abundance in 1983-84 season[a]				Compared with 1982-83[a]			
	Low	Mod	High	Index[b]	Fewer	Same	More	Index[b]
Aniak	2	4	1	4.4	1	4	1	5.0
Beaver	1	1	1	5.0	1	2	1	5.0
Brooks Range	2	4	1	4.4	3	2	1	3.7
Circle-Central	0	1	1	7.0	0	1	1	7.0
Delta	3	6	1	4.2	7	3	0	2.2
Eagle, Chicken	3	2	1	3.2	2	2	1	4.2
Fairbanks	10	11	5	4.2	10	11	3	3.8
Fort Yukon	3	9	1	4.4	2	9	2	5.0
Galena, Nulato to Ruby	2	4	0	3.7	2	3	1	4.3
Healy, Mt. McKinley	2	1	0	2.3	2	1	0	2.3
Hughes, Huslia	2	1	3	5.7	3	3	1	3.9
Manley, Cosna River	2	2	1	4.2	1	4	1	5.0
McGrath	5	5	0	3.0	4	6	0	3.4
Nenana, Clear	2	5	0	3.9	3	4	1	4.0
Tanana, Rampart	1	4	0	4.2	0	5	0	5.0
Tok, Northway	8	5	2	3.4	4	6	2	4.3
Miscellaneous other	1	2	1	5.0	1	1	1	5.0
Interior totals	49	67	19	4.1	46	67	17	4.1

[a] Based on the number of answers to each question; not all cooperators answered all questions.

[b] Index values range from 1.0 through 9.0 and were derived by giving an arbitrary value of 9.0, 5.0, and 1.0 to each "High" (More), "Moderate" (Same), and "Low" (Fewer) answer, respectively. The total value of the answers to each question for each species was divided by the number of answers to that question. An index of 9.0 indicates High (More), 5.0 indicates Moderate (Same), and 1.0 indicates Low (Fewer).

Table 5. Interior Alaska grouse population abundance and trend indices based on Trapper Questionnaire.

Area	Abundance in 1983-84 season[a]				Compared with 1982-83[a]			
	Low	Mod	High	Index[b]	Fewer	Same	More	Index[b]
Aniak	1	3	0	4.0	0	3	1	6.0
Beaver	3	0	0	1.0	2	1	0	2.3
Brooks Range	3	0	0	1.0	2	1	0	2.3
Circle-Central	2	1	0	2.3	1	0	2	6.3
Delta	3	5	0	3.5	2	5	1	4.5
Eagle, Chicken	5	0	0	1.0	2	2	0	3.0
Fairbanks	15	9	1	2.4	9	10	5	4.3
Fort Yukon	12	1	0	1.3	8	4	1	2.8
Galena, Nulato to Ruby	4	3	0	2.7	1	2	0	3.7
Healy, Mt. McKinley	1	2	0	3.7	0	3	0	5.0
Hughes, Huslia	1	2	1	5.0	2	1	1	4.0
Manley, Cosna River	2	3	0	3.4	2	4	0	3.7
McGrath	3	3	1	3.9	3	2	2	4.6
Nenana, Clear	7	0	0	1.0	5	3	0	2.5
Tanana, Rampart	3	1	0	2.0	2	2	0	3.0
Tok, Northway	5	9	0	3.6	1	10	0	4.6
Miscellaneous other	2	0	0	1.0	1	0	0	1.0
Interior totals	72	42	3	2.6	43	53	13	3.9

[a] Based on the number of answers to each question; not all cooperators answered all questions.

[b] Index values range from 1.0 through 9.0 and were derived by giving an arbitrary value of 9.0, 5.0, and 1.0 to each "High" (More), "Moderate" (Same), and "Low" (Fewer) answer, respectively. The total value of the answers to each question for each species was divided by the number of answers to that question. An index of 9.0 indicates High (More), 5.0 indicates Moderate (Same), and 1.0 indicates Low (Fewer).

Table 6. Interior Alaska snowshoe hare population abundance and trend indices based on Trapper Questionnaire.

Area	Abundance in 1983-84 season[a]				Compared with 1982-83[a]			
	Low	Mod	High	Index[b]	Fewer	Same	More	Index[b]
Aniak	4	0	0	1.0	2	2	0	3.0
Beaver	2	1	0	2.3	3	0	0	1.0
Brooks Range	3	2	1	3.7	3	1	1	3.4
Circle-Central	2	1	0	2.3	2	1	0	2.3
Delta	9	1	0	1.4	4	6	0	3.4
Eagle, Chicken	5	1	0	1.7	4	1	0	1.8
Fairbanks	23	2	0	1.3	15	7	0	2.3
Fort Yukon	7	5	1	3.2	8	5	0	2.5
Galena, Nulato to Ruby	4	1	0	1.8	3	0	0	1.0
Healy, Mt. McKinley	3	0	0	1.0	2	1	0	2.3
Hughes, Huslia	5	1	0	1.7	6	0	0	1.0
Manley, Cosna River	4	1	0	1.8	2	3	1	4.3
McGrath	5	3	0	2.5	5	2	1	3.0
Nenana, Clear	7	0	0	1.0	5	2	1	3.0
Tanana, Rampart	3	2	0	2.6	3	2	0	2.6
Tok, Northway	12	2	0	1.6	6	4	1	3.2
Miscellaneous other	1	1	0	3.0	1	0	0	1.0
Interior totals	99	24	2	1.9	74	37	5	3.9

[a] Based on the number of answers to each question; not all cooperators answered all questions.

[b] Index values range from 1.0 through 9.0 and were derived by giving an arbitrary value of 9.0, 5.0, and 1.0 to each "High" (More), "Moderate" (Same), and "Low" (Fewer) answer, respectively. The total value of the answers to each question for each species was divided by the number of answers to that question. An index of 9.0 indicates High (More), 5.0 indicates Moderate (Same), and 1.0 indicates Low (Fewer).

Table 7. Interior Alaska lynx population abundance and trend indices based on Trapper Questionnaire.

Area	Abundance in 1983-84 season[a]				Compared with 1982-83[a]			
	Low	Mod	High	Index[b]	Fewer	Same	More	Index[b]
Aniak	5	0	0	1.0	4	0	0	1.0
Beaver	3	0	0	1.0	1	1	1	5.0
Brooks Range	3	3	2	4.5	5	1	1	2.7
Circle-Central	1	1	0	3.0	1	1	0	3.0
Delta	9	0	0	1.0	5	3	2	3.8
Eagle, Chicken	6	0	0	1.0	2	3	0	3.4
Fairbanks	18	6	0	2.0	10	9	3	3.7
Fort Yukon	7	3	2	3.3	5	5	2	4.0
Galena, Nulato to Ruby	5	1	0	1.7	5	1	0	1.7
Healy, Mt. McKinley	3	0	0	1.0	2	1	0	2.3
Hughes, Huslia	5	2	0	2.1	4	3	0	2.7
Manley, Cosna River	4	1	0	1.8	3	2	1	3.7
McGrath	9	0	0	1.0	4	5	0	3.2
Nenana, Clear	5	2	0	2.1	5	3	0	2.5
Tanana, Rampart	3	1	0	2.0	2	2	0	3.0
Tok, Northway	12	2	0	1.6	7	4	0	2.5
Miscellaneous other	2	0	0	1.0	2	0	0	1.0
Interior totals	100	22	4	2.0	67	44	10	3.1

[a] Based on the number of answers to each question; not all cooperators answered all questions.

[b] Index values range from 1.0 through 9.0 and were derived by giving an arbitrary value of 9.0, 5.0, and 1.0 to each "High" (More), "Moderate" (Same), and "Low" (Fewer) answer, respectively. The total value of the answers to each question for each species was divided by the number of answers to that question. An index of 9.0 indicates High (More), 5.0 indicates Moderate (Same), and 1.0 indicates Low (Fewer).

Table 8. Interior Alaska marten population abundance and trend indices based on Trapper Questionnaire.

Area	Abundance in 1983-84 season[a]				Compared with 1982-83[a]			
	Low	Mod	High	Index[b]	Fewer	Same	More	Index[b]
Aniak	3	1	1	3.4	2	2	0	3.0
Beaver	1	2	0	3.7	0	3	1	6.0
Brooks Range	2	4	0	3.7	2	3	0	3.4
Circle-Central	2	0	0	1.0	0	1	1	7.0
Delta	5	3	0	2.5	2	6	0	4.0
Eagle, Chicken	3	3	0	3.0	2	3	0	3.4
Fairbanks	14	10	1	4.9	10	8	5	4.1
Fort Yukon	6	7	0	3.2	6	5	2	3.8
Galena, Nulato to Ruby	1	6	0	4.4	3	2	1	3.7
Healy, Mt. McKinley	1	0	0	1.0	1	0	0	1.0
Hughes, Huslia	1	3	0	4.0	5	1	0	1.7
Manley, Cosna River	2	3	0	3.4	3	2	1	3.7
McGrath	4	5	0	3.2	4	4	0	3.0
Nenana, Clear	6	1	0	1.6	5	2	1	3.0
Tanana, Rampart	4	2	0	2.3	3	3	0	3.0
Tok, Northway	3	9	1	4.4	2	5	2	5.0
Miscellaneous other	2	1	1	4.0	3	0	0	1.0
Interior totals	60	60	4	3.2	53	50	14	3.8

[a] Based on the number of answers to each question; not all cooperators answered all questions.

[b] Index values range from 1.0 through 9.0 and were derived by giving an arbitrary value of 9.0, 5.0, and 1.0 to each "High" (More), "Moderate" (Same), and "Low" (Fewer) answer, respectively. The total value of the answers to each question for each species was divided by the number of answers to that question. An index of 9.0 indicates High (More), 5.0 indicates Moderate (Same), and 1.0 indicates Low (Fewer).

Table 9. Interior Alaska mink population abundance and trend indices based on Trapper Questionnaire.

Area	Abundance in 1983-84 season[a]				Compared with 1982-83[a]			
	Low	Mod	High	Index[b]	Fewer	Same	More	Index[b]
Aniak	1	3	1	5.0	0	3	1	6.0
Beaver	3	0	0	1.0	3	1	0	2.0
Brooks Range	4	0	0	1.0	2	2	0	3.0
Circle-Central	1	0	0	1.0	0	0	1	9.0
Delta	3	1	0	2.0	2	2	0	3.0
Eagle, Chicken	4	0	0	1.0	1	2	0	3.7
Fairbanks	10	9	2	3.5	5	7	3	4.5
Fort Yukon	9	1	0	1.4	5	6	0	3.2
Galena, Nulato to Ruby	3	4	0	3.3	1	3	1	5.0
Healy, Mt. McKinley	1	1	0	3.0	1	1	0	3.0
Hughes, Huslia	1	1	2	4.0	3	2	1	3.7
Manley, Cosna River	3	0	0	1.0	1	1	0	3.0
McGrath	3	4	0	3.3	1	4	2	5.6
Nenana, Clear	2	0	2	5.0	1	1	2	6.0
Tanana, Rampart	3	1	0	2.0	2	2	0	3.0
Tok, Northway	8	2	0	1.8	4	4	0	3.0
Miscellaneous other	2	0	0	1.0	0	0	1	9.0
Interior totals	61	27	7	2.7	32	41	12	2.9

[a] Based on the number of answers to each question; not all cooperators answered all questions.

[b] Index values range from 1.0 through 9.0 and were derived by giving an arbitrary value of 9.0, 5.0, and 1.0 to each "High" (More), "Moderate" (Same), and "Low" (Fewer) answer, respectively. The total value of the answers to each question for each species was divided by the number of answers to that question. An index of 9.0 indicates High (More), 5.0 indicates Moderate (Same), and 1.0 indicates Low (Fewer).

Table 10. Interior Alaska muskrat population abundance and trend indices based on Trapper Questionnaire.

Area	Abundance in 1983-84 season[a]				Compared with 1982-83[a]			
	Low	Mod	High	Index[b]	Fewer	Same	More	Index[b]
Aniak	1	1	0	3.0	1	0	1	5.0
Beaver	0	2	1	6.3	0	0	3	9.0
Brooks Range	2	0	1	3.7	1	1	1	5.0
Circle-Central	--	--	--	--	--	--	--	--
Delta	3	0	0	1.0	2	1	0	2.3
Eagle, Chicken	2	1	0	2.3	0	2	0	5.0
Fairbanks	10	3	0	1.9	1	9	2	5.3
Fort Yukon	7	2	0	1.9	2	5	2	5.0
Galena, Nulato to Ruby	5	1	0	1.7	2	1	0	2.3
Healy, Mt. McKinley	1	0	0	1.0	1	0	0	1.0
Hughes, Huslia	2	0	0	1.0	0	2	0	5.0
Manley, Cosna River	3	0	0	1.0	0	2	0	5.0
McGrath	1	0	1	5.0	1	1	0	3.0
Nenana, Clear	2	1	0	2.3	1	2	0	3.7
Tanana, Rampart	4	0	0	1.0	2	2	0	3.0
Tok, Northway	2	5	2	5.0	0	3	4	7.3
Miscellaneous other	2	0	0	1.0	0	0	1	9.0
Interior totals	47	16	5	2.6	14	31	14	5.0

[a] Based on the number of answers to each question; not all cooperators answered all questions.

[b] Index values range from 1.0 through 9.0 and were derived by giving an arbitrary value of 9.0, 5.0, and 1.0 to each "High" (More), "Moderate" (Same), and "Low" (Fewer) answer, respectively. The total value of the answers to each question for each species was divided by the number of answers to that question. An index of 9.0 indicates High (More), 5.0 indicates Moderate (Same), and 1.0 indicates Low (Fewer).

Table 11. Interior Alaska land otter population abundance and trend indices based on Trapper Questionnaire.

Area	Abundance in 1983-84 season[a]				Compared with 1982-83[a]			
	Low	Mod	High	Index[b]	Fewer	Same	More	Index[b]
Aniak	0	3	1	6.0	1	2	0	3.7
Beaver	1	2	0	3.7	0	3	0	5.0
Brooks Range	4	1	0	1.8	1	3	0	4.0
Circle-Central	--	--	--	--	--	--	--	--
Delta	4	1	0	1.8	1	4	0	4.2
Eagle, Chicken	3	0	0	1.0	0	2	0	5.0
Fairbanks	9	5	1	2.9	2	10	2	5.0
Fort Yukon	5	4	0	2.8	3	5	1	4.1
Galena, Nulato to Ruby	0	3	2	6.6	1	3	2	5.7
Healy, Mt. McKinley	0	0	1	9.0	0	0	1	9.0
Hughes, Huslia	0	4	1	5.8	0	4	1	5.8
Manley, Cosna River	2	2	0	3.0	0	4	0	5.0
McGrath	1	6	0	4.4	1	4	2	5.6
Nenana, Clear	1	2	1	5.0	0	2	2	7.0
Tanana, Rampart	1	3	1	5.0	1	3	1	5.0
Tok, Northway	4	4	0	3.0	1	3	2	5.7
Miscellaneous other	2	0	0	1.0	0	0	1	9.0
Interior totals	37	40	8	3.6	12	52	15	5.2

[a] Based on the number of answers to each question; not all cooperators answered all questions.

[b] Index values range from 1.0 through 9.0 and were derived by giving an arbitrary value of 9.0, 5.0, and 1.0 to each "High" (More), "Moderate" (Same), and "Low" (Fewer) answer, respectively. The total value of the answers to each question for each species was divided by the number of answers to that question. An index of 9.0 indicates High (More), 5.0 indicates Moderate (Same), and 1.0 indicates Low (Fewer).

Table 12. Interior Alaska ptarmigan population abundance and trend indices based on Trapper Questionnaire.

Area	Abundance in 1983-84 season[a]				Compared with 1982-83[a]			
	Low	Mod	High	Index[b]	Fewer	Same	More	Index[b]
Aniak	3	2	0	2.6	2	3	0	3.4
Beaver	3	0	0	1.0	3	0	0	1.0
Brooks Range	4	0	0	1.0	1	1	1	5.0
Circle-Central	3	0	0	1.0	1	2	0	3.7
Delta	3	4	0	3.3	3	3	1	3.9
Eagle, Chicken	5	0	0	1.0	3	1	0	2.0
Fairbanks	21	0	0	1.0	8	10	0	3.2
Fort Yukon	11	2	0	1.6	6	7	0	3.7
Galena, Nulato to Ruby	7	0	0	1.0	4	0	0	1.0
Healy, Mt. McKinley	2	1	0	2.3	1	2	0	3.7
Hughes, Huslia	5	1	0	1.7	5	1	0	1.7
Manley, Cosna River	4	1	0	1.8	3	2	0	2.6
McGrath	7	1	0	1.5	5	3	0	2.5
Nenana, Clear	6	0	0	1.0	5	2	0	2.1
Tanana, Rampart	4	0	0	1.0	4	0	0	1.0
Tok, Northway	9	5	1	2.9	5	6	1	3.7
Miscellaneous other	1	0	1	5.0	1	0	0	1.0
Interior totals	98	17	2	1.7	60	43	3	2.8

[a] Based on the number of answers to each question; not all cooperators answered all questions.

[b] Index values range from 1.0 through 9.0 and were derived by giving an arbitrary value of 9.0, 5.0, and 1.0 to each "High" (More), "Moderate" (Same), and "Low" (Fewer) answer, respectively. The total value of the answers to each question for each species was divided by the number of answers to that question. An index of 9.0 indicates High (More), 5.0 indicates Moderate (Same), and 1.0 indicates Low (Fewer).

Table 13. Interior Alaska red squirrel population abundance and trend indices based on Trapper Questionnaire.

Area	Abundance in 1983-84 season[a]				Compared with 1982-83[a]			
	Low	Mod	High	Index[b]	Fewer	Same	More	Index[b]
Aniak	0	1	0	5.0	1	0	0	1.0
Beaver	0	0	3	9.0	0	2	1	6.3
Brooks Range	1	1	3	6.6	0	2	3	7.4
Circle-Central	0	1	2	7.7	0	1	2	7.7
Delta	1	5	4	6.2	2	5	3	5.4
Eagle, Chicken	0	2	4	7.7	0	1	4	8.2
Fairbanks	4	10	9	5.9	2	15	5	5.5
Fort Yukon	1	6	5	6.3	0	6	6	7.0
Galena, Nulato to Ruby	2	2	3	5.6	1	1	2	6.0
Healy, Mt. McKinley	0	0	1	9.0	0	0	1	9.0
Hughes, Huslia	0	2	2	7.0	2	0	2	5.0
Manley, Cosna River	0	3	1	6.0	0	2	3	7.4
McGrath	1	1	4	7.0	1	2	3	6.3
Nenana, Clear	0	3	3	7.0	0	4	2	6.3
Tanana, Rampart	0	1	3	8.3	0	2	2	7.0
Tok, Northway	0	4	10	7.9	0	3	8	7.9
Miscellaneous other	0	1	1	7.0	0	0	1	9.0
Interior totals	10	43	58	6.7	9	46	48	6.7

[a] Based on the number of answers to each question; not all cooperators answered all questions.

[b] Index values range from 1.0 through 9.0 and were derived by giving an arbitrary value of 9.0, 5.0, and 1.0 to each "High" (More), "Moderate" (Same), and "Low" (Fewer) answer, respectively. The total value of the answers to each question for each species was divided by the number of answers to that question. An index of 9.0 indicates High (More), 5.0 indicates Moderate (Same), and 1.0 indicates Low (Fewer).

Table 14. Interior Alaska wolf population abundance and trend indices based on Trapper Questionnaire.

Area	Abundance in 1983-84 season[a]				Compared with 1982-83[a]			
	Low	Mod	High	Index[b]	Fewer	Same	More	Index[b]
Aniak	3	1	1	3.4	2	2	0	3.0
Beaver	2	1	0	2.3	1	1	1	5.0
Brooks Range	2	2	0	3.0	1	2	1	5.0
Circle-Central	1	0	1	5.0	0	0	1	9.0
Delta	8	1	1	2.2	7	2	1	2.6
Eagle, Chicken	3	1	1	3.4	3	1	0	2.0
Fairbanks	11	7	2	3.2	5	8	5	5.0
Fort Yukon	8	2	2	3.8	6	2	4	4.3
Galena, Nulato to Ruby	1	3	1	5.0	1	4	0	4.2
Healy, Mt. McKinley	2	0	1	3.7	1	0	1	5.0
Hughes, Huslia	0	5	1	5.7	1	3	1	5.0
Manley, Cosna River	2	2	0	3.0	1	2	2	5.8
McGrath	1	5	3	5.9	1	4	4	6.3
Nenana, Clear	2	3	0	3.4	1	3	2	5.7
Tanana, Rampart	2	1	0	2.3	0	2	1	6.3
Tok, Northway	10	4	1	2.6	4	5	2	4.3
Miscellaneous other	1	1	0	3.0	0	1	0	5.0
Interior totals	59	39	15	3.4	35	43	26	4.7

[a] Based on the number of answers to each question; not all cooperators answered all questions.

[b] Index values range from 1.0 through 9.0 and were derived by giving an arbitrary value of 9.0, 5.0, and 1.0 to each "High" (More), "Moderate" (Same), and "Low" (Fewer) answer, respectively. The total value of the answers to each question for each species was divided by the number of answers to that question. An index of 9.0 indicates High (More), 5.0 indicates Moderate (Same), and 1.0 indicates Low (Fewer).

Table 15. Interior Alaska wolverine population abundance and trend indices based on Trapper Questionnaire.

Area	Abundance in 1983-84 season[a]				Compared with 1982-83[a]			
	Low	Mod	High	Index[b]	Fewer	Same	More	Index[b]
Aniak	3	2	1	3.7	2	3	0	3.4
Beaver	2	1	0	2.3	1	1	1	5.0
Brooks Range	2	5	0	3.9	2	4	0	3.7
Circle-Central	2	0	0	1.0	0	1	0	5.0
Delta	4	2	0	2.3	2	4	0	3.7
Eagle, Chicken	4	2	0	2.3	1	4	0	4.2
Fairbanks	13	5	1	2.5	5	12	1	4.1
Fort Yukon	11	1	0	1.3	4	8	0	3.7
Galena, Nulato to Ruby	2	5	0	3.9	1	4	0	4.2
Healy, Mt. McKinley	3	0	0	1.0	3	0	0	1.0
Hughes, Huslia	4	1	0	1.8	2	3	0	3.4
Manley, Cosna River	4	1	0	1.8	0	5	0	5.0
McGrath	3	3	1	3.9	3	2	2	4.4
Nenana, Clear	5	0	0	1.0	4	2	0	2.3
Tanana, Rampart	2	2	0	3.0	2	1	1	4.0
Tok, Northway	9	3	1	2.5	3	4	3	5.0
Miscellaneous other	1	1	0	3.0	1	0	0	1.0
Interior totals	74	34	4	2.5	36	58	8	3.9

[a] Based on the number of answers to each question; not all cooperators answered all questions.

[b] Index values range from 1.0 through 9.0 and were derived by giving an arbitrary value of 9.0, 5.0, and 1.0 to each "High" (More), "Moderate" (Same), and "Low" (Fewer) answer, respectively. The total value of the answers to each question for each species was divided by the number of answers to that question. An index of 9.0 indicates High (More), 5.0 indicates Moderate (Same), and 1.0 indicates Low (Fewer).