Furbearer
Management Report
of survey-inventory activities
1 July 1997–30 June 2000

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Alaska Department of Fish and Game
Division of Wildlife Conservation
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FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 18 (42,000 mi^2)

GEOGRAPHIC DESCRIPTION: Yukon–Kuskokwim Delta

BACKGROUND

Furbearers are abundant throughout Unit 18. Extensive aquatic habitats suitable for mink, otter, beaver, and muskrat support large populations of these furbearers. Adjacent terrestrial habitats support a large red fox population. Less extensive habitats suitable for lynx, marten, arctic foxes, squirrels, wolverine and coyote occur in Unit 18 and are occupied by these furbearers.

Fur harvests are well below desirable levels and are far below the historic highs of the 1930s. Historically, approximately one-third of the fur sealed in the State originated in Unit 18 and the sale of furs provided an important financial boost to the mixed subsistence/cash economy. However, in recent years, the number of trappers and the harvest of fur have declined. This trend is likely to continue.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

Management goals for furbearers in Unit 18 include reducing adverse interactions between furbearers and the public, maintaining populations at healthy levels, and monitoring population status and harvest.

MANAGEMENT OBJECTIVES

Furbearer populations in Unit 18 range from healthy to overabundant and can support significantly higher harvests. We encourage trappers to become more active through liberal seasons and bag limits for all furbearers in Unit 18 and through informal means of communication.

Beavers and foxes have great potential for adverse interactions with the public. We encourage trappers to target these species through broad educational efforts.

Our harvest assessment depends on fur sealers and fur buyers. Fur sealers receive a dollar for every fur they seal and fur buyers are required to fill out a report of acquisition of furs and hides. An important objective is to maintain these programs for harvest assessment and to make sure that trappers throughout Unit 18 have access to fur sealers.

Compliance with trapping regulations in general and harvest reporting in particular is poor in Unit 18. We use public communication and broad educational efforts to address this problem.

METHODS

We collected information about furbearers in Unit 18 by interviewing local residents, trappers, fur buyers, and agency biologists. We used sealing certificates and fur acquisition reports to estimate the harvest. We submitted public service announcements and occasional newspaper articles to several media sources to provide information about trapping and trapping regulations. We contacted fur sealers regarding proper procedures for sealing pelts and we made incidental observations of furbearer species during fieldwork for other species.

We sent questionnaires to trappers to solicit their opinions on a number of topics, including abundance and trend of furbearer and a few other animal populations in their trapping areas. We scored the abundance and trend information on a scale from 1 to 3. The abundance options were: not present (no score), rare (1), common (2), and abundant (3). The trend options were: fewer (1), same (2), and more (3). We calculated the average scores to estimate their aggregate opinion (Table 1).

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Beaver — Beavers range from abundant to overabundant throughout the unit in all suitable habitats. Many beaver hides have bite scars. Trapper questionnaire results show high values for both abundance and trend for all three years of this reporting period (Table 1). Villagers have complained since at least the early 1980s that beaver numbers have increased so much that they are ruining favored blackfish areas. Certainly beaver dams are inconvenient when they are built across sloughs and rivers commonly used for boat travel and beavers are regularly removed from the right of way along village roadways.

We have not conducted formal beaver cache counts for several years. However, the density of beavers along the Yukon and Kuskokwim River riparian corridors is very high. As a case in point, we counted 11 active lodges along a two-mile long slough near the Kuskokwim River during a casual flight.

Coyote — Only anecdotal information is available for coyotes. Coyotes have been taken in the Goodnews River drainage, the Kwethluk River drainage, the Fog River drainage, and the Andreafsky River drainage during this reporting period. The coyote population is probably stable at low levels.

Arctic Fox — Arctic foxes are not generally present in Unit 18, except along the coast. The population there is generally stable at low-to-moderate levels according to trapper questionnaire responses. Interviews with muskox hunters and trappers on Nunivak and Nelson Islands indicate that arctic foxes are stable at moderate levels. The fact that at least 2 arctic foxes tested positive for rabies during this reporting period suggests that the population could be higher than perceived.

Red Fox — Red foxes are abundant throughout Unit 18. They are commonly seen during aerial surveys for other species, they are routinely seen in the villages, and trappers consistently answered the questionnaire stating that fox numbers were moderate-to-high and stable-to-increasing. During this reporting period, 7 foxes tested positive for rabies, which is consistent with a large population.

Lynx — Toward the end of this reporting period lynx numbers were near their cyclic peak. Lynx habitat is limited in Unit 18 so even during the highest part of the lynx cycle, they would not be considered abundant. The number of lynx in Unit 18 should begin to decline within one or two years.

Marten — As with lynx, marten habitat is limited in Unit 18 and marten numbers are stable at low levels. Wherever marten occur, trappers target them. However, the small number of active trappers in Unit 18 does not influence marten population levels.

Mink — Mink are found throughout the extensive habitats available to them. It is rare that their actual abundance is apparent. However, while returning to Bethel by helicopter from Nelson Island in October 1999 conditions made mink tracks easily identifiable. Ice had formed in the centers of the many tundra ponds, just over an inch of fresh snow had fallen, and the wind had not blown for two days. We could easily see that nearly all of the ponds along the entire route had mink tracks on them.

Responses from trappers indicate that mink are common and stable at normal levels. Trappers are accustomed to the population levels of their areas over time and their perceptions are determined by that experience. The reader should keep in mind that normal levels for mink abundance in the Yukon-Kuskokwim Delta are generally higher than elsewhere.

Muskrat — Trappers report that muskrat numbers are stable at moderate levels. Trappers don't target muskrats as deliberately as in the past when spring camps were established expressly for hunting muskrats. Their numbers are independent of trapping pressure.

River Otter — As with mink, otters are found throughout the extensive habitats available to them. During the same flight described in the mink discussion, it was evident that otters were abundant as well.

Red Squirrel — As with lynx and marten, red squirrel habitat is limited in Unit 18 and their numbers are stable at low levels. Trappers rarely target red squirrels and their population often is independent of trapping pressure.

Arctic Ground Squirrel — Arctic ground squirrels are abundant in the habitats available to them. As with muskrats, trappers don't target ground squirrels as deliberately as in the past when spring "parky squirrel" camps were established to collect squirrel furs for parkas. Arctic ground squirrel numbers are stable and independent of trapping pressure.

Ermine (Weasel) — Trappers report that ermine are common and that the population is stable.

Wolverine — Wolverine numbers are low but are probably increasing in Unit 18. Starting in 1994, large numbers of caribou from the Mulchatna caribou herd have used the eastern portion of the unit. Greater numbers of wolf kills have provided carrion and wolverine numbers have grown with the increased availability of food.

Population Composition

The only furbearers for which sex composition of the harvest is collected during sealing are wolverines and otters. During this reporting period, male otters outnumber females in the harvest by a ratio of about 6:5 and male wolverines outnumber females by a 5:1 ratio. However, this probably does not reflect the composition of the population. Rather, it reflects the tendency for males of both species to be more vulnerable to trapping than females. Further, the small sample size renders any interpretation tenuous.

Distribution and Movements

The distribution of furbearers in Unit 18 is reflected by the distribution of their habitats. The aquatic furbearers (beaver, mink, otter, and muskrat) are particularly abundant along the Yukon and Kuskokwim rivers and within the wet tundra environments between the main rivers. They are also found along the tributaries and distributaries throughout the unit.

Red fox are abundant along riparian corridors throughout Unit 18. They are less abundant, but still present in the Kilbuck Mountains, the Andreafsky Mountains, and along the coast where arctic fox are also found.

Pockets of lynx habitat can be found around Kusilvak Mountain, along the Yukon and Kuskokwim rivers, along the larger tributaries of the main rivers, and in the Kilbuck and Andreafsky Mountains. They are only rarely found elsewhere in Unit 18.

Marten, and red squirrel can be found in the limited forested areas of Unit 18. These occur along the upper portions of the Kisaralik, Fog, and Tuluksak rivers in eastern Unit 18 and in the upper portions of the Atchuelinguk and Andreavsky rivers north of the Yukon River.

Arctic ground squirrels are found in the upland areas of the Kilbuck Mountains and the Andreafsky Mountains. These are the only areas of suitable habitat available to them in Unit 18.

Ermine are ubiquitous in Unit 18. When we hear of ermine, it is usually because they are causing problems at a fish camp, cabin, or home.

Wolverines and small numbers of coyotes are found in the Kilbuck Mountains and the Andreafsky Mountains as well. These populations seem to be growing and expanding into larger

areas as caribou from the Mulchatna herd utilize larger areas, particularly the foothills and flats between the Kuskokwim River and the Kilbuck Mountains.

MORTALITY

Harvest

Seasons and Bag Limit.

Trapping and hunting seasons and bag limits for Unit 18 furbearers were as follows:

Species	Trapping season	Trapping bag limit	Hunting season	Hunting bag limit
Beaver	1 Nov–10 Jun	No limit	N/A[a]	N/A[a]
Coyote	10 Nov–31 Mar	No limit	1 Sep–30 Apr	2
Lynx	10 Nov–31 Mar	No limit	10 Nov–31 Mar	2
Marten	10 Nov–31 Mar	No limit	N/A	N/A
Mink & Weasel	10 Nov–31 Jan	No limit	N/A	N/A
Muskrat	10 Nov–10 Jun	No limit	N/A	N/A
Arctic Fox	10 Nov–31 Mar	No limit	1 Sep–30 Apr	2
Red Fox	10 Nov–31 Mar	No limit	1 Nov–15 Feb	10[b]
River Otter	10 Nov–31 Mar	No limit	N/A	N/A
Wolverine	10 Nov–31 Mar	No limit	1 Sep–30 Apr	1

[a] Board of Game action in October 1999 created beaver hunting seasons and bag limits. See text below.

[b] However, no more than 2 may be taken before 1 Oct.

Board of Game Actions and Emergency Orders. The Board of Game changed the Unit 18 beaver regulations during their fall 1999 meeting. The season was changed to 1 July – 30 June. Beavers were classified as a fur animal as well as a furbearer and a hunting season with the same dates and no bag limit was established. Either the meat or the fur must be salvaged. The sealing requirement was eliminated and shooting beavers was made a legal method of harvest year round. The new regulations will take effect 1 July 2000.

Human-Induced Harvest. Beaver and otter harvest declined appreciably during this reporting period (Table 2). These declines coincide with a reduction in fur prices. During this same period, the average price paid for beavers declined from $32.50 to $21.77. Otter prices declined from $50.00 to $41.13. Otter harvest is partly a byproduct of beaver trapping and is influenced by the price paid for pelts of both species.

Lynx harvest declined from 1997–1998 to 1998–1999 and rose slightly in 1999–2000. Typically, lynx harvest increases as the population increases. The harvest during this reporting period does not follow that pattern, however, the number of animals harvested is too small to draw valid conclusions.

Wolverine sealing data needs to be viewed as a minimum estimate of the actual harvest. Wolverine ruffs are prized locally and some fur sewers prefer the stiffer hides derived from home tanning to those commercially tanned. As a result, many, if not most of the wolverines taken, are not sealed.

Fur acquisition reports are available for those furs sold to fur buyers for resale. This data is of unknown quality and is extremely variable (Table 3). Coffing (1998) estimated that from about 5% to 100% of furbearers caught in Akiachak were sold depending on the species. No harvest estimate is available for foxes, mink, marten, muskrat, squirrels, coyotes, or ermine.

However, some generalizations can be made using fur acquisition data. The otter harvest is a reasonable index of mink harvest because trappers target both species with the same set using a *taluyaq* (funnel type trap). Otter harvest has declined by almost 70% during this reporting period. Mink harvest has probably declined greatly as well.

Red fox are particularly abundant, but the interest in trapping them is low and the harvest is well below the potential. With fox prices between $15.00 and $22.00, it is unlikely that the harvest will improve.

Coyotes, arctic fox, marten, ermine, and red squirrel are all peripheral species to trappers in Unit 18. Even during years when trapping pressure is high, the harvest of these species will be low.

Muskrat harvest remains low. Traditionally, trappers hunted muskrats in the spring, but now it is less common. The spring camp tradition remains, but it is abbreviated, and it is directed mostly at waterfowl harvest with muskrats being incidental to that activity.

Arctic ground squirrels were at one time hunted in the spring from camps established expressly for that purpose. They are still occasionally taken for home use, but at very low levels.

Permit Hunts. No special permits are required to trap or hunt furbearers in Unit 18 during the reporting period.

Hunter Residency and Success. All of the trappers who sealed furs taken in Unit 18 were Alaska residents.

No direct measure of trapper success is available. However, we can make a gross estimate of effort by looking at the number of furs taken per trapper. Otters in Unit 18 provide a suitable index of trapper effort in Unit 18 since trappers targeting beaver and mink, as well as otters will normally catch at least a few otters.

Using only those sealing certificates that were complete, we see that in 1997–1998, 79 trappers caught 447 otters, or 5.6 otters per trapper. Five trappers caught more than 10 otters. and the trapper with the highest catch caught 29. In 1998–1999, 43 trappers caught 167 otters, or 3.8 otters per trapper. Two trappers caught more than 10 otters and the trapper with the highest catch caught 16. In 1999–2000, 21 trappers caught 61 otters, or 2.9 otters per trapper. No trappers caught more than 10 otters and the trapper with the highest catch caught 9. All of these parameters declined during this reporting period.

Harvest Chronology. The trapping season generally begins on 10 November. However, the commencement of trapping is largely dictated by travel conditions around that date. According to interviews with trappers and fur buyers, if travel conditions allow mink and otter trappers to reach trapping areas, they will begin trapping earlier than 10 November. Likewise, travel conditions can remain poor for weeks after the official start of the trapping season.

This early part of the season provides the best opportunity to deploy *taluyat* (funnel type traps) and most of the mink are harvested during the first few weeks of the season. Otters and muskrats are also caught in these mink traps. Even though otters are caught in *taluyat*, there is no early spike in otter harvest since otters are targeted throughout the season and are also caught in beaver sets. The spike in muskrat harvest is tempered as well because muskrats are also harvested in the spring.

Beaver are typically taken under the ice after travel conditions allow for safe travel and ice conditions permit safe trapping near lodges. While trappers may take a few beavers throughout the season for food and early in the season for bait, the most common time for trappers to target beavers is from the middle of February through the end of March. At that time, fur quality is high, food caches are depleted and beavers respond to bait, and longer days make for more pleasant trapping conditions. Beavers are also taken after the ice goes out incidental to other outdoor activities.

The other furbearers are harvested throughout the season when the snow permits travel by snowmachine. In Unit 18 snow conditions can be quite variable. Travel was particularly good during the entire 1999–2000 season while the two previous seasons travel conditions were poor for at least part of the season.

Transport Methods. Trappers used snowmachines to take nearly all of the furbearers sealed in Unit 18 during this reporting period.

Other Mortality

The large furbearer populations of most species in Unit 18 have negative effects on furbearer health and furbearer habitats. Beaver and red fox show these effects most easily, but populations larger than ideal are likely affecting other furbearer populations as well.

The high beaver population forces dispersing beavers to establish lodges in marginal habitats. During survey flights for other species, we commonly find old, vacant beaver ponds with dams overflowing. Often we will find a ring around these ponds devoid of woody vegetation. These marginal habitats support them only for a few years before the food supply is exhausted.

Rabies is a concern, especially with the large red fox population. Since 1997, 41 animals have been tested for rabies in Unit 18 including 3 arctic foxes, 25 dogs, and 13 red foxes. Of these, 2 arctic foxes, 4 dogs, and 7 red foxes tested positive. In 1997, there were 10 positive tests, 1 in 1998, and 2 in 1999. With the high population of foxes in Unit 18 and low fur prices, the threat of rabies will continue.

HABITAT

Assessment

Habitats for all furbearers are extensive and healthy throughout Unit 18. The only portions of the unit that have been disturbed are the areas around the villages.

Enhancement

Unit 18 furbearers are currently underutilized. Enhancement aimed at increasing furbearer populations is not necessary or contemplated.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

There were no nonregulatory problems or needs identified for furbearers in Unit 18 during the reporting period.

CONCLUSIONS AND RECOMMENDATIONS

Trapping has traditionally been very important in Unit 18. Fur offered the only source of income during the winter for many trappers. It is still one of the few resources of economic value produced in this area. However, due to low fur prices, the incentive to trap is diminished and as a result, the economic importance of trapping is fading.

The tradition of trapping is fading as well. The average age of trappers statewide that respond to the trapper questionnaire is increasing each year. The trappers in Unit 18 follow this pattern, too. There are only a local few trappers younger than 20.

Only a few trappers continue to pursue furbearers for the economic rewards. Even among these individuals, the reward is more than that measured by the fur check. I've interviewed several and they realize that there are more lucrative endeavors. Yet, they continue to trap.

Furbearers are still widely used in traditional ways. Fur garments, including parkas, mittens, mukluks, and particularly hats, are ubiquitous. Most of these are home made. Beaver fur is the favored material for hats in the inland portions of the unit while seal is the fur of choice along the coast. Parkas are made from a variety of furs including beaver, seal, otter, and arctic ground squirrel. Ruffs are generally made from wolf or wolverine fur. Children often have arctic fox fur ruffs. Other furs, such as ermine and red squirrel, are used for trim. Active skin sewers create a steady demand for local fur.

Probably more than anywhere else in Alaska, furbearers in Unit 18 are regularly used for food. Beaver, otter, mink, arctic ground squirrels, muskrats, and lynx are common table fare. The pattern of preferences varies from village to village but meat from these species is rarely discarded, even if it is only saved for dog food. For some species, the prime motivation for trapping them is the meat and occasionally the fur is not utilized. The Board of Game recognized this when they adopted new beaver regulations that permit beavers to be taken strictly for the meat.

Furbearers are often harvested opportunistically during other outdoor pursuits. For example, moose hunters occasionally shoot beavers for camp meat, spring duck hunters take muskrats, and caribou hunters will shoot foxes or wolverines if they have the opportunity.

Furbearer harvest information is poor for most species. This is partly because they're not sealed when they're tanned and used in the home, or when they are taken primarily for meat, or when they're taken opportunistically with little planning. Poor harvest information is also due to poor understanding of the regulations, the tedium of compliance, occasional poor access to fur sealers, and the low risk of consequences of failing to comply.

Poor harvest information is an administrative shortcoming as well. It is difficult to recruit and keep fur sealers in the villages. Fur sealers receive $1.00 per fur for every fur sealed and since fur harvest is declining so is their compensation. Now that the requirement to seal beavers has been eliminated, compensation will decline even further. It will probably become even more difficult to recruit and retain fur sealers, and fur harvest information will suffer.

The fur acquisition reports are a poor tool for harvest assessment when fur prices and fur harvest are low. Many of the furs trappers take in Unit 18 are not sold to fur buyers and are not included in fur acquisition report data. The fur acquisition report requirement is still worthwhile though. If fur prices raise to the level that interest in trapping increases for species that we don't seal, the fur acquisition report data should capture that increase.

There are several concerns about furbearers in Unit 18. Red fox numbers are high and the threat of rabies remains an issue. Both red and arctic foxes prey on waterfowl eggs and nestlings. The threatened spectacled eider is among the prey species. Beaver numbers are high and are blamed for disrupting fish movements and impeding boat traffic. Both of these furbearers were once highly valued but are now largely thought of nuisance wildlife.

It would take a profound increase in fur prices to create enough incentive to entice trappers to harvest any furbearer in Unit 18 to the point that there is a conservation concern. Previous high harvests provide some context. In the 1988–1989, 4,686 beavers were sealed. In the early 1980s over 700 otters per year were taken. In the 1940s an average of 16,000 mink were taken and in one year during that decade, over 60,000 were taken. Tables 2 and 3 show harvest figures well below previous levels. Clearly, furbearers in Unit 18 are severely underutilized.

LITERATURE CITED

COFFING, M, ML BROWN, G JENNINGS, AND CJ UTERMOHLE. 2000. Subsistence Harvest and Use of Wild Resources in Akiachak, 1998. Technical Paper No. 258. (draft) Alaska Department of Fish and Game. Division of Subsistence. Juneau, Alaska.

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Table 1 Trapper questionnaire aggregate scores for furbearer abundance and trend. Abundance scores: 1 = scarce, 2 = common, 3 = abundant. Trend scores: 1 = fewer, 2 = same, 3 = more.

	1997–1998		1998–1999		1999–2000	
Species	Abundance	Trend	Abundance	Trend	Abundance	Trend
Arctic fox	1.8	1.9	1.7	1.7	1.0	2.0
Beaver	2.7	2.5	2.8	2.6	2.8	2.7
Coyote	1.2	2.0	*	*	1.0	2.0
Ermine	1.9	2.0	1.9	2.0	1.7	1.7
Lynx	1.9	2.4	1.6	2.2	2.0	2.3
Marten	1.5	1.9	1.4	2.0	1.4	2.2
Mink	1.9	1.8	1.8	1.8	1.7	1.9
Muskrat	2.1	2.5	2.0	1.8	1.8	2.3
Red fox	2.5	2.1	2.4	2.7	2.7	2.8
Red squirrel	1.6	1.7	*	*	1.5	2.0
River otter	2.2	2.3	1.9	2.0	2.4	2.2
Wolf	1.7	2.7	2.0	2.4	2.2	2.3
Wolverine	1.6	1.8	1.8	2.2	1.6	2.4
Hares	2.5	2.5	3.0	2.8	2.9	2.6
Grouse	1.8	2.5	1.8	2.0	1.7	2.1
Ptarmigan	2.8	2.3	2.6	1.8	2.7	2.4
Mice/Rodents	2.4	2.1	2.0	2.0	2.2	2.0

*Not included in the survey.

Table 2 Furbearer harvest from sealing records 1997–1998 through 1999–2000.

Species	1997–1998	1998–1999	1999–2000
Beaver	1309	536	404
Lynx	72	56	63
River otter	455	175	63
Wolverine	26	7	9

Table 3 Fur acquisition report data, 1997–1998 to 1999–2000.

Species	1997–1998	1998–1999	1999–2000
Beaver	165	94	24
Coyote		1	
Arctic fox	2	2	
Red fox	34	57	
Lynx	15	4	15
Marten	15	44	33
Mink	644	173	
River otter	100	49	
Wolverine	4	1	6
Muskrat	1		

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FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 22 (25,230 mi^2)

GEOGRAPHIC DESCRIPTION: Seward Peninsula and the adjacent mainland drained by all streams flowing into Norton Sound

BACKGROUND

Furbearers found in Unit 22 include beaver, red fox, arctic fox, lynx, marten, mink, muskrat, river (land) otter, wolverine and wolves. Wolves are discussed in a separate survey and inventory report.

Furbearers are most abundant in the eastern portion of Unit 22, which is characterized by extensive spruce forests and riparian willow habitat. Densities of furbearers have fluctuated widely over the years, generally in response to natural factors. Hunting and trapping activity has at times reduced furbearer densities in close proximity to Unit 22 villages.

Harvest activity is partly related to densities of furbearers and fur prices. When fur prices and population densities are high the number of hunters and trappers increases. However, most of the furbearer harvest in Unit 22 is by subsistence and recreational users or is done opportunistically by local residents while engaged in other activities. Very few individuals in Unit 22 trap as their sole winter occupation.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Maintain viable numbers of furbearers, recognizing that populations will fluctuate in response to environmental factors.

MANAGEMENT OBJECTIVES

Management objectives for furbearers are to:

- Monitor harvest through the fur sealing program, annual hunter/trapper questionnaires and big game harvest surveys conducted annually in selected Unit 22 villages.

- Assess population status and trends utilizing sealing records, hunter/trapper interviews and questionnaires, village harvest surveys and observations by staff and the public.

- Maintain license vendors and sealing agents in all Unit 22 villages.

- Improve compliance with current sealing requirements through public communication and education.

- Minimize conflicts between furbearers and the public.

- Develop updated population management objectives in consultation with the public and other agencies.

METHODS

Information regarding distribution and abundance of furbearers is obtained from observations reported by the staff and the public. Harvest information for beaver, lynx, river otter and wolverines is collected annually from fur sealing certificates, hunter/trapper questionnaires and village harvest surveys.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Information was collected regarding the status of Unit 22 furbearer populations from observations made while conducting surveys of other species, and from information provided by interested local residents. Since 1998 Unit 22 has participated in the statewide trapper survey program, which has provided useful impressions about furbearer abundance from hunter/trappers throughout the unit.

Population Size

Beaver — During this reporting period staff observations and reports from the public indicate beaver populations continued to increase in many parts of the unit and trapper survey respondents reported that beaver were common or abundant in Units 22A, 22B, 22C and 22D. In Unit 22E beaver numbers are believed to be increasing in the Serpentine River drainage. Harvest pressure throughout the Unit has been minimal in recent years.

Many unit residents are dismayed by the proliferation of beaver on the western Seward Peninsula over the last 15– 20 years and regard beaver as a nuisance. Complaints are common, for example: beaver have blocked culverts along the road system, forcing Department of Transportation to destroy a number of dams and kill nuisance beavers; recreational boaters complain about the blockage of waterways; there is concern that beaver dams are preventing salmon from returning to their spawning grounds; and precautions must now be taken to prevent giardia infection when drinking from local streams.

Lynx — Lynx, which had been scarce unitwide since the mid 1980s, are increasing in some areas along with hares, their primary food source. In 1998–1999 reports from Unit 22A indicated lynx

were scarce, but increasing, and by 1999–2000 they were reported to be common and increasing. Lynx appear to be most abundant in southwestern Unit 22A. In Unit 22B survey respondents reported lynx were scarce, but increasing. Survey respondents from the remainder of the unit said lynx were scarce or not present in their hunting/trapping areas. Hares appear to be increasing in many parts of the unit.

River Otter — Otters are found throughout most of the major drainages of the unit, although they appear to be more common in Unit 22A, 22B and 22C. Hunter/trappers who responded to our trapper surveys in 1999–2000 indicated otters in Units 22A, 22B, 22C and 22D were scarce or common and their numbers stable. We have no information about otters in Unit 22E.

Wolverine — Wolverines were reported to be common or abundant throughout the unit and their numbers are thought to be stable or increasing. The availability of suitable habitat and food resources are thought to be the primary factors determining population density in Unit 22. In Unit 22C hunting pressure can be an important factor regulating population density, but reported harvest during this reporting period was low.

Fox — Red fox declined noticeably in 1997–1998 in many parts of the unit but were still fairly common during this reporting period. The Norton Sound Health Corporation's Office of Environmental Health now handles all specimens suspected of rabies infection in the Norton Sound area. In 1997–1998 they reported 2 red foxes from the Wales area and one arctic fox from Gambell tested positive for rabies. In 1998–1999 2 rabid red foxes from Koyuk were reported. The incidence of rabies increased in 1999–2000 when 10 cases were reported in red and arctic foxes from villages throughout the unit. Public service announcements were made warning people to avoid suspicious animals and to vaccinate their pets against rabies.

Coyote — In December 1999 a trapper reported harvesting 2 coyotes in the Unalakleet drainage in Unit 22A. This was the first report we have received of coyotes in Unit 22 and Unalakleet residents expressed great surprise because they were not previously aware of coyotes in the area.

Mink/Marten — Most of the suitable martin and mink habitat occurs in Units 22A and 22B. Marten are reported to abundant in Unit 22A. Little else is known about the status of mink and marten populations in Unit 22.

Population Composition

There were no activities to determine furbearer population composition in Unit 22 during the reporting period.

Distribution and Movements

There were no activities to determine furbearer distribution and movements in Unit 22 during the reporting period.

MORTALITY

Harvest

Hunting Seasons and Bag Limits. The hunting seasons and bag limits for furbearers in Unit 22 were the same for the entire reporting period, and there were no differences between resident and nonresident seasons.

Species	**Season**	Bag Limit
Fox, Arctic	1 Sep–30 Apr	2 foxes
Fox, Red	1 Sep–15 Mar	10 foxes, only 2 before 1 Oct
Lynx	1 Nov–15 Apr	2 lynx
Wolverine	1 Sep–31 Mar	1 wolverine

Trapping Seasons and Bag Limits. In October 1997 the Board of Game extended the beaver trapping season in Units 22C, 22D and 22E, creating a uniform season throughout Unit 22 from 1 Nov–10 June, effective with the 1998-1999 regulatory year. Previously the season in Units 22C, 22D and 22E was 1 Nov–15 Apr.

Species	Season	Bag Limit
Beaver	1 Nov–10 Jun	50 per season
Coyote	1 Nov–15 Apr	No limit
Fox, Arctic	1 Nov–15 Apr	No limit
Fox, Red	1 Nov–15 Apr	No limit
Lynx	1 Nov–15 Apr	No limit
Marten	1 Nov–15 Apr	No limit
Mink	1 Nov–31 Jan	No limit
Muskrat	1 Nov–10 Jun	No limit
Otter	1 Nov–15 Apr	No limit
Wolverine	1 Nov–15 Apr	No limit

Board of Game Actions and Emergency Orders. In October 1999 the Board of Game eliminated the sealing requirement for beaver in Unit 22 and identified beaver as a fur animal so beaver can be taken with a hunting license. However, a hunting season for beaver in Unit 22 has not yet been established.

Human-Induced Harvest. Fur prices remained steady and relatively low. The number of hunter/trappers sealing beaver, lynx, otter and wolverine increased slightly during this reporting period, but it is unknown if this resulted from increased hunter effort or better compliance with sealing requirements. Accurate harvest data are lacking for all furbearer species found in Unit 22, even for those species that are sealed. Many furs from the unit are home tanned and used locally for clothing so there is little incentive to have them sealed. The fur sealing data provides only minimum estimates of harvest. Additional harvest information was obtained from trapper

surveys and information about wolverine harvest was provided by big game harvest surveys conducted in several Unit 22 villages.

Beaver — During the 1997–1999 reporting period the Unit 22 beaver harvest reported on sealing certificates ranged from a high of 61 beaver harvested by 12 hunter/trappers in 1997–1998 to a low of 34 beaver harvested by 10 individuals in 1998–1999 (Table 1). In 1999–2000, 41 beaver were sealed by 9 hunter/trappers. Trapper surveys in 1999–2000 informed us of an additional 2 beaver harvested in Unit 22A and 8 beaver harvested in Unit 22B. In past reporting periods the majority of the harvest occurred in Units 22A and 22B, even after populations became well established in Units 22C and 22D. However, the harvest during this reporting period was greatest in Unit 22C. This can be partly attributed to a growing interest in reducing beaver numbers in the Nome area and to lengthening the season in 1998. In 1998–1999 seven of 12 beaver taken in Unit 22C were taken after April 15 when the season previously closed. In 1999–2000, twenty-five of 31 beaver were taken after April 15. There have never been harvest reports from Unit 22E. The majority of the beaver harvest in Unit 22A is taken with traps or snares during winter months. In Unit 22C, since 1998 when the season was extended, and in Unit 22B, the majority of the beaver were shot in the spring after breakup.

Lynx — During this reporting period, reported lynx harvest increased greatly in Unit 22A and remained low in the remainder of the unit. In 1997–1998 one trapper sealed 2 lynx caught in Unit 22A. In 1998–1999 seven lynx (6 trapped in Unit 22A and 1 shot in Unit 22E) were sealed and in 1999–2000 five hunter/trappers sealed 28 lynx (27 trapped in Unit 22A and 1 shot in Unit 22B) (Table 1).

River Otter — An average of 8 otter per year were sealed in Unit 22 during the reporting period, varying from a high of 11 in 1997–1998, to a low of 4 otters sealed in 1999–2000 (Table 2.) In 1998–1999 eight otters were sealed. In 1999–2000 an additional 2 otters were reported on trapper surveys, one in Unit 22A and one in Unit 22B. Otter were harvested in all subunits, with the most reports from Units 22A and 22B.

Wolverine — The number of wolverines sealed almost doubled since the previous reporting period, but was similar to 1988–1993. The number of wolverines sealed annually during this reporting period ranged from 33 in 1997–1998 to 24 the following year (Table 2). In 1999–2000 30 wolverines were sealed. The reported sex composition was 70% males, 22% females and 8% unknown. Wolverines were reported taken from all subunits with a distribution as follows: Unit 22A, 29%; Unit 22B, 45%; Unit 22C, 7%; Unit 22D, 7%; and Unit 22E, 12%. Ground shooting accounted for 45% of the wolverine taken, trapping or snaring accounted for 54%, and 1% is unknown. In 2000, the harvest of 4 additional wolverines in Unit 22A was reported on trapper surveys. In 1998–1999 big game harvest surveys in two Norton Sound villages showed that Koyuk residents took an additional 5 wolverines and Shaktoolik residents took an additional 3 that were not reported on sealing certificates. In Shaktoolik 0% of the known harvest was sealed and in Koyuk 17% of the harvest was sealed. In 1999–2000 village harvest surveys showed that Elim residents took an additional 2 wolverines and White Mountain and Shaktoolik residents each took one additional wolverine that was not sealed. In Elim 60% of the known wolverine harvest was sealed, but in Shaktoolik and White Mountain none of the known harvest was sealed.

Permit Hunts. No special permits were required to trap or hunt furbearers in Unit 22 during the reporting period.

Hunter Residency and Success. During this reporting period all but one of the hunter/trappers who harvested furbearers in Unit 22 were local residents. An Anchorage fly-in hunter took one wolverine in Unit 22B in September 1999. Success is difficult to accurately measure because most individuals take furbearers on an opportunistic basis. Frequently, they are out doing other things and not specifically hunting or trapping furbearers.

Harvest Chronology. There were no activities to determine furbearer harvest chronology in Unit 22 during the reporting period.

Transport Methods. Snowmachines were the primary means of transportation for hunter/trappers taking furbearers within Unit 22. Sealing certificate data from the 1997–1999 reporting period show that 91% of the wolverine harvest occurred by snowmachine, 6% by skis or snowshoes, 2% by highway vehicle and 1% by airplane. All lynx harvested during this reporting period were taken by hunter/trappers on snowmachines. Hunter/trappers using snowmachines took 74% of the river otter harvest, 13% was taken using boats, 4% using a highway vehicle for transportation and transportation was not reported for 9% of the harvest. Fifty-one percent of the beaver were taken using snowmachines for transportation. Boats were used to take 33% of the beaver harvest, 15% was taken using highway vehicles and 1% by hunter/trappers on skis or snowshoes. Beaver taken in Unit 22A were generally taken using snowmachines, in Unit 22B snowmachines and boats were both commonly used and in Unit 22C highway vehicles and boats were most frequently used.

Other Mortality

There were no observations of other mortality to furbearers in Unit 22 during the reporting period.

HABITAT

Assessment

We did no habitat assessment projects in Unit 22 during the reporting period.

Enhancement

We did no habitat enhancement projects in Unit 22 during the reporting period.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

There were no nonregulatory problems or needs identified for furbearers in Unit 22 during the reporting period.

CONCLUSIONS AND RECOMMENDATIONS

We lack quantitative data on furbearer population status in Unit 22. However, our observations and reports from unit residents indicate that furbearer populations are generally stable or increasing. Much of the harvest goes unreported and the actual size of the harvest and its impact on furbearer populations is unknown. Although at times our current regulations may affect species in close proximity to villages, it is unlikely that these impacts are significant unitwide.

In 1998 Region 5 began participating in the statewide trapper survey program. The annual surveys are sent to people who trap furs in the region. We have had good cooperation from fur harvesters and the comments and information provided by Unit 22 hunter/trappers has given us important harvest information and a better and more timely picture of changes in furbearer abundance in different parts of the unit.

The most effective means of collecting harvest information in unit villages is through household harvest surveys, which we began in spring 1999 in selected Unit 22 villages. However, these surveys focus on big game and only wolf and wolverine data is collected.

Trapper surveys and village harvest surveys give us some additional harvest information, but the accuracy of furbearer harvest data still needs to be improved. Fursealing agents are available in all Unit 22 villages, but significant portion of the harvest is never sealed. Many furs are kept, bartered or sold locally for clothing or handicrafts. Increased contact between local hunter/trappers and biologists is desirable to encourage harvest reporting and to gain information about harvest and furbearer abundance.

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Table 1 Unit 22 beaver and lynx harvest reported on sealing certificates, 1988–1999

	Reported harvest							Sex of harvest			Method of harvest			Nr.
Species	22A	22B	22C	22D	22E	Unk.	Total	Male	Female	Unk.	Shot	Trap/ snare	Unk.	Hunter/ trappers
Beaver														
1988–1989	5	11	2	2	0	0	20	0%	0%	100%	40%	60%	0%	6
1989–1990	23	8	0	0	0	0	31	16%	10%	74%	3%	71%	26%	8
1990–1991	2	7	0	0	0	0	9	33%	11%	56%	0%	100%	0%	3
1991–1992	18	23	3	1	0	0	45	2%	4%	94%	47%	53%	0%	8
1992–1993	10	5	1	0	0	0	16	0%	0%	100%	63%	37%	0%	7
1993–1994	11	4	25	1	0	0	41	2%	2%	96%	3%	90%	7%	9
1994–1995	3	10	5	2	0	0	20	20%	30%	50%	50%	25%	25%	5
1995–1996	11	0	1	2	0	0	14	14%	0%	86%	7%	93%	0%	4
1996–1997	34	25	5	1	0	5	70	18%	19%	63%	12%	51%	37%	9
1997–1998	21	25	15	0	0	0	61	5	1	55	17	35	9	12
1998–1999	13	8	12	1	0	0	34	6	6	22	16	18	0	10
1999–2000	9	0	31	1	0	0	41	2	1	38	30	11	0	9
Lynx														
1988–1989	1	2	0	1	0	0	4	50%	25%	25%	50%	50%	0%	4
1989–1990	0	2	1	0	0	0	3	33%	33%	33%	67%	33%	0%	3
1990–1991	2	0	0	0	0	0	2	0%	0%	100%	0%	100%	0%	1
1991–1992	4	0	0	0	1	0	5	40%	60%	0%	40%	0%	60%	4
1992–1993	4	2	4	0	0	0	10	0%	10%	90%	10%	80%	10%	4
1993–1994	2	0	0	0	0	0	2	0%	0%	100%	50%	50%	0%	1
1994–1995	3	1	0	0	0	0	4	0%	25%	75%	25%	75%	0%	2
1995–1996	0	1	0	0	0	0	1	0%	100%	0%	100%	0%	0%	1
1996–1997	5	0	0	0	0	0	5	0%	100%	0%	40%	60%	0%	2
1997–1998	2	0	0	0	0	0	2	2	0	0	0	2	0	1
1998–1999	6	0	0	0	1	0	7	3	4	0	1	6	0	3
1999–2000	27	1	0	0	0	0	28	22	4	2	1	27	0	5

Table 2 Unit 22 river otter and wolverine harvest reported on sealing certificates, 1988–1999

	Reported harvest							Sex of harvest			Method of harvest			Nr.
Species	22A	22B	22C	22D	22E	Unk.	Total	Male	Female	Unk.	Shot	Trap/ snare	Unk.	Hunter/ trappers
River otter														
1988–1989	0	0	0	0	0	0	0	0%	0%	0%	0%	0%	0%	0
1989–1990	1	1	0	0	0	0	0	0%	100%	0%	100%	0%	0%	1
1990–1991	2	1	0	1	0	0	0	50%	0%	50%	0%	100%	0%	2
1991–1992	2	0	2	0	0	0	0	0%	50%	50%	0%	100%	0%	2
1992–1993	6	1	0	4	1	0	0	17%	50%	33%	50%	50%	0%	5
1993–1994	9	0	4	4	0	1	0	33%	22%	45%	22%	78%	0%	6
1994–1995	11	8	0	2	1	0	0	27%	64%	9%	9%	82%	9%	4
1995–1996	1	0	0	0	0	1	0	0%	0%	100%	100%	0%	0%	1
1996–1997	6	0	1	3	2	0	0	33%	17%	50%	83%	17%	0%	4
1997–1998	11	4	3	2	1	1	0	4	1	6	5	4	2	10
1998–1999	8	2	5	0	1	0	0	3	3	1	3	3	2	6
1999–2000	4	3	0	1	0	0	0	3	1	0	1	3	0	3
Wolverine														
1988–1989	16	3	6	4	3	0	0	56%	38%	6%	63%	37%	0%	13
1989–1990	23	9	4	2	8	0	0	44%	30%	26%	30%	70%	0%	14
1990–1991	33	6	14	9	4	0	0	52%	21%	27%	64%	36%	0%	23
1991–1992	31	10	9	8	4	0	0	65%	29%	6%	58%	42%	0%	17
1992–1993	26	3	14	6	2	1	0	65%	31%	4%	62%	35%	4%	17
1993–1994	24	4	9	3	4	4	0	63%	17%	20%	71%	29%	0%	20
1994–1995	13	7	5	1	0	0	0	77%	23%	0%	77%	23%	0%	13
1995–1996	9	0	8	0	1	0	0	67%	33%	0%	78%	22%	0%	7
1996–1997	24	1	12	4	2	4	1	42%	50%	8%	63%	33%	4%	22
1997–1998	33	11	19	0	2	1	0	23	9	1	12	21	0	14
1998–1999	24	9	10	1	0	4	0	16	5	3	7	17	0	12
1999–2000	30	5	10	5	4	6	0	22	5	3	20	9	1	24

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FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 23

GEOGRAPHIC DESCRIPTION: Kotzebue Sound and Western Brooks Range

BACKGROUND

Furbearers inhabiting Unit 23 include beaver (*Castor canadensis*), lynx (*Lynx canadensis*), marten (*Martes americana*), mink (*Mustela vison*), muskrat (*Ondatra zibethicus*), river (land) otter (*Lutra canadensis*), red fox (*Vulpes vulpes*), white (Arctic) fox (*Alopex lagopus*), wolverine (*Gulo gulo*), and wolf (*Canis lupus*). We report the status of wolves in a separate survey and inventory report. All other species are reported here.

The Inupiat traditionally harvested furbearers for subsistence in Unit 23 and traded inland furs for coastal products (Anderson 1977). Unlike trappers in Interior regions, Unit 23 trappers did not maintain individual traplines. Instead, hunters and trappers operated within community hunting areas they fiercely defended (Erlich and Magdanz 1994).

Communities with the longest and most consistent history of trapping occur in the upper Kobuk River drainage. Participation in the harvest of furbearers was greatest in the 1940s and 1950s when demand and prices for fur were high. The sale of furs was one of the few sources of cash available to the region's residents during this time. Today, furbearer harvest in Unit 23 is by subsistence and recreational users, and by 1 professional trapper. Furbearer harvest provides materials for locally manufactured fur garments and generates limited income. Most pelts remain in the region. Harvest of many furbearers occurs on an opportunistic basis by local residents while engaged in other activities.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

Management goals for furbearers are to maintain populations capable of sustaining 1986–1997 harvest levels recognizing that populations fluctuate in response to environmental factors.

MANAGEMENT OBJECTIVES

Management objectives for furbearers are to:

- Seal furs and maintain accurate harvest records to evaluate harvest patterns.

- Provide for subsistence, commercial and recreational uses of furbearers.

METHODS

We gathered information regarding the population status of beaver, lynx, marten, river otters, and wolverines from fur sealing certificates, conversations with local residents, responses to the statewide trapper questionnaire from residents of Unit 23, and opportunistic observations of furbearers and their tracks during other wildlife surveys. Unlike previous reports we do not discuss beaver harvests because sealing became voluntary in 2000 and few people chose have their pelts sealed.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Beaver — Beaver numbers remained high the Selawik and Kobuk River drainages. In these drainages beaver have fully occupied high quality habitat and now occur widely in marginal areas as well. Residents of Selawik continued to express concern about beavers damming streams important for subsistence fishing, and about the threat of giardia in their drinking water. Beavers continued to expand their range north and west in Unit 23. Beavers now occur as far north as the Red Dog Mine and as far west as Rabbit Creek near the Chukchi Sea coast.

Fox — The red fox population was high during this reporting period. Both red and Arctic foxes were especially high during the winter of 2000–2001 (after this reporting period). Seven of 10 foxes (9 red and 1 Arctic) submitted to the virology unit in Fairbanks between December 2000 and May 2001 were positive for rabies. One fox killed within Deering exhibited clinical symptoms of rabies (tameness, ataxia, pica), but tested negative for the disease; however, it was positive for canine distemper. At least 4 dogs that had not been vaccinated for rabies (2 in Deering and 2 in Kotzebue) were destroyed after being in contact with rabid red foxes during the winter of 2000–2001. Rabid foxes were mainly reported from the coastal communities of Deering (1 red), Kotzebue (1 red and 1 arctic), Kivalina (2 red) and Buckland (1 red). A red fox found dead at the Red Dog Mine also had rabies.

Lynx — Snowshoe hares (*Lepus americanus*) continued to reoccupy portions of Unit 23 that have been devoid of hares since the last population high in 1980–1982. They are now evident near Cape Krusenstern and in portions of the lower Noatak drainage. Hares were extremely abundant in the Selawik drainage during winter and spring 1999–2000 and 2000–2001. In some local areas, e.g. the upper Noatak River drainage east of Midas Creek, hares were super abundant in April 1999 (S. Kantner, personal communication), but had catastrophically declined by April 2001. Likewise, arctic (tundra) hares (*Lepus othus*) have slowly increased on the Seward Peninsula and in coastal Unit 23 south of Cape Krusenstern.

Lynx have increased in areas where snowshoe hares have increased. In fact, lynx had become abundant in the Selawik River drainage by March 2001. During a March 2001 moose census in

the lower Tagagawik River drainage, a major tributary of the Selawik River, all 4 survey aircraft opportunistically observed lynx. I observed a minimum of 50 lynx over the course of 3 days. I saw many 'stumps' that were likely lynx as well that I didn't have time to investigate. On 2 occasions we thought we saw copulating pairs. Survival of kits born in 2000 appeared to have been good as we saw many groups of 5–7 individuals.

Local Advisory Committees (AC) decided against proposing that the Board of Game liberalize lynx hunting and trapping regulations in Unit 23 in fall 1999. They preferred to allow lynx populations to rebuild and expand their range into other portions of the Unit before changing seasons or bag limits.

Mink and Marten — Mink and marten populations fluctuate locally making it difficult to monitor trends. Forest habitat in Unit 23 is structurally simple and is dominated by white and black spruce. In many ways it is similar to late succession forests of Interior Alaska that are not productive for these furbearers. Small mammal abundance and snow characteristics strongly affect mink and marten numbers. The most abundant small mammals in forested portions of Unit 23 are red back voles (*Clethrionomys rutilus*) and tundra voles (*Microtus oeconomus*). Although snow characteristics are suitable for mink and marten in these areas, snow conditions throughout most of Unit 23 consist of wind scoured tundra or hard packed snow.

The best marten habitat in Unit 23 occurs in the boreal forests of its eastern extreme, especially in the upper Kobuk River drainage. From roughly 1990–1999 marten appeared to be expanding their range in Unit 23 westward. During this expansion marten occurred in low-to-moderate numbers as far west as the lower Noatak River and in Kotzebue, and became locally abundant in the Hockley Hills and upper Squirrel River drainage. Since 1999, marten have declined in the lower Noatak and upper Squirrel River drainages.

Mink inhabit areas throughout Unit 23, but little is known regarding their abundance or population trend.

Muskrat — Muskrats occur throughout Unit 23. We have no information regarding their abundance, population trend or harvest levels. Spring muskrat hunting used to be an important subsistence activity in Unit 23. Although a few families still practice spring muskrat hunting, harvests are low compared to those from 30 years ago and before. There is probably no biological reason to impose a closed season on muskrat in Unit 23.

Wolverine — Opportunistic sightings by staff and local residents suggest wolverine populations were high in remote portions of the unit compared to previous years. Local hunters intensively pursue wolverines for their fur and the prestige associated with taking them. Each winter hunters and trappers probably harvest most wolverines within a 50-mile radius of communities when snow and weather are favorable for getting out.

For several years the National Park Service (NPS) has conducted a wolverine research project in the middle Noatak River drainage. A component of this study has been to purchase carcasses from hunters and trappers throughout Unit 23. Several hunters and fur sealers have remarked that this has probably reduced the proportion of harvest sealed by local hunters and trappers because they feel they have satisfied reporting requirements by selling their carcasses to a management

organization. This observation is not intended to criticize the NPS, but to note that the relatively low harvests reported during 1997–1998 and 1998–1999 may be attributable to this effect. In contrast, the high number of wolverines reported for 1999–2000 is partly attributable to the Department of Public Safety protection officer traveling to Ambler to speak to 2 individuals known to have taken many wolves and wolverines during that regulatory year. If he had not done so, at least some of these furs probably would not have been sealed. Compliance with sealing requirements by local residents has historically been low and has varied through time and space in relation to the activity of fur sealers and protection officers.

Population Composition

There were no activities to determine furbearer population composition in Unit 23 during the reporting period.

Distribution and Movements

There were no activities to determine furbearer distribution and movements in Unit 23 during the reporting period.

MORTALITY

Harvest

Hunting Season and Bag Limits.

Species	Season	Bag Limit
Fox, Arctic	1 Sep–30 Apr	2 foxes
Fox, Red	1 Sep–31 Mar	10 foxes, only 2 before 1 Oct
Lynx	1 Dec–15 Jan	2 lynx
Wolverine	1 Sep–31 Mar	1 wolverine

Trapping Seasons and Bag Limits.

Species	Season	Bag Limit
Beaver	1 Nov–10 Jun	30 per season*
Fox, Arctic	1 Nov–15 Apr	No limit
Fox, Red	1 Nov–15 Apr	No limit
Lynx	1 Dec–15 Jan	3 lynx
Marten	1 Nov–15 Apr	No limit
Mink	1 Nov–31 Jan	No limit
Muskrat	1 Nov–10 Jun	No limit
River Otter	1 Nov–15 Apr	No limit
Wolverine	1 Nov–15 Apr	No limit

*50 beaver per person could be taken from the Kobuk and Selawik River drainages

Board of Game Actions and Emergency Orders. At the fall 1999 Board meeting a year-round hunting season was established for beaver in Unit 23 with no bag limit or sealing requirement. In addition, the trapping season was extended to year round with no bag limit and no sealing requirement. At the spring 2000 Board meeting beaver was defined as a ‘fur animal’ and adopted

in regulation. The designation of beaver as a 'furbearer', as well as a 'fur animal', allows take under both trapping and hunting regulations. These regulations went into effect 1 July 2000.

Human-Induced Harvest.

Lynx — Few lynx have been reported taken in Unit 23 since 1982–1983 (Table 1). At that time snowshoe hare populations crashed, followed shortly thereafter by lynx. In addition, trapping and hunting regulations were substantially reduced. Hunters have shot a few lynx opportunistically, and trappers have inadvertently taken lynx in wolf and wolverine sets. Although lynx have become very abundant in the Selawik River drainage, human demand has not increased because fur prices have been low.

River Otter — Harvests of river otters during this reporting period were roughly comparable to previous years (Table 2). Most otters reported taken were by recreational trappers.

Wolverine — Sealing data for wolverines represents only minimum estimates of actual harvest (Table 3). These data suggest males comprise the majority of the harvest, and that about equal numbers of wolverine are shot versus trapped.

Permit Hunts. No special permits were required to hunt or trap furbearers in Unit 23 during the reporting period.

Hunter Residency and Success. There were no activities to determine hunter/trapper residency and success in Unit 23 during the reporting period.

Harvest Chronology. There were no activities to determine harvest chronology in Unit 23 during the reporting period.

Transport Methods. Snow machines are the primary form of transport by hunters and trappers to harvest furbearers in Unit 23 (Table 4). Most local residents shoot furbearers rather than trap them. Much of the region is tundra and is conducive to ground shooting using a snow machine.

Other Mortality

We think fox numbers are affected primarily by rabies and distemper, rather than by harvest. Brown bears and wolves kill wolverines occasionally, but human harvests probably affect population levels more than natural mortality. Lynx are a classic example of a predator being linked to the abundance of its primary prey: snowshoe hares. In Unit 23 where trapping is not intense it may be unnecessary to restrict hunting and trapping regulations for lynx because hunters and trappers generally do not seek out lynx.

HABITAT

Assessment

We did no habitat assessment projects in Unit 23 during the reporting period.

Enhancement

We did no habitat enhancement projects in Unit 23 during the reporting period.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

There were no nonregulatory problems or needs identified for furbearers in Unit 23 during the reporting period.

CONCLUSIONS AND RECOMMENDATIONS

I suggest these recommendations as we move into the next reporting period:

- Simplify regulations when possible. Consistency between hunting and trapping regulations would substantially reduce regulatory complexity.

- Encourage the public to vaccinate their dogs against rabies and distemper and improve communication with Maniilaq Association regarding these viruses in animals.

- Distribute the publication "A Field Guide to Common Wildlife Diseases and Parasites in Alaska" (Elkin and Zarnke 2001) to individuals who hunt, trap or use furbearers in Unit 23.

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Table 1 Harvest and method of take for lynx sealed in Unit 23, 1977–1978 through 1999–2000

Year	Total harvest	Method of take			
		Shot	Trapped	Snared	Unknown
1977–1978	230	0	223	5	2
1978–1979	385	2	341	3	39
1979–1980	407	14	378	3	12
1980–1981	306	3	254	1	41
1981–1982	483	7	444	0	32
1982–1983	277	6	265	1	5
1983–1984	98	3	93	0	2
1984–1985	26	3	23	0	0
1985–1986	45	7	37	0	0
1986–1987	16	2	13	1	0
1987–1988	0	0	0	0	0
1988–1989	0	0	0	0	0
1989–1990	0	0	0	0	0
1990–1991	0	0	0	0	0
1991–1992	1	0	1	0	0
1992–1993	0	0	0	0	0
1993–1994	5	0	5	0	0
1994–1995	1	–	1	0	0
1995–1996	3	2	1	0	0
1996-1997	4	0	0	0	0
1997-1998	0	0	0	0	0
1998-1999	0	0	0	0	0
1999-2000	6	3	3	0	0

Table 2 Harvest and method of take for river otters sealed in Unit 23, 1977–1978 through 1999–2000

Year	Total harvest	Method of take			
		Shot	Trapped	Snared	Unknown
1977–1978	12	1	11	0	0
1978–1979	15	2	13	0	0
1979–1980	19	10	9	0	0
1980–1981	29	0	27	2	0
1981–1982	9	0	9	0	0
1982–1983	7	1	5	0	1
1983–1984	8	1	7	0	0
1984–1985	5	0	5	0	0
1985–1986	5	1	4	0	0
1986–1987	12	0	12	0	0
1987–1988	24	1	12	0	0
1988–1989	7	0	7	0	0
1989–1990	16	1	4	0	11
1990–1991	11	1	6	0	4
1991–1992	3	1	2	0	0
1992–1993	2	2	0	0	0
1993–1994	1	0	0	0	1
1994–1995	6	0	6	0	0
1995–1996	0	0	0	0	0
1996-1997	7	1	5	1	0
1997-1998	10	3	6	0	1
1998-1999	7	2	3	0	2
1999-2000	9	1	6	0	2

Table 3 Percent males (excluding unknown sex) and method of take for wolverine sealed in Unit 23, 1977–2000

Year	Total harvest	Males (%)	Method of take			
			Shot	Trapped	Snared	Unknown
1977–1978	75	67	26	49	0	0
1978–1979	45	73	9	34	0	0
1979–1980	26	63	12	14	0	0
1980–1981	18	76	11	7	0	0
1981–1982	48	75	13	35	0	0
1982–1983	37	67	16	20	1	0
1983–1984	46	59	17	27	1	1
1984–1985	37	61	19	15	2	2
1985–1986	35	77	7	27	1	0
1986–1987	64	56	28	28	1	7
1987–1988	40	72	11	28	1	0
1988–1989	39	56	8	31	0	0
1989–1990	18	82	3	13	1	1
1990–1991	27	65	14	11	0	2
1991–1992	37	68	14	23	0	0
1992–1993	36	69	16	20	0	0
1993–1994	19	58	14	4	0	0
1994–1995	15	71	7	8	0	1
1995–1996	29	70	12	13	1	3
1996-1997	40	63	19	21	0	0
1997-1998	19	50	4	15	0	0
1998-1999	13	100	3	7	1	2
1999-2000	31	60	15	9	1	5

Table 4 Harvest and method of transportation used to harvest furbearers and fur animals in Unit 23, 1994–1995 through 1999–2000

		Method of transportation				
Species/year	Harvest	Snowmachine	Boat	Airplane	Other	Unknown
Beaver						
1994–1995	28	0	11	17	0	0
1995–1996	48	2	21	24	0	1
1996–1997	40	3	37	0	0	0
1997–1998	12	6	6	0	0	0
1998–1999	8	0	2	0	0	6
1999–2000	14	5	3	0	0	6
Lynx						
1994–1995	1	1	0	0	0	0
1995–1996	3	3	0	0	0	0
1996–1997	0	0	0	0	0	0
1997–1998	0	0	0	0	0	0
1998–1999	0	0	0	0	0	0
1999–2000	6	6	0	0	0	0
Otter						
1994–1995	6	6	0	0	0	0
1995–1996	0	0	0	0	0	0
1996–1997	7	7	0	0	0	0
1997–1998	10	9	0	0	0	1
1998–1999	7	5	0	0	2	0
1999–2000	9	7	0	0	0	2
Wolverine						
1994–1995	15	15	0	0	0	0
1995–1996	29	28	0	1	0	0
1996–1997	40	37	0	1	2	0
1997–1998	19	18	0	1	0	0
1998–1999	12	9	0	1	2	1
1999–2000	31	26	0	0	0	5

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FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 26A (56,000 mi^2)

GEOGRAPHIC DESCRIPTION: Western North Slope

BACKGROUND

Red fox, arctic fox, and wolverine are the only furbearer species commonly found in Unit 26A. Because of limited habitat, boreal forest species such as lynx, marten, and coyote are rare and found only in the southern portion of the unit. Furbearers are harvested on the North Slope primarily for the domestic manufacture of garments. In addition, some furs are used to produce handicrafts and some are sold on the commercial fur market.

Rabid furbearers, particularly arctic foxes, continue to be a problem around human settlements. We work with the North Slope Borough to educate people on dealing with rabid animals and having their pets immunized. Arctic foxes that appear to be rabid are killed and tested for rabies when they are reported near villages.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

The management goal for furbearers is to maintain populations capable of sustained-yield harvests recognizing that populations fluctuate in response to environmental factors.

MANAGEMENT OBJECTIVES

Population management objectives established for furbearers in Unit 26A are to:

- Maintain productive populations and allow for sustained-yield harvest.
- Seal furs and maintain accurate harvest records to evaluate harvest patterns.
- Provide for subsistence, commercial and recreational uses of furbearers.
- Minimize adverse interactions between furbearers and the public.

METHODS

We did not conduct specific furbearer population surveys, however we did record incidental furbearer observations during surveys conducted for other species. We summarized harvest data from sealing certificate records.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size, Composition, and Distribution

No quantitative population information is available for lynx, red foxes, arctic foxes, or coyotes in Unit 26A. Lynx were at low density only in the southern portion of the unit. Red foxes were fairly abundant in interior regions of Unit 26A. Arctic foxes were abundant along the coastal plain in Unit 26A. Coyotes were occasionally seen along the southern border of Unit 26A.

Hunters have reported that wolverines seem more numerous in Unit 26A in recent years, but there have been no recent population surveys. Magoun (1984) estimated a fall population size of 821 wolverines for Unit 26A, assuming an overall density of 1 wolverine/54 mi^2 for the entire unit.

While conducting moose counts in Unit 26A, 11 wolverines were seen during 35 hours of flight (0.31 per hour) in 1984, 12 wolverines during 39 hours of flying (0.31 per hour) in 1991, 5 during 32 hours (0.16 per hour) in 1994, and 6 during 34 hours (0.18 per hour) in 1995. In 1998 we saw 3 wolverines during 9 hours of flight (0.33 per hour), in 1999 we saw 5 during 24 hours of flight (0.21 per hour), and in 2000 we saw 3 during 12 hours of flight (0.25 per hour).

MORTALITY

Harvest

Hunting Seasons and Bag Limits.

Unit 26A

Species	Season	Bag Limit
Coyote	1 Sep–30 Apr	2 coyotes
Fox, Arctic	1 Sep–30 Apr	2 foxes
Fox, Red	1 Sep–15 Mar	10 foxes
Lynx	1 Nov–15 Apr	2 lynx
Wolverine	1 Sep–31 Mar	1 wolverine

Trapping Seasons and Bag Limits.

Species	Season	Bag Limit
Coyote	1 Nov–15 Apr	No limit
Fox, Arctic	1 Nov–15 Apr	No limit

Fox, Red	1 Nov–15 Apr	No limit
Lynx	1 Nov–15 Apr	No limit
Wolverine	1 Nov–15 Apr	No limit

Board of Game Actions and Emergency Orders. There were no Board of Game actions or emergency orders during the reporting period.

Human-Induced Harvest, Transport Methods, Harvest Chronology .

Lynx — No lynx were sealed in Unit 26A during the reporting period. Because lynx occur at low density only in the southern portion of the unit and most residents live along the coast in the northern portion of the unit, only residents from Anaktuvuk Pass occasionally have opportunity to harvest lynx.

Arctic and red foxes — Local hunters and trappers harvested Arctic and red foxes. Because there is no sealing requirement for these species, harvest information was not obtained. Low fur prices resulted in relatively few foxes being trapped.

Coyote — No coyote harvests were reported during this period. There is no sealing requirement for coyotes, so harvest information was not obtained. Because coyotes only occur in the southern portion of the unit, only residents from Anaktuvuk Pass have opportunity to harvest them.

Wolverine —Twenty wolverines were sealed during 1997–1998. Six were females and 14 were males. Nineteen were ground shot and 1 was trapped (Table 1). Snowmachines were used for transportation for 19 and a boat was used to take 1. One was taken during September, 1 in October, 2 during November, 5 during December, 3 during January, 1 during February, 6 during March, and 1 during April (Table 2). All 9 trappers were residents of the unit.

Twenty-six wolverines were sealed during 1998–1999. Seven were females and 19 were males. Twenty-five were ground shot and 1 was trapped (Table 1). Trappers used snowmachines as transportation for all 26. One was taken during November, 4 during December, 1 during January, 7 during February, 3 during March, and 10 during April (Table 2). All 24 trappers were residents of the unit.

Nineteen wolverines were sealed during 1999–2000. Seven were females, 10 were males, and 2 were unknown. Nine were ground shot, 5 were trapped, 3 were snared, and 2 were taken by unknown methods (Table 1). Trappers used snowmachines for transportation for 17 wolverines, and 2 were unknown. One was taken in November, 1 in December, 2 in February, 1 in March, 12 in April, and 2 were unknown (Table 2). Seven hunters were residents of the unit and 1 was a nonlocal resident.

The department fur sealing system under-reports harvest for the following reasons: 1) there are no fur sealing agents in most of the villages because there is little financial incentive for anyone to act as a fur sealer; 2) many residents are not aware of sealing requirements; 3) many people are reluctant to comply with state regulations; and, 4) most hides are used locally. Most rural

residents have their hides sealed only if they are selling them to fur buyers or sending them out for commercial tanning.

According to results obtained from a North Slope census, at least 42 wolverines were harvested in Unit 26A during calendar year 1992 (Fuller and George, 1997). This compares to 2 wolverines sealed during 1991–1992 and 11 sealed during 1992–1993. According to the North Slope Borough Harvest Documentation study, 8, 10, 7, and 3 wolverines were harvested in Nuiqsut, Atqasuk, Barrow, and Anaktuvuk Pass during 1994–1995 (Brower and Opie, 1996 and 1997; Hepa and Brower, 1997). Eight of these animals were sealed.

The reported harvest of 20, 26, and 19 wolverines during the last 3 years was generally greater than the reported harvest since 1991 (Table 1). This is probably an indication of increasing wolverine numbers, but could also be a result of increased hunting effort and possibly a higher percentage of people reporting their harvest. Magoun (1984) estimated that Unit 26A could sustain an annual harvest of 300 wolverines if less than 90 females were harvested, and if the reproductive rate observed at the Driftwood study area was applicable to the entire unit. Even though the harvest is under-reported, overharvesting is probably not occurring in Unit 26A.

Permit Hunts. No special permits were required to trap or hunt furbearers in Unit 26A during the reporting period.

Hunter Residency and Success. There were no activities to determine hunter/trapper residency and success for furbearers in Unit 26A during the reporting period.

Other Mortality

We have no estimates or observations of other mortality affecting furbearers in Unit 26A.

HABITAT

Assessment

We did no habitat assessment projects in Unit 26A during the reporting period.

Enhancement

We did no habitat enhancement projects in Unit 26A during the reporting period.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

There were no nonregulatory problems or needs identified for furbearers in Unit 26A during the reporting period.

CONCLUSIONS AND RECOMMENDATIONS

It would be useful to obtain more accurate population information for furbearers, particularly wolverines. A track intercept technique has been used to estimate wolverine density in other areas of Alaska (Becker 1991), and may be useful for evaluating population trends in portions of Unit 26A. However, it would be expensive and is not a high priority at this time.

It would also be useful to obtain more accurate harvest information. The department fur sealing system under-reports harvest because there are no sealing agents in most of the villages and because most rural residents have their hides sealed only if they are sending them out for commercial tanning. In order to obtain more accurate harvest information we worked with the North Slope Borough to develop and implement a village harvest monitor program. Village residents have been hired to interview hunters and document harvest for several species of animals.

To minimize adverse interactions between furbearers and the public, we work with the North Slope Borough Public Health Department to educate people on dealing with rabid animals and having their pets immunized. We also destroy foxes that appear to be rabid and collect specimens so they can be tested for rabies.

The reported number of wolverines harvested during the last 3 years has averaged 22 animals per year, which is an increase over the average of 13 per year for the previous 7 years. However, Magoun (1984) estimated that Unit 26A could sustain an annual harvest of 300 wolverines, if less than 90 females were harvested. Even though there is considerable under-reporting, and reported harvest has recently increased, the harvest appears to be well under Magoun's estimated sustainable annual harvest. We recommend no changes in seasons and bag limits at this time.

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Table 1 Total reported harvest, sex composition, and method of take for wolverines sealed in Unit 26A, 1991–2000

Year	Total Reported Harvest	Males (%)	Method of take			
			Shot	Trapped	Snared	Unknown
1991–1992	2	50	2	0	0	0
1992–1993	11	80	8	2	0	1
1993–1994	14	57	12	1	0	1
1994–1995	16	63	12	2	1	1
1995–1996	21	67	20	1	0	0
1996–1997	11	64	5	6	0	0
1997–1998	20	70	19	1	0	0
1998–1999	26	73	25	1	0	0
1999–2000	19	53	9	5	3	2

Table 2 Chronology for reported wolverine harvest in Unit 26A, 1991–2000

Year	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Unkn	Total
1991–1992	1						1			2
1992–1993	3		1				6		1	11
1993–1994			4				5	4	1	14
1994–1995	4		3	2	1	3	2		1	16
1995–1996	4		3	2	1	4	6		1	21
1996–1997			4	2	1	2	1	1		11
1997–1998	1	1	2	5	3	1	6	1		20
1998–1999			1	4	1	7	3	10		26
1999–2000			1	1		2	1	12	2	19