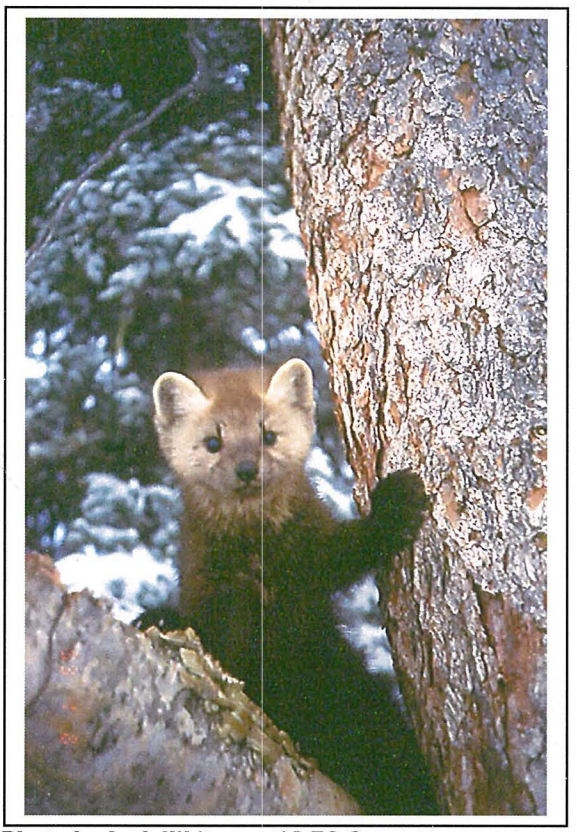
Furbearer
Management Report
of Survey-Inventory Activities
1 July 2000–30 June 2003

Cathy Brown, Editor
Alaska Department of Fish and Game
Division of Wildlife Conservation
December 2004



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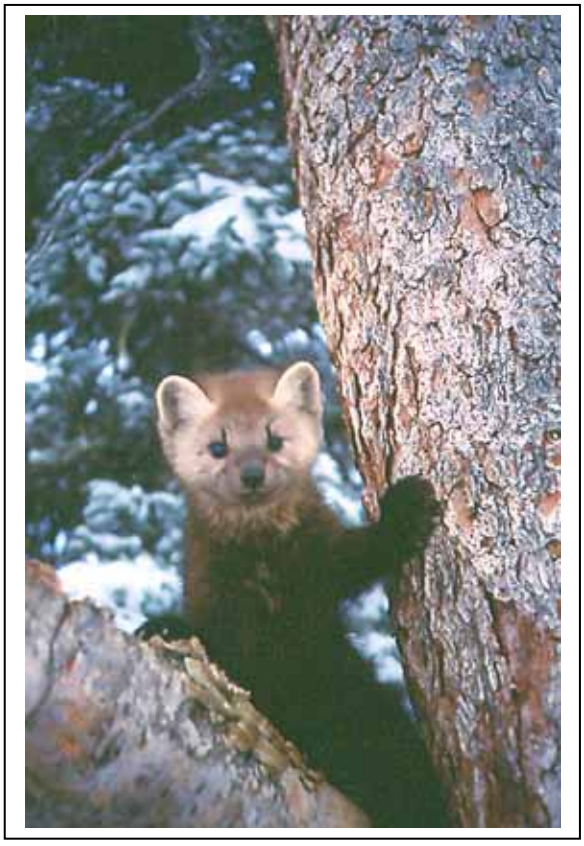

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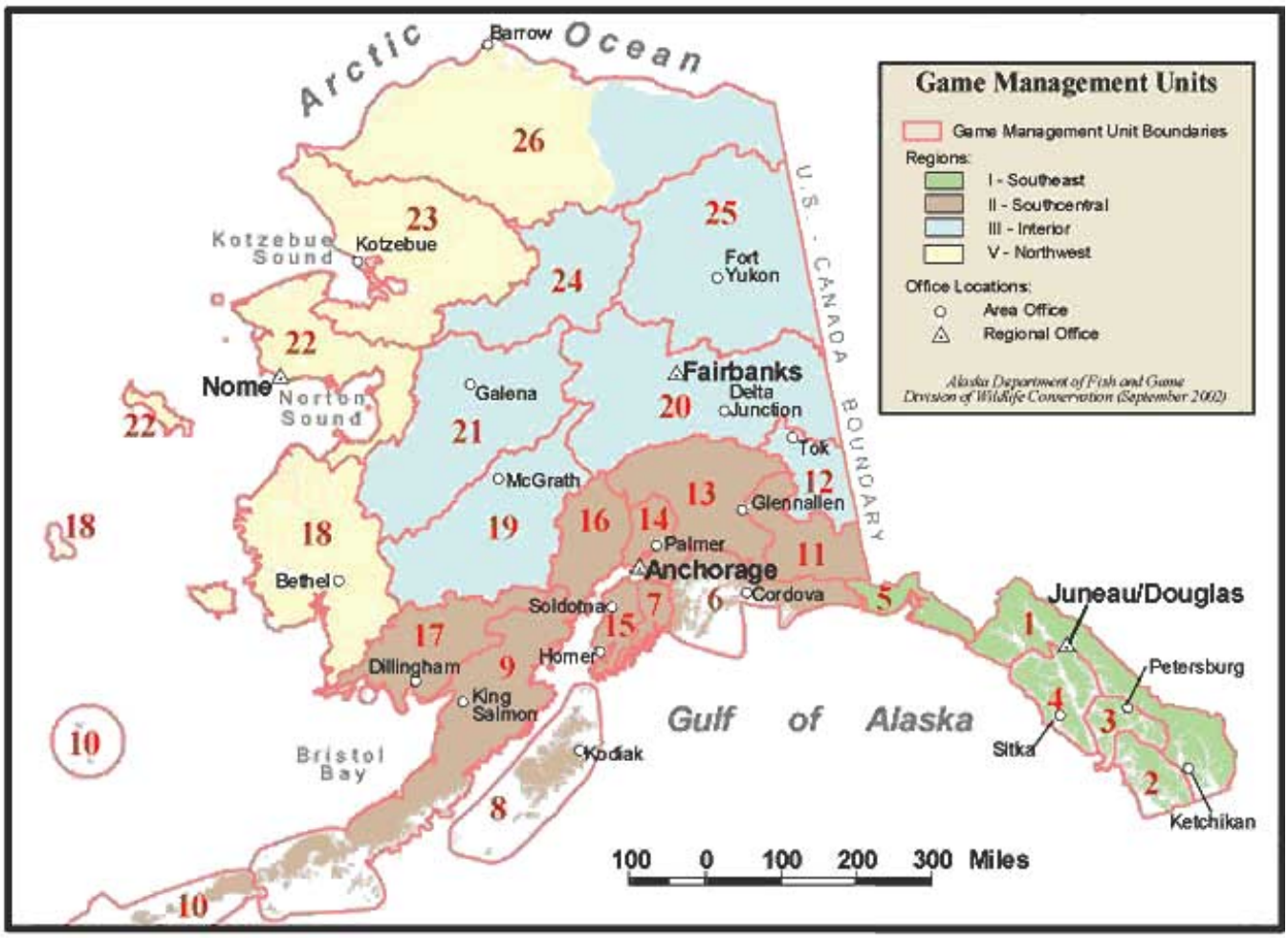
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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNIT: 1A (5000 mi^2)

GEOGRAPHIC DESCRIPTION: Unit 1 south of Lemesurier Point, including all areas draining into Behm and Portland Canals, and excluding areas draining into Ernest Sound

BACKGROUND

Furbearer populations have remained at moderate to high population levels in Unit 1A during the past decade. Trapping pressure and harvests fluctuate annually, primarily as a function of weather conditions and changes in market fur prices.

More Southeast Alaska trappers are interested in martens than any other furbearer species. Martens (*Martes americana*) are easy to trap, their pelts are easy to care for, and combined income from the pelts is generally greater than for any other furbearer species in southern Southeast Alaska. Marten prices have remained stable at moderate levels throughout the past decade. Discussions with trappers suggest that martens prefer old-growth stands and avoid clearcuts. This observation is also consistent with marten research in southern Southeast Alaska, which shows the importance of old-growth stands for foraging, travel and shelter (Flynn and Schumacher 1997). Schumacher (1999) also found martens preferred the larger diameter timber structures for dens and resting sites. Large old trees and old logs are important as den sites for martens (Hauptman 1979, Simon 1980, Hargis and McCullough 1984, Wynne and Sherburne 1984). Extensive logging in much of Unit 1A continues to remove uneven-aged old-growth habitat required by martens. As a result, we believe the area's capacity to support marten populations will decline over time.

Southeast Alaska provides excellent habitat for river otters (*Lutra canadensis*), and fur buyers consider pelts from this area to be high quality. Some local trappers report selling Southeast otter pelts to taxidermists because of the demand for the exceptional large body sizes and the high-quality fur. Otter pelt prices were high during the late 1970s, declined during the 1980s and early 1990s, and have increased during the past few seasons. Because otters are difficult to trap and pelt preparation is time consuming, prices must be high to substantially influence harvest levels. Most recently the prices and demand for otter pelts have increased slightly, and trappers report recent market sales of $100–$130 for prime Southeast otters.

Beaver (*Castor canadensis*) prices have remained stable and low for several years. Beaver harvests can fluctuate dramatically from year to year because of the efforts of a few trappers.

For the past decade mink (*Mustela vison*) pelt prices have remained low and stable and resulted in moderate to low interest among trappers. However, some trappers continue to make mink sets while trapping for other furbearers, regardless of their current low value.

Wolverines (*Gulo gulo*) inhabit only the mainland portion of Unit 1A, where very few are taken annually. Trappers do not generally target wolverines, and harvests tend to be incidental to wolf or marten trapping. There are no foxes or coyotes in Unit 1A and lynx are only occasionally taken from the 1A mainland. Mountain lions are occasionally observed along the mainland and on the Cleveland Peninsula, but there is currently no open trapping season.

We believe that weasel (*M. erminea*) populations fluctuate from year to year, independent of trapping. Harvest tends to be limited to incidental take while targeting other furbearers, primarily marten. Very few muskrats inhabit Unit 1A, and harvests are typically low and incidental to beaver trapping.

Traplines in Southeast Alaska tend to be some of the shortest in the state and are about half as long as the statewide average. The statewide average is 34 miles, while Southeast traplines tend to average 15 miles long (range 1–100 miles).

Furbearers in Unit 1A by order of their significance to trappers include marten, land otter, beaver, mink, wolverine, lynx (*Lynx canadensis*), weasel, red squirrel (*Tamiasciurus hudsonicus*), and flying squirrel (*Glaucomys sabrinus*). Fox and coyote are absent in Unit 1A.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

1. Provide information to the Board of Game to further the maintenance of viewable and harvestable populations of furbearers.

2. Seal harvested beaver, marten, otter, lynx, and wolverine pelts.

3. Contact reliable observers for general information about the status and trends of furbearer populations, including the use of an annual trapper survey.

METHODS

Furbearer harvest data comes from mandatory sealing of marten, beaver, lynx, otter, and wolverine pelts. Mink populations are assessed through staff and trapper observations and information obtained through our annual trapper surveys.

Beaver pelts have been sealed for over 23 years. Wolverines were first sealed in 1971 and river otters have been sealed since 1978. Marten sealing was initiated in 1984.

We do not perform furbearer population surveys in Southeast Alaska to estimate population sizes or follow trends. Some ecological information is available for mink and river otters from short-term research studies completed in Southeast (Harbo 1958, Home 1977, Larsen 1983, Woolington 1984, Johnson 1985). A study of marten ecology was completed on northeast Chichagof Island (Flynn and Schumacher 1997).

RESULTS AND DISCUSSION

POPULATION STATUS AND TRENDS

Marten populations fluctuate annually throughout Southeast Alaska. These dramatic shifts are directly correlated to cyclic or irregular prey fluctuations (Novak et al. 1987). Unit 1A trappers believe martens have remained at moderate to high levels during this report period (Table 1). We anticipate continued reductions in old-growth habitat will eventually result in reduced marten numbers.

Otter populations were believed to be low in the late 1970s when prices were high, (Wood 1990) and after that time prices and trapper interest dropped substantially; only recently has effort recovered. We believe that populations have steadily increased in the past decade and are currently at moderate-to-high levels. This is supported by information obtained from trappers (Table 1). Prices are now higher than during the past 15 years, and consequently, more trappers are targeting otter. Top prices advertised by Fur Buyers in Alaska for otter during the past several years are almost double the last 10-year average (Scott and Kephart 2002). Most otter trapping is done along shorelines using boats.

Beaver populations have generally remained at moderate levels in Unit 1A (Table 1). Habitat changes can cause large fluctuations in beaver populations (Wood 1990). Although early successional second-growth habitat can support higher populations of beavers than old growth, when the second-growth canopy closes (approximately 20–30 years after cutting), beaver numbers drop to low levels. Current pelt prices do not seem high enough to foster much trapping pressure except in easily accessible areas.

Mink populations appear to have remained at extremely abundant levels during this report period (Table 1). Given the current limited interest in mink pelts, we do not expect this to change unless pelt prices increase substantially and promote additional trapping effort.

MORTALITY

Harvest

Seasons and Bag Limits

Unit 1A		
Hunting		
Wolverine	10 Nov–15 Feb	One wolverine
Trapping		
Beaver	1 Dec–15 May	No limit

Lynx, mink, marten, otter, weasel, muskrat	1 Dec–15 Feb	No limit
Wolverine	10 Nov–30 Apr	No limit

Board of Game Actions and Emergency Orders. During the November 2002 BOG meeting regulatory changes were made to require trappers to mark snares with either attached metal locking tags or signage near traplines.

Trapper Harvest. The past 3-year average harvest of 170 martens was similar to the 10-year mean ($\bar{x}$ =167) (Table 2). An average of 11 trappers caught totals of 199, 205 and 107 martens annually (2000–02). The Unit 1A marten harvest reached its peak during the 1991 season, when 22 trappers caught 654 marten. It dropped considerably in 1993, when 7 trappers caught only 42 martens. During each of the past 3 years (2000–2002) an average of 10 trappers sealed 62, 185, and 68 otters, respectively. Fewer trappers each caught more otters during this report period and overall effort was down from the long-term average of 15 trappers. The 3-year average ($\bar{x}$ =105) was similar to the 10-year average ($\bar{x}$ =104).

An average of 6 trappers caught 29, 12, and 21 beaver during the 2000–02 seasons compared to the 10-year average of 26 beaver.

The Unit 1A wolverine harvest has remained low during the past 10 years (range 0–7, $\bar{x}$ =2). During this report period (2000–02) trappers sealed 5, 0, and 6 wolverine, respectively. Wolverines are typically caught incidental to other trapping efforts and are not abundant enough to be a main target species in Unit 1A. Several trappers have reported making wolverine sets only after losing martens to wolverines along established traplines. The wolverines caught during each of 2000 and 2002 were taken by 3 trappers each season. Most of the wolverines trapped in Unit 1A historically are caught along the Cleveland Peninsula; however, during 2002 one female was harvested from the lower mainland. The majority of wolverines caught each year tend to be male, although during this report period the harvest was almost 50/50. Males tend to be more vulnerable because they travel greater distance, and they remain as transients (prior to establishing home ranges) for longer periods than females (Novak *et al.* 1987).

Harvest Chronology. For all species of furbearers trapped in Unit 1A the chronology of the harvest is related more to hide quality than availability of the animals during the trapping season. Long periods of inclement winter weather also deter trappers from using boats to access trapping areas.

During this 3-year report period the majority of martens were taken during December (51%), followed by January (35%) and February (14%) (Table 3). The otter harvest followed a slightly different pattern than most years, with the majority of harvest during January (43%) and fewer in December (40%) and February (17%). The beaver harvest has been well distributed during this report period: December (38%), January (15%), February (8%), March (31%) and April (8%).

Transport Methods. Due in large part to the limited road system in Unit 1A, trappers typically report using boats as the major mode of transportation. The exception is beaver trapping, where the use of boats and highway vehicles was more evenly split at 43% and 47%, respectively. The

majority of these trappers report reaching the isolated road systems with boats, then deploying ATVs. Marten trappers reported using boats more than 90% and highway vehicles only 5% of the time during 2000–02. Similarly, otter trappers used boats 99% and highway vehicles only 1% of the time. Trappers that sealed wolverine hides in Unit 1A have used boats exclusively during the past 15 years.

Other Mortality

We issued 2 beaver depredation permits to communities and corporations during this report period. Beavers were removed from specified areas in Unit 1A because of flooding and erosion problems.

CONCLUSIONS AND RECOMMENDATIONS

Because furbearer populations in Unit 1A appear to be healthy and thriving, we do not anticipate any regulation changes at this time. Fur prices for otter and marten continue to be attractive and cost effective for trappers, even with gas and operational costs high.

Logging activities permanently remove uneven-aged, old-growth habitat, replacing it with even-aged, closed-canopy habitat that does not meet the requirements of several Southeast Alaska furbearer species. It is, therefore, important to publicize impacts from land use decisions, so that trade-offs for wildlife can be recognized and understood.

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Table 1 Unit 1A indices of abundance (I_A)[a] for furbearer species[b], 1991–2002

	SPECIES			
REGULATORY YEAR	***BEAVER***	***MARTEN***	***MINK***	***OTTER***
1991–1992	43	73	67	65
1992–1993	25	17	45	54
1993–1994	37	25	42	50
1994–1995	25	25	64	64
1995–1996	75	50	90	80
1996–1997	50	60	70	60
1997–1998	60	68	72	82
1998–1999	45	70	74	65
1999–2000	72	36	68	84
2000–2001	58	65	72	82
2001–2002	61	58	70	75
2002–2003	56	62	66	81
$\bar{x}$	51	51	67	70

[a] Species are considered abundant when $I_A \geq 50$; moderate when $20 < I_A < 50$; and scarce when $I_A \leq 20$. From Brand and Keith (1979).

[b] Values derived from responses to trapper questionnaires.

Table 2 Unit 1A furbearer reported harvests, 1984–2002

Species/regulatory year	Total take	Percent male	Method of take (percent)			Transportation used (percent)				
			Shot	Trapped or snared	Unk	Boat	Road	Air	Unknown	Other[a]
Beaver										
1984–1985	39	--	0	100	0	--	--	--	100	--
1985–1986	20	--	0	100	0	95	5	0	0	0
1986–1987	52	--	0	100	0	45	55	0	0	0
1987–1988	44	--	0	100	0	27	48	0	25	0
1988–1989	24	--	0	100	0	33	67	0	0	0
1989–1990	10	--	0	100	0	60	40	0	0	0
1990–1991	7	--	0	100	0	29	29	0	0	42
1991–1992	46	--	0	100	0	39	39	0	2	20
1992–1993	14	--	0	100	0	43	57	0	0	0
1993–1994	28	--	0	100	0	46	54	0	0	0
1994–1995	19	--	0	100	0	11	42	0	47	0
1995–1996	46	--	--	100	0	7	93	0	0	0
1996–1997	24	--	--	100	0	33	46	0	0	21
1997–1998	36	--	--	100	0	69	31	0	0	0
1998–1999	14[c]	--	--	57	43	21	36	0	43	0
1999–2000	36	--	--	97	3	42	47	0	3	8
2000–2001	29	--	--	100	0	76	24	0	0	0
2001–2002	12	--	--	100	0	0	100	0	0	0
2002–2003	21	--	--	100	0	71	29	0	0	0
$\bar{x}$	27	--	--	98	2	42	47	0	0	0
Marten										
1984–1985	203	69	0	100	0	--	--	--	100	--
1985–1986	156	63	0	100	0	--	--	--	100	--
1986–1987	127	66	0	100	0	94	6	0	0	0
1987–1988	313	69	0	100	0	84	16	0	0	0
1988–1989	490	59	0	100	0	84	16	0	0	0
1989–1990	246	70	0	100	0	89	11	0	0	0
1990–1991	261	65	0	100	0	71	15	1	0	13
1991–1992	654	62	0	100	0	91	9	0	0	0
1992–1993	122	71	0	100	0	97	3	0	0	0
1993–1994	42	74	0	100	0	95	5	0	0	0

Table 2 continued

Species/regulatory year	Total take	Percent male	Method of take (percent)			Transportation used (percent)				
			Shot	Trapped or snared	Unk	Boat	Road	Air	Unknown	Other[a]
Marten										
1995–1996	134	64	0	100	0	98	2	0	0	0
1996–1997	220	64	0	100	0	78	13	0	0	9
1997–1998	198	64	0	100	0	84	3	0	0	13
1998–1999	196	65	0	100	0	90	8	0	0	2
1999–2000	222	61	0	100	0	95	5	0	0	0
2000–2001	199	63	0	100	0	99	1	0	0	0
2001–2002	205	88	0	100	0	90	10	0	0	0
2002–2003	107	78	0	100	0	86	14	0	0	0
$\bar{x}$	180	68	0	100	0	89	8	0	0	3
Otter										
1984–1985	65	63	1	99	0	--	--	--	100	0
1985–1986	70	71	7	93	0	63	0	0	37	0
1986–1987	63	62	11	89	0	91	5	4	0	0
1987–1988	88	61	9	91	0	81	5	4	10	0
1988–1989	45	78	40	60	0	71	11	0	18	0
1989–1990	81	72	18	82	0	90	10	0	0	0
1990–1991	80	59	10	90	0	98	2	0	0	0
1991–1992	84	55	19	81	0	89	11	0	0	0
1992–1993	61	57	13	87	0	80	18	0	2	0
1993–1994	112	62	11	89	0	97	3	0	0	0
1994–1995	129	51	18	82	0	96	3	0	0	1
1995–1996	65	66	23	75	2	77	11	0	0	12
1996–1997	104	55	20	80	0	90	9	1	0	0
1997–1998	119	59	14	86	0	94	6	0	0	0
1998–1999	68	60	9	91	0	96	3	0	1	0
1999–2000	131	56	27	73	0	89	10	0	0	1
2000–2001	62	63	0	100	0	99	1	0	0	0
2001–2002	185	56	4	96	0	99	1	0	0	0
2002–2003	68	68	13	87	0	100	0	0	0	0
$\bar{x}$	88	62	14	86	0	89	6	1	9	1

Table 2 continued

Species/regulatory year	Total take	Percent male	Method of take (percent)			Transportation used (percent)				
			Shot	Trapped or snared	Unk	Boat	Road	Air	Unknown	Other[a]
Wolverine										
1984–1985	1	100	100	0	0	100	0	0	0	0
1985–1986	0	--	--	--	--	--	--	--	--	--
1986–1987	2	100	0	100	0	100	0	0	0	0
1987–1988	1	0	0	100	0	100	0	0	0	0
1988–1989	0	--	--	--	--	--	--	--	--	
1989–1990	1	100	0	100	0	100	0	0	0	0
1990–1991	7	71	14	86	0	29	0	0	0	71[b]
1991–1992	1	0	0	100	0	100	0	0	0	0
1992–1993	2	0	0	100	0	100	0	0	0	0
1993–1994	1	100	0	100	0	100	0	0	0	0
1994–1995	5	100	0	100	0	100	0	0	0	0
1995–1996	0	--	--	--	--	--	--	--	--	--
1996–1997	3	100	0	100	0	100	0	0	0	0
1997–1998	3	67	0	100	0	33	0	0	0	67
1998–1999	0	--	--	--	--	--	--	--	--	--
1999–2000	1	100	0	100	0	100	0	0	0	0
2000–2001	5	100	0	100	0	100	0	0	0	0
2001–2002	0	--	--	--	--	--	--	--	--	--
2002–2003	6	50	0	100	0	100	0	0	0	0
$\bar{x}$	2	62	8	92	0	90	0	0	0	10

[a] Includes trappers who hike or use snowmachines.

[b] Trappers using snowmachines took 5 of 7 wolverines.

[c] One beaver killed by vehicle.

Table 3 Unit 1A furbearer harvest chronology by month, 1984–2002

Species/regulatory year	Harvest periods							Successful trappers/hunters
	Dec	Jan	Feb	Mar	Apr	May	Unk	
Beaver								
1984–1985	1	11	8	5	11	3	0	--
1985–1986	0	1	11	6	2	0	0	--
1986–1987	15	8	12	9	4	4	0	11
1987–1988	16	0	0	11	1	3	13	11
1988–1989	12	4	0	8	0	0	0	5
1989–1990	3	2	1	0	4	0	0	5
1990–1991	0	0	4	3	0	0	0	5
1991–1992	17	11	5	4	8	0	1[a]	9
1992–1993	7	2	2	1	2	0	0	9
1993–1994	10	5	3	6	4	0	0	7
1994–1995	2	0	12	1	4	0	0	3
1995–1996	0	0	7	3	16	12	8	8
1996–1997	0	5	4	7	2	6	0	6
1997–1998	7	7	10	4	2	0	6	10
1998–1999	4	5	2	1	0	0	2	4
1999–2000	10	7	6	8	4	0	1	9
2000–2001	1	8	3	11	0	0	0	10
2001–2002	12	0	0	0	0	0	0	2
2002–2003	2	2	2	8	4	0	0	6
$\bar{x}$	6	4	5	5	4	1	2	7
Marten								
1984–1985	118	68	17	0	0	0	0	--
1985–1986	107	5	2	0	0	0	42	--
1986–1987	49	65	13	0	0	0	0	14
1987–1988	61	74	7	0	0	0	171	15
1988–1989	95	43	2	0	0	0	350	21
1989–1990	73	80	75	0	0	0	18	16
1990–1991	115	43	10	1	0	0	92	17
1991–1992	215	111	149	0	0	0	179	22
1992–1993	24	93	5	0	0	0	0	12
1993–1994	15	14	1	0	0	0	12	7
1994–1995	81	39	23	0	0	0	0	10
1995–1996	15	34	7	0	0	0	78	10
1996–1997	107	69	44	0	0	0	0	11
1997–1998	97	63	34	4	0	0	0	15
1998–1999	90	65	41	0	0	0	0	13
1999–2000	171	42	9	0	0	0	0	15
2000–2001	121	59	10	0	0	0	0	11
2001–2002	101	57	54	0	0	0	0	12
2002–2003	43	50	14	0	0	0	0	9
$\bar{x}$	89	57	27	0	0	0	0	14
Otter								
1984–1985	24	37	2	0	0	0	2	--
1985–1986	27	30	13	0	0	0	0	--
1986–1987	29	26	8	0	0	0	0	13
1987–1988	42	40	6	0	0	0	0	14
1988–1989	8	20	17	0	0	0	0	12
1989–1990	19	40	22	0	0	0	0	12

Species/regulatory year	Harvest periods							Successful trappers/hunters
	Dec	Jan	Feb	Mar	Apr	May	Unk	
1990–1991	36	34	10	0	0	0	0	14
1991–1992	31	39	14	0	0	0	0	14
1992–1993	27	27	6	0	1	0	0	12
1993–1994	64	38	10	0	0	0	0	15
1994–1995	78	37	13	0	0	0	1	19
1995–1996	33	21	11	0	0	0	0	14
1996–1997	35	28	41	0	0	0	0	13
1997–1998	61	40	18	0	0	0	0	16
1998–1999	27	22	19	0	0	0	0	11
1999–2000	61	50	20	0	0	0	0	18
2000–2001	21	38	3	0	0	0	0	12
2001–2002	41	26	32	3	0	0	0	8
2002–2003	31	28	9	0	0	0	0	9
$\bar{x}$	37	33	14	0	0	0	0	13
Wolverine								
1984–1985	1	0	0	0	0	0	0	--
1985–1986	--	--	--	--	--	--	--	--
1986–1987	0	2	0	0	0	0	0	1
1987–1988	1	0	0	0	0	0	0	1
1988–1989	--	--	--	--	--	--	--	0
1989–1990	0	0	0	0	1	0	0	1
1990–1991	1	5	0	1	0	0	0	3
1991–1992	0	1	0	0	0	0	0	1
1992–1993	0	1	0	0	1	0	0	2
1993–1994	0	1	0	0	0	0	0	1
1994–1995	0	0	2	1	2	0	0	4
1995–1996	--	--	--	--	--	--	--	0
1996–1997	0	0	0	2	1	0	0	2
1997–1998	2	0	0	1	0	0	0	3
1998–1999	0	0	0	0	0	0	0	0
1999–2000	0	0	1	0	0	0	0	1
2000–2001	2	1	2	0	0	0	0	3
2001–2002	0	0	0	0	0	0	0	0
2002–2003	0	2	2	0	4	0	0	3
$\bar{x}$	1	1	1	1	1	0	0	1

[a] One beaver was taken by ADF&G during the month of August.

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNIT: 1B (3000 mi^2)

GEOGRAPHIC DESCRIPTION: Southeast Alaska mainland from Cape Fanshaw to Lemesurier Point

BACKGROUND

Except for a few isolated homesteads and cabins, no large communities exist on the Unit 1B mainland, so most trapping pressure comes from residents of Petersburg, Wrangell, and Meyers Chuck. Because trappers from these communities must cross open water to access mainland traplines, access is largely restricted to boats. As a result, trapping pressure and harvest fluctuate annually and are influenced by weather and changes in fur prices. In the Stikine River drainage snowfall and the timing and duration of freeze-up can greatly influence access, trapping pressure, and harvest.

The combined income from marten (*Martes americana*) pelts is generally greater than from any other furbearer species in Southeast Alaska. Accordingly, martens are the most important furbearer species in Unit 1B. Marten populations tend to fluctuate widely in response to both prey abundance and trapping pressure. Pelt prices for martens have remained consistent at moderate levels through the past decade, and the marten harvest has remained relatively high during this report period.

While wolverines (*Gulo gulo*) are occasionally harvested on Mitkof Island in Unit 3, the vast majority of wolverines harvested in the central Southeast panhandle are taken on the Unit 1B mainland. The wolverine harvest has remained stable at moderate levels during the past decade, except for 1999 when the harvest of 18 animals was twice the 9-year average.

With the exception of 1996 and 1997, the beaver (*Castor canadensis*) harvest has remained very low for the past decade. Access is limited in Unit 1B and traditionally just 1 to 3 trappers per year target beavers.

Land otters (*Lutra canadensis*) are common along the protected coastal areas and inland waters of Unit 1B. Otter populations fluctuate in response to trapping effort, harvest, and fur prices. The otter harvest steadily increased during this report period, probably in response to increased prices for Southeast Alaska otter pelts.

Although lynx (*Lynx canadensis*) have been documented in Unit 1B, they are considered scarce. No lynx harvest was reported during this report period.

Past declines in some wild furbearer populations prompted regulations. In 1913 beaver trapping was prohibited for 5 years with a renewal extending the closure another 5 years. Martens were protected for 5 years starting in 1915.

Most furbearer trapping is used as a winter income supplement and as a form of recreation. Seasons and bag limits have remained unchanged in recent years.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

1. Provide information to the Board of Game to further maintenance of viewable and harvestable populations of furbearers.

2. Seal beaver, marten, otter, lynx, and wolverine pelts as they are presented for sealing.

3. Contact reliable observers for general information about the status and trends of furbearer populations, including the use of an annual trapper survey.

METHODS

Harvest information for beavers, lynx, martens, otters, and wolverines is collected from mandatory sealing. Location, harvest date, trapping and transportation method, and sex of all species except beavers are recorded on sealing certificates. We measure pelt size on beavers and otters, which provides an indication of harvested animals' ages. Additional harvest information on furbearer species is reported on fur export reports and fur acquisition reports.

Methods for estimating furbearer population abundance, trends, and distribution include the Alaska trapper questionnaires that local trappers received during the report period; interviews with trappers and fur buyers; and field observations by ADF&G and U.S. Forest Service personnel.

The video "Alaska Guide to Fur Handling" was distributed to local trappers in an effort to maximize the dollar value of their furs through proper skinning and pelt preparation techniques.

We monitored logging operations, road construction, and other developments to assess potential habitat loss.

RESULTS AND DISCUSSION

POPULATION STATUS AND TRENDS

No formal field surveys were conducted in this unit to determine furbearer population status or trends. Information obtained from the trapper questionnaire and biologists' field observations provides our best indication of status and trends (Table 1). Trappers reported that beavers were

common and stable in 2000–01, abundant and stable in 2001–02, and abundant and increasing in 2002–03, throughout available habitat in Unit 1B.

Lynx occur infrequently; perhaps as Gray (1915) and others believed, they are more likely to move into the area when snowshoe hares become scarce in the interior of British Columbia. While lynx may occur in some larger drainages of Unit 1B, no harvest has been reported in recent years.

Trappers reported martens were abundant and stable in 2000–01, common and stable in 2001–02, and abundant and stable in 2002–03.

Mink populations were reported to be abundant and increasing during this report period.

Land otter populations were reported to be abundant and stable in 2000–01 and 2001–02, and abundant and increasing in 2002–03.

Wolverines remained at a low but stable density with trappers reporting in 2002–03 that the population appeared to be increasing.

Trappers reported on the questionnaire that rodent populations were abundant and stable with numbers increasing in 2002–03.

MORTALITY

Seasons and Bag Limits

Hunting

Wolverine	10 Nov–30 Apr	One Wolverine

Trapping

Beaver	1 Dec–15 May	No Limit
Lynx, marten, mink, otter	1 Dec–15 Feb	No Limit
Wolverine	10 Nov–30 Apr	No Limit

Board of Game Actions and Emergency Orders. In fall 2002 the board adopted a regulation requiring that snares with a cable diameter of 3/32 inch or larger that are set out of the water must be individually marked with a permanent metal tag showing the trapper's name and address, or the trapper's permanent identification number. As an alternative, trappers may post a sign within 50 yards of the snare listing the trapper's name and address, or the trapper's permanent identification number. No emergency orders were issued during this report period.

Trapper Harvest. With the exception of 1996 and 1997 when 40 and 16 beaver, respectively, were taken by 2 trappers, there has been very little beaver trapping effort in Unit 1B (Table 2). During this report period, 1 trapper reported taking 1 beaver in 2000–01, 2 trappers took 4 beavers in 2001–02, and 1 trapper took 1 beaver in 2002–03.

After three consecutive years of above average harvest in 1997, 1998, and 1999, the marten harvest declined during this report period. A total of 239, 115, and 195 martens were taken in 2000, 2001, and 2002, respectively, below the 9-year average of 223 annually (Table 3). Record snowfall during the winter of 2001–02 made access and keeping traps operational difficult and probably contributed to the relatively low harvest in 2001.

Unit 1B had an otter harvest of 10 during the 2000 season, 17 in 2001, and 21 in 2002. That is consistent with the 9-year average of 16 annually (Table 4). The number of wolverines harvested was 4, 2, and 2 in 2000, 2001, and 2002, respectively, down significantly from the 9-year mean of 8 annually (Table 5). Heavy snowfall during the winter of 2001–02 hampered trapper access and made it difficult to keep traps functioning. A resulting increase in deer mortality may have increased food availability for martens and wolverines, improving survival, and enhancing reproduction the following spring.

Harvest level is directly related to fur prices and winter weather conditions during the trapping season. Mink and beaver pelt values have been low in recent years. According to fur buyer Dean Wilson, Southeast Alaska martens vary widely in quality and color and bring lower prices than Interior Alaska martens. The market favors southeastern Alaska otters, however, because of their larger size, good color, and silky fur. The Oriental market has been particularly interested in land otters in recent years, and prices have increased.

Harvest Chronology. During this report period, most furbearer harvest in Unit 1B took place in January and February, although historically a high percentage of the otter and marten harvest has occurred in December (Tables 6–9).

Transport Methods. Most beaver trapping areas in Unit 1B are accessed by boat, and most marten trapping areas area accessed by boat and skis or snowshoes (Tables 10–11).

CONCLUSIONS AND RECOMMENDATIONS

Most furbearer populations appear to be abundant or common and remain stable in suitable habitat. Trapping effort is moderate, reflecting the current low to moderate fur prices. Harvest is well below sustained yield potentials. Large areas of noncoastal habitat on the mainland and islands remain untrapped and continue to provide refuge for furbearers.

I recommend no regulation changes at this time. All land development plans should be reviewed and commented on regarding effects to furbearer populations and trappers. ADF&G can maximize the value of the resource by working with local trappers through the Hunter and Trapper Education Programs.

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Table 1 Results from trapper's questionnaire, Unit 1B & 3 combined

	2000–01 Petersburg, Wrangell, Kupreanof & vicinity		2001–02 Petersburg, Wrangell, Kupreanof & vicinity		2002–03 Petersburg, Wrangell, Kupreanof & vicinity	
Furbearer species	Relative abundance	Trend	Relative abundance	Trend	Relative abundance	Trend
Beaver	common	same	abundant	same	abundant	more
Ermine	abundant	same	common	more	common	more
Lynx	x	x	x	x	scarce	fewer
Marten	abundant	same	common	same	abundant	same
Mink	abundant	more	abundant	more	abundant	more
Muskrat	scarce	same	scarce	same	scarce	fewer
Red Squirrel	abundant	same	abundant	more	abundant	more
River Otter	abundant	same	abundant	same	abundant	more
Wolf	abundant	more	abundant	more	abundant	fewer
Wolverine	common	same	scarce	same	scarce	more
Prey species						
Grouse	common	same	common	same	scarce	same
Ptarmigan	common	same	scarce	same	scarce	fewer
Mice/Rodents	abundant	same	abundant	same	abundant	more

Table 2 Unit 1B beaver harvest, 1994–2002

		Method of Take		
Regulatory year	Reported harvest	Trap/snare	Unknown	Successful trappers
1994–95	1	1	0	1
1995–96	1	0	1	1
1996–97	40	40	0	2
1997–98	16	16	0	2
1998–99	0	0	0	0
1999–00	4	4	0	2
2000–01	1	1	0	1
2001–02	4	4	0	2
2002–03	1	1	0	1

Table 3 Unit 1B marten harvest, 1994–2002

Regulatory year	Reported harvest						
	M	(%)	F	(%)	Unk.	Total	Successful trappers
1994–95	59	(73)	21	(27)	0	80	5
1995–96	56	(76)	17	(23)	1	74	6
1996–97	137	(58)	65	(27)	33	235	7
1997–98	143	(42)	74	(21)	123	340	10
1998–99	176	(48)	84	(23)	105	365	11
1999–2000	209	(59)	137	(38)	7	353	10
2000–01	153	(64)	86	(36)	0	239	8
2001–02	77	(67)	35	(30)	3	115	8
2002–03	119	(61)	73	(37)	3	195	9

Table 4 Unit 1B land otter harvest, 1994–2002

Regulatory year	Reported harvest						Method of take					
	M	%	F	%	Unk.	Total	Trap/snare	%	Shot	%	Unk.	Successful trappers
1994–95	14	(54)	12	(46)	0	26	20	(77)	6	(23)	0	8
1995–96	2	(50)	2	(50)	0	4	4	(100)	0	(0)	0	2
1996–97	8	(33)	16	(67)	0	24	22	(91)	2	(9)	0	4
1997–98	14	(46)	9	(30)	7	30	28	(93)	2	(7)	0	6
1998–99	4	(31)	8	(62)	1	13	8	(62)	5	(38)	0	6
1999–2000	10	(77)	3	(23)	0	13	8	(62)	5	(38)	0	4
2000–01	6	(60)	4	(40)	0	10	10	(100)	0	(0)	0	4
2001–02	12	(71)	5	(29)	0	17	17	(100)	0	(0)	0	4
2002–03	12	(57)	9	(43)	0	21	18	(86)	3	(14)	0	8

Table 5 Unit 1B wolverine harvest, 1994–2002

Regulatory year	Reported harvest						Method of take				Successful trappers
	M	%	F	%	Unk.	Total	Trap/Snare	%	Shot	%	
1994–95	8	(100)	0	(0)	0	8	8	(100)	0	(0)	5
1995–96	1	(100)	0	(0)	0	1	1	(100)	0	(0)	1
1996–97	6	(60)	4	(40)	0	10	10	(100)	0	(0)	5
1997–98	5	(63)	3	(37)	0	8	8	(100)	0	(0)	6
1998–99	4	(44)	5	(56)	0	9	9	(100)	0	(0)	2
1999–2000	7	(39)	11	(61)	0	18	18	(100)	0	(0)	7
2000–01	3	(75)	1	(25)	0	4	2	(67)	1	(23)	4
2001–02	1	(50)	1	(50)	0	2	2	(100)	0	(0)	1
2002–03	0	(0)	2	(100)	0	2	2	(100)	0	(0)	2

Table 6 Unit 1B beaver harvest, chronology by month, 1994–2002

Regulatory year	Month								
	October[a]	November	December	January	February	March	April	May	n
1994–95	0	0	0	0	0	1	0	0	1
1995–96	1	0	0	0	0	0	0	0	1
1996–97	0	0	8	0	8	24	0	0	40
1997–98	0	0	13	0	3	0	0	0	16
1998–99	0	0	0	0	0	0	0	0	0
1999–2000	0	0	4	0	0	0	0	0	4
2000–01	0	0	0	0	0	0	0	1	1
2001–02	0	0	0	4	0	0	0	0	4
2002–03	0	0	0	1	0	0	0	0	1

[a] USFS took 1 beaver that was damming a fish ladder.

Table 7 Unit 1B marten harvest, chronology by month, 1994–2002

Regulatory year	Month			
	December	January	February	n
1994–95	64	16	0	80
1995–96	50	21	3	74
1996–97	128	101	6	235
1997–98	130	187	23	340
1998–99	249	114	2	365
1999–2000	51	295	7	353
2000–01	192	46	1	239
2001–02	9	98	8	115
2002–03	53	116	26	195

Table 8 Unit 1B otter harvest, chronology by month, 1994–2002

Regulatory year	Month				Nr
	December	January	February	Unk.	
1994–95	9	9	4	4	26
1995–96	0	2	2	0	4
1996–97	12	2	10	0	24
1997–98	10	19	1	0	30
1998–99	3	9	1	0	13
1999–2000	7	6	0	0	13
2000–01	0	10	0	0	10
2001–02	4	8	5	0	17
2002–03	8	4	9	0	21

Table 9 Unit 1B wolverine harvest, chronology by month, 1994–2002

Regulatory year	Month						
	November	December	January	February	March	April	Nr
1994–95	0	4	3	1	0	0	8
1995–96	0	0	0	1	0	0	1
1996–97	0	3	5	0	1	1	10
1997–98	0	1	5	2	0	0	8
1998–99	6	2	0	0	1	0	9
1999–2000	0	0	14	2	1	1	18
2000–01	0	3	1	0	0	0	4
2001–02	0	0	1	1	0	0	2
2002–03	0	0	2	0	0	0	2

Table 10 Unit 1B beaver harvest, method of transportation, 1994–2002

Regulatory year	Boat	3-wheeler	Highway	Skis/snowshoes	Snowmachine	Unknown	Total
1994–95	1	0	0	0	0	0	1
1995–96	0	0	0	0	0	1	1
1996–97	40	0	0	0	0	0	40
1997–98	8	0	0	0	8	0	16
1998–99	0	0	0	0	0	0	0
1999–2000	3	0	0	1	0	0	4
2000–01	1	0	0	0	0	0	1
2001–02	12	0	0	0	0	0	12
2002–03	1	0	0	0	0	0	1

Table 11 Unit 1B marten harvest, method of transportation, 1994–2002

Regulatory year	Boat	3-wheeler	Snowmachine	Highway	Skis/snowshoes	Total
1994–95	67	0	13	0	0	80
1995–96	74	0	0	0	0	74
1996–97	69	17	112	37	0	235
1997–98	239	0	97	4	0	340
1998–99	210	60	89	6	0	365
1999–2000	262	0	0	0	91	353
2000–01	217	0	22	0	0	239
2001–02	115	0	0	0	0	115
2002–03	139	16	0	0	40	195

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNIT: 1C (7600 mi^2)

GEOGRAPHICAL DESCRIPTION: That portion of the Southeast Alaska mainland from Cape Fanshaw to the latitude of Eldred Rock, including Sullivan Island and the drainages of Berners Bay

BACKGROUND

Martens (*Martes americana*), mink (*Mustela vison*), otters (*Lutra canadensis*), and beavers (*Castor canadensis*) make up the majority of the Unit 1C furbearer harvest. Smaller numbers of wolverines (*Gulo gulo*), weasels (*Mustela erminea*), and an occasional fisher are taken each year.

Beavers exist at moderate levels in most drainages along the coastal mainland where habitat is suitable, as well as on some of the larger islands. There is limited natural or human-caused disturbance affecting beaver habitat in this subunit. Berners Bay, Taku River, Herbert/Eagle River system, Cowee Creek, St. James Bay, Shelter Island, and Lincoln Island contribute to the total harvest. Few beavers have been sighted on Douglas Island. Although the beaver harvest varies annually, this variation seems related more to trapper effort than to the abundance of beavers.

River otters are fairly common along the mainland coast and most large islands in the unit. While little is known about otter populations, they are thought to be most abundant in sheltered waters provided by bays and inlets.

Martens are common throughout Unit 1C mainland drainages, but are not found on most islands. The exception is Douglas Island, which has an occasional marten present.

Wolverines occur in small numbers, and the sealing information provides little insight into population status or distribution. While wolverines are one of the least common species in the subunit, the high pelt price encourages trappers to target them. Most wolverines are captured in Berners Bay or on the west side of Lynn Canal. Both of these areas are remote from the Juneau road system.

During the report period one fisher was trapped and brought to ADF&G. This animal was captured on the lower Taku River in a wolverine set. The first fisher ever recorded in the Juneau area was captured in 1996, and it appears that there may now be a small population in the area.

During the report period ADF&G received several reports of fisher sightings by cabin owners in the upper Taku River, as well as ADF&G personnel stationed at Canyon Island on the Taku River. Additional evidence of fisher (scat, tracks, porcupine kill) was seen in the Sheep Creek drainage (Neil Barten, personal communication).

Coyotes (*Canis latrans*), though once scarce to nonexistent in this subunit, are now becoming common near Gustavus and in the foothills of the Chilkat Mountains. Residents of Gustavus routinely hear coyotes, and trappers have begun catching them in areas where they were not present in past years. There have even been several reported sightings near the Mendenhall Glacier Visitor Center during this report period. The presence of coyotes seems to coincide with the increase in lynx (*Lynx canadensis*) numbers and may well be a response to an increase in snowshoe hares. Two lynx were trapped in the Gustavus area during the report period, which are the first lynx caught in 1C since the 1994–1995 trapping season.

Little information exists for mink (*Mustela vison*) since trappers are not required to seal them. Anecdotal information suggests that mink are abundant.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

1. Regulate seasons and bag limits to maintain viewable and harvestable populations of furbearers.

2. Seal harvested beaver, marten, otter, lynx, and wolverine pelts as they are presented for sealing.

3. Contact reliable observers for general information about the status and trends of furbearer populations, including the use of an annual trapper survey.

METHODS

Mandatory sealing of martens, beavers, otters, wolverines, and lynx was the chief source of furbearer harvest data. For each species we recorded method and month of take, transportation means, and harvest location. Sex and pelt size was recorded for each otter, pelt size was recorded for each beaver, and sex was recorded for wolverines and martens. We also began collecting a canine tooth when agreeable with the trapper for aging wolverines and a tissue sample for DNA analysis in our efforts to better understand wolverine population dynamics and distribution. Trapper interviews and a mail-out trapper survey provided additional insight into perceived population status and trapping pressure.

Infrared-activated cameras were put afield in 2002 and 2003 in an attempt to record the presence of fishers. These cameras were located near Sheep Creek, but no fishers were detected. We are planning to continue these efforts during the next report period.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

We do not conduct any formal furbearer research to document or monitor population status or trends; rather, we depend on trapper questionnaires and trapper effort for furbearer information. Unit 1C furbearer populations appear stable, based on trapper interviews, mail-out trapper surveys, and harvest data. Lynx remain uncommon, while otters, mink, and martens are common or abundant. Wolverines are present in low densities and found in remote sites. Coyotes are present in low-to-moderate numbers on the west side of Lynn Canal and near Gustavus. Fishers may be gaining a foothold in the area, but we have only the occasional errant capture or sighting to provide us with information about this species presence.

Mortality

Harvest

Seasons and Bag Limits

Hunting

Marten, otter, mink, beaver, lynx	No Open Season	
Wolverine	10 Nov–15 Feb	One

Trapping

Marten, otter, mink, lynx	1 Dec–15 Feb	No limit
Beaver	1 Dec–15 May	No limit
Wolverine	10 Nov–30 Apr	No limit

Board of Game Actions and Emergency Orders. No Board of Game actions occurred that changed the trapping regulations for this unit, and no emergency orders were issued during this report period.

Trapper Harvest: Table 1 shows the furbearer harvest since RY 1986.

The number of beavers harvested during the period fluctuated from a high of 27 in 2000 to a low of 2 in 2001. The mean harvest of 13.6 beavers per season is far below the mean of 23 for the previous 10 years. The decline in beaver catch likely is due to a lack of effort more than a scarcity of beavers. Given the low value of their fur, and the amount of effort required to trap and handle beaver and their pelts, trappers often ignore them. Beavers are at times considered a nuisance because of their propensity for causing flooding in some residential areas as well as plugging culverts resulting in road problems for the Department of Transportation. During each of the past 3 years we issued 2-3 permits under 5 AAC 92.041 (permit to take beavers to control damage to property).

The river otter harvest increased throughout the report period from 8 in 2000 to 11 in 2001 and 17 in 2002. An increase in the price paid for otter pelts during the report period (> $100.00) likely contributed to an increase in trapping effort.

The mean annual harvest of wolverines during this report period was 4.7, nearly identical to the mean annual harvest of 5.2 during the 2 previous report periods. Based on information provided by trappers, wolverines are present in most of the upper reaches of the drainages crossed by the Juneau road system, but most abundant in Berners Bay and on the west side of Lynn Canal. During the 2001–2002 trapping season, 5 of the 9 wolverines sealed were captured along a short section of the Johnson Creek Road in Berners Bay.

The marten harvest declined from a mean annual take of 201 during the previous report period to 78 during this report period. This is below the harvest level characteristic of the unit through the late 1980s and most of the 1990s. The percent males in the harvest ranged from 68% in 2001 to 55% in 2002. The lower percentage of male martens in the harvest during the past 3 years may be an indication of a declining marten population.

Harvest Chronology. Most furbearers, with the exception of beavers, were caught during December and January. Beavers were caught throughout the trapping season, with the majority caught in April when the days are longer and the weather is better.

Table 3 shows the chronology of the marten harvest during this report period. Sixty-two percent of the marten harvest occurred in December, 29% in January, and only 9% in February. This catch distribution is common for martens. Trappers generally saturate an area with traps and catch most available animals during the early part of the season.

Transport Method. Most Unit 1C trapping takes place adjacent to the Juneau road system, thereby allowing trappers access to areas with highway vehicles. However, a CBJ ordinance forbids setting of traps within ½ mile of a road within the city or borough limits, forcing trappers to hike or snowshoe the necessary distance away from the road before setting traps. Most trappers use well established hiking trails to gain access to legal trapping areas. In some cases, such as in Gustavus, trappers begin hiking from their homesteads. Also, during most winters at least one trapper takes a boat to Berners Bay, Pt. Couverdon, or St. James Bay and drops off a snowmobile or 4-wheeler for locomotion.

CONCLUSIONS AND RECOMMENDATIONS

Unit 1C furbearer populations appear to be healthy and capable of withstanding the present level of trapping pressure. The marten harvest will bear monitoring for overall numbers as well as percent females given the steady decline during this report period. The otter catch will likely continue to rise if prices remain high. Some consideration might be warranted for harvest limits in certain areas if the catch appears to be localized. No fishers were reported harvested in 2000 or 2001, but a single animal was sealed in 2002. There has been some discussion within ADF&G as to the level of reporting of fisher harvest given that they must be turned over to the state. A trapper who captured a fisher in 1998 was displeased that he had to give the animal to the state, and there likely could be other trappers who decide to keep their catch rather than report and forfeit it. In spite of this concern, however, it seems an open season on fishers is not justified and

would result in an overharvest given the scarcity of these animals and their propensity for being vulnerable to trapping. Presently ADF&G has no plans to open a fisher trapping season in Southeast Alaska.

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Table 1 Unit 1C furbearer harvest, 1986–2002

Regulatory year	Beavers	Lynx	Martens	Otters	Wolverines
1986–1987	107	0	241	31	9
1987–1988	47	0	314	55	8
1988–1989	5	0	209	19	10
1989–1990	35	0	256	31	7
1990–1991	15	0	240	36	5
1991–1992	11	0	193	12	8
1992–1993	21	1	73	12	2
1993–1994	25	5	44	13	6
1994–1995	10	1	190	26	9
1995–1996	26	0	262	16	4
1996–1997	17	0	293	19	3
1997–1998	62	0	181	21	5
1998–1999	7	0	267	12	6
1999–2000	36	0	155	6	4
2000–2001	27	1	76	8	1
2001–2002	2	1	90	11	9
2002–2003	12	0	67	17	4

Table 2 Unit 1C marten harvest chronology by sex, 1994–2002

	1994–1995				1995–1996				1996–1997			
Month	Males	%	Females	%	Males	%	Females	%	Males	%	Females	%
November	0	0	0	0	1	100	0	100	0	0	0	0
December	76	72	30	28	78	53	69	47	129	63	76	37
January	41	66	21	34	69	62	42	38	55	71	22	29
February	13	59	8	36	1	50	1	50	5	45	5	45
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Total	130	68	59	31	149	57	112	43	189	65	103	35

	1997–1998				1998–1999				1999–2000			
Month	Males	%	Females	%	Males	%	Females	%	Males	%	Females	%
November	0	0	0	0	0	0	0	0	0	0	0	0
December	67	71	28	29	95	61	60	39	35	61	22	39
January	58	68	27	32	47	55	39	45	40	62	25	38
February	1	100	0	0	10	38	16	62	13	39	20	61
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Total	126	70	55	30	152	57	115	43	88	53	67	47

Table 2 continued

	2000–2001				2001–2002				2002–2003			
Month	Males	%	Females	%	Males	%	Females	%	Males	%	Females	%
November	0	0	0	0	0	0	0	0	0	0	0	0
December	30	57	23	43	20	65	11	35	22	52	20	48
January	14	67	7	33	21	66	11	34	9	60	6	40
February	2	100	0	0	7	88	1	12	6	60	4	40
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Total	46	61	30	39	48	68	23	32	37	55	30	45

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNIT: 1D (2700 mi^2)

GEOGRAPHIC DESCRIPTION: That portion of the Southeast Alaska mainland lying north of the latitude of Eldred Rock, excluding Sullivan Island and the drainages of Berners Bay

BACKGROUND

Trapping in Unit 1D may be limited by the difficult access to many areas prior to river freeze-up. The Chilkat River provides a transportation corridor once it freezes, but solid ice and enough snow for traveling by snowmachine often aren't present until December. This limits the areas trappers can access. With limited marine shoreline compared to other Southeast Alaska units, river otter *(Lutra canadensis)* and mink *(Mustela vison)* habitat is not as prevalent or as productive as in other areas. In spite of this, the Chilkat River and its tributaries support a fair number of these species. Beavers *(Castor canadensis)*, though once scarce, are now quite common throughout the unit. The lynx *(Lynx canadensis)* population varies from almost no animals to abundance, depending on the number of snowshoe hares. Extensive mountainous terrain in the subunit provides wolverine habitat, and the scavenging opportunities on wolf-killed moose (*Alces alces*) and goats probably provide ample foraging opportunities. We have little information on the wolverine population in this unit. Late season salmon runs provide food for many furbearers throughout the winter.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

1. Provide information to the Board of Game to further maintenance of viewable and harvestable populations of furbearers.

2. Seal harvested beaver, marten, otter, lynx, and wolverine *(Gulo gulo)* pelts as they are presented for sealing.

3. Contact reliable observers for general information about the status and trends of furbearer populations, including the use of an annual trapper survey.

METHODS

Mandatory sealing of martens, otters, wolverines, and lynx has provided the best source of data on furbearer harvests. For each species, the method and month of take and type of transportation were recorded. Sex composition of the marten harvest was noted. Sex and pelt size (used to differentiate adults and young) were recorded for otters and beavers. Trapper questionnaires provided additional insight into perceived population status and trapping pressure.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

We do not conduct any formal furbearer research to document or monitor furbearer population status or trends in this unit; rather we depend on trapper questionnaires and trapper effort for furbearer information. Indications are that most furbearer populations are stable in Unit 1D. Marten continue to attract the most attention by trappers, and if the harvest is a reflection of abundance, the population appears to be healthy. The high proportion of males in the harvest throughout this reporting period supports this assessment. Lynx numbers seem to fluctuate drastically due to the immigration of animals from Canada, or lack thereof, and catch rates fluctuate along with these movements. The population of land otters appears to be healthy and widespread based on the abundance of otter tracks seen while flying winter moose surveys. Wolverine will probably always be found at low densities, but because of extensive suitable habitat (much of which is nearly inaccessible), the wolverine population is probably stable and should remain so. Beavers have increased in number over the past 20 years, prompting the Department of Fish and Game to submit a proposal to the Board of Game in fall 2000 to open a beaver trapping season. The board adopted the proposal that allowed a trapping season beginning in the fall of 2001. The beaver season had been closed since 1976 due to low numbers.

MORTALITY

Harvest

Seasons and Bag Limits.

Hunting

Marten, otter, mink, lynx, beaver	No open season	
Wolverine	10 Nov–15 Feb	1 per season

Trapping

Beaver	1 Dec–15 May	5 per season
Marten, otter, lynx	1 Dec–15 Feb	No limit
Mink, wolverine	10 Nov–30 Apr	No limit

Board of Game Actions and Emergency Orders. An ADF&G drafted proposal was adopted by the BOG that established a beaver trapping season beginning in RY 2001. The season had been closed since 1976. No emergency orders were issued in relation to trapping seasons.

Trapper Harvest. Table 1 lists Unit 1D trapper harvest since RY 1989.

The average annual harvest of 61 martens captured during this report period is slightly higher than the 10-year average of 57.6 martens per year. The percentage of males in the harvest is still relatively high, indicating a healthy marten population.

Eighteen lynx were trapped during this report period, compared to none during 1997–1999. Given the vulnerability of lynx to trapping, it is likely that few, if any, lynx were present during the previous report period. It is apparent when looking at the lynx harvest year to year (Table 1), that lynx are either present in catchable numbers or absent altogether, probably due to influxes from Canada. In spite of an increase in harvest over the previous report period, the average of 6 lynx harvested per year is only slightly higher than the 10-year average of 5 per year. It is unknown whether the lynx population was high or low in Canada during this report period, but apparently some animals did move down into the Chilkat Valley.

The land otter harvest increased to 13 during the current report period from only 4 during 1997–1999. This reflects the highest 3-year harvest since 11 otters were harvested during 1991–1993.

The wolverine harvest increased from an annual mean of 1.7 during the previous report period to 6.6 during 2000–2002. This is also greater than the previous 10-year average of 4.7 wolverines per year.

Sixteen beavers were trapped under 5 AAC 92.041 (permit to take beavers to control damage to property) during the report period. The Division of Wildlife Conservation staff received complaints of beavers flooding several roads as well as negatively affecting aquaculture projects. Only 2 beavers were harvested in 2001, but the beaver harvest increased to 22 during the 2002 trapping season.

Harvest Chronology. The chronology of the marten harvest for the 3 years during the report period is shown in Table 2. December and January continue to be the dominant months for harvesting marten. The wolverine and otter harvest was also concentrated into these months.

Transport Method. Trapper access relies much less on boats than in other parts of the region. Access by vehicle along the highway and logging road system is most common and is used to support other types of access, such as snowmobiles and showshoes.

Habitat Assessment. Some marten habitat will be lost as old-growth forests, particularly riparian areas, are converted to clearcuts. Many of the areas currently scheduled for harvesting, such as those along the upper Chilkat and Klehini Rivers, fall into this category. At present, all operable timberlands within the state forest are scheduled for cutting during the next 120 years, with several hundred acres being leased each year. Most of this land supports martens. Although impacts to wildlife populations are considered in timber harvest plans, mitigation measures or habitat enhancement opportunities for marten are limited due to their need for climax forests.

CONCLUSIONS AND RECOMMENDATIONS

Marten harvests during this reporting period dropped slightly from the previous report period. It is not clear how much this movement is due to a change in trapper effort. Males continue to dominate the harvest, which is an indication of a healthy population. Monitoring sex ratios in the marten harvest should be continued.

The newly established beaver trapping season should alleviate some of the problems associated with beaver flooding and lessen the workload of ADF&G to issue permits for beaver removal. The concerns by many Haines residents about the extinction of beavers in Unit 1D with the adoption of a trapping season were not realized. If anything, the harvest is much lower than most people would have thought.

There are no plans by ADF&G to change the seasons or bag limits on furbearers in Unit 1D at this time.

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Table 1 Unit 1D furbearer harvest, 1989–2002

Regulatory Year	Beavers	Lynx	Martens	Otters	Wolverines
1989–1990	N/A	0	114	1	2
1990–1991	N/A	0	104	1	3
1991–1992	N/A	11	51	6	1
1992–1993	N/A	27	2	2	8
1993–1994	N/A	8	17	3	10
1994–1995	N/A	0	0	2	4
1995–1996	N/A	0	99	2	7
1996–1997	N/A	4	108	2	9
1997–1998	N/A	0	86	3	3
1998–1999	N/A	0	48	0	0
1999–2000	N/A	0	61	1	2
2000–2001	11	12	31	3	3
2001–2002	2	4	57	7	9
2002–2003	22	2	95	3	8

Table 2 Unit 1D marten harvest chronology by sex, 1994–2002

	1994–1995				1995–1996				1996–1997			
Month	Males	%	Females	%	Males	%	Females	%	Males	%	Females	%
November	0	0	0	0	10	83	2	17	0	0	0	0
December	0	0	0	0	36	92	3	8	12	60	8	40
January	0	0	0	0	24	73	9	27	68	77	20	23
February	0	0	0	0	3	20	12	80	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	---	0	---	73	74	2	26	80	74	28	26

	1997–1998				1998–1999[1]				1999–2000			
Month	Males	%	Females	%	Males	%	Females	%	Males	%	Females	%
November	0	0	0	0	0	0	0	0	0	0	0	0
December	13	72	5	28	10	83	2	17	27	61	17	39
January	32	67	16	33	4	67	2	33	7	78	2	22
February	10	67	5	33	17	81	4	19	7	88	1	12
Unknown	0	0	0	0	1	0	0	0	0	0	0	0
Total	55	68	26	33	32	80	8	20	41	67	20	33

[1] Does not include 8 martens of unknown sex, trapped in December.

Table 2 (continued) Unit 1D marten harvest chronology by sex, 1994–2002

	2000–2001[1]				2001–2002[2]				2002–2003[3]			
Month	Males	%	Females	%	Males	%	Females	%	Males	%	Females	%
November	0	0	0	0	0	0	0	0	0	0	0	0
December	22	73	8	27	16	73	6	27	28	55	23	45
January	0	0	0	0	19	66	10	34	11	79	3	21
February	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	1	0	0	0	0	0	0	0
Total	22	73	8	27	36	69	16	31	39	60	26	40

[1] Does not include 1 marten of unknown sex, trapped in January.

[2] Does not include 6 martens of unknown sex, trapped in December and January.

[3] Does not include 30 martens of unknown sex, trapped in December and January.

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2002

LOCATION

GAME MANAGEMENT UNIT: 2 (3900 mi^2)

GEOGRAPHIC DESCRIPTION: Prince of Wales and all adjacent islands bounded by a line drawn from Dixon Entrance in the center of Clarence Strait, Kashevarof Passage, and Sumner Strait to and including Warren Island

BACKGROUND

Unit 2 includes Prince of Wales Island (POW) and a complex of smaller islands with their associated bays and estuaries. The combined archipelago consists of a large amount of sheltered waters that provide relatively safe boat access along many miles of shoreline. POW and many other islands have thousands of miles of logging roads (2500–3000) accessible by motor vehicle. Thus, access to a large amount of furbearer habitat is exceptional and trappers can operate long traplines with relative ease. However, by comparison to other areas in the state, Southeast Alaska traplines are some of the shortest, averaging only 15 miles in length while the statewide average trapline length is 29 miles. Clearcut logging has fragmented the landscape and in many cases, especially for marten (*Martes americana*), has reduced suitable habitat to narrow wildlife travel corridors. By using these concentrated travel corridors, trappers may increase their success.

Furbearer populations have remained at moderate-to-high levels during the past decade. Trapping pressure and harvests fluctuate annually, primarily as a function of changes in weather and fur prices. Recently the timber industry has scaled down, and the result has been a high unemployment rate. This reduction in employment has provided residents with more time to trap and incentives for pursuing additional income from the sale of furbearer hides.

Southeast Alaska provides excellent habitat for land otters (*Lutra canadensis*), and fur buyers consider Southeast pelts to be high quality. Pelt prices were high during the late 1970s, declined during the 1980s and early 1990s, and have significantly increased during the past few seasons. Because otters are difficult to trap and pelt preparation is time consuming, prices must be high to substantially influence harvest levels. Because most otter trappers use boats for transportation in Unit 2, weather often affects the intensity of effort.

Beaver (*Castor canadensis*) prices have remained stable and low for several years. Beaver harvests can fluctuate dramatically from year to year because of the efforts of only a few trappers.

Southeast Alaska trappers are more interested in martens than any other furbearer species. Martens are easy to trap, their pelts are easy to care for, and combined income from the pelts is generally greater than for any other furbearer species in southern Southeast. With the exception of the 1986–1987 season, when pelt prices jumped markedly, marten prices have remained consistent at moderate levels throughout the past decade. Extensive logging continues to remove uneven-aged, old-growth habitat required by martens, and as a result, we believe the area's capacity to support marten populations will decline over time (Flynn and Schumacher 1997).

For at least the past decade mink (*Mustela vison*) pelt prices have remained low and stable. This has resulted in moderate-to-low interest among trappers.

Weasel (*Mustela erminea*) populations fluctuate from year to year, independent of trapping. Harvest tends to be limited to incidental take while targeting other furbearers, primarily martens. Muskrats are absent from Unit 2.

Furbearers by order of importance to Unit 2 trappers include martens, land otters, beavers, mink, and flying squirrels (*Glaucomys sabrinus*). Wolverines (*Gulo gulo*), foxes (*Vulpes spp.*), coyotes (*Canis latrans*), lynx (*Lynx Canadensis*) and red squirrels (*Tamiasciurus hudsonicus*) are absent in Unit 2.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

1. Provide information to the Board of Game to further maintenance of viewable and harvestable populations of furbearers.

2. Seal harvested beaver, marten, otter, lynx, and wolverine pelts.

3. Contact reliable observers for general information about the status and trends of furbearer populations, including the use of an annual trapper survey.

METHODS

Our harvest data comes from mandatory sealing of marten, beaver, and otter pelts. We have discontinued the collection of mink harvest data; therefore, the status of mink populations is assessed through staff observations and information obtained through annual trapper surveys.

Beaver pelts have been sealed for more than 20 years. Wolverines were first sealed in 1971 and land otters have been sealed since 1978. Marten sealing was initiated in 1984.

We do not perform furbearer population surveys in Southeast Alaska. Some ecological information is available for mink and land otters from short-term research studies completed in Southeast (Harbo 1958, Home 1977, Larsen 1983, Woolington 1984, Johnson 1985). A study of marten ecology was recently completed on northeast Chichagof Island (Flynn and Schumacher 1997).

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Unit 2 beaver populations have generally remained at moderate levels (Table 1). Habitat changes can cause large fluctuations in beaver populations. Although early successional second-growth habitat can support higher populations of beavers than old growth, when second-growth canopy closes (approximately 20 years after cutting), beaver numbers drop below those supported in old-growth stands. Current pelt prices are not high enough to foster much trapping pressure except in easily accessed areas, such as along the road system.

Unit 2 trappers believe martens have remained at moderate to high levels during this report period (Table 1). Marten populations tend to fluctuate annually throughout Southeast Alaska, probably because of changes in prey abundance. The extreme declines in other Southeast locations seem to be more dramatic, suggesting there may be alternative food sources to buffer martens when vole numbers decline. One untested hypothesis is that martens may benefit from deer carcass remains left by wolves. This reliable food source is not available in areas such as Unit 4 where wolves are absent. Discussions with trappers suggest that martens prefer old-growth stands and avoid clearcuts. This is consistent with findings of Flynn and Schumacher (1997), who found that martens avoid clearcuts and spend the majority of their time feeding and resting in older forest stands. Schumacher (1999) also found marten preferred the larger diameter timber structures for dens and resting sites. Large old trees and old logs are important as den sites for martens (Hauptman 1979, Simon 1980, Hargis and McCullough 1984, Wynne and Sherburne 1984). We anticipate that reductions in old-growth habitat, increasing roads and traffic along fragmented habitat, and refugia loss will eventually result in fewer martens in the unit.

Trappers believe mink populations have fluctuated between moderate and high levels (range I_A= 42–100) in Unit 2 during this report period (Table 1). Given the current limited interest in mink pelts, we do not expect this to change unless pelt prices increase substantially.

Otter populations were believed to be low in the late 1970s when prices were high (Wood 1990). We believe that populations have steadily increased during the past decade and are currently at moderate-to-high levels. This is supported by information obtained from trappers. Since 1991 trappers have reported a perceived abundance of moderate-to-high levels ($\bar{x}$ =65). The 1992 index of abundance was the exception, when the index dropped to the low (I_A =45). During this report period trappers reported otter abundance was high (Table 1).

MORTALITY

HARVEST

Seasons and Bag Limits.

Hunting

Wolverine	10 Nov–15 Feb	One wolverine

Trapping

Beaver	1 Dec–15 May	No limit
Lynx, mink, marten,		
Otter, weasel, muskrat	1 Dec–15 Feb	No limit
Wolverine	10 Nov–30 Apr	No limit

Board of Game Actions and Emergency Orders. Board of Game actions included a new regulation making it mandatory to mark snares with either an attached metal tag or signage at the trap site.

Trapper Harvest. Unit 2 marten harvests are typically high compared to elsewhere in Southeast and during average years are second only to Unit 4, the highest Region I marten producer (Table 2). The most recent 3-year average has been 764 (range 323–1083) and includes the highest harvest of martens in Unit 2 since 1987. The low harvest of 323 during the 2001 season was probably more related to low trapper effort, poor weather conditions, and heavy snow that blocked roads than to abundance of marten. The low harvest during 2001 probably contributed to the record high harvest during the following 2002 season.

The harvest of 616 otters during 2002 was the highest on record and well above the 10-year average of 214 (range 40–616). Trapping, rather than shooting, remained the predominant method of take, and most successful otter trappers relied on boats for transportation (Table 2). During this report period an average of 14% of the otters sealed were shot, rather than trapped, slightly above the long-term average of 10%. Old-growth forest is preferred otter habitat and little use is made of cutover areas. Otters are most commonly found close to saltwater and prefer adjacent old-growth habitat for resting and denning. Clearcut logging, both past and present, will substantially impact future otter populations because timber selections often occur in these preferred habitats. Trappers report higher than average prices paid for Southeast Alaska otters, and this high price may have contributed to the increased effort and harvest. Pelt prices of $120 for top hides during the 2002 season was over twice the normal going market rate and provided incentive for trappers to concentrate on otters.

The Unit 2 beaver harvest has fluctuated during the past 15 years from 411 in 1986 to a low of 44 in 2001. The average during the past 3-year report period was 181 with a high of 310 beavers in 2000. The low of 44 beavers sealed during the 2001 season may be a result of poor weather, including snowbound roads, and consequently less trapping effort, rather than a declining beaver population.

Harvest Chronology. During the past 10 years about 27% of the beaver harvest occurred during December, followed by January (19%), April (16%), February (13%), March (11%), May (9%), and June (3%) (Table 3). During the 2000 season 27 trappers participated in the harvest, one of the highest on record, while the 2001 season saw the fewest trappers ever in the field (5).

December is also the preferred month for marten trappers. Over the past 10 years about 70% of all martens taken have been caught in December, followed by January (24%) and February (6%).

Heavy snowfall in late December prevented trappers from accessing many roads during winter 2001. The average number of active marten trappers increased slightly during this 3-year report period ($\bar{x}$ =35), compared to the past 10 years ($\bar{x}$ =31).

During the past 10 years the land otter harvest has typically been split between December (41%), January (44%) and February (15%). The number of successful otter trappers during this 3-year report period ($\bar{x}$ =17) was below the long-term average ($\bar{x}$ =22) mostly due to the reduced effort during 2001.

Transport Methods. The Unit 2 road system consists of more than 2500 miles of drivable surface and provides trappers and hunters with more road access than in any other unit in Alaska. Some of this road system is disconnected from the main road and is only accessible by boat. This requires trappers to transport ATVs by boat to some of the more remote areas.

Two of the past 3 seasons have been mild winters, and the road system has remained open much of the year, allowing trappers to reach a large portion of the unit. Trappers continue to use road vehicles (78%) and boats (19%) as the major modes of transportation to areas in Unit 2 (Table 2).

OTHER MORTALITY

Beavers were removed from specific areas because of flooding and erosion problems created by their cutting and damming activities. We issued 3 beaver depredation permits to communities and corporations during this report period.

CONCLUSIONS AND RECOMMENDATIONS

Unit 2 furbearer populations appear stable at this time. We anticipate increased trapper effort due to a reduction of logging and the resulting displacement of timber-related jobs. We may also see increased effort because of high market prices for some furbearers, including river otter.

Unit 2 marten ecology may differ from other Southeast Alaska populations due to a broader prey base associated with scavenging carcasses of wolf-killed deer.

Logging permanently removes uneven-aged, old-growth habitat, replacing it with even-aged, closed-canopy habitat that does not meet the requirements of several furbearer species. It is therefore important to publicize effects from land use decisions, so that trade-offs for wildlife can be recognized and understood. A current project to pave large sections of POW roads and a long-term plan to add additional state ferries will provide more access for trapping, hunting and other outdoor activities, all of which will place more demand on Unit 2 furbearers.

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Table 1 Unit 2 indices of abundance (I_A)[a] for furbearers[b], 1991–2002

	SPECIES			
REGULATORY YEAR	***BEAVER***	***MARTEN***	***MINK***	***OTTER***
1991–1992	62	44	67	67
1992–1993	50	39	45	45
1993–1994	12	12	42	50
1994–1995	50	25	75	67
1995–1996	33	83	100	83
1996–1997	37	50	75	50
1997–1998	42	82	80	72
1998–1999	48	62	90	85
1999–2000	72	68	85	68
2000–2001	68	72	82	71
2001–2002	48	76	86	68
2002–2003	54	69	91	82
$\bar{x}$	48	57	77	67

[a] Species are considered abundant when $I_A \geq 50$; moderate when $20 < I_A < 50$; and scarce when $I_A \leq 20$. From Brand and Keith (1979).

[b] Values derived from responses to trapper questionnaires

Table 2 Unit 2 furbearer reported harvests, 1984–2002

Species/regulatory year	Total take	Percent male	Method of take (percent)			Transportation used (percent)				
			Shot	Trapped or snared	Unk	Boat	Road	Air	Unknown	Other
Beaver										
1984–1985	234	--	0	100[a]	0	--	--	--	100	--
1985–1986	364	--	0	99	0	37	63	0	0	0
1986–1987	411	--	0	100	0	33	67	0	0	0
1987–1988	352	--	0	99	0	14	82	0	4	0
1988–1989	103	--	0	100	0	5	90	1	4	0
1989–1990	397	--	0	100[b]	0	12	88	0	0	0
1990–1991	172	--	0	100	0	9	85	0	3	3
1991–1992	257	--	0	99	1	25	75	0	0	0
1992–1993	64	--	0	98	2	45	38	0	0	17
1993–1994	204	--	0	100	0	13	87	0	0	0
1994–1995	161	--	0	100	0	11	87	0	0	2
1995–1996	281	--	0	100	0	9	89	0	0	2
1996–1997	291	--	0	100	0	19	76	0	0	5
1997–1998	249	--	0	100	0	17	81	0	0	2
1998–1999	104	--	0	100	0	26	70	0	0	4
1999–2000	310	--	0	100	0	5	88	7	0	0
2000–2001	310	--	0	100	0	8	90	2	0	0
2001–2002	44	--	0	100	0	0	100	0	0	0
2002–2003	189	--	0	100	0	36	64	0	0	0
$\bar{x}$	237	--	0	100	0	18	79	0	0	0
Marten										
1984–1985	1039	57	0	100	0	--	--	--	100	--
1985–1986	571	56	0	100	0	--	--	--	100	0
1986–1987	301	58	0	100	0	63	37	0	0	0
1987–1988	1149	60	0	100	0	51	49	0	0	0
1988–1989	908	54	0	100	0	44	56	0	0	0
1989–1990	907	58	0	100	0	34	54	0	12	0
1990–1991	501	44	0	100	0	21	63	0	5	11
1991–1992	700	53	0	100	0	54	44	2	0	0
1992–1993	575	50	0	100	0	45	52	0	0	3
1993–1994	656	58	0	100	0	24	76	0	0	0
1994–1995	1038	64	0	100	0	38	48	0	0	14
1995–1996	1126	58	0	100	0	59	34	0	1	6
1996–1997	1052	56	0	100	0	26	69	0	0	5

Table 2 continued

Species/regulatory year	Total take	Percent male	Shot	Trapped or snared	Unk	Boat	Road	Air	Unknown	Other
1997–1998	1076	58	0	100	0	54	45	0	0	1
1998–1999	614	66	0	100	0	55	43	0	2	0
1999–2000	778	58	0	99	1	33	67	0	0	0
2000–2001	885	59	0	100	0	31	59	0	0	0
2001–2002	323	53	0	100	0	16	84	0	0	0
2002–2003	1083	60	0	100	0	27	63	0	0	0
$\bar{x}$	804	57	0	100	0	40	55	0	0	3
Otter										
1984/1985	192	50	8	85	7	--	--	--	100	--
1985/1986	141	59	2	97	1	62	10	0	28	0
1986/1987	62	70	3	82	15	74	26	0	0	0
1987/1988	176	56	8	90	2	76	22	0	2	0
1988/1989	92	61	2	98	0	91	9	0	0	0
1989/1990	154	56	10	90	0	85	15	0	0	0
1990/1991	40	53	20	78	2	68	22	0	0	10
1991/1992	43	51	16	81	3	70	23	2	3	2
1992/1993	66	56	23	74	0	70	23	0	0	7
1993/1994	108	59	6	94	0	50	50	0	0	0
1994/1995	232	62	4	96	0	74	25	0	0	1
1995/1996	198	63	5	95	0	76	20	0	0	4
1996/1997	94	47	1	99	0	52	37	0	0	11
1997/1998	186	52	17	83	0	82	18	0	0	0
1998/1999	288	59	10	82	8	79	13	0	8	0
1999/2000	193[c]	36	15	85	0	78	22	0	0	0
2000/2001	142	56	26	74	0	65	35	0	0	0
2001/2002	64	65	0	100	0	80	21	0	0	0
2002/2003	616	57	15	84	8	76	24	0	0	0
$\bar{x}$	161	56	10	88	2	73	23	0	1	2

[a] One beaver was hit and killed by a car.

[b] One beaver was shot.

[c] One otter was an illegal kill.

Table 3 Unit 2 furbearer harvest chronology by month, 1984–2002

Species/regulatory Year	Harvest periods							Successful trappers/hunters
	Dec	Jan	Feb	Mar	Apr	May	Unk	
Beaver								
1984/1985	52	54	38	40	32	18	0	--
1985/1986	66	96	66	95	34	7	0	--
1986/1987	120	66	96	74	26	29	0	21
1987/1988	90	87	34	73	45	13	10	29
1988/1989	31	4	7	2	48	11	0	16
1989/1990	199	79	6	76	26	9	2	22
1990/1991	18	56	59	17	17	5	0	17
1991/1992	120	46	17	46	12	11	5	17
1992/1993	36	4	10	2	11	1	0	10
1993/1994	109	27	10	26	25	7	0	20
1994/1995	58	35	29	15	24	0	0	19
1995/1996	55	31	37	67	25	6	60	18
1996/1997	114	58	43	57	13	0	6	22
1997/1998	48	39	59	76	12	0	15	21
1998/1999	31	12	16	7	10	10	18	13
1999/2000	53	39	60	138	18	2	0	22
2000/2001	48	50	29	60	75	26	14	27
2001/2002	20	11	13	0	0	0	0	5
2002/2003	53	42	49	26	14	3	0	21
$\bar{x}$	70	44	36	50	25	8	7	19
Marten								
1984/1985	675	275	89	0	0	0	0	--
1985/1986	300	175	27	0	0	0	69	--
1986/1987	217	57	27	0	0	0	0	29
1987/1988	643	338	44	0	0	0	124	63
1988/1989	519	63	29	0	0	0	297	49
1989/1990	613	258	33	0	0	0	3	53
1990/1991	257	157	58	0	0	0	29	30
1991/1992	475	127	66	0	0	0	32	33
1992/1993	431	116	28	0	0	0	0	30
1993/1994	510	104	42	0	0	0	0	37
1994/1995	635	308	49	0	0	0	46	36
1995/1996	692	163	26	0	0	0	245	35
1996/1997	846	189	17	0	0	0	0	35
1997/1998	687	349	32	8	0	0	0	39
1998/1999	516	90	0	0	0	0	8	28
1999/2000	519	204	55	0	0	0	0	30
2000/2001	607	257	0	0	0	0	0	24
2001/2002	182	111	13	0	0	0	0	14
2002/2003	598	356	129	0	0	0	0	27
$\bar{x}$	522	195	40	0	0	0	0	35
Otter								
1984/1985	55	93	44	0	0	0	0	--
1985/1986	43	82	16	0	0	0	0	--
1986/1987	35	23	4	0	0	0	0	19
1987/1988	36	103	34	1	0	0	2	27
1988/1989	60	21	11	0	0	0	0	17
1989/1990	60	66	28	0	0	0	0	29
1990/1991	6	19	12	0	0	0	3	14

Species/regulatory Year	Harvest periods							Successful trappers/hunters
	Dec	Jan	Feb	Mar	Apr	May	Unk	
1991/1992	16	19	7	0	0	0	1	19
1992/1993	18	26	21	1	0	0	0	20
1993/1994	31	52	25	0	0	0	0	25
1994/1995	106	90	36	0	0	0	0	26
1995/1996	61	72	21	0	0	0	44	23
1996/1996	53	38	3	0	0	0	0	18
1997/1998	78	76	27	0	0	0	5	23
1998/1999	145	116	27	0	0	0	0	30
1999/2000	95	79	16	1	0	0	1	25
2000/2001	33	72	30	0	0	0	0	15
2001/2002	26	38	0	0	0	0	0	7
2002/2003	181	284	139	12	0	0	0	28
$\bar{x}$	60	72	26	1	0	3	7	21

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNIT: 3 (3000 mi^2)

GEOGRAPHIC DESCRIPTION: Islands of Petersburg, Wrangell, and Kake areas

BACKGROUND

In previous years the Unit 1B and Unit 3 furbearer reports were combined in a single report. This year, for the first time, we have provided separate reports for each unit.

Furs, particularly those of the sea otter (*Enhydra lutris*), attracted Russians to colonize Southeastern Alaska in the late 1700s and early 1800s. Ships from many nations came to the area to trade with Alaska Natives for fur. In the early part of the 20th century fur farming was one of the biggest industries in Southeast Alaska. Blue and silver fox and mink (*Mustela vison*) were the primary species raised, but attempts were also made to raise raccoons, skunks, beavers (*Castor canadensis*), muskrats (*Ondatra zibethicus*), and red fox (*Vulpes vulpes*) (Burris and McKnight 1973).

At one time there were 200 fur farms in operation, according to U.S. Forest Service (USFS) archaeologist Larry Roberts. From the 1930s to the 1950s, 5 to 9 fur farms operated on Kupreanof Island. Petersburg was the regional center for the blue fox industry, supporting 60 fur farms located on a nearby island in the mid 1930s (Roppel 1983). The University of Alaska experimental fur farm on Mitkof Island, where researchers studied captive mink, fox, and marten populations, operated from 1936 to 1972. Several small islands contained introduced populations of free-roaming fox, a system unique to Alaska.

Past declines in some wild furbearer populations prompted regulations. In 1913 beaver trapping was prohibited for 5 years with a renewal of the prohibition extending the closure another 5 years. Martens were protected for 5 years starting in 1915.

Today most furbearer trapping is used as a winter income supplement and as a form of recreation. Seasons and bag limits have remained unchanged in recent years.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

1. Provide information to the Alaska Board of Game to further maintenance of viewable and harvestable populations of furbearers.

2. Seal harvested beaver, marten, otter, lynx, and wolverine pelts as they are presented for sealing.

3. Contact reliable observers for general information about the status and trends of furbearer populations, including the use of an annual trapper survey.

METHODS

Harvest information for beavers, lynx, martens, otters, and wolverines is collected from mandatory sealing. Location, harvest date, trapping and transportation method, and sex of all species are recorded on sealing certificates (except for the sex of beavers). We measure pelt size on beavers and otters, which provides an indication of harvested animals' ages. Additional harvest information on furbearer species is reported on fur export and fur acquisition reports.

Methods for estimating furbearer population abundance, trends, and distribution include mail-out questionnaires which local trappers received during the report period; interviews with trappers and fur buyers; and field observations by ADF&G and USFS personnel.

The video "Alaska Guide to Fur Handling" was distributed to local trappers to help them maximize the dollar value of their furs through proper skinning and pelt preparation techniques.

We monitored logging operations, road construction, and other developments to assess potential habitat loss.

RESULTS AND DISCUSSION

POPULATION STATUS AND TRENDS

No formal field surveys were conducted in this unit to determine furbearer population status or trends. Information obtained from the trapper questionnaire and biologists' field observations provides our best indication of status and trends (Table 1). Trappers reported that beavers were common and stable in 2000–01, abundant and stable in 2001–02, and abundant and increasing in 2002–03 throughout available habitat in Unit 3.

Lynx are not known to occur in Unit 3, and no harvest has been reported.

Trappers reported martens were abundant and stable in 2000–01, common and stable in 2001–02, and abundant with numbers increasing 2002–03.

Mink populations were reported to be abundant and increasing during this report period.

Land otter populations were reported to be abundant and stable in 2000–01 and 2001–02, and abundant and increasing in 2002–03.

Wolverines remained at a low but stable density with trappers reporting in 2002–03 that the population appeared to be increasing.

Trappers reported on the questionnaire that rodent populations were abundant and stable with numbers increasing in 2002–03.

Wolverines are considered scarce in Unit 3, although occasionally a few animals are harvested on Mitkof Island adjacent to the Unit 1B mainland. Three wolverines were harvested on Mitkof Island in 2002–03 but no harvest was reported in 2000–01 or 2001–02.

Trappers reported on the questionnaire that rodent populations were abundant and stable with numbers increasing in 2002–03.

MORTALITY

Season and Bag Limit.

Hunting

Wolverine	10 Nov–30 Apr	One wolverine

Trapping

Beaver (except Mitkof Island)	1 Dec–15 May	No Limit
Beaver (Mitkof Island)	1 Dec–15 Apr	No limit
Lynx, marten, mink, otter	1 Dec–15 Feb	No limit
Wolverine	10 Nov–30 Apr	No limit

Board of Game Actions and Emergency Orders. In fall 2002 the board adopted a regulation requiring that snares with a cable diameter of 3/32 inch or larger that are set out of the water must be individually marked with a permanent metal tag showing the trapper's name and address, or the trapper's permanent identification number. As an alternative, trappers may post a sign within 50 yards of the snare listing the trapper's name and address or the trapper's permanent identification number. No emergency orders were issued during this report period.

Trapper Harvest. During the report period, the number of trappers targeting beaver increased, as did the harvest. For all 3 years the beaver harvest was well above average the 9-year average of 46 beaver annually. Thirteen to 16 successful trappers harvested 139, 110, and 86 beavers in 2000, 2001, and 2002, respectively (Table 2).

The marten harvest was above the 9-year mean of 188 in 2000 when 290 marten were harvested, but decreased in 2001 and 2002 when 178 and 150, respectively, were taken. The decreasing trend in marten taken may have been related to the decrease in the number of successful trappers from 27 in 2000, to 17 in 2001, to 13 in 2002 (Table 3).

Unit 3 had an otter harvest of 56, 41, and 39 during the 2000, 2001, and 2002 seasons, respectively, which was down slightly from the 9-year average of 48 annually (Table 4). The wolverine harvest remained low during this report period, with none reported in 2000 or 2001 and 3 taken in 2003 (Table 5). The wolverine harvest during this report period was consistent with the 9-year mean of 1 wolverine per year in Unit 3.

Harvest level is directly related to fur prices and winter weather conditions during the trapping season. Mink and beaver pelt values have been low in recent years. According to fur buyer Dean Wilson, Southeast Alaska martens vary widely in quality and color and bring lower prices than Interior Alaska martens. However, the market favors southeastern land otters because of their larger size, good color, and silky fur. The Oriental market has been particularly interested in land otters in recent years, and prices have increased.

Harvest Chronology. Traditionally most of the Unit 3 furbearer harvest takes place in December and January, although a substantial portion of the beaver harvest can occur during February, March, and April. During this report period the majority of Unit 3 beavers were harvested during December, January, and February, respectively (Tables 6–9).

Transport Methods. During the report period, most beaver and marten trapping areas in Unit 3 were accessed by highway vehicles and boats. (Tables 10 & 11).

CONCLUSIONS AND RECOMMENDATIONS

Most furbearer populations appear to be abundant or common and remain stable in suitable habitat. Trapping effort is moderate, reflecting the current low-to-moderate fur prices. Harvest is well below sustained yield potentials. Large areas of noncoastal habitat on the mainland and islands remain untrapped and provide refuge for furbearer populations.

No regulation changes are recommended at this time. All land development plans should be reviewed and commented on regarding effects to furbearer populations and trappers. ADF&G can maximize the value of the resource by working with local trappers through the Hunter and Trapper Education Programs.

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Table 1 Results from trappers questionnaire, Unit 1B & 3 combined

	2000–01 Petersburg, Wrangell, Kupreanof and vicinity		2001–02 Petersburg, Wrangell, Kupreanof and vicinity		2002–03 Petersburg, Wrangell, Kupreanof and vicinity	
Furbearers species	Relative abundance	Trend	Relative abundance	Trend	Relative abundance	Trend
Beaver	common	same	abundant	same	abundant	more
Ermine	abundant	same	common	more	common	more
Lynx	x	x	x	x	scarce	fewer
Marten	abundant	same	common	same	abundant	same
Mink	abundant	more	abundant	more	abundant	more
Muskrat	scarce	same	scarce	same	scarce	fewer
Red Squirrel	abundant	same	abundant	more	abundant	more
Land Otter	abundant	same	abundant	same	abundant	more
Wolf	abundant	more	abundant	more	abundant	fewer
Wolverine	common	same	scarce	same	scarce	more
Prey species						
Grouse	common	same	common	same	scarce	same
Ptarmigan	common	same	scarce	same	scarce	fewer
Mice/rodents	abundant	same	abundant	same	abundant	more

Table 2 Unit 3 beaver harvest, 1993–2002

		Method of Take			
Regulatory year	Reported harvest	Trap/snare	Shot	Unknown	Successful trappers
1993–94	55	55	0	0	18
1994–95	25	24	1	0	5
1995–96	26	26	0	0	5
1996–97	44	44	0	0	6
1997–98	56	56	0	0	11
1998–99	54	53	0	1	11
1999–2000	43	43	0	0	10
2000–01	139	139	0	0	16
2001–02	110	110	0	0	14
2002–03	86	86	0	0	13

Table 3 Unit 3 marten harvest, 1993–2002

Regulatory year	Reported harvest						Successful trappers
	M	(%)	F	(%)	Unk.	Total	
1993–94	118	(67)	58	(33)	1	177	12
1994–95	53	(67)	17	(21)	9	79	7
1995–96	82	(35)	45	(19)	105	232	16
1996–97	98	(37)	55	(20)	109	262	23
1997–98	69	(25)	47	(17)	158	274	19
1998–99	59	(26)	35	(15)	127	221	16
1999–2000	108	(68)	52	(32)	0	160	15
2000–01	146	(50)	92	(32)	52	290	27
2001–02	54	(30)	39	(22)	88	178	17
2002–03	55	(37)	32	(21)	63	150	13

Table 4 Unit 3 land otter harvest, 1993–2002

Regulatory year	Reported harvest						Method of take					
	M	%	F	%	Unk.	Total	Trap/snare	%	Shot	%	Unk.	Successful trappers
1993–94	53	(65)	29	(35)	0	82	82	(100)	0	(0)	0	17
1994–95	29	(63)	13	(28)	4	46	43	(94)	3	(6)	0	8
1995–96	17	(52)	16	(48)	0	33	31	(93)	2	(7)	0	9
1996–97	32	(47)	22	(32)	13	67	62	(92)	5	(8)	0	14
1997–98	20	(43)	22	(48)	4	46	45	(98)	1	(2)	0	11
1998–99	18	(55)	9	(27)	6	33	33	(100)	0	(0)	0	11
1999–2000	23	(56)	18	(44)	0	41	25	(61)	16	(39)	0	11
2000–01	25	(45)	27	(48)	4	56	52	(93)	4	(7)	0	16
2001–02	22	(54)	19	(46)	0	41	40	(98)	1	(2)	0	16
2002–03	22	(59)	15	(38)	1	39	37	(95)	2	(5)	0	16

Table 5 Unit 3 wolverine harvest, 1993–2002

Regulatory year	Reported harvest						Method of take				Successful trappers
	M	%	F	%	Unk.	Total	Trap/snare	%	Shot	%	
1993–94	0	(0)	0	(0)	0	0	0	(0)	0	(0)	0
1994–95	1	(100)	0	(0)	0	1	1	(100)	0	(0)	1
1995–96	1	(100)	0	(0)	0	1	1	(100)	0	(0)	1
1996–97	1	(50)	1	(50)	0	2	2	(100)	0	(0)	2
1997–98	2	(67)	1	(33)	0	3	3	(100)	0	(0)	2
1998–99	0	(0)	0	(0)	0	0	0	(0)	0	(0)	0
1999–2000	0	(0)	0	(0)	0	0	0	(0)	0	(0)	0
2000–01	0	(0)	0	(0)	0	0	0	(0)	0	(0)	0
2001–02	0	(0)	0	(0)	0	0	0	(0)	0	(0)	0
2002–03	1	(33)	2	(67)	0	3	3	(100)	0	0	2

Table 6 Unit 3 beaver harvest chronology by month, 1993–2002

Regulatory year	Month								
	November	December	January	February	March	April	May	June[a]	*n*
1993–94	0	31	18	2	2	2	0	0	55
1994–95	12	1	1	1	9	0	1	0	25
1995–96	0	0	8	12	6	0	0	0	26
1996–97	0	12	5	18	9	0	0	0	44
1997–98	0	19	14	8	8	7	0	0	56
1998–99	0	21	4	0	0	24	1	4	54
1999–2000	0	12	1	7	11	12	0	0	43
2000–01	0	62	40	31	1	5	0	0	139
2001–02	2	28	28	18	12	14	8	0	110
2002–03	0	29	26	16	7	8	0	0	86

[a]Department of Transportation took 4 beavers that were damming culverts.

Table 7 Unit 3 marten harvest chronology by month, 1993–2002

Regulatory year	Month					
	December	January	February	March	Unknown	*n*
1993–94	68	73	36	0	0	177
1994–95	45	28	6	0	0	79
1995–96	89	67	76	0	0	232
1996–97	132	95	33	0	2	262
1997–98	189	64	17	0	4	274
1998–99	161	58	2	0	0	221
1999–2000	94	56	10	0	0	160
2000–01	184	73	9	0	24	290
2001–02	106	40	23	9	0	178
2002–03	0	75	75	0	0	150

Table 8 Unit 3 land otter harvest chronology by month, 1993–2002

Regulatory year	Month							*n*
	June[a]	July	Oct.	Dec.	Jan.	Feb.	Apr.	
1993–94	0	0	0	28	45	9	0	82
1994–95	0	3	1	19	13	10	0	46
1995–96	0	0	0	20	7	6	0	33
1996–97	0	0	0	18	31	19	0	67
1997–98	0	0	0	25	11	10	0	46
1998–99	1	0	0	13	18	1	0	33
1999–2000	0	0	0	15	12	14	0	41
2000–01	0	0	0	29	22	5	0	56
2001–02	0	0	0	18	14	5	4	41
2002–03	0	0	0	15	16	8	0	39

[a] Accidental catch by Department of Transportation taking beavers that were damming culverts.

Table 9 Unit 3 wolverine harvest chronology by month, 1993–2002

Regulatory year	Month						
	November	December	January	February	March	April	*n*
1993–94	0	0	0	0	0	0	0
1994–95	0	0	0	0	0	1	1
1995–96	0	0	0	0	1	0	1
1996–97	0	0	1	1	0	0	2
1997–98	0	1	1	1	0	0	3
1998–99	0	0	0	0	0	0	0
1999–2000	0	0	0	0	0	0	0
2000–01	0	0	0	0	0	0	0
2001–02	0	0	0	0	0	0	0
2002–03	0	1	0	0	1	1	3

Table 10 Unit 3 beaver harvest, method of transportation, 1993–2002

Regulatory year	Airplane	Boat	3-wheeler	Highway	Skis/snowshoes	Snowmachine	Unknown	Total
1993–94	0	28	0	25	2	0	0	55
1994–95	8	10	0	7	0	0	0	25
1995–96	0	2	2	22	0	0	0	26
1996–97	0	12	0	26	5	1	0	44
1997–98	0	25	0	31	0	0	0	56
1998–99	0	38	0	16	0	0	0	54
1999–2000	0	1	0	42	0	0	0	43
2000–01	0	50	20	69	0	0	0	139
2001–02	0	14	0	91	0	5	0	110
2002–03	0	18	12	56	0	0	0	86

Table 11 Unit 3 marten harvest, method of transportation, 1993–2002

Regulatory Ear	Airplane	Boat	3-wheeler	Snowmachine	Highway	Skis/snowshoes	Unknown	Total
1993–94	0	131	3	0	43	0	0	177
1994–95	0	57	22	0	0	0	0	79
1995–96	0	99	0	76	57	0	0	232
1996–97	0	170	8	29	55	0	0	262
1997–98	0	136	18	0	120	0	0	274
1998–99	0	72	9	5	120	15	0	221
1999–2000	0	29	0	0	131	0	0	160
2000–01	4	82	27	6	171	0	0	290
2001–02	0	32	9	44	93	0	0	178
2002–03	0	57	19	0	74	0	0	150

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June2003

LOCATION

GAME MANAGEMENT UNIT: Unit 4 (5800 mi^2)

GEOGRAPHIC DESCRIPTION: Admiralty, Baranof, Chichagof, and adjacent islands

BACKGROUND

Furbearer trapping in Game Management Unit 4 was of greater importance in the past than it is today. Local Natives historically used furbearers for cultural and subsistence purposes and as items of trade. Russian settlement in the region was instigated by the quest for fur. More recently, trapping provides income during the winter when other cash-generating opportunities are scarce, as well as providing recreational opportunities. However, recent government and other financial aid programs are at least partially responsible for diminishing the incentive to trap. Fur prices and the relative strength of the local economy, rather than furbearer abundance, has always been a major factor influencing trapping effort. Today most trapping has a strong recreational aspect, although income remains important. Because most trapping is facilitated through boat transportation, weather often affects the amount of effort. Winter storms frequently preclude trapline access, and in extreme years, limit trapper activity. The use of motorized land vehicles is increasing in areas where logging roads remain open to public use.

Furbearers occurring in Unit 4 are marten (*Martes americana*), river otter (*Lontra canadensis*), mink (*Mustela vison*), short-tailed weasel (*Mustela erminea*), red squirrel (*Tamiasciurus hudsonicus*), and beaver (*Castor canadensis*).

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

1. Regulate seasons and bag limits to maintain viewable and harvestable populations of mink, marten, and river otters.

2. Through regulatory restrictions, allow beaver populations to expand in western portions of the unit (Chichagof and Baranof Islands).

3. Seal harvested beaver, marten, and river otter pelts as they are presented for sealing.

4. Contact reliable observers for general information about the status and trends of furbearer populations, including the use of an annual trapper survey.

5. Continue to monitor mink, marten, and river otter populations through carcass necropsies and evaluation of those data.

METHODS

Trappers were required to submit river otter, beaver, and marten hides to authorized personnel for sealing. Each marten and otter pelt was examined and sex was determined. Otters were sexed by the presence or absence of the preputial orifice. Marten pelts were sexed by the larger size of males (Strickland and Douglas 1987). After sorting, the presence of a preputial orifice and/or the direction of the growth of the underfur at the posterior end of the abdominal gland was used to verify sex (Lensink 1953 in ibid). Width and length measurements were recorded for otter and beaver. Trappers provided data on the method of take (trap, snare, or firearm), primary transport means, month of catch, and location of take.

A mail-out questionnaire was sent to trappers that use Unit 4. Names and addresses were compiled from sealing documents. For the 2000–01 season, 44 questionnaires were sent and 17 (37 % response rate) were received. During the 2001–02 season, 42 questionnaires were mailed out and 15 (36% response rate) were received. Questionnaire responses were not available from the 2002–03 season.

Responses to trapper questionnaires provided a profile of trappers and their activities and observations. Additionally, responses can be analyzed to provide a more precise indication of the amount of harvest of unsealed furbearers. Formerly, the annual estimate of mink taken in Unit 4 was based on biologist estimates or from combining Fur Export Reports and Fur Acquisition Reports. Neither of these methods was deemed accurate; they severely underestimated the amount of harvest.

For this reporting period, work begun by Jack Whitman (previous area management biologist for Unit 4) during the 1999–2000 season compared the number of marten reported harvested on the questionnaires versus the number of marten sealed. Whitman assumed that the number of marten sealed more accurately reflected the total harvest than the questionnaire returns and developed an annual conversion factor, which was then used to estimate the number of mink harvested. That is, the conversion factor derived for marten was multiplied by the number of mink reported on the questionnaire responses, with the total mink capture resulting (Whitman 2001).

During the 2000–01 and 2001–02 seasons, carcasses were collected from area trappers and necropsies were performed. A series of weights and standard body measurements were collected from marten, mink, and river otter. Sex and age classes were assigned to each carcass. Relative physical condition was assessed, based on the amount of external and internal fat depositions. Stomachs were examined for the presence and number of parasites, particularly the roundworm *Soboliphyme baturini*. Skulls and femurs, and where appropriate, bacula, were collected and later cleaned. Canine teeth were extracted and cementum analysis was conducted on animals presumed to be >1 year old. Other aging techniques were investigated, and data were collected based on skull suture characteristics, baculum development, and femur morphology (Whitman 2001). Data were not collected during the 2002–03 season due to personnel changes and scheduling conflicts.

Sex and age ratios can be used to evaluate the relative extent of the harvest in some species and the current status of populations of mink and marten. Data are presented in appropriate sections of this report. In addition, Whitman used data from cementum aging of mink to advance a plausible management scheme for that species. This manuscript was published elsewhere (Whitman 2003).

As indicated by Flynn (personal communication), small mammal abundance may best reflect marten abundance. Therefore, Whitman instigated small mammal snap-trap lines in an effort to monitor potential prey abundance and assess the technique's relative value as a predictor of marten abundance and harvests.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

In 1990 the U.S. Forest Service (USFS) and the Alaska Department of Fish and Game (ADF&G) began a cooperative study on marten ecology on northeast Chichagof Island (Flynn 1993). Marten densities in the study areas have been monitored since 1992 using mark-recapture techniques (Flynn and Schumacher, 1994). Marten numbers declined during the winter of 1991–92 and remained low into 1993. Marten numbers peaked in winter and fall 1996 and declined substantially by winter 1997. At the same time, numbers of small mammals, especially long-tailed voles (*Microtus longicaudus),* showed a similar trend. Research has documented that marten prey primarily on long-tailed voles when available.

Although no formal population investigations resulting in statistically bound density estimates are available for any furbearer species in Unit 4, evidence from trapper questionnaires is probably adequate to reveal general population trends. During the period 1995–2002, trapper responses indicate that marten populations were moderate, with a slightly increasing trend. Mink populations remained stable at moderate levels, while river otter populations apparently increased slightly to moderate levels. Beaver and ermine populations were thought to remain low, while populations of red squirrels were moderate to high, increasing throughout the period. Grouse and ptarmigan populations were generally thought to be quite low, with mice and vole populations high during 1995 and 1996, then dropping to moderate levels.

Another indication of relative population levels can be inferred from male: female ratios or from total young:adult female ratios in the harvested segment of the population, particularly for marten. Based on sealing documents during 2000–01 and 2001–02, marten harvests consisted of 74% and 57% males, respectively. The 2002–03 season indicated males in the harvest as 63%. Total young:adult female ratios are probably a better indication of population status (Strickland and Douglas 1987). Various Canadian jurisdictions use a ratio of 3:1 in management of their seasons. If ratios fall below, seasons are curtailed. Higher ratios signify populations in which production and subsequent survival of young was high. Ratios from Unit 4 during 2000–01 were 6.8:1, and during 2001–02 were 4.8:1. Necropsies were not conducted in the 2002–03 season. These high juvenile:adult ratios appear to reflect secure marten populations.

Mink occur throughout Unit 4, but are largely restricted to the intertidal and riverine habitats. Populations are thought to be stable at relatively high densities (Whitman 2003). Based on

trapline captures in good habitat near Sitka, densities of at least 12 mink per linear mile of beach exist. No statistically bound census techniques were employed.

River (land) otters occur throughout the islands of Unit 4. No census data are available, but populations are thought to be stable.

Admiralty Island beaver populations are thought to be stable. Beavers occur in low numbers on Baranof Island, although higher beaver densities in localized areas have caused road drainage problems. The season is currently closed on both Chichagof and Baranof islands.

Status of prey populations potentially available to marten and mink were investigated. From mail-out questionnaires, trappers indicated status and trends of red squirrels (*Tamiasciurus hudsonicus*), blue grouse (*Dendragapus obscurus*), ptarmigan (*Lagopus* spp.), and mice, voles, and shrews collectively. Squirrel populations throughout Unit 4 were thought to be moderate to high during the period 1995–2002, with a generally increasing trend. Both grouse and ptarmigan numbers were low and stable. Small rodent and soricid populations were reported to be high during 1995 and 1996, declining to moderate numbers during 2000–2002.

Population Composition

Marten

In 2000–01, trappers caught 74% male marten, in 2001–02, 57% males, and 63% males in 2002–03 (Table 1), as reported on sealing documents. In the ADF&G research program, 59% males were caught in 1991–92 (Flynn and Blundell 1992). In 1992–93 the ratio was 60% male (Flynn 1993). Because of possible sex-based differences in the vulnerability of marten to trapping, these ratios may not accurately reflect the sex ratio in the wild (Buskirk and Lindstedt 1989).

According to Flynn and Schumacher (1994), juvenile martens significantly increased in the population in 1993–94 from the low levels recorded the previous years. This increase coincided with a two-fold increase of mice and voles on their study areas. They concluded that marten numbers were recovering on northern Chichagof Island, but that recruitment to the south appeared to be lagging a year behind.

A total of 121 marten carcasses were collected and necropsied during the 2000–01 season. Seventy-nine were males (65%). The total young:adult female ratio in the harvested sample was 75:11, yielding a ratio of 6.8:1. This ratio suggests reasonable production and survival of pups during spring 1999, with the overall marten population probably stable (Whitman 2001).

Of 85 marten carcasses necropsied during the 2001–02 season, 54 were males (63%). The total young:adult female ratio was 44:9 or 4.8:1. This young:adult female ratio is probably reflective of a stable marten population. It should be noted, however, that the sample of carcasses was collected from northern Baranof and southern Chichagof islands where logging activities have been minor. Marten carcasses were not necropsied during the 2002–03 season.

River otter

Sex ratios of river otters taken by trappers were 55% males in 2000–01, 53% males in 2001–02, and 47% males in 2002–03 (Table 1).

Because of their larger home ranges and their propensity to travel more, male river otters are more vulnerable to trapping (Melquist and Dronkert 1987). Thus, the percent of males in the harvest is usually greater than females. As harvest pressures increase, the proportion of females often increases and may signify harvest above sustainable limits. Unit 4 river otter harvests ranged from 63 to 283 animals during the period 1977–78 through 2002–03, and percent males in the harvest ranged from 39.7 to 64.0 (mean of 54.1% males). There was no indication that increases in the harvest resulted in a decline in male percentages in the harvest, and I suspect that the relatively light harvest has little impact on the otter population.

Annual variations in mean age of harvested otters may be useful in determining population trend. While any single year may provide limited data upon which population status assumptions can be made, it does provide baseline data for comparison purposes.

Mink

In 2003 Whitman published a manuscript in The Canadian Field-Naturalist concerning mink population parameters and management recommendations in Unit 4. These recommendations are incorporated into this report.

MORTALITY

Harvest

Hunting		
Coyote	1 Sep–30 Apr	2 coyotes
Wolf	1 Aug–30 Apr	5 wolves
Wolverine	10 Nov–15 Feb	1 wolverine
Trapping		
Beaver (that portion east of Chatham Strait)	1 Dec–15 May	No limit
Beaver (that portion west of Chatham Strait)	No open season	
Coyote, red fox, lynx, otter	1 Dec–15 Feb	No limit
Marten and mink, that portion of Chichagof Island east of Idaho Inlet and north of Trail River and Tenakee Inlet and north of a line from the headwaters of Trail River to the head of Tenakee Inlet	1 Dec–31 Dec	No limit
Marten and mink	1 Dec–15 Feb	No limit

Board of Game Actions and Emergency Orders. No board actions were taken and no emergency orders were issued during the period.

Trapper Harvest. Of 1121 marten pelts sealed in 2000–01, 829 were males, 252 were females, and 40 were of unknown sex. In 2001–02, 755 were examined; 434 were males, 286 were females, and 35 were of unknown sex. In 2002–03 there were 697 males, 411 females, and 1 of undetermined sex, for a total of 1109. Table 1 summarizes the sexes of martens in the harvest for the 1998–2002 regulatory years.

In 2000–01, 140 otters were sealed; 77 were males, 59 were females and 4 were of unknown sex. In 2001–02 there were 78 males, 65 females and 4 of unknown sex for a total of 147. The 2002–03 harvest was 283 otters; 132 males, 149 females and 2 of unknown sex. Harvest sex ratios since 1998 are presented in Table 1.

A comparison of marten harvest data from sealing documents and from trapper questionnaires resulted in a conversion factor (number of sealed marten/number of marten reported on trapper questionnaires) of 2.44 for 2000–01, 2.19 for 2001–02 and 2.39 for 2002–03. Using those same conversion factors for mink, which are not required to be sealed, I estimate that 312 mink were taken from the unit during 2000–01 and 229 mink were harvested during 2001–02. Trapper questionnaire data from 2002–03 is not currently available.

Hunter Residency and Success. During the 2000–01 season, 31 trappers reported catching marten, 27 of whom were residents of the unit. In 2001–02 there were 34 marten trappers reporting, 28 who listed residency in Unit 4. For 2002–03 there were 31 trappers, of which 27 were unit residents (Table 2).

Of the 14 trappers sealing Unit 4 otters, 12 claimed unit residency in 2000–01. In 2001–02 21 trappers reported catching otters; 17 of them claimed Unit 4 residency. For 2002–03 there were 25 trappers, with 20 of them being unit residents (Table 2).

Harvest Chronology. The greatest marten harvest occurred in the first month of the trapping season. A total of 1057 (94%) of the 2000–01 martens were taken in December. In 2001, 702 (93%) martens were caught in December. In 2002 the December harvest was 1073 (97%) (Table 3).

In 2000–01, 88 (63%) of trapped otters were taken in December. For the 2001–02 and 2002–03 seasons, 78 (53%) and 170 (60%), respectively, were taken in December (Table 3).

Transport Methods. Trappers using boats for transportation take most martens. In 2000/01, 89% of all martens were taken by trappers who used boats; in 2002–02, 60%; and in 2002–03, 68% (Table 4). Other transportation means that may be important in any given year include snowmachines, 3-wheelers, highway vehicles, and walking. Weather conditions influence the degree to which these other transportation types are used in any given year.

The take of otters is almost entirely with the aid of boats. For the 2000–01, 2001–02, and 2002–03 seasons, respectively, boats were reportedly used for 100%, 93%, and 97% of the harvest.

HABITAT

Assessment

The carrying capability for marten is undoubtedly decreasing in many areas in Unit 4 because of clearcutting of old-growth habitats. Martens have been documented to spend most their time in old-growth forest areas (Flynn 1993). Clearcutting may also be impacting otters. Larsen (1983) reported otters made little use of shorelines associated with clearcuts. Intertidal areas and immediately adjacent upland habitat is probably secure in terms of mink habitat.

CONCLUSIONS AND RECOMMENDATIONS

Seasons for most species have remained the same for many years. Federal subsistence regulations supersede State regulations on federal lands under the terms of the Alaska National Interest Lands Conservation Act (ANILCA). On Chichagof Island federal lands were closed to mink, marten, and weasel trapping in 1994, and in 1995 and 1996 were open for a December-only season. Nonfederal lands remained open under state regulations during the 3-year period. The discrepancy between state and federal regulations confused the public and created management problems.

The decline of marten populations during this report period may have been affected by trapping, but probably correlates directly to the densities of small mammals. The high 1991–92 harvest was in part due to nutritionally stressed martens moving more and being more vulnerable to trappers. As pointed out by Strickland and Douglas (1987), it is impractical to set harvest levels by determining an absolute population level. The need for trapping restrictions can be supported by monitoring the sex ratio and the presence of juveniles in the harvest (Strickland and Douglas 1987, Young and Schenck 1991). Because the population is now relatively high, existing trapping regulations are appropriate. With further population increase, more liberal season dates may be appropriate. Because marten are often captured in mink sets, the seasons for the 2 species should coincide to reduce the incidental take of martens at the low end of their cycle.

Otter populations appear to be healthy, and trapping pressure is light. No changes are recommended in trapping regulations at this time.

The beaver harvest remained low during the report period. This is probably because of a small demand for beavers and the lack of good habitat in the unit. Timber harvest in Chichagof Island valley bottoms appears to favor beaver habitat, but the absence of beavers in such areas may be keeping it from being used. Continued closure of beaver trapping west of Chatham Strait is recommended to encourage natural expansion of beavers into areas of regrowth alder and cottonwood.

Given the cyclic nature of marten populations and economic factors that affect trapping effort, management objectives based on some past harvest levels are not realistic. Further, reasonable means of monitoring population densities over such a large area are not available to establish appropriate yearly harvest objectives. Therefore, the evaluation of population status will continue to be subjective. Examining harvest statistics and anecdotal information from trappers and local residents can enhance this. With reduced fur prices and decreasing interest in trapping, the possibility for overtrapping most species appears low. Specific harvest or population

objectives cannot be used as management standards without programs in place that document population status.

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Table 1 Unit 4 furbearer harvest data, 1998–99 through 2002–03

Season	Male	Female	Unknown	Total
Marten				
1998–99	358	200	1	559
1999–2000	730	396	8	1134
2000–01	829	252	40	1121
2001–02	434	286	35	755
2002–03	697	411	1	1109
Otter				
1998–99	81	62	0	143
1999–2000	69	41	6	116
2000–01	77	59	4	140
2001–02	78	65	4	147
2002–03	132	149	2	283

Table 2 Unit 4 trapper residency and success, 1998–99 through 2002–03

Season	Local[a]	Nonlocal	Nonresident	Total
Marten				
1998–99	24	3	0	27
1999–2000	27	7	0	34
2000–01	21	10	0	31
2001–02	28	6	0	34
2002–03	27	4	0	31
Otter				
1998–99	15	1	0	16
1999–2000	16	5	0	21
2000–01	12	2	0	14
2001–02	17	4	0	21
2002–03	20	5	0	25

[a]Unit 4 residents.

Table 3 Unit 4 furbearer harvest chronology by month, 1998–99 through 2002–03

Season	November	December	January	February	Seasonwide	Total
Marten						
1998–99	0	462	78	19	0	559
1999–2000	0	1007	117	10	0	1134
2000–01	0	1057	64	0	0	1121
2001–02	0	702	52	0	0	755[b]
2002–03	0	1073	32	4	0	1109
Otter						
1998–99	0	97	45	1	0	143
1999–2000	0	91	23	2	0	116
2000–01	0	88	50	2	0	140
2001–02	0	78	68	0	0	147[b]
2002–03	0	170	70	43	0	283

[a]Confiscated animal; incidental catch while trapping beaver.

Table 4 Unit 4 successful trapper transport methods, 1998–99 through 2002–03

Season	Airplane	Horse/ dog team	Boat	Highway vehicle	4-wheeler/ snowmachine	Walked	Off-road vehicle	Unknown
Marten								
1998–99	0	0	483	38	14	24	0	0
1999–00	2	0	1034	0	1	97	0	0
2000–01	0	0	999	118	2	1	0	1
2001–02	7	0	451	241	5	3	48	0
2002–03	0	0	753	349	1	6	0	0
Otter								
1998–99	0	0	133	6	0	4	0	0
1999–00	0	0	112	0	0	4	0	0
2000–01	0	0	140	0	0	0	0	0
2001–02	0	0	137	4	0	6	0	0
2002–03	0	0	274	6	0	3	0	0

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNIT: Unit 5 (5800 mi^2)

GEOGRAPHIC DESCRIPTION: Cape Fairweather to Icy Bay, eastern Gulf of Alaska coast.

BACKGROUND

Furbearer species probably gained access to the Yakutat Forelands via the Alsek/Tatshenshini corridor (Klein 1965). Beavers, river otters *(Lutra canadensis)*, and mink *(Mustela vison)* are the common water-associated species; muskrats *(Ondatra zibethacus)* are noticeably absent, although they were once plentiful, according to some Yakutat residents. Lynx *(Lynx canadensis)* are present in small numbers, while martens *(Martes americana)* are found in fair abundance. Wolverines *(Gulo gulo)* probably occur in low numbers over extensive areas. Trapping pressure has historically been light throughout the Malaspina and Yakutat Forelands.

In Yakutat the harvest of furbearers is largely dependent on 2 main factors: effort by experienced trappers and winter weather conditions. There are usually 1 or 2 ambitious trappers in Yakutat, and when they participate in trapping, the furbearer catch is usually high and vice versa. Winter weather also affects trapping effort by enhancing or inhibiting locomotion. In winters with little snow, the roads remain open to vehicle traffic, thereby allowing more trapping opportunity. This is the opposite of many other areas of the state where lack of snowfall inhibits trapping effort.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

1. Provide information to the Board of Game to further maintenance of viewable and harvestable populations of furbearers.

2. Seal harvested beaver, marten, otter, lynx, and wolverine pelts as they are presented for sealing.

3. Contact reliable observers for general information about the status and trends of furbearer populations, including the use of an annual trapper survey.

METHODS

Staff from the Alaska Department of Public Safety Division of Fish and Wildlife Protection (now Bureau of Wildlife Enforcement) and ADF&G's Commercial Fisheries Division in Yakutat and Wildlife Conservation Division staff in Douglas sealed furbearer hides. All known trappers were encouraged to fill out a trapper survey to provide us with information on furbearer abundance and trapping effort.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

We do not conduct any formal furbearer research to document or monitor population status or trends; rather we depend on trapper questionnaires and trapper effort for furbearer information. Trapping pressure is generally light within this subunit and trends in harvest reflect several factors in addition to furbearer population levels. One or two individuals changing their trapping intensity can have substantial effect on harvests, as in the marten harvest during this period. Indications are that most furbearer populations are stable in Unit 5. The lynx harvest remains low, which is related to the low density of snowshoe hares. Little is known of marten abundance, but all indications are that they are common in forested regions of the unit. Land otters are more common in Unit 5 than the harvest would indicate. Low trapping effort accounts for the scarcity of these animals in harvest records. As with other furbearers, no population estimate exists for wolverines. It is believed that they occur at low densities in areas remote from habitation or roads.

MORTALITY

Harvest

Seasons and Bag Limits

Hunting

Beaver, marten, otter, mink, red fox, lynx	No open season	
Coyote	1 Sep–30 Apr	2
Wolverine	10 Nov–15 Feb	1

Trapping

Beaver	10 Nov–15 May	No limit
Coyote	1 Dec–15 Feb	No limit
Red Fox	1 Dec–15 Feb	No limit
Lynx	1 Dec–15 Feb	No limit

Marten	1 Dec–15 Feb	No limit
Mink, weasel	10 Nov–15 Feb	No limit
Otter	10 Nov–15 Feb	No limit
Wolverine	10 Nov–30 Apr	No limit

Board of Game Actions and Emergency Orders. The board took no actions that changed trapping regulations in this unit, and no emergency orders were issued during the period.

Trapper Harvest: Table 1 shows the furbearer harvest since 1986.

The beaver harvest was slightly higher than the previous report periods. Three of the beavers harvested were taken under 5 AAC 92.041 (permit to take beavers to control damage to property) on airport property. Few trappers are targeting beavers in other areas of the unit because of the low price and the amount of work it takes to catch and prepare beaver hides for sale.

There were 4 lynx harvested during this report period. Given the ease with which lynx can be trapped, the lack of harvest is a fair indication that lynx were scarce or absent.

The harvest of 76 martens during this report period was the lowest 3-year harvest in the past 15 years. Although this may be an accurate reflection of marten abundance, anecdotal information suggests that the low reported catch was partly due to one trapper not reporting his harvest. It was believed that this trapper had at least 50 marten that he never sealed. Only 10 otters were harvested during the report period. Otters, like beavers, require a lot of work to catch, skin, and flesh, and this probably led to the low catch. However, given the high price being paid for otter pelts, a higher harvest is expected during the next few years.

The wolverine harvest of 8 during the current report period matches the mean harvest during the previous report period, yet it is far below the 1994–1996 catch of 24. But, as Table 1 reveals, the harvest of most furbearers was at an all-time high during that period, and likely due to 1 or 2 industrious trappers.

Harvest Chronology: Most furbearers were caught in early to midwinter. Based on the number of animals caught with the use of highway vehicles for transportation, the closure of the Yakutat road system (by snow accumulation) may have also affected the harvest timing during the first 2 years of the report period. However, during the 2001–02 season, the absence of snow allowed trappers to use highway vehicles to access the entire road system throughout the trapping season. Otter and wolverine harvests peaked in December, although several animals were caught in November and January. Table 2 shows the chronology of the marten harvest. November accounted for the bulk of the 2000 harvest.

Transport Methods: Four wheelers and snowmachines were the most commonly used transport mode for marten trappers during this period, with highway vehicles and boats being less commonly used. For other species highway vehicles were most commonly used, with the use of snowmachines, 4-wheelers, boats, and airplanes being much less common. Generally speaking, the favored mode of transportation is dictated by snow accumulation.

CONCLUSIONS AND RECOMMENDATIONS

We believe harvests were within sustainable limits during the report period. It is not possible to determine if the annual harvest of each species indicates declining, stable, or increasing populations because of the variation in trapper effort from year to year. And in some cases the lack of reporting adds further confusion to our data interpretation. This variation is a reflection of both the amount of trapping effort directed at furbearers, as well as the intensity of the effort. Because of this, it is important to continue to collect information on furbearer populations from trapper interviews, as well as annual trapper surveys. These can provide us with a subjective measure of the relative abundance of furbearers.

One concern worth noting was the capture of dogs during the 2002 trapping season. There were 3 dogs captured and killed by snares and conibears, resulting in efforts by community members to ban trapping in certain areas. Some of these efforts were aimed at the city assembly, but no action was taken. The absence of snow during 2002 allowed people and dogs to hike far and wide, and this led to several dogs being caught in areas where they would otherwise not have been. In 2 of the cases, the dogs were running far from their owners. In the third situation, the dog was caught in a conibear while accompanied by its owner. Trapper education and trapping awareness for hikers is something that needs attention by ADF&G.

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Table 1 Unit 5 furbearer harvest, 1986–2002

Regulatory year	Beavers	Lynx	Martens	Otters	Wolverines
1986–1987	8	0	38	2	2
1987–1988	7	0	111	1	1
1988–1989	3	10	17	0	0
1989–1990	4	6	22	0	0
1990–1991	3	0	83	1	3
1991–1992	8	0	47	1	0
1992–1993	1	0	20	6	2
1993–1994	9	14	76	7	0
1994–1995	0	5	289	4	8
1995–1996	4	5	116	2	4
1996–1997	1	2	103	0	12
1997–1998	11	0	229	10	4
1998–1999	3	0	134	4	3
1999–2000	8	0	0	0	1
2000–2001	7	0	48	5	0
2001–2002	0	1	7	2	4
2002–2003	17	3	21	3	4

Table 2 Unit 5 marten harvest chronology by sex, 1994–2002

	1994–1995				1995–1996				1996–1997			
Month	Males	%	Females	%	Male	%	Females	%	Males	%	Females	%
November	20	44	25	56	6	60	4	40	0	0	0	0
December	47	56	37	44	57	54	48	46	28	60	19	40
January	12	50	12	50	0	0	0	0	33	59	23	41
February	28	70	12	30	0	0	0	0	0	0	0	0
Unknown	64	67	32	33	0	0	1	100	0	0	0	0
Total	171	59	118	41	63	54	53	46	61	59	42	41

	1997–1998				1998–1999				1999–2000			
Month	Males	%	Females	%	Males	%	Females	%	Males	%	Females	%
November	35	53	31	47	23	50	23	50	0		0	
December	68	61	43	39	19	63	11	37	0		0	
January	38	73	14	27	36	62	22	38	0		0	
February	0	0	0	0	0	0	0	0	0		0	
Unknown	0	0	0	0	0	0	0	0	0		0	
Total	141	62	88	38	78	58	56	42	0		0	

Table 2 (continued) Unit 5 marten harvest chronology by sex, 1994–2002

	2000–2001				2001–2002				2002–2003			
Month	Males	%	Females	%	Males	%	Females	%	Males	%	Females	%
November	15	52	14	48	3	75	1	25	6	100	0	0
December	8	62	5	38	0	0	1	100	1	14	6	86
January	1	33	2	67	1	50	1	50	1	33	2	67
February	2	67	1	33	0	0	0	0	3	60	2	40
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Total	26	54	22	46	4	57	3	43	11	52	10	48

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000

To: 30 June 2003

LOCATION

GAME MANAGEMENT UNIT: 6 (10,140 mi^2)

GEOGRAPHIC DESCRIPTION: Prince William Sound and north Gulf Coast

BACKGROUND

Beavers, coyotes, lynx, martens, mink, muskrats, land otters, weasels and wolverines are all present in Unit 6. Density of individual species is variable, depending upon a variety of ecological factors and levels of harvest. Historical information on population status and trends is mostly anecdotal. Harvests of beavers, lynx, martens, land otters and wolverines were monitored by sealing.

Beavers are abundant in Subunits 6A, 6B and 6C, where the deltas of the Copper and Bering Rivers and other freshwater streams provide suitable habitat. Density is lower in Subunit 6D, where less habitat is available. Heller (1910) reported beavers in the Rude River drainage of eastern Prince William Sound (PWS), but he apparently did not find them on islands in PWS. J. Reynolds (ADF&G files 1976) documented occurrence on Hawkins and Hinchinbrook Islands, Simpson Bay, Rude River and Gravina River. Beavers also occur in the Sheep River drainage.

We have sealed beaver hides to monitor harvest since 1927 (Courtright 1968). Most of the take was from the Copper and Bering River deltas, where total harvest has fluctuated widely. In 1938 C. Rhode (ADF&G files) reported a harvest of 700 from the deltas. When the town of Katalla was abandoned, trapping pressure on the Bering River delta declined considerably. By 1951 beaver harvest declined to a low of 27, and then increased again to more than 300 in 1960 and 1963 (Griese 1990). Average harvest during the last 20 years was 60 beavers.

Coyotes are relatively new arrivals in Unit 6. Heller (1910) did not note their presence in 1908, and F. Robards (ADF&G files) suggested coyotes replaced red foxes as the dominant canid by 1938. However, recent observations by trappers and ADF&G personnel suggest they have declined in eastern Unit 6, while wolves have increased.

Red foxes are rare in Unit 6. They were common in the early 1900s but may have been displaced as coyote populations increased (Griese 1990). The last significant harvest of foxes was reported in 1972 in Subunit 6C (Griese 1988*b*).

Lynx occur at low density in Unit 6. O. Koppen (ADF&G files) indicated in 1949 that numbers had always been low. Lynx abundance in Unit 6 increased following cyclical decline of snowshoe hares in adjacent Units 11 and 13, indicating lynx may disperse to the coast in search

of prey. Harvest increased for 1–5 years in Unit 6 following peak lynx abundance in adjacent units during 1972, 1982, 1992, and 2000. Few kittens have been reported in the harvest. Unit 6 may serve as low-density refugia for lynx when populations decline in adjacent units (Griese 1988*b*).

Density of marten is quite variable. In 1949, O. Koppen (ADF&G files) characterized populations as scattered. He believed the highest density occurred between Cape Suckling and Cape Yakataga. He suggested that PWS and deltas of the Copper and Bering rivers were frequently subjected to excessive trapping, resulting in low numbers. Populations in the 1980s increased, except in heavily trapped areas near Valdez and Cordova (Griese 1988*b*). During the late 1990s marten numbers increased unitwide, trappers reported a higher abundance than normal, and a record harvest occurred. Marten sealing began during 1999–2000.

Mink are common in most of Unit 6. Observations made between 1931 and 1955 (ADF&G files) suggested the potential for high numbers may not have been realized because of periodic overharvest. Trapping effort declined during the 1980s because of low pelt prices, and mink numbers increased throughout the unit (L. Kritchen, personal communication). However, this increase may have been slowed or reversed in 1989 in western PWS because of mortality caused by the *Exxon Valdez* oil spill.

Muskrats are found in Unit 6 east of PWS. Heller (1910) did not report muskrats in PWS in 1908, and J. Reynolds (ADF&G files) confirmed their absence in 1976. On the Copper River Delta, muskrats were plentiful during the 1930s (G. Nelson, ADF&G files); however by 1935 icing and overflows had reduced numbers. O. Koppen (ADF&G files) also reported depressed numbers in 1948 due to predation. By 1955 the Copper River Delta population had recovered (F. Robards, ADF&G files) and persisted with scattered but locally common densities (Griese 1988*a*). Recent Trapper Questionnaires and locally abundant push-ups indicate muskrat numbers increased since 1998.

Land otters are common in most of Unit 6. Heller (1910) reported land otters were the most common carnivore in PWS in 1908. However, trapping and hunting with dogs reduced them to low levels during the early 1930s (G. Nelson, ADF&G files). The population recovered during the 1940s (O. Koppen, ADF&G files) and became plentiful throughout the unit by 1951 (F. Robards, ADF&G files). The *Exxon Valdez* oil spill in 1989 caused significant mortality in western PWS. However, land otters were reported as recovered by the *Exxon Valdez* Oil Spill Trustee Council in 1999.

Weasels are common on the mainland of Unit 6. They generally are not a species targeted by trappers, but are caught incidentally in marten and mink sets.

Wolverines are present in most of the unit. In the late 1930s, they were plentiful and considered a nuisance (G. Nelson, ADF&G files). Bounties were placed on wolverines in 1954 that resulted in "undue" harvest pressure on the population, increasing the take 5-fold (F. Robards, ADF&G files). The bounty was removed in 1959. Harvest peaked between 1972 and 1978 because of increased trapper access and effort, as well as greater numbers of wolverines (Griese 1988b). Harvest was relatively high during the 1990s, averaging 19 per year during 1992–1998.

MANAGEMENT DIRECTION

Management Objectives

The management goal is to provide optimum harvests and maximum opportunities to participate in the hunting and trapping of furbearers (Rausch 1977). Management objectives have not been established.

METHODS

We sealed hides of beavers, land otters, lynx, martens, and wolverines taken by trappers and hunters. Sealing of martens began in 1999–2000. We recorded location and date of harvest, method of take, and type of transportation for all species. Sex was recorded for otters, martens and wolverines, and we measured length and width of beavers, lynx and otters. We also sent questionnaires to trappers to obtain information on relative abundance and trends in furbearer populations.

We assessed habitat used by land otters along the coastline in eastern PWS during 2000 and 2001, as described by Golden (1998). We collected scat deposition rates in eastern PWS during 2002 to determine a relative measure of otter abundance.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Beavers were abundant during this reporting period in Subunits 6A, 6B, and 6C, particularly on the deltas of the Copper and Bering rivers. On the Copper River Delta in Subunit 6C, the population was high and stable. Cache surveys in 1988 and 1990 indicated 2400 and 3100 animals, respectively (Nowlin 1993). Beavers increased in abundance on eastern Hinchinbrook Island; dams and ponds became a nuisance for some homeowners in Boswell Bay.

Coyotes were abundant and most populations were stable. Griese (1990) estimated density at 0.1-1.0/mi^2 in suitable habitat. A possible exception was in eastern Unit 6 where they may have declined because of displacement by an increasing wolf population. Red foxes were scarce and did not show signs of increasing during the reporting period.

Numerous observations and high harvest indicated that lynx increased substantially in Unit 6, coinciding with declining prey populations in adjacent, interior areas (Units 11 and 13). Marten numbers peaked during 1999–2000 and have subsequently declined. Mink and land otters were both common, with stable numbers in most of Unit 6. We monitored scat deposition rates of land otters at 39 sites in eastern PWS during July 2002. Analysis of relative abundance of land otters is in preparation. Muskrats increased during the reporting period and are considered locally abundant by trappers in Unit 6C. Wolverines were present at low to moderate density and were stable.

MORTALITY

Harvest

Seasons and Bag Limits. The beaver trapping season during 2000–01 was 1 December to 30 April with no bag limit. Beginning in 2001–02 the season was 10 November–30 April with no bag limit. Harvest ranged from a low of 75 during 2001–02, when poor trapping conditions occurred, to a high of 139 during 2000–01 (Table 1). Fifteen of the beavers taken during 2001–02 were shot under a nuisance control permit. Traps or snares were the normal method of take, and the proportion of juveniles in the harvest varied. As in past years, 90–100% of the harvest came from Unit 6C.

The coyote trapping season during 2000–01 in Unit 6C (that portion south of the Copper River Highway and east of the Heney Range) was 10 November–30 April; the trapping season in the remainder of Unit 6 was 10 November–31 March with no bag limit. Beginning in 2001–02 the season was 10 November–30 April with no bag limit for all of Unit 6. The coyote hunting season was 1 September–30 April and the bag limit was 2 coyotes. No harvest data are available. Because of low prices, trapping effort is minimal.

The red fox trapping season was 10 November–28 February, and there was no bag limit. There was no hunting season for red fox. No harvest data are available. Because of low prices, trapping effort is minimal.

The lynx trapping season was 15 January–15 February during the reporting period, with no bag limit. The hunting season for lynx was closed during the entire reporting period. Harvest during 2001–02 was 19 (Table 1), which was more then double the highest reported since sealing began in the early 1970s. The harvest returned to a more normal level during 2002–03 (Table 1).

The marten trapping season during the reporting period was 10 November–28 February, with no bag limit. Harvest peaked during 1999–2000 (the first year that sealing was required) when 198 were reported. Harvest has since declined to an average level based on previous fur acquisition and export reports (Table 1).

The mink trapping season during the reporting period was 10 November–28 February, with no bag limit. No harvest data are available. Because of low prices, trapping effort is minimal.

The muskrat trapping season during the reporting period was 10 November–10 June, and there was no bag limit. No harvest data are available. Because of low prices, trapping effort is minimal.

Land otter trapping season was 10 November–31 March, with no bag limit. Harvest was 64–176 during this reporting period (Table 1). Most (61%) of the high harvest taken during 2002–03 was by 2 experienced trappers working in eastern Prince William Sound. Eighty-three percent of the otters were taken in Subunit 6D. Most otters were taken using traps or snares.

The weasel trapping season during the reporting period was 10 November–28 February, with no bag limit. No harvest data are available. Because of low prices, trapping effort is minimal.

The wolverine trapping season was 10 November–28 February, and there was no bag limit. The wolverine hunting season was 1 September–31 March, and the bag limit was 1 wolverine. Harvest declined to an annual average of 7 during the reporting period. (Table 1). Lack of snow during the last several years resulted in difficult trapping conditions. Most wolverines were harvested in Subunit 6C and were trapped or snared.

Board of Game Actions and Emergency Orders. We regulated the lynx trapping season each year by emergency order as part of our tracking harvest strategy. Emergency orders were issued to modify season lengths as lynx and prey populations varied, to ensure sustainable harvest.

Harvest Chronology. Peak beaver harvest varied during the reporting period (Table 2), depending primarily on ice and snow conditions that provide access to beavers. The maritime climate causes annual variation in timing and endurance of winter conditions favorable to trappers. A similar pattern occurred over the past 5 years.

Land otters were primarily harvested during January, followed by December (Table 2). This was a shift from the 1990s, when more harvest occurred during December. The highest harvest of martens occurred during November and December (Table 2), as was reported during the previous 2 years. Lynx harvest was evenly distributed between January and February.

Most wolverine harvest during 2001–02 and 2002–03 occurred during February (Table 2). Warm, stormy weather created difficult trapping conditions for wolverines early in the season during those years. Historically, November through January is also a productive period.

Transport Methods. Beaver trappers consistently used highway vehicles for the majority of transportation (Table 3). Heavy reliance on highway vehicles occurred because the Copper River Highway provided easy access to high beaver populations in Subunit 6C. Land otter trappers used primarily boats for transportation, although colder conditions during 2000–01 allowed more access using all-terrain vehicles, snowmachines, and highway vehicles. (Table 3). Transportation used by wolverine trappers and hunters varied, depending on snow conditions (Table 3). Historically, good snow conditions allow better access with snowmachines and harvest increases. During the reporting period snow conditions were relatively poor, which restricted snowmachine use. Transportation used by marten trappers also varied widely depending on trapping conditions (Table 3).

HABITAT

Assessment

During summer 2001 and 2002 we assessed land otter habitat at 92 sites in eastern PWS and selected sites for long-term monitoring of otter use. Habitat analysis is ongoing. Our goal is to establish a technique to monitor trends in otter density and abundance for management purposes.

CONCLUSIONS AND RECOMMENDATIONS

Quantifiable management objectives need to be established for beavers, land otters and wolverines. Harvest information is available for all these species from sealing records, and

application of existing and emerging methodologies may provide opportunities to monitor population trends. We are approaching this goal with our ongoing work on land otters.

Harvests of most furbearers were within sustainable limits, and no changes in seasons or bag limits are recommended.

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Table 1 Unit 6 beaver, land otter, marten, lynx and wolverine reported harvest by sex, age and method of take, 1998–2003

Regulatory	Sex				Reported harvest					Method of take					Successful
year	M	F	(%)	Unk	Juv.[a]	(%)	Adults	Unk	Total	Trap/snare	(%)	Shot	L&S	Unk	trappers
Beaver															
1998–99				33	4	(17)	20	9	33	33	(100)	0	0	0	5
1999–2000				108	31	(31)	70	7	108	108	(100)	0	0	0	10
2000–01				139	20	(14)	119	0	139	139	(100)	0	0	0	7
2001–02				75	5	(13)	33	37	75	60	(80)	15	0	0	8
2002–03				106	7	(19)	29	70	106	106	(100)	0	0	0	17
Land otter															
1998–99	15	18	(55)	3	22	(76)	7	7	36	31	(86)	1	0	4	7
1999–2000	32	14	(30)	1	21	(55)	17	9	47	44	(94)	3	0	0	15
2000–01	32	26	(45)	6	42	(66)	22	0	64	62	(97)	2	0	0	10
2001–02	30	28	(48)	6	31	(58)	22	11	64	50	(78)	14	0	0	13
2002–03	109	59	(35)	8	74	(45)	90	12	176	168	(95)	8	0	0	18
Marten															
1999–2000	135	59	(30)	4					198	198	(100)	0	0	0	11
2000–01	91	64	(41)	2					157	88	(97)	3	0	66	8
2001–02	49	25	(34)	25					99	99	(100)	0	0	0	13
2002–03	56	28	(33)	0					84	84	(100)	0	0	0	14
Wolverine															
1998–99	15	6	(29)	0					21	18	(86)	3	0	0	9
1999–2000	10	4	(29)	0					14	13	(93)	1	0	0	4
2000–01	4	4	(50)	0					8	8	(100)	0	0	0	5
2001–02	7	3	(30)	0					10	9	(90)	1	0	0	7
2002–03	4	0	(0)	0					4	4	(100)	0	0	0	4
Lynx															
1998–99	0	0		0					0						
1999–2000	0	1	(100)	0	0	(0)	1		1	1	(100)	0	0	0	1
2000–01	1	1	(50)	0	2	(100)	0		2	2	(100)	0	0	0	1
2001–02	4	4	(50)	11	1	(5)	19		19	17	(89)	2	0	0	9
2002–03	0	3	(100)	0	0	(0)	2	1	3	2	(67)	1	0	0	3

[a] Beavers (length + width) $\leq$ 52", otters (length) <42", lynx (length) < 34".

Table 2 Unit 6 beaver, land otter, marten and wolverine harvest chronology percent by time period, 1998–2003

Regulatory year	Harvest periods							
	October	November	December	January	February	March	April	*n*
Beaver								
1998–99	0	24	39	27	9	0	0	33
1999–2000	0	21	12	8	22	18	19	108
2000–01	11	6	12	8	9	32	23	138
2001–02 [a]	0	3	9	21	31	9	7	75
2002–03 [b]	0	13	35	12	4	32	0	106
Land otter								
1998–99	0	53	28	19	0	0	0	36
1999–2000	0	9	49	19	6	17	0	47
2000–01	0	9	25	52	13	2	0	64
2001–02	0	22	36	27	16	0	0	64
2002–03	0	7	27	44	18	3	0	176
Marten								
1999–2000	0	26	42	25	7	0	0	198
2000–01	0	1	85	7	8	0	0	157
2001–02	0	49	30	13	7	0	0	99
2002–03	0	24	38	24	14	0	0	84
Wolverine								
1998–99	5	10	14	19	43	10	0	21
1999–2000	0	30	0	10	50	0	0	10
2000–01	0	13	38	25	25	0	0	8
2001–02	0	10	0	20	70	0	0	10
2002–03	0	0	0	0	100	0	0	4

a Fifteen beavers taken during July and August under damage control permit.

b Four beavers taken during August under damage control permit.

Table 3 Unit 6 beaver, land otter, marten and wolverine harvest percent by transport method, 1998–2003

Regulatory year	Percent of harvest							
	Airplane	Dogsled skis snowshoes	Boat	3-or 4-wheeler	Snowmachine	Highway vehicle	Unknown	*n*
Beaver								
1998–99	0	0	6	6	15	39	33	33
1999–2000	0	0	0	0	6	91	0	108
2000–01	0	0	0	24	5	70	1	139
2001–02	0	0	20	0	0	75	5	75
2002–03	0	0	6	4	0	91	0	106
Land otter								
1998–99	0	0	53	0	0	36	0	36
1999–2000	0	43	49	0	2	43	0	47
2000–01	0	0	30	22	9	39	0	64
2001–02	0	11	67	3	0	19	1	64
2002–03	0	0	78	5	0	16	0	176
Marten								
1999–2000	0	0	6	27	58	10	0	198
2000–01	0	5	1	1	5	6	82	157
2001–02	0	31	15	18	29	6	0	99
2002–03	17	0	30	6	12	36	0	84
Wolverine								
1998–99	0	10	10	5	57	19	0	21
1999–2000	7	0	0	0	93	0	0	14
2000–01	0	0	0	25	38	38	0	8
2001–02	0	0	40	10	30	20	0	10
2002–03	0	0	0	25	75	0	0	4

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNITS: 7 and 15 (8397 mi^2)

GEOGRAPHIC DESCRIPTION: Kenai Mountains

BACKGROUND

Historically, trapping was an important part of the Kenai Peninsula's culture and economy. Over the past two decades, trapping has evolved into primarily a recreational activity with few dedicated trappers remaining because of increased restrictions and pelt prices. Beavers, land otters, wolverines, lynx, coyotes, mink and weasels are found throughout the Kenai Peninsula at varying densities, depending upon habitat quality or prey abundance. The distribution and density of red foxes and martens are limited. Red foxes were abundant prior to 1930, according to longtime Kenai residents; however, they quickly disappeared as coyotes established and rapidly increased during the 1930s. Subunit 15C supports a small remnant population of red fox with an occasional observation reported from other areas of the Kenai Peninsula. Coyotes are widely distributed and abundant.

Martens are moderately abundant in Unit 7 but are rare in Unit 15 with the exception of the portion of Subunit 15B East, north of Kenai River. Because martens have never been common in Unit 15, it seems likely that habitat and/or prey availability, rather than human-induced mortality, controls their distribution on the Kenai.

Beavers were common in suitable habitat on the Kenai Peninsula; however, population density and trends have not been measured and are poorly understood in most areas. Incidental observations and the trend in nuisance beaver complaints indicate beaver populations peaked about 1984 and have remained relatively stable.

Land otters are common in inland waters and sheltered coastal areas of the Kenai Peninsula. Little is known about the population dynamics of this species. Observations and harvest information indicate otters are most abundant in drainages that support anadromous fish, stream-connected lakes and in sheltered coastal waters, such as the south shore of Kachemak Bay.

Wolverines are found most commonly in the Kenai Mountains, including the southern and eastern peninsula coastal areas, Caribou Hills, and the hilly terrain that forms the headwaters of the Deep Creek and Anchor River drainages. Wolverines are seldom observed in the northern

lowlands or the western coastal fringes of the peninsula. The historical distribution of wolverines on the Kenai Peninsula has not been documented; however, harvest records suggest a wider distribution during the late 1960s and early 1970s when moose densities were highest and wolf density low.

Lynx are cyclically abundant in the forest habitats of the Kenai Peninsula. Early-seral, mixed deciduous-spruce forests in Subunits 15A and 15B appear to have a higher carrying capacity for snowshoe hares, and consequently, lynx numbers are usually higher in these areas than in the subclimax spruce forests of Subunit 15C and Unit 7. Lynx density began to increase about 1994–95 as the snowshoe density increased. Snowshoe hares increased until the summer of 1996, then remained stable until 1998. Reports from trappers suggest hares started to decline in the summer of 1999 but were still high in pockets of high quality habitat. Trapping season reopened in Unit 7 and Subunits 15B and C in 1996–97, with a 1–31 January season. These units were last opened in 1987–88. Subunit 15A, closed in 1984–85, was reopened in 1997–98 along with the remainder of Units 15 and 7 from 1 January to 15 February. Due to a declining lynx population, following the snowshoe hare decline, trapping seasons for lynx were closed again in all of Units 7 and 15 in 2002–03.

Mink and weasel are common throughout Units 7 and 15. Although their pelt value is generally low, they continue to be important furbearers, especially for young trappers. Muskrats remained scarce throughout the units during this reporting period. Research has not been conducted to determine the controlling factors that regulate muskrat numbers; however, it is believed that midwinter flooding and overflow of lakes and rivers is the reason survival is low.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

Kenai Peninsula: A) maintain furbearer trapping seasons and bag limits consistent with population levels during periods of pelt primeness; B) maintain furbearer hunting seasons and bag limits consistent with population levels, but not necessarily limited to periods of pelt primeness; C) obtain sufficient data to develop measurable population objectives.

MANAGEMENT OBJECTIVES

Beaver

To maintain beaver populations capable of sustaining an average annual harvest of 150 through 2005.

Land Otter

To maintain otter populations capable of sustaining an annual harvest of 35 through 2005.

Wolverine

To maintain wolverine populations capable of sustaining an annual harvest of 20 through 2005.

Lynx

To maintain populations capable of sustaining a harvest commensurate with the current population size, reproductive status and trend. Hunting and trapping seasons will be allowed only during years of lynx abundance.

Marten

To maintain a marten population capable of sustaining an annual harvest of 35 through 2005.

METHODS

Harvests were monitored through mandatory sealing for lynx, land otter, wolverine, beaver and marten and reports from local trappers. Fur acquisition reports provided additional harvest data for species that lack the sealing requirement.

All of the harvest data is kept at the department's Web-based database called WinfoNet. This report reflects updated data in all tables using data from WinfoNet; therefore, data may differ slightly from past reports.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

We have conducted no formal research to document the status and trend of furbearers in Units 7 and 15 except monitoring of lynx by the U.S. Fish and Wildlife Service (FWS). Preliminary results from the FWS indicate the population has recovered from a cyclic low period from 1987 to 1992. During this report period the lynx population decreased and is currently at or near the cyclic low. Distribution and abundance of other furbearers appears to be stable.

Population Size:

No data available

Population Composition:

No data available

MORTALITY:

Harvest:

Season and Bag Limit.

Beaver

The season was open from 1 February to 31 March in Units 7 and 15 until 1992–93 when it was extended to 1 December to 31 March. In 1997–98 the season was extended again to 10 November to 31 March. The bag limit was 20 beaver per person. Since 1998–99, the annual beaver harvest exceeded 150 in 3 of 5 years, averaged 199 and ranged from 119–301 (Table 1). The annual variations in harvest appear to reflect effort, trapping conditions, and access. There are no obvious indications that harvests reflect population fluctuations.

Coyote

Seasons were open from 10 November to 28 February in Units 7 and 15 until 1996–97. In 1997–98 the season was extended to 10 November to 31 March. The bag limit for coyote was not limited. Because sealing is not required for coyotes, no harvest estimate is available.

Wolverine and Red Fox

The season was open from 10 November to 28 February in Units 7 and 15. The number allowed was not limited on wolverine, but red fox harvest was limited to one per trapper. Unit 15A was closed to trapping wolverine from 1987–88 to 1996–97. The mean annual wolverine harvest during the last 5 years was 14, and ranged from 6 to 18 (Table 4). During 3 of the 5 years the percent females in the harvest was equal to or greater than the percent males. Seventy-four percent (50 of 68) of the harvest occurred in Unit 7 during the last 5 years. Because sealing is not required for red fox, no harvest estimate is available.

Lynx

The season was closed beginning in 1987 for trapping and 1988 for hunting. The lynx population increased noticeably during the mid 1990s in response to an increase in the abundance of snowshoe hares. Trapping season was reopened 1–31 January in 1996 in Unit 7 and Subunits 15B and 15C. In 1997–98 Units 7 and 15 were opened to trapping 1 January–15 February with no bag limit. Harvest records indicate lynx density remained high from 1997 to 2000. During 2000–01 and 2001–02 season, dates were shortened to 15 January–15 February, and lynx trapping was closed for Units 7 and 15 beginning 2002–03. Lynx trapping season was reopened in 1996–97 in Unit 7 and Subunits 15B and C, and in 1997–98 in Unit 15A. Lynx trapping seasons in all of Unit 7 and 15 were closed again in 2002–03. During the 4 years when trapping for lynx was open (1998–99 to 2001–02), Unit 15A accounted for 32 to 59% of the annual harvest that averaged 117. Unit 7 has not demonstrated the extreme changes in density compared to Unit 15. The reason for a lower but more stable population in Unit 7 is the lack of widespread habitat to support snowshoe hares. Snowshoe hare populations decreased in both Units 7 and 15 during this report period. The total harvest for Units 7 and 15 declined from a high of 151 in 1998–99 to a low of 74 in 2001–02, and the percent kittens in the harvest reached a low of 9% in 2001–02 (Table 5). The harvest of 9 lynx during 2002–03 represents animals taken under hunting regulations.

Mink and Weasel

Seasons were open 10 November–31 January in Units 7 and 15. The number allowed was not limited. Because sealing is not required for mink and weasel, no harvest estimate is available.

Marten

The season in that portion of Subunit 15B east of Kenai River, Skilak Lake, and north of Skilak River was closed. The remainder of Unit 15 and Unit 7 were open 10 November–31 January, with no bag limit. Marten was added to the list of species requiring mandatory sealing during the 1988–89 trapping season. Table 2 shows the past 5 years of trapping data. The annual harvest averaged 94, ranging from 36–155. The harvest averaged 38 percent females over the past 5 years. All except one were trapped in Unit 7. Martens apparently are better suited to mountainous habitat with consistent weather patterns and deep snow found in Unit 7. Unit 15 commonly has inconsistent weather with frequent periods of rain during midwinter. However,

increased sightings of martens and their tracks in Subunits 15B and 15C suggest marten range may be expanding.

Muskrat

The season was open 10 November–15 May for Units 7 and 15, with no bag limit. Because sealing is not required for muskrats, no harvest estimate is available.

Land Otter

The season was open 10 November–31 January in Subunits 15A and 15B and 10 November–28 February in Subunit 15C and Unit 7 until 1996–97. Since 1997–98 the season has been 10 November–28 February for Units 7 and 15, with no bag limit. Otter harvests fluctuated during the past 5 years, probably related to access, weather conditions, and effort (Table 3). The mean annual, 5-year harvest was 46 otters with a range of 35–63. Males have outnumbered females in each of the past 5 years; the mean 5-year percentage of females in the harvest was 41 percent.

Board of Game Actions and Emergency Orders. There were no Board of Game actions regarding furbearers during this report period.

Harvest Chronology. Tables 6 through 10 show the chronology for reported harvest by percent for beavers, martens, otters, wolverines and lynx. General analyses of these data can be misleading due to variations in weather and access. Most of Unit 15 is within the Kenai National Wildlife Refuge and restrictions (related to snow depth) affect when trappers can access the area. Also, periodic freeze/thaw cycles on the Kenai Peninsula affect effort throughout the winter. The detailed analyses required to obtain meaningful information concerning harvest chronology is beyond the scope of this report; therefore, the data is provided without interpretation.

Transport Methods. Tables 11 through 15 show harvest percent by transport method for beavers, otters, wolverines and lynx. Because several (dogsled, skis and snowshoes) transport types are listed under one category, the reported transport method used is misleading as shown in these tables. Generally, trappers in Units 7 and 15 use a highway vehicle to access their trapline and then use snowshoes or a snowmachine as they travel along their traplines.

CONCLUSIONS AND RECOMMENDATIONS

The current density, allowing for a mean harvest of 199 beavers over the past 5 years, is acceptable under the stated management objective. In fact, beaver populations are probably underused in portions of the peninsula, in particular Subunit 15C. Initiation of beaver cache surveys along several representative drainages is recommended to monitor population trends and to determine whether additional harvesting is warranted.

Because marten harvests have only been documented through mandatory sealing since 1988–89, data indicating long-term trends in harvests are unavailable. However, it was interesting to note that few martens have been reported from Unit 15 in the past 2 decades, indicating martens are rare in this unit. Because historical records suggesting martens were trapped in Unit 15 are also rare and controversial as to authenticity, this data probably supports the theory that Unit 15 is

poor marten habitat compared to Unit 7. Harvest was distributed over most of Unit 7 and was generally confined near a road system due to the unit's remoteness.

Land otter harvests have been variable, probably due to weather conditions and access restrictions, rather than a reduction in the density of otters. Reports from trappers and staff observation suggest land otters were relatively abundant during the previous 5 years. The 5-year mean harvest of 46 exceeded the minimum management objective.

Wolverine harvests have decreased steadily in recent years, reaching a low of 6 in 2002–03. The percent females in the harvest was also relatively high (33–58%) during the last 5 years, but may be a result of the low sample size (6–18 annually). The low harvest in 2002–03 probably was due to the absence of snow throughout most of the trapping season, resulting in very limited access and decreased effort in trapping for wolverines by the few trappers who usually target this species. We will continue to monitor wolverine harvests, and if we obtain evidence indicating harvest is having an adverse impact on wolverine populations, we will suggest restrictions to current regulations.

Lynx management on the Kenai Peninsula has followed the recommendations of Brand and Keith (1979). Their study indicated that, during a lynx population decline in Alberta, trapping mortality was additive to natural mortality. Using computer modeling they showed more lynx would be produced and greater long-term harvest would be achieved when trapping was curtailed for 3 to 4 years, starting with the second year after the lynx harvest peak. This harvest strategy is currently implemented on the Kenai Peninsula. Staff observations and reports from longtime trappers suggest the hare cycle probably peaked around 1999–2000.

Trapping for lynx closed in Units 7 and 15 in 2002–03. Hunting has remained open, but the limited harvest of 10 lynx in 2002–03 suggests impacts to the population from hunting are minimal.

In accordance with our harvest tracking strategy, I recommend we maintain the lynx trapping closure in all of Units 7 and 15 at least through the 2004–05 season, but allow the current hunting season and bag limit (10 November–31 January, 2 lynx limit) as long as the harvest does not exceed 15.

No changes are recommended for the other species.

LITERATURE CITED

BRAND, C. AND L. KEITH. 1979. Lynx demography during a snowshoe hare decline in Alberta. Journal of Wildlife Management 43(4): 827–849.

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Please cite any information taken from this section, and reference as:

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Table 1 Annual beaver harvests on Kenai Peninsula by game management unit, 1998–2003

Regulatory year	Game Management Units					
	7	15A	15B	15C	All 15	Total Harvest
1998–99	75	25	12	28	65	140
1999–00	65	25	1	68	94	159
2000–01	130	102	34	35	171	301
2001–02	25	38	14	42	94	119
2002–03	143	45	64	25	134	277

All data has been updated from the ADF&G online database: WildlifeInfoNet

Table 2 Annual marten harvests on Kenai Peninsula by game management unit, 1998–2003

Regulatory year	Unit	Males	Females (%)	Unk.	Total Harvest
1998–99	7	41	29 (41)	0	70
	15	0	0	0	0
1999–00	7	47	13 (22)	14	74
	15	0	0	0	0
2000–01	7	68	42 (38)	24	134
	15	0	0	0	0
2001–02	7	55	47 (46)	52	154
	15	1	0	0	1
2002–03	7	17	12 (41)	7	36
	15	0	0	0	0

All data has been updated from the ADF&G online database: WildlifeInfoNet

Table 3 Annual land otter harvest on Kenai Peninsula by game management unit, 1998–2003

Regulatory year	Unit	Males	Females (%)	Unk.	Total Harvest
1998–99	7	1	1	0	2
	15A	6	0	0	6
	15B	4	6	0	10
	15C	10	7	0	17
	Subtotal	21	14 (40)	0	35
1999–00	7	5	3	3	11
	15A	7	5	1	13
	15B	3	0	0	3
	15C	7	7	3	17
	Subtotal	22	15 (41)	7	44
2000–01	7	4	4	6	14
	15A	9	7	0	16
	15B	3	4	0	7
	15C	6	4	4	14
	Subtotal	22	19 (46)	10	51
2001–02	7	6	4	2	12
	15A	3	1	2	6
	15B	1	0	0	1
	15C	11	8	1	20
	Subtotal	21	13 (38)	5	39
2002–03	7	15	6	1	22
	15A	16	4	1	21
	15B	3	0	0	3
	15C	4	13	0	17
	Subtotal	38	23 (38)	2	63

All data has been updated from the ADF&G online database: WildlifeInfoNet

Table 4 Summary of wolverine harvest on Kenai Peninsula by game management unit, 1998–2003

Regulatory year	Unit	Males	Females (%)	Unk.	Total Harvest
1998–99	7	6	3	3	12
	15A	0	0	0	0
	15B	1	2	0	3
	15C	2	0	0	2
	Subtotal	9	5 (36)	3	17
1999–00	7	4	5	4	13
	15A	0	0	0	0
	15B	0	0	0	0
	15C	1	2	0	3
	Subtotal	5	7 (58)	4	16
2000–01	7	8	7	0	15
	15A	1	0	0	1
	15B	0	0	0	0
	15C	0	2	0	2
	Subtotal	9	9 (50)	0	18
2001–02	7	2	2	0	4
	15A	0	1	0	1
	15B	2	1	0	3
	15C	1	2	0	3
	Subtotal	5	6 (55)	0	11
2002–03	7	4	2	0	6
	15A	0	0	0	0
	15B	0	0	0	0
	15C	0	0	0	0
	Subtotal	4	2 (33)	0	6

All data has been updated from the ADF&G online database: WildlifeInfoNet

Table 5 Summary of lynx harvest on Kenai Peninsula by game management units, 1998–2003

Regulatory year	Unit	Adults	Kittens (%)	Unclass	Total Harvest
1998–99	7	17	4	0	21
	15A	66	19	0	85
	15B	11	2	1	4
	15C	23	6	1	30
	Subtotal	118	32 (21)	1	151
1999–00	7	12	4	0	16
	15A	67	12	6	85
	15B	13	2	0	15
	15C	21	1	8	30
	Subtotal	113	19 (14)	14	146
2000–01	7	12	4	0	16
	15A	23	9	2	34
	15B	17	5	0	22
	15C	21	5	0	26
	Subtotal	73	23 (24)	2	98
2001–02	7	13	1	1	15
	15A	28	4	1	33
	15B	14	0	1	15
	15C	10	1	0	11
	Subtotal	65	6 (9)	3	74
2002–03	7	0	0	1	1
	15A	2	0	2	4
	15B	0	1	0	1
	15C	2	0	1	3
	Subtotal	4	1 (25)	4	9

All data has been updated from the ADF&G online database: WildlifeInfoNet

Table 6 Units 7 & 15 beaver harvest chronology percent by month, 1998–2003

Regulatory year	Month					Unk/other	Total Harvest
	November	December	January	February	March		
1998–99	41	16	15	7	3	17	140
1999–00	45	25	11	8	11	1	159
2000–01	42	22	20	11	2	4	301
2001–02	46	28	11	7	3	6	119
2002–03	42	22	8	21	7	0	277

All data has been updated from the ADF&G online database: WildlifeInfoNet

Table 7 Units 7 & 15 marten harvest chronology percent by month, 1998–2003

Regulatory year	Month					Unk/other	Total Harvest
	November	December	January	February	March		
1998–99	31	39	30	0	0	0	70
1999–00	23	35	39	3	0	0	74
2000–01	14	65	21	0	0	0	134
2001–02	28	46	22	3	0	0	155
2002–03	17	33	50	0	0	0	36

All data has been updated from the ADF&G online database: WildlifeInfoNet

Table 8 Units 7 & 15 otter harvest chronology percent by month, 1998–2003

Regulatory Year	Month						
	November	December	January	February	March	Unk/other	Total Harvest
1998–99	31	11	37	20	0	0	35
1999–00	16	34	23	20	2	5	44
2000–01	12	31	31	23	0	2	51
2001–02	28	23	23	21	3	3	39
2002–03	25	40	27	8	0	0	63

All data has been updated from the ADF&G on-line database: WildlifeInfoNet

Table 9 Units 7 & 15 wolverine harvest chronology percent by month, 1998–2003

Regulatory year	Month						
	November	December	January	February	March	Unk/other	Total Harvest
1998–99	0	12	41	35	6	6	17
1999–00	13	19	31	31	0	6	16
2000–01	6	22	17	44	0	11	18
2001–02	9	18	55	18	0	0	11
2002–03	0	0	50	50	0	0	6

All data has been updated from the ADF&G online database: WildlifeInfoNet

Table 10 Units 7 & 15 lynx harvest chronology percent by month, 1998–2003

Regulatory year	Month					Unk/other	Total Harvest
	November	December	January	February	March		
1998–99	1	1	57	39	0	1	151
1999–00	2	3	62	29	1	2	146
2000–01	3	6	56	34	0	1	98
2001–02	4	8	50	38	0	0	74
2002–03	30	10	50	10	0	0	10

All data has been updated from the ADF&G online database: WildlifeInfoNet

Table 11 Units 7 & 15 beaver harvest percent by transport method, 1998–2003

Regulatory Year	Percent of harvest								
	Airplane	Horse/ Dogsled	Boat	3- or 4-wheeler	Snow machine	ORV	Highway vehicle	Unk/other	Total Harvest
1998–99	1	0	4	1	21	0	32	40	140
1999–00	3	0	0	0	35	3	30	30	159
2000–01	18	1	4	5	10	0	31	31	301
2001–02	4	0	6	0	10	0	13	67	119
2002–03	1	0	22	0	5	0	29	43	277

All data has been updated from the ADF&G online database: WildlifeInfoNet

Table 12 Units 7 & 15 marten harvest percent by transport method, 1998–2003

Regulatory year	Percent of harvest: Airplane	Horse/ Dogsled	Boat	3- or 4-wheeler	Snow machine	ORV	Highway vehicle	Unk/other	Total Harvest
1998–99	0	0	0	0	24	0	34	41	70
1999–00	0	0	3	0	46	0	16	35	74
2000–01	0	0	0	16	17	0	20	47	134
2001–02	0	0	1	0	11	0	16	72	154
2002–03	0	0	0	0	47	0	11	42	36

All data has been updated from the ADF&G online database: WildlifeInfoNet

Table 13 Units 7 & 15 otter harvest percent by transport method, 1998–2003

Regulatory year	Percent of harvest: Airplane	Horse/ Dogsled	Boat	3 or 4-wheeler	Snow machine	ORV	Highway vehicle	Unk/other	Total Harvest
1998–99	0	0	14	6	14	3	23	40	35
1999–00	0	0	16	0	27	0	23	34	44
2000–01	2	0	8	0	33	0	20	37	51
2001–02	0	0	0	0	33	5	21	41	39
2002–03	6	0	16	0	11	0	37	30	63

All data has been updated from the ADF&G online database: WildlifeInfoNet

Table 14 Units 7 & 15 wolverine harvest percent by transport method, 1998–2003

Regulatory year	Percent of harvest								Total Harvest
	Airplane	Dogsled	Boat	3- or 4-wheeler	Snow machine	ORV	Highway vehicle	Unk/other	
1998–99	0	0	6	0	65	0	0	29	17
1999–00	0	0	13	0	38	0	0	50	16
2000–01	0	0	6	17	22	0	6	50	18
2001–02	9	0	0	0	45	0	9	36	11
2002–03	0	0	0	0	17	0	33	50	6

All data has been updated from the ADF&G online database: WildlifeInfoNet

Table 15 Units 7 & 15 lynx harvest percent by transport method, 1998–2003

Regulatory year	Percent of harvest								Total Harvest
	Airplane	Dogsled	Boat	3- or 4-wheeler	Snow machine	ORV	Highway vehicle	Unk/other	
1998–99	0	0	1	1	73	0	11	15	151
1999–00	1	0	0	0	53	0	14	32	146
2000–01	3	0	0	0	18	0	22	56	98
2001–02	0	0	0	0	36	1	18	45	74
2002–03	0	0	0	0	0	10	50	40	10

All data has been updated from the ADF&G online database: WildlifeInfoNet

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNIT: 8 (5097 mi^2)

GEOGRAPHIC DESCRIPTION: Kodiak and adjacent islands

BACKGROUND

Archeological evidence indicates the only furbearers indigenous to the Kodiak Archipelago are red foxes, land otters, and short-tailed weasels (Rausch 1969). Skeletal remains of other species have been found in midden sites, but Native traders probably brought these into the area. Wildlife management agencies introduced beavers and muskrats in 1925 and 1929, respectively. Mink, marten, and red squirrels were introduced in 1952 (Burris and McKnight 1973). Healthy populations of all of these furbearers, except mink, now reside in the unit. Raccoons were illegally introduced at various times, but sightings are rare. Norway rats are common in the vicinity of Kodiak and other villages. Captive red and arctic foxes escaped or were released from fox farms widespread in the early 1900s. Arctic foxes occur only on Chirikof Island. Feral dogs occur on the southwest end of Kodiak, where they occasionally form packs and hunt deer.

Red foxes, land otters, beavers, and short-tailed weasels are the most abundant furbearers on the archipelago. Marten occur only on Afognak Island. Trappers most commonly pursue red foxes, land otters, and beaver. Furbearer populations and trapping pressure have been stable during the past decade. No major changes in regulations occurred during this report period.

Recreational trappers conduct most of the trapping in Unit 8, and effort is affected more by weather than by vagaries in the fur market. Little fur is exported for sale; most is kept on the island for personal use or to sell locally.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

Management objectives for furbearers in Unit 8 are to develop measurable objectives for all furbearer species and collect harvest data on land otters and beavers through the mandatory sealing program and statewide trapper questionnaire.

METHODS

We monitored beaver and land otter harvests through a mandatory sealing program. We sent statewide trapper questionnaires to trappers each year and recorded the number of furs exported from the state.

RESULTS AND DISCUSSIONS

POPULATION STATUS AND TREND

Population Size

No objective estimates of furbearer populations have been done. Most trappers reported furbearer populations were high during this report period, except along portions of the Kodiak road system.

MORTALITY

Harvest

Season and Bag Limit. Beaver trapping season was from 10 November to 30 April. The bag limit was 30 beavers per trapper. Harvests fluctuated but showed a generally increasing trend. During the past 5 years (1998–99 through 2002–03), annual harvests ranged from 18 to 71 and averaged 48 (Table 2). The previous 5-year period (1994–95 through 1997–98) had similar fluctuations, but the average annual harvest was 40.4. The number of trappers during the past 5 years fluctuated from 13 to 18, averaging 14.8 per year. The average take per trapper ranged from 1.0 to 4.6, with an average of 3.2 beavers/trapper per year.

The red fox trapping season was open from 10 November to 31 March with no limit on the number of animals a trapper could legally take. The red fox hunting season was from 1 September to 15 February and the bag limit was 2 foxes. Red foxes are the most commonly pursued furbearer in Unit 8, but current methods of monitoring harvest may underestimate the take. The 1991–92 through 1997–98 fur export permit data indicated an average annual harvest of 34.8. The average annual harvest by trappers and hunters is estimated at 300 red foxes. Some foxes are home-tanned or dried for wall hangings, and we suspect hides are often shipped without fur export permits.

The marten, weasel, and land otter trapping season was from 10 November to 31 January with no limit on the number of these animals a trapper could legally catch. Land otter harvests have fluctuated, but continued a generally increasing trend. During the past 5 years (1998–99 through 2002–03), the annual harvests ranged from 100 to 216, with an average of 157.2 (Table 1). The previous five-year period (1994–95 through 1997–98) had similar fluctuations, but the average annual harvest was 135.4. The number of otter trappers during the past 5 years has fluctuated from 19–24, averaging 22.2/year. The average take per trapper ranged from 5.0 to 9.1, with an average of 7.1 otters/trapper per year.

The muskrat trapping season was from 10 November to 10 June with no bag limit. There was no closed hunting or trapping season on squirrels, nor was there a bag limit on squirrels.

Harvests of marten, squirrels, weasels, and muskrats were negligible. Occasionally, trappers made sets for marten on Afognak Island, but little trapping effort occurred for the remaining species.

Board of Game Actions and Emergency Orders. The Board of Game made no changes in furbearer trapping or hunting regulations in this report period.

Harvest Chronology. November is typically the most active month for fur trappers in Unit 8, but harvest chronology for both land otters and beavers has been variable (Tables 3 and 4, respectively).

Transport Methods. Highway vehicles and boats are the most common modes of transport for otter and beaver trappers (Tables 5 and 6, respectively), but methods are variable with aircraft and 3- or 4-wheelers common in some years.

Other Mortality

None noted.

HABITAT

Logging on Afognak Island was the only major land use activity altering furbearer habitat. Clearcut logging of old-growth timber was detrimental to marten populations in southeastern Alaska (Young 1990). Studies of the effects of logging on furbearers have not been conducted in Unit 8.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

A population trend estimation technique for land otters should be developed. The land otter is the furbearer most susceptible to overexploitation in Unit 8. During the 1980–81 season, the harvest exceeded 400 otters, and in local areas up to 1 otter/mile of coastline was harvested. Annual harvests have never reached that level again, but they have been generally increasing for the past several years. As prices for otters remain high and prices for other furs decline, the otter harvest could quickly again become a concern. Without survey data it will be difficult to properly assess impacts on the population.

Beavers caused occasional flooding of roads by plugging culverts. Approximately 1–5 nuisance beavers were removed adjacent to roads in northeastern Kodiak Island annually by trapping and shooting. The Alaska Department of Transportation & Public Facilities (DOT&PF) is periodically issued a beaver depredation permit to allow control of nuisance beavers along the highway.

Ground squirrels are a chronic nuisance at the state airport in Kodiak, where they undermine runway edges and damage runway lights. DOT&PF has a permit to shoot ground squirrels.

Some conflicts between trappers and other recreational users occur where trappers make sets near beaches and roadsides. Deer, bear, and eagles are periodically caught in fox snares, and 1–2 deer per year are reported dead in snares. Domestic dogs and cats are also occasionally caught in these sets, prompting articles and letters to the local newspaper.

Typically, inexperienced trappers are responsible for the snared deer and pets, and better trapper education could alleviate the problem.

The commander of the U.S. Coast Guard base near the city of Kodiak closed all Coast Guard lands to trapping in 2003. This action was in response to concerns about pets and children being vulnerable to getting caught in traps and snares, and to a perceived decline in the number of foxes on the base.

CONCLUSION AND RECOMMENDATIONS

Harvests of all furbearer species were relatively low and furbearer populations were relatively high. Less than 25 beaver and otter trappers were active each year, and the average annual harvest of all species was estimated at 500 animals. Land otters are potentially susceptible to overharvest and a population trend estimation technique should be developed for that species. We should also develop and disseminate educational materials for trappers and pet owners suggesting ways to minimize trap-related injuries to pets.

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Table 1 Unit 8 land otter harvest 1994–2002

Regulatory	Reported Harvest				Method of Take			Successful
Year	M (%)	F (%)	Unk	Total	Trap/Snare (%)	Shot (%)	Unk.	Trappers
1994–95	33 (36)	34 (37)	24	91	76 (83)	14 (15)	1	15
1995–96	71 (51)	48 (35)	20	139	138 (99)	1 (1)	0	19
1996–97	59 (47)	50 (40)	17	126	124 (98)	2 (2)	0	18
1997–98	70 (47)	53 (36)	25	148	142 (96)	6 (4)	0	17
1998–99	77 (45)	59 (34)	37	173	143 (83)	25 (15)	5	19
1999–2000	48 (48)	28 (28)	24	100	93 (93)	5 (5)	2	20
2000–01	102 (54)	80 (42)	7	189	178 (94)	9 (5)	2	24
2001–02	98 (45)	106 (49)	12	216	211 (98)	3 (1)	2	24
2002–03	54 (49)	52 (47)	4	110	103 (94)	6 (5)	1	24

Table 2 Unit 8 beaver harvest 1994–2002

Regulatory	Reported Harvest [a]					Method of Take					Successful
Year	Juv	%	Adult	%	Total	Trap/Snare	%	Shot	%	Unk.	Trappers
1994–95	2	7	22	76	29	21	72	3	10	5	8
1995–96	10	20	26	52	50	45	90	5	10	0	14
1996–97	9	24	28	74	38	37	97	1	3	0	8
1997–98	10	24	26	62	42	31	74	7	17	4	12
1998–99	8	19	35	81	43	39	91	4	9	0	13
1999–2000	4	8	28	58	48	39	81	4	8	5	13
2000–01	13	22	39	65	60	34	57	12	20	14	13
2001–02	7	39	11	61	18	14	78	4	22	0	18
2002–03	15	21	39	55	71	49	69	22	31	0	17

[a] Beavers ≤ 52" were reported as juveniles; beavers not measured are not included in analysis

Table 3 Unit 8 land otter harvest chronology percent by month, 1994–2002

Regulatory year	Harvest periods					*n*
	November	December	January	February[a]	Unknown	
1994–95	40	30	27	2	1	91
1995–96	32	46	22	0	0	139
1996–97	44	21	35	0	0	126
1997–98	29	49	22	0	0	148
1998–99	66	26	8	0	0	173
1999–00	38	45	15	0	2	100
2000–01	30	35	35	0	0	189
2001–02	31	40	19	0	10	216
2002–03	21	66	12	0	1	110

[a] Season closed 31 January

Table 4 Unit 8 beaver harvest chronology percent by month, 1994–2002

Regulatory year	Harvest periods								
	November	December	January	February	March	April	May	Unknown	*n*
1994–95	38	7	28	0	0	10	0	17	29
1995–96	22	50	0	0	10	14	0	4	50
1996–97	71	21	0	3	3	3	0	0	38
1997–98	19	43	0	21	17	0	0	0	42
1998–99	60	34	0	0	0	5	0	0	43
1999–00	52	15	15	15	4	0	0	0	48
2000–01	44	13	8	8	3	0	0	24	60
2001–02	72	22	0	0	0	6	0	0	18
2002–03	34	11	11	6	6	32	0	0	71

Table 5 Unit 8 land otter harvest percent by transport method, 1994–2003

Regulatory year	Percent of harvest								
	Airplane	Boat	3- or 4-wheeler	Snow machine	ORV	Highway vehicle	Foot	Unknown	*n*
1994–95	3	54	0	5	0	34	0	3	91
1995–96	0	48	0	0	0	42	6	3	139
1996–97	5	66	5	0	0	17	0	8	126
1997–98	5	68	14	0	0	14	1	0	148
1998–99	1	59	8	0	0	21	4	7	173
1999–2000	3	44	22	0	0	29	0	2	100
2000–01	2	66	13	0	0	16	0	3	189
2001–02	1	75	9	0	0	11	2	1	216
2002–03	15	14	11	0	0	59	0	1	110

Table 6 Unit 8 beaver harvest percent by transport method, 1994–2003

Regulatory year	Percent of harvest								
	Airplane	Boat	3- or 4-wheeler	Snow machine	ORV	Highway vehicle	Foot	Unknown	*n*
1994–95	3	28	0	24	0	28	0	17	29
1995–96	0	10	14	0	0	70	0	6	50
1996–97	0	0	37	0	0	61	0	3	38
1997–98	12	0	31	0	5	50	2	0	42
1998–99	0	77	2	2	0	12	0	7	43
1999–2000	4	40	17	0	0	25	4	10	48
2000–01	8	40	22	0	0	7	0	23	60
2001–02	0	22	39	0	0	33	0	6	18
2002–03	35	11	41	0	0	8	0	4	71

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNITS: 9 (45,522 mi^2) and 10 (15,798 mi^2)

GEOGRAPHIC DESCRIPTION: Alaska Peninsula; Aleutian and Pribilof Islands

BACKGROUND

Furbearers in these areas include beaver, coyote, red fox, lynx, marten, mink, muskrat, land otter and wolverine. All species are found on at least part of the mainland of Unit 9. There are fewer species on the islands in both units. On some islands furbearers are present because of past introductions for fur farming or efforts to establish harvestable wild populations.

Beavers are found on the mainland north of Port Moller. The most productive beaver habitat has a dependable water supply with little fluctuation in stream flow and is adjacent to abundant and easily accessible willow, aspen, cottonwood, or birch vegetation. Beavers are found from sea level to elevations of 2000 feet.

Coyotes apparently first arrived in Alaska about 1915 and were rare before 1980. They rapidly extended their range, yet now are restricted to the mainland of Unit 9. Relatively few are trapped, usually incidentally to fox, lynx, or wolf trapping effort. Sport hunters generally take a few coyotes.

Red foxes are on the mainland, on some of the offshore Alaska Peninsula islands, and on the larger islands of the eastern Aleutians. Red fox introductions to the Aleutians and Alaska Peninsula islands began during Russian occupancy and continued through 1932. Some earlier red fox introductions succeeded, but foxes were later exterminated to facilitate introduction of arctic foxes. Rabies, mange and distemper epidemics occur periodically in fox populations, resulting in widespread mortality.

Arctic foxes occur in a narrow band along the marine coast, on open tundra, and on sea ice many miles from shore. Their natural distribution extends to the northwestern shore of Bristol Bay. Blue color-phase arctic foxes were introduced dating back to the Russian period. Arctic foxes are noted for their wide fluctuations in population levels with periodic peaks about every four years. Their population densities are linked to cyclic fluctuations in small rodent populations. Foxes also patrol beaches in search of carrion. Foxes are an efficient predator of nesting birds and the U.S. Fish and Wildlife Service (FWS) is attempting to eliminate them from many of the islands.

Lynx inhabit the mainland north of Port Heiden. Primarily a boreal species, lynx venture onto the tundra in search of arctic hares, lemmings and ptarmigan when prey is scarce. The lynx-hare cycle is well known, and population highs can sometimes be predicted every 8 to 10 years. However, Unit 9 is on the fringe of the range for both lynx and snowshoe hare, and the fluctuations for both species are less consistent than elsewhere in Alaska.

Marten occur regularly only in the northern parts of Units 9A and 9B. The distribution of marten is limited primarily to climax spruce forests from sea level to timberline.

Mink inhabit the mainland of the Alaska Peninsula and Unimak Island. Microtine populations typically fluctuate drastically and are the primary factors affecting mink abundance. An abundance of mice or hares in upland areas will sometimes prompt mink populations to spread inland in search of prey. In some areas spring flooding may reduce populations by drowning young mink in dens.

Land otters occur on the mainland, some adjacent islands east of the Alaska Peninsula, and Unimak Island. Otter populations are relatively stable, with coastal areas providing abundant marine food. Parasites and disease are not normally important mortality factors. Spring flooding occasionally drowns young otters in dens.

Wolverines live on the mainland and Unimak Island. Compared to other furbearers, wolverines never attain high densities, partially because of their large territorial requirements and low reproductive rate.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVE

Management objectives for furbearers in Units 9 and 10 have not been developed.

METHODS

We assessed population trends indirectly by monitoring harvests of sealed species and by obtaining information from trappers on questionnaires. Fieldwork for surveying furbearers was not funded this report period. We made incidental observations of furbearers during moose, caribou and brown bear surveys.

Pelt sealing is required for beaver, lynx, otter, and wolverine and provided the most accurate and complete harvest information. Because furs kept for personal use were sometimes not reported, actual harvest exceeded those obtained from this data source.

The harvest of unsealed furbearers (coyote, red fox, arctic fox, marten, mink, and muskrat) could not be estimated with any confidence. However, trapper questionnaires and other incidental information provided a rough, qualitative index to trends in populations of furbearers and key prey species. The trapper questionnaire population abundance index (AI) was calculated by assigning rank values of 1 for "low," 5 for "moderate," and 9 for "high." Similarly, the trend index (TI) used the same rank values for "fewer," "same," and "more than present the previous year.”

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Beaver. Beaver cache surveys have not been conducted since 1987. Comments from trappers and complaints from the public indicated beaver populations remained high north of Unit 9D. Beavers appear to have recovered from the brief decline reported in the mid 1990s (i.e., AI and TI averaged 5.5 and 5.0 in 1994-96). Both the AI and TI increased in 1996–97 to 7.9 and 5.6, despite extremely low water levels during 1996–97 causing some freeze-out mortality. During the late 1990s trappers rated beaver as abundant (Mean AI = 7) and increasing with a mean TI of 6.0. During this reporting period trappers continued to rate beaver as abundant (Mean AI = 7.3) and increasing (Mean TI = 6.0).

Coyote. Trappers rated the coyote population as being moderately abundant (AI = 4.1 and 5.7), but increasing (TI = 5.7 and 6.3) during the 2000–01 and 2001–02 regulatory years. However, in 2002–03 trappers reported a decrease in the coyote population (AI = 2.2 and TI = 4.0). During 2001–02 and 2002–03, wolves were considered to be more abundant (AI = 7.8 and 6.0) than in the previous year and increasing (TI = 8.3 and 5.9). Interspecific conflicts with wolves may have contributed to the perceived decrease in coyote numbers.

Red Fox. A moderate outbreak of rabies in 1997–98 temporarily diminished the red fox population in 1998–99 (AI = 4.7, TI = 3.2), but it recovered within a year to more normal abundance in 1999–2000 (AI = 7.3 and TI = 7.7). During this reporting period trappers rated red fox as abundant (AI = 6.3, 7.0, and 6.2). The trend index was variable during this reporting period (TI = 3.0. 7.0, and 3.8).

Lynx. Trappers believed lynx abundance was low during 2000–03 (Mean AI = 2.8) but relatively stable during the period (Mean TI = 4.2). Trappers reported snowshoe hare abundance was moderate and increasing (Mean AI = 5.4 and Mean TI = 6.2).

Marten. So few trappers (≤2 per year) rated marten abundance that meaningful interpretation is precluded. Marten distribution is very limited within Unit 9, and changes in status are difficult to document.

Mink. Mink abundance was reported as moderate (Mean AI = 5.7) and relatively stable (Mean TI = 5.8).

Otter. Otters appear to be recovering from the decline during the 1997–99 reporting period (AI = 7.5, 5.0 and 3.9 and TI = 6.3, 4.1, and 3.9). Otter abundance was reported as moderate (AI = 4.6, 5.8, and 6.7) and increasing (TI = 5.7, 6.6, and 6.3), although salmon runs continue to be lower than the 20-year average during this reporting period

Wolverine. Trappers reported wolverines as relatively scarce (Mean AI = 3.0) and decreasing (Mean TI = 3.3) during the reporting period.

MORTALITY

Harvest

During this reporting period, trappers reported that poor snow cover and periodic thaws made trapping conditions poor in 2000–01 and 2002–03. On average trappers spent 8 weeks trapping during each regulatory year.

Season and Bag Limits. At the start of this reporting period, the beaver trapping season in Unit 9 was 1 January to 31 March with a bag limit of 40 per season. Trappers in Unit 9B were allowed to take 2 beavers per day using firearms from 15 April–31 May. Beginning in the 2001–02 regulatory year, the trapping season in Unit 9 was lengthened to 10 November through 31 March, and trappers in all of Unit 9 were allowed to take 2 beavers per day using firearms from 15 April–31 May. Unit 10 was not open for beaver trapping. Harvests have declined dramatically since 865 were taken in 1987–88. This is a result of reduced prices for beaver pelts, a high cost in both effort and expenses, and perhaps a diminished interest in trapping among village residents. The harvest in 2002–03 was the highest it has been since 1994–95. This increase appears to be related primarily to an increase in the number of beavers trapped during a longer season and was minimally influenced by regulation changes allowing the use of firearms in the spring (Table 1).

The coyote trapping season in Units 9 and 10 was 10 November to 31 March with no bag limit. The coyote hunting season in these units was from 1 September to 30 April with a bag limit of 2. Because sealing was not required for coyotes, no estimate of harvest is available.

The red fox and arctic fox trapping seasons in Units 9 and 10 were open from 10 November to 28 February with no bag limit. The red fox hunting season in both Units was from 1 September to 15 February and the bag limit was 2 foxes. The arctic fox hunting season in Unit 9 was open from 1 September to 30 April with a 2-fox limit. In Unit 10 there was no closed hunting season and no bag limit for arctic fox. Because sealing was not required for foxes, no estimate of harvest is available.

The lynx and marten trapping season in Unit 9 was 10 November to 28 February with no bag limit for either species. The lynx hunting season in Unit 9 ran concurrent with the trapping season, but the bag limit was 2. Unit 10 was not open for lynx or marten trapping or hunting. Lynx harvests have continued at normal levels (range 33–35, Table 1). Lynx were unusually abundant in Unit 9C during 1991–95, but harvests have dropped to an average of 4 lynx per year during 1995–2003. During the 9 years prior to 1991, an average of only 1 lynx per year was taken in Unit 9C. Because sealing was not required for marten, no estimate of harvest is available.

The mink trapping season was 10 November to 28 February in Units 9 and 10 with no bag limit.
The muskrat trapping season in Units 9 and 10 was 10 November to 10 June with no bag limit.
The otter trapping season in Units 9 and 10 was from 10 November to 31 March with no bag limit. Otter harvests increased during this reporting period (Table 1). The increase corresponds well to the increase in beaver harvest during this reporting period, lending support to the hypothesis that the harvest rates of these 2 species are linked in Unit 9.

The trapping season for wolverines in Units 9 and 10 was from 10 November to 28 February with no bag limit. The hunting season for wolverines in Units 9 and 10 was from 1 September to 31 March with a bag limit of one per hunter. On average, 64 wolverines per year were taken from Unit 9 during 1974–94, but the harvest ranged from 21 to 36 in the past 5 years (Table 1). Poor travel conditions and overall low fur prices reduced trapping effort. There has not been a reported harvest of wolverines from Unit 10 since 1980.

Board of Game Actions and Emergency Orders. In 2001 the board lengthened the beaver season by opening it on 1 November and allowed trappers in Unit 9 to take 2 beavers per day with firearms only from 15 April to 31 May. No other board actions or emergency orders affected trapping or hunting of furbearers in Units 9 or 10 during this reporting period.

Permits. Permits were issued in the fall of 2000 and 2002 to trap beaver obstructing a road culvert in Eskimo Creek near the King Salmon Air Force Base.

Trapper Residency and Success. Data on trapper residency and success have not been specifically analyzed. Residents from villages within the unit took most of the furbearers trapped in Unit 9. A few trappers from outside the area have flown into Units 9A and 9B to trap.

Harvest Chronology. The harvest chronology should be viewed cautiously, because trappers do not always keep close track of when harvests occur. Annual variations in chronology usually reflect weather and travel conditions. January and February historically have been the most important months for trapping. December was equally important during this reporting period (Table 2), possibly as a result of regulation changes that lengthened the beaver season.

Transport Methods. Snowmachines and ATVs were the most common means of access for beaver, lynx, otter, and wolverine trappers (Table 3). Variation in the use of these 2 transportation methods between regulatory years was associated with differences in snow conditions between years.

Other Mortality

No confirmed cases of rabies were reported during this reporting period.

HABITAT

No formal habitat assessment programs were conducted in Unit 9. Habitat enhancement is not necessary or practical in this relatively inaccessible area.

CONCLUSIONS AND RECOMMENDATIONS

The furbearer harvests in Units 9 and 10 appeared to be low and relatively stable. Low fur prices, difficult travel conditions and large refugia in national parks have reduced harvests of most species below historic levels. Although population information was lacking, harvests of furbearers appeared below sustainable yield.

Harvest information was sufficient for management purposes for all species of furbearers requiring sealing in Unit 9. Harvest information for unsealed species, based on export and

acquisition reports, was incomplete and potentially biased because of inaccurate unit coding by furbuyers and a lack of enforcement of fur export regulations. We have discontinued using these data.

Reports from trappers through both personal contact and trapper questionnaires provided a useful relative index to abundance and trend, but the number of responses per unit was generally inadequate to detect local trends.

We lacked adequate field observations to augment harvest data and trapper questionnaires in evaluating population sizes and trends. New methodology for assessing lynx and wolverine population densities are under development in Interior Alaska, but may not be easily applied in Unit 9 because of typically poor snow conditions. Given the lack of techniques to assess population status for most species and the low level of trapping pressure in recent years, there is little impetus to intensify management or develop management objectives.

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Table 1 Unit 9 beaver, lynx, otter and wolverine harvest, 1998–2003

Regulatory Year	Reported Harvest							Method of Take			
	M	F	Unknown	Juvenile	Adults	Unknown	Total	Trap/Snare	Shot	Unknown	Total Trappers
Beaver											
1998–99	0	0	85	7	35	43	85	76	9	0	15
1999–00	0	0	75	16	55	4	75	72	2	1	15
2000–01	0	0	90	16	66	8	90	79	11	0	12
2001–02	0	0	108	49	58	1	108	75	30	3	18
2002–03	0	0	181	59	118	4	181	162	17	2	23
Lynx											
1998–99	0	0	38	10	21	7	38	38	0	0	6
1999–00	0	0	32	5	24	2	32	21	3	8	13
2000–01	0	0	33	2	31	0	33	33	0	0	6
2001–02	0	0	33	0	19	14	33	33	0	0	6
2002–03	0	0	35	4	29	2	35	35	0	0	7
Otter											
1998–99	31	25	4	0	0	60	60	48	6	6	19
1999–00	17	13	1	0	0	31	31	29	2	0	13
2000–01	27	14	0	0	0	41	41	38	3	0	13
2001–02	41	18	0	0	0	59	59	56	3	0	015
2002–03	71	37	7	0	0	115	115	113	2	0	17
Wolverine											
1998–99	27	8	1	0	0	36	36	33	3	0	21
1999–00	18	6	0	0	0	24	24	15	9	0	15
2000–01	18	2	1	0	0	21	21	19	2	0	10
2001–02	16	8	0	0	0	24	24	17	7	0	16
2002–03	18	7	0	0	0	25	25	21	4	0	11

Table 2 Unit 9 beaver, lynx, otter and wolverine harvest percent chronology by month, 1998–2003

Regulatory Year	Harvest Periods						
	September-October	November	December	January	February	March	April-May
Beaver							
1998–99	0	0	0	41	34	15	9
1999–00	3	3	0	51	40	3	4
2000–01	0	0	5	47	33	5	10
2001–02	1	10	19	35	9	0	26
2002–03	0	9	26	22	22	12	9
Lynx							
1998–99	0	0	21	47	32	0	0
1999–00	0	3	45	45	6	0	0
2000–01	0	26	30	14	30	0	0
2001–02	9	15	28	15	15	18	0
2002–03	0	14	38	8	40	0	0
Otter							
1998–99	0	10	18	28	20	23	0
1999–00	0	0	13	32	23	32	0
2000–01	0	0	43	23	30	4	0
2001–02	0	1	38	37	17	7	0
2002–03	0	14	20	45	14	7	0
Wolverine							
1998–99	3	6	14	36	31	11	0
1999–00	8	4	17	54	12	4	0
2000–01	0	0	9	19	67	5	0
2001–02	17	4	33	17	25	4	0
2002–03	4	0	15	49	28	4	0

Table 3 Unit 9 beaver, lynx, otter and wolverine harvest percent by transportation method, 1998–2003

Regulatory Year	Percent of Harvest							
	Airplane	Dogsled	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway Vehicle	Unknown
Beaver								
1998–99	0	0	8	60	31	0	0	1
1999–00	3	0	1	12	79	0	3	3
2000–01	8	0	16	56	19	0	1	0
2001–02	0	0	22	12	56	1	0	9
2002–03	1	0	19	51	1	0	16	12
Lynx								
1998–99	0	0	0	87	11	0	2	0
1999–00	9	0	0	6	81	0	0	3
2000–01	5	0	35	60	0	0	0	0
2001–02	0	0	0	0	97	0	3	0
2002–03	0	0	0	86	3	0	8	3
Otter								
1998–99	0	8	5	28	45	0	0	13
1999–00	3	0	0	16	42	0	0	39
2000–01	0	0	6	44	11	0	22	17
2001–02	0	0	0	27	69	1	0	3
2002–03	9	0	9	47	0	11	16	8
Wolverine								
1998–99	6	0	0	14	64	0	6	11
1999–00	17	0	0	4	75	0	4	0
2000–01	5	0	5	32	5	0	0	53
2001–02	22	0	0	9	52	4	0	13
2002–03	12	0	4	20	4	0	8	52

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNITS: 11 (12,784 mi^2) and 13 (23,368 mi^2)

GEOGRAPHIC DESCRIPTION: Nelchina and Upper Susitna Rivers, Wrangell Mountains

BACKGROUND

Historic harvest data are limited for furbearers in Units 11 and 13 prior to the initiation of sealing requirements. Wolverine and beaver sealing became mandatory in 1971, followed by lynx and land otter in 1977. Before sealing began, fur buyer reports gave minimal information on harvests, and bounty records provided harvest data only on wolverines. Little research on furbearer populations has been conducted in either unit until recently, and as a result, data pertaining to population densities, movements and distribution of furbearers are limited. Harvest records, reports by hunters and trappers, and field observations by department personnel are the only unit-specific historic sources of information concerning furbearer abundance.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVE

To develop measurable objectives for management of furbearer populations.

METHODS

Beaver, lynx, river otter, and wolverine pelts were sealed, and trappers were interviewed at the time of sealing to obtain harvest statistics. Between 1992 and 2002 marten pelts were also sealed in subunit 13E. Recent trapper questionnaire results (Scott and Kephart 2002) provided additional harvest and relative abundance information on both sealed and unsealed furbearers.

Yearly trends in lynx abundance were monitored by conducting track surveys within favorable lynx habitat in both Unit 11 and 13. Twenty-six aerial transects (7 in Unit 11 and 19 in Unit 13) were established in 1988 for the purpose of conducting lynx track surveys on a yearly basis. Randomly selected aerial transects, each approximately 8 km long and 0.4 km wide, were flown in late winter.

In September 1995 small mammal trapping was initiated to develop a population abundance index in the Glennallen area. The objective was to develop a small mammal abundance index

and determine if this information could be used to predict furbearer abundance based on prey abundance. This work continued until the fall of the 1999. The trapping was conducted between mileposts 110 and 162 along the Richardson Highway and at milepost 186 of the Glenn Highway. During all 3 years we used Museum Special traps baited with peanut butter. All trapping was conducted from mid to late September. Habitats included spruce forests (1995–99), mid-successional fields (1995–97), mid-aged aspen (1995–99), spruce/birch association (1997), and alder thickets (1995). During the first 2 years (1995–96), 20–40 traps were set for 3 nights in each of the various habitat types. Trapping intensity was increased to 100 traps for 3 nights in each habitat type in 1997. During all years trap spacing was approximately 10 meters. Traps were checked daily and the catch was recorded.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Beavers are considered relatively abundant in both units. Although beaver cache surveys were not flown, frequent field observations of beaver ponds and food caches made during aerial big game surveys suggest beaver numbers are high. Trappers responding to the trapper questionnaire also consider beavers to be abundant on their lines and indicate that current population levels are similar to those reported in previous trappers' surveys.

Land otters are common in both Unit 11 and 13. Trapper questionnaire results also suggest most trappers consider river otter to be common but not abundant on their lines. Most trapper questionnaire responders reported river otter numbers had not changed in recent years.

Based on sealing records, the lynx track index, and field observations, the current lynx cycle in Units 11 and 13 is low. The lynx population appears to follow a 9- to 10-year cycle, with peaks in 1972, 1982, and 1991–92. Even though the lynx trapping season was closed for 3 years between 1987 and 1990, the last peak in 1991–92 was only moderate at best in Unit 11 and never fully developed in Unit 13. The snowshoe hare peak in the early 1990s was similarly low in amplitude. Through the last low cycle between 1993 and 1995, the lynx trapping season remained open, though shortened to 30–45 days. Low lynx prices aided in keeping trapping pressure at a minimum. Between the 1995–96 and 1997–98 seasons, the combined harvest for both units increased 540%. Based on the historic cycle, the snowshoe hare population should have hit a low in 1997–98; instead numbers were much higher than expected, boosting lynx reproduction. Between 1996–97 and 2001–02, the annual harvest was high in Unit 11 and 13, with a combined average of 426 lynx. Record numbers of lynx were caught in 2000–01 in both Unit 11 and 13. Of the lynx sealed, kittens peaked at 43% in 1997–98 and dropped off through the high, bottoming out at 13% in 2001–02, just one year after the peak. The harvest in 2002–03 was low, though the percentage of kittens was up slightly.

Due to poor snow conditions, lynx track transects were not flown in 1999 or 2001, so no index was available for those 2 years. The 2000 spring index, however, was very high, consistent with the high harvests in 2000–01. Index results from 2002 and 2003 confirmed that lynx numbers had decreased substantially.

In Units 11 and 13 hares have historically followed a 10-year cycle that varies in amplitude. Hare abundance within cycles has been lower each cycle since the 1972 high. The last predicted high was in 1992. After a low amplitude peak between 1991 and 1992, hare numbers started to decline. Following the historic cycle, the population should have hit bottom in 1997 or 1998. However, between 1995 and 1998 hare numbers increased. This phase shift was reflected in high lynx harvests shortly thereafter. Results of snowshoe hare pellet transect surveys conducted in Unit 11 and 12 by National Park Service biologists showed a peak in the hare cycle in 1999 (Carl Mitchell, personal communication). In sharp contrast to the last high in 1991–92, this peak was the highest seen in 25 years in certain portions of Units 11 and 12. Field observations in Unit 13 suggested a similar high in 1999 and a dramatic decline in 2000. Pellet transect surveys in Units 11 and 12 showed that within pockets hares were able to rebound slightly in 2001; however, they continued to decline into a low phase between 2002 and 2003. Currently the hare population across Units 11 and 13 is quite low. Reasons for increases in hare abundance during periods of expected cyclic lows are largely unknown. The past high in 1991–92, however, was perhaps low enough to avoid the habitat damage usually seen during cyclic highs, thus allowing the population to rebound sooner, and to a much higher level than predicted.

Wolverines are considered common in the more remote mountainous regions of Units 11 and 13 and relatively scarce at lower elevations. Wolverines are the only furbearers for which density estimates have been calculated for portions of Unit 13. A density estimate of 4.5 wolverine/ 1000 km^2 was obtained during 1991 in the eastern Talkeetna Mountains portion of Subunit 13A (Gardner and Becker 1991) and 5.2 wolverine/1000 km^2 by Golden (1996) five years later. These estimates were similar to the 5.2 wolverine/1000 km^2 density obtained in the Chugach Mountains in Subunit 13D in 1987 (Becker and Van Daele 1988). These estimates were obtained in the spring after harvest and much of the overwinter mortality had already occurred. Also, both were obtained in areas considered to be favorable wolverine habitat at moderate to high elevations; hence, extrapolation of the observed densities cannot be used to calculate an accurate unitwide estimate. Trappers responding to the trapper questionnaire consider wolverine scarce but stable in Units 11 and 13. Harvests have been low, but relatively constant since 1985.

Marten numbers increased in both Unit 11 and 13 during the mid 1980s, appeared to peak about 1988 and have been fluctuating annually since. Abundance estimates are developed from the trapper questionnaire and field observations. Marten trappers considered the species to be abundant in 1995–96, though only common from 1997 to 2002. The price paid by Alaska fur buyers dropped considerably on most furs in 1997, marten included. The price for marten began to recover in 2000, though other fur prices remained low. Yearly fluctuations in marten numbers are thought to represent changes in production and/or survival of young due to food availability and stochastic weather, though trends are not fully understood. Field observations in 2001 and 2002 showed an abundance of red-backed voles throughout the Copper River Valley, but the summer of 2003 was very dry, and observations dropped off considerably. Trapper reports have not been tallied yet for 2002–03. Marten continue to be the most economically important furbearer in Units 11 and 13.

Trappers reported coyotes to be common or abundant, depending on the habitat type. Overall coyote numbers are considered stable at this time. High coyote numbers occur along the many rivers found throughout the units. River bottoms and creek drainages appear to be favored

habitat. Productivity and survival have likely decreased across much of Units 11 and 13 through this reporting period in response to the lack of small game.

Trappers reported that fox increased during the late 1990s and were considered abundant until 2000. Fox were considered common in 2001 and 2002. Trappers have estimated a wide range of abundance, depending on the habitat. The lack of snow during 2001 and 2002, combined with declining small game populations, may be partially responsible for lower fox numbers in Units 11 and 13. Fox are found in both units from forested lowlands to alpine tundra.

Muskrats were abundant during the early 1980s, but their numbers declined dramatically only a few years later. Trappers considered muskrats either not present or scarce on their lines from 1993 to 1997. More push-ups were observed during the late 1990s; trappers indicated that muskrat numbers had rebounded. During this reporting period, trapper reports have been highly variable. The winter of 2002–03 had the highest muskrat population in more than 20 years based on the number of houses and push-ups in many lakes and marshes. By fall 2003 muskrats had declined substantially. The reason for this recent decline is unknown.

Mink are reported common and the population stable on traplines of those individuals responding to the trapper questionnaire.

In September 1995 small mammal trapping was initiated to develop a population abundance index. The objectives were to participate in a statewide effort to document small mammal population trends and determine if an index of prey abundance could be used to predict furbearer population trends. This project was carried out for 5 years. Trapping intensity during the fall of 1999 was lower than in previous years. Respective catch rates for 1995, 1996, 1997, 1998, and 1999 were 0.2 (n = 61), 0.05 (n = 11), 0.09 (n = 106), 0.04 (n = 26), and 0.05 (n = 8) catches per trap night. Results indicated small mammals were abundant in 1995, declined in 1996, and remained relatively low through 1999. No obvious correlation between voles and furbearers was evident from this intensive trapping effort, so it was discontinued.

Distribution and Movements

Lynx distribution follows the spruce forest habitat in both units. Lynx harvests consistently have been highest in Subunits 13A, B and C along the Copper, Gulkana, Gakona and Chistochina Rivers and in 13D along the Klutina and Tonsina River drainages. Harvest is extremely low in 13E and only occurs on the west side of the subunit, where habitat is ideal and equally accessible. Trappers on the east side of 13E are unable in many years to reach their traplines until the end of lynx season due to open rivers. The dispersal of marked lynx from both the Kenai Peninsula and Yukon Territory into Unit 13 suggests lynx can disperse over long distances. Considering lynx are harvested most heavily along the Unit 13 boundary and along the McCarthy Road in Unit 11, the more remote parts of each unit perhaps provide a valuable source of immigration. Movement is most likely an important component of the lynx population cycle in Units 11 and 13.

Long-distance dispersal of radiocollared wolverines in Unit 13 has been reported by Gardner (1985) and Golden (1997). Gardner (1985) observed that movements declined during the fall, but increased again in February with the dispersal of juveniles into vacant habitat. Wolverines are

most abundant in mountainous habitats of the Chugach, Talkeetna, and Alaska ranges in Unit 13 and the Chugach and Wrangell mountains in Unit 11. Prior to the late 1970s, wolverines were reportedly more numerous near settlements and on the Lake Louise Flats.

MORTALITY

Harvest

Seasons and Bag Limits. Beaver trapping season in Unit 13 was 10 October to 30 April during the 1994–95 season, but was extended 2 weeks to close 15 May starting in 1995–96. The bag limit was 30 beavers per season prior to 1995; the bag limit was eliminated in Unit 13 beginning in 1995–96. Beginning in 2001, two weeks were added to the beginning of the season to allow for open-water trapping. The current season in Unit 13 is 25 September to 15 May. Since 1988 the season in Unit 11 has opened 10 November and closed on 30 April, with a bag limit of 30 beavers per season. Additional beaver may be harvested under the summer federal subsistence hunting season in Unit 11 from 1 June to 10 October. The summer federal subsistence beaver hunting season in Unit 13 is from 15 June to 10 September.

The beaver harvest in Unit 11 has fluctuated between 0 and 6 during the last 5 reporting seasons (Table 1). Historically, the highest harvest was 56 beaver taken in 1985, but harvests have fluctuated appreciably between years. Recently, little effort has been made to trap beaver in Unit 11. While harvest under the recently established summer federal subsistence hunting season is low in Unit 11, it is incorporated into state harvest records due to sealing requirements.

The beaver harvest in Unit 13 over this reporting period steadily increased and averaged 234 beavers per year from 1998–99 through 2002–03 (Table 2). This is the highest reported 5-year average since sealing records have been maintained. The harvest of 342 beavers in 2002–03 was the highest annual harvest ever recorded. Prior to liberalizing seasons in 1986, the beaver catch in Unit 13 averaged 92 (range 33–201). The last historic peak was during the 1986–87 and 1988–89 seasons, with reported catches of 333 and 300 beavers respectively. The percentage of kits in the harvest has ranged from 21% to 31% over the last 5 years (Table 2). While harvest under the recently established summer federal subsistence hunting season in the small subsistence hunting areas is low in Unit 13, it, too, is incorporated into state harvest records due to sealing requirements.

Coyote trapping season in Units 11 and 13 was from 10 November to 31 March, with no bag limit. During this reporting period, the coyote hunting season was from 1 September to 30 April, with a bag limit of 2 coyotes. The coyote hunting season was aligned with Interior game management units beginning 2003–04. The current hunting season dates in Units 11 and 13 are 10 August to 30 April with a bag limit of 10 coyotes. Because coyotes are not sealed, there is no harvest estimate.

Historically, lynx trapping seasons have had no bag limit in either Unit 11 or 13. In 1996–97 the lynx trapping season was 1 December to 15 January in both Unit 11 and 13. From 1997 to 1999 the season was slightly longer, from 1 December to 15 February. During the cycle peak in 2000–01, the season was 10 November to 15 February. During the 2001–02 season, the dates were shortened again to 1 December to 31 January. Since 2002–03 the dates have been 1 December to

15 January. During this reporting period, the hunting season for lynx was 10 November to 31 January with a bag limit of 2 lynx.

Lynx harvests in Unit 11 peaked in 1991–92 with 108 lynx sealed, declined to 9 lynx in 1995–96, then increased rapidly, peaking again at 196 lynx in 2000–01. The harvest since has dropped considerably, with only 2 lynx harvested in 2002–03. The number of kittens in the harvest peaked at 33 in 1998–99 while the population was still increasing (Table 3). The percent kittens quickly dropped off, with only 9% kittens harvested by 2000–01. Similarly, the lynx harvest in Unit 13 increased dramatically in 1996–97 to 200. During the peak in 2000–01, 497 lynx were harvested in Unit 13 (Table 4). The percentage of kittens in the harvest peaked in 1997 at 43%, and has declined slowly since. Between 2000 and 2002, the percentage of kittens harvested has averaged 16% (Table 4). The lynx cycle historically has varied between 9 and 11 years, though given the last high in 1991–92, the rapid increase beginning in 1996 was earlier than predicted. The lynx cycle peak in the early 1990s was lower than previous highs, and combined with low fur prices, trapping pressure remained fairly low until it picked up again in the late 1990s. Until 1991 Subunit 13D provided over half of the total lynx harvested in Unit 13, but given increased trapping pressure in Subunit 13C, the 2 subunits now have nearly equal harvests.

The marten season was 10 November to 31 December in Subunit 13E. The marten season in Unit 11 and the remainder of Unit 13 was 10 November to 28 February. There was no bag limit in either unit; however, sealing was required for martens caught in 13E between 1992 and 2002. For the 2003–04 season, marten trapping in Subunit 13E was aligned with the remainder of the unit, and the sealing requirement was dropped. Sealing of martens was required between 1992 and 2002 in only Subunit 13E. During this reporting period, the annual harvest from Unit 13E averaged 68 martens (range 23–95). Males averaged 69% (range 61–75%) of the harvest. Martens continue to be the most important furbearer both in total harvest and value of furs sold, according to trapper survey responses.

During this reporting period, the muskrat season in both Unit 11 and 13 was from 10 November to 10 June and there was no bag limit. For 2003–04, 45 days were added to the beginning of the season in Unit 13, aligning the beaver and muskrat opening dates. The current season dates are 25 September to 10 June. Though muskrats are not sealed in Unit 11 or 13, trapping pressure is variable from year to year, based on winter conditions. Even with the extended season in Unit 13 adopted in 2003, harvest is not expected to increase significantly.

The red fox trapping season in Units 11 and 13 was from 10 November to 28 February with no bag limit. During this reporting period, the red fox hunting season was from 1 September to 15 February with a bag limit of 2 foxes. The red fox hunting season was aligned with Interior Alaska game management units beginning 2003–04. The current hunting season dates in Unit 11 and 13 are 1 September to 15 March, with a bag limit of 10 foxes (no more than 2 may be taken prior to 1 October). Because red foxes are not sealed, there is no harvest estimate.

The river otter trapping season was 10 November to 31 March with no bag limit. River otter harvests in Unit 11 varied from 0 to 3 during the last 5 years (Table 5). Harvests in this unit historically have been low, averaging fewer than 4 animals per year (range 0–12) since 1977. In Unit 13 the average reported harvest during the last 5 years was 26 otters (Table 6), down from the previous 5-year average of 45. Since 1977 the annual harvest has averaged 29 (range 5–68)

for Unit 13. Otter harvests by subunit in Unit 13 have fluctuated annually, and no subunit has consistently produced a higher percentage of the total take.

The trapping season for mink and weasels was extended one month to 10 November to 28 February beginning 1997–98 with no bag limit. Because mink and weasels are not sealed, there is no harvest estimate.

Since 1992 the wolverine trapping season has been 10 November to 31 January. The 2-wolverine bag limit was dropped in 1997. Hunting season for wolverine was 1 September to 31 January with a bag limit of 1 wolverine. The wolverine harvest has been low in Unit 11 since 1985, averaging 9 per year. During the 1997–98 season, 27 wolverines were harvested. Since then, the average has been only 6 per year (range 3–9; Table 7). The harvest in Unit 13 also has remained relatively stable since 1985, averaging 34 per year, and ranging from 16 to a high of 53 in 2001. For the past 5 years the annual harvest has averaged 35 (Table 8). Wolverine harvests recently have been much lower than historical levels in both units. During the 1970s, the average yearly wolverine harvest in Unit 11 was 31, and in Unit 13 it was 86. Males have consistently accounted for the majority of the harvest in both Units 11 and 13. Harvest locations from both units indicate most wolverines harvested are from the foothills of the Chugach, Talkeetna, Alaska and Wrangell mountain ranges.

Hunter/Trapper Residency and Trapper Success. Interest in beaver trapping in Unit 11 has remained low; 1–3 trappers reported taking beaver during this reporting period. The interest has been low since the mid 1980s, when 13, and then 12, trappers reported taking beaver in 1985 and 1986. Harvest was low during this reporting period, though trapping, snaring and shooting were all reported in Unit 11 (Table 1). Most trappers who sealed beaver from Unit 11 were local residents. Interest in trapping beaver in Unit 13 has varied year to year, though the number of successful trappers averaged 30 over this reporting period. Trapping was the most reported method of take (82%), followed by snaring (16%).

Only 1 or 2 trappers harvested otter in Unit 11 in the last 5 years. This is similar to the historical average of 1.7 since 1983. The harvest and number of trappers in Unit 13 peaked in 1983 (68 otters, 24 trappers), then again in 1994 (61 otters, 26 trappers). An average of 11 trappers harvested otter during this reporting period in Unit 13. This is down from an average of 19 in the previous 5-year reporting period. The average successful trapper caught 2.1 otters this period, down from 2.3 in the previous period. During this reporting period, trapping was the most reported method of take for otters in Units 11 and 13, averaging 100% and 85% respectively. Ground shooting was the next most-reported method of take in Unit 13 (12%), followed by a small percentage taken by snaring (2%).

In Unit 11 the number of successful lynx trappers dropped from 15, with an average catch of 13.1 lynx during the recent high in 2000–01, to only 2 successful trappers, with an average catch of 1.0 lynx in 2002–03. This recent drop was far more severe than after the previous high. In 1991–92 there were 12 successful trappers, with an average catch of 9.0 lynx each. Two years later, there were still 8 successful trappers, with an average catch of 2.4 lynx each. In Unit 13, the number of successful trappers dropped from a record high of 101 in 2000–01 to only 27 in 2002–03. The average catch dropped from 4.9 to 1.6 lynx per trapper. In 1997–98 the lynx population had increased enough that while only 38 trappers successfully harvested lynx, the

average catch per trapper was 10.3 lynx. Method of take has stayed relatively constant over the past 20 years. Trapping is by far the most important harvest method, averaging 88% in Unit 11, and 86% of the harvest in Unit 13 since 1982. Less than 5% of lynx are snared in each unit, and an additional few lynx are shot each year (Table 3, Table 4).

Three to 6 trappers successfully harvested wolverine in Unit 11 each year. The number of trappers taking wolverines in Unit 11 has been relatively stable, averaging 4 per year during this reporting period. The catch per trapper is low and fluctuates between 1 and 2 wolverines per trapper over the last 20 years. During this reporting period, an average of 22 trappers successfully harvested wolverines each year in Unit 13 (range 19–27). Similar to Unit 11, the average catch varies between 1 and 2 wolverine per trapper. In the past 5 years, on average, 93% of wolverines were taken by trapping in Unit 11, followed by 6% being shot (Table 7). In Unit 13, trapping and shooting were the most frequently reported methods of take (80% and 13% respectively); snaring accounted for 7% of the take (Table 8).

Response to the trapper questionnaire was 60–70% for the past several years. Trapping effort was similar in all years; trappers reported an average of 12 weeks spent trapping. Those trappers who responded to the survey had an average of 14 years trapping their current lines, which averaged 35 miles in length. Most trappers averaged between 25 and 50 sets on their line, but 10–20% reported setting over 100 traps.

Comments received from the trapper questionnaire center around concerns over recreational use of traditional trapping trails. Many trappers reported difficulty maintaining their lines during February and March due to snowmachiners, skiers, and others using the trails. Some reported traps and fur stolen. Late winter trail use has increased in recent years and is of serious concern to many trappers in Unit 13.

This year's questionnaire included questions regarding the recent louse infestation of wolves in the Matanuska–Susitna region and elsewhere. Trappers were very concerned about the spread of this louse to Unit 13. Few trappers reported catching wolves or coyotes having signs of infestation; however, one wolf previously infested was trapped in Unit 11. It had been captured by ADF&G near Wasilla during spring of 1999 when it was treated and released. This incident has created concern over the future of wolf trapping in the Copper River Basin. Trappers will have little incentive to trap wolves if their hides are of diminished value.

Harvest Chronology. In Unit 11, beaver harvests have been low and chronology highly variable (Table 9). In Unit 13, chronology data indicate most beaver are taken early or late in the season, with few trappers spending much energy trying to take beaver between December and February (Table 10). The early part of the season has been popular because the ice is thinner and beaver meat is sought for trapping bait and sled dog food. Since 2001–02, the 25 September season opening has afforded trappers a longer open water season. The summer federal subsistence season has likewise boosted the early season harvest in recent years. During the 2001–02 and 2002–03 seasons, 12% and then 18% of the beaver were harvested prior to October in Unit 13 (Table 10). An average of 40% of the total harvest is taken during October (Table 10). Harvest steadily increases during the spring months, reflecting the longer days, moderating temperatures and higher pelt quality. Since 1995, when the season was extended to May, an average of 10% of the harvest occurs during this last month of the season (Table 10).

The otter harvest in Unit 11 has been low and chronology highly variable (Table 11). The Unit 13 harvest chronology has been variable, though during this reporting period, the majority of otters were harvested from December through February (Table 12). Similar to harvest chronology during the 1980s, during the 2002–03 season, 29% of the otters were harvested in November (Table 12). Perhaps one cause of this early harvest was the late freeze-up and the abundance of open water unitwide.

Harvest chronology data for lynx in Units 11 and 13 are included in Tables 13 and 14 respectively. During this reporting period, chronology data for both units reflected season dates and lynx abundance more than any other factors. In 1998–99 lynx were increasing, they peaked in 2000–01, and by 2002–03 they were quite scarce across much of Unit 11 and 13. Most trappers started setting traps for lynx as soon as the season opened, or whenever snow conditions and freeze-up allowed travel to traplines after opening day.

Tables 15 and 16 present chronology data for Unit 11 and 13 wolverine harvest. Because the season is so short, the timing of the wolverine harvest, like that of lynx, is thought to reflect season dates and trapping conditions more than differences in trapping preference.

Transport Methods. The transportation methods are reported in Tables 17 through 24. The transport method most used by successful trappers during this reporting period was snowmachine, averaging between 69–100% depending on species and unit. Beaver trappers in Unit 13 are the only group that uses a wide variety of transportation methods (Table 18). Other common transport methods reported this period were airplane, dog sleds, snowshoes, skis and highway vehicles.

CONCLUSIONS AND RECOMMENDATIONS

Estimates of trapping pressure in Units 11 and 13 are compiled from the trapper questionnaire, sealing data and staff contact with trappers. Trapper questionnaire responses suggest fewer individuals are trapping in Units 11 and 13 and those that are, as a group, are getting older, with a substantial number of years of trapping experience here. The amount of effort by these individuals declined in the early 1990s but stabilized the last few years, as reflected by the number of sets made, length of traplines and weeks trapped. Although trapper questionnaire responses suggest the price paid for fur really was not a factor for those still trapping, low fur prices were a major underlying contributing factor to the decline in the number of trappers. There is no question trapping pressure is currently much lower than in the 1980s.

According to the Trapper Questionnaire Statewide Annual Report, fur prices for some species have rebounded slightly in the last few years, though they remain far below averages paid in the 1980s. In 2002–03, the top price paid by an Alaska fur buyer for lynx was $106, and it was most likely for a large taxidermy quality pelt. During the early 1990s, the average price paid for lynx was $77. Like other fur prices, the average fell abruptly in 1997, and during the late 1990s lynx averaged only $54. In the last 3 years, prices for lynx have rebounded slightly. During 2002–03, the average price paid for lynx was $91. Regardless of these small fluctuations, the current lynx market is quite depressed compared to the 1980s when lynx averaged more than $300. One benefit of lower pelt prices is the response from trappers to allow the lynx populations to rest

during cyclic lows. This self-regulating factor complements the current lynx management strategy.

Lynx in Unit 11 and 13 are managed by a tracking harvest strategy (THS). Season lengths are adjusted during the various stages of the lynx cycle in an attempt to control the harvest. The lynx harvest objective under the THS is to reduce the catch of lynx after the beginning of the cyclic decline to keep the population from being pushed even lower by high harvests. When lynx are abundant and producing kittens, the season is lengthened. Reproduction is monitored by assessing the percentage of kittens in the harvest. Abundance is monitored by trapper questionnaires, harvest records, and track index surveys. Harvest summaries and population trend estimates are completed by 15 March each year. Determination of season dates for the following year is completed by 20 April and is included in the next year's trapping regulation book.

Marten prices also fell during the 1990s, averaging only $24 in 1998–99. Prices have rebounded somewhat, averaging $40 in 2002–03. Similar to lynx, this is still far below the $100 average paid in the late 1980s.

Prices paid for wolverines have not varied appreciably for the last several years, though the price paid for wolves has dropped consistently over the past decade. The average price paid in 1992–93 was $275; in 2002–03 it was down to $142.

Beaver harvest in Unit 13 has been fairly steady over the past decade until this past year. During 2002–03 a record number of beavers were harvested, in large part due to the extended season. Over this decade the beaver price topped out at $35 in 1996–97 and has since fallen back to an average of $20. Despite low prices, trappers still trap beavers for a variety of reasons. Some trappers have found markets for carcasses, and sometimes skulls. Beaver trapping continues to be an educational tool for young people as well, particularly since the open water season was extended in Unit 13. The current harvest in Unit 11 is a very small fraction of what it was in the 1980s. The reason for this decline is unknown. Beaver populations are considered healthy across both Units 11 and 13. Trapping is not concentrated, with the possible exception of some highly visible roadside beaver colonies. Current harvest rates are considered sustainable.

Otter harvests in Unit 13 have fluctuated over the past 20 years, perhaps in part related to prices paid for pelts. As with other furs, there was a decline in harvest and price paid during the late 1990s, though in the past few years, harvest has risen slightly, and price has rebounded to an average of $94 paid in 2002–03. Trapper reports and field observations suggest the current otter harvests are sustainable.

Recent harvests of foxes, coyotes, mink and weasels have been lower than in previous years in large part because of reduced trapping pressure and effort. This conclusion is based on responses to trapper questionnaires. A number of individuals reported either not trapping, or spending less effort than in previous years. Some trappers have reported seeing fewer foxes than in recent years. Another reason for the decline in trapping pressure and effort for foxes and coyotes is a weak fur market for long-haired furs. Prices have been low and stable for most of the past decade, with only a recent increase in the price paid for fox in 2002–03, which averaged $36. Mink are the only small furbearer whose price continues to decline; the 2002–03 average was

only $8. There were no overall population trends detected other than annual fluctuations in abundance for these species. Harvests of fox, coyote, mink and weasels are well within sustainable levels, and no changes in trapping or hunting regulations are recommended.

Based on the trapper questionnaire, sealing records and field observations, wolverine numbers appear to be low, though stable, across Unit 13. Trapper reports suggest wolverines are common in mountainous areas; however, numbers remain low in forested habitats at lower elevations. Management objectives included increasing wolverine numbers and promoting increased use of lowland habitats. Management actions over the past 10 years have included shortening the season and creating a bag limit of 2 wolverines. These moves were not successful in increasing wolverine numbers on the forested lowlands. Due to the average take of 1–2 wolverines by most successful wolverine trappers, the bag limit was eliminated in 1997–98. The season has remained short, closing on 31 January. Lack of food for wolverines on the Lake Louise Flats is the most likely limiting factor. Dispersing radiocollared wolverines have moved to other mountainous habitats and have not remained on the forested lowlands of the Lake Louise Flats. The management objective to increase wolverine numbers on the Flats may not be biologically feasible. Few Nelchina caribou wintering in Unit 13, low moose numbers, and depressed small game populations are all possible factors in keeping wolverine numbers down.

Wolverine harvests in Unit 13 have been stable since 1985, and well below peak harvests of the 1970s and early 1980s. Important harvest areas include the Chugach Range in Unit 13D along the Richardson Highway and near large high mountain lakes and the eastern Talkeetnas in Subunit 13A. In heavily trapped portions of the eastern Talkeetnas in Subunit 13A, marked wolverines had an average harvest rate of 8% over a 4-year period in the mid 1990s (Golden 1997). A sustainable harvest rate for wolverines in Unit 13 is believed to be 4–15% of the fall population (Gardner et al. 1993). Because current harvest rates appear to be sustainable, and the objective of increasing wolverines in lowland areas is questionable, I recommend maintaining the current season length.

Martens are still considered the most important furbearer to individuals currently trapping in Units 11 and 13, even though pelt prices have dropped by more than 50% from the $100 average of the late 1980s. Marten numbers increased in both units during the 1980s. Responses to the trapper questionnaire suggest martens are common, given normal fluctuations in the food supply or predation. Current harvest levels for martens are considered to be sustainable. The decline in trapping effort, because of lower prices paid for martens over the past decade, has increased the size of refugia that should help the marten population to increase more rapidly once the prey base is sufficient. The lack of fire in the Copper River Valley has also contributed to the abundance of old-growth boreal forest in low to moderate elevations, which is highly used by martens. The season across Unit 13 is now uniform, making some interior habitats more accessible to trappers late in the season. There are no sealing requirements in Unit 13 for martens; however, the trapper questionnaire should continue to ask how many martens each trapper takes every year. Although the questionnaire is voluntary and responses are sometimes variable, the high number of trappers responding makes these data worthwhile.

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Table 1. Unit 11 beaver harvest, 1998–2002.

Regulatory	Reported Harvest					Method of Take				
Year	Adult	Juv. [a]	(%)[a]	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1998–99	0	0	(0%)	1	1	0	(0%)	0	(0%)	1
1999–00	1	0	(0%)	0	1	1	(100%)	0	(0%)	0
2000–01	3	0	(0%)	0	3	1	(33%)	2	(67%)	0
2001–02	2	0	(0%)	4	6	3	(50%)	3	(50%)	0
2002–03	0	0	(0%)	0	0	0	(0%)	0	(0%)	0

[a] Beaver < 52”

Table 2. Unit 13 beaver harvest, 1998–2002.

Regulatory	Reported Harvest					Method of Take				
Year	Adult	Juv. [a]	(%)[a]	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1998–99	143	46	(24%)	0	189	189	(100%)	0	(0%)	0
1999–2000	134	61	(31%)	1	196	196	(100%)	0	(0%)	0
2000–01	186	49	(21%)	5	240	238	(99%)	2	(1%)	0
2001–02	148	51	(26%)	3	202	187	(93%)	13	(7%)	2
2002–03	238	104	(30%)	0	342	331	(97%)	1	(0%)	10

[a] Beaver < 52”

Table 3. Unit 11 lynx harvest, 1998–2002.

Regulatory	Reported Harvest					Method of Take				
Year	Adult	Juv. [a]	(%)[a]	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1998–99	61	33	(35%)	5	99	93	(98%)	2	(2%)	4
1999–2000	89	23	(21%)	2	114	113	(99%)	1	(1%)	0
2000–01	176	17	(9%)	3	196	196	(100%)	0	(0%)	0
2001–02	28	3	(10%)	1	32	28	(88%)	4	(12%)	0
2002–03	1	1	(50%)	0	2	2	(100%)	0	(0%)	0

[a] Lynx $\leq$ 35” in length.

Table 4. Unit 13 lynx harvest, 1998–2002.

Regulatory	Reported Harvest					Method of Take				
Year	Adult	Juv. [a]	(%)[a]	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1998–99	167	79	(32%)	1	247	244	(100%)	0	(0%)	3
1999–2000	307	107	(26%)	11	425	391	(98%)	6	(2%)	28
2000–01	386	80	(17%)	31	497	463	(94%)	27	(6%)	7
2001–02	158	22	(12%)	15	195	161	(85%)	29	(15%)	5
2002–03	33	7	(18%)	2	42	37	(88%)	5	(12%)	0

[a] Lynx $\leq$ 35” in length.

Table 5. Unit 11 otter harvest, 1998–2002.

Regulatory	Reported Harvest					Method of Take				
Year	Males	(%)	Females	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1998–99	0	(0%)	0	1	1	0	(0%)	0	(0%)	1
1999–2000	0	(0%)	0	0	0	0	(0%)	0	(0%)	0
2000–01	2	(67%)	1	0	3	3	(100%)	0	(0%)	0
2001–02	0	(0%)	1	0	1	1	(100%)	0	(0%)	0
2002–03	1	(50%)	1	0	2	2	(100%)	0	(0%)	0

Table 6. Unit 13 otter harvest, 1998–2002.

Regulatory	Reported Harvest					Method of Take				
Year	Males	(%)	Females	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1998–99	5	(63%)	3	8	16	13	(93%)	1	(7%)	2
1999–00	7	(88%)	1	13	21	20	(100%)	0	(0%)	1
2000–01	10	(83%)	2	7	19	15	(79%)	4	(21%)	0
2001–02	21	(81%)	5	8	34	31	(91%)	3	(9%)	0
2002–03	15	(68%)	7	6	28	26	(93%)	2	(7%)	0

Table 7. Unit 11 wolverine harvest, 1998–2002.

Regulatory	Reported Harvest						Method of Take				
Year	Males	(%)	Females	(%)	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1998–99	4	(57%)	3	(43%)	0	7	6	(86%)	1	(14%)	0
1999–00	4	(80%)	1	(20%)	0	5	5	(100%)	0	(0%)	0
2000–01	7	(78%)	2	(22%)	0	9	9	(100%)	0	(0%)	0
2001–02	2	(40%)	3	(60%)	1	6	5	(83%)	1	(17%)	0
2002–03	2	(67%)	1	(33%)	0	3	3	(100%)	0	(0%)	0

Table 8. Unit 13 wolverine harvest, 1998–2002.

Regulatory	Reported Harvest						Method of Take				
Year	Males	(%)	Females	(%)	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1998–99	19	(63%)	11	(37%)	3	33	28	(85%)	5	(15%)	0
1999–00	19	(66%)	10	(34%)	2	31	26	(84%)	5	(16%)	0
2000–01	24	(75%)	8	(25%)	2	34	27	(79%)	7	(21%)	0
2001–02	27	(60%)	18	(40%)	6	53	49	(96%)	2	(4%)	0
2002–03	12	(50%)	12	(50%)	1	25	23	(92%)	2	(8%)	0

Table 9. Unit 11 beaver harvest chronology percent by month, 1998–2002.

Regulatory	Harvest periods							
Year	October	November	December	January	February	March	April	*n*
1998–99	--	0%	0%	100%	0%	0%	0%	1
1999–2000	--	0%	0%	0%	100%	0%	0%	1
2000–01	--	67%	33%	0%	0%	0%	0%	3
2001–02	--	25%	0%	0%	50%	25%	0%	6 [a]
2002–03	--	0%	0%	0%	0%	0%	0%	0

[a] Two were taken in June under Federal Subsistence Regulations.

Table 10. Unit 13 beaver harvest chronology percent by month, 1998–2002.

Regulatory	Harvest periods										
Year	August	September	October	November	December	January	February	March	April	May	*n*
1998–99	0%	0%	50%	19%	8%	4%	5%	3%	3%	8%	189
1999–00	0%	2%	50%	15%	1%	1%	4%	4%	11%	12%	196
2000–01	0%	2%	25%	15%	9%	5%	4%	9%	8%	23%	240
2001–02	5%	7%	36%	12%	23%	2%	4%	3%	3%	6%	202
2002–03	0%	18%	46%	16%	12%	2%	2%	1%	1%	1%	342

Table 11. Unit 11 otter harvest chronology percent by month, 1998–2002.

Regulatory	Harvest periods						
Year	November	December	January	February	March	April	*n*
1998–99	100%	0%	0%	0%	0%	0%	1
1999–2000	0%	0%	0%	0%	0%	0%	0
2000–01	0%	100%	0%	0%	0%	0%	3
2001–02	0%	0%	0%	100%	0%	0%	1
2002–03	0%	50%	0%	50%	0%	0%	2

Table 12 . Unit 13 otter harvest chronology percent by month, 1998–2002.

Regulatory	Harvest periods						
Year	November	December	January	February	March	April	*n*
1998–99	0%	21%	21%	36%	0%	21%	16
1999–2000	0%	14%	57%	5%	0%	24%	21
2000–01	0%	37%	21%	16%	21%	5%	19
2001–02	3%	24%	35%	29%	3%	6%	34
2002–03	29%	36%	18%	11%	7%	0%	28

Table 13. Unit 11 lynx harvest chronology percent by month, 1998–2002.

Regulatory	Harvest periods						
Year	October	November	December	January	February	March	*n*
1998–99	0%	0%	22%	64%	12%	2%	99
1999–2000	0%	1%	24%	48%	27%	0%	114
2000–01	0%	7%	64%	24%	4%	0%	196
2001–02	0%	0%	69%	28%	3%	0%	32
2002–03	0%	0%	50%	50%	0%	0%	2

Table 14 . Unit 13 lynx harvest chronology percent by month, 1998–2002.

Regulatory	Harvest Periods				
Year	November	December	January	February	*n*
1998–99	0%	43%	43%	13%	247
1999–2000	1%	40%	39%	20%	425
2000–01	12%	42%	30%	16%	497
2001–02	7%	52%	38%	3%	195
2002–03	2%	55%	43%	0%	42

Table 15 . Unit 11 wolverine harvest chronology percent by month, 1998–2002.

Regulatory	Harvest Periods					
Year	November	December	January	February	March	*n*
1998–99	0%	0%	100%	0%	0%	7
1999–2000	0%	40%	60%	0%	0%	5
2000–01	0%	33%	67%	0%	0%	9
2001–02	0%	0%	100%	0%	0%	6
2002–03	0%	0%	100%	0%	0%	3

Table 16. Unit 13 wolverine harvest chronology percent by month, 1998–2002.

Regulatory	Harvest periods							
Year	September	October	November	December	January	February	March	*n*
1998–99	13%	0%	10%	37%	37%	3%	0%	33
1999–2000	6%	0%	6%	26%	58%	0%	3%	31
2000–01	6%	0%	9%	38%	47%	0%	0%	34
2001–02	0%	0%	4%	45%	49%	2%	0%	51
2002–03	4%	0%	4%	20%	72%	0%	0%	25

Table 17. Unit 11 beaver harvest percent by transport method, 1998–2002.

	Percent of Harvest							
Regulatory Year	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	*n*
1998–99	0%	0%	0%	0%	0%	0%	0%	1
1999–2000	0%	0%	0%	0%	100%	0%	0%	1
2000–01	0%	0%	0%	0%	100%	0%	0%	3
2001–02	0%	0%	0%	50%	0%	0%	50%	6
2002–03	0%	0%	0%	0%	0%	0%	0%	0

Table 18. Unit 13 beaver harvest percent by transport method, 1998–2002.

	Percent of Harvest							
Regulatory Year	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	*n*
1998–99	4%	0%	12%	21%	34%	2%	28%	189
1999–2000	0%	5%	7%	6%	13%	0%	70%	196
2000–01	1%	0%	11%	1%	43%	0%	44%	240
2001–02	2%	3%	11%	18%	27%	7%	32%	202
2002–03	0%	0%	37%	15%	16%	0%	31%	342

Table 19. Unit 11 otter harvest percent by transport method, 1998–2002.

	Percent of Harvest							
Regulatory Year	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	*n*
1998–99	0%	0%	0%	0%	100%	0%	0%	1
1999–2000	0%	0%	0%	0%	0%	0%	0%	0
2000–01	0%	0%	0%	0%	100%	0%	0%	3
2001–02	0%	0%	0%	0%	0%	0%	0%	1
2002–03	0%	0%	0%	0%	100%	0%	0%	2

Table 20. Unit 13 otter harvest percent by transport method, 1998–2002.

	Percent of Harvest							
Regulatory Year	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	*n*
1998–99	0%	13%	7%	0%	80%	0%	0%	16
1999–2000	0%	5%	0%	0%	90%	0%	5%	21
2000–01	29%	0%	0%	0%	53%	0%	18%	19
2001–02	24%	6%	0%	0%	56%	3%	12%	34
2002–03	7%	0%	0%	7%	64%	0%	21%	28

Table 21. Unit 11 lynx harvest percent by transport method, 1998–2002.

Regulatory Year	Percent of Harvest							
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	*n*
1998–99	0%	3%	0%	0%	90%	0%	7%	99
1999–2000	0%	0%	0%	0%	97%	2%	1%	114
2000–01	0%	0%	0%	0%	98%	0%	2%	196
2001–02	0%	0%	0%	0%	81%	0%	19%	32
2002–03	0%	0%	0%	0%	100%	0%	0%	2

Table 22. Unit 13 lynx harvest percent by transport method, 1998–2002.

Regulatory Year	Percent of Harvest							
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	*n*
1998–99	0%	2%	0%	0%	92%	0%	5%	247
1999–2000	0%	3%	0%	0%	86%	0%	11%	425
2000–2001	0%	10%	0%	1%	76%	0%	12%	497
2001–2002	0%	10%	1%	1%	65%	1%	23%	195
2002–2003	0%	0%	7%	0%	83%	0%	10%	42

Table 23. Unit 11 wolverine harvest percent by transport method, 1998–2002.

Regulatory Year	Percent of Harvest							
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	*n*
1998–99	14%	0%	0%	0%	86%	0%	0%	7
1999–2000	0%	20%	0%	0%	80%	0%	0%	5
2000–01	0%	0%	0%	0%	100%	0%	0%	9
2001–02	17%	0%	0%	0%	83%	0%	0%	6
2002–03	0%	0%	0%	0%	100%	0%	0%	3

Table 24. Unit 13 wolverine harvest percent by transport method, 1998–2002.

Regulatory Year	Percent of Harvest							
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	*n*
1998–99	0%	0%	0%	7%	80%	0%	12%	33
1999–2000	0%	0%	0%	6%	81%	0%	13%	31
2000–01	6%	3%	0%	0%	85%	0%	6%	34
2001–02	6%	8%	0%	0%	76%	0%	10%	51
2002–03	9%	5%	0%	5%	77%	0%	5%	25

Percentages in these tables reflect known information only. Unknown numbers are excluded from percentage calculations.

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNIT: 12 (10,000 mi^2) and 20E (11,000 mi^2)

GEOGRAPHIC DESCRIPTION: Upper Tanana, White, Fortymile, Ladue, and Charley River drainages

BACKGROUND

Historically, furbearer trapping has been an important part of the economy in eastern Interior Alaska. Between the early 1900s and 1920, trapping supplemented income of miners and Alaska Natives. The gold rush ended during the 1920s and most of the miners moved out of the Fortymile area. However, trapping still augmented incomes for many area residents. Today, the economy of the area is primarily seasonal. Trapping continues to provide for subsistence use and additional income for local residents. However, trapping effort has declined since 1997 due to reduced fur prices.

Marten and lynx are the most economically important furbearers in Units 12 and 20E. During population highs, muskrats are also economically and culturally important in Unit 12. Beavers are an important subsistence resource to Northway residents but are lightly trapped in most of the area. Little trapping effort is spent on coyotes, red foxes, mink, river otters, ermine, red squirrels, and wolverines because of low pelt values, low abundance, or difficulty and expense of trapping. Wolves are discussed in a separate management report.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Provide an optimal harvest of furbearers.
- Provide the greatest opportunity to participate in hunting and trapping furbearers.

MANAGEMENT OBJECTIVES

- Maintain accurate annual harvest records based on sealing documents.
- As new research and management findings become available, develop specific population and harvest objectives for furbearers.

METHODS

We collected harvest data for beaver, lynx, otter, and wolverine by requiring trappers to have their furs sealed. Additional information collected at the time of sealing included: name of trapper; location of harvest; date of harvest; pelt measurements for beaver, lynx, and otter; sex of the furbearer except for beaver; method of take; and method of transportation used. Annual harvest estimates for beaver and otter included a subjective estimate of unreported take because some pelts were used in the trappers' homes and were not sealed. Harvest data were summarized by regulatory year, which begins 1 July and ends 30 June (e.g., RY00 = 1 Jul 2000 through 30 Jun 2001).

We mailed questionnaires to trappers in Units 12 and 20E through the Statewide Furbearer Management Program. Trappers were asked to rate species abundance as scarce, common, or abundant. They were also asked to rate species population trends based on their field observations.

We purchased lynx carcasses from trappers for $10 each. Carcasses were kept frozen until they could be examined to determine age, sex, body condition and reproductive status of females. This information was used to help assess lynx population trends by evaluating age structure, pregnancy rate, and body condition of harvested lynx.

During 1995–1997 and 2002–2003, lynx and snowshoe hare population trends were monitored using an aerial survey technique (M. McNay, ADF&G, unpublished data).

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Lynx

Based on track surveys, harvest data (Tables 1 and 2), and comments from area trappers, the last lynx population cyclic high in Units 12 and 20E occurred during 1997–1999. Years of high kitten production corresponded with years of high snowshoe hare numbers. Aerial track count surveys in 2003–2004 resulted in 0.19 lynx tracks/mile (unchanged from 2002–2003 survey) and 1.08 hare tracks/mile (a 280% increase from 2002–2003). This data indicates lynx numbers are at, or approaching, a low in their cycle; however, with increasing hare numbers, I expect to see an upward swing in the lynx population in the next 1–2 years.

Wolverine, Marten, Red Fox, Muskrat, Coyote, and Beaver

Historically in Units 12 and 20E marten trapping contributed most of the income for area trappers. During RY00–RY03 that was still the case, but many trappers did not trap or reduce their trapping effort because of low marten availability and reduced raw fur price. Furbearer populations vary greatly over Unit 12 and 20E depending on numerous factors, including weather patterns; amount and timing of snow pack runoff; quantity, quality and interspersion of habitat in various successional stages; and avian predation and availability of food. Information from interviews with trappers indicates wolverine, red fox, coyote and beaver populations are stable at moderate to high levels.

Other Species

Trapper questionnaire results and sightings by area pilots and department personnel indicated that otters were uncommon in both Units 12 and 20E, and ermine and red squirrel were common and stable. Mink were scarce in both units. There was little trapper demand for these species. Trappers also were asked about prey species. Between 2000 and spring 2003, respondents listed hares as scarce, ptarmigan as scarce, grouse as scarce to common, and microtines as common to abundant.

MORTALITY

Harvest

Seasons and Bag Limits. Seasons and bag limits for the report period are presented in Table 3.

Alaska Board of Game Actions and Emergency Orders. The Alaska Board of Game adopted a regulation in spring 1992 that allows the department to annually set the lynx season independent of the board process for Interior Units 12, 20, and 25C. This action enhanced our ability to apply the lynx tracking harvest strategy (Stephenson 1988) that was adopted as board policy in 1987. This strategy was designed to protect lynx populations during the low part of the population cycle to allow for a more rapid and larger growth phase. The lynx trapping seasons were adjusted annually by emergency orders issued by the department after evaluating current lynx and snowshoe hare population trends as part of the lynx harvest tracking system.

In January 2002 the Board of Game changed sealing regulations so that sealing of beavers was no longer required after 1 July 2002. At the March 2002 meeting, the board lengthened the beaver trapping season to 20 Sep–15 May, with a limit of 15 beavers in Unit 12 and 25 beavers in Unit 20E, and specified that during 20 Sep–31 Oct and 16 Apr–15 May only, firearms can be used to take up to 6 beaver per regulatory year, provided the meat is salvaged for human consumption.

In March 2002 the Board of Game lengthened the coyote hunting season in both units to begin 10 August, and liberalized the bag limit to 10 during the entire hunting season.

Hunter–Trapper Harvest.

Lynx — During RY00–RY02, the lynx harvest ranged from 27 to 171 in Unit 12 (Table 1) and 18 to 74 in Unit 20E (Table 2). Based on pelt measurements, the percentage of kittens in the harvest ranged between 0% and 18% in Unit 12 and between 7% and 11% in Unit 20E and declined during the reporting period in both units. Average annual harvest during the RY00–RY02 reporting period was 68% and 51% below the average annual harvest during the previous 3-year reporting period in Units 12 and 20E respectively. During RY00–RY01 the lynx season remained open through 15 March, but in RY02 was shortened to 31 January, in accordance with the lynx tracking strategy (Table 3). Harvest during RY00–RY01 was more evenly spread between December–February than during the shorter RY02 season, in which nearly the entire harvest occurred in January (Tables 4 and 6).

Wolverine — During RY00–RY02, the wolverine harvest ranged from 16 to 27 in Unit 12 and 4 to 11 in Unit 20E (Tables 1 and 2). The Unit 12 harvest was slightly above average, while the Unit 20E harvest was average compared to the average long-term (RY86–RY99) annual harvest.

Beaver — Beaver harvest in Unit 12, during RY00–RY02 was below the long-term average, with an average annual harvest during RY00–RY01 of only 24 beaver, compared to the 17-year average of 42 (Table 1). Sealing requirements for beaver were eliminated in RY02, but interviews with local trappers indicate a similar harvest level in RY02 as in RY00–RY01. Beaver harvest in Unit 20E is historically low (Table 2). Most harvest in Unit 20E occurred along the Yukon River by residents of Eagle who use beavers as food or for making handicrafts.

Otter — Otter populations in both Units 12 and 20E were low due to a lack of suitable habitat. Trappers seldom selected for otters due to low fur prices and the difficulty of catching them. During the past 10 years, an average of 6.5 otters were taken annually in Unit 12 (Table 1), while a total of 2 otters were trapped in Unit 20E (Table 2).

Method of Take.

Most trappers used traps or snares as their primary method of harvesting furbearers, in Units 12 and 20E (Tables 1 and 2).

Transport Methods.

Most trappers used snowmachines as their primary form of transportation to access all furbearer species in Units 12 and 20E (Tables 5 and 7).

Other Mortality

Rates of natural mortality were unknown for furbearers in Units 12 and 20E.

HABITAT

Assessment and Enhancement

Prior to the mid 1990s, 30 years of strict fire suppression activities in Units 12 and 20E created an older, less diverse mosaic of habitats than would have existed under a natural fire regime. Lack of early- to medium-aged seral habitats may have limited snowshoe hare and microtine numbers, and ultimately, lynx, marten, and other species. There are several large areas of early- to medium-aged seral habitats created by wildfire in Unit 20E. Incidental sightings and trapping records indicate that snowshoe hare and lynx numbers were higher in these areas compared to the remainder of Unit 20E. There are plans to log more than 1000 acres of the Tok River valley over the next 10 years. The Division of Wildlife Conservation is working with the Department of Natural Resources (DNR) Division of Forestry in planning postlogging treatment to promote wildlife habitat regeneration that should benefit furbearers.

The *Alaska Interagency Fire Management Plan* for the Upper Tanana area currently guides wildfire suppression activities. Under this plan, a more natural fire regime will be restored to

the area and will eventually improve habitat heterogeneity. All land-managing agencies agreed to the plan. Having a more diverse mosaic of habitats should benefit all furbearer species.

CONCLUSIONS AND RECOMMENDATIONS

The furbearer management objective to maintain accurate annual harvest records based on sealing documents was met during RY00–RY02. We accomplished this by monitoring population trends and harvest through sealing selected furs, conducting trapper surveys and interviews, conducting our annual lynx and hare track surveys and by examining lynx carcasses and reproductive tracts from lynx purchased from trappers at the Tok ADF&G office. The objective to develop specific population and harvest objectives for furbearers as new research and management findings become available was not met during the report period. Harvest objectives will be reviewed during the next report period as new research and management findings become available.

Overall trapping effort was not directly measured. However, information collected from sealing data, trapper questionnaires, and discussions with area trappers indicated that trapping effort has declined since 2000, primarily due to low pelt prices.

Lynx harvest declined in Units 12 and 20E due to declining numbers of hares, low fur prices, and the decreasing numbers of active area trappers. Lynx pelt prices are currently on the upswing and could begin to influence trapper effort in the next few years if the trend continues. In recent years, lower fur prices and a less active trapping community in Units 12 and 20E have resulted in a significant decline in competition among trappers within these units, as compared to the late 1980s and early 1990s. With the reduced level of competition among trappers for the fur resources in these units, years with longer seasons have allowed trappers to become more relaxed in setting their lynx lines, trap when days are longer, and some have postponed lynx trapping efforts until February to select for better fur quality. I recommend revisiting the applicability of the lynx harvest strategy in Units 12 and 20E, as it relates to current lynx trapping effort and fur prices to ensure that trapper opportunity is not being limited unnecessarily.

Wolverine harvest was low, with the majority of wolverines harvested by a few area trappers who selected for wolverine due to wolverine's high market value, relative to other furbearer species. Wolverine harvest is currently low and I recommend no change in management of this species.

Martens were the most sought after furbearer in both units. Low price and lower overall marten numbers caused a reduction in trapper effort during RY00–RY02. Marten harvest varied among individual trappers and was proportional to local marten abundance along individual traplines. Marten harvest is currently low and I recommend no change in management of this species.

All other furbearer populations fluctuated within their historical levels and do not warrant changes in seasons and bag limits or methods and means.

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TABLE 1 Unit 12 beaver, lynx, otter, and wolverine harvest, regulatory years 1993–1994 through 2002–2003

Species/ Regulatory year	Reported harvest						Estimated harvest		Method of take				Total harvest	Successful trappers/ hunters
	Sex			Age										
	M	F	Unk	Juv[a]	Adults	Unk	Unreported	Illegal	Trap/snare	Shot	L&S[b]	Unk		
Beaver														
1993–1994	0	0	35	2	32	1	20	0	34	0	0	1	55	11
1994–1995	0	0	26	0	26	0	20	0	26	0	0	0	46	6
1995–1996	0	0	14	7	7	0	20	0	14	0	0	0	34	4
1996–1997	0	0	27	6	20	1	20	0	26	0	0	1	47	6
1997–1998	0	0	40	9	31	0	20	0	40	0	0	0	60	9
1998–1999	0	0	19	1	18	0	20	0	19	0	0	0	39	4
1999–2000	0	0	10	2	8	0	20	0	10	0	0	0	30	3
2000–2001	0	0	2	0	0	2	20	0	1	0	0	1	22	2
2001–2002	0	0	6	0	6	0	20	0	6	0	0	0	26	1
2002–2003[c]	0	0	7	0	5	2	20	0	5	2	0	0	27	2
Lynx														
1993–1994	0	0	121	2	117	2	0	0	103	3	0	15	121	28
1994–1995	0	0	89	12	75	2	0	0	85	3	0	1	89	23
1995–1996	0	0	42	11	31	0	0	0	40	2	0	0	42	10
1996–1997	0	0	164	40	121	3	0	0	158	2	0	4	164	32
1997–1998	0	0	353	103	233	17	0	0	351	2	0	0	353	37
1998–1999	0	0	324	73	237	14	0	0	319	5	0	0	324	28
1999–2000	0	0	221	42	179	0	0	0	216	5	0	0	221	33
2000–2001	0	0	171	27	126	18	0	0	103	28	0	40	171	38
2001–2002	0	0	88	10	65	13	0	0	79	9	0	0	88	36
2002–2003	0	0	27	0	27	0	0	0	25	2	0	0	27	16
Otter														
1993–1994	0	0	0	0	0	0	3	0	0	0	0	0	3	0
1994–1995	3	3	0	0	0	6	3	0	6	0	0	0	9	3
1995–1996	2	2	0	0	0	4	3	0	2	2	0	0	7	3
1996–1997	2	1	2	0	0	5	3	0	4	1	0	0	8	4
1997–1998	0	0	1	0	0	1	3	0	1	0	0	0	4	1
1998–1999	0	0	5	0	0	5	3	0	4	1	0	0	8	3
1999–2000	4	0	0	0	0	4	3	0	4	0	0	0	7	4
2000–2001	2	1	0	0	0	3	3	0	3	0	0	0	6	3
2001–2002	1	1	0	0	0	2	3	0	2	0	0	0	5	1
2002–2003	3	2	0	0	0	5	3	0	5	0	0	0	8	2

Species/ Regulatory year	Reported harvest						Estimated harvest		Method of take				Total harvest	Successful trappers/ hunters
	Sex			Age										
	M	F	Unk	Juv[a]	Adults	Unk	Unreported	Illegal	Trap/snare	Shot	L&S[b]	Unk		
Wolverine														
1993–1994	15	3	3	0	0	21	0	0	19	2	0	0	21	15
1994–1995	12	9	0	0	0	21	0	0	21	0	0	0	21	12
1995–1996	4	3	0	0	0	7	0	0	6	1	0	0	7	7
1996–1997	8	2	1	0	0	11	0	0	11	0	0	0	11	8
1997–1998	13	4	1	0	0	18	0	0	18	0	0	0	18	11
1998–1999	18	8	0	0	0	26	0	0	24	2	0	0	26	15
1999–2000	17	12	1	0	0	30	0	0	27	3	0	0	30	13
2000–2001	18	9	0	0	0	27	0	0	26	1	0	0	27	15
2001–2002	16	4	1	0	0	21	0	0	20	1	0	0	21	13
2002–2003	13	3	0	0	0	16	0	0	16	0	0	0	16	12

[a] Beavers ≤52"; lynx ≤35" in length.

[b] L&S (land and shoot) refers to animals taken by hunters the same day hunters were airborne.

[c] No beaver sealing required beginning regulatory year 2003–2003.

TABLE 2 Unit 20E beaver, lynx, otter, and wolverine harvest, regulatory years 1993–1994 through 2002–2003

Species/ Regulatory Year	Reported harvest						Estimated harvest		Method of take				Total harvest	Successful trappers/ hunters
	Sex			Age										
	M	F	Unk	Juv[a]	Adults	Unk	Unreported	Illegal	Trap/snare	Shot	L&S[b]	Unk		
Beaver														
1993–1994	0	0	9	0	9	0	5	0	9	0	0	0	14	2
1994–1995	0	0	0	0	0	0	5	0	0	0	0	0	5	0
1995–1996	0	0	5	1	4	0	5	0	5	0	0	0	10	2
1996–1997	0	0	3	0	3	0	5	0	2	1	0	0	8	1
1997–1998	0	0	0	0	0	0	5	0	0	0	0	0	5	0
1998–1999	0	0	1	0	1	0	5	0	1	0	0	0	6	1
1999–2000	0	0	11	3	8	0	5	0	11	0	0	0	16	3
2000–2001	0	0	4	0	4	0	5	0	0	0	0	4	9	1
2001–2002	0	0	0	0	0	0	5	0	0	0	0	0	5	0
2002–2003[c]	0	0	0	0	0	0	5	0	0	0	0	0	5	0
Lynx														
1993–1994	0	0	46	1	45	0	0	0	46	0	0	0	46	11
1994–1995	0	0	23	3	20	0	0	0	23	0	0	0	23	7
1995–1996	0	0	28	4	24	0	0	0	27	1	0	0	28	8
1996–1997	0	0	33	7	25	1	0	0	33	0	0	0	33	9
1997–1998	0	0	102	25	77	0	0	0	102	0	0	0	102	12
1998–1999	0	0	116	18	98	0	0	0	111	3	0	2	116	16
1999–2000	0	0	82	18	54	10	0	0	77	5	0	0	82	19
2000–2001	0	0	74	4	44	26	0	0	54	2	0	18	74	12
2001–2002	0	0	56	4	52	0	0	0	39	7	0	10	56	16
2002–2003	0	0	18	2	16	0	0	0	17	1	0	0	18	5
Otter														
1993–1994	1	0		0	1	0	0	0	0	1	0	0	1	1
1994–1995	1	0	0	0	0	1	0	0	1	0	0	0	1	1
1995–1996[d]														
1996–1997[d]														
1997–1998[d]														
1998–1999[d]														
1999–2000[d]														
2000–2001	0	0	0										0	0
2001–2002	0	0	0										0	0
2002–2003	0	0	0										0	0

Species/ Regulatory Year	Reported harvest						Estimated harvest		Method of take				Total harvest	Successful trappers/ hunters
	Sex			Age										
	M	F	Unk	Juv[a]	Adults	Unk	Unreported	Illegal	Trap/snare	Shot	L&S[b]	Unk		
Wolverine														
1993–1994	7	3	0	0	0	10	0	0	10	0	0	0	10	5
1994–1995	4	3	0	0	0	7	0	0	7	0	0	0	7	5
1995–1996	3	1	0	0	0	4	0	0	4	0	0	0	4	4
1996–1997	6	0	0	0	0	6	0	0	5	1	0	0	6	6
1997–1998	4	0	4	0	0	8	0	0	8	0	0	0	8	6
1998–1999	6	1	0	0	0	7	0	0	5	2	0	0	7	5
1999–2000	2	1	0	0	0	3	0	0	3	0	0	0	3	3
2000–2001	8	1	2	0	0	11	0	0	10	1	0	0	11	7
2001–2002	3	1	1	0	0	5	0	0	5	0	0	0	5	3
2002–2003	3	1	0	0	0	4	0	0	4	0	0	0	4	3

[a] Beavers ≤52"; lynx ≤35" in length.

[b] L&S (land and shoot) refers to animals taken by hunters the same day hunters were airborne.

[c] No beaver sealing required beginning regulatory year 2002–2003.

[d] No reported harvest.

TABLE 3 Furbearer trapping and hunting seasons in Units 12 and 20E, regulatory years 2000–2001 through 2002–2003

Species/	Trapping		Hunting	
Regulatory year	Trapping season	Bag limit	Hunting season	Bag limit
Beaver				
2000–2001	1 Nov–15 Apr	15 in Unit 12; 25 in Unit 20E	No open season	
2001–2002	1 Nov–15 Apr	15 in Unit 12; 25 in Unit 20E	No open season	
2002–2003	1 Nov–15 Apr	15 in Unit 12; 25 in Unit 20E	No open season	
	20 Sep–31 Oct 16 Apr–15 May	Firearms may be used to take up to 6 per regulatory year with a valid trapping license.		
Coyote				
2000–2001	15 Oct–30 Apr	No limit	1 Sep–30 Apr	10, no more than 2 before 1 Oct
2001–2002	15 Oct–30 Apr	No limit	1 Sep–30 Apr	10, no more than 2 before 1 Oct
2002–2003	15 Oct–30 Apr	No limit	10 Aug–30 Apr	10
Lynx				
2000–2001	1 Nov–30 Nov 1 Dec–15 Mar	5 No Limit	1 Nov–15 Mar	2
2001–2002	1 Nov–30 Nov 1 Dec–15 Mar	5 No Limit	1 Nov–15 Mar	2
2002–2003	1 Nov–30 Nov 1 Dec–31 Jan	5 No Limit	1 Nov–15 Mar	2
Marten				
2000–2001	1 Nov–28 Feb	No Limit	No open season	
2001–2002	1 Nov–28 Feb	No Limit	No open season	
2002–2003	1 Nov–28 Feb	No Limit	No open season	
Mink				
2000–2001	1 Nov–28 Feb	No Limit	No open season	
2001–2002	1 Nov–28 Feb	No Limit	No open season	
2002–2003	1 Nov–28 Feb	No Limit	No open season	

Species/	Trapping		Hunting	
Regulatory year	Trapping season	Bag limit	Hunting season	Bag limit
Muskrat				
2000–2001	20 Sep–10 Jun	No limit	No open season	
2001–2002	20 Sep–10 Jun	No limit	No open season	
2002–2003	20 Sep–10 Jun	No limit	No open season	
Otter				
2000–2001	1 Nov–15 Apr	No limit	No open season	
2001–2002	1 Nov–15 Apr	No limit	No open season	
2002–2003	1 Nov–15 Apr	No limit	No open season	
Red Fox				
2000–2001	1 Nov–28 Feb	No limit	1 Sep–15 Mar	10, no more than 2 before 1 Oct
2001–2002	1 Nov–28 Feb	No limit	1 Sep–15 Mar	10, no more than 2 before 1 Oct
2002–2003	1 Nov–28 Feb	No limit	1 Sep–15 Mar	10, no more than 2 before 1 Oct
Red Squirrel				
2000–2001	No closed season	No limit	No closed season	No limit
2001–2002	No closed season	No limit	No closed season	No limit
2002–2003	No closed season	No limit	No closed season	No limit
Weasel				
2000–2001	1 Nov–28 Feb	No limit	No open season	
2001–2002	1 Nov–28 Feb	No limit	No open season	
2002–2003	1 Nov–28 Feb	No limit	No open season	
Wolverine				
2000–2001	1 Nov–28 Feb	No limit	1 Sep–31 Mar	1
2001–2002	1 Nov–28 Feb	No limit	1 Sep–31 Mar	1
2002–2003	1 Nov–28 Feb	No limit	1 Sep–31 Mar	1

TABLE 4 Unit 12 beaver, lynx, otter, and wolverine reported harvest[a] chronology by month, regulatory years 1993–1994 through 2002–2003

Species/	Harvest chronology by month							
Regulatory year	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr	Unknown
Beaver								
1993–1994	0	13	4	0	3	3	5	
1994–1995	0	0	0	2	2	17	5	
1995–1996	0	0	2	0	1	7	0	
1996–1997	0	2	4	3	7	11	0	
1997–1998	0	0	2	4	3	31	0	
1998–1999	0	0	0	0	0	12	7	
1999–2000	0	0	0	0	0	3	0	
2000–2001	0	0	0	1	0	1	0	
2001–2002	0	0	0	0	0	6	0	
2002–2003[b]	2	0	0	0	0	5	0	
Lynx								
1993–1994	0	1	47	56	2	0	0	
1994–1995	0	0	49	37	0	0	0	
1995–1996	0	0	12	30	0	0	0	
1996–1997	0	1	87	73	0	0	0	
1997–1998	0	1	97	161	94	0	0	
1998–1999	0	3	71	109	141	0	0	
1999–2000	0	1	34	95	89	2	0	
2000–2001	0	17	34	59	46	6	0	9
2001–2002	0	5	15	35	28	5	0	0
2002–2003	0	0	11	15	0	1	0	0
Otter								
1993–1994	0	0	0	0	0	0	0	
1994–1995	0	0	5	1	0	0	0	
1995–1996	1	0	2	1	0	0	0	
1996–1997	0	0	3	2	0	0	0	
1997–1998	0	0	0	0	0	1	0	
1998–1999	0	0	0	0	0	0	0	
1999–2000	0	0	0	1	3	0	0	
2000–2001	0	0	0	0	2	0	1	
2001–2002	0	0	2	0	0	0	0	
2002–2003	0	0	2	3	0	0	0	
Wolverine								
1993–1994	1	1	2	7	10	0	0	
1994–1995	0	2	2	10	7	0	0	
1995–1996	0	1	1	1	3	1	0	
1996–1997	0	0	1	1	8	1	0	
1997–1998	0	3	3	7	5	0	0	
1998–1999	2	1	6	4	13	0	0	

Species/	Harvest chronology by month							
Regulatory year	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr	Unknown
1999–2000	1	0	7	7	15	0	0	
2000–2001	0	4	6	9	8	0	0	
2001–2002	0	3	9	1	7	1	0	
2002–2003	0	0	1	8	7	0	0	

[a] Unknown not included.

[b] These beaver were voluntarily presented for sealing; no beaver sealing required as of regulatory year 2002–2003.

TABLE 5 Unit 12 harvest percent by transport method, regulatory years 1993–1994 through 2002–2003

Species/ Regulatory year	Harvest percent by transport method							
	Airplane	Dogsled, Skis, Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown
Beaver								
1993–1994	0	0	14	0	49	0	20	17
1994–1995	0	15	19	0	65	0	0	0
1995–1996	0	21	0	0	14	0	29	36
1996–1997	0	26	0	0	70	0	0	4
1997–1998	0	8	20	0	73	0	0	0
1998–1999	0	27	0	0	63	0	0	0
1999–2000	0	0	40	0	50	0	10	0
2000–2001	0	0	0	0	50	0	50	0
2001–2002	0	100	0	0	0	0	0	0
2002–2003	0	0	0	0	71	0	29	0
Lynx								
1993–1994	0	4	0	0	84	0	3	8
1994–1995	1	4	0	0	81	0	7	6
1995–1996	2	2	0	0	93	0	2	0
1996–1997	1	4	0	0	94	0	3	3
1997–1998	0	0	0	1	94	0	5	0
1998–1999	0	3	0	0	83	0	14	0
1999–2000	0	2	0	0	92	0	5	0
2000–2001	3	6	0	1	74	0	16	0
2001–2002	2	3	0	0	79	0	13	2
2002–2003	0	0	0	4	93	0	4	0
Otter								
1993–1994[a]								
1994–1995	0	0	0	0	100	0	0	0
1995–1996	0	0	0	25	75	0	0	0
1996–1997	0	0	0	0	100	0	0	0
1997–1998	0	0	0	0	100	0	0	0
1998–1999	0	0	0	0	80	0	20	0
1999–2000	0	0	0	0	75	0	25	0
2000–2001	0	0	0	0	67	0	33	0
2001–2002	0	0	0	0	100	0	0	0
2002–2003	0	0	0	20	80	0	0	0

Species/ Regulatory year	Harvest percent by transport method							
	Airplane	Dogsled, Skis, Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown
Wolverine								
1993–1994	24	0	0	0	76	0	0	0
1994–1995	10	0	0	0	90	0	0	0
1995–1996	14	0	0	0	86	0	0	0
1996–1997	9	0	0	0	82	0	9	0
1997–1998	0	0	0	0	100	0	0	0
1998–1999	4	0	0	4	88	0	4	0
1999–2000	0	0	0	0	90	0	10	0
2000–2001	4	0	0	0	96	0	0	0
2001–2002	0	5	0	0	95	0	0	0
2002–2003	0	19	0	0	81	0	0	0

[a] No reported harvest.

TABLE 6 Unit 20E beaver, lynx, otter, and wolverine reported harvest chronology by month, regulatory years 1993–1994 through 2002–2003

Species/	Harvest chronology by month							
Regulatory year	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr	Unknown
Beaver								
1993–1994	0	2	2	0	0	0	0	
1994–1995	0	0	0	0	0	0	0	
1995–1996	0	0	0	0	0	2	0	
1996–1997	0	0	0	0	0	2	1	
1997–1998	0	0	0	0	0	0	0	
1998–1999	0	0	1	0	0	0	0	
1999–2000	0	0	0	0	2	9	0	
2000–2001	0	0	4	0	0	0	0	
2001–2002	0	0	0	0	0	0	0	
2002–2003	0	0	0	0	0	0	0	
Lynx								
1993–1994	0	0	24	22	0	0	0	
1994–1995	0	0	16	7	0	0	0	
1995–1996	0	0	5	22	1	0	0	
1996–1997	0	0	15	18	0	0	0	
1997–1998	0	0	16	57	29	0	0	
1998–1999	0	2	25	44	42	2	0	
1999–2000	0	1	11	60	7	3	0	
2000–2001	0	1	1	13	29	0	0	30
2001–2002	0	2	19	15	18	0	0	2
2002–2003	0	1	1	15	1	0	0	0
Otter								
1993–1994	0	0	1	0	0	0	0	
1994–1995	0	0	1	0	0	0	0	
1995–1996[a]								
1996–1997[a]								
1997–1998[a]								
1998–1999[a]								
1999–2000[a]								
2000–2001	0	0	0	0	0	0	0	
2001–2002	0	0	0	0	0	0	0	
2002–2003	0	0	0	0	0	0	0	
Wolverine								
1993–1994	0	0	1	6	3	0	0	
1994–1995	0	0	3	3	1	0	0	
1995–1996	0	0	3	0	1	0	0	
1996–1997	0	0	1	1	4	0	0	
1997–1998	0	1	2	1	4	0	0	
1998–1999	1	0	4	0	2	0	0	

Species/	Harvest chronology by month							
Regulatory year	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr	Unknown
1999–2000	0	0	1	0	2	0	0	
2000–2001	0	0	3	3	4	1	0	
2001–2002	0	0	1	3	1	0	0	
2002–2003	0	0	1	1	2	0	0	

[a] No reported harvest.

TABLE 7 Unit 20E percent harvest by transport method, regulatory years 1993–1994 through 2002–2003

Species/ Regulatory year	Percent harvest by transport method							
	Airplane	Dogsled, Skis, Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown
Beaver								
1993–1994	0	0	0	0	100	0	0	0
1994–1995	0	0	0	0	0	0	0	0
1995–1996	0	0	0	0	100	0	0	0
1996–1997	67	0	33	0	0	0	0	0
1997–1998[a]								
1998–1999	0	0	0	0	100	0	0	0
1999–2000	0	0	0	0	100	0	0	0
2000–2001	100	0	0	0	0	0	0	0
2001–2002	0	0	0	0	0	0	0	0
2002–2003	0	0	0	0	0	0	0	0
Lynx								
1993–1994	9	0	0	4	85	0	2	0
1994–1995	26	0	0	0	74	0	0	0
1995–1996	4	0	0	0	92	0	4	0
1996–1997	9	0	0	0	91	0	0	0
1997–1998	18	0	0	0	80	0	2	0
1998–1999	4	0	0	0	93	0	3	0
1999–2000	1	1	0	0	91	0	6	0
2000–2001	0	3	0	0	96	0	1	0
2001–2002	2	0	0	0	82	0	13	4
2002–2003	0	44	0	0	50	0	6	0
Otter								
1993–1994	0	0	0	0	100	0	0	0
1994–1995	0	0	0	0	100	0	0	0
1995–1996[a]								
1996–1997[a]								
1997–1998[a]								
1998–1999[a]								
1999–2000[a]								
2000–2001	0	0	0	0	0	0	0	0
2001–2002	0	0	0	0	0	0	0	0
2002–2003	0	0	0	0	0	0	0	0

Species/ Regulatory year	Percent harvest by transport method							
	Airplane	Dogsled, Skis, Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown
Wolverine								
1993–1994	70	10	0	0	20	0	0	0
1994–1995	29	0	0	0	57	0	14	0
1995–1996	0	0	0	0	100	0	0	0
1996–1997	17	0	0	0	66	0	0	17
1997–1998	0	0	0	0	100	0	0	0
1998–1999	29	0	0	0	29	0	29	14
1999–2000	0	0	0	0	100	0	0	0
2000–2001	18	18	0	0	64	0	0	0
2001–2002	0	0	0	0	100	0	0	0
2002–2003	50	0	0	0	50	0	0	0

[a] No reported harvest.

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNIT: 14 (6625 mi^2)

GEOGRAPHIC DESCRIPTION: Eastern Upper Cook Inlet

BACKGROUND

Game Management Unit 14 is divided into 3 subunits, and contains more than half (more than 320,000) of the people living in Alaska. Subunit 14A is in the Matanuska-Susitna Borough area and 14C includes Anchorage. The human populations in these units continue to remain the fastest growing in the state. Most trapping in Unit 14 is low volume, and many resource users access areas from established roads or trails. Availability of additional trapping areas close to the major communities is limited due to the expanding human population. Trapping and hunting are prohibited or severely restricted in the western half of Subunit 14C (the Anchorage bowl); therefore, most consumptive use occurs in Subunits 14A and 14B.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Provide the opportunity to trap and hunt furbearers.
- Maintain an optimal sustained harvest of furbearers.
- Develop measurable population objectives for all fur species.

MANAGEMENT OBJECTIVES

- Monitor annual harvest of furbearers using sealing forms, questionnaires, and trapper interviews.
- Implement track counts to form a long-term population index.
- Use annual harvest standards to evaluate long-term harvest levels: land otter, 20; lynx, 12 (when the season is open); wolverine, 10; and beaver, 250 (Masteller 1993).

METHODS

Information on trapping conditions, trapper effort, and trends in fur abundance and distribution were collected using a questionnaire sent to Unit 14 trappers. Harvest data were collected for beaver, land otter, lynx, wolverine, and marten through sealing certificates. The location of harvest was identified and recorded. During sealing, data on age (for beaver and lynx) and sex (for land otter, lynx, marten, and wolverine) were collected when possible. The month, method of take, and mode of hunter/trapper transport were also recorded. Minimum harvest data for other species were collected from trapper questionnaires.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Trappers said most species were common or abundant during this reporting period. They reported muskrats were scarce in some areas, although trapper effort was limited. Lynx and otters were reported in above-average numbers in all years while wolverines were reported as scarce with an improving trend. Populations of prey species were common or abundant in all years, even snowshoe hares, which have been locally reported as reduced in numbers. No specific investigations of furbearer population size or composition were conducted during the reporting period.

Distribution and Movements

Hare numbers increased notably in the mid to late 1990s, with a concurrent increase in lynx (Masteller 1997). Since 2000 lynx and hare numbers have been reported to be abundant, with lynx showing an upward trend. The higher number of lynx has been attributed to declining hare and other prey populations in Unit 13 and the immigration of cats into Unit 14. However, there may also be some increases in populations due to changes in management based on the Lynx Harvest Tracking Strategy (Golden 1999). Trapper and pilot reports indicate wolf numbers have increased in recent years and there have been no reports of any declines in coyote or fox numbers.

MORTALITY

Trapping Seasons and Bag Limits (seasons for 2000–02 unless otherwise stated).

Species	Season	Bag Limit
Beaver		
Unit14A and B	10 Nov–15 May	No limit
Unit 14C	1 Dec–15 Apr	20 per season
Coyote		
Unit 14A and B	10 Nov–31 Mar	No limit
Unit 14C	10 Nov–28 Feb	No limit

Red Fox		
Unit 14A and B	10 Nov–28 Feb	No limit
Unit 14C	10 Nov–28 Feb	1 per season
Lynx	15 Dec–15 Jan	No limit
Marten	10 Nov–31 Dec	No limit
Mink/Weasels	10 Nov–31 Jan	No limit
Muskrat	10 Nov–15 May	No limit
Land Otter		
Unit 14A and B	10 Nov–31 Mar	No limit
Unit 14C	10 Nov–28 Feb	No limit
Wolverine	10 Nov–31 Jan	2 per season

Hunting Seasons and Bag Limits.

Species	**Season**	**Bag Limit**
Coyote	1 Sep–30 Apr	2 per season
Red Fox	1 Sep–15 Feb	2 per season
Lynx	15 Dec–15 Jan	2 per season
Wolverine	1 Sep–31 Jan	1 per season

Board of Game Actions and Emergency Orders. The Board of Game took no actions in 2001 regarding furbearers in Unit 14. In spring 2003 the department recommended closing the 2003–04 trapping season for lynx based on the Lynx Harvest Tracking strategy.

Hunter/Trapper Harvest. Trappers reported increases in pelt prices and fair to good trapping conditions in 2000–01 and 2001–02. The harvest of beavers and martens decreased during the reporting period, although both were showing moderately high harvest numbers. Beaver populations throughout the unit are stable and possibly declining. The harvest of juveniles has increased (Table 1), while the average pelt size has decreased the last several seasons (Figure 1).

The harvest of otters, lynx and wolverines increased during the reporting period. The otter harvest has been relatively high for the last 7 seasons, bolstered by increasing pelt prices (Table 2). If the trend continues, the harvest standard may need to be reevaluated. The lynx harvest was very high and above our harvest standard level of 12 (Table 3). This has increased possibly due to more effort since there has been a substantial increase in the reported number of lynx hunters and trappers since the last report. This may be the result of increasing lynx populations and higher pelt prices (Peltier and Scott 2002). The

wolverine harvest was above the harvest standard level of 10 in 2000–01 and 2001–02 when 11 and 12 animals were taken respectively (Table 4). If the trend continues, seasons and bag limits may need to be reevaluated.

The average price for martens has been increasing steadily, and there have been higher harvests of martens in recent years (Table 5). The marten harvest is probably less market driven than is the harvest of species more difficult or time-consuming to trap, such as beaver. Therefore, the harvest is probably an adequate index of population abundance. Lower harvests reflect decreased productivity/survival of martens in response to scarce prey species that fluctuate in abundance across years. Unit 14 is generally considered marginal marten habitat due to the high level of human settlement disturbing continuous coniferous forests.

Information for the harvest of species that do not require sealing was taken from trapper questionnaires. During the reporting period, the total harvest ranges for all respondents were: coyote, 3–10; red fox, 1–17; mink, 1–5; weasels, 1–4; muskrats, 3–16; and red squirrels, 2–10. Many trappers either do not receive, or fail to return, the questionnaires; therefore, these should be considered minimum harvest totals.

In November and December 1998 trappers reported catching coyotes and wolves with lice (*Trichodectes canis*) between Willow and Talkeetna in the lower Susitna River valley. Lice also were reported on wolves during the 1999–2000 and 2002–03 seasons but at a reduced frequency. Since then, there have been occasional reports by trappers and other evidence that lice continue to be present in the local populations of coyotes and wolves.

Harvest Chronology. Weather conditions, such as snow depth, freezing rain, and cold temperatures can determine peak trapping success by limiting human access and optimal trapping conditions. Variation in trapping conditions and trapping effort can be seen via the chronology of the harvest across years (Tables 6–10).

Transport Methods. Snowmachines are still the most popular transport means for trappers (Tables 11–15). Highway vehicles and 4-wheelers (ATVs) were used in higher numbers during the poor snow years in 2000–01 and 2002–03. Highway vehicles were used heavily by beaver and otter trappers. Aircraft use for wolverine trappers has increased in the last decade and peaked in 1996, (Table 14) while non-mechanized travel has increased recently for marten trappers (Table 15).

Other Mortality

There were 10, 8, and 5 nuisance beaver permits issued in 2000–01, 2001–02, and 2002–03, respectively. These allowed the taking of up to 20 beavers per permit (varied by permit and location). As in previous years, road/railroad maintenance personnel identified most problem areas where beavers have plugged culverts and flooded roadbeds. Lengthening the beaver season in the mid 1990s may have resulted in some reductions in nuisance beaver complaints. However, with healthy beaver populations,

relatively low pelt prices, reduced trapping levels, and increased human development, nuisance complaints can be expected to increase.

HABITAT

The only significant habitat disturbance to occur in recent years was the Miller's Reach wildfire in June 1996, which burned approximately 37,000 acres of mature mixed birch/spruce forest north and east of Big Lake in Subunit 14A. Significant urban development and growth continues in the Anchorage and Matanuska-Susitna areas, which may have had localized impacts on habitat values and movement corridors.

CONCLUSIONS AND RECOMMENDATIONS

The lack of data on population density, composition, and productivity of furbearers makes it difficult to identify optimal harvest levels. Recent harvests have exceeded annual harvest standards for some species in Unit 14. Not enough information is available to conclude that any of these populations are declining. Developing measurable population objectives for fur species through population size estimation is beyond the limits of our resources. Indirect survey techniques tested by Golden (1994) can be used as an index of abundance and need to be conducted yearly. An index will provide more precise information on population trends than sealing data, which often follow fur prices and trapping conditions rather than population trends.

Martens display relatively low productivity for a small mammal. There was a suspected overharvest of martens in the Matanuska-Susitna area in the late 1980s, resulting in a season reduction and a sealing program for the species in Units 14 and 16. Due to potentially high trapper density in this area, information taken at the time of sealing is important for successfully determining the health and status of the population. The sex of the animal is recorded at the time of sealing, and trappers are asked to keep records of their harvest by sex and month. A relatively high proportion of females caught late in the season is an indication of an overharvest, and this trend was observed during the last 5 years (Figure 2). This trend may not be totally accurate because many sealed martens do not have sex distinguished, and the harvest chronology is often uncertain. However, we may consider reducing season lengths during our next Board of Game meeting if the trend continues. Currently, there is sufficient reason not to support any extension of the marten seasons in Unit 14. The percent of females in the harvest remains the best available method for managers to assess the health of the population. Because of this, there needs to be a concerted effort by trappers and sealers to keep accurate records in noting the sex of the animal and when it was taken.

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Table 1 Unit 14 beaver harvest, 1987–2003

Regulatory Year	Reported harvest[a] Juv [b]	(%)	Adults	Method of Take Trap/snare	Shot	Unk	Total	Successful Trappers/hunters
1987–88	29	(11)	237	233	0	33	266	--
1988–89	30	(15)	166	175	0	21	196	--
1989–90	41	(27)	113	135	0	19	154	39
1990–91	44	(28)	111	149	4	2	155	34
1991–92	36	(16)	185	206	4	15	225	37
1992–93	70	(28)	183	241	1	11	253	50
1993–94	43	(19)	187	219	1	10	230	61
1994–95	31	(21)	113	149	0	11	160	38
1995–96	51	(20)	203	279	3	0	282	59
1996–97	53	(20)	207	256	5	19	280	56
1997–98	48	(21)	179	197	0	46	243	43
1998–99	48	(26)	140	181	1	10	192	36
1999–2000	35	(21)	129	147	2	24	173	33
2000–01	66	(28)	173	227	3	11	241	38
2001–02	31	(22)	110	133	0	14	147	31
2002–03	69	(33)	140	218	0	1	219	51
Average (1999–2003)	50		138	181	1	12	194	38

[a] Includes only beavers with reported measurements
[b] Beaver measuring $\leq$ 52 inches (length + width)

Table 2 Unit 14 land otter harvest, 1988–2003

Regulatory Year	Reported harvest			Method of Take			Total	Successful Trappers/hunters
	Male	Female	Unk	Trap/snare	Shot	Unk		
1988–89	3	4	1	8	0	0	8	8
1989–90	11	9	4	22	0	2	24	14
1990–91	1	7	2	8	2	0	10	7
1991–92	17	4	5	25	1	0	26	14
1992–93	5	3	5	9	0	4	13	7
1993–94	22	9	3	32	1	1	34	17
1994–95	16	12	2	29	0	1	30	14
1995–96	14	15	6	33	2	0	35	18
1996–97	14	13	12	39	0	0	39	14
1997–98	23	14	2	38	0	1	39	20
1998–99	11	15	7	33	0	0	33	8
1999–2000	18	11	1	30	0	0	30	18
2000–01	13	14	5	30	0	2	32	18
2001–02	17	8	7	32	0	0	32	15
2002–03	28	23	2	52	0	1	53	23
Average (1999–2003)	17	14	4	35	0	1	36	16

Table 3 Unit 14 lynx harvest, 1987–2003

Regulatory Year	Age Composition				Method of Take				Total	Successful Hunters/trappers
	Juv[a]	(%)	Ad	Unk	Trap/Snare	Shot	(L&S)[b]	Unk		
1987–88[c]	0	(0)	0	0	0	0	(0)	0	0	0
1988–89[c]	0	(0)	0	0	0	0	(0)	0	0	0
1989–90[c]	0	(0)	0	0	0	0	(0)	0	0	0
1990–91	7	(54)	6	0	11	2	(0)	0	13	8
1991–92	2	(17)	10	3	14	1	(0)	0	15	6
1992–93	3	(30)	7	1	10	1	(0)	0	11	9
1993–94	0	(0)	7	3	7	1	(0)	2	10	4
1994–95[c]	0	(0)	0	0	0	0	(0)	0	0	0
1995–96[c]	0	(0)	0	0	0	0	(0)	0	0	0
1996–97	1	(50)	1	1	3	0	(0)	0	3	2
1997–98	0	(0)	1	1	1	0	(0)	1	2	2
1998–99	0	(0)	2	2	2	1	(0)	1	4	3
1999–2000	2	(40)	3	4	6	0	(0)	3	9	8
2000–01	8	(20)	31	6	37	3	(0)	5	45	21
2001–02	5	(14)	30	12	40	4	(0)	3	47	27
2002–03	4	(19)	17	12	31	2	(0)	0	33	20
Average[d]	4		17	7	23	2	(0)	2	28	16

[a] Lynx measuring < 34 inches in length.
[b] L&S (land and shoot) refers to animals taken by hunters the same day hunters were airborne.
[c] Season closed.
[d] For 1999 through 2003

Table 4 Unit 14 wolverine harvest, 1987–2003

	Reported Harvest				Method of Take					Successful
Year	Male	Female	(%)	Unk	Trap/snare	Shot	(L&S)[a]	Unk	Total	Trappers/hunters
1987–88	4	3	(43)	0	5	1	(1)	1	7	6
1988–89	6	4	(40)	0	10	0	(0)	0	10	5
1989–90	5	3	(37)	0	6	2	(0)	0	8	6
1990–91	9	7	(44)	0	16	0	(0)	0	16	10
1991–92	5	2	(28)	1	7	1	(0)	0	8	8
1992–93	4	5	(56)	0	7	2	(0)	0	9	9
1993–94	9	4	(31)	0	13	0	(0)	0	13	10
1994–95	3	2	(40)	0	5	0	(0)	0	5	5
1995–96	5	2	(28)	3	10	0	(0)	0	10	7
1996–97	4	5	(55)	0	9	0	(0)	0	9	6
1997–98	8	5	(38)	0	12	1	(0)	0	13	9
1998–99	4	1	(20)	1	4	2	(0)	0	6	6
1999–2000	3	2	(40)	0	5	0	(0)	0	5	6
2000–01	7	4	(37)	0	11	0	(0)	0	11	7
2001–02	7	5	(42)	0	12	0	(0)	0	12	10
2002–03[b]	1	0	(100)	0	1	0	(0)	0	1	1
Average (1997–2002)	6	3		0	9	0	(0)	0	9	8

[a] L&S (land and shoot) refers to animals recorded as “ground shot” when transportation indicated was “aircraft”.
[b] Incomplete information at this time, based on available sealing certificates ONLY.

Table 5 Unit 14 marten harvest, 1992–2003

	Reported harvest				Method of Take				Successful
Regulatory Year	Male	Female	(%)	Unk	Trap/snare	Shot	Unk	Total	Trappers/hunters
1992–93[a]	5	1	(17)	0	6	0	0	6	2
1993–94	8	3	(27)	0	11	0	0	11	3
1994–95	10	8	(44)	10	18	0	10	28	5
1995–96	37	16	(30)	0	51	0	2	53	12
1996–97	70	32	(31)	0	102	0	0	102	12
1997–98	75	50	(40)	13	138	0	0	138	16
1998–99	32	25	(44)	5	62	0	0	62	14
1999–2000	49	23	(32)	2	74	0	0	74	13
2000–01	100	31	(24)	0	131	0	0	131	10
2001–02	76	37	(33)	15	104	0	24	128	23
2002–03	36	20	(36)	14	69	0	1	70	16
Average (1998–2003)	59	27		7	88	0	5	93	15

[a] Sealing not required prior to 1992–93 season.

Table 6 Unit 14 beaver harvest chronology by month, 1989–2003

Year	Percent harvested											Harvest
	Jun–Aug[a]	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Unk	
1989–90	0	0	1	15	14	15	8	12	32	1	1	154
1990–91	0	2	1	8	4	4	27	26	19	1	6	155
1991–92	0	0	0	8	6	34	26	15	3	4	3	225
1992–93	0	1	9	11	13	9	6	32	14	0	3	253
1993–94	0	2	5	11	13	14	11	21	22	0	1	230
1994–95	4	1	0	4	12	14	19	7	32	0	4	160
1995–96	1	1	1	8	27	5	7	13	24	9	3	282
1996–97	2	2	1	4	12	4	20	19	19	8	9	280
1997–98	2	1	0	10	11	17	13	12	23	11	0	243
1998–99	3	1	0	24	10	7	2	26	21	7	0	192
1999–2000	2	10	2	16	28	13	5	14	4	6	0	173
2000–01	1	0	1	29	12	13	5	7	29	2	0	241
2001–02	2	0	2	23	19	6	6	12	20	11	0	147
2002–03	0	0	4	31	20	26	8	4	1	2	3	219

[a] These are beaver taken on damage control permits

Table 7 Unit 14 land otter harvest chronology by month, 1987–2003

Regulatory Year	Percent of Harvest								Total Harvest
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
1987–88	0	12	12	25	25	25	12	0	8
1988–89	0	0	17	50	0	0	12	12	8
1989–90	0	0	20	25	8	42	8	0	24
1990–91	0	0	20	10	20	30	20	0	10
1991–92	4	0	4	15	31	19	27	0	26
1992–93	0	0	0	46	23	15	15	0	13
1993–94	0	0	9	12	50	18	12	0	34
1994–95	0	0	3	20	20	33	20	3	30
1995–96	0	6	17	37	14	14	11	0	35
1996–97	0	0	20	23	23	23	10	0	39
1997–98	0	0	18	26	13	24	18	3	39
1998–99	0	0	19	19	29	19	13	0	33
1999–2000	0	0	30	47	10	3	10	0	30
2000–01	0	0	28	22	31	3	16	0	32
2001–02	0	0	22	13	28	16	22	0	32
2002–03	0	0	42	23	26	4	6	0	53

Table 8 Unit 14 lynx harvest chronology by month, 1987–2003

Regulatory Year	Percent of Harvest						Total Harvest
	Nov	Dec	Jan	Feb	Mar	Unk	
1987–88[a]	0	0	0	0	0	0	0
1988–89[a]	0	0	0	0	0	0	0
1989–90[a]	0	0	0	0	0	0	0
1990–91	0	38	62	0	0	0	13
1991–92	0	67	33	0	0	0	15
1992–93	0	73	27	0	0	0	11
1993–94	0	80	20	0	0	0	10
1994–95[a]	0	0	0	0	0	0	0
1995–96[a]	0	0	0	0	0	0	0
1996–97	0	0	100	0	0	0	3
1997–98	0	0	50	0	0	50	2
1998–99	0	25	0	75	0	0	4
1999–2000	11	33	22	0	0	33	9
2000–01	2	38	40	0	0	20	45
2001–02	0	40	53	0	0	6	47
2002–03	0	64	33	0	3	0	33

[a] lynx season closed

Table 9 Unit 14 wolverine harvest chronology by month, 1987–2003

Regulatory Year	Percent of Harvest								Total Harvest
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
1987–88	0	0	0	43	14	14	29	0	7
1988–89	0	0	0	10	10	80	0	0	10
1989–90	12	0	25	0	63	0	0	0	8
1990–91	0	0	12	31	6	50	0	0	16
1991–92	0	0	12	25	25	38	0	0	8
1992–93	11	0	0	22	67	0	0	0	9
1993–94	0	0	0	31	69	0	0	0	13
1994–95	0	0	20	20	60	0	0	0	5
1995–96	0	0	30	50	20	0	0	0	10
1996–97	0	0	0	33	67	0	0	0	9
1997–98	8	0	8	31	54	0	0	0	13
1998–99	17	0	0	0	67	17	0	0	6
1999–2000	0	0	0	41	60	0	0	0	5
2000–01	0	0	0	36	64	0	0	0	11
2001–02	0	0	8	58	33	0	0	0	12
2002–03[a]	0	0	0	100	0	0	0	0	1

[a] incomplete information at this time, based on available sealing certificates ONLY

Table 10 Unit 14 marten harvest chronology by month, 1992–2003

	Percent of Harvest								
Year	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	Harvest
1992–93[a]	0	0	50	50	0	0	0	0	6
1993–94	0	0	45	55	0	0	0	0	11
1994–95	0	0	64	32	4	0	0	0	28
1995–96	0	0	62	38	0	0	0	0	53
1996–97	0	0	70	30	0	0	0	0	102
1997–98	0	0	55	45	0	0	0	0	138
1998–99	0	0	39	61	0	0	0	0	62
1999–2000	0	0	55	45	0	0	0	0	74
2000–01	0	0	53	47	0	0	0	0	131
2001–02	0	0	47	52	0	0	0	0	128
2002–03	0	0	46	54	0	0	0	0	70

[a] Sealing not required prior to 1992–93 season.

Table 11 Unit 14 beaver trapper transport methods, 1989–2003

Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snow-machine	ORV	Highway Vehicle	Unk	
1989–90	3	23	23	0	28	0	6	17	154
1990–91	0	32	0	1	43	0	17	6	155
1991–92	0	19	0	1	58	1	15	7	225
1992–93	0	1	8	5	47	0	20	19	253
1993–94	0	1	10	1	47	0	28	12	230
1994–95	0	9	25	5	21	0	24	16	160
1995–96	8	3	6	8	26	0	34	14	282
1996–97	1	1	5	6	49	0	25	12	280
1997–98	1	8	7	6	28	0	36	14	243
1998–99	0	18	1	5	47	0	28	1	192
1999–2000	0	22	0	0	22	0	22	33	173
2000–01	0	10	24	6	28	10	17	7	241
2001–02	1	10	0	5	60	1	10	12	147
2002–03	8	14	4	5	20	0	36	13	219

Table 12 Unit 14 land otter trapper transport methods, 1987–2003

Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled, Skis Snowshoes	Boat	3- or 4-wheeler	Snow-machine	ORV	Highway Vehicle	Unk	
1987–88	0	88	0	0	12	0	0	0	8
1988–89	0	25	0	0	25	0	38	12	8
1989–90	0	71	0	0	8	0	13	8	24
1990–91	0	60	0	0	0	0	40	0	10
1991–92	0	19	0	0	69	0	8	4	26
1992–93	0	8	0	0	54	0	8	30	13
1993–94	0	6	0	0	62	0	6	26	34
1994–95	10	0	0	0	60	0	20	10	30
1995–96	9	14	0	3	26	0	31	17	35
1996–97	5	10	0	3	56	0	18	8	39
1997–98	0	13	3	13	38	0	28	5	39
1998–99	0	21	3	0	48	0	27	0	33
1999–2000	0	24	0	3	33	0	33	7	30
2000–01	0	19	0	16	38	0	22	6	32
2001–02	0	28	0	6	63	0	3	0	32
2002–03	2	23	0	8	23	2	38	6	53

Table 13 Unit 14 lynx trapper transport methods, 1987–2003

Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled, Skis Snowshoes	Boat	3- or 4-wheeler	Snow-machine	ORV	Highway Vehicle	Unk	
1987–88[a]	0	0	0	0	0	0	0	0	0
1988–89[a]	0	0	0	0	0	0	0	0	0
1989–90[a]	0	0	0	0	0	0	0	0	0
1990–91	0	15	0	0	31	0	8	46	13
1991–92	0	0	0	27	47	0	27	0	15
1992–93	0	9	0	36	45	0	0	9	11
1993–94	0	10	0	50	20	0	0	20	10
1994–95[a]	0	0	0	0	0	0	0	0	0
1995–96[a]	0	0	0	0	0	0	0	0	0
1996–97	0	0	0	67	33	0	0	0	3
1997–98	0	0	0	0	50	0	0	50	2
1998–99	0	0	0	50	0	0	50	0	4
1999–2000	0	22	0	0	22	0	22	33	9
2000–01	0	13	0	36	7	0	22	22	45
2001–02	0	21	0	17	43	0	11	9	47
2002–03	0	12	6	18	10	0	48	6	33

[a] Lynx season closed

Table 14 Unit 14 wolverine trapper transport methods, 1987–2003

Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled, Skis Snowshoes	Boat	3- or 4-wheeler	Snow-machine	ORV	Highway Vehicle	Unk	
1987–88	57	14	0	0	14	0	14	0	7
1988–89	10	30	0	0	60	0	0	0	10
1989–90	12	38	0	12	0	0	38	0	8
1990–91	19	44	0	0	12	0	0	25	16
1991–92	38	0	0	12	25	0	0	25	8
1992–93	33	11	0	0	33	0	0	22	9
1993–94	31	0	0	8	54	0	0	8	13
1994–95	20	20	0	0	40	0	0	20	5
1995–96	40	0	0	10	40	0	0	10	10
1996–97	67	0	0	0	22	0	0	11	9
1997–98	31	0	0	8	54	0	8	0	13
1998–99	50	17	0	0	33	0	0	0	6
1999–2000	40	0	0	0	60	0	0	0	5
2000–01	18	27	0	0	55	0	0	0	11
2001–02	8	25	0	17	42	8	0	0	12
2002–03[a]	0	0	0	0	100	0	0	0	1

[a] incomplete information at this time, based on available sealing certificates ONLY

Table 15 Unit 14 marten trapper transport methods, 1992–2003

Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snow-machine	ORV	Highway Vehicle	Unk	
1992–93[a]	0	0	0	0	50	0	0	50	6
1993–94	0	0	0	0	91	0	9	0	11
1994–95	0	28	0	0	36	0	0	36	28
1995–96	0	7	0	15	11	0	26	40	53
1996–97	1	10	0	0	80	0	0	9	102
1997–98	0	38	0	2	51	0	2	7	138
1998–99	0	24	0	8	57	0	10	0	62
1999–2000	0	43	0	0	54	0	3	0	74
2000–01	0	27	0	0	69	0	4	0	131
2001–02	0	12	0	0	62	0	7	20	128
2002–03	0	4	0	34	6	0	50	6	70

[a] Sealing not required prior to 1992–93 season

Figure 1. Unit 14 beaver harvest depicted by age group and average pelt size (length + width) across years, 1991–2002 (Juvenile beaver measure $\leq$ 52 inches). Harvest numbers are incomplete due to some beaver measurements unrecorded at time of sealing.

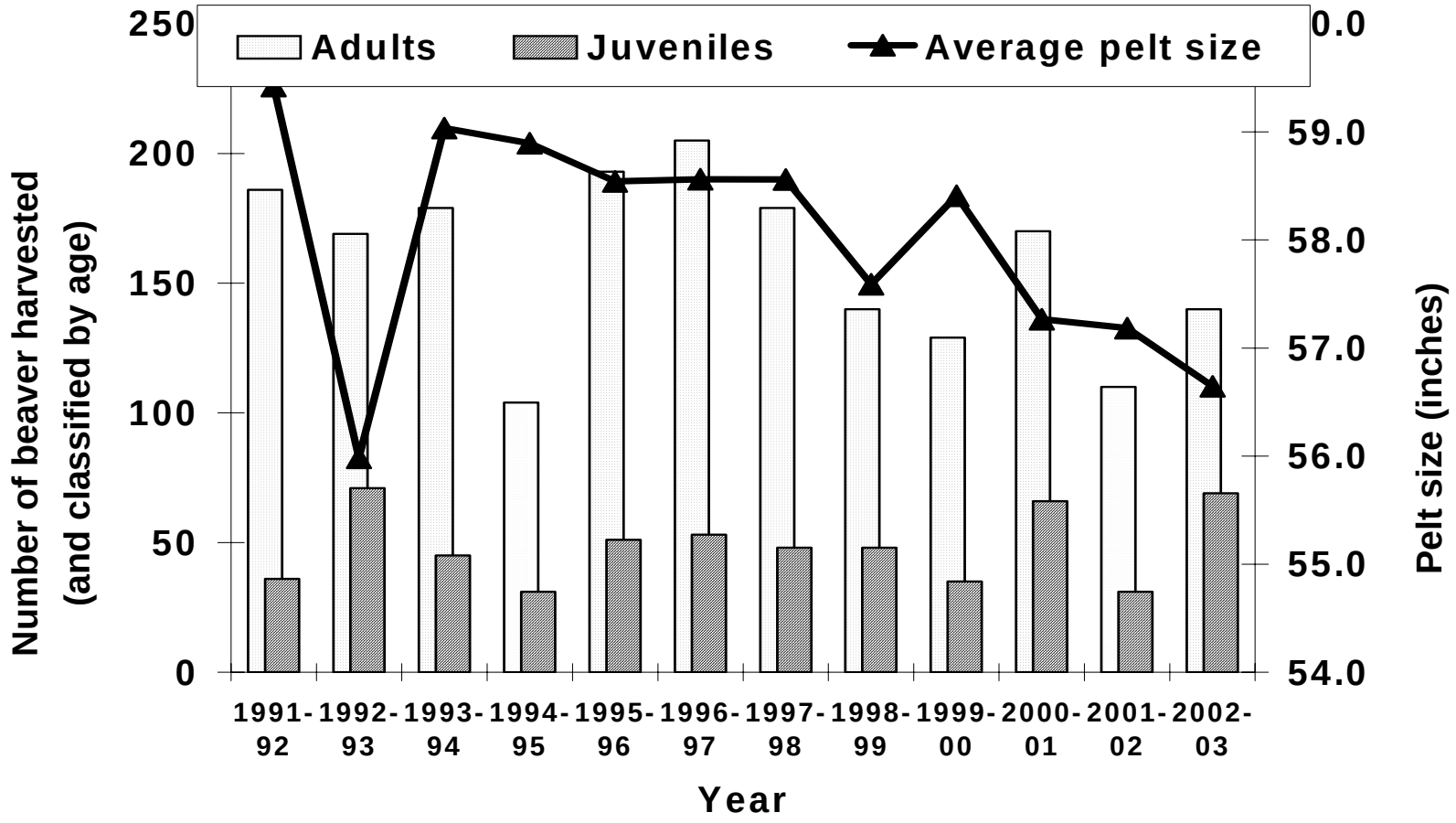
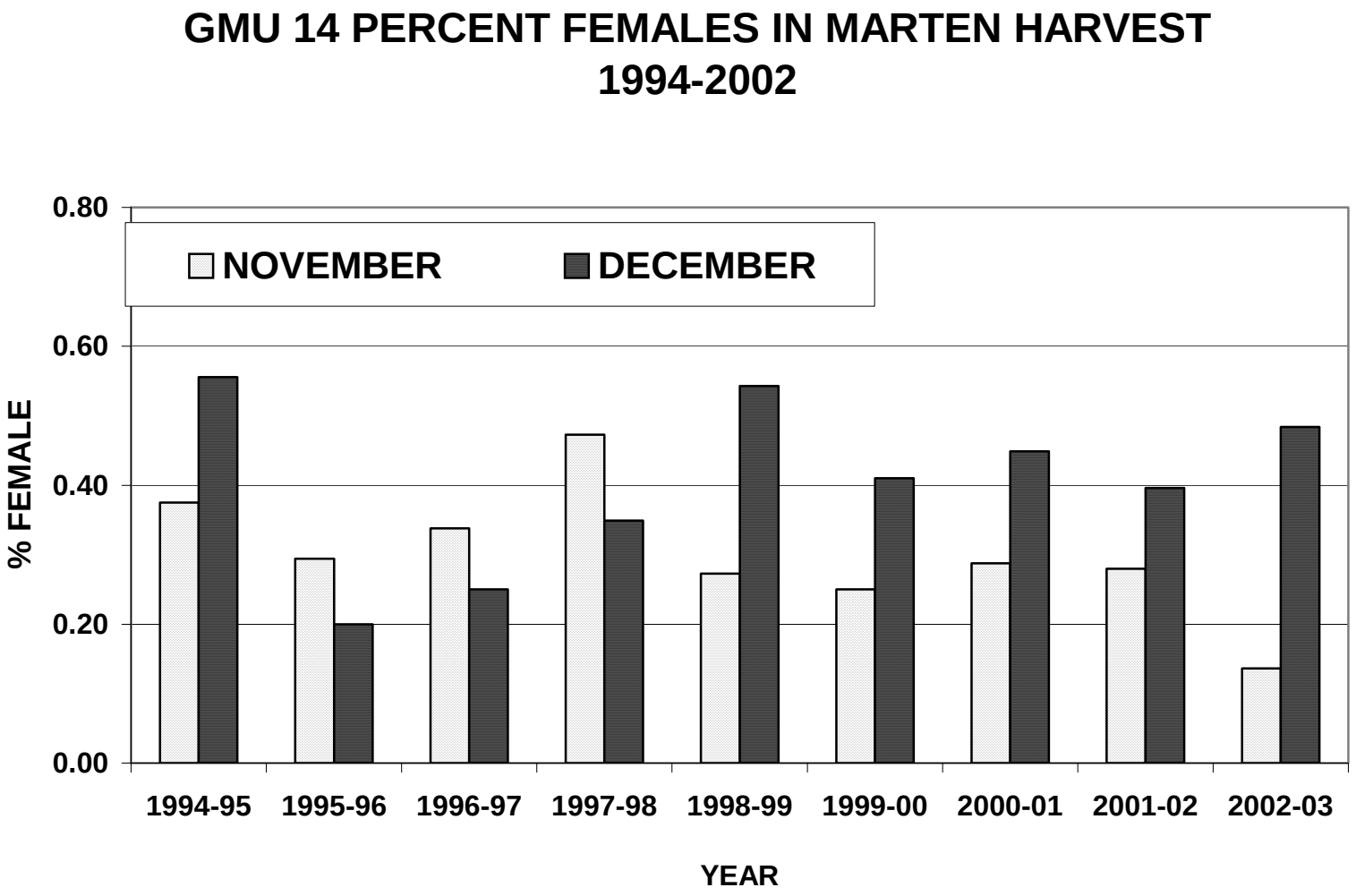


Figure 2. Percent female marten trapped over time in Unit 14, 1994–2003.



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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2002

LOCATION

GAME MANAGEMENT UNIT: 16 (12,225 mi^2)

GEOGRAPHIC DESCRIPTION: West side of Cook Inlet

BACKGROUND

Game Management Unit 16, located west of the lower Susitna River and upper Cook Inlet, contains large areas of unaltered wildlife habitat. Lake Clark National Park is on the south end of the unit and Denali National Park is on the north end. The area has had no major wildfires since the 1950s, but hundreds of acres of white spruce have been killed over the last 2 decades by a spruce bark beetle infestation. Recreational cabins and fishing and hunting lodges are scattered throughout the unit, many of which have winter caretakers who hunt and trap furbearers. There are maintained roads in the eastern and northern portions of Unit 16A and near the settlements of Tyonek and Beluga in Unit 16B. Permanent residents live along the Parks Highway, in and around the Petersville and Oilwell Road areas, and in the settlements of Skwentna, Beluga and Tyonek. A few permanent households are interspersed throughout the unit. Because of its proximity to Alaska's largest population centers, the area receives a large amount of year-round recreational use. A few local residents trap full time to generate income, primarily from marten and beaver.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Provide the opportunity to trap and hunt furbearers.
- Maintain an optimal sustained harvest of furbearers.
- Develop measurable population objectives for all fur species.

MANAGEMENT OBJECTIVES

- Monitor annual harvest of furbearers using sealing forms, questionnaires, and trapper interviews.
- Implement track counts to form a long-term population index.
- Use annual harvest standards to evaluate long-term harvest levels: land otter, 40; wolverine, 20; and beaver, 350 (Masteller 1993).

METHODS

Information on trapping conditions, trapper effort, and trends in fur abundance and distribution were collected using a questionnaire sent to Unit 16 trappers. Harvest data were collected for beaver, land otter, lynx, wolverine, and marten through sealing certificates. During sealing, harvest location, data on age (for beaver and lynx) and sex (for land otter, lynx, marten, and wolverine) were collected when possible. The month, method of take, and mode of hunter/trapper transport were also recorded. Minimum harvest data for other species were collected from trapper questionnaires.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Trappers reported that all species were common or abundant in 2000–2002, except lynx, which were reported as scarce in 2000–2001, and wolverine, which were reported as scarce in 2001–2002. Trappers reported small prey species as common or abundant in all years.

No specific studies investigating furbearer population size or composition were conducted during the reporting period. Due to sub-optimal weather and other commitments, the 2 track transects in Unit 16A have not been surveyed since 1997.

MORTALITY

Trapping Seasons and Bag Limits (seasons for 2000–02 unless otherwise stated).

Species	Season	Bag Limit
Beaver (2000–01)	10 Oct–15 May	No limit
(2001–02, 2002–03)	25 Sep–15 May	No limit
Coyote	10 Nov–31 Mar	No limit
Red Fox	10 Nov–28 Feb	No limit
Lynx	15 Dec–15 Jan	No limit
Marten		
Unit 16A	10 Nov–31 Dec	No limit
Unit 16B	10 Nov–31 Jan	No limit
Mink/Weasels	10 Nov–31 Jan	No limit
Muskrat	10 Nov–10 Jun	No limit
Land Otter	10 Nov–31 Mar	No limit
Squirrels/Marmots	No closed season	No limit
Wolverine		
Unit 16A	10 Nov–31 Jan	2 per season
Unit 16B	10 Nov–28 Feb	No limit

Hunting Seasons and Bag Limits.

Species	Season	Bag Limit
Coyote	1 Sep–30 Apr	2 per season
Red Fox	1 Sep–15 Feb	2 per season
Lynx	15 Dec–15 Jan	2 per season
Wolverine		
Unit 16A	1 Sep–31 Jan	1 per season
Unit 16B	1 Sep–31 Mar	1 per season

Board of Game Actions and Emergency Orders. In 2001, the board extended the Unit 16 beaver season by 2 weeks in the fall to allow more open water trapping opportunities. In spring 2003 the department recommended closing the 2003–2004 trapping season for lynx, based on the Lynx Harvest Tracking strategy (Golden 1999).

Hunter/Trapper Harvest. Fur harvest fluctuates with trapping conditions, effort, and fur prices. Trapping conditions were described as generally fair to good during the reporting period. In general, fur prices increased substantially for most species during the reporting period (Peltier and Scott 2002).

Beaver and otter harvests have increased since the early 1990s (Tables 1 and 2), but remain below historic levels. The previous peak in harvest occurred during 1986–87 when trappers took 651 beavers and 68 otters in Unit 16 (Masteller 1997). Beaver populations throughout the unit are believed to be stable or increasing, yet the harvest remains below objective levels (Table 1). Conversely, the harvests of 60 otters in 2001–02 and 56 otters in 2002–03, bolstered by higher pelt prices, were the highest recorded since 1986–87 (Table 2). The average beaver pelt size increased and then declined to late 1990s levels during the reporting period. The proportion of juvenile beaver in the harvest has been relatively constant the last several seasons except for an increase during the last season (Figure 1).

The lynx harvest historically has been low in Unit 16 (Table 3), reflecting a lack of good hare habitat. However, there was an unusually high harvest of 23 lynx in 2001. This may be due to lower hare numbers in adjacent units and/or similar movement patterns observed in other parts of the Matanuska-Susitna Borough area. The 5-year average harvest of 26 wolverines was greater than the 10-year average of 23 animals (Table 4). Most of this can be attributed to the 2001–02 wolverine harvest of 45, which was the highest in recent history. The marten harvest has remained high since populations recovered from a decline in the early 1990s and increased substantially during the last 3 seasons, (Table 5) with a peak in 2001.

Information for the harvest of species that do not require sealing was taken from trapper questionnaires. During the reporting period through 2002, the total harvest ranges were: coyotes, 1–6; red fox, 2–23; mink, 0–18; weasels, 2–30; and muskrats, 0–6. Many trappers either do not

receive, or fail to return, the questionnaires; therefore, these should be considered minimum harvest totals.

In November and December 1998 trappers reported catching coyotes and wolves with lice (*Trichodectes canis*) between Willow and Talkeetna in the lower Susitna River valley. Lice were also reported on wolves during the 1999–2000 and 2002–2003 seasons but at a reduced frequency. Since then, there have been occasional reports by trappers and other evidence that lice continue to be present in the local populations of coyotes and wolves.

Harvest Chronology. Weather conditions, such as snow depth, freezing rain, and cold temperatures can determine peak trapping success by limiting human access and optimal trapping conditions. Variation in trapping conditions can be seen via the chronology of the harvest across years (Tables 6–9). Historically, most beaver harvest occurred between February and April (Table 6), but trappers have been harvesting more in the fall, taking advantage of the earlier opening in September.

Transport Methods. Most Unit 16 trappers use snowmachines to access their trapping areas (Tables 10–13). Boats were used much more often in 2002–03 due to a relatively snow-free winter and open-water conditions. Nonmotorized transport methods continue to gain in popularity. The lack of roads in the unit limits the use of highway vehicles.

Other Mortality

There were 4, 2, and 1 nuisance beaver permits issued in 2000–01, 2001–02, and 2002–03, respectively. These allowed the taking of up to 40 beavers per permit. (The number varied by permit and location.) As in previous years, road/railroad maintenance personnel identified most problem areas where beavers have plugged culverts and flooded roadbeds. Two common problem areas are Oilwell Road in Unit 16A and the road system near Tyonek and Beluga in Unit 16B. With healthy beaver populations, relatively low prices, and reduced trapping levels, nuisance complaints can be expected to increase.

HABITAT

No major fires or other significant habitat disturbances occurred in Unit 16 during the reporting period.

CONCLUSIONS AND RECOMMENDATIONS

The lack of data on population density, composition, and productivity of furbearers makes it difficult to determine if harvests are optimal. Developing measurable population objectives for fur species through population size estimation is beyond the limits of our resources. Indirect survey techniques tested by Golden (1994) can be used as an index of abundance, and should be conducted yearly. An index will provide more precise information on population trends than sealing data, which often follows fur prices and trapping conditions rather than population trends.

Marten display relatively low productivity for a small mammal. There was an apparent overharvest of marten in the Matanuska-Susitna area in the late 1980s, resulting in a sealing program for the species in Units 14 and 16. Given the recent higher harvests of marten and the potentially high trapper density in this area, information taken at the time of sealing is important for successfully determining the health and status of the population. The sex of the animal is recorded at the time of sealing, and trappers are encouraged to keep records of their harvest by sex and month. A relatively high proportion of females caught late in the season indicates an overharvest. The percent of females in the harvest cannot be effectively analyzed for Unit 16 because a large proportion of the sealed marten do not have sex distinguished and the harvest chronology is often uncertain. There continues to be a need for trappers and sealers to keep better records. The percent of females in the harvest is the best available method for managers to assess the health of the marten population.

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Table 1 Unit 16 beaver harvest, 1987–2003

	Reported harvest				Method of Take				Successful
Regulatory Year	Juv [a]	(%)	Adults	Unk	Trap/snare	Shot	Unk	Total	Trappers/hunters
1987–88	0	--	0	394	0	0	394	394	---
1988–89	0	--	0	370	370	0	0	370	---
1989–90	22	(15)	123	0	145	0	0	145	16
1990–91	30	(17)	146	0	171	0	5	176	20
1991–92	32	(14)	192	4	209	5	14	228	30
1992–93	19	(21)	61	10	85	2	3	90	19
1993–94	16	(18)	71	0	87	0	0	87	15
1994–95	10	(15)	56	0	66	0	0	66	9
1995–96	7	(11)	56	2	65	0	0	65	9
1996–97	38	(24)	122	7	152	2	13	167	26
1997–98	28	(23)	93	2	121	2	0	123	14
1998–99	26	(24)	81	4	113	2	0	115	16
1999–00	40	(24)	129	1	173	0	0	173	21
2000–01	32	(17)	160	4	193	3	0	196	23
2001–02	18	(13)	125	20	156	6	1	163	33
2002–03	65	(23)	223	6	229	0	65	294	30
Average[b]	36		144	7	173	2	13	188	25

[a] Beaver measuring $\leq$ 52 inches (length + width).
[b] For 1998-99 through 2002-03.

Table 2 Unit 16 land otter harvest, 1987–2003

	Reported harvest				Method of Take				Successful
Regulatory Year	Male	Female	(%)	Unk	Trap/snare	Shot	Unk	Total	Trappers/hunters
1987–88	0	0	(--)	51	0	0	51	51	---
1988–89	25	13	(34)	9	43	0	4	47	---
1989–90	5	4	(44)	11	18	1	1	20	8
1990–91	6	3	(33)	6	15	0	0	15	7
1991–92	9	7	(44)	3	15	3	1	19	10
1992–93	1	2	(--)	11	13	1	0	14	8
1993–94	13	16	(55)	2	30	1	0	31	12
1994–95	6	1	(14)	0	7	0	0	7	4
1995–96	6	7	(54)	3	14	2	0	16	5
1996–97	10	11	(52)	6	27	0	0	27	8
1997–98	14	7	(33)	3	24	0	0	24	10
1998–99	11	4	(27)	3	18	0	0	18	10
1999–00	22	17	(44)	3	42	0	0	42	17
2000–01	15	4	(21)	13	30	0	2	32	20
2001–02	31	25	(45)	4	60	0	0	60	18
2002–03	30	19	(39)	7	55	1	0	56	19
Average[a]	22	14		6	41	0	0	42	17

[a] For 1998–99 through 2002–03.

Table 3 Unit 16 lynx harvest, 1984–2003

	Reported Harvest								Method of Take					Successful
Regulatory Year[a]	M	F	(%)	Unk sex	Juv[b]	(%)	Ad	Unk age	Trap/Snare	Shot	(L&S)[c]	Unk	Total	Hunters/ trappers
1984–85	0	0	--	1	0	--	0	1	0	0	(0)	1	1	---
1985–86	0	0	--	2	0	--	0	2	2	0	(0)	0	2	1
1986–87	0	6	(100)	0	0	--	0	6	0	0	(0)	6	6	---

1990–91	0	0	--	0	0	--	0	0	0	0	(0)	0	0	0
1991–92	0	0	--	1	0	(0)	0	1	1	0	(0)	0	1	1
1992–93	1	1	(50)	1	0	(0)	2	1	3	0	(0)	0	3	2
1993–94	1	2	(67)	1	0	(0)	4	0	2	1	(0)	1	4	3

1996–97	0	0	--	0	0	--	0	0	0	0	(0)	0	0	0
1997–98	0	1	(100)	0	0	(0)	1	0	1	0	(0)	0	1	1
1998–99	0	1	(100)	0	0	(0)	1	0	1	0	(0)	0	1	1
1999–00	3	0	(0)	0	2	(67)	1	0	3	0	(0)	0	3	2
2000–01	0	0	--	2	0	--	1	1	2	0	(0)	0	2	2
2001–02	0	0	--	23	0	--	21	2	21	2	(0)	0	23	16
2002–03	0	0	--	0	0	--	8	0	8	0	(0)	0	8	6
Average[d]	--	--	--	--	--	--	6	1	7	0	--	0	7	5

[a] Season closed during 1987–88, 1988–89, 1989–90, 1994–95 and 1995–96.
[b] Lynx measuring $\leq$ 34 inches in length.
[c] L&S (land and shoot) refers to animals recorded as “ground shot” when transportation indicated was “aircraft”.
[d] Average for 1998–99 through 2002–2003.

Table 4 Unit 16 wolverine harvest, 1987–2003

Year	Reported Harvest				Method of Take				Total	Successful Trappers/hunters
	Male	Female	(%)	Unk	Trap/snare	Shot	(L&S)[a]	Unk		
1987–88	0	0	--	25	0	0	--	25	25	--
1988–89	5	9	(64)	1	11	1	--	3	15	--
1989–90	7	6	(46)	0	12	1	(0)	0	13	7
1990–91	5	2	(29)	1	4	4	(0)	0	8	6
1991–92	15	5	(25)	1	14	7	(0)	0	21	11
1992–93	10	3	(23)	0	10	3	(0)	0	13	11
1993–94	8	3	(27)	1	8	4	(2)	0	12	12
1994–95	14	11	(44)	0	18	7	(0)	0	25	18
1995–96	7	2	(22)	0	7	2	(0)	0	9	7
1996–97	11	10	(48)	1	19	3	(1)	0	22	14
1997–98	6	9	(60)	1	11	5	(0)	0	16	11
1998–99	12	1	(7)	2	13	2	(0)	0	15	12
1999–00	15	13	(46)	1	20	9	(0)	0	29	20
2002–01	24	8	(24)	2	25	6	(0)	3	34	17
2001–02	30	14	(32)	1	41	4	(0)	0	45	28
2002–03	14	4	(22)	0	14	4	(0)	0	18	11
Average[b]	19	8		1	23	5	(0)	1	26	18

[a] L&S (land and shoot) refers to animals recorded as “ground shot” when transportation indicated was “aircraft”.
[b] Average 1998–99 through 2002–03.

Table 5 Unit 16 marten harvest, 1992–2003

	Reported Harvest				Method of Take					Successful
Year[a]	Male	Female	(% female)[b]	Unk	Trap/snare	Shot	(L&S)[c]	Unk	Total	Trappers/hunters
1992–93	34	11	--	85	130	0	(0)	0	130	11
1993–94	71	27	(27)	5	103	0	(0)	0	103	11
1994–95	28	22	--	47	71	0	(0)	26	97	14
1995–96	138	63	(31)	28	186	0	(0)	43	229	18
1996–97	253	149	(37)	178	570	0	(0)	10	580	34
1997–98	122	45	(27)	132	299	0	(0)	0	299	24
1998–99	261	126	(33)	171	558	0	(0)	0	558	33
1999–00	259	109	(30)	115	485	0	(0)	0	485	31
2000–01	326	193	(37)	295	814	0	(0)	0	814	29
2001–02	566	289	(34)	90	922	1	(0)	23	945	40
2002–03	274	139	(34)	85	473	0	(0)	25	498	35
Average[d]	337	171		151	650	0	(0)	10	660	34

[a] Sealing not required until 1992–93
[b] Not calculated in years when a large proportion was of unknown sex.
[c] L&S (land and shoot) refers to animals recorded as “ground shot” when transportation indicated was “aircraft.”
[d] Average 1998–99 through 2002–2003.

Table 6 Unit 16 beaver harvest chronology, 1989–2003

	Percent harvested											
Year	Jun–Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Unk	Harvest
1989–90	0	0	0	11	24	14	5	9	36	0	1	138
1990–91	0	0	0	4	1	9	31	22	27	0	6	176
1991–92	0	0	0	31	7	3	34	12	12	0	1	228
1992–93	0	0	0	9	5	10	17	44	11	0	3	90
1993–94	0	0	2	24	9	20	0	34	10	0	0	87
1994–95	0	0	0	11	12	0	20	27	30	0	0	66
1995–96[a]	0	0	0	0	6	0	14	32	6	41	0	65
1996–97[a]	2	0	5	1	4	21	13	38	7	1	7	167
1997–98	0	0	0	0	15	2	11	12	17	34	0	123
1998–99	0	0	0	14	15	2	8	23	26	11	0	115
1999–00[b]	0	0	9	19	13	6	12	4	37	0	0	173
2000–01	1	1	7	10	23	19	14	21	4	0	0	196
2001–02	2	3	23	17	20	12	2	7	11	1	1	163
2002–03	0	3	18	18	26	6	3	2	7	7	10	294

[a] Season lengthened to include first 2 weeks of May
[b] Season lengthened 1 month in fall.

Table 7 Unit 16 land otter harvest chronology, 1989–2003

	Percent of Harvest								
Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Unk	Harvest
1989–90	0	20	45	20	0	15	0	0	20
1990–91	0	7	7	40	13	26	7	0	15
1991–92	0	10	5	42	21	16	0	5	19
1992–93	0	0	36	21	29	7	0	7	14
1993–94	10	16	39	23	3	10	0	0	31
1994–95	0	14	0	0	57	29	0	0	7
1995–96	0	12	38	38	6	6	0	0	16
1996–97	0	11	18	4	44	22	0	0	27
1997–98	0	0	4	17	29	46	4	0	24
1998–99	0	31	30	12	12	19	0	0	18
1999–00	0	27	22	12	10	29	0	0	42
2000–01	0	6	44	28	9	13	0	0	32
2001–02	0	3	33	30	27	7	0	0	60
2002–03	0	18	45	20	13	5	0	0	56

Table 8 Unit 16 wolverine harvest chronology, 1989–2003

	Percent of Harvest								
Year	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	Harvest
1989–90	0	0	15	8	38	31	8	0	13
1990–91	0	0	0	0	12	50	38	0	8
1991–92	5	0	5	0	57	24	10	0	21
1992–93[a]	8	0	0	15	15	54	8	0	13
1993–94[a]	8	8	0	25	34	8	16	0	12
1994–95[a]	0	0	4	8	48	32	8	0	25
1995–96[a]	0	0	0	11	22	67	0	0	9
1996–97[a]	4	0	9	23	14	45	4	0	22
1997–98[a]	13	0	0	19	19	31	19	0	16
1998–99[a]	0	0	7	20	20	47	7	0	15
1999–00[a]	3	0	3	24	14	31	24	0	29
2000–01[a]	3	0	6	26	18	38	6	3	34
2001–02[a]	4	0	7	24	24	38	2	0	45
2002–03[a]	0	0	0	22	33	33	11	0	18

[a] Season length different for Units 16A (10 Nov–31 Jan) and 16B (10 Nov–28 Feb).

Table 9 Unit 16 marten harvest chronology, 1992–2003

Year[a]	Percent of Harvest								Harvest
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
1992–93	0	0	72	26	0	2	0	0	130
1993–94	0	0	49	35	11	5	0	0	103
1994–95	0	0	47	37	0	0	0	16	97
1995–96	0	0	55	44	1	0	0	0	229
1996–97	0	0	41	51	8	0	0	0	580
1997–98	0	0	11	57	32	0	0	0	299
1998–99	0	0	26	57	18	0	0	0	558
1999–00	0	0	36	36	21	6	0	0	485
2000–01	0	0	29	45	25	1	0	0	814
2001–02	0	0	21	47	32	0	0	1	945
2002–03	0	0	29	32	38	0	0	1	498

[a] Sealing not required before 1992–93.

Table 10 Unit 16 beaver trapper transport methods, 1987–2003

Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snow-machine	ORV	Highway Vehicle	Unk	
1987–88	0	0	0	0	0	0	0	100	394
1988–89	9	22	0	0	58	0	0	11	370
1989–90	12	28	0	0	57	0	1	1	145
1990–91	3	17	3	0	74	0	0	3	176
1991–92	6	2	1	0	79	0	3	9	228
1992–93	1	9	0	0	65	0	10	14	90
1993–94	1	0	0	5	77	0	7	10	87
1994–95	9	8	6	0	70	0	1	6	66
1995–96	0	0	42	0	42	0	0	17	65
1996–97	13	0	1	0	69	0	7	9	167
1997–98	9	0	44	0	35	0	7	5	123
1998–99	9	8	7	0	75	0	1	0	115
1999–00	5	20	6	0	62	0	6	0	173
2000–01	18	5	0	3	54	1	11	9	196
2001–02	11	10	7	0	58	0	11	2	163
2002–03	18	9	23	8	12	0	8	22	294

Table 11 Unit 16 land otter trapper transport methods, 1987–2003

Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snow-machine	ORV	Highway Vehicle	Unk	
1987–88	0	0	0	0	0	0	0	100	51
1988–89	17	47	0	0	34	0	0	2	47
1989–90	15	55	0	0	25	0	0	5	20
1990–91	7	40	0	0	53	0	0	0	15
1991–92	0	5	0	0	90	0	0	5	19
1992–93	29	0	0	0	43	0	0	28	14
1993–94	16	0	0	16	65	0	0	3	31
1994–95	0	0	0	0	86	0	0	14	7
1995–96	19	0	0	0	44	0	0	37	16
1996–97	15	0	0	0	85	0	0	0	27
1997–98	8	4	0	0	83	0	4	0	24
1998–99	0	22	0	0	61	0	0	17	18
1999–00	0	7	5	0	86	0	2	0	42
2000–01	0	19	0	0	63	0	13	6	32
2001–02	15	13	2	0	70	0	0	0	60
2002–03	14	11	2	32	32	2	7	0	56

Table 12 Unit 16 wolverine trapper transport methods, 1987–2003

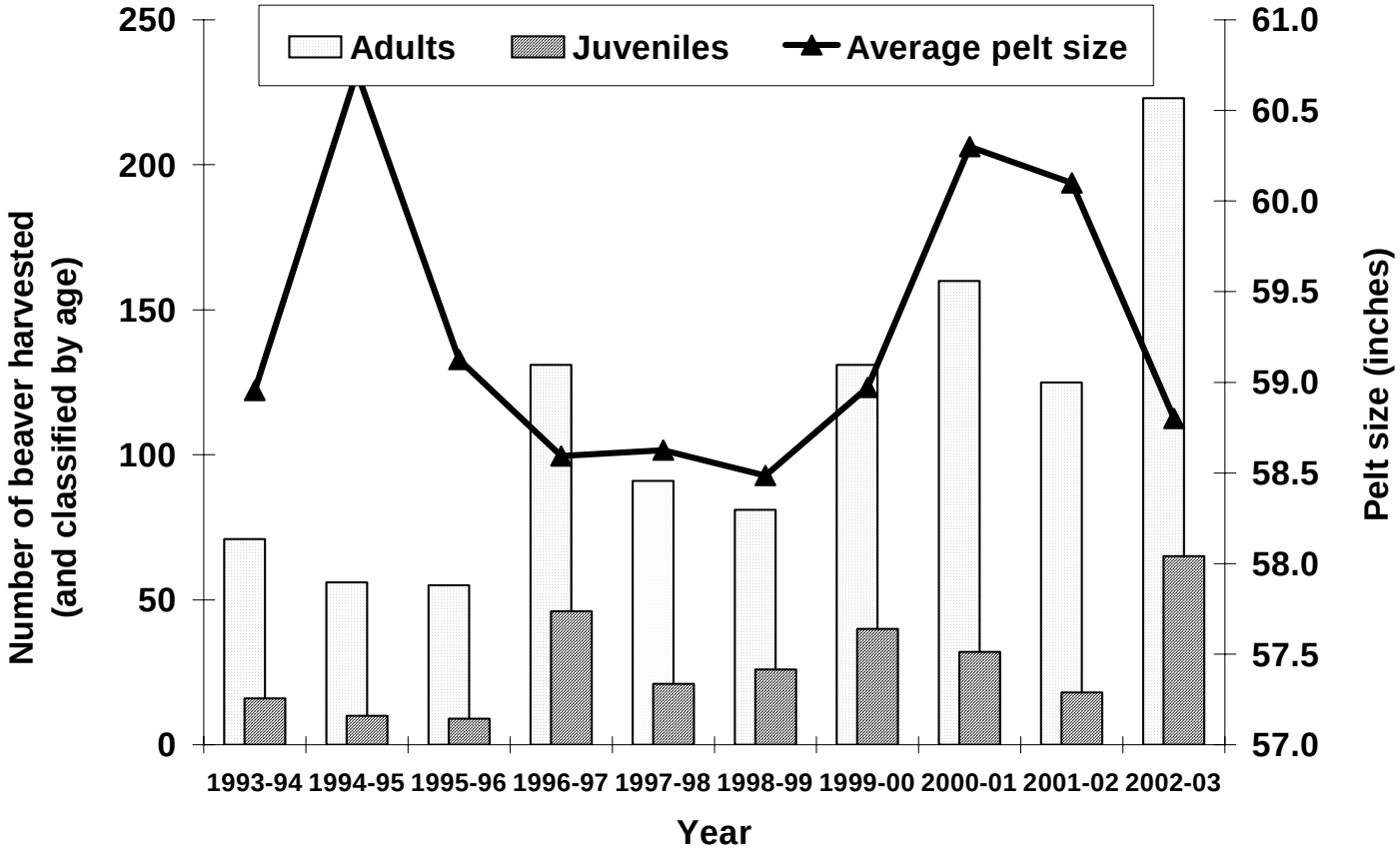
Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snow-machine	ORV	Highway Vehicle	Unk	
1987–88	0	0	0	0	0	0	0	100	25
1988–89	33	13	0	0	27	0	0	27	15
1989–90	38	16	0	0	38	0	0	8	13
1990–91	50	12	0	0	38	0	0	0	8
1991–92	33	0	0	0	52	5	5	5	21
1992–93	31	0	0	0	54	0	8	8	13
1993–94	50	0	0	0	50	0	0	0	12
1994–95	24	0	0	0	60	0	0	16	25
1995–96	11	0	0	0	78	0	0	11	9
1996–97	27	0	0	0	68	4	0	0	22
1997–98	6	12	0	0	80	0	0	6	16
1998–99	13	0	0	0	87	0	0	0	15
1999–00	21	7	0	0	72	0	0	0	29
2000–01	26	3	0	3	56	3	0	9	34
2001–02	33	2	0	2	60	0	0	2	45
2002–03	17	11	0	0	67	0	6	0	18

Table 13 Unit 16 marten trapper transport methods, 1992–2003

Regulatory Year[a]	Percent of Harvest								Total Harvest
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snow-machine	ORV	Highway Vehicle	Unk	
1992–93	2	6	0	8	82	0	0	2	130
1993–94	23	0	0	6	65	0	6	0	103
1994–95	23	5	0	0	33	0	6	33	97
1995–96	25	3	0	29	24	0	2	17	229
1996–97	15	1	0	0	79	0	2	2	580
1997–98	5	1	0	0	89	0	5	0	299
1998–99	2	5	0	0	80	0	2	11	558
1999–00	0	5	1	0	87	0	2	4	485
2000–01	1	11	0	0	87	0	1	0	814
2001–02	5	4	0	0	87	0	1	2	945
2002–03	3	18	0	4	62	2	7	5	498

[a] Sealing not required before 1992–93.

Figure 1 Unit 16 beaver harvest depicted by age group and average pelt size (length + width) across years. (Juvenile beaver measure ≤ 52 inches). Harvest numbers are incomplete due to some beaver unmeasured at time of sealing.



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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNIT: 17 (18,800 mi^2)

GEOGRAPHIC DESCRIPTION: Northern Bristol Bay

BACKGROUND

Trapping has been an important part of the culture and economy of the residents of Northern Bristol Bay. Trapping was one of the main sources of income for many local people prior to the growth of the commercial fishing industry. Until recently large numbers of trappers from around the region would come to Dillingham to tag and sell pelts at the annual "Beaver Round-up" in March. In the past, fur buyers purchased thousands of pelts during the week-long rendezvous and celebration. During the past decade there has been a continued decline in the importance of fur trapping to the economy and seasonal activities of local people.

Beavers historically have been the most important furbearer in Game Management Unit 17. They are abundant throughout most of unit, occurring in all major drainages and in most of the smaller tributaries. Beaver dams and the resulting reservoirs enhance waterfowl nesting habitat, provide aquatic plants used by moose and other herbivores, and are frequented by a wide variety of wildlife. In some portions of the unit, beaver dams may impede the movement of migrating salmon. While the silt accumulating upstream of the dams can destroy salmon spawning habitat, the ponds may also provide good rearing habitat for different fish species. Trapping, adverse winter weather, and predation are the most significant mortality factors for beavers in Unit 17. Season closures were imposed in portions of the unit on several occasions to allow populations to recover. Commercial salmon prices affected beaver trapping effort in the past; as salmon prices rose, fur trapping effort declined. Pelt prices are a significant factor in the annual beaver harvest, with low fur prices contributing to the low amount of beaver trapping activity. However, the importance of beaver as food for local residents assures a base level of harvest regardless of other factors.

Red foxes are another common furbearer in Unit 17. They occur throughout the unit, preying on ptarmigan, grouse and various small mammals, as well as using remains from hunter-killed moose and caribou. Fox populations fluctuate widely, perhaps because of periodic rabies outbreaks. In the past, they have been an economically important fur species to local trappers.

Land otter populations increased steadily during the 1980s, and appeared to stabilize during the 1990s. Increases in otter prices resulted in trappers targeting otters rather than just catching them incidentally while trapping for beaver.
Lynx are uncommon in Unit 17. The lynx population fluctuates, but they are generally found in low-to-moderate densities even during peaks. Much of the fluctuation is probably due to local hare abundance and lynx dispersal from adjacent units. Most of the lynx harvested are caught within the Mulchatna River drainage and the mountains near Manokotak.

Wolverines occur throughout Unit 17, ranging from ridge tops to river mouths. Although no data have been collected on the wolverine population in the unit, incidental observations and trapper reports suggest it is stable. Harvest levels fluctuate annually, but they have remained relatively constant since 1976.

Martens were uncommon in most of Unit 17 prior to 1970, but recent reports suggest they are becoming more widespread. Most of their habitat occurs along the Wood-Tikchik Lake system and the spruce forests along the Nushagak and Mulchatna Rivers. Martens were reported in moderate numbers during the reporting period.

Mink occur in most of the riparian areas of Unit 17, but the size of the population and its relative trend are unknown. Pelts are smaller than mink found in the Kuskokwim River drainage, and prices paid for Unit 17 mink are much lower. Consequently, there is little trapping effort targeted toward mink in this area.

Coyotes are becoming more common throughout Unit 17 as they expand their range westward from the Alaska Range. Arctic foxes are uncommon visitors to the unit, probably dispersing from the lower Kuskokwim River drainages during peaks in their population cycles. Weasels are common throughout the unit, but there is little trapping effort targeting the species. Long-term residents of Unit 17 report that muskrats were common along the lower Nushagak and Togiak Rivers and on the Nushagak Peninsula during the first half of this century. They are currently rare throughout Unit 17, mainly occupying the Igushik and Snake River drainages.

POPULATION OBJECTIVES

Beaver: To maintain a population in Subunit 17A at an average stream density index of 1.0 cache per river mile. To maintain populations throughout Subunits 17B and 17C at a level sufficient to sustain an average stream density of 1.2 caches per river mile.

Otter: To maintain a population in Unit 17 capable of sustaining an average annual harvest of 200 otters.

Red Fox: To maintain a population in Unit 17 capable of sustaining a 5-year average annual harvest of 400 foxes.

Wolverine: To maintain a population in Unit 17 capable of sustaining an average annual harvest of 50 wolverines.

METHODS

Harvest data were collected when beavers, wolverines, lynx, and otters were sealed. Fur acquisition reports provided additional harvest data for those species not required to be sealed. A trapper questionnaire designed to provide an index of population status of various furbearer species was sent to a sample of trappers throughout the unit each spring. Aerial cache surveys were flown most years between 1968 and 2002 to provide an index of abundance in selected streams and rivers.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Beaver populations in the unit appeared to be stable to increasing during this reporting period. Most residents report high beaver densities throughout the area, but low prices kept harvests low during this reporting period. Reports of nuisance beavers, particularly in salmon spawning streams and along roads, have remained constant over the past several years.

Otter and wolverine populations appeared to be stable. Both species occur throughout the unit. No objective population data have ever been collected on these species in Unit 17.

Although never common in the unit, lynx populations probably increased in the early 1990s but are currently low. Population data for lynx are derived from incidental observations and harvest records. Snowshoe hare populations appeared to be moderate in Subunits 17B and 17C during this reporting period.

Red fox populations appeared to be stable to increasing during this reporting period, though trends are difficult to determine because of low trapping effort.

Coyotes were becoming more common in the unit, as their numbers and range continued to increase. Highest densities appeared to be along the lower Nushagak River and Nushagak Peninsula.

No data were available to assess marten, mink or weasel population trends. Trapper reports indicate that these species are common in suitable habitat and that marten populations have expanded their range in recent years.

Muskrats remained scarce throughout the unit during this reporting period. In spite of intensive human use of area waterways, observations of muskrats are rare. The only portions of the unit with viable populations appeared to be the Weary and Igushik River drainages.

MORTALITY

HARVEST

Season and Bag Limit.

Beaver season was 10 November through 31 March, and from 15 April through 31 May firearms could be used to take up to 2 beaver per day for food. The season bag limit was 40 beavers per trapper. Beaver harvests during this reporting period were 326 in 2000–01; 219 in 2001–02; and 258 in 2002–03, all lower than the mean annual harvest for the previous 5 years (1995/96–1999/00, $\bar{x}$ = 468) (Table 1). Trappers indicated the main reasons for the reduced harvest were low prices and unfavorable weather conditions during the trapping season. The number of trappers afield also was affected by these factors (Table 2). The percentage of kits in the harvest remained relatively consistent with past seasons. (Table 1). Snares and conibear traps are equally important methods of trapping beavers in Unit 17 in recent years (Table 2).

Marten, mink, weasel, and wolverine seasons were open 10 November through 28 February with no bag limit. Wolverines could be hunted 1 September through 31 March 31. There was a bag limit of one wolverine per season with a hunting license but no bag limit for trapping. Wolverine harvests during this reporting period were similar to the previous period. Harvests were 33 in 2000–01; 47 in 2001–02; and 15 in 2002–03. Traps were the most common method of harvest, followed by firearms (Table 3).

Coyote, arctic fox, red fox, and lynx seasons were open 10 November through 31 March. There was no bag limit on these animals. The number of lynx caught this reporting period was substantially lower than previous years, with 3 reported in 2000–01; 2 in 2001–02; and 1 in 2002–03. The average annual harvest from the previous 5 years (1995/96–1999/00) was 10 (Table 1). Most lynx caught in the past 5 years have been taken by a trap or snare (Table 4).

Land otter season was open from 10 November through 31 March with no bag limit.
The numbers of otters taken is probably related to beaver trapping effort. Reported harvests of otters were 67 in 2000–01; 29 in 2001–02; and 50 in 2002–03. The average annual harvest for the previous 5 years (1995/96 – 1999/00) was 91 (Table 1). During the past 5 years the sex ratio of the harvest has remained relatively even (Table 5). Traps (probably conibears) are the most common method used by successful trappers, followed by snares and firearms (Table 5).

Muskrat season was open 10 November to 28 February, with a bag limit of 2 per season.

Harvest data on furbearers that are not sealed are sketchy at best. Fur export and acquisition reports provide only minimum harvest levels because many furs are used locally during periods of low fur prices.

Board of Game Actions and Emergency Orders. There were no Board of Game actions on furbearer seasons, bag limits, or trapping in Unit 17 during this reporting period. No emergency orders affecting trapping were issued during this reporting period.

Permit Hunts. Permits for trapping nuisance beavers were issued each fall during this reporting period to remove beaver damming culverts on local roads in the Dillingham area.

Hunter Residency and Success. Data on trapper residency and success have not been specifically analyzed. Individuals from villages within Unit 17 account for most of the harvest. Trappers residing in adjacent units (Nondalton, Iliamna, and Kuskokwim River villages) also take some furbearers in Unit 17. A few trappers from outside of the area have flown into Subunit 17B to harvest wolverines. Several wolverines were taken each year by nonresidents during the fall while hunting for moose or caribou.

Transport Methods. Snowmachines were typically the most common means of access used by successful trappers in Unit 17 (Tables 6–9). During most years snowmachines allow reliable access to most of the unit from late December to March. However, during the relatively mild winter of 2002–03 many trappers used boats to access trapping areas throughout the winter.

Harvest Chronology. Beaver harvest chronology is dependent on weather conditions. Fluctuations noted on Table 10 should be viewed with caution. Many trappers did not keep close track of when their beavers were trapped during the course of the season. The relatively few lynx harvested during this reporting period do not provide any meaningful information on harvest chronology (Table 11). Otters were caught throughout the trapping season with most of the harvest occurring during the period when most of the beaver trapping occurs (January and February) (Table 12). Wolverine harvests were highest in February during most years (Table 13).

OTHER MORTALITY

Beaver and an occasional otter are sometimes caught in gillnets during the summer fishing season. The total number caught unitwide is probably less than 50 per year. These incidental catches are rarely reported, and carcasses are either used for food or discarded. Natural mortality of beavers can be high in the Bristol Bay area during winters of low temperatures and low snowfall, when beaver caches in shallow areas become ice-bound. Several beavers were reported traveling across snow-covered tundra during the winter of 2001–02. High mortality rates can also occur for beavers along major rivers during severe spring breakup periods. There were no reported cases of rabid foxes in Unit 17 during this reporting period.

HABITAT

ASSESSMENT

No formal habitat monitoring programs were conducted in Unit 17. Furbearer habitat along the Nushagak, Mulchatna, and Togiak Rivers, and along the lower reaches of the major tributaries to those rivers, appeared to be in very good to excellent condition. Although there was evidence of heavy browsing, willow stands on gravel bars were abundant.

ENHANCEMENT

No human-caused habitat enhancement activities have been documented in Unit 17. Because of the relative inaccessibility of most of the unit and the occurrence of natural enhancement, human-caused habitat enhancement is neither practical nor necessary at this time.

NONREGULATORY PROBLEMS/NEEDS:

Commercial Fisheries biologists reported conflicts with beavers and spawning salmon along streams throughout the unit (J. Browning, ADF&G, personal communication). Permits are issued each year to the Alaska Department of Transportation and Public Facilities to remove beavers that are impacting road culverts.

CONCLUSIONS

Most furbearer populations in Unit 17 appear to be healthy and stable. Low prices paid for pelts, coupled with high fuel prices, have reduced trapping pressure on beavers and otters in many areas. Local trappers are generally satisfied with current beaver and otter seasons and bag limits.

Wolverine harvests have been relatively consistent for the past several years and populations seemed stable. Prohibition of same-day-airborne hunting and elimination of the March portion of the trapping season have not reduced the harvest. Many wolverine pelts are used by local fur sewers, and prices have remained consistently high.

Lynx populations have rebounded from the low levels first noted in 1987–88 and peaked in 1994–95. Liberal seasons have probably had little effect on the recovery of the lynx population because most trappers in the unit catch lynx incidentally in fox and wolverine sets.

Red fox populations remained relatively stable during this reporting period. If the fox population cycle is driven by periodic endemic rabies outbreaks, there are probably few practical measures the department can implement to achieve the objective of maintaining a population that will support a harvest of 400 foxes per year.

Reasons for the low muskrat population in Unit 17 remain a mystery. However, this seems to be a statewide phenomenon. More research into the historic abundance and distribution of this species in the Bristol Bay area is needed.

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Table 1 Reported harvest of furbearers in Unit 17, 1956–57 through 2002–03 (sealing record data)

Regulatory	Beaver		Lynx		Land Otter				Wolverine			
year	% Kits	Total	% Kits	Total	Male	Female	Unk	Total	Male	Female	Unk	Total
1956–57	22.9	367	---	---	---	---	---	---	---	---	---	---
1957–58	19.1	3165	---	---	---	---	---	---	---	---	---	---
1958–59	19.6	3245	---	---	---	---	---	---	---	---	---	---
1959–60	24.3	3721	---	---	---	---	---	---	---	---	---	---
1960–61	23.1	2849	---	---	---	---	---	---	---	---	---	---
1961–62	29.5	1903	---	---	---	---	---	---	---	---	---	---
1962–63	23.3	2172	---	---	---	---	---	---	---	---	---	---
1963–64	28.4	1766	---	---	---	---	---	---	---	---	---	---
1964–65	22.1	957	---	---	---	---	---	---	---	---	---	---
1965–66	25.2	1424	---	---	---	---	---	---	---	---	---	---
1966–67	25.3	2711	---	---	---	---	---	---	---	---	---	---
1967–68	25.7	3158	---	---	---	---	---	---	---	---	---	---
1968–69	N/A	1750[a]	---	---	---	---	---	---	---	---	---	---
1970–71	27.5	824	---	---	---	---	---	---	---	---	---	---
1971–72	20.5	762	---	---	---	---	---	---	---	---	---	---
1972–73	23.9	1849	---	---	---	---	---	---	10	5	6	21
1973–74	23.9	1681	---	---	---	---	---	---	27	18	0	45
1974–75	15.8	929[b]	---	---	---	---	---	---	14	7	1	22
1975–76	22.2	637[b]	---	---	---	---	---	---	50	25	3	78
1976–77	17.7	766[b]	---	---	---	---	---	---	37	12	2	51
1977–78	23.5	802[b]	11.1	36	52	49	7	108	32	14	3	49
1978–79	20.5	959	26.7	30	70	54	9	133	26	14	3	43
1979–80	27.7	1478	32.0	25	68	62	9	140	28	19	0	47
1981–82	20.9	1693	11.8	17	94	83	1	179	28	10	0	38
1982–83	12.8	1824	12.0	25	100	72	31	204	34	17	1	52
1983–84	18.7	1360	8.3	12	94	63	3	165	10	4	0	14
1984–85	22.9	1661	27.6	29	105	94	20	219	39	16	2	57

Table 1 Continued

Regulatory	Beaver		Lynx		Land Otter				Wolverine			
Year	% Kits	Total	% Kits	Total	Male	Female	Unk	Total	Male	Female	Unk	Total
1985–86	15.9	1452	12.5	8	49	46	6	101	13	8	2	23
1986–87	20.1	2817	21.4	14	87	90	11	188	31	9	0	40
1987–88	21.8	3048	0	1	133	133	1	267	22	20	2	44
1988–89	18.8	965	0	1	66	57	19	142	21	16	7	44
1989–90	19.7	1245	0	1	67	46	3	116	14	7	5	26
1990–91	20.2	1092	50.0	2	68	71	10	149	19	19	8	46
1991–92	21.8	1183	0	5	40	45	18	103	25	23	3	51
1992–93	29.9	455	13.3	15	38	36	9	83	8	2	0	10
1993–94	20.0	676[c]	13.3	15	46	40	10	96	18	10	1	29
1994–95	23.3	1091	14.3	28	63	50	21	134	32	21	5	58
1995–96	26.2	439	0	7	43	40	0	83	22	12	0	34
1996–97	20.0	869	14.3	7	75	95	24	194	28	14	8	50
1997–98	24.4	382	21.4	14	40	43	3	86	29	18	0	47
1998–99	27.5	436	11.1	9	23	22	5	50	20	6	1	27
1999–00[d]	43.7	215	0	12	14	18	10	42	21	9	0	30
2000–01	18.4	326	33	3	20	26	21	67	20	12	1	33
2001–02	25.1	219	0	2	15	12	2	29	30	14	3	47
2002–03	17.1	258	0	1	28	20	2	50	11	4	0	15

[a] No harvest records available, estimates only

[b] Beaver trapping season closed in units 17A and 17C.

[c] Beaver trapping season in unit 17A extended by one month by emergency regulation.

[d] Beaver trapping season changed to November 10–March 31 unitwide, with April 15–May 31 season when 2 beaver/day could be taken with a firearm.

Table 2 Unit 17 beaver harvest, 1992–93 through 2002–03

Regulatory year[a]	Reported harvest			Method of take			Successful Trappers
	Kits[b] (%)	Adults (%)	Total	Trap (%)	Snare (%)	Unk.	
1992–93	136 (29.9)	319 (70.1)	455	218 (47.9)	213 (46.8)	24	45
1993–94	135 (20.0)	541 (80.0)	676	345 (51.0)	320 (47.3)	11	57
1994–95	254 (23.3)	837 (76.7)	1091	564 (51.7)	517 (47.4)	10	90
1995–96	115 (26.2)	324 (73.8)	439	244 (55.6)	195 (44.4)	0	44
1996–97	174 (20.0)	695 (80.0)	869	311 (35.8)	558 (64.2)	0	65
1997–98	90 (24.4)	289 (75.6)	382	177 (46.3)	179 (46.9)	26	38
1998–99	120 (27.5)	316 (72.5)	436	187 (42.9)	212 (48.6)	37	43
1999–00	94 (43.7)	121 (56.3)	215	98 (45.6)	108 (50.2)	9	25
2000–01	90 (18.4)	266 (81.6)	326	132 (40.5)	179 (54.9)	15	26
2001–02	55 (25.1)	164 (74.9)	219	78 (35.6)	136 (62.1)	5	21
2002–03	44 (17.1)	214 (82.9)	258	166 (64.3)	75 (29.1)	17	24

[a] Season dates: 1992/93–96/97 Unit 17A: Jan. 1–Jan. 31 20 per season
Units 17B & 17C: Jan. 1–Feb. 28 20 per season
1993–94 Unit 17A season extended to Jan. 1–Feb. 28 by emergency regulation.
1999–2000 Unitwide season extended to November 10–March 31, and April 15–May 31, when 2 beaver/day can be taken with a firearm. 40 per season

[b] Juveniles < 52"

Table 3 Unit 17 wolverine harvest, 1992–93 through 2002–03

Regulatory Year[a]	Reported harvest				Method of take				Successful Trappers
	Males (%)	Females (%)	Unk.	Total	Trap (%)	Snare (%)	Shot (%)	Unk.	
1992–93	8 (80.0)	2 (20.0)	0	10	8 (80.0)	0 (---)	2 (20.0)	0	10
1993–94	18 (62.1)	10 (34.5)	1	29	7 (24.1)	1 (3.4)	21 (72.4)	0	20
1994–95	32 (55.2)	21 (36.2)	5	58	44 (75.9)	1 (1.7)	13 (22.4)	0	29
1995–96	22 (64.7)	12 (35.3)	0	34	25 (73.5)	1 (2.9)	8 (23.5)	0	17
1996–97	28 (56.0)	14 (28.0)	8	50	36 (72.0)	1 (2.0)	13 (26.0)	0	24
1997–98	29 (61.7)	18 (38.3)	0	47	37 (78.7)	0 (---)	10 (21.3)	0	18
1998–99	20 (74.1)	6 (22.2)	1	27	15 (55.6)	1 (37.0)	10 (37.0)	1	27
1999–2000	21 (70.0)	9 (30.0)	0	30	13(43.3)	0 (---)	17 (56.7)	0	22
2000–01	20 (60.6)	12 (36.4)	1	33	11 (33.3)	0 (---)	20 (60.6)	2	22
2001–02	30 (63.8)	14 (29.8)	3	47	34 (72.3)	0 (---)	13 (27.7)	0	25
2002–03	11 (73.3)	4 (26.7)	0	15	8 (53.3)	0 (---)	7 (46.7)	0	14

[a] Trapping season dates: 1992/93–present Unit 17 Nov. 10–Feb. 28 No limit
Hunting season dates: 1992/93–present Unit 17 Sep. 1–Mar. 31 1 wolverine

Table 4 Unit 17 lynx harvest, 1992–93 through 2002–03

Regulatory Year[a]	Reported harvest						Method of take			Successful Trappers
	Males (%)	Females (%)	Unk.	Juveniles[b] (%)	Adults (%)	Total	Trap/Snare (%)	Shot (%)	Unk.	
1992–93	5 (33.3)	4 (26.7)	6	2 (13.3)	13 (86.7)	15	13 (86.7)	2(13.3)	0	4
1993–94	5 (33.3)	7 (46.7)	3	2 (13.3)	13 (86.7)	15	14 (93.3)	1 (6.7)	0	11
1994–95	10 (35.7)	15 (53.6)	3	4 (14.3)	24 (85.7)	28	28 (100)	0 (---)	0	14
1995–96	2 (28.6)	5 (71.4)	0	0 (---)	7 (100)	7	6 (85.7)	1(14.3)	0	6
1996–97	1 (14.3)	4 (57.1)	2	1 (14.3)	5 (71.4)	7	6 (85.7)	0 (---)	1	7
1997–98	8 (57.1)	6 (42.9)	0	3 (21.4)	11 (78.6)	14	9 (64.3)	5(35.7)	0	9
1998–99	3 (33.3)	4 (44.4)	2	1 (11.1)	8 (88.9)	9	9 (100)	0 (---)	0	7
1999–00	3 (25.0)	8 (66.7)	1	0 (---)	12 (100)	12	11 (91.7)	1 (8.3)	0	4
2000–01	0 (---)	0 (---)	3	1 (33.3)	2 (67.7)	3	3 (100)	0 (---)	0	1
2001–02	0 (---)	0 (---)	2	0 (---)	2 (100)	2	2 (100)	0 (---)	0	2
2002–03	0 (---)	0 (---)	1	0 (---)	1 (100)	1	0 (---)	1 (100)	0	1

[a] Trapping season dates: 1992/93–1996/97 Unit 17 Nov. 10–Feb. 28 No limit
1997/98–present Unit 17 Nov. 10–Mar. 31 No Limit
Hunting season dates: 1992/93–present Unit 17 Nov. 10–Feb. 28 2 lynx

[b] Juveniles < 34" in length

Table 5 Unit 17 otter harvest, 1992–93 through 2002–03

Regulatory Year[a]	Reported harvest				Method of take				Successful Trappers
	Males (%)	Females (%)	Unk.	Total	Trap (%)	Snare (%)	Shot (%)	Unk.	
1992–93	38 (45.8)	36 (43.4)	9	83	60 (72.3)	20 (24.1)	1 (1.2)	2	29
1993–94	46 (47.9)	40 (41.6)	10	96	62 (64.6)	21 (21.9)	6 (6.3)	7	33
1994–95	63 (47.0)	50 (37.3)	21	134	122 (91.0)	12 (9.0)	0 (---)	0	41
1995–96	43 (51.8)	40 (48.2)	0	83	68 (81.9)	8 (9.6)	3 (3.6)	4	24
1996–97	75 (38.7)	95 (49.0)	24	194	118 (60.8)	64 (33.0)	6 (3.1)	6	51
1997–98	40 (46.5)	43 (50.0)	3	86	57 (66.3)	19 (22.1)	10 (11.6)	0	30
1998–99	23 (46.0)	22 (44.0)	5	50	28 (56.0)	18 (36.0)	4 (8.0)	0	16
1999–2000	14 (33.3)	18 (42.9)	10	42	30 (71.4)	3 (7.1)	1 (2.4)	8	19
2000–01	20 (29.9)	26 (38.8)	21	67	56 (83.6)	8 (11.9)	3 (4.5)	0	14
2001–02	15 (51.7)	12 (41.4)	2	29	23 (79.3)	4 (13.8)	1 (3.4)	1	12
2002–03	28 (56.0)	20 (40.0)	2	50	41 (82.0)	3 (6.0)	6 (12.0)	0	15

[a] Season dates:

1992/93–1996/97	Unit 17	Nov. 10–Mar. 31	No limit
1997/98–1998/99	Unit 17	Nov. 10–Feb. 28	No limit
1999/2000–present	Unit 17	Nov. 10–Mar. 31	No limit

Table 6 Unit 17 beaver harvest percentage by transport method, 1992–93 through 2002–03

Regulatory year	Percent of harvest								
	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown	Total
1992–93	---	---	---	---	96.3	---	---	3.7	455
1993–94	1.3	---	---	---	96.4	---	---	2.2	676
1994–95	0.4	1.3	---	---	98.2	---	0.2	---	1091
1995–96	0.9	2.7	---	---	96.4	---	---	---	439
1996–97	1.5	---	---	---	98.4	0.1	---	---	869
1997–98	---	---	---	6.3	84.0	---	1.8	6.8	382
1998–99	0.5	2.3	---	---	88.8	---	---	8.5	436
1999–00	0.5	---	0.5	---	93.0	---	---	6.0	215
2000–01	---	---	2.8	---	89.0	---	4.0	4.3	326
2001–02	---	---	---	---	98.6	---	0.5	0.9	219
2002–03	---	---	22.5	9.3	49.2	---	14.3	4.7	258

Table 7 Unit 17 lynx harvest percentage by transport method, 1992–93 through 2002–03

Regulatory Year	Percent of harvest								
	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown	Total
1992–93	---	---	---	---	100.0	---	---	---	15
1993–94	---	---	6.7	---	80.0	---	---	13.3	15
1994–95	3.6	---	---	---	96.4	---	---	---	28
1995–96	42.9	---	---	---	57.1	---	---	---	7
1996–97	---	---	---	---	85.7	---	---	14.3	7
1997–98	---	---	---	7.1	64.3	---	---	28.6	14
1998–99	---	---	22.2	---	77.8	---	---	---	9
1999–00	---	---	---	---	100	---	---	---	12
2000–01	---	---	---	---	100	---	---	---	3
2001–02	---	---	---	---	100	---	---	---	2
2002–03	---	---	100	---	---	---	---	---	1

Table 8 Unit 17 otter harvest percentage by transport method, 1992–93 through 2002–03

	Percent of harvest								
Regulatory year	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown	Total
1992–93	---	---	6.0	---	91.6	---	---	2.4	83
1993–94	---	---	10.4	---	80.2	---	---	9.4	96
1994–95	---	---	---	---	99.3	---	---	0.7	134
1995–96	---	---	---	---	86.7	---	1.2	12.0	83
1996–97	---	---	---	---	94.8	---	---	5.2	194
1997–98	---	---	---	7.0	93.0	---	---	---	86
1998–99	---	---	---	---	100	---	---	---	50
1999–2000	---	---	16.7	---	50.0	---	---	33.3	42
2000–01	11.9	---	---	---	80.6	---	7.5	---	67
2001–02	---	---	---	---	96.6	---	---	3.4	29
2002–03	---	---	30.0	---	52.0	---	6.0	12.0	50

Table 9 Unit 17 wolverine harvest percentage by transport method, 1992–93 through 2002–03

	Percent of harvest								
Regulatory Year	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown	Total
1992–93	---	---	---	---	100.0	---	---	---	10
1993–94	17.2	---	---	---	79.3	---	---	3.4	29
1994–95	13.8	---	---	---	86.2	---	---	---	58
1995–96	52.9	---	---	---	41.2	---	---	5.9	34
1996–97	38.0	---	---	---	62.0	---	---	---	50
1997–98	46.8	---	---	---	51.1	---	---	2.1	47
1998–99	37.0	---	---	---	55.6	---	---	7.4	27
1999–2000	16.7	---	6.7	---	73.3	---	---	3.3	30
2000–01	24.2	---	3.0	---	63.6	---	3.0	6.1	33
2001–02	15.0	---	4.3	---	76.6	---	---	4.3	47
2002–03	40.0	---	26.7	---	33.3	---	---	---	15

Table 10 Unit 17 beaver harvest chronology percentage by month, 1992–93 through 2002–03

Regulatory	Month							
Year	November	December	January	February	March	April	Other/Unk	Total
1992–93	---	---	71.2	27.9	---	---	0.9	455
1993–94	---	---	45.4	51.6	---	---	3.0	676
1994–95	---	---	43.9	51.6	3.0	---	1.5	1091
1995–96	---	0.5	43.3	56.0	---	---	0.2	439
1996–97	---	0.1	55.5	44.4	---	---	---	869
1997–98	1.1	15.2	54.2	27.0	1.6	---	---	382
1998–99	10.1	18.8	40.4	24.3	---	---	6.4	436
1999–2000	5.1	5.6	70.2	13.0	4.2	---	1.9	215
2000–01	8.3	14.4	34.4	18.1	18.7	0.3	5.8	326
2001–02	10.5	15.5	44.3	18.7	8.7	---	2.3	219
2002–03	9.7	25.6	24.0	33.7	---	3.9	3.1	258

Table 11 Unit 17 lynx harvest chronology percentage by month, 1992–93 through 2002–03

Regulatory	Month						
Year	November	December	January	February	March	Other/Unknown	Total
1992–93	13.3	46.7	---	40.0	---	---	15
1993–94	8.3	33.3	13.3	53.3	---	---	15
1994–95	---	25.0	35.7	35.7	3.6	---	28
1995–96	---	28.6	57.1	14.3	---	---	7
1996–97	---	14.3	28.6	42.9	---	14.3	7
1997–98	---	21.4	35.7	7.1	---	35.7	14
1998–99	11.1	11.1	11.1	44.4	11.1	11.1	9
1999–2000	---	8.3	66.7	16.7	8.3	---	12
2000–01	---	66.7	33.3	---	---	---	3
2001–02	---	50.0	50.0	---	---	---	2
2002–03	100	---	---	---	---	---	1

Table 12 Unit 17 otter harvest chronology percentage by month, 1992–93 through 2002–03

Regulatory Year	Month						
	November	December	January	February	March	Other/Unknown	Total
1992–93	8.4	10.8	59.0	20.5	---	1.2	83
1993–94	14.6	24.0	34.4	18.8	1.0	7.3	96
1994–95	5.2	18.7	47.0	24.6	3.0	1.4	134
1995–96	1.2	10.8	32.5	55.4	---	---	83
1996–97	1.0	2.6	46.9	43.3	3.6	2.6	194
1997–98	3.5	29.1	39.5	26.7	---	1.2	86
1998–99	10.0	14.0	36.0	38.0	---	2.0	50
1999–2000	4.8	9.5	35.7	19.1	7.1	23.8	42
2000–01	13.4	10.5	40.3	28.4	7.5	---	67
2001–02	10.3	17.2	34.5	24.1	10.3	3.4	29
2002–03	18.0	28.0	20.0	34.0	---	---	50

Table 13 Unit 17 wolverine harvest chronology percentage by month, 1992–93 through 2002–03

Regulatory Year	Month						
	November	December	January	February	March	Other/Unknown	Total
1992–93	---	10.0	40.0	50.0	---	---	10
1993–94	---	10.3	13.8	51.7	3.4	20.7	29
1994–95	---	13.8	36.2	41.4	5.2	3.4	58
1995–96	14.7	8.8	20.6	38.2	---	17.6	34
1996–97	---	20.0	42.0	28.0	8.0	2.0	50
1997–98	---	6.4	51.1	38.3	---	4.3	47
1998–99	---	11.1	29.6	40.7	---	18.5	27
1999–2000	3.3	10.0	20.0	36.7	10.0	20.0	30
2000–01	---	6.1	9.1	51.5	3.0	30.3	33
2001–02	---	12.8	14.9	29.8	25.5	17.0	47
2002–03	13.3	6.7	26.7	13.3	6.7	33.3	15

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

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

GEOGRAPHIC DESCRIPTION: Yukon–Kuskokwim Delta

BACKGROUND

Furbearers are abundant throughout Unit 18, and extensive areas of suitable habitat support large populations of red fox and aquatic furbearers, such as mink, river otter, muskrat and beaver. Less extensive habitats suitable for lynx, marten, arctic fox, squirrel, 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 with minor fluctuations driven by fur prices and travel conditions.

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, fur buyers, and trappers who export fur from Alaska. Fur sealers receive a dollar for every fur they seal, fur buyers are required to fill out a

report of acquisition of furs and hides, and trappers sending furs out of Alaska are required to fill out a raw fur export permit. Our objectives include maintaining these programs for harvest assessment.

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 furbearer information in Unit 18 by interviewing local trappers and other residents; estimated harvest through sealing certificates and fur acquisition reports; submitted public service announcements and newspaper articles to several media sources to provide information about trapping and trapping regulations; distributed trapper questionnaires; contacted fur sealers regarding proper procedures for sealing pelts; and made incidental observations of furbearer species during fieldwork for other species.

We solicited trapper opinions regarding abundance and trend of furbearer populations using a questionnaire. The abundance options and scores were: not present (no score), rare (1), common (2), and abundant (3) and the trend options were: fewer (1), same (2), and more (3). We calculated the average scores to estimate their aggregate opinion.

We conducted an aerial beaver cache survey along Reindeer River between Pilot Station and Marshall following a route modified from a 1984 survey. All of the lodges along the river (not including adjacent oxbow lakes) were mapped and classified as vacant or occupied based on the presence or absence of feed caches, and the findings were compared to those from 1984.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Trapper questionnaire results for 2000–2001 and 2001–2002 are found in Table 1 but data from the 2002–2003 questionnaire is unavailable due to staffing changes.

Beaver — Beavers range from abundant to overabundant throughout the unit in all suitable habitats. Trapper questionnaire results show moderately high values for both abundance and trend for the two years for which we have data (Table 1). Villagers have complained since at least the early 1980s that beaver numbers have increased to the point that they are ruining favored fish habitats. 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.

On 31 October 2002, we conducted an aerial beaver cache survey along the Reindeer River and recorded active and inactive lodges, concentrating on lodges located along the river itself. During our return flight, we made a cursory assessment of lodges located beyond the river. In 1984, a similar area was surveyed that included the Reindeer River and the surrounding riparian habitat to a width of approximately 5 miles. We can compare the 2002 survey directly to the

Reindeer River portion of the 1984 survey, but we can only compare the extended area with the caution that the search effort in the extended area was lower in 2002 than during 1984. By any of these measures, beaver density has increased considerably during the last 2 decades (Table 2).

Coyote — Only anecdotal population information is available for coyotes, and we agree with trappers that the population is probably stable at low levels (Table 1).

Arctic Fox — Arctic foxes are present in Unit 18 along the coast and on Nunivak Island. The population there is generally stable at moderate levels according to trapper questionnaire responses and interviews with muskox hunters and trappers on Nunivak and Nelson Islands (Table 1).

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

Lynx — Toward the end of the previous reporting period lynx numbers were near their cyclic peak. Since then their numbers have declined, and since 2001–2002 only adults have been presented for sealing. There are recent indications that the snowshoe hare population is beginning to come back and lynx numbers should follow.

Marten —Marten numbers are stable at low levels. The limited marten habitat in Unit 18 is not conveniently accessed by village residents so only small numbers of trappers target them directly. This limited harvest pressure does not influence marten population levels.

Mink — Mink are plentiful throughout the extensive habitats available to them but they are rarely seen and appear to have a low abundance. However, while we were 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 2 days. We could easily see that nearly all of the ponds along the entire route had mink tracks on them. This suggests that high mink numbers are the norm and we have no reason to believe that this has changed since this observation.

Trapper questionnaire responses indicate that mink are common and stable at normal levels (Table 1) but this is understated. Normal levels for mink abundance in the Yukon-Kuskokwim Delta are generally higher than elsewhere but may not be perceived as exceptional by area trappers who are accustomed to mink being abundant.

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, river otter are found throughout the extensive habitats available to them. During the same aerial flight described in the mink discussion, it was evident that otters were normally abundant as well, and trappers report their numbers as stable at normal levels.

Otters are probably targeted more directly by Unit 18 trappers than any other furbearer because they have maintained their value. Trappers expect about $100 per pelt.

During surveys for other species, we normally see otter tracks and have noted that otters appear to be more abundant than during the previous reporting period. However, trapper questionnaires indicate that trappers perceive otter populations to be stable (Table 1).

Red Squirrel — As with marten, red squirrel habitat is limited in Unit 18 and their numbers are stable at low levels. Trappers rarely target red squirrels except when they are being a nuisance and their population 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 numbers are low to moderate (Table 1) and that the population is stable to declining. However, their numbers are not influenced by trapping because trappers rarely target them unless they are a nuisance around home or field camps.

Wolverine — Wolverine numbers are moderate to low but are probably increasing in Unit 18 as greater numbers of caribou, moose and wolves provide prey and carrion.

Population Composition

The only furbearers for which sex composition of the harvest is collected during sealing are otters and wolverines. During this reporting period, male otters outnumber females in the harvest by a ratio of about 7:5 and male wolverines outnumber females by about 5:3. 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.

Distribution and Movements

The distribution of furbearers in Unit 18 is reflected by the distribution of their habitats. The aquatic furbearers (beavers, mink, otters, and muskrats) 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 foxes 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 foxes are also found.

Good 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 occasionally found elsewhere in Unit 18 as lynx seek out scattered pockets of hares.

Martens and red squirrels 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; in the

upper portions of the Atchuelinguk, Andreafsky, and East Fork Andreafsky Rivers; and north of the Yukon River upriver from Marshall.

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 are found in the Kilbuck and Andreafsky mountains, with fewer animals found along riparian habitats throughout the unit. The wolverine population is probably growing and its distribution roughly parallels that of caribou, moose, and wolves.

Coyotes remain rare and they are found mostly in the upland areas north of the Yukon River and in the Kilbuck Mountains south and east of the Kuskokwim River. During the previous reporting period they were taken in the Andreafsky River drainage, the Goodnews River drainage, the Kwethluk River drainage, and in the Fog River drainage.

MORTALITY

Harvest

Seasons and Bag Limit. Trapping and hunting seasons and bag limits were as follows:

2000–2001, 2001–2002, 2002–2003

Species	Trapping season	Trapping bag limit	Hunting season	Hunting bag limit
Beaver	1 Jul–30 Jun	No limit	1 Jul–30 Jun	No limit
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[a]
River Otter	10 Nov–31 Mar	No limit	N/A	N/A
Wolverine	10 Nov–31 Mar	No limit	1 Sep–31 Mar	1

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

Board of Game Actions and Emergency Orders. During the fall 1999 Board of Game meeting, the Unit 18 beaver season was changed to 1 July–30 June and they were classified as a fur animal (as well as a furbearer) with a hunting season established with the same dates and no bag limit. Either the meat or the fur must be salvaged; the sealing requirement was eliminated; and

shooting was made a legal method of harvest year-round. These regulations took effect at the beginning of this reporting period.

Human-Induced Harvest. Coffing (2000) estimated that from about 5% to 100% of furbearers caught in Akiachak were sold, depending on the species. Those that are not sold are used domestically for crafts and garments and are rarely reported, so harvest report data in Unit 18 should be viewed as minimum estimates.

Otter harvest grew during this reporting period (Table 3) as interest followed fur prices. During the previous reporting period otter prices had declined from $50.00 to $41.13 but had risen to an average price of more than $120 by the end of this reporting period. We suspect that if travel conditions during 2002–2003 had been better, otter harvest would have been even higher.

Lynx harvest (Table 3) declined through this reporting period, following typical lynx population cycles. We anticipate that lynx numbers and harvest will begin growing toward the beginning of the next reporting period.

Wolverine harvest from sealing data was lower in 2002–2003 than in 2000–2001 or 2001–2002, (Table 3) but this was due to poor travel conditions and was not related to wolverine numbers. 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 wolverines are not sealed.

Mink are harvested along with otters in sets using a *taluyaq* (funnel type trap), and even though otters are also targeted directly using 330 conibear or similar quick-kill traps, mink are taken indirectly by otter trappers, making otter harvest a reasonable index of mink harvest. Because otter harvest increased during this reporting period, mink harvest probably increased as well, despite the low fur acquisition report numbers (Table 4).

Red fox are particularly abundant, but the interest in trapping them is low and the harvest is well below the potential. With fox prices averaging about $30, the harvest is not likely to increase.

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

Muskrat harvest remains low. Traditionally, trappers would hunt muskrats after the ice went out, but spring muskrat camp is uncommon today. The spring camp tradition remains, but it is abbreviated and directed mostly at waterfowl 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 and new parkas made from parky squirrel pelts are occasionally seen, but ground squirrel harvest is low.

Fur acquisition reports are available for those furs sold to fur buyers for resale but the data are unreliable (Table 4). Otter harvest can be used to gauge the reliability of these data since we have both sealing data and fur acquisition report data and we believe that most of the otters caught in Unit 18 would have been sold because fur prices were high. Of 410 otters sealed in 2002–2003, only 27 were recorded on the fur acquisition reports.

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

Hunter Residency and Success. All of the trappers who sealed Unit 18 furs were Alaska residents except one nonresident who took a wolverine in September 2002.

No direct measure of trapper success is available. However, interest in otter trapping increased as the number of trappers catching more than 10 otters, the number of otters taken per trapper, and the greatest individual harvest were higher in 2002–2003 than any year of the last 2 reporting periods (Table 5) despite poor travel conditions. This higher trapper effort is likely due to trappers' expectations of receiving $100 per otter.

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 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 when 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.

Other furbearers are harvested throughout the season when snow conditions permit travel by snowmachine. In Unit 18 snow conditions can be quite variable. Travel conditions were generally good during the entire 2000–2001 season, poor during at least part of the 2001–2002 season, and extremely poor for the entire 2002–2003 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 readily, 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 and unrepaired. Often we will find a ring around these ponds devoid of woody vegetation. These marginal habitats support beavers for only a few years before the food supply is exhausted.

Rabies is a concern, especially with the large red fox population. Since 1997, 91 animals have been tested for rabies in Unit 18 including 30 positive cases. During this reporting period, 3 arctic foxes, 3 dogs, and 11 red foxes tested positive. 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, though some are overused. 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 as fur offered the only source of income during the winter for many trappers, and 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, and the average age of trappers responding to the trapper questionnaire is increasing each year. The trappers in Unit 18 follow this statewide pattern, with only a few local trappers younger than 20.

Furbearers are still widely used in traditional ways. Fur garments, including parkas, mittens, mukluks, and hats, are ubiquitous and most are homemade. 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, and 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 with beaver, otter, mink, arctic ground squirrels, muskrats, and lynx being 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 used. The Board of Game recognized this when it adopted 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, lynx, 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, taken primarily for meat, or 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 for failing to comply.

Poor harvest information is an administrative shortcoming as well. Fur sealers only receive $1 per fur for every fur sealed, and compensation is declining with the harvest. Now that the requirement to seal beavers has been eliminated, compensation has declined even further. Without greater incentive, it will continue to be difficult to recruit and retain fur sealers, and fur harvest information will suffer.

The fur acquisition reports and the raw fur export permits are currently dysfunctional as tools for harvest assessment. We should implement these reports as they were designed or abandon them and devise a different method to track harvest for those species that are not sealed.

Foxes and beavers were once highly valued but are now largely thought of as nuisance wildlife. Red fox numbers are high and the threat of rabies remains an issue; both red and arctic foxes prey on waterfowl eggs and nestlings, and the threatened spectacled eider is among their prey species. Beaver numbers are high and are blamed for disrupting fish movements and impeding boat traffic.

It would take a profound increase in fur prices 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 1988–1989, 4686 beavers were sealed. In the early 1980s more than 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. Clearly, with current harvests well below these levels, furbearers in Unit 18 are severely underutilized.

LITERATURE CITED

COFFING, M., M.L. BROWN, G JENNINGS, AND C.J. UTERMOHLE. 2000. Subsistence Harvest and Use of Wild Resources in Akiachak, 1998. Technical Paper No. 258. 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.

	2000–2001		2001–2002	
Species	Abundance	Trend	Abundance	Trend
Arctic fox	1.8	2.5	1.3	1.6
Beaver	2.5	2.4	2.3	2.2
Coyote	1.2	2.0	1.0	1.5
Ermine	1.8	1.9	1.5	1.5
Lynx	1.9	2.5	2.1	2.2
Marten	1.8	2.0	1.5	1.8
Mink	1.8	2.1	1.8	1.7
Muskrat	1.8	2.1	2.0	1.8
Red fox	2.5	2.7	2.4	2.3
Red squirrel	1.3	1.6	1.4	1.8
River otter	2.0	2.1	2.1	2.3
Wolf	1.8	2.4	2.1	2.6
Wolverine	1.8	2.0	1.3	1.8
Hares	2.4	2.0	1.9	1.6
Grouse	1.9	1.7	1.0	1.3
Ptarmigan	2.5	2.2	2.2	2.0
Mice/Rodents	2.3	2.0	1.7	1.7

Table 2 Comparison of the 2002 and 1984 beaver cache surveys along the Reindeer River. The Reindeer River extended area includes the river and the riparian area along both sides of the river to a total width of approximately 5 miles.

Year	Area	Active lodges	Inactive lodges	Unknown	Total
1984	Reindeer River	2	1		3
1984	Reindeer River extended	34	8		42
2002	Reindeer River	32	18		52
2002	Reindeer River extended*	104	32	13	149

*Includes only those beaver lodges seen on a single transect following the Reindeer River and represents a minimum count.

Table 3 Furbearer harvest from sealing records 2000–2001 through 2002–2003.

Species	2000–2001	2001–2002	2002–2003
Lynx	84	53	41
River otter	191	138	410
Wolverine	13	22	12

Table 4 Fur acquisition report data, 1997–1998 to 1999–2000.

Year	Beaver	Coyote	Arctic Fox	Red Fox	Lynx	Marten	Mink	Muskrat	Otter	Wolverine
1997–1998	165		2	34	15	15	644	1	100	4
1998–1999	94	1	2	57	4	44	173		49	1
1999–2000	24				15	33				6
2000–2001	42			7	3	18	155	104	24	2
2001–2002	0			5	12				6	1
2002–2003	16			144	15	10	12	21	27	

Table 5 Otter harvest per trapper, 1997–2003

Year	Nr. trappers	Otter harvest	Otters/trapper	Trappers with > 10 otters	Highest catch
1997–1998	79	447	5.6	5	29
1997–1998	43	167	3.8	2	16
1997–1998	21	61	2.9	0	9
2000–2001	40	191	4.8	4	18
2001–2002	24	138	5.8	4	32
2002–2003	43	410	9.5	10	43

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNIT: 19 (36,490 mi^2)

GEOGRAPHIC DESCRIPTION: All drainages of the Kuskokwim River upstream from Lower Kalskag

BACKGROUND

Furbearers historically have contributed to the economic base in western Interior Alaska and have been an integral part of the subsistence lifestyle in the region. Native people relied on furbearers for garments, food, and trade goods. The quest for furs prompted early Russian settlement in the area. During the middle part of the 20th century, miners in the area were largely unemployed during winter and supplemented their income by trapping and selling fur. Local economies are still influenced by income from the sale of wild pelts. However, despite the fact that modern transportation methods such as snowmachines have enabled longer traplines, international markets for wild fur have declined, and the economic incentive for harvesting fur has diminished to the point that many trappers have abandoned their traditional traplines for more lucrative pursuits.

Furbearer seasons and bag limits have varied dramatically since original regulations were adopted in the early 20th century. Several factors influence the annual harvest levels of various furbearer species. These include population levels, snow conditions, climate, pelt prices, availability of alternate income, fuel prices, and regulations.

MANAGEMENT DIRECTION

Furbearer management is designed to annually assess populations, maintain or enhance those populations, and develop regulations to encourage sustainable harvests.

MANAGEMENT GOALS

- Protect, maintain, and enhance furbearer populations in concert with other components of the ecosystem.

- Provide people with sustained opportunities to participate in subsistence use, hunting/trapping for recreational and commercial purposes, viewing, and photographing furbearers.

MANAGEMENT OBJECTIVES

- Maintain accurate annual harvest records based on sealing documents.
- Maintain indices of population trends using trapper questionnaires.

Activities Planned

1 Seal furs of selected species as they are harvested and presented for sealing to monitor harvest levels and trends. (Objective 1a)

2 Conduct trapper questionnaires and interviews to determine the status of various furbearer populations. (Objective 1b)

METHODS

Population status and trends were determined from Alaska Department of Fish and Game's Trapper Questionnaire Statewide Annual Reports for regulatory years 1995–1996 through 2002–2003. Pelt prices were based on the average prices paid at North American Fur Auction sales.

Harvest and trapping pressure were monitored based on sealing certificates, fur acquisition reports, and fur export reports. Note that data from fur acquisition and export reports are not accurate and should be viewed only as an indication to a possible trend. Total harvest, harvest chronology, sex and age, method of take, and transportation were summarized by regulatory year (RY), which begins 1 July and ends 30 June (e.g., RY00 = 1 Jul 2000 through 30 Jun 2001).

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Beaver

Whitman (1998) estimated beaver densities were high in the late 1980s but noted a small decline in the early 1990s. There was less suitable habitat in Units 19B and 19C than in Units 19A and 19D. However, even marginal habitat was frequently occupied. A beaver cache survey was conducted in November 2002 in 3 trend areas in the McGrath area. Results indicated that the local population had remained stable since 1997 when the last survey was conducted. The number of caches counted in the Wilson's trend area in 1997 was 27, compared with 26 in 2002; in the Vinasale trend area, 22 versus 19 caches were located; and in the Lower Takotna trend area, 10 caches were located in 1997, compared with 8 in 2002.

Results of the trapper questionnaires indicated that beaver abundance was high in Unit 19 during RY97 through RY02 (Parker McNeill 1999; Kephart 2000, 2001; Scott and Kephart 2002; Peltier and Scott 2003). Trappers also reported that the trend in the population was either the same or slightly increasing.

Lynx

Trappers reported that lynx were scarce during RY97 through RY00 (Parker McNeill 1999; Kephart 2000, 2001). However, trappers indicated they had seen more lynx during RY97–RY00, and in RY01 trappers reported that lynx were common and they were observing more lynx. This coincides with a lynx high in Interior Alaska (Peltier and Scott 2003). Whitman (1998) suggested that lynx were probably never abundant in Unit 19, but that some drainages in the foothills of the Alaska Range and along the Unit 19B/17B border support snowshoe hare populations capable of sustaining limited lynx populations. The percent of kits observed in the harvest was low or nonexistent (0% for RY00 through RY02; Table 2), supporting the theory that there is limited lynx habitat in Unit 19.

River Otter

River otters were common and the population was probably stable during RY97–RY00 (Parker McNeill 1999; Kephart 2000, 2001; Scott and Kephart 2002). However, for the RY01 season trappers reported that otters were abundant and they observed more compared to previous years (Peltier and Scott 2003).

Wolverine

In RY97 wolverines were scarce and trappers reported seeing few wolverines or their sign. During RY98 wolverines were again common, but trappers reported the trend was stable, which conflicted with the previous year's report. In RY99 wolverines were common, and trappers reported that wolverine numbers were increasing (Parker McNeill 1999; Kephart 2000, 2001). In RY00 trappers indicated that they had observed fewer wolverines, and in RY01 they reported the trend as the same (Scott and Kephart 2002; Peltier and Scott 2003). These alternating years of observing fewer, more, or the same probably suggest that the wolverine population remained relatively stable with some annual variation, which may be more noticeable in wolverines because overall numbers of wolverines are not high.

Marten

Trappers indicated that martens were common but not abundant in RY97, and by RY98 reported that they were abundant and the population trend was increasing. During RY98–RY01 martens have remained abundant, and the trend has either been the same or increasing (Parker McNeill 1999; Kephart 2000, 2001; Scott and Kephart 2002; Peltier and Scott 2003).

During winter 2003–2004, 362 marten carcasses were collected from Unit 19 trappers from Big, Middle Hoholitna, and North Fork Kuskokwim Rivers. Sex ratios ranged from 58% to 69% males in the harvest; a minimum of 60% males in the harvest is considered good (J. Whitman, ADF&G, personal communication). The young of the year:adult female ratio ranged from 2.7:1 to 4.0:1. A 4.0:1 ratio is considered adequate to ensure good marten numbers for the following year (depending on microtine cycles and climate). Ratios below 4.0:1 indicate that reproduction and/or survival of young martens was inadequate, and marten numbers will probably decrease in those areas in the 2004–2005 season (J. Whitman, ADF&G, personal communication).

Mink

Mink were common in Unit 19, and populations appeared to be stable during RY97–RY99 (Parker McNeill 1999; Kephart 2000, 2001). Mink were reported as scarce during the RY00 season, but this may have been related to poor snow conditions for trapping (Scott and Kephart 2002). By RY01 mink appeared to be common and stable (Peltier and Scott 2003).

Muskrat

One of the greatest mysteries in furbearer management in Alaska is muskrat population dynamics. Historically, muskrat populations were high in suitable habitat throughout Unit 19, and spring shooting of muskrats was a widespread pursuit. However, populations declined by about 1975 (Whitman 1998). Populations have not rebounded since that time. Founder populations still exist, but production and/or survival of kits has not been sufficient to cause population increases. Perhaps predation (by northern pike, in particular), diseases, parasites, or changes in weather or habitat are factors that singly, or in combination, have acted to keep populations low (Whitman 1998). Trappers reported that muskrats were common and increasing in RY97 but were scarce and probably declining in RY98 and RY99 (Parker McNeill 1999; Kephart 2000, 2001). In RY00 and RY01, trappers reported that muskrat were still scarce, but the trend was either the same or slightly increasing (Scott and Kephart 2002; Peltier and Scott 2003). Recently, anecdotal observations in other parts of Interior Alaska suggest that muskrat populations may be increasing (B. Stephenson, ADF&G, personal communication).

Coyote

Viable coyote populations in Unit 19 were restricted to areas in or near the Alaska Range. Populations periodically expanded into other parts of the unit, but they are unlikely to increase significantly as long as wolves are common and widespread (Whitman 1998). Trappers reported coyotes were scarce during RY98–RY01; yet they also reported observing more coyotes in RY00 and RY01 compared to previous years (Parker McNeill 1999; Kephart 2000, 2001; Scott and Kephart 2002; Peltier and Scott 2003).

Red Fox

Trappers reported that red fox populations were relatively low through the mid 1980s, before peaking about 1990 (Whitman 1998). Incidental observations of red foxes in early winter 1997 indicated the population was rebounding (Whitman 1998). However, trappers reported fewer red foxes in RY97. By RY98 and RY99 red foxes had again increased (Parker McNeill 1999; Kephart 2000, 2001). In RY00 and RY01 red foxes were common (Scott and Kephart 2002; Peltier and Scott 2003).

MORTALITY

Harvest

Unit 19 Trapping Seasons and Bag Limits, RY00–RY04.

Species	Season	Bag limit
Beaver	1 Nov–10 Jun	No limit
Coyote	1 Nov–31 Mar	No limit
Lynx	1 Nov–28 Feb	No limit
Marten	1 Nov–28 Feb	No limit
Mink & Weasel	1 Nov–28 Feb	No limit
Muskrat	1 Nov–10 Jun	No limit
Red Fox	1 Nov–31 Mar	No limit
River Otter	1 Nov–15 Apr	No limit
Wolverine	1 Nov–31 Mar	No limit

Unit 19 Hunting Seasons and Bag Limits, RY00–RY04.

Species	Season	Bag limit
Coyote		
RY00 and RY01	1 Sep–30 Apr	10
RY02 and RY03	10 Aug–30 Apr	10
RY04	10 Aug–30 Apr	10/day
Red Fox	1 Sep–15 Mar	10
Lynx	1 Nov–28 Feb	2
Wolverine	1 Sep–31 Mar	1

Alaska Board of Game Actions and Emergency Orders. No regulatory changes were made during the 2000 Alaska Board of Game meetings. During the March 2002 meeting, the sealing requirement for beaver was rescinded statewide. In addition, the hunting season and bag limit for coyotes was lengthened by 20 days, and the bag limit was increased from 2 to 10. This aligned the season with wolf and sheep seasons and simplified regulations regionwide. During the March 2004 board meeting, the bag limit for coyote was increased from 10 coyotes to 10 coyotes per day.

Trapper Harvest, Residency, and Chronology.

Beaver — Whitman (1998) concluded that beaver harvests have fluctuated widely, and generally declined, since the mid 1960s, and that low harvests reflect low pelt prices rather than low populations. Thus, in recent years a significant portion of the beaver harvest was motivated by recreation, rather than by economics. In addition, much of the beaver harvest by local subsistence users was for human food or dog food and for use in garments. Often these pelts were not presented for sealing, and this portion of the harvest is poorly documented.

Reported harvest ranged from 80 to 421 during RY95–RY01 (Table 1). There is no sealing data for RY02 because the sealing requirement for beaver was rescinded beginning in RY02.

The percent of kits in the harvest was low during RY95–RY01 (Table 2). With a low number of beavers harvested, tracking the percent of kits in the harvest is not as important as it was during periods of high harvest. During years of high exploitation and when the population is highly productive, a good harvest strategy would be to harvest ≤15% kits (J. Whitman, ADF&G, personal communication). Beaver pelt prices were slightly higher ($33–$35; Table 3) and there were more trappers in the field in RY96 and RY97 than during RY95 and RY98–RY01 (Table 2). This may account for the increase in harvest in RY96 and RY97 (Table 3). Pelt prices have remained relatively stable since RY97 at about $19. During RY95–RY01 beavers were harvested throughout the winter and spring, with most of the harvest occurring in January, February, and March (Table 4). In previous years most harvest occurred in February and March (>75%; Whitman 1998). Weather conditions may have been more suitable for trapping in January during RY95–RY01.

Lynx — Lynx are not abundant in Unit 19. During RY95–RY02, harvest ranged from 9 to 80 (Tables 1 and 2). The higher harvests of 53 lynx in RY00 and 80 lynx in RY01 coincided with an overall population high observed in the Interior. By RY02, lynx populations in some parts of the Interior had already begun to crash following a decline in the hare population. Most lynx were harvested in December, January, or February (Table 4). Pelt prices for lynx were higher during RY95–RY97 ($82–$95) than in previous years (Whitman 1998) and subsequent years ($40–$76) until RY02 when they increased again ($119; Table 3).

River Otter — River otter harvest was low during RY95–RY02 (<30; Table 1), except in RY96 when 50 animals were harvested. The harvest of river otters in Unit 19 declined during the 15 years prior to RY96 (Whitman 1998). Pelt prices for otters increased from $55 in 1994 to $90 in RY95. Prices remained relatively high in RY96 and RY97 and declined somewhat after that until RY02, when pelt prices were $114 (Table 3). The relatively high harvest in RY96 was consistent with increased harvests of other furbearers in Unit 19 (Tables 1 and 2), but the reasons for the increases are not known. Although sex of otter was recorded, sample sizes during RY95–RY02 were too small to draw any inferences (Table 2). Harvest chronology by month was relatively consistent throughout the season (Table 4).

Wolverine — Wolverine harvest in Unit 19 did not fluctuate or decline as much as other furbearing species during the past 3 decades (Whitman 1998). Harvest was fairly stable during RY95–RY02 (range: 37–96; Tables 1 and 2). Although wolverine pelt prices have declined over the years, they still bring a substantially higher price than most other furs (Table 3). Harvest occurred throughout the season (Table 4).

Marten — Martens are the most sought after and valuable furbearer species in Unit 19. Most trappers target martens, and other species (except wolverine) are taken incidentally (Whitman 1998). Harvest has been low or declining for several years because of low pelt prices (Whitman 1998). Estimated harvest was very low in RY95 (494), increased substantially in RY96 (2647), then remained stable during RY97–RY99 (range: 822–972; Table 5). The increased harvest in RY96 was observed in other furbearer species as well. Harvest was slightly higher in RY00 and RY01 (1407 and 1171) and declined some in RY02 (628). Pelt prices were stable those 3 years and the lower harvest in 2002 may be due to decreased marten populations or decreased trapper effort. Pelt prices were moderately high in RY95–

RY97 ($66), declined somewhat and remained relatively stable during RY98–RY03 (range: $22–$38; Table 3).

Mink — Market demand for wild-caught mink was low. Consequently, few Unit 19 trappers targeted them and harvest has been low for at least a decade. Mink trapping was largely incidental to marten trapping efforts. During RY95–RY02, estimated harvest ranged from 9–35, except in RY96, when harvest was 92, following the trend observed in harvest of other species.

Muskrat — Poor pelt prices and low population density combined to make muskrats one of the least valuable furbearer species in the area (Whitman 1998). Some harvest by shooting occurred in scattered locations during spring, and most pelts were used in domestically produced hats. However, in RY02, 29 muskrats were sold, which may reflect an increase in the muskrat population.

Ermine and Red Squirrel — These species have little recreational or economic value in the region. Most harvest occurs incidentally to marten trapping (Table 5). Pelt prices were very low for both ermine and red squirrel.

Coyote — Similar to previous years (Whitman 1998), we estimated unitwide harvest of coyotes was less than 10 annually during RY95–RY02 (Table 5).

Red Fox — Red fox were generally captured incidentally to other species. Little effort was spent specifically for them, although some pelts were used in garments and craft items. During RY95–RY02, estimated harvest from acquisition and export fur reports was <50, except in RY96, when estimated harvest was 82 (Table 5).

Residency, Harvest Methods, and Transportation Methods. Almost all harvest was by residents of Unit 19. Most harvest occurred in Units 19A and 19D (Table 1) near communities. However, a significant proportion of the wolverine harvest occurred in Unit 19B, an area with excellent wolverine habitat.

The most frequently used method of take (>80%) for all species during RY95–RY02 was trapping/snaring (Table 2). Shooting from the ground accounted for most of the remainder of the harvest, with a few animals taken by land and shoot (Table 2).

Transportation methods shifted from a prevalence of snowshoes, skis, or dog teams during the mid 1980s to primarily mechanized vehicles (Whitman 1998). During RY95–RY02 more than 55% of trappers used snowmachines. Snowshoes and airplanes were the next most common transport method for taking beavers (Table 6). Snowmachines were used to harvest most lynx and river otters (Table 6). Both snowmachines and aircraft were the predominant transport method for wolverines (Table 6).

CONCLUSIONS AND RECOMMENDATIONS

Trapper questionnaire results indicated that, in general, most of the furbearer populations in Unit 19 were stable or increasing. Habitat for lynx is limited, accounting for the low harvests

of this species. Coyote populations will probably remain low as long as wolves inhabit the area. Pelt prices have declined significantly over the years, with an occasional increase as observed for some species. Although we do not have quantitative data on furbearer populations, pelt prices and harvest will probably remain low in the foreseeable future, indicating existing regulations are adequate and can continue to provide substantial opportunities to harvest furbearers. Management goals and objectives are being revised as follows:

MANAGEMENT GOAL

- Protect, maintain, and enhance furbearer populations in concert with other components of the ecosystem.

MANAGEMENT OBJECTIVE

- Manage furbearer populations to maintain populations at levels sufficient to provide for sustained consumptive and nonconsumptive uses.

Activities

1. Seal furs of selected species as they are harvested and presented for sealing to monitor harvest levels and trends.

2. Conduct trapper questionnaires and interviews to determine the status of various furbearer populations.

3. Monitor furbearer populations, trends, and annual harvest using sealing documents, fur acquisition reports, and fur export reports.

4. Monitor trend in the McGrath area beaver populations by conducting beaver cache surveys.

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TABLE 1 Unit 19 furbearer harvest by subunit, regulatory years 1995–1996 through 2002–2003

	Unit					
Species/Year	19A	19B	19C	19D	19Z	Total
Beaver						
1995–1996	3	11	2	64	0	80
1996–1997	222	16	0	159	24	421
1997–1998	77	15	0	116	0	208
1998–1999	43	5	2	35	0	85
1999–2000	17	13	0	57	0	87
2000–2001	92	17	7	59	6	181
2001–2002[a]	22	12	0	48	0	82
Lynx						
1995–1996	0	1	8	2	0	11
1996–1997	7	0	3	13	1	24
1997–1998	1	2	1	5	0	9
1998–1999	1	0	6	5	0	12
1999–2000	1	22	6	2	0	31
2000–2001	3	1	21	17	11	53
2001–2002	10	39	8	22	1	80
2002–2003	2	6	7	16	0	31
River Otter						
1995–1996	0	5	0	1	0	6
1996–1997	30	5	0	15	0	50
1997–1998	8	4	0	4	0	16
1998–1999	4	1	0	1	0	6
1999–2000	8	7	0	0	0	15
2000–2001	16	7	1	2	0	26
2001–2002	2	3	0	4	0	9
2002–2003	19	0	0	8	0	27
Wolverine						
1995–1996	5	16	14	2	0	37
1996–1997	9	26	19	20	2	76
1997–1998	5	17	6	4	6	38
1998–1999	7	22	9	5	1	44
1999–2000	11	23	15	15	0	64
2000–2001	15	38	30	13	0	96
2001–2002	13	40	10	5	4	72
2002–2003	4	28	9	18	0	59

[a] Beaver were no longer required to be sealed beginning regulatory year 2002–2003.

TABLE 2 Unit 19 furbearer reported harvest by sex, age, and method of take, regulatory years 1995–1996 through 2002–2003

Regulatory year	Reported harvest: Sex M	Sex F	Sex Unk	Age Juv[a]	Age Adults	Age Unk	Method of take: Trap/snare	Shot	L&S[b]	Unk	Total harvest	Successful trappers/ hunters
Beaver												
1995–1996			80	26	39	15	80	0	0	0	80	15
1996–1997			421	42	376	3	363	14	0	44	421	36
1997–1998			208	16	186	6	203	5	0	0	208	25
1998–1999	0	0	85	12	71	2	82	0	0	3	85	15
1999–2000	0	0	87	2	85	0	78	0	0	9	87	14
2000–2001	0	0	181	13	167	1	161	0	0	20	181	19
2001–2002[c]	0	0	82	7	71	4	67	4	0	11	82	17
Lynx												
1995–1996			11	1	10	0	11	0	0	0	11	7
1996–1997			24	8	16	0	22	0	0	2	24	17
1997–1998			9	3	5	1	8	1	0	0	9	9
1998–1999	0	0	12	0	8	4	12	0	0	0	12	7
1999–2000	0	0	31	1	28	2	30	1	0	0	31	8
2000–2001	0	0	53	0	53	0	52	0	0	1	53	18
2001–2002	0	0	80	0	74	6	77	3	0	0	80	27
2002–2003	0	0	31	0	24	7	28	3	0	0	31	18
River otter												
1995–1996	1	1	4	3	3	0	6	0	0	0	6	3
1996–1997	19	29	2	13	35	2	44	3	1	2	50	21
1997–1998	4	7	5	5	8	3	15	1	0	0	16	9
1998–1999	2	3	1	0	6	0	5	0	0	1	6	6
1999–2000	4	4	7	3	12	0	15	0	0	0	15	5
2000–2001	15	9	2	3	22	1	26	0	0	0	26	11
2001–2002	3	2	4	4	4	1	9	0	0	0	9	5
2002–2003	14	11	2	1	22	4	23	0	0	4	27	6

TABLE 2 continued

Regulatory year	Reported harvest: Sex M	Sex F	Sex Unk	Age Juv[a]	Age Adults	Age Unk	Method of take: Trap/snare	Shot	L&S[b]	Unk	Total harvest	Successful trappers/ hunters
Wolverine												
1995–1996	24	11	2			37	33	3	0	1	37	20
1996–1997	42	32	2			76	70	5	1	0	76	37
1997–1998	24	13	1			38	33	3	0	2	38	23
1998–1999	32	12	0	0	0	44	35	7	1	1	44	22
1999–2000	44	17	3	0	0	64	52	11	0	1	64	33
2000–2001	56	31	9	0	0	96	80	11	0	5	96	33
2001–2002	44	26	2	0	0	72	66	6	0	0	72	30
2002–2003	36	21	2	0	0	59	53	6	0	0	59	30

[a] "Juvenile" = beaver (length + width) ≤52"; lynx (length) <34"; or river otter (length) <42".

[b] Land and shoot.

[c] Beaver were no longer required to be sealed beginning regulatory year 2002–2003.

TABLE 3 Average North American furbearer pelt prices (U.S. dollars), regulatory years 1995–1996 through 2003–2004

Species	Regulatory year								
	1995–96	1996–97	1997–98	1998–99[a]	1999–00[b]	2000–01[c]	2001–02[d]	2002–03[e]	2003–04[f]
Beaver Good quality large brown	22	33	35	22	18	17	19	18	18–20
Marten Large I–II dark brown	66	66	66	22	32	29	38	33	38–45
Mink Large–medium I–II dark brown North	19	26	23	10	14	15	11	10	12–16
Red fox XL–large I–II Northwest	27	38	34	10	17	23	32	29	45
Lynx Large–medium I–II first color	82	90	95	58	48	40	76	119	120–135
River otter XL–large I–II dark brown	90	74	86	43	64	61	72	114	90–110
Wolverine XL I–II brown	170	160	249[d]	n/a	187	136	256	n/a	300–350

[a] Beaver and marten from 12 Feb 1999 sale; lynx from 11 Mar 1999 sale; mink, fox, and otter from 27 May sale.
[b] Prices from 25 Feb 2000 sale.
[c] Prices from 11 Jan 2001 sale.
[d] Prices from 17 Feb 2002 sale.
[e] Prices from 19 Jun 2003 sale.
[f] Forecast for 2003–2004 season.

TABLE 4 Unit 19 furbearer harvest chronology by month, regulatory years 1995–1996 through 2002–2003

Regulatory year	Harvest periods								
	Sep–Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Beaver									
1995–1996	5	10	27	0	3	23	12	0	0
1996–1997	0	42	28	106	53	144	17	26	5
1997–1998	0	2	53	27	32	84	5	5	0
1998–1999	0	0	34	8	6	18	1	0	0
1999–2000	0	1	19	22	9	17	19	0	0
2000–2001	0	18	8	25	86	31	4	0	0
2001–2002[a]	0	0	15	10	38	15	0	4	0
Lynx									
1995–1996	0	1	3	4	3	0	0	0	0
1996–1997	0	1	4	8	8	1	0	0	0
1997–1998	0	1	3	2	2	0	0	0	0
1998–1999	0	0	2	3	7	1	0	0	0
1999–2000	0	12	11	6	1	0	0	0	0
2000–2001	0	10	16	16	9	0	0	0	0
2001–2002	1	19	24	23	11	2	0	0	0
2002–2003	0	5	5	9	11	1	0	0	0
River otter									
1995–1996	0	4	1	1	0	0	0	0	0
1996–1997	0	7	7	9	21	4	2	0	0
1997–1998	0	3	2	7	1	3	0	0	0
1998–1999	0	0	3	2	1	0	0	0	0
1999–2000	0	0	0	13	1	0	0	0	0
2000–2001	0	3	3	4	14	2	0	0	0
2001–2002	0	2	5	0	1	1	0	0	0
2002–2003	0	3	1	11	10	2	0	0	0
Wolverine									
1995–1996	1	2	6	6	9	12	0	0	0
1996–1997	4	11	17	22	13	9	0	0	0
1997–1998	3	1	6	4	15	9	0	0	0
1998–1999	5	0	9	10	11	9	0	0	0
1999–2000	7	7	19	13	8	9	0	0	0
2000–2001	7[b]	8	10	21	31	19	0	0	0
2001–2002	3	8	11	14	14	22	0	0	0
2002–2003	5	4	6	10	10	24	0	0	0

[a] Beaver were no longer required to be sealed beginning regulatory year 2002–2003.
[b] Includes 1 wolverine harvested in Aug.

TABLE 5 Unit 19 estimated harvest[a] of unsealed furbearer species, regulatory years 1995–1996 through 2002–2003

Regulatory year	Unsealed furbearer species						
	Coyote	Red fox	Marten	Mink	Muskrat	Weasel	Squirrel
1995–1996	0	21	494	35	1	5	0
1996–1997	2	82	2647	92	6	46	1
1997–1998	2	45	865	34	0	0	0
1998–1999	3	22	822	3	0	2	0
1999–2000	2	44	972	10	0	0	0
2000–2001	1	18	1407	12	0	2	3
2001–2002	0	34	1171	9	0	1	0
2002–2003	1	22	628	13	29	3	10

[a] Estimates calculated by combining fur acquisition reports and fur export permits.

TABLE 6 Unit 19 furbearer percent harvest by transport method, regulatory years 1995–1996 through 2002–2003

Species/regulatory year	Percent harvest by transport method								Total harvest
	Airplane	Dogsled, skis, or snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown	
Beaver									
1995–1996	24	11	0	6	59	0	0	0	
1996–1997	<1	4	7	0	82	0	<1	7	
1997–1998	6	0	0	0	91	0	0	3	
1998–1999	2	20	0	0	74	0	0	4	85
1999–2000	1	10	0	0	78	0	0	10	87
2000–2001	0	5	0	0	82	2	0	11	181
2001–2002	1	2	5	0	78	0	0	13	82
2002–2003[a]	50	0	0	0	50	0	0	0	6
Lynx									
1995–1996	9	54	0	0	36	0	0	0	
1996–1997	0	17	4	0	67	4	0	8	
1997–1998	11	0	0	0	78	0	0	11	
1998–1999	8	0	0	0	92	0	0	0	12
1999–2000	6	77	0	0	13	0	0	3	31
2000–2001	0	32	0	0	62	2	2	2	53
2001–2002	5	36	0	0	56	0	3	0	80
2002–2003	6	26	0	13	48	0	6	0	31
River Otter									
1995–1996	17	0	0	67	17	0	0	0	
1996–1997	6	0	0	0	90	0	0	4	
1997–1998	0	0	0	0	100	0	0	0	
1998–1999	33	0	0	0	50	0	0	17	6
1999–2000	0	7	0	0	86	0	0	7	15
2000–2001	8	15	0	4	65	0	0	8	26
2001–2002	0	0	0	0	100	0	0	0	9
2002–2003	48	0	0	4	33	0	0	15	27

Species/regulatory year	Percent harvest by transport method								Total harvest
	Airplane	Dogsled, skis, or snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown	
Wolverine									
1995–1996	27	19	0	3	49	0	0	3	
1996–1997	32	9	0	0	58	0	0	1	
1997–1998	47	10	3	0	34	0	0	5	
1998–1999	39	0	2	0	57	0	0	2	44
1999–2000	16	25	1	2	53	0	2	1	64
2000–2001	24	13	2	3	53	0	0	5	96
2001–2002	43	10	0	1	43	0	0	3	72
2002–2003	47	8	0	3	39	0	0	2	59

[a] Beavers were no longer required to be sealed beginning regulatory year 2002–2003.

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003[a]

LOCATION

GAME MANAGEMENT UNIT: 20A, 20B, 20C, 20F, and 25C (44,760 mi^2)

GEOGRAPHIC DESCRIPTION: Central and lower Tanana Valley and middle Yukon River drainage

BACKGROUND

The fur trade is one of Alaska's oldest industries. Trapping remains an important use of wildlife resources today for many people and can be significant to the economies of rural areas because alternative sources of income are limited. Furbearers provide food and clothing for personal use and cash income. Nonconsumptive use of furbearers is also important, because many people enjoy watching furbearers or finding evidence of their activities.

Little is known about factors limiting furbearer populations. Most furbearers are difficult to study because of their secretive habits. Information has come primarily from harvest data. Trapper questionnaires have been used annually since 1965 to collect information on trapper activities and the relative abundance of furbearers. Furbearer investigations in the last 35 years in Interior Alaska have included research on 1) lynx population dynamics (Nava 1970; Berrie 1973; O'Connor 1984; Stephenson 1988); 2) beaver population ecology (Boyce 1974, 1981); 3) the effects of fire on furbearers (Stephenson 1984; Magoun and Vernam 1986); and 4) development of techniques to survey furbearer populations using track counts (Golden 1987; Schwartz et al. 1988; Stephenson 1988).

MANAGEMENT DIRECTION

MANAGEMENT GOALS AND OBJECTIVES

Beaver

- Manage beaver in the lower Chena River portion of Unit 20B for an annual fall beaver colony density of 0.2 to 0.5 colonies/km of river and mitigate problems arising from beaver activities.

[a] This unit report also includes data collected outside the reporting period at the discretion of the reporting biologist.

- Conduct annual fall beaver cache surveys in the lower Chena River to identify cache locations and determine at which sites to allow harvest.

- Issue nuisance beaver permits to remove problem animals.

- Coordinate with Department of Transportation and Public Facilities (DOT/PF) to minimize dammed culverts and flooded roads.

Lynx

- Manage lynx with a tracking harvest strategy whereby seasons are most liberal when lynx are abundant and most conservative when lynx are scarce.

- Estimate the annual sex and age of harvested lynx by examining carcasses from Units 20A and 20B.

- Conduct aerial track surveys in Units 20A and 20B to provide indices to trends in lynx and hare populations.

Wolverine

- Manage wolverine harvests in Unit 20A based on estimates of sustainable yield derived from density estimates and modeling.

- Complete aerial surveys to estimate density of wolverines in Unit 20A by April 2003.

- Use the model of Gardner et al. (1993) to estimate sustainable wolverine harvests in Unit 20A.

METHODS

We conducted beaver cache surveys from a riverboat in 2000, 2001, 2002 and 2003 during late September/early October to determine fall beaver colony density in the lower Chena River (downstream from the confluence with the Little Chena River). In 1993 we began subjectively categorizing cache sizes relative to the 18 ft boat used to conduct the surveys (<18 ft = small, 18 ft = medium, >18 ft = large). We mitigated problems arising from beaver activity by issuing nuisance or registration permits to trappers and by coordinating with the public and DOT/PF highway crews to minimize dammed culverts and flooded property. We continued to administer the program we initiated in 1999 through which Alaska Trapper Association (ATA) members served as mentors to local youth, teaching ethical and responsible trapping practices along this stretch of river.

We maintained accurate records of harvest by compiling data from the required sealing documents for beavers (until Jul 2002), lynx, otters, and wolverines. After July 2002 we kept accurate records of beaver taken under nuisance and ATA permits through a permit condition that required harvest reporting. A Uniform Coding Unit was assigned to each pelt sealed to monitor distribution of harvest. Sealing data provided minimum harvest estimates because some pelts were used domestically and were not reported. Fur prices were compiled from data

provided by North American Fur Exchange. Prices were the averages from January and February sales and sections of fur most closely representing Alaska grade fur.

We sent questionnaires to 100–150 trappers per year to get information regarding their trapping activities. Trapper questionnaires were used to get trapper opinions on furbearer population levels and trends.

In 1987 the Board of Game adopted a "tracking harvest strategy" to manage lynx trapping seasons in the road-connected game management units of Interior and Southcentral Alaska. Under that strategy, lynx seasons are to be reduced when lynx populations are low and liberalized when lynx are abundant. As part of the tracking harvest strategy, lynx track survey transects were established in Units 20A and 20B in 1995, but inadequate snow conditions often precluded surveys which limited usefulness of data for year-to-year trend information. However, when track survey data were combined with harvest numbers, proportions of kittens in the harvest, pregnancy rates, and litter sizes, important trends could be identified. Mark McNay (research biologist, ADF&G, Fairbanks) analyzed data from Unit 20A and 20B lynx carcasses purchased from trappers since April 1995 to estimate pregnancy rates, litter sizes, and percentage of kittens in the harvest.

During this reporting period we conducted lynx track surveys in Units 20A and 20B on 14 March 2001. We flew east–west transects every 6 miles (township lines) with fixed-wing aircraft (Bellanca Scout or Piper Super Cub) at an altitude of 200–300 feet and a speed of 70–90 mph. We recorded distance to end point of the transect for each lynx track seen. We analyzed the track data by calculating the percentage of 1-mile segments observed to contain lynx tracks and the number of lynx tracks per mile of transect.

Harvest data were summarized by regulatory year (RY), which begins 1 July and ends 30 June (e.g., RY00 = 1 Jul 2000 through 30 Jun 2001).

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Beaver

Cache surveys indicated beaver colony density in the lower Chena River varied from 0.5 caches/km to 0.7 caches/km between 1999 and 2003 (Table 1). Boyce (1981) concluded that 0.5 colonies/km was a saturation density for beaver in Interior Alaska. During this reporting period, colony density observed in the lower Chena River exceeded the high end of our objective of 0.2 to 0.5 colonies/km (Table 1).

Density was highest in the Fort Wainwright area of the Chena River survey area. Assuming a mean of 5 beavers per colony (Boyce 1974), 100–145 beaver inhabited the lower Chena River during this report period; 300–500 beaver likely inhabited the entire drainage of the lower Chena, including sloughs, creeks, and ponds.

Lynx

March 2001 lynx track surveys indicated an increase in the number of tracks seen per mile and the percentage of mile segments with lynx tracks present (Table 2), which corresponded with the high lynx harvest for that year (Table 3) and the decreased percentage of kittens in the harvest (Table 4).

Wolverine

Wolverine density and sustainable harvest were not estimated in Unit 20A, because no funding was allocated to complete aerial surveys to estimate wolverine density.

MORTALITY

Harvest

Seasons and Bag Limits. Seasons and bag limits varied among species, subunits, and over time (Tables 5–8).

Alaska Board of Game Actions and Emergency Orders. During the March 2000 meeting the Board of Game lifted the prohibition on using aircraft to trap beaver in the Minto Flats Management Area after 1 March of each year. The requirement to seal beaver in all units of the Fairbanks Area was repealed, effective 1 July 2002. During the March 2002 meeting the Board of Game extended the coyote hunting season into August, making it 10 August–30 April. The board also required trappers to mark traps and snares set in the Fairbanks Management Area with the trapper's permanent driver's license number or name and address.

Starting July 2002 the department used its discretionary authority to close beaver trapping at Creamer's Field Migratory Waterfowl Refuge in an effort to increase wetland habitats on the refuge.

Hunter/Trapper Harvest.

Beaver — Low demand for beaver pelts due to depressed fur prices (Table 9) supports insignificant trapping effort for this species. Beaver harvested in the Fairbanks Area were not required to be sealed after 1 July 2002. Since this change, harvest records have been recorded only for beaver taken under nuisance and ATA permits, via a reporting condition of the permit. Since RY99, ATA representatives have served as mentors to teach local youth ethical and responsible beaver trapping principles. The program has been well accepted by the local public. However, a local newspaper article about the Girl Scouts' participation in the program initiated statewide, nationwide, and international attention and resulted in 29 form letters from a nationwide animal rights group addressed to the Fairbanks assistant area biologist protesting the Girl Scouts' actions. Among other attention paid to the program, members of a fifth grade class in New York State wrote variable opinions on the subject directly to Governor Murkowski. The program serves the educational needs of youth well, but does not harvest a sufficient number of beaver to eliminate the need to issue nuisance permits in the lower Chena River (Table 10).

Lynx — The reported lynx harvest was at a high during RY00 (Table 3). It had increased annually since RY95. The primary factor influencing lynx harvest is abundance; however,

other factors that influenced lynx harvests include: 1) changes in season lengths, 2) publicity encouraging trappers to restrict their harvest of lynx during the low phase of the cycle, 3) environmental conditions affecting trapping effort.

Carcass necropsy data, track survey data, and harvest data all suggest lynx reached a peak in population number in RY00, then experienced a decline to near the low point in the population cycle by RY02. Information about hares from the trapper questionnaires also supports this, indicating that the snowshoe hares were scarce in RY01, relative to previous years.

Wolverine — The percentage of males in the harvest was 71–77% for the 3 seasons from RY00 through RY02 (Table 11). Male wolverines have larger home ranges than females (Gardner 1985; Magoun 1985) and are more susceptible to trapping. Long-term trends of <50% male wolverines in the harvest could indicate unsustainable harvest rates and should trigger more in-depth analysis of the population, including the model developed by Gardner et al. (1993).

Magoun (1985) stated that factors responsible for long-term wolverine population declines could include: 1) widespread declines in food resources, particularly the demise or shift in range of large ungulate populations; 2) widespread habitat destruction; and 3) heavy harvests over large areas.

Other Furbearers — Because there are no sealing requirements for coyote, ermine, marten, mink, muskrat, red fox, or red squirrel, trends were suggested for these species using the trapper questionnaire report, biologist observations, and personal conversations with trappers. Based on these indices, coyotes and foxes tended to decrease with the hares and lynx. Anecdotal observations suggested that wolverines tended to increase after the lynx high. Martens and weasels tended to increase when the lynx were declining. Anecdotal observations also suggested that muskrat populations are rising from a long-term low and are beginning to occupy habitats that haven't been occupied in decades. The trapper reports from the questionnaire support this by quantifying muskrats as rare, but increasing.

Method of Take and Transportation. Methods of take and transportation were typical for Interior Alaska, with snowmachines used by most trappers to gain access to most species (Table 12).

CONCLUSIONS AND RECOMMENDATIONS

The Chena River beaver population remained above 0.7 caches/km of river during the reporting period; therefore, the management objective was not met. Further efforts to reduce the number of beaver and nuisance permits issued should be investigated. One possibility would be to solicit local residents to trap beaver during the regular season in chronic nuisance areas. Badger Slough could be excluded from the permit area because most chronic nuisance areas are on Badger Slough, and it is used mainly by private landowners, compared to the Chena River, which receives a high level of use from the general public. Areas outside the permit area in Unit 20B could afford an open water season to reduce nuisance beaver

problems near roadways and homes without the risk of overharvest to the high-density beaver population.

The objectives of using nuisance beaver permits to remove problem beavers and coordinating with the Department of Transportation to minimize dammed culverts and flooded roads were met.

The 3 lynx management objectives were met. We managed lynx seasons using the tracking harvest strategy and recommend no changes for the next reporting period. We estimated the annual sex and age of harvested lynx by examining carcasses from Units 20A and 20B. We conducted aerial track surveys in Units 20A and 20B to provide indices to trends in lynx population.

The 3 wolverine management objectives to manage wolverine harvests in Unit 20A based on estimates of sustainable yield were not met. We did not estimate wolverine density during this reporting period because surveys were not funded. Because funding for a wolverine density estimate is unlikely during the next reporting period, we recommend eliminating the current objective of estimating wolverine density and modeling harvestable surplus. We recommend managing wolverine harvest based on percentage of males in the harvest.

For other furbearer species, we did not detect any problems requiring management changes; therefore, we recommend no regulatory action at this time. Trappers will continue to be an important source of information. Communication with the trappers should be improved by 1) expanding the trapper questionnaire, 2) visiting traplines, 3) writing articles about furbearer research and management projects for the Alaska Trapper's Association magazine, 4) soliciting input regarding management issues, and 5) keeping trappers informed about issues affecting them.

We recommend the Management Goals and Objectives for the next reporting period be revised as follows. Management goals, objectives, and activities will be listed under separate headings.

MANAGEMENT GOALS

- Provide the greatest sustained opportunity for harvesting furbearers.
- Provide an opportunity for education, viewing, and photography of beaver on the lower Chena River and Badger Slough.
- Minimize problems caused by nuisance beaver with the aid of public harvest.

MANAGEMENT OBJECTIVES

Beaver

- Manage beaver in the lower Chena River portion of Unit 20B for an annual fall beaver colony density of 0.2 to 0.5 colonies/km of river.

Lynx

- Manage lynx according to a tracking harvest strategy.

Wolverine

- Manage for a 3-year mean annual harvest of >50% males by subunit for the Fairbanks Area.

MANAGEMENT ACTIVITIES

Beaver

- Conduct annual fall beaver cache surveys in the lower Chena River to estimate colony density, identify cache locations, and direct harvest.

- Issue nuisance beaver permits to remove problem beavers.

- Coordinate with the Alaska Trappers Association to incorporate their youth trapper mentoring program into the nuisance beaver permitting system.

- Coordinate with Department of Transportation and Public Facilities to minimize dammed culverts and flooded roads.

Lynx

- Estimate the annual sex and age of harvested lynx by examining carcasses from Units 20A and 20B.

- Conduct aerial track surveys in Units 20A and 20B to provide indices to trends in lynx and hare populations

Wolverine

- Estimate the annual sex ratio of harvested wolverine from sealing records.

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TABLE 1 Fall beaver cache surveys in the lower Chena River, downstream from the confluence with the Little Chena River. Unit 20B, 1999–2003

Date	Location[a]	Caches	Stream distance (km)	Density (caches/km)
1999				
5 Oct	Chena River	24	40	0.6
2000				
28 Sep	Chena River	20	40	0.5
2001				
2 Oct	Chena River	22	40	0.6
2002				
25 Sep	Chena River	24	40	0.6
2003				
15 Oct	Chena River	29	40	0.7

[a] Chena River downstream from confluence with Little Chena River.

TABLE 2 Postseason lynx track count data, Units 20A and 20B combined, regulatory years 1994–1995 through 2002–2003[a]

Year	Month	Miles	Lynx tracks observed	Tracks per mile	Percent of 1-mile segments with lynx tracks
1995	Feb	134	32	0.24	38
1996	Feb	405	69	0.17	13
1996	Mar	405	97	0.24	19
1999	Mar	399	137	0.34	22
2001	Mar	442	170	0.38	26

[a] Lack of adequate weather conditions precluded surveys in some years.

TABLE 3 Number of pelts sealed from selected furbearers in portions of Units 20 and 25C, regulatory years 1997–1998 through 2002–2003

Species	Unit	Regulatory year					
		1997–1998	1998–1999	1999–2000	2000–2001	2001–2002	2002–2003[a]
Beaver	20A	29	82	35	94	53	
	20B	599	405	230	354	442	
	20C	137	128	70	136	59	
	20F	11	3	0	5	6	
	25C	5	3	7	1	4	
Total		781	621	342	590	564	
Lynx	20A	168	260	440	628	295	118
	20B	251	371	388	527	299	48
	20C	186	173	135	267	156	83
	20F	50	29	56	84	18	44
	25C	29	2	43	18	8	3
Total		684	835	1062	1524	776	296
River Otter	20A	0	4	20	16	16	7
	20B	27	12	6	27	19	10
	20C	9	4	6	4	14	13
	20F	2	1	0	1	0	1
	25C	0	0	0	0	0	0
Total		38	21	32	48	49	31
Wolverine	20A	10	11	22	9	15	11
	20B	10	9	10	18	7	16
	20C	17	4	7	15	16	5
	20F	1	1	3	8	4	2
	25C	4	2	0	1	2	0
Total		42	27	42	51	44	34

[a] Sealing not required for beaver after Jun 2002.

TABLE 4 Number of carcasses examined and percentages of kittens, pregnancy, and litter size, Units 20A and 20B, regulatory years 1994–1995 through 2003–2004

	Regulatory year									
	1994–1995	1995–1996	1996–1997	1997–1998	1998–1999	1999–2000	2000–2001	2001–2002	2002–2003	2003–2004
Carcasses	20	21	25	130	208	250	365	197	31	27
Kittens	5%	19%	32%	33%	25%	20%	19%	8%	0%	0%
Adult females	35%	33%	36%	28%	27%	33%	37%	42%	52%	56%
Pregnant females	20%	14%	16%	19%	14%	14%	19%	19%	19%	33%
Adult males	60%	48%	32%	39%	48%	46%	45%	50%	48%	44%
Pregnancy rate	57%	43%	44%	69%	54%	43%	51%	46%	38%	60%
$\bar{x}$ Litter size[a]	1.8	1.9	1.2	2.0	1.8	1.7	1.6	1.0	0.5	1.5

[a] Mean litter size derived from carcasses collected in all of Units 20 and 12. Sample size was not large enough for robust analysis of litter size in Units 20A and 20B alone.

TABLE 5 Trapping seasons and bag limits for river otter, wolverine, coyote, marten, mink, weasel, fox, and muskrat within the Fairbanks Area (Units 20A, 20B, 20C, 20F, and 25C), 1983–2003

Species	Season dates	Season length (days)	Regulatory years[a]	Bag limit
River otter	1 Nov–15 Apr	167	1983–2003	No limit
Wolverine	1 Nov–31 Mar	152	1983–1986	No limit
	1 Nov–28 Feb	121	1987–2003	No limit
Coyote	1 Nov–31 Mar	152	1983–2003	No limit
Marten, Mink	1 Nov–28 Feb		1983–2003	No limit
Weasel, Fox, and Muskrat	1 Nov–10 Jun	223	1983–2003	No limit

[a] Regulatory year = 1 Jul through 30 Jun (e.g., regulatory year 1983 begins 1 Jul 1983 and ends 30 Jun 1984).

TABLE 6 Hunting seasons and bag limits for lynx, wolverine, red fox, coyote, and squirrel within the Fairbanks Area (Units 20A, 20B, 20C, 20F, and 25C), 1983–2003

Species	Season dates	Season length (days)	Regulatory year(s)	Bag limit
Lynx	1 Nov–31 Mar	152	1983–1986	2
	1 Nov–31 Dec	61 (Unit 20A)	1987	2
	1 Nov–15 Jan	76 (Units 20B, 20C, 20F, and 25C)	1987	2
	15 Dec–15 Jan	31	1988–1989	2
	1 Dec–31 Jan	62	1990–2003	2
Wolverine	1 Sep–31 Mar	213	1983–2003	1
Red Fox	1 Nov–15 Feb	117	1983–1990	2
	1 Sep–15 Mar	197	1991–2003	10
Coyote	1 Sep–30 Apr	243	1983–2001	2
	10 Aug–30 Apr	265	2002–2003	10
Squirrel	No closed season	365	1983–2003	No limit

[a] Regulatory year = 1 Jul through 30 Jun (e.g., regulatory year 1983 begins 1 Jul 1983 and ends 30 Jun 1984).

TABLE 7 Trapping seasons and bag limits for beaver within the Fairbanks Area (Units 20A, 20B, 20C, 20F, and 25C), 1983–2003[a,b]

Unit	Season dates	Season length (days)	Regulatory years	Bag limit
20A	1 Feb–15 Apr	75	1983–1991	25
	1 Nov–15 Apr	167	1992–1997	25
	1 Nov–15 Apr	167	1998–2003	No limit
20B[a]	1 Feb–15 Apr	75	1983–1984	25
	1 Nov–15 Apr	167	1985–1997	25
	1 Nov–15 Apr	167	1998–2003	No limit
20C	1 Nov–15 Apr	167	1983–1997	25
	1 Nov–15 Apr	167	1998–2003	No limit
20F	1 Nov–15 Apr	167	1983–1987	25
	1 Nov–15 Apr	167	1988–1997	50
	1 Nov–15 Apr	167	1998–2003	No limit
25C	1 Nov–15 Apr	167	1983–1997	25
	1 Nov–15 Apr	167	1998–2003	No limit

[a] A portion of the lower Chena River and Badger Slough has been closed to trapping without a permit since 1983.
[b] Regulatory year = 1 Jul through 30 Jun (e.g., regulatory year 1983 begins 1 Jul 1983 and ends 30 Jun 1984).

TABLE 8 Trapping seasons and bag limits for lynx within the central (Units 20A, 20B, and 20C east of Teklanika) and more remote (Units 20F, 25C, and remainder of 20C) portions of the Fairbanks Area, regulatory years 1995–1996 through 2002–2003

Regulatory year(s)[a]	Portion of Fairbanks Area	Season length	Season dates	Bag limit
1995–1996	central	31	15 Dec–15 Jan	No limit
1997	central	77	1 Dec–15 Feb	No limit
1998–1999	central	91	1 Dec–28 Feb	No limit
2000–2001	central	121	1 Nov–28 Feb	No limit
2002	central	62	1 Dec–31 Jan	No limit
1995–1996	remote	62	1 Dec–31 Jan	No limit
1997–2002	remote	121	1 Nov–28 Feb	No limit

[a] Regulatory year = 1 Jul through 30 Jun (e.g., regulatory year 1995 begins 1 Jul 1995 and ends 30 Jun 1996).

TABLE 9 Average furbearer pelt prices (U.S. dollars), compiled from North American Fur Auctions, regulatory years 2000–2001 through 2003–2004[a,b]

Species	Regulatory year 2000–2001	2001–2002	2002–2003	2003–2004
Beaver Western	20 (17)	17 (14)	15 (13)	19 (16)
Marten Section I	30 (26)	33 (28)	35 (30)	38 (32)
Mink Section I	13 (11)	11 (9)	11 (9)	15 (13)
Red fox Section I	26 (22)	29 (25)	26 (22)	22 (19)
Lynx Section I	54 (46)	76 (65)	105 (89)	158 (134)
Otter all	68 (58)	70 (60)	121 (103)	104 (88)
Wolverine all	175 (149)	211 (179)	166 (141)	165 (140)

[a] Average of Jan and Feb sales.
[b] Eighty-five percent of auction averages in parenthesis. Trappers pay about 15–20% in sales commissions and shipping.

TABLE 10 Beaver taken by permit in the Fairbanks Area during regulatory years 1999–2000 through 2003–2004

Regulatory year	Take in Lower Chena area[a] Nuisance	ATA[b]	Take outside Lower Chena area Nuisance
1999–2000	Unk	27	Unk
2000–2001	Unk	13	9
2001–2002	6	11	21
2002–2003	10	6	12
2003–2004	9	7	50

[a] Lower Chena area is the Chena River downstream from its confluence with the Little Chena River and Badger Slough downstream from Plack Road.
[b] Alaska Trappers Association's mentoring program for local youth.

TABLE 11 Wolverine harvest (number of pelts sealed) and percentage of males in the harvest, Units 20A, 20B, 20C, 20F, and 25C, regulatory years 1989–1990 through 2002–2003

Regulatory year	Sealed[a]	Males	% males[a]
1989–1990	19	10	53
1990–1991	22	13	59
1991–1992	44	26	59
1992–1993	20	15	75
1993–1994	43	35	81
1994–1995	33	17	51
1995–1996	16	12	75
1996–1997	38	21	55
1997–1998	42	24	60
1998–1999	27	18	78
1999–2000	42	31	76
2000–2001	49	36	73
2001–2002	41	29	71
2002–2003	30	23	77

[a] Excludes wolverines of unknown sex.

TABLE 12 Percent method of take and transportation used to harvest furbearers from Units 20A, 20B, 20C, 20F, and 25C, regulatory years 2000–2001 through 2002–2003

Regulatory year/Species	Method of take				Method of transportation			
	Ground shooting	Trapping	Snaring	Other/ Unk	Airplane	Dogsled/ snowshoe/skis	Snowmachine	Other/Unk/ Highway
2000–2001								
Beaver	0	17	83	0	0	18	81	1
Otter	0	78	22	0	0	11	80	9
Lynx	2	84	13	0	1	16	81	1
Wolverine	6	72	21	2	4	11	83	2
2001–2002								
Beaver	1	18	82	0	1	20	77	3
Otter	4	84	12	0	0	4	92	4
Lynx	7	80	13	0	1	20	76	4
Wolverine	9	73	18	0	0	9	91	0
2002–2003[a]								
Otter	0	90	10	0	13	6	77	7
Lynx	1	82	17	0	4	19	70	7
Wolverine	0	86	14	0	3	3	77	17

[a] Sealing not required for beaver after Jun 2002.

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNIT: 20D (5633 mi^2)

GEOGRAPHIC DESCRIPTION: Central Tanana Valley near Delta Junction

BACKGROUND

Furbearers are an important natural resource in Unit 20D. Species include beaver, coyote, lynx, marten, mink, muskrat, otter, red fox, red squirrel, weasel, wolverine, and wolf. Wolves are discussed in a separate management report. Both recreational and commercial trappers use the area. Competition for traplines and furbearers is intense. Much of the area is easily accessible from the road system and/or major rivers.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Provide for an optimal harvest of furbearers.
- Provide the greatest opportunity to participate in hunting and trapping furbearers.

MANAGEMENT OBJECTIVES AND ACTIVITIES

- Monitor furbearer population trends and annual harvests of furbearers using sealing documents, fur acquisition reports, fur export reports, trapper questionnaires, and trapper interviews.
    - Seal furs as they are harvested and presented for sealing and analyze harvest patterns.
    - Conduct trapper questionnaires and interviews as a basis for determining the status of various furbearer populations.
- Monitor trends in abundance of furbearer prey species by establishing snowshoe hare and small mammal trend surveys.
    - Conduct snowshoe hare surveys and small mammal trapline surveys to monitor prey abundance.

- Determine lynx reproductive status by purchasing and examining lynx carcasses and reproductive tracts as needed.

    - Purchase lynx carcasses from trappers and examine them for reproductive status as needed.

METHODS

We collected harvest data for beaver, lynx, otter, and wolverine by requiring trappers to have their furs sealed. Additional information collected at the time of sealing included: name of trapper; location of harvest; date of harvest; pelt measurements for beaver, lynx, and otter; sex of the furbearer except for beaver; method of take; and method of transportation used.

We mailed questionnaires to trappers in Unit 20D through the Statewide Furbearer Management Program. Trappers were asked to rate species abundance as scarce, common, or abundant. They were also asked to rate species population trends as fewer, same, or more than the previous year.

We purchased lynx carcasses from trappers for $10 each. Carcasses were kept frozen until they could be examined to determine age, sex, and reproductive status of females.

A snowshoe hare population trend index was completed in conjunction with a nongame breeding bird survey (BBS). The BBS was conducted by surveying the Richardson Highway from Milepost 256.2 to 230.4. It required the surveyor to stop at ½-mile intervals for 3 minutes at each stop. The survey was begun ½-hour before sunrise (approximately 3:00 AM) in late June or early July. All hares seen during the survey were counted.

Data were summarized by regulatory year (RY), which begins 1 July and ends 30 June (e.g., RY01 = 1 Jul 2001 through 30 Jun 2002).

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Lynx carcasses were purchased from Unit 20D trappers, with 131 purchased during RY00, 70 during RY01, and 14 carcasses purchased during RY02 (Table 1). Percent kittens among the necropsy samples decreased from 13% in RY00 to 0% in RY02 indicating very low reproductive rates among lynx in Unit 20D. Mean age increased from 2.3 years in RY00 to 2.9 in RY02. This data will be pooled with results from the remainder of Unit 20 to determine overall productivity and population trends.

Counts of snowshoe hares, obtained during the Donnelly Dome BBS indicate that the hare population was at a cyclic low during the report period. The number of hares counted during the survey peaked in 1999 at 85. The number of hares seen on the survey declined substantially from 43 in 2000 to 6 in 2001 and 2 in both 2002 and 2003, indicating that the hare population has likely reached the low portion of the population cycle in this portion of Unit 20D (Table 2).

Furbearer and prey population abundance and trends based on responses to trapper questionnaires during RY00 and RY01 of this reporting period were reviewed and discussed in Scott and Kephart (2002) and Peltier and Scott (2003).

Population Size

Population size was unknown for furbearers in Unit 20D.

Population Composition

Population composition was unknown for furbearers in Unit 20D.

Distribution and Movements

No work was performed to determine furbearer distribution and movements during this report period.

MORTALITY

Harvest

Season and Bag Limit. Unit 20D furbearer seasons and bag limits are listed in Table 3.

Alaska Board of Game Actions and Emergency Orders. The lynx trapping season was adjusted annually by emergency orders issued by the department as part of a lynx harvest tracking system.

In October 1997 an emergency order was issued to correct a mistake in the Alaska Administrative Code and the trapping regulation book that erroneously listed the opening date for trapping mink, weasel, and land otter as 10 November instead of the correct date of 1 November. The season for land otter was corrected during the spring 1998 Board of Game meeting to begin on 1 November. Mink and weasel seasons were adjusted by emergency order in subsequent years to begin 1 November. At the March 2002 meeting, the board adjusted mink and weasel seasons to begin 1 November.

In January 2002 the Board of Game changed sealing regulations so that sealing of beavers was no longer required in Unit 20D after 1 July 2002.

In March 2002 the Board of Game lengthened the coyote hunting season to begin 10 August and changed the bag limit to 10 during the entire hunting season.

Hunter/Trapper Harvest. Estimates of Unit 20D furbearer harvest are available for species that were sealed.

The RY00 through RY02 beaver harvest averaged 17 beaver/year (range = 1–27) (Table 4). This is a decrease from the mean harvest of 30/year during the last reporting period, and is substantially lower than the high harvest reported in RY86 and RY87. Juveniles represented 21% of the harvest during this reporting period.

Reported lynx harvest increased this reporting period, averaging 169/year (range = 35–257) compared to an average harvest of 142/year (range = 122–160) during the last reporting

period (Table 4). The increased harvest was due to higher numbers of lynx, longer trapping seasons, and greater interest by trappers to trap lynx in RY00 and RY01. During RY02, harvest was substantially lower (35), likely due to decreased population and a shortened trapping season.

Otter harvest during this reporting period was typically low, with an average harvest of 5 otter/year (range = 2–7), compared to an average harvest of 4 otters/year during the last reporting period (Table 4).

Wolverine harvest during this reporting period was variable and did not vary greatly from previous years. Harvest ranged from a high of 22 in RY00 to a low of 8 in both RY01 and RY02 (Table 4).

Harvest Chronology. The majority of beavers were harvested in February during this reporting period (Table 5). During the previous 20 years, most beaver harvest has occurred in March.

Lynx were primarily captured during the legal trapping season, which included November–February during RY00 and RY01 and December–January during RY02 (Table 3). Lynx were caught continuously during the trapping season with no clear trends in chronology during RY00–RY01. During RY02, 68% of the lynx harvest occurred in December. Because the season was only open for 2 months, and the lynx population was low, trappers may have focused their effort during the first month in RY02 (Table 5).

There was no clear pattern in otter or wolverine harvest; both species were captured randomly throughout the season (Table 5).

Method of Take. Traps and snares were the most commonly used method for capturing all furbearers in Unit 20D during this reporting period (Table 4).

Transport Methods. Snowmachines continued to be the most commonly used means of transportation for beaver, lynx, otter, and wolverine trappers in Unit 20D (Table 6).

Other Mortality

Rates of natural mortality were unknown for furbearers in Unit 20D.

HABITAT

Assessment and Enhancement

Postlogging scarification with a dozer blade was conducted in September 2002 on a 25-acre timber sale along the Tanana River east of Delta. Assessment is ongoing, and we expect this treatment will enhance furbearer prey habitat. Fort Greely shearbladed about 150 acres of aspen forest in March 2003 to enhance wildlife habitat. The resulting dense young aspen forest provides good habitat for hare and grouse, furbearer prey species.

CONCLUSIONS AND RECOMMENDATIONS

Furbearer management objectives were met by monitoring population trends and harvest through sealing selected furs and conducting trapper questionnaires. The trend in beaver harvest was decreasing and remained below the high harvest of RY86 and RY87. Lynx harvest increased in RY00–RY01 due to increased population size, longer trapping seasons, and greater trapping pressure, and decreased considerably in RY02 due to a sharp population decline. The trend in snowshoe hare population size declined during this reporting period, indicating that lynx populations are at a low point and will likely begin increasing in the near future. Reported harvest of otters and wolverines was variable. No changes in furbearer trapping or hunting regulations are recommended at this time other than annual adjustments in the lynx season via the harvest tracking strategy.

Management objectives and activities are revised as follows for the next reporting period:

MANAGEMENT OBJECTIVES AND ACTIVITIES

- Manage furbearer populations to maintain populations at levels sufficient to provide for sustained consumptive and nonconsumptive uses.
    - Seal furs as they are harvested and presented for sealing and analyze harvest patterns.
    - Conduct trapper questionnaires and interviews as a basis for determining the status of various furbearer populations.
    - Monitor furbearer population trends and annual harvest using sealing documents, fur acquisition reports and fur export reports.
    - Monitor trends in abundance of furbearer prey species by establishing snowshoe hare and small mammal trend surveys.
    - Conduct snowshoe hare surveys to monitor prey abundance.
- Manage lynx harvest with a tracking harvest strategy whereby seasons are most liberal when lynx are abundant and most conservative when lynx are scarce.
    - Purchase lynx carcasses from trappers and examine them for reproductive status as needed.
    - Adjust lynx season dates and bag limits annually to reflect current population trend.

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TABLE 1 Unit 20D lynx carcass data, regulatory years 1994–1995 through 2002–2003

Regulatory year	No. male (%)	No. female (%)	No. adult (%)	No. kittens (%)	$\bar{x}$ Age of adults	$\bar{x}$ No. kittens per adult females	*n*
1994–1995	4 (50)	4 (50)	7 (88)	1 (13)	4	4.0	8
1995–1996	5 (56)	4 (44)	6 (67)	2 (22)	n/a	n/a	9
1996–1997	0 (0)	0 (0)	0 (0)	0 (0)	n/a	n/a	0
1997–1998	17 (49)	18 (51)	19 (54)	16 (46)	2.3	2.2	35
1998–1999	34 (55)	28 (45)	48 (77)	14 (23)	1.4	1.9	62
1999–2000	47 (57)	35 (43)	60 (73)	21 (26)	1.5	2.8	82
2000–2001	51 (38)	63 (48)	114 (87)	17 (13)	2.3	0.3	131
2001–2002	36 (51)	34 (48)	70 (100)	0 (0)	2.3	0.0	70
2002–2003	10 (71)	4 (28)	14 (100)	0 (0)	2.9	0.0	14

TABLE 2 Snowshoe hare numbers seen during the Donnelly Dome Breeding Bird Survey, Unit 20D, 1995–2003

Year	Number of hares
1995	4
1996	24
1997	46
1998	73
1999	85
2000	43
2001	6
2002	2
2003	2

TABLE 3 Furbearer trapping and hunting seasons in Unit 20D, regulatory years 2000–2001 through 2002–2003

Species/	Trapping		Hunting	
Regulatory year	Trapping season	Bag limit	Hunting season	Bag limit
Beaver				
2000–2001	1 Nov–15 Apr	25	No open season	
2001–2002	1 Nov–15 Apr	25	No open season	
2002–2003	1 Nov–15 Apr	25	No open season	
Coyote				
2000–2001	1 Nov–31 Mar	No limit	1 Sep–30 Apr	2
2001–2002	1 Nov–31 Mar	No limit	1 Sep–30 Apr	10, no more than 2 before 1 Oct
2002–2003	1 Nov–31 Mar	No limit	10 Aug–30 Apr	10
Lynx				
2000–2001	1 Nov–28 Feb	No limit	1 Dec–31 Jan	2
2001–2002	1 Nov–28 Feb	No limit	1 Dec–31 Jan	2
2002–2003	1 Dec–31 Jan	No limit	1 Dec–31 Jan	2
Marten				
2000–2001	1 Nov–28 Feb	No limit	No open season	
2001–2002	1 Nov–28 Feb	No limit	No open season	
2002–2003	1 Nov–28 Feb	No limit	No open season	
Mink				
2000–2001	1 Nov–28 Feb	No limit	No open season	
2001–2002	1 Nov–28 Feb	No limit	No open season	
2002–2003	1 Nov–28 Feb	No limit	No open season	
Muskrat				
2000–2001	1 Nov–10 Jun	No limit	No open season	
2001–2002	1 Nov–10 Jun	No limit	No open season	
2002–2003	1 Nov–10 Jun	No limit	No open season	

TABLE 3 continued

Species/	Trapping		Hunting	
Regulatory year	Trapping season	Bag limit	Hunting season	Bag limit
Otter				
2000–2001	1 Nov–15 Apr	No limit	No open season	
2001–2002	1 Nov–15 Apr	No limit	No open season	
2002–2003	1 Nov–15 Apr	No limit	No open season	
Red Fox				
2000–2001	1 Nov–28 Feb	No limit	1 Sep–15 Mar	10, no more than 2 before 1 Oct
2001–2002	1 Nov–28 Feb	No limit	1 Sep–15 Mar	10, no more than 2 before 1 Oct
2002–2003	1 Nov–28 Feb	No limit	1 Sep–15 Mar	10, no more than 2 before 1 Oct
Red Squirrel				
2000–2001	No closed season	No limit	No closed season	No limit
2001–2002	No closed season	No limit	No closed season	No limit
2002–2003	No closed season	No limit	No closed season	No limit
Weasel				
2000–2001	1 Nov–28 Feb	No limit	No open season	
2001–2002	1 Nov–28 Feb	No limit	No open season	
2002–2003	1 Nov–28 Feb	No limit	No open season	
Wolverine				
2000–2001	1 Nov–28 Feb	No limit	1 Sep–31 Mar	1
2001–2002	1 Nov–28 Feb	No limit	1 Sep–31 Mar	1
2002–2003	1 Nov–28 Feb	No limit	1 Sep–31 Mar	1

TABLE 4 Unit 20D beaver, lynx, otter, and wolverine harvest, regulatory years 1986–1987 through 2002–2003

Regulatory year	Reported harvest: Sex			Reported harvest: Age			Method of take				Total harvest
	M	F	Unk	Juv[a]	Adults	Unk	Trap/snare	Shot	L&S[b]	Unk	
Beaver											
1986–1987			70	13	57	0	64	0	0	6	70
1987–1988			85	21	64	0	75	3	0	7	85
1988–1989			34	2	22	10	25	0	0	9	34
1989–1990			18	1	17	0	18	0	0	0	18
1990–1991			23	1	22	0	21	0	0	2	23
1991–1992			35	2	33	0	35	0	0	0	35
1992–1993			6	0	6	0	6	0	0	0	6
1993–1994			12	2	10	0	12	0	0	0	12
1994–1995			37	8	24	5	34	3	0	0	37
1995–1996			15	2	13	0	15	0	0	0	15
1996–1997			18	6	12	0	18	0	0	0	18
1997–1998			40	3	37	0	40	0	0	0	40
1998–1999			16	1	15	0	7	0	0	9	16
1999–2000			34	13	21	0	34	0	0	0	34
2000–2001			27	3	24	0	26	1	0	0	27
2001–2002			15	6	9	0	13	0	0	2	15
2002–2003[c]			1	0	1	0	1	0	0	0	1
Lynx											
1986–1987				4	16	0	20	0	0	0	20
1987–1988				4	13	0	17	0	0	0	17
1988–1989				1	9	0	8	2	0	0	10
1989–1990				0	4	0	4	0	0	0	4
1990–1991				3	19	1	23	0	0	0	23
1991–1992				9	38	1	45	1	0	2	48
1992–1993				16	79	1	85	6	0	9	96
1993–1994				5	35	0	40	0	0	0	40
1994–1995				7	26	2	33	0	0	2	35
1995–1996				12	14	0	26	0	0	0	26
1996–1997				6	37	4	46	0	0	1	47
1997–1998				52	91	1	143	1	0	0	144
1998–1999				22	86	14	122	0	0	0	122
1999–2000				37	120	3	145	4	0	11	160

TABLE 4 continued

Regulatory year	Reported harvest										Total harvest
	Sex			Age			Method of take				
	M	F	Unk	Juv[a]	Adults	Unk	Trap/snare	Shot	L&S[b]	Unk	
Lynx											
2000–2001				55	190	12	234	11	0	12	257
2001–2002				29	164	23	202	11	0	3	216
2002–2003				3	32	0	35	0	0	0	35
Otter											
1986–1987	3	2	1				6	0	0	0	6
1987–1988	2	1	0				2	1	0	0	3
1988–1989	2	0	4				6	0	0	0	6
1989–1990	0	0	0				0	0	0	0	0
1990–1991	0	1	0				1	0	0	0	1
1991–1992	2	1	0				3	0	0	0	3
1992–1993	0	0	0				0	0	0	0	0
1993–1994	1	0	2				1	0	0	2	3
1994–1995	2	1	2				5	0	0	0	5
1995–1996	0	2	0				2	0	0	0	2
1996–1997	0	1	1				2	0	0	0	2
1997–1998	3	0	1				4	0	0	0	4
1998–1999	0	0	4				4	0	0	0	4
1999–2000	0	1	2				3	0	0	0	3
2000–2001	1	0	1				2	0	0	0	2
2001–2002	4	1	1				6	0	0	0	6
2002–2003	0	0	7				7	0	0	0	7

TABLE 4 continued

Regulatory year	Reported harvest: Sex M	Sex F	Sex Unk	Age Juv[a]	Age Adults	Age Unk	Method of take: Trap/snare	Shot	L&S[b]	Unk	Total harvest
Wolverine											
1986–1987	5	0	1				5	1	0	0	6
1987–1988	3	3	0				6	0	0	0	6
1988–1989	8	6	1				15	0	0	0	15
1989–1990	3	2	2				6	1	0	0	7
1990–1991	5	1	1				7	0	0	0	7
1991–1992	9	3	0				12	0	0	0	12
1992–1993	3	3	0				6	0	0	0	6
1993–1994	2	2	5				9	0	0	0	9
1994–1995	5	7	0				12	0	0	0	12
1995–1996	0	2	0				2	0	0	0	2
1996–1997	3	2	1				6	0	0	0	6
1997–1998	7	5	1				13	0	0	0	13
1998–1999	3	0	0				3	0	0	0	3
1999–2000	3	3	0				6	0	0	0	6
2000–2001	11	7	4				21	1	0	0	22
2001–2002	5	2	1				7	1	0	0	8
2002–2003	5	3	0				6	2	0	0	8

[a] Beavers ≤52"; lynx ≤35" in length.

[b] L&S (land and shoot) refers to animals taken by hunters the same day hunters were airborne.

[c] Beaver not required to be sealed beginning regulatory year 2002–2003.

TABLE 5 Unit 20D beaver, lynx, otter, and wolverine harvest chronology percent by month(s), regulatory years 1986–1987 through 2002–2003

Species/	Harvest chronology percent by month(s)							
Regulatory year	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr	Unk
Beaver								
1986–1987	0	1	11	6	16	56	9	0
1987–1988	2	2	28	1	4	45	15	0
1988–1989	0	0	12	0	18	47	9	0
1989–1990	0	11	6	0	33	39	11	0
1990–1991	0	9	9	0	0	74	0	0
1991–1992	0	0	3	0	6	49	43	0
1992–1993	0	33	0	17	17	33	0	0
1993–1994	0	17	0	8	0	42	33	0
1994–1995	8	0	5	14	5	32	35	0
1995–1996	0	20	27	7	0	47	0	0
1996–1997	0	11	28	0	6	56	0	0
1997–1998	0	0	0	5	0	55	40	5
1998–1999	0	0	0	0	0	25	19	56
1999–2000	0	0	18	6	0	68	9	0
2000–2001	0	0	11	41	37	7	0	4
2001–2002	0	0	0	20	27	40	0	13
2002–2003	0	0	0	0	100	0	0	0
Lynx								
1986–1987	0	0	50	50	0	0	0	0
1987–1988	0	0	71	29	0	0	0	0
1988–1989	0	0	40	40	10	10	0	0
1989–1990	0	0	25	75	0	0	0	0
1990–1991	0	4	21	71	4	0	0	0
1991–1992	0	4	48	46	0	0	0	0
1992–1993	0	4	42	42	7	0	0	0
1993–1994	0	0	53	48	0	0	0	0
1994–1995	0	0	54	46	0	0	0	0
1995–1996	0	0	50	50	0	0	0	0
1996–1997	0	6	53	34	0	0	0	6
1997–1998	0	1	35	39	24	2	0	0
1998–1999	0	0	24	31	45	0	0	0
1999–2000	0	0	36	33	31	0	0	0
2000–2001	0	21	32	29	18	0	0	1
2001–2002	1	18	32	33	16	1	0	1
2002–2003	0	0	69	29	3	0	0	0
Otter								
1986–1987	0	0	0	60	40	0	0	0
1987–1988	0	0	33	0	0	67	0	0
1988–1989	0	0	0	67	17	17	0	0
1989–1990	0	0	0	0	0	0	0	0
1990–1991	0	0	0	0	100	0	0	0
1991–1992	0	0	0	100	0	0	0	0
1992–1993	0	0	0	0	0	0	0	0
1993–1994	0	0	0	33	67	0	0	0
1994–1995	0	0	40	40	0	0	20	0
1995–1996	0	0	0	0	100	0	0	0
1996–1997	0	0	50	0	50	0	0	0

TABLE 5 continued

Species/	Harvest chronology percent by month(s)							
Regulatory year	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr	Unk
Otterr								
1997–1998	0	25	0	25	0	50	0	0
1998–1999	0	50	25	25	0	0	0	0
1999–2000	0	0	67	33	0	0	0	0
2000–2001	0	50	50	0	0	0	0	0
2001–2002	0	0	17	0	83	0	0	0
2002–2003	0	0	43	43	0	0	14	0
Wolverine								
1986–1987	17	0	17	33	17	17	0	0
1987–1988	0	0	17	83	0	0	0	0
1988–1989	0	7	33	47	7	0	0	0
1989–1990	0	0	0	14	29	57	0	0
1990–1991	0	0	14	29	57	0	0	0
1991–1992	17	25	17	42	0	0	0	0
1992–1993	17	33	17	33	0	0	0	0
1993–1994	11	67	22	0	0	0	0	0
1994–1995	0	0	17	42	42	0	0	0
1995–1996	0	0	0	33	67	0	0	0
1996–1997	0	0	17	0	67	17	0	0
1997–1998	0	0	15	23	54	8	0	0
1998–1999	0	0	0	67	33	0	0	0
1999–2000	0	0	50	17	17	17	0	0
2000–2001	5	5	5	3	50	0	0	0
2001–2002	0	0	0	13	75	13	0	0
2002–2003	0	0	13	0	63	25	0	0

TABLE 6 Unit 20D harvest percentage by transport method[a], regulatory years 1986–1987 through 2002–2003

Species/ Regulatory year	Harvest percent by transport method									
	Airplane	Dogsled	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway vehicle	Skis, Snowshoes	Other	Unk
Beaver										
1986–1987	0	19	6	19	43	0	6	9		0
1987–1988	0	2	6	0	51	0	33	8		0
1988–1989	0	0	26	0	59	0	12	3		0
1989–1990	0	0	0	0	0	0	17	83[a]		0
1990–1991	0	26	0	0	65	0	0	9		0
1991–1992	0	0	9	0	91	0	0	0		0
1992–1993	0	0	0	0	100	0	0	0		0
1993–1994	0	0	58	0	33	0	8	0		0
1994–1995	3	0	35	0	54	0	8	0		0
1995–1996	0	0	0	0	60	0	40	0		0
1996–1997	0	6	0	0	72	0	22	0		0
1997–1998	0	0	35	0	60	0	0	0	5	0
1998–1999	0	0	19	0	25	0	0	0	56	0
1999–2000	0	0	15	0	79	0	0	6	0	0
2000–2001	0	0	4	0	96	0	0	0	0	0
2001–2002	0	0	0	0	87	0	0	0	13	0
2002–2003	0	0	0	0	100	0	0	0	0	0
Lynx										
1986–1987	10	0	0	5	85	0	0	0		0
1987–1988	6	6	0	0	78	0	12	0		0
1988–1989	0	0	0	0	80	0	20	0		0
1989–1990	0	0	0	0	100	0	0	0		0
1990–1991	0	0	0	0	100	0	0	0		0
1991–1992	0	2	0	0	71	0	17	6		4
1992–1993	0	1	0	4	66	4	10	6		9
1993–1994	0	0	0	0	73	5	23	0		0
1994–1995	0	0	0	0	63	0	26	9		3
1995–1996	0	4	0	0	92	0	0	4		0
1996–1997	0	2	0	2	64	0	28	4		0
1997–1998	0	1	0	0	85	0	14	1	0	0
1998–1999	0	0	0	0	75	0	21	3	0	0
1999–2000	3	0	0	0	81	0	10	1	5	0

TABLE 6 continued

Species/ Regulatory year	Harvest percent by transport method									
	Airplane	Dogsled	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway vehicle	Skis, Snowshoes	Other	Unk
Lynxr										
2000–2001	4	0	0	0	66	4	14	3	7	0
2001–2002	1	0	0	0	74	2	14	7	3	0
2002–2003	0	0	0	3	57	0	31	9	0	0
Otter										
1986–1987	0	0	0	0	83	17	0	0		0
1987–1988	0	0	0	0	100	0	0	0		0
1988–1989	0	0	0	0	100	0	0	0		0
1989–1990	0	0	0	0	100	0	0	0		0
1990–1991	0	0	0	0	0	0	0	0		1
1991–1992	0	0	0	0	67	0	0	33		0
1992–1993	0	0	0	0	0	0	0	0		0
1993–1994	0	0	0	0	33	0	0	0		67
1994–1995	0	0	20	80	0	0	0	0		
1995–1996	0	0	0	0	100	0	0			
1996–1997	0	0	0	0	100	0	0			
1997–1998	0	0	0	0	75	0	0	25	0	0
1998–1999	0	0	0	0	50	0	25	25	0	0
1999–2000	0	0	67	0	33	0	0	0	0	0
2000–2001	0	0	0	0	100	0	0	0	0	0
2001–2002	0	0	0	0	100	0	0	0	0	0
2002–2003	0	0	0	0	100	0	0	0	0	0
Wolverine										
1986–1987	17	33	0	0	33	17	0	0		0
1987–1988	0	0	0	0	100	0	0	0		0
1988–1989	0	0	0	0	87	0	0	13		0
1989–1990	0	29	0	0	43	0	0	29		0
1990–1991	14	0	0	0	57	0	0	29		0
1991–1992	33	0	0	0	58	0	8	0		0
1992–1993	17	0	0	0	83	0	0	0		0
1993–1994	0	0	0	0	78	0	0	22		0

TABLE 6 continued

Species/ Regulatory year	Harvest percent by transport method									
	Airplane	Dogsled	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway vehicle	Skis, Snowshoes	Other	Unk
Wolverine										
1994–1995	17	8	0	0	75	0	0	0		0
1995–1996	0	0	0	0	100	0	0	0		0
1996–1997	0	0	0	0	100	0	0	0		0
1997–1998	0	0	0	0	100	0	0	0	0	0
1998–1999	0	0	0	0	67	0	33	0	0	0
1999–2000	0	0	0	0	100	0	0	0	0	0
2000–2001	5	0	0	0	96	0	0	0	0	0
2001–2002	0	0	0	0	100	0	0	0	0	0
2002–2003	0	0	0	0	63	25	13	0	0	0

[a] Transportation codes were revised in 1989; however, some errors may exist due to use of some old sealing certificates.

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June2003

LOCATION

GAME MANAGEMENT UNIT: 21 (43,925 mi^2)

GEOGRAPHIC DESCRIPTION: Yukon River drainage above Paimuit to Tozitna River including Koyukuk River to Dulbi Slough

BACKGROUND

Furbearers have traditionally been an important resource in Unit 21. They supply food, clothing, and trade items. Furbearer populations have always been sufficient to meet local demand but are subject to cycles of abundance or scarcity. Snowshoe hares are the primary prey species for lynx, red fox, and wolverine, but increases in ptarmigan and grouse numbers can also support increased numbers of these furbearers. Years of good microtine production are also important to some of these furbearers. The innumerable lakes, rivers, and streams found in Unit 21 support a large number of water-dependent furbearers such as beaver, mink, river otter and muskrat. The following species found in Unit 21 are listed in the order of their economic importance: marten, beaver, lynx, wolverine, wolf, red fox, mink, river otter, and muskrat. Wolves are discussed in detail in a separate management report. Coyotes are rare. Weasels and red squirrels are common but not usually targeted by trappers.

MANAGEMENT DIRECTION

Data were summarized by regulatory year (RY), which begins 1 July and ends 30 June (e.g., RY00 = 1 Jul 2000 through 30 Jun 2001).

MANAGEMENT GOALS

- Protect, maintain, and enhance the furbearer populations and their habitats in concert with other components of the ecosystem.

- Provide for continued use of furbearers by local Alaska residents who have customarily and traditionally depended on these populations.

MANAGEMENT OBJECTIVE

- Maintain populations of furbearers that will support a minimum level of harvest equal to the mean of the harvest of each species from RY89 through RY99.

MANAGEMENT ACTIVITIES

- Monitor harvest through fur sealing records, fur acquisition reports, and fur export permits.

- Monitor furbearer populations by reconnaissance surveys, trapper questionnaires, and trapper interviews.

METHODS

We monitored harvest through sealing records, fur export reports, fur acquisition reports, and personal interviews. We interviewed some trappers about furbearer abundance, reviewed trapper questionnaires, and gathered incidental data during surveys of other species and other field activities. Beaver cache surveys were conducted in the fall by the Koyukuk–Nowitna National Wildlife Refuge (NWR) staff to determine the relative number of active lodges on the Koyukuk, Nowitna, and Northern Innoko refuges.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

During this report period, beavers and river otters were found throughout the unit in suitable habitat. Beaver populations were high and stable. Koyukuk–Nowitna NWR cache surveys in 1991 counted 280 caches (1.3/mi^2) on the Northern Innoko NWR. The number of active caches counted in 1999 declined to 170 (0.8/mi^2). A survey in 1991 on the Koyukuk NWR counted 291 active caches (0.9/mi^2). That number increased to 351 active caches (1.1/mi^2) counted in 2000. A survey conducted on the Nowitna NWR in 1993 counted 344 active caches (0.6/mi^2), while in 2001 the count was down to 265 active caches (0.5/mi^2) (U.S. Fish and Wildlife Service, unpublished data).

Muskrat numbers were still very low at the beginning of this report period; however, an increase in the number of push-ups occurred beginning in RY02. Numerous hypotheses were suggested for the initial decline, including loss of habitat as a result of pond succession, predation by pike and disease. Reports of increasing numbers of muskrats in Unit 21 appeared to be consistent with reports of increases that also occurred in eastern Interior Alaska at the beginning of the reporting period. Otters were common throughout the unit, and their numbers appear stable.

Lynx were in the high phase of their 10-year cycle during the RY00 season, but were already declining by RY02. Hare densities appeared to increase most in the mountainous terrain with deciduous forests. These areas subsequently attracted higher concentrations of lynx. Red foxes were numerous throughout the unit and appeared stable or slightly increasing. Coyotes were rare in Unit 21, with only a few observations and incidental harvest. Coyotes were reported near the communities of Ruby, Galena, and Nulato. Populations of lynx, fox, and coyotes probably benefited from the high number of ptarmigan from RY99–RY01.

Marten populations were moderate in Units 21B and 21A and the western and southern portion of Unit 21D but low in the northern portion of Unit 21D and Unit 21C during this reporting period. Most trappers reported that marten were absent at various times during the trapping season. These apparent absences were temporary and were caused either by local migrations or by restricted movement of the animals. Some trappers reported signs of increasing marten numbers in portions of Unit 21 toward the end of the reporting period. Mink populations were low in the area and were probably associated with numbers of muskrats. Weasels occur throughout the unit but at relatively low numbers. Mustelids probably benefited from the increase in voles and shrews in RY02.

Hare populations were low throughout the unit in RY00 and RY02. Willow ptarmigan were at very high numbers in RY00 and RY01. Grouse populations appeared higher in RY99. Microtine species were very abundant in RY02.

Distribution and Movements

All furbearer species were found throughout the unit in the areas of suitable habitat.

MORTALITY

Harvest

Trapping Seasons and Bag Limits.

Species	Season	Bag limit
Beaver	1 Nov–10 Jun	No limit
Coyote	1 Nov–31 Mar	No limit
Lynx	1 Nov–28 Feb	No limit
Marten	1 Nov–28 Feb	No limit
Mink and Weasel	1 Nov–28 Feb	No limit
Muskrat	1 Nov–10 Jun	No limit
Red Fox	1 Nov–28 Feb	No limit
River Otter	1 Nov–15 Apr	No limit
Wolverine	1 Nov–31 Mar	No limit

Hunting Seasons and Bag Limits.

Species	Season	Bag limit
Coyote (RY00–RY01)	1 Sep–30 Apr	10, no more than 2 before 1 Oct
Coyote (RY02)	10 Aug–30 Apr	
Red Fox	1 Sep–15 Mar	
Lynx	1 Nov–28 Feb	
Wolverine	1 Sep–31 Mar	

Alaska Board of Game Actions and Emergency Orders. Since RY86, trapping seasons and bag limits remained the same for marten, coyote, lynx, fox, mink, muskrat, otter, and wolverine. In 2002 the Board of Game changed the hunting season for coyotes to open on 10 August instead of 1 September and the limit of 2 coyotes before 1 October was dropped. In RY02 the requirement for sealing beaver was eliminated.

Trapper Harvest.

Beaver — During the report period, harvest of beavers from the unit was low (Table 1), compared with harvests of over 1000 during the late 1980s. The overall catch was only a fraction of the harvestable surplus, mostly attributable to low pelt prices. Harvest reporting of beavers is lower than actual harvest for several reasons. Harvest is often for food, so fur handling has a lower priority and pelts never enter the fur market. Some furs are used for personal use. Finally, with the elimination of the sealing requirement for beavers, harvest is not as well documented through fur acquisition and export reporting mechanisms because all furs harvested are not sold or exported, and some trappers do not complete a fur export permit when shipping furs outside the state for tanning.

Kit harvest was low mainly because of trapping techniques (Table 2). Experienced trappers used snares with large diameter openings and placed their sets outside food caches, away from lodges. Trapper effort was greatest during spring (Table 3).

Lynx — Lynx populations reached the low point of their 10-year cycle during the mid 1980s. Populations peaked during RY91 and then declined. Lynx numbers peaked again at the beginning of this reporting period, and harvest increased (Tables 1 and 2). However, trapper effort was still relatively minimal because of moderate pelt prices. The value of lynx pelts was stable at moderate levels, but still low compared to prices they received during the late 1970s and 1980s.

Otter — Although otters were abundant in the unit, harvest remained relatively low (Tables 1 and 2). Pelt prices for otters harvested in the Interior improved beginning in RY02, but trapping effort was still minimal. Most harvest occurred when otters were incidentally taken in beaver sets, and therefore, harvest levels are consistent with beaver trapping efforts.

Wolverine — Harvest of wolverines was stable (Tables 1 and 2). Wolverine fur prices were stable at a reasonably high level during the reporting period.

Other Species — Marten harvest during the mid 1990s was greatly reduced due to low trapping effort and low prices. Pelt prices for marten were strong throughout the reporting period and resulted in consistently good levels of harvest (Table 4). Fox populations were high; however, pelt prices were low and trappers had little incentive to pursue this species. Coyotes were scarce, and very few were caught each year. Wolves were abundant in the unit, and wolf predation on coyotes may keep coyote numbers low. Mink were a minor furbearer in the unit found in low densities. Pelt prices for mink harvested in the Interior were low, so few trappers targeted them.

Trapping Conditions — Weather was moderate for the 3 years of the reporting period. Snowfall was normal and access was not limited. An extended period of warm and rainy

weather in RY02 at the beginning of the season did temporarily delay trapping activities. Some trappers reported problems maintaining traps in working condition during the freezing and thawing cycles that year. Overall, trapping conditions were adequate for most trappers.

CONCLUSIONS AND RECOMMENDATIONS

With the exception of coyotes and muskrats, furbearer populations throughout the unit were stable or increasing and were at moderate-to-high levels. We were not aware of any areas with excessive harvest. As long as fur prices remain depressed, it is doubtful any significant increases in harvest will occur for any of the species. I recommend continuing the present seasons and bag limits. Marten and lynx seasons should be reviewed annually, but overharvest is unlikely as long as fur prices are depressed for these species. Population trend information for all species can be gathered from trapper questionnaires, discussions with local fish and game advisory committees, and trapper interviews.

The goals to 1) protect, maintain, and enhance the furbearer populations and their habitats in concert with other components of the ecosystem and 2) provide for continued use of furbearers by local Alaska residents who have customarily and traditionally depended on these populations were met.

The objective to maintain populations of furbearers that will support a minimum level of harvest equal to the mean of the harvest of each species from RY89 through RY99 was met. Mean harvest during the RY00–RY02 report period fluctuated, but none of the furbearer populations declined to levels that would not allow for those minimal levels of harvest. The objective for the next report period will be to maintain populations of furbearers that will support a minimum level of harvest equal to the mean of the harvest of each species over the last 10 regulatory years.

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TABLE 1 Unit 21 reported harvest of sealed furbearer species, regulatory years 1992–1993 through 2002–2003[a]

Regulatory year	Species			
	Beaver	Lynx	Otter	Wolverine
1992–1993	218	26	10	8
1993–1994	270	40	17	39
1994–1995	417	22	36	27
1995–1996	218	4	22	11
1996–1997	564	35	49	31
1997–1998	508	30	25	22
1998–1999	263	31	10	18
1999–2000	268	78	16	27
2000–2001	272	121	8	34
2001–2002	290	106	26	25
2002–2003	27	56	38	38

[a] Sealing requirement for beaver eliminated in regulatory year 2002–2003.

TABLE 2 Unit 21 beaver, lynx, otter, and wolverine harvest regulatory years 1992–1993 through 2002–2003[a]

Regulatory year	Reported harvest						Estimated harvest		Method of take					Successful trappers/hunters
	M	F	Unk	Juv[b]	Adults	Unk	Unreported	Illegal	Trap/Snare	Shot	(L&S)	Unk	Total	
Beaver														
1992–1993	--	--	--	79	139	0	0	0	218	0	--	0	218	16
1993–1994	--	--	--	38	232	0	0	0	270	0	--	0	270	30
1994–1995	--	--	--	55	362	0	0	0	388	0	--	29	417	29
1995–1996	--	--	--	10	207	11	0	0	176	31	--	21	228	23
1996–1997	--	--	--	26	537	1	0	0	564	0	--	0	564	45
1997–1998	--	--	--	10	498	0	0	0	508	0	--	0	508	45
1998–1999	--	--	--	25	238	0	0	0	253	0	--	10	263	25
1999–2000	--	--	--	35	233	0	0	0	251	0	--	17	268	27
2000–2001	--	--	--	13	257	2	0	0	189	33	--	50	272	19
2001–2002	--	--	--	13	237	40	0	0	288	2	--	0	290	23
2002–2003	--	--	--	0	27	0	0	0	27	0	--	0	27	4
Lynx														
1992–1993	--	--	--	2	24	0	0	0	26	0	--	0	26	16
1993–1994	--	--	--	0	40	0	0	0	40	0	--	0	40	12
1994–1995	--	--	--	1	21	0	0	0	21	1	--	0	22	12
1995–1996	--	--	--	0	3	1	0	0	4	0	--	0	4	6
1996–1997	--	--	--	6	27	2	0	0	34	1	--	0	35	13
1997–1998	--	--	--	2	28	0	0	0	30	0	--	0	30	12
1998–1999	--	--	--	1	30	0	0	0	30	1	--	0	31	10
1999–2000	--	--	--	24	54	0	0	0	76	2	--	0	78	22
2000–2001	--	--	--	8	90	23	0	0	119	2	--	0	121	26
2001–2002	--	--	--	7	85	14	0	0	105	0	--	1	106	28
2002–2003	--	--	--	0	44	12	0	0	52	3	--	1	56	23
Otter														
1992–1993	2	1	7	--	--	--	0	0	8	0	--	2	10	7
1993–1994	6	2	9	--	--	--	0	0	15	2	--	0	17	6
1994–1995	15	11	10	--	--	--	0	0	36	0	--	0	36	11
1995–1996	5	4	10	--	--	--	0	0	19	0	--	0	19	15
1996–1997	24	13	12	--	--	--	0	0	44	0	--	5	49	24
1997–1998	11	5	9	--	--	--	0	0	25	0	--	0	25	17
1998–1999	3	1	6	--	--	--	0	0	10	0	--	0	10	7
1999–2000	3	3	10	--	--	--	0	0	14	1	--	1	16	8
2000–2001	1	5	2	--	--	--	0	0	8	0	--	0	8	3
2001–2002	14	7	5	--	--	--	0	0	24	1	--	1	26	11
2002–2003	16	13	9	--	--	--	0	0	35	3	--	0	38	14

TABLE 2 continued

Regulatory year	Reported harvest						Estimated harvest		Method of take					Successful trappers/hunters
	M	F	Unk	Juv[b]	Adults	Unk	Unreported	Illegal	Trap/Snare	Shot	(L&S)	Unk	Total	
Wolverine														
1992–1993	3	3	2	--	--	--	10	0	8	0	--	10	18	7
1993–1994	14	23	2	--	--	--	10	0	36	2	--	11	49	18
1994–1995	13	11	3	--	--	--	10	0	24	2	--	11	37	8
1995–1996	7	4	0	--	--	--	10	0	6	5	--	10	21	15
1996–1997	21	9	1	--	--	--	10	0	20	3	--	18	41	17
1997–1998	17	3	2	--	--	--	10	0	22	0	--	10	32	17
1998–1999	14	3	1	--	--	--	10	0	17	1	--	10	28	13
1999–2000	14	10	3	--	--	--	10	0	25	2	--	10	37	17
2000–2001	18	10	6	--	--	--	10	0	27	6	--	11	44	20
2001–2002	14	5	6	--	--	--	10	0	20	2	--	13	35	16
2002–2003	24	10	4	--	--	--	10	0	34	2	--	12	48	19

[a] Sealing requirement for beaver eliminated in RY02.

[b] Juveniles: beavers <52" (length + width); lynx <34" in length.

TABLE 3 Unit 21 beaver, lynx, otter, and wolverine harvest chronology by month, regulatory years 1992–1993 through 2002–2003

Regulatory year	Harvest periods							
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Beaver								
1992–1993	5	42	11	45	102	2	--	--
1993–1994	14	27	57	89	74	9	0	0
1994–1995	8	86	54	156	113	0	0	0
1995–1996	10	4	1	36	79	44	34	0
1996–1997	0	39	45	121	346	13	0	0
1997–1998	5	45	13	189	220	13	0	0
1998–1999	7	18	21	47	167	3	0	0
1999–2000	43	1	2	69	145	2	0	0
2000–2001	0	4	35	123	88	0	--	--
2001–2002	25	21	32	101	109	2	--	--
2002–2003[a]	0	1	0	20	0	6	--	--
Lynx								
1992–1993	5	7	10	3	--	--	--	--
1993–1994	0	12	14	14	--	--	--	--
1994–1995	1	1	15	5	--	--	--	--
1995–1996	0	3	1	0	--	--	--	--
1996–1997	0	15	0	17	3	--	--	--
1997–1998	0	4	1	18	7	--	--	--
1998–1999	0	13	10	7	1	--	--	--
1999–2000	1	21	19	36	1	--	--	--
2000–2001	6	46	26	43	0	--	--	--
2001–2002	6	20	45	33	1	--	--	--
2002–2003	0	8	30	16	0	--	--	--
Otter								
1992–1993	3	2	0	0	2	1	--	--
1993–1994	0	2	4	5	3	2	--	--
1994–1995	0	15	11	5	4	0	--	--
1995–1996	1	8	0	3	6	1	--	--
1996–1997	2	17	9	7	11	0	--	--
1997–1998	2	6	2	2	13	0	--	--
1998–1999	2	2	2	0	4	0	--	--
1999–2000	1	5	3	5	0	0	--	--
2000–2001	0	0	1	4	3	0	--	--
2001–2002	2	4	5	5	7	0	--	--
2002–2003	2	2	22	4	1	7	--	--

TABLE 3 continued

Regulatory year	Harvest periods							
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Wolverine								
1992–1993	1	0	1	3	3	--	--	--
1993–1994	6	7	11	1	1	--	--	--
1994–1995	0	2	5	15	15	--	--	--
1995–1996	2	3	1	5	5	--	--	--
1996–1997	4	9	1	7	10	--	--	--
1997–1998	4	2	5	3	8	--	--	--
1998–1999	2	3	2	7	3	--	--	--
1999–2000	1	7	0	12	7	--	--	--
2000–2001	1	3	3	21	5	0	--	--
2001–2002	4	1	2	1	15	2	--	--
2002–2003	2	4	6	17	6	1	--	--

[a] Sealing requirement for beaver eliminated in regulatory year 2002–2003.

TABLE 4 Unit 21 estimated harvest[a] of unsealed furbearer species regulatory years 1992–1993 through 2002–2003

Regulatory year	Species					
	Beaver[b]	Coyote	Marten	Mink	Muskrat	Red fox
1992–1993	--	0	559	50	0	1
1993–1994	--	1	997	17	4	25
1994–1995	--	0	461	6	0	12
1995–1996	--	0	385	7	0	4
1996–1997	--	1	2072	100	33	37
1997–1998	--	0	231	2	0	11
1998–1999	--	0	256	0	0	18
1999–2000	--	0	778	0	0	16
2000–2001	--	1	964	3	2	28
2001–2002	--	0	921	4	0	9
2002–2003	67	0	535	8	2	18

[a] Estimates derived from Fur Acquisition Reports and Fur Export Permits.
[b] Sealing requirement for beaver eliminated in regulatory year 2002–2003.

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

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 (Persons 2001).

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 Community-based Harvest Assessments conducted annually in selected Unit 22 villages.

- Assess population status and trends using sealing records, hunter/trapper interviews and questionnaires, Community-based Harvest Assessments 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 beavers, lynx, river otters 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 (Persons 2001).

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 beavers 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 beavers on the western Seward Peninsula over the last 20 years and regard beavers as a nuisance. Complaints are common; for example: beavers have blocked culverts along the road system, forcing the Alaska Department of Transportation and Public Facilities 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 (Persons 2001).

Lynx — Lynx, which had been scarce unitwide since the mid 1980s, are increasing in some areas along with hares, their primary food source (Persons 2001). In 2000–2001 and 2001–2002 reports from Unit 22A indicated lynx were common. Lynx appear to be most abundant in Unit 22A. In Unit 22B survey respondents reported lynx were also common and numbers are likely increasing. Lynx are scarce, but probably increasing, in Units 22C and 22D. 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 2000–2001 indicated otters in Units 22A, 22B, 22C and 22D were common and their numbers stable. We have no information about otters in Unit 22E.

Wolverine — Wolverines were reported to be common throughout the unit and their numbers are thought to be stable. Suitable habitat and food resources are thought to be the primary factors determining population density in Unit 22, although hunting pressure around Unit 22C can be an important factor regulating population density.

Fox — Red foxes declined noticeably during the late 1990s, but during the reporting period respondents from Unit 22 reported foxes to be common in many areas of the unit and abundant in the Nome area . The Norton Sound Health Corporation's Office of Environmental Health now handles all specimens suspected of rabies infection in the Norton Sound area. In 2000–2001 the office reported 5 foxes from Unit 22 either tested positive or were suspected positive of having rabies. In 2001–2002, 3 foxes tested positive or were suspected positive for rabies, and in 2002–2003 no rabid foxes were reported. 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 (Persons 2001). No coyotes were reported during the reporting period.

Mink/Marten — Most of the suitable marten and mink habitat occurs in Units 22A and 22B. Martens are reported to abundant in Unit 22A. Little else is known about the status of mink and marten populations in Unit 22 (Persons 2001).

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 changed during the reporting period. A hunting season for beaver was established in 2001.

2000–2001, 2001–2002		
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
2002–2003		
Beaver	1 Aug–10 Jun	20 beavers per season
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. The trapping seasons and bag limits for fur bearers in Unit 22 were the same for the entire reporting period. There is no difference between resident and nonresident seasons and bag limits.

2000–2001, 2001–2002, 2002–2003		
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 November 2001 the Board of Game established a beaver hunting season in Unit 22. The resident and nonresident season is 1 August –10 June, with a bag limit of 20 beavers per season.

Human-Induced Harvest. The number of hunter/trappers sealing lynx, otter and wolverine increased slightly during this reporting period but it is not known if this is the result of 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 provide only minimum estimates of harvest. Additional harvest information was obtained from trapper surveys, and information about wolverine harvest was

provided by community-based harvest surveys conducted in several Unit 22 villages (Persons 2001). Harvest surveys conducted for harvest year 2000–2001 in Brevig Mission, Shishmaref, Teller, and Wales discovered an additional harvest of 1, 6, 2, and 2 wolverines in these villages, respectively.

Beaver — The number of beavers harvested during the reporting period in Unit 22 is unknown. In October 1999 the Board of Game eliminated the sealing requirement for beaver in Unit 22; therefore, Department sealing records indicate very few beavers sealed (Table 1). Recent trapper reports indicate beavers were a less important species. In Unit 22C, two trappers indicated beavers were an important species and harvested a combined total of 38 beavers.

Lynx — Reported lynx harvest has increased in Unit 22A since the mid 1990s. In 1995 no lynx were reported harvested. Reported harvest increased to 5, 2, 6, and 27 in 1996, 1997, 1998 and 1999, respectively. Harvest continued to increase during the reporting period in Unit 22A and peaked in 2001 when 64 lynx were reported. In 2000, 56 lynx were harvested in Unit 22A, and harvest decreased in 2002 when 35 lynx were harvested (Table 2). Reported lynx harvest also increased in Unit 22B. In 2000 no lynx were reported harvested; in 2001 5 lynx were reported harvested; and harvest peaked in 2002 when 11 lynx were harvested. Reported harvest remained low in the remainder of the unit.

River Otter — An average of 10 otter per year were sealed in Unit 22 during the reporting period, varying from a high of 16 in 2000–2001, to a low of 6 in 2001–2002 (Table 3.) In 2002–2003 eight otters were sealed. Trapper questionnaires indicated otters are an important target species among Unit 22 trappers.

Wolverine — The number of wolverines sealed during this reporting period ranged from 33 in 2002–2003 to 71 in 2000–2001(Table 4). In 2001–2002, 40 wolverines were sealed. The 71 wolverines harvested in 2000–2001 is the highest harvest ever reported in Unit 22, which is most likely a result of improved compliance with sealing requirements and the abundance of wolverines in areas of the unit. The reported sex composition for the reporting period was 60% males, 31% females and 9% unknown. Trapper questionnaires indicated wolverines are an important target species among Unit 22 trappers. They were reported taken from all subunits with a distribution as follows: Unit 22A, 25%; Unit 22B, 45%; Unit 22C, 12%; Unit 22D, 14%; and Unit 22E, 4%.

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 4 of the hunter/trappers who harvested furbearers in Unit 22 were local residents. Two nonresident hunter/trappers harvested lynx, and 2 harvested wolverines. 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 (Persons 2001).

Harvest Chronology. Travel conditions are an important component in timing of furbearer harvest. Snow conditions dictate the timing of harvest for beaver, red fox, arctic fox, lynx,

marten, mink, otter, and wolverine in Unit 22. Beavers are also harvested by boat in late spring during breakup or in the fall in some parts of the unit.

Transport Methods. Snowmachines were the primary means of transportation for hunter/trappers taking furbearers within Unit 22. Sealing certificate data from the 2000–2003 reporting period show that 86% of the furbearer harvest occurred by snowmachine, 1% by skis or snowshoes, 5% by highway vehicle and 3% by airplane.

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, observations, reports from unit residents, and harvest data indicate that furbearer populations are generally stable or increasing in most parts of the unit. Although a significant portion of furbearer harvest is unreported, we believe reporting has increased throughout the unit in recent years. The actual harvest and its impact on furbearer populations are unknown.

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 have given us important harvest information and a better and more timely picture of changes in furbearer abundance in different parts of the unit (Persons 2001).

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 (Persons 2001).

Trapper surveys and Community-based Harvest Assessments give us some additional harvest information, but the accuracy of furbearer harvest data still needs to be improved. Fur-sealing

agents are available in all Unit 22 villages, but a 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 (Persons 2001).

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Table 1 Unit 22 beaver harvest reported on sealing certificates, 1988–1989 through 2002–2003

	Reported harvest							Sex of harvest, %			Method of harvest, %			Nr. hunters
Species	22A	22B	22C	22D	22E	Unk	Total	Male	Female	Unk.	Shot	Trap/snar	Unk	trapper
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	8	2	90	28	57	15	12
1998–1999	13	8	12	1	0	0	34	18	18	64	47	53	0	10
1999–2000	9	0	31	1	0	0	41	5	2	93	73	27	0	9
2000–2001	11	0	0	0	0	0	11	0	0	100	0	100	0	2
2001–2002	10	0	0	0	0	0	10	0	0	100	0	100	0	1
2002–2003	0	0	0	1	0	0	1	0	0	100	100	0	0	1

Table 2 Unit 22 lynx harvest reported on sealing certificates, 1988–1989 through 2002–2003

	Reported harvest							Sex of harvest, %			Method of harvest, %			Nr. hunters
Species	22A	22B	22C	22D	22E	Unk	Total	Male	Female	Unk.	Shot	Trap/snar	Unk	trapper
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	100	0	0	0	100	0	1
1998–1999	6	0	0	0	1	0	7	43	57	0	14	86	0	3
1999–2000	27	1	0	0	0	0	28	79	14	7	4	96	0	5
2000–2001	56	0	0	0	0	0	56	75	20	4	5	82	13	9
2001–2002	64	5	0	0	0	0	69	16	19	65	3	94	3	9
2002–2003	35	11	0	5	0	0	51	22	25	53	14	86	0	9

Table 3 Unit 22 river otter harvest reported on sealing certificates, 1988–1989 through 2002–2003

	Reported harvest							Sex of harvest, %			Method of harvest, %			Nr. hunters/
Species	22A	22B	22C	22D	22E	Unk	Total	Male	Female	Unk.	Shot	Trap/snar	Unk	Trapper
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	2	0	100	0	100	0	0	1
1990–1991	2	1	0	1	0	0	4	50	0	50	0	100	0	2
1991–1992	2	0	2	0	0	0	4	0	50	50	0	100	0	2
1992–1993	6	1	0	4	1	0	12	17	50	33	50	50	0	5
1993–1994	9	0	4	4	0	1	18	33	22	45	22	78	0	6
1994–1995	11	8	0	2	1	0	22	27	64	9	9	82	9	4
1995–1996	1	0	0	0	0	1	2	0	0	100	100	0	0	1
1996–1997	6	0	1	3	2	0	12	33	17	50	83	17	0	4
1997–1998	4	3	3	1	1	0	12	33	8	59	0	75	25	8
1998–1999	2	4	0	1	0	2	9	22	44	34	11	67	22	5
1999–2000	3	0	1	0	0	2	6	50	17	33	17	50	33	4
2000–2001	4	8	3	0	0	1	16	56	25	19	38	50	12	9
2001–2002	5	0	1	0	0	0	6	67	0	33	0	100	0	2
2002–2003	0	4	4	0	0	0	8	38	62	0	0	100	0	6

Table 4 Unit 22 wolverine harvest reported on sealing certificates, 1988–1989 through 2002–2003

	Reported harvest							Sex of harvest, %			Method of harvest, %			Nr. hunters
Species	22A	22B	22C	22D	22E	Unk	Total	Male	Female	Unk.	Shot	Trap/snar	Unk	trapper
Wolverine														
1988–1989	16	3	6	4	3	0	32	56	38	6	63	37	0	13
1989–1990	23	9	4	2	8	0	46	44	30	26	30	70	0	14
1990–1991	33	6	14	9	4	0	66	52	21	27	64	36	0	23
1991–1992	31	10	9	8	4	0	62	65	29	6	58	42	0	17
1992–1993	26	3	14	6	2	1	52	65	31	4	62	35	4	17
1993–1994	24	4	9	3	4	4	48	63	17	20	71	29	0	20
1994–1995	13	7	5	1	0	0	26	77	23	0	77	23	0	13
1995–1996	9	0	8	0	1	0	18	67	33	0	78	22	0	7
1996–1997	24	1	12	4	2	4	47	42	50	8	63	33	4	22
1997–1998	13	26	0	2	1	0	42	57	24	19	31	55	14	16
1998–1999	10	10	1	0	4	0	25	67	21	12	29	71	0	12
1999–2000	5	11	5	8	6	1	36	67	17	16	63	27	10	24
2000–2001	17	29	7	9	9	0	71	56	20	24	44	42	14	35
2001–2002	9	14	7	6	4	0	40	54	43	3	40	60	0	18
2002–2003	7	17	2	7	0	0	33	70	30	0	50	50	0	20

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

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 marine mammal products (Anderson et al. 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).

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 or 2 professional trappers. Furbearer harvests provide materials for locally manufactured garments and generate 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. We do not report beaver harvests because sealing became voluntary in 2000 and few people have sealed their pelts.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Beaver — Beaver numbers remained high in the Selawik and Kobuk River drainages. In these drainages beaver have fully occupied high quality habitat and now widely occur in marginal areas as well. Residents of Selawik are concerned 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 upper Kugururuk River and as far west as Rabbit Creek and in the vicinity of Point Hope (E. Kingik, personal communication) near the Chukchi Sea coast.

Fox — Opportunistic observations indicated red foxes were abundant during each year of this reporting period. Both red and arctic fox numbers were especially high during the winter of 2000–2001. During that year, 7 of 10 foxes (9 red and 1 arctic) submitted to the virology unit in Fairbanks 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.

No foxes were submitted for rabies testing during the winter of 2001–2002, and only 1 red fox found dead near the Red Dog Mine was submitted during 2002–2003 (this fox was rabid). After this reporting period, 3 red foxes from Kotzebue and the surrounding area tested positive for rabies during August 2003, and 2 more tested positive during April 2004. Three additional foxes killed within the city limits of Kotzebue during November 2003 were negative for rabies.

Lynx — Snowshoe hare (*Lepus americanus*) numbers peaked at very high densities and then crashed in parts of Unit 23, e.g. the Selawik and upper Noatak drainages, during winter and spring 1999–2000 and 2000–2001. 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 probably lynx that I didn’t have time to investigate. On 2 occasions we observed

copulating pairs. Survival of kits born in 2000 appeared to have been good as we saw many groups of 5–7 individuals.

Since that time snowshoe hares have maintained moderately high densities in localized areas. As a result, lynx that abandoned the Selawik drainage following the crash of hares there moved into surrounding areas, e.g. the Buckland/Kiwalik, mid to lower Kobuk and lower Noatak drainages, and have persisted in low to moderate densities since that time. Arctic (tundra) hares (*Lepus othus*) were present at low densities on the Seward Peninsula and in coastal Unit 23 south of Cape Krusenstern during this reporting period; however, the extent to which lynx prey on this species is uncertain.

Mink and Marten — Mink and marten numbers fluctuate locally making it difficult to monitor population trends. Small mammal abundance and snow characteristics strongly affect mink and marten numbers. Red back voles (*Clethrionomys rutilus*) were very abundant in the upper Kobuk drainage during the fall and winter of 2002–2003. Although snow characteristics are generally suitable for mink and marten in the upper Kobuk drainage, the hard-packed snow conditions characteristic of most of the remainder of Unit 23 may limit the distribution of these species.

The best marten habitat in Unit 23 occurs 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 became locally abundant in the Hockley Hills and upper Squirrel River drainage. Marten appeared to decline in the western coastal portion of the unit during this reporting period.

Mink occur throughout Unit 23 but little is known about 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 years prior to 1970.

Wolverine — Opportunistic sightings by staff and reports from local residents suggest wolverine populations were roughly comparable 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 that occur within a 50-mile radius of communities when snow and weather are favorable for traveling by snowmachine. Wolverines were most abundant in remote portions of the unit that were lightly hunted or trapped.

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.

2000–2001, 2001–2002, 2002–2003 Species	Season	Bag Limit
Beaver	No closed season	No 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.

2000–2001 Species	Season	Bag Limit
Beaver	No closed season	No limit
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
2001–2002, 2002–2003		
Beaver	No closed season	No limit
Fox, Arctic	1 Nov–15 Apr	No limit
Fox, Red	1 Nov–15 Apr	No limit
Lynx[a]	1 Dec–15 Jan	3 lynx
(Jan 2002 in-season change)	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
River Otter	1 Nov–15 Apr	No limit
Wolverine	1 Nov–15 Apr	No limit

[a]Season lengthened to 1 Nov–15 Apr and bag limit increased to "no limit" in November 2001.

Board of Game Actions and Emergency Orders. The Board of Game lengthened the lynx season to 1 November–15 April and increased the bag limit to "no limit" at its November 2001 meeting. This action was expedited and went into effect in January 2002 to allow trappers to capitalize on high lynx numbers in portions of Unit 23. After this reporting period, the Board of Game extended mink and weasel trapping seasons to close 15 April at its November 2003 meeting. At this meeting the board also established "no closed season" for muskrat trapping but stipulated

muskrat could only be taken using a firearm between 1 June and 31 October. Actions taken during the November 2003 board meeting will go into effect beginning 1 July 2004.

Human-Induced Harvest.

Lynx — After approximately 15 years of low harvests, the lynx harvest in Unit 23 substantially increased during 2001–2002 (Table 1). Most of the lynx reported taken were harvested by a single trapper operating in the lower Kobuk drainage. Compared to the Kobuk drainage, lynx density appeared to be much higher in the Selawik drainage during this time but none were reported taken from this area (all but 1 lynx taken in the Noatak drainage were taken in the Kobuk). Trappers in the Selawik drainage either did not target lynx or did not seal lynx that were taken. Lynx harvests in 2001–2002 and 2002–2003 were still far below levels taken in Unit 23 during the late 1970s and early 1980s.

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

Wolverine — As with other furbearers, sealing data for wolverines represents only minimum estimates of actual harvest (Table 3). These data suggest males compose the majority of the harvest, and that a higher proportion of wolverines are being trapped versus shot. Almost all wolverines are taken using snowmachines for transportation.

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. Month and year of harvest are recorded on sealing certificates for lynx, otter and wolverine. Only wolverine can be taken (by hunting) before 1 November. Combining sealing data for these species, most furbearers are taken in Unit 23 during March (35% of the total annual harvest for all years during this reporting period combined). This is because long hours of daylight, moderate temperature and spring-hardened snow are conducive to traveling by snowmachine, not because pelts are in the best condition at that time.

Transport Methods. Snowmachines are the primary form of transport by hunters and trappers to harvest furbearers in Unit 23 (Table 4). In the past most local residents have shot furbearers rather than trapped them. Much of the region is tundra and is conducive to ground shooting using a snowmachine. In recent years, however, more people are trapping furbearers than in the past.

Other Mortality

We think fox numbers are affected primarily by rabies and occasionally 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 during low periods of their population oscillations.

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

- Simplify regulations when possible. Establishing 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.

LITERATURE CITED

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Table 1 Harvest and method of take for lynx sealed in Unit 23, 1977–1978 through 2002–2003

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
2000–2001	8	1	7	0	0
2001–2002	71	1	50	0	0
2002–2003	33	0	33	0	0

Table 2 Harvest and method of take for river otters sealed in Unit 23, 1977–1978 through 2002–2003

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
2000–2001	9	1	5	0	3
2001–2002	5	0	4	1	0
2002–2003	10	0	10	0	0

Table 3 Percent males (excluding unknown sex) and method of take for wolverines sealed in Unit 23, 1977–1978 through 2002–2003

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
2000–2001	39	62	4	31	0	4
2001–2002	29	78	2	11	0	16
2002–2003	19	80	7	12	0	0

Table 4 Harvest and method of transportation used to harvest furbearers and fur animals in Unit 23, 1994–1995 through 2002–2003

		Method of transportation				
Species/year	Harvest	Snowmachine	Boat	Airplane	Other	Unknown
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
2000–2001	8	8	0	0	0	0
2001–2002	71	70	0	0	1	0
2002–2003	33	33	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
2000–2001	9	8	0	0	0	1
2001–2002	5	5	0	0	0	0
2002–2003	10	10	0	0	0	0
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
2000–2001	39	38	1	0	0	0
2001–2002	29	26	0	1	0	2
2002–2003	19	19	0	0	0	0

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNIT: 24 (26,055 mi^2)

GEOGRAPHIC DESCRIPTION: Koyukuk River drainage above the Dulbi River

BACKGROUND

Furbearers have traditionally been an important resource in Unit 24. They supply food, clothing, and trade items. Fur populations have always been sufficient to meet local demand but are subject to cycles of abundance or scarcity. Snowshoe hares are the primary prey species for lynx, red fox, and wolverine, but increases in ptarmigan and grouse numbers can also support increased numbers of these furbearers. Years of good microtine production are also important to some of these furbearers. The innumerable lakes, rivers, and streams found in Unit 24 support a large number of water-dependent furbearers, such as beaver, mink, river otter and muskrat. The following species found in Unit 24 are listed in the order of their economic importance: marten, wolf, beaver, lynx, wolverine, red fox, mink, river otter, and muskrat. Coyotes are rare. Wolves are discussed in detail in a separate management report. Weasels and red squirrels are common but not usually targeted by trappers.

MANAGEMENT DIRECTION

Harvest data were summarized by regulatory year (RY), which begins 1 July and ends 30 June (e.g., RY02 = 1 Jul 2002 through 30 Jun 2003).

MANAGEMENT GOALS

- Protect, maintain, and enhance the furbearer populations and their habitats in concert with other components of the ecosystem.

- Provide for continued use of furbearers by local Alaska residents who have customarily and traditionally depended on these populations.

MANAGEMENT OBJECTIVE

- Maintain populations of furbearers that will support a minimum level of harvest equal to the mean of the harvest of each species from RY89 through RY99.

MANAGEMENT ACTIVITIES

- Monitor harvest through fur-sealing records, fur acquisition reports, and fur export permits.

- Monitor furbearer populations by reconnaissance surveys, trapper questionnaires and trapper interviews.

METHODS

We monitored harvest through sealing records, fur export reports, fur acquisition reports, and personal interviews. We interviewed trappers about furbearer abundance, reviewed trapper questionnaires, and gathered incidental data during surveys of other species and other field activities. Beaver cache surveys were conducted in the fall by the Koyukuk–Nowitna and Kanuti National Wildlife Refuge (NWR) staffs to determine the relative number of active lodges on the Koyukuk and Kanuti refuges.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Beaver numbers continued to be high throughout Unit 24. Beaver cache surveys conducted on the Kanuti NWR in 2003 estimated 1148 active caches (± 147 @ 90% CI), over a 2168-mi^2 area (Kanuti NWR, unpublished data, Fairbanks). Beaver cache surveys conducted by the Koyukuk NWR in 1991 found 291 active caches (0.9/mi^2). Surveys in 2000 on the Koyukuk NWR found 351 active caches (1.1/mi^2) (Koyukuk NWR, unpublished data, Galena). The Koyukuk NWR lies partially within the boundaries of both Units 24 and 21D. Muskrat numbers were still low during the reporting period, but they were beginning to increase by RY02. Several explanations for the long-term decline were suggested, including loss of habitat due to low water levels, pike predation, or possibly disease. However, none of the suggested explanations had been investigated. Reports of increasing numbers of muskrats were received from trappers in Huslia in the southernmost portion of Unit 24 and by trappers to the north in Allakaket.

Lynx were in the high phase of their 10-year cycle during the RY00 season, but were already declining by RY02. The last peak of the lynx cycle was in RY91. Especially high numbers of lynx were reported in the southern slopes of the Brooks Range, where snowshoe hare population swings appear to peak at a much higher relative magnitude than the low-lying areas in the remainder of Unit 24. Red fox populations were moderately high throughout the unit and increasing in some areas. Arctic fox occasionally wander from the Arctic Slope into the unit. Coyotes are rarely seen in Unit 24, although one was photographed on the Dalton Highway near Bonanza Creek in RY02.

Otter numbers were stable throughout the reporting period. Otter tracks were frequently observed during early-winter aerial moose surveys. Marten populations were moderately high throughout the unit and increasing in some areas. Marten tracks were particularly abundant in

old burns west of the Koyukuk River in the lower Alatna River drainage (1999 moose survey observations, ADF&G files, Galena) and in the Huslia River drainage (2000 wolf survey observations, ADF&G files, Galena). Wolverine abundance was moderate and stable. Mink and weasel were stable at low numbers throughout the area.

Small mammal prey populations were abundant, based on the snap-trap collections by Koyukuk and Kanuti NWR staffs. Microtine species were very abundant in RY02 and are important as prey species to furbearers such as marten, weasels, and fox. Snowshoe hare populations declined after peaks in RY99–RY00. Grouse (spruce and ruffed) densities continued to be moderate to low, while willow ptarmigan abundance declined substantially from the previous reporting period.

Distribution and Movements

Most of the furbearer species were found in the unit during the reporting period. Some reached the northern limits of their ranges in the southern Brooks Range. No radiotagging studies of furbearers were conducted in Unit 24.

MORTALITY

Harvest

Trapping Seasons and Bag Limits.

Species	Season	Bag limit
Beaver	1 Nov–10 Jun	No limit
Coyote	1 Nov–31 Mar	No limit
Red Fox	1 Nov–28 Feb	No limit
Marten	1 Nov–28 Feb	No limit
Mink and Weasel	1 Nov–28 Feb	No limit
Muskrat	1 Nov–10 Jun	No limit
Lynx	1 Nov–28 Feb	No limit
River Otter	1 Nov–15 Apr	No limit
Wolverine	1 Nov–31 Mar	No limit

Hunting Seasons and Bag Limits.

Species	Season	Bag limit
Coyote (RY00–RY01)	1 Sep–30 Apr	10, no more than 2 before 1 Oct
Coyote (RY02)	10 Aug–30 Apr	10
Red Fox	1 Sep–15 Mar	10
Lynx	1 Nov–28 Feb	2
Wolverine	1 Sep–31 Mar	1

Alaska Board of Game Actions and Emergency Orders. Beginning in RY92 the Alaska Board of Game changed the bag limit for beaver from 50 per year to no limit. In RY96 the beaver

season was extended to 10 June. In 2002 the board changed the hunting season for coyotes to open on 10 August instead of 1 September and dropped the limit of 2 coyotes before 1 October. Also in RY02 the requirement for sealing beaver was eliminated. During the past 16 years, trapping seasons and bag limits remained the same for marten, lynx, fox, mink, muskrat, otter, and wolverine.

Trapper Harvest.

Beaver — Beaver harvest was low in the area compared to previous reported levels (Tables 1 and 4). Elimination of the sealing requirement compromises comparison to previous years. Prices have typically determined the harvest more than bag limits. Also, harvest of beavers is often for food, therefore fur handling has a lower priority. Beaver kit harvest was low, mainly because of trapping techniques (Table 2). Experienced trappers used snares with large-diameter openings and placed their sets outside food caches away from lodges. Most beaver harvest occurred in the spring (Table 3).

Lynx — Harvest data supported field observations that lynx reached a high point in their 10-year cycle in RY00 (Table 1). Percent kittens in the harvest (Table 2) increased in RY00 and RY01 (9–12%), and decreased in RY02 (3%). By RY02 decreasing harvest levels, decreased percentage of kittens in the harvest, comments by trappers, and incidental observations indicated the lynx population was decreasing in most areas. Pelt prices were moderate for lynx, but still low compared to prices during the late 1970s and 1980s. No trends were evident in harvest chronology of lynx (Table 3).

Otter — Otters were abundant. However, the harvest throughout the last decade was very low, compared to abundance (Table 1). Trapping effort was minimal (Table 2). Otters were usually taken incidentally in late-season beaver sets (Table 3).

Wolverine — Wolverine harvest varied during the reporting period (Table 1). Actual harvest may be higher by 10 animals per year because furs used for subsistence purposes were seldom sealed (Table 2). No harvest chronology pattern was readily discernible (Table 3).

Other Species — Marten harvest increased during the reporting period (Table 4). Prices for marten pelts gradually built up during the reporting period. Fox populations were high, but low prices elicited little trapper interest (Table 4).

Trapping Conditions — Weather was moderate for the 3 years of the reporting period. Snowfall was normal and access was not limited. An extended period of warm and rainy weather in RY02 at the beginning of the season did temporarily delay trapping activities. Some trappers reported problems maintaining traps in working condition during the freezing and thawing cycles that year. Overall, trapping conditions were adequate for most trappers.

CONCLUSIONS AND RECOMMENDATIONS

Furbearer population dynamics were good throughout the unit. The distribution of trappers indicated trapping pressure was light and was distributed along furbearer population gradients. The harvest of furbearers was well below sustainable harvest levels, and the

situation is not likely to change significantly given the density of trappers, their conscientious efforts, and their access to suitable areas. As is the trend throughout the Interior, the age of trappers in the unit is increasing and very few young trappers were recruited. In the future this may play an important role in deciding whether trapping can be a practical population regulation tool for some species. I recommend continuing the present seasons and bag limits. Population trend information for all species can continue to be gathered from trapper questionnaires, discussions with local fish and game advisory committees, and trapper interviews.

The goals to 1) protect, maintain, and enhance the furbearer populations and their habitats in concert with other components of the ecosystem and 2) provide for continued use of furbearers by local Alaska residents who have customarily and traditionally depended on these populations were met.

The objective to maintain populations of furbearers that will support a minimum level of harvest equal to the mean of the harvest of each species from RY89 through RY99 was met. Mean harvest during that period fluctuated, but none of the furbearer populations declined to levels that would not allow for those minimal levels of harvest. The objective for the next report period will be to maintain populations of furbearers that will support a minimum level of harvest equal to the mean of the harvest of each species over the last 10 regulatory years.

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TABLE 1 Unit 24 estimated harvest of sealed furbearer species, regulatory years 1992–1993 through 2002–2003

	Species			
Regulatory year	Beaver	Lynx	Otter	Wolverine
1992–1993	78	111	6	8
1993–1994	320	123	19	29
1994–1995	140	35	11	29
1995–1996	234	30	18	26
1996–1997	654	25	41	27
1997–1998	433	36	22	28
1998–1999	221	40	3	31
1999–2000	192	102	9	29
2000–2001	206	286	23	19
2001–2002	221	212	9	21
2002–2003[a]	50	63	8	25

[a] Sealing requirement for beaver eliminated in regulatory year 2002–2003.

TABLE 2 Unit 24 beaver, lynx, otter, and wolverine harvest, regulatory years 1992–1993 through 2002–2003

Regulatory year	Reported harvest: Sex M	Sex F	Sex Unk	Age Juv[b]	Age Adults	Age Unk	Estimated harvest: Unreported	Estimated harvest: Illegal	Method of take: Trap/Snare	Shot	L&S	Unk	Total harvest	Successful trappers/ hunters
Beaver														
1992–1993	--	--	--	13	65	0	0	0	76	0	--	2	78	10
1993–1994	--	--	--	22	298	0	0	0	320	0	--	0	320	30
1994–1995	--	--	--	5	135	0	0	0	136	0	--	4	140	11
1995–1996	--	--	--	32	202	0	0	0	234	0	--	0	234	19
1996–1997	--	--	--	14	634	6	0	0	654	0	--	0	654	42
1997–1998	--	--	--	18	384	31	0	0	432	0	--	1	432	57
1998–1999	--	--	--	12	208	1	0	0	221	0	--	0	221	28
1999–2000	--	--	--	14	178	0	0	0	165	0	--	27	192	25
2000–2001	--	--	--	4	185	17	0	0	188	0	--	18	206	16
2001–2002	--	--	--	21	194	6	0	0	219	0	--	2	221	16
2002–2003[a]	--	--	--	12	38	0	0	0	50	0	--	0	50	1
Lynx														
1992–1993	--	--	--	1	110	0	0	0	111	0	--	0	111	22
1993–1994	--	--	--	6	117	0	0	0	123	0	--	0	123	35
1994–1995	--	--	--	1	33	1	0	0	34	1	--	0	35	13
1995–1996	--	--	--	1	29	0	0	0	29	1	--	0	30	18
1996–1997	--	--	--	0	24	1	0	0	22	1	--	2	25	14
1997–1998	--	--	--	0	36	0	0	0	36	0	--	0	36	18
1998–1999	--	--	--	0	40	0	0	0	40	0	--	0	40	13
1999–2000	--	--	--	0	101	1	0	0	100	2	--	0	102	30
2000–2001	--	--	--	24	244	18	0	0	260	2	--	24	286	31
2001–2002	--	--	--	25	184	3	0	0	207	5	--	0	212	24
2002–2003	--	--	--	2	60	1	0	0	63	0	--	0	63	16

TABLE 2 continued

Regulatory year	Reported harvest: Sex M	Sex F	Sex Unk	Age Juv[b]	Age Adults	Age Unk	Estimated harvest: Unreported	Estimated harvest: Illegal	Method of take: Trap/Snare	Shot	L&S	Unk	Total harvest	Successful trappers/ hunters
Otter														
1992–1993	0	3	3	--	--	--	0	0	6	0	--	0	6	4
1993–1994	2	2	15	--	--	--	0	0	5	0	--	14	19	9
1994–1995	2	1	8	--	--	--	0	0	11	0	--	0	11	5
1995–1996	5	3	10	--	--	--	0	0	17	1	--	0	18	8
1996–1997	11	26	4	--	--	--	0	0	40	0	--	1	41	15
1997–1998	7	5	10	--	--	--	0	0	21	0	--	1	22	12
1998–1999	0	1	2	--	--	--	0	0	3	0	--	0	3	2
1999–2000	3	0	6	--	--	--	0	0	9	0	--	0	9	5
2000–2001	11	5	7	--	--	--	0	0	23	0	--	0	23	10
2001–2002	3	0	6	--	--	--	0	0	8	0	--	1	9	5
2002–2003	1	3	4	--	--	--	0	0	8	0	--	0	8	3
Wolverine														
1992–1993	3	5	0	--	--	--	10	0	7	1	--	0	18	5
1993–1994	16	9	4	--	--	--	10	0	27	0	--	2	39	15
1994–1995	17	12	0	--	--	--	10	0	26	2	--	1	39	14
1995–1996	17	7	2	--	--	--	10	0	22	4	--	0	36	15
1996–1997	17	10	0	--	--	--	10	0	25	2	--	0	37	19
1997–1998	20	8	0	--	--	--	10	0	25	3	--	0	38	20
1998–1999	13	17	1	--	--	--	10	0	30	1	--	0	41	15
1999–2000	21	7	1	--	--	--	10	0	26	1	--	2	39	18
2000–2001	13	5	1	--	--	--	10	0	19	0	--	0	29	9
2001–2002	19	2	0	--	--	--	10	0	18	3	--	0	31	10
2002–2003	15	8	2	--	--	--	10	0	25	0	--	0	35	8

[a] Sealing requirement for beaver eliminated in regulatory year 2002–2003.
[b] Juveniles: Beavers <52" (length+width); lynx <34" in length.

TABLE 3 Unit 24 beaver, lynx, otter, and wolverine harvest chronology by month, regulatory years 1992–1993 through 2002–2003

Regulatory year	Harvest periods							
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Beaver								
1992–1993	8	12	0	20	31	0	--	--
1993–1994	2	7	56	88	167	0	--	--
1994–1995	3	1	27	17	85	0	--	--
1995–1996	11	0	3	51	153	0	--	--
1996–1997	13	24	63	219	305	8	0	0
1997–1998	7	7	20	112	237	30	20	0
1998–1999	9	1	1	18	124	0	40	0
1999–2000	7	0	12	74	27	3	42	0
2000–2001	0	5	6	121	56	0	0	--
2001–2002	5	1	15	78	51	0	47	--
2002–2003[a]	0	0	0	0	0	0	50	--
Lynx								
1992–1993	28	32	24	25	--	--	--	--
1993–1994	12	28	45	37	1	--	--	--
1994–1995	6	8	12	9	0	--	--	--
1995–1996	3	7	8	12	0	--	--	--
1996–1997	3	7	8	6	0	--	--	--
1997–1998	1	9	9	17	0	--	--	--
1998–1999	3	17	4	14	0	--	--	--
1999–2000	3	29	31	37	2	--	--	--
2000–2001	32	101	76	71	0	--	--	--
2001–2002	16	42	80	74	0	--	--	--
2002–2003	7	17	27	12	0	--	--	--
Otter								
1992–1993	0	1	0	2	3	0	--	--
1993–1994	8	0	1	8	2	0	--	--
1994–1995	0	0	0	1	2	0	--	--
1995–1996	2	3	2	2	9	0	--	--
1996–1997	6	3	6	14	12	0	--	--
1997–1998	0	3	1	7	11	0	--	--
1998–1999	0	0	1	0	2	0	--	--
1999–2000	0	1	0	7	1	0	--	--
2000–2001	0	2	7	12	2	0	--	--
2001–2002	0	2	0	3	2	0	--	--
2002–2003	2	1	4	0	1	0	--	--

TABLE 3 continued

Regulatory year	Harvest periods							
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Wolverine								
1992–1993	3	1	0	2	1	--	--	--
1993–1994	2	3	7	10	6	--	--	--
1994–1995	1	7	7	5	8	--	--	--
1995–1996	3	5	5	4	5	--	--	--
1996–1997	3	6	5	8	4	--	--	--
1997–1998	1	9	7	3	7	1	--	--
1998–1999	3	6	9	8	5	0	--	--
1999–2000	2	6	6	9	4	0	--	--
2000–2001	3	4	9	2	1	0	--	--
2001–2002	1	8	4	5	3	0	--	--
2002–2003	3	6	4	8	4	0	--	--

[a] Sealing requirement for beaver eliminated in regulatory year 2002–2003.

TABLE 4 Unit 24 estimated harvest[a] of unsealed furbearer species, regulatory years 1992–1993 through 2002–2003

Regulatory year	Species					
	Beaver	Coyote	Marten	Mink	Muskrat	Red Fox
1992–1993	--	0	252	6	2	2
1993–1994	--	0	609	3	1	6
1994–1995	--	0	97	1	0	4
1995–1996	--	0	161	16	0	3
1996–1997	--	0	1339	93	14	148
1997–1998	--	0	169	1	0	4
1998–1999	--	0	41	0	0	2
1999–2000	--	0	422	0	0	8
2000–2001	--	0	832	27	1	76
2001–2002	--	0	450	10	4	10
2002–2003	114[b]	0	438	2	0	14

[a] Estimates derived from Fur Acquisition Reports and Fur Export Permits.
[b] Sealing requirement for beaver eliminated in regulatory year 2002–2003.

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

LOCATION

GAME MANAGEMENT UNITS: 25A, 25B, 25D, 26B, and 26C (75,000 mi^2)

GEOGRAPHIC DESCRIPTION: Eastern Interior, Eastern Brooks Range, and Central and Eastern Arctic Slope

BACKGROUND

The upper Yukon River valley in eastern Interior Alaska has long been known as one of Alaska's most productive furbearer habitats. Diverse and abundant habitats include wetlands, riparian, and upland seral vegetation communities. The area supports extensive populations of a variety of furbearers, especially beaver, lynx, and fox. Information about furbearer abundance and species composition on the Arctic Slope is limited. Wolves, wolverines, and foxes are the most important species for trappers in this area.

Information on furbearers comes from pelt sealing records for beavers, lynx, river otters, and wolverines; fur acquisition reports; export reports; and trapper questionnaires. Beaver populations have been surveyed periodically in the Yukon Flats National Wildlife Refuge (YFNWR) since 1982 (McLean 1986; FWS-YFNWR, unpublished data). Limited surveys of other furbearers were conducted in the 1980s (Golden 1987).

Lynx trapping seasons were changed during the 1980s. There was concern about the effects of trapping during the low phase of the lynx population cycle. Before 1985 the season dates were 1 November–15 March. The Board of Game reduced the season in Units 25A, 25B, and 25D to 1 November–28 February. The following season was further reduced to 1 December–31 January. As lynx numbers began to recover, the season was again lengthened to 1 November–28 February in regulatory year (RY) 1988 (RY = 1 Jul–30 Jun, e.g., RY02 = 1 Jul 2002 through 30 Jun 2003). This season remained in place through RY03. In contrast to more populated areas, trapping pressure was relatively light, especially following recent declines in fur prices. A tracking harvest strategy does not appear to be necessary in this area under present conditions. Beaver trapping regulations were changed in RY95 to allow beavers to be taken in Units 25A, 25B, and 25D by shooting during 16 April–1 June, with a bag limit of 1 per day. The bag limit was changed to a 2 per day in RY96. The meat of beavers taken by shooting must be salvaged for human consumption.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Protect, maintain, and enhance furbearer populations in concert with other components of the ecosystem to assure their capability of providing sustained opportunities for commercial use of furbearers.

- Provide people with sustained opportunities to participate in hunting, subsistence use, viewing, and photographing furbearers.

MANAGEMENT OBJECTIVES

The management objective for furbearers is to maintain accurate annual harvest records and indices of population trends based on sealing documents and trapper questionnaires.

- Seal furs as they are harvested and presented for sealing and analyze harvest patterns.

- Conduct trapper questionnaires and interviews as a basis for determining the status of various furbearer populations.

Activities Planned

- Seal furs of selected species as they are harvested and presented for sealing to monitor harvest levels and trends (Objective 1a).

- Conduct trapper questionnaires and interviews to determine the status of various furbearer populations (Objective 1b).

METHODS

We analyzed harvest data from sealing certificates, fur acquisition reports, and fur export reports. Reports from trappers were evaluated. The only population surveys conducted were annual beaver lodge and food cache surveys done by YFNWR biologists.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Beavers, martens, lynx, and red foxes are common and sometimes occur in high numbers on the Yukon Flats. Aerial surveys of beaver lodges and food caches indicated that beaver activity fluctuated from year to year, with the number of active lodges in some areas being below the long-term average during the report period. The decline in beaver populations appears to be greatest in lake systems, with the number of active lodges in riparian areas remaining near or above the long-term average (FWS-YFNWR, unpublished data). Anecdotal information indicates beavers continued to be abundant in and adjacent to riparian areas

during RY00–RY02. The possible limiting effects of beaver dams on migratory whitefish populations are a concern for some local residents.

Trapper reports and harvest data indicated that lynx numbers were high during the late 1980s and early 1990s, and were again at high levels in the late 1990s. High lynx populations continued through RY03. Lynx numbers and harvest were low during the mid 1990s, but were relatively high during RY96–RY03.

Trappers reported that mink, muskrats, weasels, and wolverines were moderately abundant. Muskrats had declined following cold winters and dry summers in the mid 1990s, but some increase was apparent by the late 1990s and has continued during RY00–RY03. High water during spring 1992 restored water levels in a number of sloughs and lakes on the Yukon Flats. Many trappers reported a subsequent increase in muskrat and mink populations.

River otters and coyotes were generally scarce, although otters are widely distributed on the Yukon Flats. Red and arctic foxes continue to be common in Units 26B and 26C, and wolverines are found at low density throughout the area. Wolverine tracks were commonly observed during a March 2004 moose survey.

MORTALITY

Harvest

Hunting Seasons and Bag Limits.

Unit/Species	Bag Limit	Resident Season	Nonresident Season
Unit 25:			
Coyote	2 coyotes	1 Sep–30 Apr	1 Sep–30 Apr
Arctic Fox	2 foxes	1 Sep–30 Apr	1 Sep–30 Apr
Red Fox	2 foxes	1 Sep–15 Mar	1 Sep–15 Mar
Lynx	2 lynx	1 Nov–28 Feb	1 Nov–28 Feb
Wolverine	1 wolverine	1 Sep–31 Mar	1 Sep–31 Mar
Unit 26:			
Coyote	2 coyotes	1 Sep–30 Apr	1 Sep–30 Apr
Arctic Fox	2 foxes	1 Sep–30 Apr	1 Sep–30 Apr
Red Fox	2 foxes	1 Sep–15 Mar	1 Sep–15 Mar
Lynx	2 lynx	1 Nov–28 Feb	1 Nov–28 Feb
Wolverine	1 wolverine	1 Sep–31 Mar	1 Sep–31 Mar

Trapping Seasons and Bag Limits.

Unit/Species	Bag Limit	Resident Season
Unit 25:		
Beaver	50 beavers	1 Nov–15 Apr
	2 beavers/day by shooting	16 Apr–1 Jun
Coyote	No limit	1 Nov–31 Mar

Unit/Species	Bag Limit	Resident Season
Arctic Fox	No limit	1 Nov–15 Apr
Red Fox	No limit	1 Nov–28 Feb
Lynx	No limit	1 Nov–28 Feb
Marten	No limit	1 Nov–28 Feb
Mink and Weasel	No limit	1 Nov–28 Feb
Muskrat	No limit	1 Nov–10 Jun
River Otter	No limit	1 Nov–15 Apr
Wolverine	No limit	1 Nov–15 Apr
Unit 26:		
Beaver	No season	No season
Coyote	No limit	1 Nov–15 Apr
Arctic Fox	No limit	1 Nov–15 Apr
Red Fox	No limit	1 Nov–15 Apr
Lynx	No limit	1 Nov–15 Apr
Marten	No limit	1 Nov–15 Apr
Mink and Weasel	No limit	1 Nov–31 Jan
Muskrat	No limit	1 Nov–10 Jun
River Otter	No limit	1 Nov–15 Apr
Wolverine	No limit	1 Nov–15 Apr

Alaska Board of Game Actions and Emergency Orders. The dramatic decline in trapping effort and harvest of beaver led the Board of Game to eliminate the requirement to seal beaver beginning in RY02. In 2004 the board established hunting and trapping seasons for arctic fox in Units 24 and 25. Small numbers of arctic foxes periodically disperse southward into these areas.

Hunter/Trapper Harvest.

Beaver — Beavers were most commonly taken in and near major drainages such as the Black, Little Black, Coleen, Hodzana, Chandalar, and Christian Rivers, and Birch and Beaver Creeks. Beaver harvest in Unit 25 continued to be low compared to the late 1980s (Table 1), and the requirement to seal beavers was rescinded in RY02. The low harvests in recent years were probably related to lower pelt values and consequent reduction in trapper effort.

Lynx — Lynx harvest increased from about 200 annually in RY95 to 700 or more annually in RY96, RY97, and RY98. Harvest subsequently declined to about 200–400 lynx annually during RY99–RY02 (Table 1). Trapper reports indicate that lynx continued to be abundant in many areas through RY03. The harvest of lynx occurred over an extensive area, but was greatest in the Chandalar, Christian, Black, Little Black, Salmon Fork, Porcupine, and Sheenjek drainages. The largest harvests occurred in eastern Unit 25D and in Unit 25B.

Snowshoe hares are the primary prey of lynx. Production and survival of lynx kittens is highly dependent on the abundance of this cyclic prey species. The proportion of kittens in the harvest declined from about 22% during RY95–RY97 to 3–7% in RY00–RY02 (Table 2). These observations agreed with trapper reports indicating that snowshoe hares declined after

the late 1990s, although they continued to be common during this report period. During the low phase of the hare cycle, the proportion of kittens in the harvest may be as low as 3% (Stephenson and Karczmarczyk 1989).

River Otter and Wolverine — Otter harvest was low, probably because of lower fur prices and generally low trapping effort. Harvests ranged from 2 to 8 between RY00 and RY02 (Table 1). The low otter harvest was probably associated with reduced trapping effort for beaver during the last few years.

Most of the wolverine harvest was in Unit 25 (Table 1). Harvest was relatively stable, ranging from 35 to 50, during the past 5 years. The only area where wolverine harvest increased in the last decade was in Unit 25D (Table 1). The number of animals taken was still small relative to the area's size.

Unsealed species — The estimated harvest of most species of unsealed furbearers has gradually declined in Unit 25 since the late 1980s (Table 3). Fur prices declined to low levels for most species during this period, probably accounting for much of the decline in trapping effort and harvest. Temporary declines in furbearer populations may have also contributed to an unknown degree. Muskrats were historically taken in large numbers. The dramatic decline in harvest has been attributed to a drying trend. Many lakes and ponds have diminished in size or disappeared, reducing the amount of muskrat habitat. A dramatic long-term decline in mink populations was probably also related to the drying trend and a decline in muskrat numbers. Unusually cold winters and low snowfall, resulting in thick ice, also contributed to declines in muskrat populations. A flood in 1992 restored water levels in some areas and appeared to cause some increase in muskrat and mink populations. Local residents report a noticeable increase in muskrat populations during the report period, which is reflected in harvest reports (Table 3).

Marten harvest increased in 1996 but subsequently declined, and during this reporting period was still below the levels observed in the late 1980s. Reasons for the long-term decline in marten harvest probably included the general decline in fur prices during the early 1990s and reduced trapper effort. Some observers speculate that marten populations decline during the high phase of the lynx-hare cycle. This may have contributed to comparatively low harvests during the last several years.

Trapper Success. Among sealed species, beavers and lynx were the most commonly taken animals (Table 1). The average number taken by each reporting trapper during RY98–RY02 ranged from 11 to 42 (Table 2). The number of martens taken by individual trappers was unknown. Numerically and economically, martens were once the most important furbearer for most trappers. However, lynx were more important during the last few years. Comments on trapper questionnaires indicated furbearer populations were generally high, and the major deterrents to higher harvests were reduced pelt values, severe weather or poor trail conditions.

Harvest Chronology. The harvest of beavers in Unit 25 was greatest during February and March, when over 50% of the harvest occurred (Table 4). Lynx were harvested primarily in December, January and February, corresponding to when lynx pelts were at their prime. The harvest of otters and wolverines was distributed over a broader period, but in Unit 25 most

were harvested in December, January, and February, when trapping activity for other species was greatest. The small harvest of wolverines in Units 26B and 26C occurred primarily in late winter (Table 5).

Harvest and Transport Methods. Traps and snares were the predominant method for harvesting furbearers in Unit 25 (Table 2). Firearms were used to take a few beavers, lynx and wolverines. Snowmachines were the most common method of transportation. They were used for taking more than 80% of the furbearers in most years. A few were taken with the aid of aircraft, dogsled, skis, snowshoes, or highway vehicles (Table 6). In Unit 26B, highway vehicles were used by trappers on the Dalton Highway and were used in connection with most of the reported harvest of wolverines (Table 7).

CONCLUSIONS AND RECOMMENDATIONS

Although we lack quantitative data on furbearer population status in the upper Yukon and eastern Arctic, harvest data and anecdotal reports from trappers indicate that furbearer populations were not adversely affected by current harvest. Present seasons and bag limits provide reasonable trapping and hunting opportunity, while also providing for the conservation of furbearer populations. Recent declines in fur prices reduced trapping activity, reinforcing other indications that existing regulations are adequate.

Furbearer management objectives are generally being met, but will be revised as follows for the next reporting period.

MANAGEMENT OBJECTIVE

- Manage furbearer populations to maintain populations at levels sufficient to provide for sustained consumptive and nonconsumptive uses.

Activities

- Seal furs of selected species as they are harvested and presented for sealing to monitor harvest levels and trends.
- Conduct trapper questionnaires and interviews to determine the status of various furbearer populations.
- Monitor furbearer population trends and annual harvest using sealing documents, fur acquisition reports, and fur export reports.

I recommend we continue to maintain communication with local trappers and work to increase the number of fur sealing agents in the area. This includes continued personal contact with trappers and efforts to communicate through the trapper questionnaire.

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TABLE 1 Units 25A, 25B, 25D, 26B, and 26C furbearer harvest, regulatory years 1993–1994 through 2002–2003

Species/	Unit					
Regulatory year	25A	25B	25D	26B	26C	Total
Beaver						
1993–1994	8	3	68	0	0	79
1994–1995	14	38	70	0	0	122
1995–1996	2	20	66	0	0	88
1996–1997	14	10	164	0	0	176
1997–1998	20	36	62	0	0	118
1998–1999	1	13	32	0	0	46
1999–2000	9	10	102	0	0	121
2000–2001	4	14	84	0	0	102
2001–2002[a]	4	20	93	0	0	117
Lynx						
1993–1994	8	89	262	4	0	363
1994–1995	6	50	173	3	0	232
1995–1996	1	62	155	0	0	218
1996–1997	0	227	524	0	0	751
1997–1998	0	429	350	0	0	779
1998–1999	31	434	219	0	0	684
1999–2000	5	247	179	0	0	431
2000–2001	19	180	236	0	0	435
2001–2002	4	26	244	3	1	278
2002–2003	3	13	213	0	0	229
River Otter						
1993–1994	0	0	1	0	0	1
1994–1995	1	4	1	0	0	6
1995–1996	1	2	6	0	0	9
1996–1997	1	0	4	0	0	5
1997–1998	0	1	2	0	0	3
1998–1999	2	1	0	0	0	3
1999–2000	2	0	0	0	0	2
2000–2001	7	1	0	0	0	8
2001–2002	1	0	1	0	0	2
2002–2003	1	1	0	0	0	2
Wolverine						
1993–1994	17	14	13	11	1	56
1994–1995	25	18	9	8	0	60
1995–1996	7	5	5	6	1	24
1996–1997	14	14	7	11	0	46
1997–1998	13	10	1	8	0	32
1998–1999	11	11	3	8	2	35
1999–2000	23	10	3	19	4	59
2000–2001	25	11	7	7	0	50
2001–2002	22	7	4	8	2	43
2002–2003	13	4	22	6	1	46

[a] Beginning in regulatory year 2002, beaver sealing was no longer required.

TABLE 2 Units 25A, 25B, 25D, 26B, and 26C beaver, lynx, otter, and wolverine harvest, regulatory years 1993–1994 through 2002–2003

Units/Species/ Regulatory year	Reported harvest						Method of take				Total harvest	Successful trappers and hunters
	M	F	Unk sex	Juv[a]	Adults	Unk age	Trap/snare	Shot	(L&S)[b]	Unk		
Units 25A, 25B, and 25D:												
Beaver												
1993–1994			79	11	59	9	79	0	0	0	79	15
1994–1995			122	26	96	0	114	0	0	8	122	18
1995–1996			88	25	62	1	88	0	0	0	88	15
1996–1997			188	51	137	0	168	20	0	0	188	18
1997–1998			118	33	85	0	110	6	0	2	118	19
1998–1999			46	8	38	0	45	1	0	0	46	11
1999–2000			121	27	94	0	112	9	0	0	121	13
2000–2001			102	4	27	71	102	0	0	0	102	13
2001–2002[c]			117	22	95	0	110	7	0	0	117	17
Lynx												
1993–1994			363	53	304	6	350	3	0	10	363	85
1994–1995			251	34	211	6	246	0	3	2	251	61
1995–1996			218	48	169	1	216	2	0	0	218	44
1996–1997			751	177	574	0	744	0	0	7	751	83
1997–1998			779	177	594	8	779	0	0	0	779	55
1998–1999			684	112	565	7	681	1	0	2	684	42
1999–2000[c]			431	48	297	86	431	0	0	0	431	26
2000–2001			435	29	398	8	434	1	0	0	435	34
2001–2002			274	16	252	6	272	1	0	1	274	30
2002–2003			229	6	217	6	207	0	0	22	229	29
Otter												
1993–1994	1	0	0	--	--	1	1	0	0	0	1	1
1994–1995	1	2	3	--	--	6	6	0	0	0	6	4
1995–1996	4	4	1	--	--	9	9	0	0	0	9	8
1996–1997	3	1	1	--	--	5	5	0	0	0	5	5
1997–1998	1	1	1	--	--	3	3	0	0	0	3	3
1998–1999	0	0	3	--	--	3	3	0	0	0	3	2
1999–2000	1	1	0	--	--	2	2	0	0	0	2	1
2000–2001	5	3	0	--	--	8	8	0	0	0	8	2
2001–2002	1	0	1	--	--	2	2	0	0	0	2	2
2002–2003	1	1	0	--	--	2	2	0	0	0	2	2

TABLE 2 continued

Units/Species/ Regulatory year	Reported harvest						Method of take				Total harvest	Successful trappers and hunters
	M	F	Unk sex	Juv[a]	Adults	Unk age	Trap/snare	Shot	(L&S)[b]	Unk		
Units 25A, 25B, and 25D:												
Wolverine												
1993–1994	24	9	10	--	--	43	40	2	0	1	43	10
1994–1995	25	23	4	--	--	52	51	0	0	1	52	24
1995–1996	11	6	0	--	--	17	15	2	0	0	17	11
1996–1997	23	10	2	--	--	35	33	2	0	0	35	19
1997–1998	18	4	2	--	--	24	22	2	0	0	24	13
1998–1999	13	8	4	--	--	25	24	1	0	0	25	13
1999–2000	21	12	3	--	--	36	36	0	0	0	36	11
2000–2001	30	12	1	--	--	43	39	4	0	0	43	11
2001–2002	24	7	2	--	--	33	24	9	0	0	33	12
2002–2003	26	10	3	--	--	39	37	2	0	0	39	16
Units 26B and 26C:												
Lynx												
1993–1994			4	0	4	0	4	0	0	0	4	1
1994–1995			3	0	3	0	3	0	0	0	3	1
1995–1996			0	0	0	0	0	0	0	0	0	0
1996–1997			0	0	0	0	0	0	0	0	0	0
1997–1998			0	0	0	0	0	0	0	0	0	0
1998–1999			0	0	0	0	0	0	0	0	0	0
1999–2000			0	0	0	0	0	0	0	0	0	0
2000–2001			0	0	0	0	0	0	0	0	0	0
2001–2002			4	0	0	0	3	1	0	0	4	2
2002–2003			0	0	0	0	0	0	0	0	0	0
Wolverine												
1993–1994	9	3	0	--	--	12	7	4	0	1	12	10
1994–1995	6	2	0	--	--	8	5	3	0	0	8	6
1995–1996	4	3	0	--	--	7	1	6	0	0	7	7
1996–1997	8	3	0	--	--	11	8	2	1	0	11	6
1997–1998	7	1	0	--	--	8	3	5	0	0	8	6
1998–1999	9	1	0	--	--	10	8	2	0	0	10	7
1999–2000	14	8	1	--	--	23	15	5	0	3	23	10

TABLE 2 continued

Units/Species/ Regulatory year	Reported harvest						Method of take				Total harvest	Successful trappers and hunters
	M	F	Unk sex	Juv[a]	Adults	Unk age	Trap/snare	Shot	(L&S)[b]	Unk		
Units 26B and 26C:												
Wolverine												
2000–2001	3	4	0	--	--	7	2	5	0	0	7	6
2001–2002	7	2	1	--	--	10	7	3	0	0	10	6
2002–2003	6	1	0	--	--	7	3	4	0	0	7	3

[a] Beavers ≤52" for length and width; lynx ≤34" in length.

[b] L&S (land-and-shoot) refers to animals taken by hunters the same day hunters were airborne.

[c] Beginning regulatory year 2002–2003, beaver sealing was no longer required.

TABLE 3 Unit 25 estimated harvest[a] of unsealed furbearer species, regulatory years 1990–1991 through 2002–2003

Species	Regulatory year												
	1990–1991	1991–1992	1992–1993	1993–1994	1994–1995	1995–1996	1996–1997	1997–1998	1998–1999	1999–2000	2000–2001	2001–2002	2002–2003
Coyote	0	1	1	2	1	0	1	0	0	0	0	1	0
Arctic fox	0	1	2	5	7	0	0	0	1	0	0	3	0
Red fox	171	187	41	115	139	86	235	69	3	24	25	16	47
Marten	2070	2769	883	1234	1422	748	2233	536	152	490	700	209	642
Mink	42	46	17	34	54	81	232	26	6	4	10	0	7
Muskrat	23	299	167	92	784	558	126	9	138	131	519	403	999
Weasel	6	17	5	11	19	31	13	0	0	11	36	10	35
Squirrel	25	54	24	4	55	13	43	8	2	3	3	2	3

[a] Estimates calculated by combining fur acquisition reports and fur export permits.

TABLE 4 Units 25A, 25B, and 25D beaver, lynx, otter, and wolverine harvest chronology by month, regulatory years 1993–1994 through 2002–2003

Species/	Harvest chronology by month							
Regulatory year	Aug/Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Beaver								
1993–1994	0	0	12	5	8	35	8	
1994–1995	0	13	6	7	57	19	15	
1995–1996	0	3	13	0	25	35	12	
1996–1997	0	0	15	1	31	100	15	14
1997–1998	0	16	3	10	41	39	0	6
1998–1999	0	6	5	5	4	25	0	1
1999–2000	0	19	3	3	20	64	4	7
2000–2001	1	22	8	7	27	36	2	0
2001–2002[a]	5	0	8	7	21	53	16	5
Lynx								
1993–1994	0	34	162	111	55	1	0	
1994–1995	1	20	112	52	44	0	0	
1995–1996	0	5	86	55	69	0	0	
1996–1997	0	13	231	302	218	2	0	
1997–1998	0	91	188	259	241	0	0	
1998–1999	0	15	208	223	238	0	0	
1999–2000	0	6	178	158	89	0	0	
2000–2001	0	24	184	130	84	13	0	
2001–2002	0	19	141	65	48	0	0	
2002–2003	0	0	54	28	82	52	13	
River Otter								
1993–1994	0	1	0	0	0	0	0	
1994–1995	0	1	0	1	2	0	0	
1995–1996	0	1	4	0	4	0	0	
1996–1997	0	0	1	2	1	0	1	
1997–1998	0	0	1	1	1	0	0	
1998–1999	0	2	1	0	0	0	0	
1999–2000	0	0	0	1	0	0	1	
2000–2001	0	2	2	0	1	3	0	
2001–2002	0	0	0	1	1	0	0	
2002–2003	0	0	0	1	0	1	0	
Wolverine								
1993–1994	1	5	10	10	11	2	0	
1994–1995	0	4	13	13	13	9	0	
1995–1996	0	2	6	1	7	1	0	
1996–1997	2	1	5	9	11	7	0	
1997–1998	1	1	6	6	6	4	0	
1998–1999	0	2	6	7	7	3	0	
1999–2000	0	3	2	11	12	1	7	
2000–2001	2	6	17	6	8	4	0	
2001–2002	0	5	10	6	11	1	0	
2002–2003	1	0	2	7	4	13	11	

[a] Beginning in regulatory year 2002, beaver sealing was no longer required.

TABLE 5 Units 26B and 26C lynx and wolverine harvest chronology by month, regulatory years 1993–1994 through 2002–2003

Species/	Harvest chronology by month						
Regulatory year	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr
Lynx							
1993–1994	0	0	0	0	4	0	0
1994–1995	0	1	2	0	0	0	0
1995–1996	0	0	0	0	0	0	0
1996–1997	0	0	0	0	0	0	0
1997–1998	0	0	0	0	0	0	0
1998–1999	0	0	0	0	0	0	0
1999–2000	0	0	0	0	0	0	0
2000–2001	0	0	0	0	0	0	0
2001–2002	0	0	0	3	0	0	1
2002–2003	0	0	0	0	0	0	0
Wolverine							
1993–1994	0	0	1	2	3	4	1
1994–1995	1	0	0	0	0	4	3
1995–1996	1	0	0	0	0	3	3
1996–1997	1	2	0	0	5	1	2
1997–1998	1	0	0	3	2	2	0
1998–1999	0	0	1	0	3	4	2
1999–2000	1	0	3	4	8	4	3
2000–2001	0	1	1	1	1	1	2
2001–2002	0	1	2	1	4	2	0
2002–2003	1	0	5	0	0	1	0

TABLE 6 Units 25A, 25B, and 25D beaver, lynx, otter, and wolverine harvest percent by transport method, regulatory years 1993–1994 through 2002–2003

Species/ Regulatory year	Harvest percent by transport method							
	Airplane	Dogsled, Skis, or Snowshoes	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway vehicle	Unknown
Beaver								
1993–1994	0	0	0	0	100	0	0	0
1994–1995	2	0	0	0	88	0	0	10
1995–1996	0	9	0	0	89	0	0	2
1996–1997	0	1	11	0	88	0	0	0
1997–1998	0	6	0	0	87	0	5	2
1998–1999	0	13	0	0	83	0	0	4
1999–2000	0	21	1	0	76	0	2	0
2000–2001	0	17	0	0	82	0	0	1
2001–2002[a]	5	8	6	0	71	0	0	10
Lynx								
1993–1994	1	5	0	0	92	0	1	1
1994–1995	1	6	0	0	91	0	0	2
1995–1996	4	4	0	0	90	0	0	3
1996–1997	4	7	1	0	87	0	0	1
1997–1998	7	8	0	<1	84	0	<1	<1
1998–1999	<1	16	<1	<1	82	0	<1	<1
1999–2000	15	9	0	0	77	0	0	0
2000–2001	2	14	0	0	82	0	2	<1
2001–2002	0	5	0	0	90	0	<1	4
2002–2003	0	6	0	0	62	0	1	31
River Otter								
1993–1994	0	0	0	0	100	0	0	0
1994–1995	0	0	0	0	50	0	0	50
1995–1996	0	0	0	0	100	0	0	0
1996–1997	0	0	0	0	100	0	0	0
1997–1998	0	0	0	0	100	0	0	0
1998–1999	0	67	0	0	33	0	0	0
1999–2000	0	0	0	0	100	0	0	0
2000–2001	0	25	0	0	75	0	0	0
2001–2002	0	0	0	0	100	0	0	0
2002–2003	0	50	0	0	50	0	0	0

TABLE 6 continued

Species/ Regulatory year	Harvest percent by transport method							
	Airplane	Dogsled, Skis, or Snowshoes	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway vehicle	Unknown
Wolverine								
1993–1994	7	7	7	0	77	0	0	2
1994–1995	4	4	0	0	81	0	0	11
1995–1996	0	0	14	0	71	0	14	0
1996–1997	14	0	3	0	71	0	0	11
1997–1998	4	33	0	0	63	0	0	0
1998–1999	0	20	0	0	60	0	0	20
1999–2000	8	6	0	0	86	0	0	0
2000–2001	2	28	0	0	67	0	2	0
2001–2002	0	9	0	0	85	0	3	0
2002–2003	3	21	0	0	77	0	0	0

[a] Beginning in regulatory year 2002–2003, beaver sealing was no longer required.

TABLE 7 Units 26B and 26C lynx and wolverine harvest percent by transport method, regulatory years 1993–1994 through 2002–2003

Species/ Regulatory year	Harvest percent by transport method							
	Airplane	Dogsled, Skis, or Snowshoes	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway vehicle	Unknown
Lynx								
1993–1994	0	0	0	0	0	0	100	0
1994–1995	0	0	0	0	0	0	100	0
1995–1996	0	0	0	0	0	0	0	0
1996–1997	0	0	0	0	0	0	0	0
1997–1998	0	0	0	0	0	0	0	0
1998–1999	0	0	0	0	0	0	0	0
1999–2000	0	0	0	0	0	0	0	0
2000–2001	0	0	0	0	0	0	0	0
2001–2002	0	0	0	0	100	0	0	0
2002–2003	0	0	0	0	0	0	0	0
Wolverine								
1993–1994	0	0	0	0	45	0	54	0
1994–1995	13	0	0	0	25	0	38	25
1995–1996	0	0	14	0	71	0	14	0
1996–1997	0	0	0	0	45	0	55	0
1997–1998	0	25	0	0	50	0	25	0
1998–1999	0	20	0	0	50	0	30	0
1999–2000	3	6	0	0	48	0	18	9
2000–2001	0	0	0	0	71	0	29	0
2001–2002	10	0	0	0	60	0	30	0
2002–2003	6	0	0	0	57	0	29	0

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FURBEARER MANAGEMENT REPORT

From: 1 July 2000
To: 30 June 2003

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 marten and coyote are rare and found only in the southern portion of the unit. Lynx expanded their range into Unit 26A during the late 1990s, following a snowshoe hare irruption in the Colville River drainage. 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 (Carroll 2001).

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 and Movements

No quantitative population information is available for lynx, red foxes, arctic foxes, or coyotes in Unit 26A. Lynx were at low, but increasing density in 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 wolverines during 12 hours of flight (0.25 per hour). In 2001 we saw 4 wolverines during 13 hours of flight (0.30 per hour), in 2002 we saw 7 wolverines in 16 hours (0.43 per hour) and 3 lynx, and in 2003 we saw 4 wolverines during 12 hours (0.33 per hour) and 2 lynx.

MORTALITY

Harvest

Hunting Seasons and Bag Limits.

Unit 26A: *2000–2001, 2001–2002, 2002–2003*

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.
Unit 26A: *2000–2001, 2001–2002, 2002–2003*

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, Harvest Chronology, Transport Methods.
Lynx — Snowshoe hares migrated to and became plentiful in the Colville River drainage during the 1990s. Only occasional lynx sightings were made through 2000, but numbers increased in 2001–2002 and lynx were seen as far north as Wainwright and Barrow. Seven lynx were sealed in Unit 26A during 2001–2002. Two were females and 7 were males. All were ground shot. Snowmachines were used for transportation for all of them. One was taken during February and 6 during March. Both trappers were residents of the unit. One male lynx was taken by a local resident in March 2003 who used a snowmachine for transportation and ground shooting as his method of take.

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-three wolverines were sealed during 2000–2001. Four were females and 19 were males. Sixteen were ground shot and 7 were trapped (Table 1). Snowmachines were used for transportation for 21, an airplane for 1, and skis for 1. One was taken during September, 1 in October, 1 during November, 1 during December, 3 during January, 5 during February, 10 during March, and 1 during April (Table 2). All 9 trappers were residents of the unit.

Twenty-six wolverines were sealed during 2001–2002. Ten were females and 16 were males. Twenty-five were ground shot and 1 was trapped (Table 1). Trappers used snowmachines as transportation for 23 and snowshoes for 3. Four were taken during November, 5 during December, 3 during February, and 14 during March. (Table 2). All 11 trappers were residents of the unit.

Eleven wolverines were sealed during 2002–2003. Three were females and 8 were males. All were ground shot. (Table 1). Trappers used snowmachines for transportation for 10 wolverines,

and 1 used aircraft. One was taken in September, and 10 in March (Table 2). Three trappers were residents of the unit and 1 was a nonlocal resident.

The department fur sealing system underreports 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 23, 26, and 11 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 underreported, overharvesting is probably not occurring in Unit 26A. Trappers reported that the harvest was reduced in 2002–2003 because there was a great deal of seismic petroleum exploration that winter, which drove wolves and wolverines out of areas where people normally hunt.

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

Hunter Residency and Success. All harvests of all furbearer species were by residents except for one nonresident hunter taking one wolverine in 2002–2003. There were no estimates or measures of hunter/trapper success 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. It was apparent that the migration and increasing population of snowshoe hares in Unit 26A expanded the prey base and resulted in an increase in numbers of lynx, wolverines, and foxes.

Enhancement

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

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

Trappers reported that harvest was reduced in 2002–2003 because there was a great deal of seismic petroleum exploration that drove wolves and wolverines out of areas where people normally hunt. The effect of seismic exploration on furbearer distribution should be further investigated.

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 also would be useful to obtain more accurate harvest information. The department fur sealing system underreports 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 2000–2001 and 2001–2002 averaged 24.5 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 underreporting, 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. The harvest of wolverines in 2002–2003 was only 11, and trappers attributed this to the increased amount of seismic petroleum exploration driving wolves and wolverines out of areas where people normally hunt. There should be an investigation of the effect of seismic exploration on furbearing animals.

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Table 1 Total reported harvest, sex composition, and method of take for wolverines sealed in Unit 26A, 1991–1992 through 2002–2003

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
2000–2001	23	83	16	7	0	0
2001–2002	26	62	25	1	0	0
2002–2003	11	73	11	0	0	0

Table 2 Chronology for reported wolverine harvest in Unit 26A, 1991–1992 through 2002–2003

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
2000–2001	1	1	1	1	3	5	10	1	0	23
2001–2002	0	0	4	5	0	3	14	0	0	26
2002–2003	`1	0	0	0	0	0	10	0	0	11

The Federal Aid in Wildlife Restoration Program consists of funds from a 10% to 11% manufacturer's excise tax collected from the sales of handguns, sporting rifles, shotguns, ammunition and archery equipment. The Federal Aid program allots funds back to states through a formula based on each state's geographic area and number of paid hunting license holders. Alaska receives a maximum 5% of revenues collected each year. The Alaska Department of Fish and Game uses federal aid funds to help restore, conserve and manage wild birds and mammals to benefit the public. These funds are also used to educate hunters to develop the skills, knowledge and attitudes for responsible hunting.

Photo by Jack Whitman, ADF&G