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

Carole Healy, Editor
Alaska Department of Fish and Game
Division of Wildlife Conservation
December 2001

ADF&G

Please note that population and harvest data in this report are estimates and may be refined at a later date. Please cite any information taken from this report, giving credit to authors and the Alaska Department of Fish and Game.

When using part of this report, look at the end of each unit for authors and the correct reference. If this report is used in its entirety, please reference as: Alaska Department of Fish and Game. 2001. Furbearer management report of survey-inventory activities 1 July 1997–30 June 2000. C. Healy, editor. Project 7.0. Juneau, Alaska. 357 p.

Funded in part through Federal Aid in Wildlife Restoration, Proj. 7, Grants W-27-1, W-27-2 and W-27-3.

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

Carole Healy, Editor
Alaska Department of Fish and Game
Division of Wildlife Conservation

ADF&G

Funded in part through
Federal Aid in Wildlife Restoration
Grants W-27-1, W-27-2 and W-27-3,
Project 7.0
December 2001

STATE OF ALASKA

Tony Knowles, Governor

DEPARTMENT OF FISH AND GAME
Frank Rue, Commissioner

DIVISION OF WILDLIFE CONSERVATION
Wayne L. Regelin, Director

For a free copy of this report please direct requests to our publications specialist.

Publications Specialist
ADF&G, Wildlife Conservation
P.O. Box 25526
Juneau, AK 99802-5526
(907) 465-4176

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

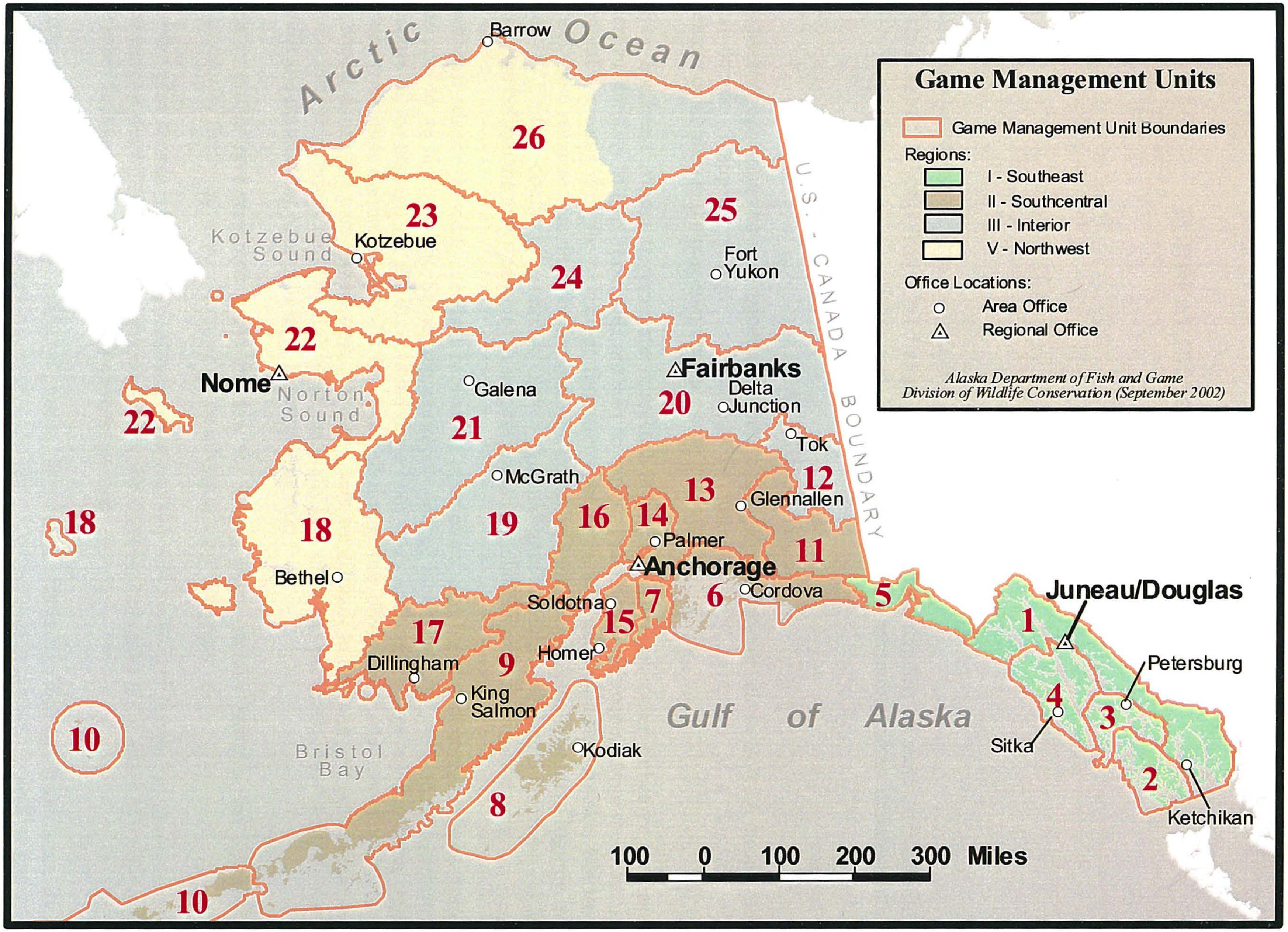
Carole Healy, Editor
Alaska Department of Fish and Game
Division of Wildlife Conservation

Funded in part through
Federal Aid in Wildlife Restoration
Grants W-27-1, W-27-2 and W-27-3,
Project 7.0
December 2001

Please note that population and harvest data in this report are estimates and may be refined at a later date. Any information taken from this report should be cited with credit given to authors and the Alaska Department of Fish and Game.

When using part of this report, look at the end of each unit for authors and the correct reference. If this report is used in its entirety, please reference as: Alaska Department of Fish and Game. 2001. Furbearer management report of survey-inventory activities 1 July 1997–30 June 2000. C. Healy, editor. Project 7.0. Juneau, Alaska. 357 p.

FURBEARER TABLE OF CONTENTS


Game Management Units
Game Management Unit Boundaries
Regions:
I - Southeast
II - Southcentral
III - Interior
V - Northwest
Office Locations:
Area Office
Regional Office
Alaska Department of Fish and Game
Division of Wildlife Conservation (September 2002)
Arctic Ocean
Barrow
Kotzebue Sound
Kotzebue
Nome
Norton Sound
Galena
Fairbanks
Delta Junction
Fort Yukon
Tok
McGrath
Glennallen
Palmer
Anchorage
Cordova
Soldotna
Homer
Bethel
Dillingham
King Salmon
Kodiak
Bristol Bay
Gulf of Alaska
Juneau/Douglas
Petersburg
Sitka
Ketchikan
U.S. - CANADA BOUNDARY
26
23
25
24
22
22
21
20
12
13
14
16
19
18
18
11
15
7
6
5
1
17
9
4
3
2
10
8
10
100 0 100 200 300 Miles

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 1A (5,000 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 fur prices.

More Southeast Alaska trappers are 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 Alaska. Marten prices have remained stable at moderate levels throughout the past decade. 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, and fur buyers consider pelts from this area to be high quality. Some 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.

Beaver 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 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 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 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.

Furbearers in Unit 1A by order of their significance to trappers include marten (*Martes americana*), land otter (*Lutra canadensis*), beaver (*Castor canadensis*), mink (*Mustela vison*), wolverine (*Gulo gulo*), lynx (*Lynx canadensis*), weasel (*M. erminea*), 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 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 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. 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) and is currently in the writing phase.

RESULTS AND DISCUSSION

POPULATION STATUS AND TRENDS

Marten populations fluctuate annually throughout Southeast Alaska. Fluctuations are likely related to changes in prey abundance. Unit 1A trappers believe martens have remained at moderate to high levels during this report period (Table 1). Discussions with trappers suggest that martens prefer old-growth stands and avoid clearcuts. 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 presently at moderate-to-high levels. This is supported by information obtained from trappers (Table 1). Prices are now higher than during the past few years and consequently more trappers are targeting otter.

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 years post-cutting), beaver numbers drop to low levels. Current pelt prices do not seem high enough to foster much trapping pressure except in easily accessed 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	Nov 10–Feb 15	One wolverine
Trapping		
Beaver	Dec 1–May 15	No limit
Lynx, mink, marten, otter, weasel, muskrat	Dec 1–Feb 15	No limit
Wolverine	Nov 10–Apr 30	No limit

Board of Game Actions and Emergency Orders. A public proposal submitted to the Board of Game (Board) during fall 2000 to limit trapping along some of the areas close to Ketchikan and along high use trails was not adopted, and with direction from the Board the department formed a public working group to address the issue. The proposal was submitted after 3 pets were caught in traps during the 1998 trapping season. This working group made a good attempt at reaching consensus among trappers, pet owners, and other user groups. Members of the team were selected from a list of people who submitted comments to the Board on this issue; we attempted to select representatives from each of the user groups. Once the group establishes some guidelines the next step will be to present the recommendations to the public for comments. The group has identified potential mandatory and voluntary changes. As a key concern the group voted unanimously in favor of a trapping class for anyone wanting to trap in the Ketchikan Borough. This education effort will take a great deal of work to organize and implement.

There were no changes to trapping regulations during this report period.

Trapper Harvest. The past 3-year average of 205 marten was similar to the 10-year mean ($\bar{x}$=219). An average of 14 trappers caught totals of 198, 196 and 222 martens annually (1997–99). The Unit 1A marten harvest reached its peak during the 1991 season when trappers caught 654 marten, and dropped considerably to a low of 42 marten in 1993.

During each of the past 3 years (1997–1999) an average of 15 trappers sealed 119, 68, and 131 otters, respectively. The 3-year average ($\bar{x}$=106) is well above the 15-year average ($\bar{x}$=85). The high of 19 successful otter trappers during the 1999 season was one of the highest on record for Unit 1A compared to an average of 15 trappers during the past 10 years.

The Southeast-wide harvest of 448 beaver during the 1999 season was the highest in recent years and well above the 5-year average of 329. The Unit 1A beaver harvest has also exceeded the long-term average during 2 of the past 3 years of this report period. Trappers caught 36 beaver during both the 1997 and 1999 seasons. During 1998, the harvest dropped by over 50% to 14 beaver, likely because of in-season heavy and persistent snow making travel and trapping difficult. During such a winter it is often too labor intensive to dig through deep snow and chip through ice to make beaver sets. Beavers also become much less active and remain in their lodges or under ice relying on food caches, making them more difficult to catch. The low 1998 harvest can also be attributed to fewer trappers actively targeting beaver. As a result of trapping conditions during the 1998 season only 4 trappers sealed Unit 1A beaver. Ten beaver trappers were successful during 1997, more than during any other year in the last 10. The 10-year average has been 7 successful beaver trappers annually in Unit 1A.

The Unit 1A wolverine harvest has remained low during the past 15 years (range 0–7, $\bar{x}$=2). During this report period (1997–99) trappers sealed 3, 0, and 1 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 marten to wolverines along established traplines. The 3 wolverine caught in 1997 were taken by 3 separate trappers.

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. During this 3-year report period the majority of martens were taken during December (58%), January (28%) and February (14%). The otter harvest followed the same pattern with the majority of harvest during December (47%) and fewer in January (35%) and February (18%). The beaver harvest has been well distributed during this report period; December (27%), January (25%), and February (23%), with fewer taken during March (17%) 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 54% and 46%, respectively. Marten trappers reported using boats over 90% and highway vehicles only 5% of the time during

1997–99. Similarly, otter trappers used boats 93% and highway vehicles 6% of the time. Trappers that sealed wolverine hides in Unit 1A used boats exclusively during the past 15 years except during 1990, when snow conditions were ideal and 5 of 7 wolverine harvested were accessed by snowmachines.

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. Management staff will continue to work with the public working group to address issues related to pets caught in traps and snares around Ketchikan. 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 tradeoffs for wildlife can be recognized and understood. The Roadless Initiative passed by Congress in 2000 will protect some prime furbearer habitat in Unit 1A from future logging activities (USDA 2000).

LITERATURE CITED

BRAND, C. J., AND L. B. KEITH. 1979. Lynx demography during a snowshoe hare decline in Alberta. J. Wildl. Manage. 43:827–849.

FLYNN, R. W., AND T. SCHUMACHER. 1997. Ecology of martens in Southeast Alaska. Fed. Aid Wildl. Rest. Prog. Rep. Grant W-24-2, Study 7.16. Juneau. 38pp.

HARBO, S. 1958. An investigation of mink in interior and Southeastern Alaska. M.S. Thesis, Univ. of Alaska, Fairbanks. 108pp.

HOME, W. S. 1977. Otter. Pages 48–57 *in* Dixon Harbor biological survey: Final report on winter mammal and bird studies. Natl. Park Serv., Juneau, Alaska.

JOHNSON, C. B. 1985. Use of coastal habitat by mink on Prince of Wales Island, Alaska. M.S. Thesis, Univ. of Alaska, Fairbanks. 179pp.

LARSEN, D. N. 1983. Habitats, movements, and foods of river otters in coastal southeastern Alaska. M.S. Thesis, Univ. of Alaska, Fairbanks. 149pp.

LARSEN, D. N. 1993. Survey-inventory management report. Furbearers. Pages 1–13 *in* S. M. Abbott, ed. Fed. Aid Wildl. Rest. Proj. W-23-3, W-23-4, Study 7.0. Juneau.

WOOD, R. E. 1990. Annual report of survey-inventory activities. Furbearers. Pages 1–7 *in* S. O. Morgan, ed. Fed. Aid Wildl. Rest. Proj. W-23-1, Study 7.0. Juneau.

WOOLINGTON, J. D. 1984. Habitat use and movements of river otters at Kelp Bay, Baranof Island, Alaska. M.S. Thesis, Univ. of Alaska, Fairbanks. 147pp.

PREPARED BY:

Boyd Porter
Wildlife Biologist III

SUBMITTED BY:

Bruce Dinneford
Regional Management Coordinator

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

Porter, B. 2001. Unit 1A furbearer management report. Pages 1–12 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 1A indices of abundance (I_A)[a] for furbearer species[b], 1991–1999

	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
$\bar{x}$	48	47	66	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 1A furbearer reported harvests, 1984–1999

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	43	42	47	0	3	8
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
1994/1995	143	66	0	100	0	85	15	0	0	0
1995/1996	134	64	0	100	0	98	2	0	0	0
1996/1997	220	64	0	100	0	78	13	0	0	9

Table 2 Continued

Species/regulatory year	Total take	Percent male	Method of take (percent) Shot	Trapped or snared	Unk	Transportation used (percent) Boat	Road	Air	Unknown	Other[a]
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
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
Wolverine										
1984/1985	1	100	100	0	0	100	0	0	0	0
1985/1986	0	--	--	--	--	0	0	0	0	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	--	--	--	--	0	0	0	0	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

Table 2 Continued

Species/regulatory year	Total take	Percent male	Method of take (percent) Shot	Trapped or snared	Unk	Transportation used (percent) Boat	Road	Air	Unknown	Other[a]
1994/1995	5	100	0	100	0	100	0	0	0	0
1995/1996	0	--	--	--	--	0	0	0	0	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	0	0	0	0	0	0	0	0	0
1999/2000	1	100	0	100	0	100	0	0	0	0

[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, 1984–1999

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
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
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
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

Table 3 Continued

Species/regulatory year	Harvest periods							Successful trappers/hunters
	Dec	Jan	Feb	Mar	Apr	May	Unk	
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
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

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

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 1B (3,000 MI2)

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 fluctuates annually and are influenced by both 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 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 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 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 are common in along the protected coastal areas and inland waters of Unit 1B. Otter populations fluctuate in response to trapping effort, harvest, and fur prices. With the exception of 1997, the otter harvest declined during this report period.

Although lynx 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 Alaska trapper questionnaires local trappers received during the report period; interviews with trappers and fur buyers; and field observations by ADF&G and 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 are abundant and stable 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 common, but felt that populations decreased in 1996/97. In 1997/98 they reported martens abundant with numbers declining. In 1998/99 trappers reported marten abundant and stable.

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

Land otter populations were reported to be abundant and stable in 1996/97, common and declining in 1997/98, and common and stable in 1998/99.

Wolverines remained at a low but stable density with trappers reporting in 1998/99 that the population appeared to be increasing.

MORTALITY

Seasons and Bag Limits

Hunting

Wolverine	Nov 10–Apr 30	One Wolverine

Trapping

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

Board of Game Actions and Emergency Orders. No Board of Game actions occurred and no emergency orders were issued during this report period.

Trapper Harvest. Prior to 1996, when 40 beaver were harvested, there had been almost no beaver trapping effort in Unit 1B (Table 2). Two trappers reported taking 16 beavers in 1997/98. No beavers were harvested in 1998/99. Two trappers harvested 4 beavers in 1999/00. During this report period the marten harvest was well above the 9-year mean of 223/year and increased substantially from a low of 74 in 1995, to 340, 365, and 353 in 1997, 1998, and 1999, respectively (Table 3). Unit 1B had an otter harvest of 30, 13, and 13 during the 1997, 1998, and 1999 seasons, respectively (Table 4). The number of wolverines harvested was 8, 9, and 18 in 1997, 1998, and 1999, respectively (Table 5). The harvest of 18 wolverines in 1999 was well above the 9-year mean of 8 per year. One trapper was responsible for harvesting 6 of 18 wolverine taken in Unit 1B in 1999. Heavy snowfall during the winter of 1998/99 hampered trapper access and made it difficult to keep traps functioning. A resulting increase in deer mortality may have increased food availability for wolverines, improved survival, and enhanced reproduction the following spring. These factors probably contributed to relatively high wolverine harvest reported in 1999.

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 martens vary widely in quality and color and bring lower prices than interior martens. The market favors Southeastern 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. Most furbearer harvest in Unit 1B takes place in January and December, although a substantial portion of the beaver harvest can occur during February and March (Tables 6–9).

Transport Methods. Most beaver and marten trapping areas in Unit 1B are accessed by boat and snowmachine (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 non-coastal 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.

LITERATURE CITED

BURRIS, O.E. AND D.E. MCKNIGHT. 1973. Game Transplants in Alaska. Alaska Dept. of Fish and Game. Tech. Bull. No. 4. 30–38pp.

ROPPEL, P. 1983 Southeast Alaska: A Pictorial History. Library of Congress Cataloging in Publication Data. 137pp.

GRAY, F. H. 1915. Smithsonian Institute Archives, Record Unit 7176, Box 7, Folder 3. U.S. Fish and Wildl. Serv. 1860–1961.

PREPARED BY:

Richard E. Lowell
Wildlife Biologist II

SUBMITTED BY:

Bruce Dinneford
Regional Management Coordinator

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

Lowell, R. E. 2001. Unit 1B furbearer management report. Pages 13–22 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Results from trappers questionnaire, Unit 1B

	Petersburg, Wrangell, Kupreanof & vicinity		1997/98 Petersburg, Wrangell, Kupreanof & vicinity		1998/99 Petersburg, Wrangell, Kupreanof & vicinity	
Furbearer species	Relative abundance	Trend	Relative abundance	Trend	Relative abundance	Trend
Beaver	abundant	same	abundant	fewer	abundant	same
Ermine	abundant	same	common	fewer	abundant	same
Lynx				x	scarce	same
Marten	common	fewer	abundant	fewer	abundant	same
Mink	abundant	same	abundant	fewer	abundant	same
1996/97 Muskrat	scarce	same	scarce	same	scarce	same
Red Squirrel	abundant	same	abundant	fewer	abundant	more
River Otter	abundant	same	common	fewer	common	same
Wolf	abundant	same	abundant	fewer	abundant	same
Wolverine	scarce	same	scarce	fewer	common	more
Prey species						
Grouse	common	same	common	fewer	common	same
Ptarmigan	x common	same	scarce	fewer	scarce	same
Mice/Rodents	abundant	same	abundant	fewer	abundant	same

Table 2 Unit 1B beaver harvest, 1991–1999

		Method of Take		
Regulatory year	Reported harvest	Trap/snare	Unknown	Successful trappers
1991/92	0	0	0	0
1992/93	0	0	0	0
1993/94	3	3	0	3
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

Table 3 Unit 1B marten harvest, 1991–1999

Regulatory year	Reported harvest						Successful trappers
		(%)	F	(%)	Unk.	Total	
1991/92	266	(73)	97	(27)	0	363	10
1992/93	31	(63)	18	(37)	0	49	2
1993/94	92	(61)	57	(38)	3	152	6
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
1999/00	209	(59)	137	(38)	7	353	10

Table 4 Unit 1B land otter harvest, 1991–1999

Regulatory year	Reported harvest						Method of take					
	M	%	F	%	Unk.	Total	Trap/snare	%	Shot	%	Unk.	Successful trappers
1991/92	0	(0)	0	(0)	0	0	0	(0)	0	(0)	0	0
1992/93	15	(88)	2	(12)	0	17	17	(0)	0	(0)	0	3
1993/94	14	(67)	7	(33)	0	21	19	(90)	2	(10)	0	6
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
1999/00	10	(77)	3	(23)	0	13	8	(62)	5	(38)	0	4

Table 5 Unit 1B wolverine harvest, 1991–1999

Regulatory year	Reported harvest						Method of take				Successful trappers
	M	%	F	%	Unk.	Total	Trap/Snare	%	Shot	%	
1991/92	4	(67)	2	(33)	0	6	6	(100)	0	(0)	3
1992/93	4	(57)	3	(43)	0	7	7	(100)	0	(0)	1
1993/94	6	(86)	1	(14)	0	7	7	(100)	0	(0)	4
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
1999/00	7	(39)	11	(61)	0	18	18	(100)	0	(0)	7

Table 6 Unit 1B beaver harvest, chronology by month, 1991–1999

Regulatory year	Month								
	October[a]	November	December	January	February	March	April	May	n
1991/92	0	0	0	0	0	0	0	0	0
1992/93	0	0	0	0	0	0	0	0	0
1993/94	0	0	3	0	0	0	0	0	3
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
1999/00	0	0	4	0	0	0	0	0	4

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

Table 7 Unit 1B marten harvest, chronology by month, 1991–1999

Regulatory year	Month			
	December	January	February	n
1991/92	117	185	61	363
1992/93	20	29	0	49
1993/94	98	54	0	152
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
1999/00	51	295	7	353

Table 8 Unit 1B otter harvest, chronology by month, 1991–1999

Regulatory year	Month				n
	December	January	February	Unk.	
1991/92	0	0	0	0	0
1992/93	4	5	8	0	17
1993/94	6	14	1	0	21
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
1999/00	7	6	0	0	13

Table 9 Unit 1B wolverine harvest, chronology by month, 1991–1999

Regulatory year	Month						
	November	December	January	February	March	April	n
1991/92	0	0	3	3	0	0	6
1992/93	0	3	4	0	0	0	7
1993/94	1	3	3	0	0	0	7
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
1999/00	0	0	14	2	1	1	18

Table 10 Unit 1B beaver harvest, method of transportation, 1991–1999

Regulatory year	Boat	3-wheeler	Highway	Skis/snowshoes	Snowmachine	Unknown	Total
1991/92	0	0	0	0	0	0	0
1992/93	0	0	0	0	0	0	0
1993/94	0	3	0	0	0	0	3
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
1999/00	3	0	0	1	0	0	4

Table 11 Unit 1B marten harvest, method of transportation, 1991–1999

Regulatory year	Boat	3-wheeler	Snowmachine	Highway	Skis/snowshoes	Total
1991/92	202	0	140	0	21	363
1992/93	7	0	42	9	0	49
1993/94	75	68	0	9	0	152
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
1999/00	262	0	0	0	91	353

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 1C (7,600 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, mink, otters, and beavers make up the majority of the Unit 1C furbearer harvest. Smaller numbers of wolverines, weasels, and an occasional fisher are taken each year.

Beavers exist at moderate levels in most drainages along the coastal mainland where habitat is suitable. 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 there were 2 fishers trapped and brought to ADF&G. Both animals were captured on the mainland in marten sets. 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.

Coyotes, though once scarce to non-existent 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 numbers and may well be a response to an increase in snowshoe hares.

Little information exists for mink since trappers are not required to seal them. Anecdotal information indicates 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. 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 1998 and 1999 in an attempt to record the presence of fishers. These cameras were located near Bessie Creek and 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

Unit 1C furbearer populations appear to be 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 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	Nov 10–Feb 15	One

Trapping

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

Board of Game Actions and Emergency Orders. No Board of Game actions occurred and no emergency orders were issued during this report period.

Trapper Harvest. The number of beavers harvested during the period fluctuated from a high of 62 in 1997 to a low of 7 in 1998, and in 1999 the harvest was back up to 36. The low harvest in 1998 was likely due to the heavy snowfall that discouraged many trappers from pursuing beavers. In spite of the low 1998 harvest, the mean harvest of 35 beavers per season during this report period compares favorably against the mean of 28 for the previous 10 years. Much of the beaver harvest during this period is attributed to one trapper. Beavers are at times considered a nuisance because of their 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 declined throughout the report period from 20 in 1997 to 12 in 1998 and only 6 in 1999. Cars killed 4 otters. Conversations with trappers gave no indications that otters were less abundant, so lack of trapper effort probably affected harvest.

The mean annual harvest of wolverines during this report period was 5, nearly identical to the mean annual harvest of 5.6 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.

The marten harvest declined from a mean annual take of 248 during the previous report period to 201 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 70% in 1997 to 57% in both 1998 and 1999. The lower percentage of male marten in the harvest during the past 2 years may be an indication of a declining marten population. We believe the trapping effort during the period was within the population's capabilities.

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. In 1997 and 1999 the harvest was almost evenly divided between December and January. In 1998 however, the bulk of the harvest occurred in December.

Transport Method. Most Unit 1C trapping takes place adjacent to the Juneau road system, thereby allowing trappers access to areas with highway vehicles. In some cases 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 likely decline during the early part of the next report period based on the percentage of females in the harvest during 1998 and 1999. A single fisher was trapped in each year from 1996–1998, but none were reported harvested in 1999. There has been some discussion about the status of fishers and the lack of a season for this species. One trapper who captured a fisher in 1998 was displeased that he had to give the animal to the state. Presently there is no plan to open a fisher trapping season in Southeast Alaska.

PREPARED BY:
Neil Barten
Wildlife Biologist III

SUBMITTED BY:
Bruce Dinneford
Regional Management Coordinator

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

Barten, N. 2001. Unit 1C furbearer management report. Pages 23–28 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 1C furbearer harvest, 1986–1999

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

Table 2 Unit 1C marten harvest chronology by sex, 1994–1999

	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	0.0
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	0.0
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
Total	126	70	55	30	152	57	115	43	88	53	67	47

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 1D (2,700 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 travelling 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, land otters and mink 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, though once scarce, are now quite common throughout the unit. The lynx population varies from almost no animals to abundance, depending on the number of lynx and snowshoe hares in neighboring Canadian areas. Mountainous terrain in the subunit provides extensive wolverine habitat and the scavenging opportunities on wolf-killed moose and goats probably provides 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 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

The average annual harvest of 65 martens captured during this reporting period is substantially lower than the 99 and 108 marten caught in 1995 and 1996, respectively. It is unclear whether this trend is due to a change in marten density or a change in trapping effort. Heavy snows in 1999 may have excluded trappers from some areas of the unit, resulting in a lower catch. The high proportion of males in the harvest throughout this reporting period indicates a healthy and productive marten population.

Wolverine harvest decreased to less than 1.6 animals per year during this report period. This is a dramatic decrease from the previous 2 periods when the mean annual harvest was greater than 6. It is likely that decreased trapper effort is responsible for this difference, because during the years of high harvest 2 trappers were responsible for most of the wolverine catch. During this reporting period neither of these trappers was active. Because of extensive suitable habitat, the wolverine population is probably stable at low numbers.

No lynx were trapped during this report period, probably reflecting low densities typical in this unit. These animals were relatively common and easy to catch in the early 1990s, as the prey base in adjacent Canadian areas declined and lynx immigrated into the unit in search of food. It is unknown whether the lynx population was high or low in Canada during this report period.

Land otter harvests remained low, similar to levels experienced during the previous five years. The population appears to be healthy and widespread based on the abundance of otter tracks seen while flying winter moose surveys.

Sixteen beavers were trapped under 5 AAC 92.041 (permit to take beavers to control damage to property). The Division of Wildlife Conservation staff received complaints of beavers flooding several roads as well as negatively affecting aquaculture projects. Several nuisance permits were issued during this report period. 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. The Board adopted the proposal that will allow a trapping season beginning in the fall of 2001. The beaver season had been closed since 1976 due to low numbers.

MORTALITY

Harvest

<u>Seasons and Bag Limits</u>.

Hunting

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

Trapping

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

Board of Game Actions and Emergency Orders. No Board of Game actions occurred and no emergency orders were issued during this report period.

Trapper Harvest. Table 1 lists trapper harvest for the report period. The lynx harvest remained at zero during the 3-year period. Three otters were trapped in 1997, none in 1998, and 2 in 1999. The wolverine harvest declined from an annual mean of 6.5 during the previous report period, to less than 2 during 1997–1999. The marten harvest decreased from the previous reporting period; 86 martens were sealed in 1997, 48 in 1998, and 61 in 1999.

Harvest Chronology. The chronology of the marten harvest for the 3 years during the report period is shown in Table 3. 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 clear-cuts. 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 somewhat after an apparent rebound during the previous 2 years. It is not clear how much this movement is due to a change in trapper effort. Males continue to dominate the harvest, although the proportion of females has increased. At this time, there is no indication that any season or bag limit changes are needed. Monitoring sex ratios in the marten harvest should be continued and trapper interviews and questionnaires should be used to gather qualitative information about marten abundance. Harvests of other species are low, but management objectives are apparently being met.

PREPARED BY:

Neil L. Barten
Wildlife Biologist III

SUBMITTED BY:

Bruce Dinneford
Regional Management Coordinator

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

Barten, N. L. 2001. Unit 1D furbearer management report. Pages 29–34 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 1D furbearer harvest, 1989–1999

Regulatory year	Lynx	Martens	Otters	Wolverines
1989/1990	0	114	1	2
1990/1991	0	104	1	3
1991/1992	11	51	6	1
1992/1993	27	2	2	8
1993/1994	8	17	3	10
1994/1995	0	0	2	4
1995/1996	0	99	2	7
1996/1997	4	108	2	9
1997/1998	0	86	3	3
1998/1999	0	48	0	0
1999/2000	0	61	1	2

Table 2 Unit 1D marten harvest chronology by sex, 1994–1999

	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.

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 2 (3,900 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 accessible by motor vehicle. Thus, access to a large amount of furbearer habitat is exceptional and trappers can operate long traplines with relative ease. Clearcut logging has fragmented the landscape and in many cases, especially for marten, has reduced suitable habitat to narrow wildlife travel corridors. Concentrating furbearers and trappers, these travel corridors attract trappers and increase 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, 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 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, weather often affects the intensity of effort.

Beaver 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.

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 pelt prices have remained low and stable. This has resulted in moderate-to-low interest among trappers.

Weasel 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 (*Martes americana*), land otters (*Lutra canadensis*), beavers (*Tamiasciurus hudsonicus*), mink (*Mustela vison*), and flying squirrels (*Glaucomys sabrinus*). Wolverines, foxes, coyotes, lynx and red squirrels 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 over 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 (1990). Although early successional second-growth habitat can support higher populations of beavers than old growth, when second-growth canopy closes (approximately 20 years post-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, likely related to 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. 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 presently 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	Nov 10–Feb 15	One wolverine
Trapping		
Beaver	Dec 1–May 15	No limit

Lynx, mink, marten,		
Otter, weasel, muskrat	Dec 1–Feb 15	No limit
Wolverine	Nov. 10–April 30	No limit

Board of Game Actions and Emergency Orders. No Board of Game actions occurred and no emergency orders were issued during this report period.

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. However, during both 1996 and 1997, Unit 2 produced more marten than any other area in Southeast. During 1994–1997 unit 2 marten harvest reached the highest level ever recorded ($\bar{x}$=1073), then, in 1998, declined by about 43%. The 1999 harvest showed an increasing trend (778).

The harvest of 285 otters during 1998 was the highest on record and well above the 10-year average of 145. Trappers unable to access many roads because of deep and persistent snow may have spent their time pursuing otters instead of martens in 1998. During this 3-year report period (1997–1999), an average of 221 otters were sealed, up from the long-term average of 141. 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 9%. 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 as timber selections often occur in these preferred habitats.

The Southeast-wide harvest of 448 beaver during 1999 was the highest in recent years and well above the 5-year average of 329. The 1999 Unit 2 beaver harvest contributed considerably to this record. The Unit 2 harvest has fluctuated during the past 15 years from 411 in 1986 to a low of 64 in 1992. The average during the past 3-year report period was 219 with a high of 309 beaver in 1999. The low of 100 beaver sealed during the 1998 season may be a result of poor weather and less trapping effort rather than a declining beaver population.

Harvest Chronology. During the past 15 years about 30% of the beaver harvest occurred during December, followed by March (21%) and February (19%). Twenty-two trappers caught 138 beaver during March 2000, which is the most for any month during the past 10 years.

December is also the preferred month for marten trappers. Over the past 15 years about 70% of all martens taken are caught in December followed by January (25%) and February (5%). The 1998 season was slightly different with 85% of the harvest in December. Heavy snowfall in late December prevented trappers from accessing many roads during winter 1998. The average number of active marten trappers declined slightly during this 3-year report period ($\bar{x}$=32), compared to the past 15 years ($\bar{x}$=38).

During the past 15 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 ($\bar{x}$ =26) was similar to the long-term average ($\bar{x}$ =23).

Transport Methods. Trappers continue to use road vehicles (78%) and boats (19%) as the major modes of transportation to areas in Unit 2 (Table 2). The road system consists of over 2,000 miles of drivable surface and provides trappers and hunters with more road access than in any other unit in the region. During recent mild winters the road system has remained open and allowed trappers to reach most of the unit. The high 1999 beaver harvest (309) is likely a reflection of mild weather that allowed good road system access. The lack of snow on ponds and creeks created less work for beaver trappers and made trapping more efficient.

OTHER MORTALITY

Beavers were removed from specific areas because of flooding and erosion problems created by their cutting and damming activities. We issued 4 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.

Unit 2 marten ecology may differ from other Southeast populations due to a broader prey base. The increased beaver harvest contributed to a region-wide high harvest. The record 1998 otter harvest may have been enhanced by late snowfall, focusing trapping effort along the saltwater beach fringe.

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 tradeoffs for wildlife can be recognized and understood. The Roadless Initiative passed by Congress in 2000 will protect some prime furbearer habitat from future logging activities (USDA 2000). 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.

LITERATURE CITED

BRAND, C. J., AND L. B. KEITH. 1979. Lynx demography during a snowshoe hare decline in Alberta. J. Wildl. Manage. 43:827–849.

FLYNN, R. W., AND T. SCHUMACHER. 1997. Ecology of martens in Southeast Alaska. Fed. Aid Wildl. Rest. Prog. Rep. Grant W-24-2, Study 7.16. Juneau. 38pp.

HARBO, S. 1958. An investigation of mink in interior and Southeastern Alaska. M.S. Thesis, Univ. of Alaska, Fairbanks. 108pp.

HOME, W. S. 1977. Otter. Pages 48-57 *in* Dixon Harbor biological survey: Final report on winter mammal and bird studies. Natl. Park Serv., Juneau, Alaska.

JOHNSON, C. B. 1985. Use of coastal habitat by mink on Prince of Wales Island, Alaska. M.S. Thesis, Univ. of Alaska, Fairbanks. 179pp.

LARSEN, D. N. 1983. Habitats, movements, and foods of river otters in coastal southeastern Alaska. M.S. Thesis, Univ. of Alaska, Fairbanks. 149pp.

LARSEN, D. N. 1993. Survey-inventory management report. Furbearers. Pages 1–13 *in* S. M. Abbott, ed. Fed. Aid Wildl. Rest. Proj. W-23-3, W-23-4, Study 7.0. Juneau.

USDA FOREST SERVICE EIS. 2000. Forest Service Roadless Area Conservation Final Impact Statement. USDA Forest Service. 1950-3. Approx. 2,000 pp.

WOOD, R. E. 1990. Annual report of survey-inventory activities. Furbearers. Pages 1–7 *in* S. O. Morgan, ed. Fed. Aid Wildl. Rest. Proj. W-23-1, Study 7.0. Juneau.

WOOLINGTON, J. D. 1984. Habitat use and movements of river otters at Kelp Bay, Baranof Island, Alaska. M.S. Thesis, Univ. of Alaska, Fairbanks. 147pp.

PREPARED BY:
Boyd Porter
Wildlife Biologist III

SUBMITTED BY:
Bruce Dinneford
Regional Management Coordinator

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

Porter, B. 2001. Unit 2 furbearer management report. Pages 35–45 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 2 indices of abundance (I_A)[a] for furbearers[b], 1991–1999

	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
$\bar{x}$	45	52	73	65

[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, 1984–1999

Species/regulatory year	Total take	Percent male	Method of take (percent) Shot	Trapped or snared	Unk		Transportation used (percent) 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			90	1	4	0
1989/1990	397	--	0	100[b]	0		12	88	0	0	0
1990/1991	172	--	0	100	0			85	0	3	3
1991/1992	257	--	0	99	1		25	75	0	0	0
1992/1993	64	--	0	98	2	5	45	38	0	0	17
1993/1994	204	--	0	100	0		13	87	0	0	0
1994/1995	161	--	0	100	0	9	11	87	0	0	2
1995/1996	281	--	0	100	0			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	9		88	7	0	0
Marten											
1984/1985	1039	57	0	100	0		--	--	--	100	--
1985/1986	571	56	0	100	0	5	--	--	--	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
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

Table 2 Continued

Species/regulatory year	Total take	Percent male	Method of take (percent) Shot	Method of take (percent) Trapped or snared	Method of take (percent) Unk	Transportation used (percent) Boat	Transportation used (percent) Road	Transportation used (percent) Air	Transportation used (percent) Unknown	Transportation used (percent) Other
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]			85	0	78	22	0	0	0

[a] One beaver was hit and killed by a car.
[b] One beaver was shot. 36 15
[c] One otter was an illegal kill.

Table 3 Unit 2 furbearer harvest chronology by month, 1984–1999

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
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
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
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

Table 3 Continued

Species/regulatory year	Harvest periods							Successful trappers/hunters
	Dec	Jan	Feb	Mar	Apr	May	Unk	
1996/1997	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

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 3 (3,000 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, attracted Russians to colonize Southeastern Alaska in the late 1700s and early 1800s. Ships from many nations came to the area to trade with natives for fur. In the early part of the twentieth century, fur farming was one of the biggest industries in Southeast. Blue and silver fox and mink were the primary species raised, but attempts were also made to raise raccoons, skunks, beavers, muskrats, and red fox (Burris, McKnight 1973).

At one time there were 200 fur farms in operation, according to U.S. Forest Service (FS) 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 1936–1972. 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 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 FS 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 appear abundant and stable 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 common, but felt that populations decreased in 1996–1997. In 1997–1998 they reported martens were abundant with numbers declining. In 1998–1999 trappers reported martens abundant and stable.

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

Land otter populations were reported to be abundant and stable in 1996–1997, common and declining in 1997/98, and common and stable in 1998–1999.

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 1997/98 but no harvest was reported in 1998–1999 or 1999–2000.

Trappers reported on the questionnaire that rodent populations were abundant and stable. The FS has conducted small mammal surveys on Mitkof Island since 1993 (Table 2). They have established transects in clearcuts, old-growth habitats, and mixed conifer stands. All 3 habitats have shown similar densities of *Peromyscus* with a low in 1993, a high in 1994, and a declining population in 1996 and 1997. No surveys were conducted during 1998 and 1999.

In 1997, the FS initiated a study of marten ecology on Mitkof Island. A total of 27 martens were successfully fitted with radiocollars, including 12 in 1997 and 15 in 1998. Of the 12 martens collared in 1997, 5 (42%) were trapped that year, 2 died of natural causes, and 4 had unknown fates. Of the 15 animals collared in 1998, 4 (27%) were trapped that year, 4 (27%) were trapped in 2000, and 6 had unknown fates. Of the 14 animals harvested by trappers, 8 (57%) were trapped $\leq$ 1 mile from their original capture location, 3 (21%) were trapped 1–2 miles from their original capture location, and 2 (14%) were trapped from 2–12 miles from their original capture location. The capture location of the one remaining marten was not reported.

MORTALITY

Season and Bag Limit.

Hunting

Wolverine	Nov 10–Apr 30	One wolverine

Trapping

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

Board of Game Actions and Emergency Orders. No Board of Game actions occurred and no emergency orders were issued during this report period.

Trapper Harvest. The number of beaver trappers in Unit 3 increased by 50% during this report period. Ten to 11 successful trappers harvested 56, 54, and 43 beavers in 1997, 1998, and 1999, respectively (Table 3). The marten harvest was above the 9-year mean of 188 in 1997 and 1998 when 274 and 221, respectively, were taken. The harvest decreased substantially in 1999 when 160 martens were taken. The decreasing trend in marten taken may have been related to the decrease in the number of successful trappers from 19 in 1997, to 16 in 1998, to 15 in 1999 (Table 4). Unit 3 had an otter harvest of 46, 33, and 41 during the 1997, 1998, and 1999 seasons, respectively (Table 5). The wolverine harvest remained low during this report period, with 3 taken in 1997, and none reported in 1998 or 1999 (Table 6). 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 martens vary widely in quality and color and bring lower prices than interior 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 and April (Tables 7–10).

Transport Methods. Most beaver and marten trapping areas in Unit 3 are accessed by highway vehicles and boats. Prior to 1997 the majority of Unit 3 marten trappers used boats to access their trapping areas. During this report period, however, the number of martens harvested by trappers using highway vehicles surpassed the number taken by those using boats (Tables 11 & 12).

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 non-coastal habitat on the mainland and islands remain untrapped and provide refuge for furbearer populations.

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.

LITERATURE CITED

BURRIS, O.E. AND D.E. MCKNIGHT. 1973. Game Transplants in Alaska. Alaska Dept. of Fish and Game. Tech. Bull. No. 4. 30–38pp.

ROPPEL, P. 1983. Southeast Alaska: A Pictorial History. Library of Congress. Publication Data. 137pp.

GRAY, F. H. 1915. Smithsonian Institute Archives, Record Unit 7176, Box 7, Folder 3. U.S. Fish and Wildl. Serv. 1860–1961.

PREPARED BY:

Richard E. Lowell
Wildlife Biologist II

SUBMITTED BY:

Bruce Dinneford
Regional Management Coordinator

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

Lowell, R. E. 2001. Unit 3 furbearer management report. Pages 46–57 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 3 results from trapper questionnaire, 1996–1999

	1996/97 Petersburg, Wrangell, Kupreanof and vicinity		1997/98 Petersburg, Wrangell, Kupreanof and vicinity		1998/99 Petersburg, Wrangell, Kupreanof and vicinity	
Furbearers species	Relative abundance	Trend	Relative abundance	Trend	Relative abundance	Trend
Beaver	abundant	same	abundant	fewer	abundant	same
Ermine	abundant	same	common	fewer	abundant	same
Lynx				x	scarce	same
Marten	common	fewer	abundant	fewer	abundant	same
Mink	abundant	same	abundant	fewer	abundant	same
Muskrat	scarce	same	scarce	same	scarce	same
Red Squirrel	abundant	same	abundant	fewer	abundant	more
Land Otter	abundant	same	common	fewer	common	same
Wolf	abundant	same	abundant	fewer	abundant	same
Wolverine	scarce	same	scarce	fewer	common	more
Prey species						
Grouse	common	same	common	fewer	common	same
Ptarmigan	x common	same	scarce	fewer	scarce	same
Mice/rodents	abundant	same	abundant	fewer	abundant	same

Table 2 *Peromyscus*/100 trap nights, Unit 3, 1993–1997[a]

Year	Twin Creek clearcut	Twin Creek old growth	Twin Creek mixed conifer
1993	4	8.0	4.0
1994	20.7	20.0	21.0
1996	18	18.7	16.7
1997	15.3	15.3	4.8

[a] Conducted by FS on Mitkof Island.

Table 3 Unit 3 beaver harvest, 1991–1999

		Method of Take			
Regulatory year	Reported harvest	Trap/snare	Shot	Unknown	Successful trappers
1991/92	80	80	0	0	18
1992/93	34	33	1	0	8
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
1999/00	43	43	0	0	10

Table 4 Unit 3 marten harvest, 1991–1999

Regulatory year	Reported harvest						Successful trappers
		(%)	F	(%)	Unk.	Total	
1991/92	129	(60)	87	(40)	0	216	20
1992/93	41	(57)	31	(43)	0	72	8
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
M 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
1999/00	108	(68)	52	(32)	0	160	15

Table 5 Unit 3 land otter harvest, 1991–1999

Regulatory year	Reported harvest						Method of take					
	M	%	F	%	Unk.	Total	Trap/snare	%	Shot	%	Unk.	Successful trappers
1991/92	20	(29)	37	(54)	12	69	69	(100)	0	(0)	0	12
1992/93	7	(54)	6	(46)	0	13	11	(85)	2	(15)	0	5
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
1999/00	23	(56)	18	(44)	0	41	25	(61)	16	(39)	0	11

Table 6 Unit 3 wolverine harvest, 1991–1999

Regulatory year	Reported harvest						Method of take				Successful trappers
	M	%	F	%	Unk.	Total	Trap/snare	%	Shot	%	
1991/92	2	(100)	0	(0)	0	2	2	(100)	0	(0)	2
1992/93	1	(100)	0	(0)	0	1	0	(100)	0	(0)	1
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	(100)	0	(0)	0
1999/00	0	0	0	0	0	0	0	(100)	0	(0)	0

Table 7 Unit 3 beaver harvest chronology by month, 1991–1999

Regulatory year	Month								
	November	December	January	February	March	April	May	June[a]	*n*
1991/92	4	16	20	22	13	5	0	0	80
1992/93	7	19	2	0	0	6	0	0	34
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
1999/00	0	12	1	7	11	12	0	0	43

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

Table 8 Unit 3 marten harvest chronology by month, 1991–1999

Regulatory year	Month				
	December	January	February	Unknown	*n*
1991/92	139	56	21	0	216
1992/93	44	27	0	1	72
1993/94	68	73	36	0	177
1994/95	45	28	6	0	79
1995/96	89	67	76	0	232
1996/97	132	95	33	2	262
1997/98	189	64	17	4	274
1998/99	161	58	2	0	221
1999/00	94	56	10	0	160

Table 9 Unit 3 land otter harvest chronology by month, 1991–1999

Regulatory year	Month						*n*
	June[a]	July	Oct.	Dec.	Jan.	Feb.	
1991/92	0	0	0	37	16	16	69
1992/93	0	0	0	10	2	1	13
1993/94	0	0	0	28	45	9	82
1994/95	0	3	1	19	13	10	46
1995/96	0	0	0	20	7	6	33
1996/97	0	0	0	18	31	18	67
1997/98	0	0	0	25	11	10	46
1998/99	1	0	0	13	18	1	33
1999/00	0	0	0	15	12	14	41

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

Table 10 Unit 3 wolverine harvest chronology by month, 1991–1999

Regulatory year	Month						
	November	December	January	February	March	April	*n*
1991/92	0	0	2	0	0	0	2
1992/93	0	1	0	0	0	0	1
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
1999/00	0	0	0	0	0	0	0

Table 11 Unit 3 beaver harvest, method of transportation, 1991–1999

Regulatory year	Airplane	Boat	3-wheeler	Highway	Skis/snowshoes	Snowmachine	Unknown	Total
1991/92	0	15	0	63	0	0	2	80
1992/93	0	5	0	29	0	0	0	34
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
1999/00	0	1	0	42	0	0	0	43

Table 12 Unit 3 marten harvest, method of transportation, 1991–1999

Regulatory year	Boat	3-wheeler	Snowmachine	Highway	Skis/snowshoes	Unknown	Total
1991/92	104	0	0	57	21	34	216
1992/93	39	0	12	21	0	0	72
1993/94	131	3	0	43	0	0	177
1994/95	57	22	0	0	0	0	79
1995/96	99	0	76	57	0	0	232
1996/97	170	8	29	55	0	0	262
1997/98	136	18	0	120	0	0	274
1998/99	72	9	5	120	15	0	221
1999/00	29	0	0	131	0	0	160

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 4 (5,800 mi^2)

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

BACKGROUND

Furbearer trapping in Game Management Unit 4 (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, limits 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 include martens (*Martes americana*), land otters (*Lontra canadensis*), mink (*Mustela vison*), short-tailed weasels (*Mustela erminea*), red squirrels (*Tamiasciurus hudsonicus*), and beavers (*Castor canadensis*).

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

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

2. Provide for the expansion of beaver populations in western portions of the Unit (Chichagof and Baranof islands).

3. Seal harvested beaver, marten, and land 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 land otter populations through carcass necropsies and evaluation of those data.

METHODS

Trappers were required to submit land 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 the direction of the growth of the underfur at the posterior end of the abdominal gland were used to verify sex (Lensink 1953 in ibid). Width and length measurements were recorded for otters and beavers. 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 Unit 4 trappers. Names and addresses were compiled from sealing documents. For the 1997/98 season, 69 trappers received questionnaires and responses were obtained from 19 (28% response rate). For the 1998/99 season, 51 trappers received questionnaires and responses were obtained from 19 (37% response rate). During 2000, 40 and 17 questionnaires were sent and received, respectively (43% response rate).

Responses to trapper questionnaires provided a profile of trappers and their activities and observations. Additionally, responses can provide an indication of the harvest of unsealed furbearers. Formerly the annual estimate of the Unit 4 mink take was based on the Sitka Area Biologist’s estimates or by combining Fur Export Reports and Fur Acquisition Reports. Neither of these methods was accurate and severely underestimated the amount of harvest.

During this reporting period, I compared the number of martens reported harvested on the questionnaires versus the number sealed. Assuming the number sealed more accurately reflects the total harvest than questionnaire returns, I developed an annual conversion factor, which was then used to estimate the number of mink harvested. The conversion factor derived for marten was multiplied by the number of mink reported on questionnaire responses, resulting in a corrected mink capture.

Carcasses were collected from area trappers and necropsies were performed. A series of weights and standard body measurements were collected from martens, mink, and land otters. Sex and age classes were assigned to each carcass. Relative physical condition was assessed based on the amount of external and internal fat depositions (Whitman 2000). Stomachs were examined for presence and number of parasites, particularly the roundworm *Soboliphyme baturini*. Skulls, femurs, and, where appropriate, bacula, were collected and 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.

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

As indicated by Flynn (personal communication), small mammal abundance may reflect marten abundance. Therefore, I initiated 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, 1996). Marten numbers declined during winter 1992 and remained low into 1993. Marten numbers peaked in winter–fall 1996 and declined substantially by winter 1997. At the same time, the abundance 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-sound density estimates are available for any Unit 4 furbearer species, evidence from trapper questionnaires appear adequate to reveal general population trends. During 1995–1999, trapper responses indicated that marten populations were moderate with a slightly increasing trend. Mink populations remained stable at moderate levels, while land otter populations apparently increased slightly to moderate levels (Fig. 1). Beaver and ermine populations were thought to be low, while red squirrels populations were moderate to high, increasing throughout the period. Trends in prey species can influence abundance of some furbearer species. 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 to female ratios or from total young to adult female ratios in the harvest, particularly for martens. During the 1997/98 season, marten harvests consisted of 60% males, based on sealing documents. During the 1998/99 and 1999/00 seasons, the percent males in the harvest was 64 and 65%, respectively, indicating strong populations. Based on carcass collections from the 1998/99 and 1999/00 seasons, percentage of males in the harvest was 67 and 60%, respectively. Total young to adult female ratios are probably a better indication of population status (Strickland and Douglas 1987). Various Canadian jurisdictions use a ratio of 3:1 young to adult females for managing their seasons; if ratios fall lower, seasons are curtailed. Higher ratios signify populations where production and subsequent survival of young was high. Ratios from Unit 4 during 1998/99 were

4.8:1, and during 1999/00 were 13.4:1. These exceptionally high juvenile to adult female ratios appear to reflect secure marten populations.

Mink are throughout Unit 4, but are largely restricted to intertidal and riverine habitats. Populations are thought to be stable at relatively high densities (Whitman 2000, Whitman, *in review*, Appendix A). Based on trapline captures in good habitat near Sitka, densities of at least 12 mink per linear mile of beach exist. No statistically sound census techniques were employed.

Land otters are throughout the Unit 4 islands. No census data are available, but populations are thought to be stable.

Admiralty Island beaver populations are stable. Beaver numbers are low on Baranof Island. The season is currently closed on both Chichagof and Baranof islands.

Status of prey populations potentially available to martens 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 were reported as moderate to high during 1995–99, 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 1997–1999.

Small mammal snaptrap lines were established during 1999, and 726 trap-nights resulted in 46 captures, indicating relatively high populations, especially of Sitka mice (*Peromyscus keeni*) and common shrews (*Sorex cinereus*). During 2000, only 310 trap-nights of effort yielded 10 captures, indicating small mammal populations had declined in comparison with the previous year (6.34 captures/100 trap-nights in 1999 vs. 3.23 captures/100 trap-nights in 2000), although captures of long-tailed voles (*Microtus longicaudus*) increased.

Population Composition

<u>Marten</u>

In 1997/98, sealing documents indicate that trappers caught 60% male martens, in 1998/99 sixty-four percent, and 65% in 1999/00 (Table 1). In the ADF&G research program, 59% males were caught in 1991/92 (Flynn and Blundell 1992), and 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 2-fold increase of mice and voles on their study areas. They concluded that marten numbers were recovering on northern Chichagof Island, but recruitment to the south appeared to be lagging a year behind.

A total of 98 marten carcasses were collected and necropsied during the 1998/99 season. Sixty-six were males (67%). The total young to adult female ratio in the harvested sample was 4.8:1.

This ratio suggests reasonable production and survival of pups during spring 1998, with the overall marten population probably stable.

Of 179 marten carcasses necropsied during the 1999/00 season, 107 were males (60%), indicating only a slight difference from the overall catch rates gathered from sealing documents. Based on cementum analyses, 134 (75%) were young-of-the-year, with the remainder ranging from 1 to 7 years of age (Fig. 2). The total young to adult female ratio was 13.4:1. This extremely high young to adult female ratio is probably reflective of a healthy, expanding 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. Necropsy data from the 2000/01 season have yet to be analyzed.

Land Otter

The percentage of male land otters taken by trappers was 57% in 1997/98, 57% in 1998/99, and 59% in 1999/00 (Table 1). In an effort to obtain morphological measurements that would allow age class determination without the time and expense involved in cementum analyses, skulls, femurs, and bacula were collected from otters harvested near Sitka. After cleaning, 6 skull measurements were recorded from 41 otters whose age at death was determined by cementum analysis. Prior to cementum aging, individuals were assigned to a discreet age class (young-of-the-year, yearling, and adult) based on tooth wear patterns and degree of suture closure. Cementum age determination corresponded well with the more subjective age class designations.

Five of the 6 skull measurements (total length, zygomatic width, inter-orbital width, post-orbital process width, and mastoid width), baculum weight, and femur length generally increased with age, although regression analyses on any individual measurement failed to differentiate discreet age or even age class. Post-orbital constriction width, however, showed a negative relationship when regressed against cementum age. Contrary to findings of Friley (1949) and Lancia and Hair (1983), I found only a slight positive relationship between baculum weight and age.

Unlike most other mustelids, none of the skull measurements I investigated were diagnostic for determination of sex in land otters, although other investigators have noted weight dimorphism (Melquist and Hornocker 1983). I will continue to collect skulls, bacula, and femurs from harvested otters in an effort to determine statistically meaningful sexing and aging criteria.

Ages of harvested land otters from the 1998/99 season were investigated. Animals were judged to be young-of-the-year (<1 year-old) if nasal or zygomatic sutures were clearly evident in cleaned skulls, apices of canine roots were open, or if the distal femur symphysis was evident. Animals judged to be $\geq$1 year were aged based on canine cementum analysis (Matson's Laboratory, Montana).

Mean age of the 1998/99 harvested otter sample was 2.90 ($\pm$0.663, p=0.10) years (n=49), and ranged from 0 to 11 years (Fig. 3). There was no difference between mean ages of males (n=29 and females (n=20) (p<0.05).

Because of their larger home ranges and their propensity to travel more, male land 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 otter harvests ranged from 63 to 226 animals during 1977/78 through 1997/98, and percent males in the harvest ranged from 39.7 to 64.0 (mean 53.5%). 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 provides limited data upon which population status assumptions can be made, it does provide baseline data for comparative purposes.

Mink

A manuscript was recently submitted to the Canadian Field-Naturalist for publication concerning mink population parameters and management recommendations in Unit 4 (see Appendix A).

MORTALITY

Harvest

Seasons and Bag Limits

Hunting		
Coyote	Sep 1–Apr 30	2 coyotes
Wolf	Aug 1–Apr 30	5 wolves
Wolverine	Nov 10–Feb 15	1 wolverine
Trapping		
Beaver (that portion east of Chatham Strait)	Dec 1–May 15	No limit
Beaver (that portion west of Chatham Strait)	No open season	
Coyote, red fox, lynx, otter	Dec 1–Feb 15	No limit
Marten and mink, 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	Dec 1–Dec 31	No limit
Marten and mink, remainder of Unit 4	Dec. 1–Feb. 15	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 746 marten pelts sealed in 1997/98, 447 were males, 298 were females, and 1 was of unknown sex. In 1998/99, 559 were examined; 358 were males, 200 were females, and 1 was of unknown sex. In 1999/00 there were 730 males, 396 females, and 8 of undetermined sex, for a total of 1134. Table 1 summarizes the sexes of martens in the harvest for the 1995–2000 regulatory years.

Comparison of marten harvest data from sealing documents and from trapper questionnaires resulted in a conversion factor of 2.73 for 1998/99, and 2.12 for 1999/00 (number of sealed marten/number of marten reported on trapper questionnaires). Using those same conversion factors for mink, I estimate that 221 mink were taken from the unit during 1998/99 and 333 mink were harvested during 1999/00.

Two hundred twenty-eight land otters were sealed in 1997/98, 130 males and 98 females. In 1998/99 there were 81 males and 62 females, for a total of 143. The 1999/00 harvest was 116 otters, 69 males, 41 females, and 6 of undetermined sex. Harvest sex ratios since 1995 are presented in Table 1.

Hunter Residency and Success. During the 1997/98 season, 41 trappers reported catching martens, 35 of which were residents of the unit. In 1998/99 there were 27 marten trappers, 23 who listed residency in Unit 4. For 1999/00 there were 34 trappers, of which 26 were unit residents (Table 2).

Of the 20 trappers sealing otters, 15 claimed Unit 4 residency in 1997/98. In 1998/99 16 otter trappers reported catching otters, all claiming unit residency. For 1999/00 there were 21 trappers with 16 unit residents (Table 2).

Harvest Chronology. The greatest marten harvest occurred in the first month of the trapping season. A total of 584 (78%) of the 1997/98 marten were taken in December. In 1998, 462 (83%) martens were caught in December. In 1999 the December harvest was 1007 (89%) (Table 3).

In 1997/98, 90 (39%) of all trapped otters were taken in December. For the 1998/99 and 1999/00 seasons, 97 (68%) and 91 (78%), respectively, were taken in December (Table 3).

Transport Methods. Trappers using boats for transportation take most martens. In 1997/98, 81% of all martens were taken by trappers who used boats; in 1998/99, 86%; and in 1999/00, 91% (Table 4). Other transportation means that may be important in any given year include snowmachines, 4-wheelers, highway vehicles, and walking. Weather conditions influence the degree to which these other transportation types are used in any given year.

The otter take is almost entirely with the aide of boats. For the 1997/98, 1998/99, and 1999/00 seasons, respectively, boats were reportedly used for 97%, 93%, and 97% of the harvest.

HABITAT

Assessment

The carrying capacity for martens is undoubtedly decreasing in many Unit 4 areas because of clearcutting of old-growth habitats. Martens have been found to spend most their time in old-growth forest (Flynn 1991). 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 furbearer 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 Claim Act (ANILCA). Federal lands on Chichagof Island 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. As martens 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. I do not recommend any change in trapping regulations at this time.

The beaver harvest remained low during the report period. This is likely because of a small demand for beavers and the dearth of 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 utilized. Continued closure of beaver trapping west of Chatham Strait is recommended to encourage natural expansion of beavers into areas of re-growth.

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 over trapping most species appears low. Specific harvest or population objectives cannot be used as management standards without programs in place that document population status. We intend to evaluate the practicality of a management objective regarding marten sex ratios in the harvest.

LITERATURE CITED

BUSKIRK, S. W. AND S. L. LINDSTEDT. 1989. Sex biases in trapped samples of mustelidae. J. Mamm. 70(1):88–97.

FLYNN, R, W. AND G. BLUNDELL. 1992. Ecology of martens in Southeast Alaska. Alaska Dep. Fish and Game, Fed. Aid in Wildl. Rest., Research Prog. Rep. Proj. W-23-5, Study 7.16, 32pp.

FLYNN, R, W. 1993. Ecology of martens in Southeast Alaska. Alaska Dep. Fish and Game, Fed. Aid in Wildl. Rest., Research Prog. Rep. Proj. W-24-1, Study 7.16, 49pp.

FLYNN, R, W. AND T. V. SCHUMACHER 1994. Age structure and fecundity of martens on Chichagof Island and northern Baranof Island, Southeast Alaska, during 1993–94. Alaska Dep. Fish and Game, Fed. Unpub. Rep. to USDA Forest Service. 14pp.

LARSEN, D. N. 1983. Habitats, movements, and foods of land otters in coastal Southeast Alaska. M.S. Thesis. Univ. of Alaska, Fairbanks. 149pp.

LENSINK, C. J. 1953. An investigation of the marten in interior Alaska. M.S. Thesis. Univ. Alaska, Fairbanks. 89pp.

STRICKLAND, M. A. AND C. W. DOUGLAS. 1987. Marten. Pages 531–546 *in* Wild Furbearer Management and Conservation in North America. M. Novak, J. A. Baker, M. E. Obbard and B. Malloch, eds. Ontario Ministry of Nat. Resources. Toronto.

YOUNG, E. L. AND T. E. SCHENCK. 1991. Development of Federal/State management criteria for an impacted marten (*Martes americana*) population in southeastern Alaska. Presented at N.W. Section of The Wildl. Soc. Silverdale, WA.

PREPARED BY:

Jackson S. Whitman
Wildlife Biologist III

SUBMITTED BY:

Bruce Dinneford
Regional Management Coordinator

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

Whitman, J. S. 2001. Unit 4 furbearer management report. Pages 58–76 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 4 furbearer harvest data, 1995–1999

Season	Male	Female	Unknown	Total
Marten				
1995/96	520	245	2	767
1996/97	962	576	21	1559
1997/98	447	298	1	746
1998/99	358	200	1	559
1999/00	730	396	8	1134
Otter				
1995/96	87	91	9	187
1996/97	64	36	0	100
1997/98	130	98	0	228
1998/99	81	62	0	143
1999/00	69	41	6	116

Table 2 Unit 4 trapper residency and success, 1995–1999

Season	Local[a]	Nonlocal	Nonresident	Total
Marten				
1995/96	39	11	0	50
1996/97	43	12	0	55
1997/98	35	6	0	41
1998/99	23	4	0	27
1999/00	26	8	0	34
Otter				
1995/96	19	7	0	26
1996/97	17	5	0	22
1997/98	15	5	0	20
1998/99	16	0	0	16
1999/00	16	5	0	21

[a]Unit 4 residents.

Table 3 Unit 4 furbearer harvest chronology by month, 1995–1999

Season	November	December	January	February	Seasonwide	Total
Marten						
1995/96	0	607	155	5	0	767
1996/97[a]	9	1192	303	51	4	1559
1997/98	0	584	156	6	0	746
1998/99	0	462	78	19	0	559
1999/00	0	1007	117	10	0	1134
Otter						
1995/96	0	143	38	6	0	187
1996/97	0	27	61	12	0	100
1997/98	0	90	123	15	0	228
1998/99	0	97	45	1	0	143
1999/00	0	91	23	2	0	116

[a]November kills are illegal.

Table 4 Unit 4 successful trapper transport methods, 1995–1999

Season	Airplane	Horse/ dog team	Boat	Highway vehicle	4-wheeler/ snowmachine	Walked	Off-road vehicle	Unknown
Marten								
1995/96	3	0	503	67	82	98	14	0
1996/97	24	0	1068	312	59	96	0	0
1997/98	0	0	604	47	54	41	0	0
1998/99	0	0	483	38	14	24	0	0
1999/00	2	0	1034	0	1	81	16	0
Otter								
1995/96	0	0	175	0	0	11	0	1
1996/97	1	0	89	0	0	10	0	0
1997/98	0	0	222	3	0	3	0	0
1998/99	0	0	133	6	0	4	0	0
1999/00	0	0	112	0	0	4	0	0

APPENDIX A.

Age Structure Differences in American Mink, *Mustela vison*, Populations under Varying Harvest Regimes

JACKSON S. WHITMAN[1]

[1]ALASKA DEPARTMENT OF FISH AND GAME, WILDLIFE CONSERVATION DIVISION,

304 LAKE STREET, ROOM 103, SITKA, ALASKA 99835

Whitman, J.S. 2000. Age structure differences in American Mink *(Mustela vison)* populations under varying harvest regimes. Canadian Field-Naturalist XXX(X):XXX-XXX.

Two American Mink populations were examined using canine tooth cementum annuli to assess age structure of harvested segments of the populations. Trapping mortality was different between these 2 populations. Comparisons are made with a Montana Mink population. I propose that furbearer managers can readily assess relative harvest pressures by analyzing the age structure of a Mink population, and offer management recommendations for populations displaying various age structures.

Key Words: American Mink, *Mustela vison*, age structure, cementum, harvest management, Alaska, Idaho, Montana.

Raw fur prices fluctuate dramatically due to unpredictable fashion trends, thus trapping effort varies accordingly, without predictable trends. The American Mink (*Mustela vison*) is one of several species that are harvested throughout most of the United States and Canada (Eagle and Whitman 1987), and are considered a valuable fur resource (Deems and Pursley 1983). As early as 1938 it was recognized that intensive trapping can cause local declines in Mink populations (Errington 1938, McCabe 1949). However, furbearer managers are often at a disadvantage when assessing the status of various populations because of inadequate funding or staffing.

In the absence of empirical population data, information presented herein may provide managers with a reasonable and relatively inexpensive tool for assessing the status of Mink populations. Mink carcasses can be collected from trappers and, in addition to assessing other parameters (diet, fat indices, sex ratios, reproductive status, etc.), canines or other teeth can be extracted, processed, and evaluated. A low incidence of juveniles in the harvested segment of the population may indicate low harvest pressure, or may signal the presence of more severe environmental problems, such as the presence of toxic contaminants (Aulerich et al. 1974, O'Shea, et al. 1981).

STUDY AREAS

Two divergent American Mink populations were analyzed. A population in west central Idaho (Upper Payette River drainage, Valley County) was studied between 1977 and 1980 (Whitman 1981). This population (Idaho) inhabited a high glacial valley, ranging from 1500-2000 m elevation in a riverine habitat. Weather conditions were continental, typified by accumulations of winter snow (mid-November through mid-April) and temperate, dry summers. Yearly precipitation averaged 64 cm. Temperature variations ranged from an average of –7.4^{o}C in January to 17.1^{o}C in July. This study area encompassed at least 9 traplines that had been trapped annually for several decades at a moderate intensity.

A second Mink population in the Alexander Archipelago in Southeast Alaska (Alaska), on Baranof and Chichagof islands near Sitka, inhabits a marine coastal environment characterized by temperate, rainy conditions. Snow accumulations were highly variable, but rarely amount to more than 30 cm. Average annual precipitation was 219 cm, with temperature means of 3^{o}C to 17^{o}C in January and August, respectively. Carcass collections from this area were from the 1999/2000 trapping season, a year with no measurable snow accumulation at tideline. Area trappers catch Mink only incidentally while targeting American Marten (*Martes americana*) and River Otter (*Lontra canadensis*), and harvest pressures are extremely light.

METHODS

Mink carcasses from trapper harvests during open seasons (November-January) were collected in both study areas. Lower canine teeth were extracted from most animals suspected to be adults based on presence or absence of the suprasesamoid tubercle (Greer 1957), skull and bacular morphology, tooth wear, or skull suture characters. Canines were sectioned, stained, and analyzed for number of cementum annuli (Matson's Laboratory, Milltown, Montana). Cementum annuli were assumed to represent the actual age of Mink in years (Eagle and Whitman 1987).

Following cementum analysis, data were graphed using Microsoft Excel software, and logarithmic regression analysis was used to fit curves to the data. There were no significant differences between sexes in age class distribution, so sexes were lumped. Forty-two and 81 Mink were used for Idaho and Alaska samples, respectively.

In an attempt to clarify data reported by Mitchell (1958), and to compare those data with my own, I have assumed that his "adult" animals were all between the ages of 1 and 3 years. Because he did not report actual ages of adults, my use of his information to construct log curves is largely speculative.

RESULTS AND DISCUSSION

Of 42 Mink collected from fur trappers in the Idaho study, 17 were adults (older than 1 year), for a juvenile to adult ratio of 1.47:1. In the Alaska sample, 45 of 81 animals were adults (0.08:1 ratio) (Table 1). The oldest animal in both populations was a single 4-year old, confirming reports of Mitchell (1961) in Montana, Gerell (1971) in Sweden, and Askins and Chapman (1984) in Maryland that population turnover generally occurred during a 3-year period. Mitchell (1958) compared ages of Mink in intensively harvested areas versus unharvested areas, and reported dramatically different demographic parameters (juvenile:adult ratios of 4.5:1 and 0.3:1, respectively).

In the Idaho study, Mink harvest was believed to be moderate, had been occurring for more than a decade prior to the investigation, and continued throughout the 1977–1980 study. Mink were relatively abundant but populations were assumed to be below carrying capacity. In the Alaska investigation, trappers incidentally caught Mink in sets primarily designed for American Marten (*Martes americana*), but their effects on Mink populations were thought to be negligible. Because Marten did not exist on islands over most of the area, Mink had not been trapped prior to this investigation for at least 5 years. Thus, harvest pressures were assumed to be extremely light, and Mink probably existed at or near carrying capacity.

Contrasting the age structure of the 2 subject populations (Figure 1), and further, comparing these data with that of Mitchell (1958)(Figure 2), it is probable that furbearer managers can use age structure data as one indicator of the effects of trapper harvest on Mink populations. If logarithmic curves can be closely fit to the resultant age structure data, the steepness of the curves can be used to estimate harvest intensity. Obviously, Mink populations exist at widely differing densities throughout their range, largely dependent on carrying capacity of various habitats. High or low catches per unit area or per unit effort do not necessarily reflect high or low harvest pressure.

Using juvenile to adult ratios to assess harvest pressures can also be used without the time and expense of cementum analyses (Table 1) using my assessment of relative harvest pressure. In areas where the juvenile to adult ratio is greater than 2.0:1 and trapping is intense, managers should consider modifying regulations to reduce the harvest. However, where Mink trapping is incidental to other species, alignment of seasons is often an overriding management consideration. Additionally, where Mink harvest is incidental, adults may be more aggressive in patrolling their respective home ranges and thus more vulnerable to capture.

Interestingly, most authors agree that a high proportion of young in the harvest of American Marten is desirable (Strickland and Douglas 1987). Thus, from the data contained herein, there appears to be an incongruity in prescribed management of 2 closely related species. This can perhaps be explained by species differences in home range use and the relative numbers of dispersing and transient young-of-the-year animals in the populations. The greater vulnerability of young Martens is probably due to a number of factors, including lack of established home ranges and lack of experience. Young Mink, on the other hand, probably disperse from their natal ranges earlier than Martens, establishing home ranges before the trapping season commences (Gerell 1970), or may remain as residents in their natal home ranges (Harbo 1958).

ACKNOWLEDGEMENTS

I thank Linda Bergdoll-Schmidt for her assistance in numerous Mink carcass necropsies, often under malodorous conditions. The Idaho carcass collections were conducted through the University of Idaho Cooperative Wildlife Research Unit by the author with the supervision and encouragement of Maurice Hornocker. Wayne Melquist often provided field assistance and support. Alaska work was conducted as part of management operations by the author while working for the Alaska Department of Fish and Game. For their assistance in providing carcasses, I thank the many trappers who made the effort to contribute samples, especially Jim Bacon and Loyal, Mike, and Kevin Johnson. L. Johnson, W. B. Dinneford, J. Copeland and X anonymous reviewers provided valuable criticisms of this manuscript. Thanks are also extended to my supervisor, W. B. Dinneford, for allowing the latitude to explore furbearer population and management concerns.

LITERATURE CITED

ASKINS, G. R. AND J. A. CHAPMAN. 1984. Age determination and morphological characteristics of wild mink from Maryland, USA. Z. Saugetierk. 49:182-189.

AULERICH, R. J., R. K. RINGER, AND S. IWAMOTO. 1974. Effects of dietary mercury on mink. Arch. Environ. Contam. Toxicol. 2:43-51.

DEEMS, E. F., JR. AND D. PURSLEY. 1983. North American furbearers: a contemporary reference.
International Association of Fish and Wildlife Agencies, Maryland Department of Natural
Resources. 223pp.

EAGLE, T. E. AND J. S. WHITMAN. 1987. Mink. *In* Wild Furbearer Management and ion in North America. M. Novak and J. Baker, eds. Ontario Ministry of Natural Resources, Toronto. Pp. 614-624.

ERRINGTON, P. L. 1938. The decline of a mink population. J. Mammal. 19:250-251.

GERELL, R. 1970. Home ranges and movements of the mink, Mustela vison Schreber in southern Sweden. Oikos 21:160-173.

———. 1971. Population studies on mink, *Mustela vison* Schreber, in southern Sweden. Viltrevy 8:83-114.

GREER, K. R. 1957. Some osteological characters of known-age ranch minks. J. Mammal. 38:319-330.

HARBO, S.J. JR. 1958. An investigation of mink in interior and southeastern Alaska. M.S. Thesis. Univ. Alaska, Fairbanks. 108pp.

MCCABE, R. A. 1949. Notes on live-trapping mink. J. Mammal. 30:416-423.

MITCHELL, J. L. 1958. Mink population study. Montana Fish and Game Department, Pittman-Robertson Proj. W-49-R-7, Project Report. 3pp.

———, 1961. Mink movements and populations on a Montana river. J. Wildl. Manage. 25:48-54.

O'SHEA, T. J., T. E. KAISER, G. R. ASKINS, AND J. A. CHAPMAN. 1981. Polychlorinated biphenyls in a wild mink population. Pages 1746-1751 *in* J. A. Chapman and D. Pursley, eds. Proc. Worldwide Furbearer Conference, Frostburg, Md.

WHITMAN, J. S. 1981. Ecology of mink (*Mustela vison*) in west-central Idaho. M.S. Thesis. Idaho Cooperative Wildlife Research Unit. University of Idaho, Moscow. 102pp.

Table 1. Juvenile:adult ratios from 4 harvest regimes in Montana, Alaska, and Idaho showing the continuum and with recommendations for furbearer managers.

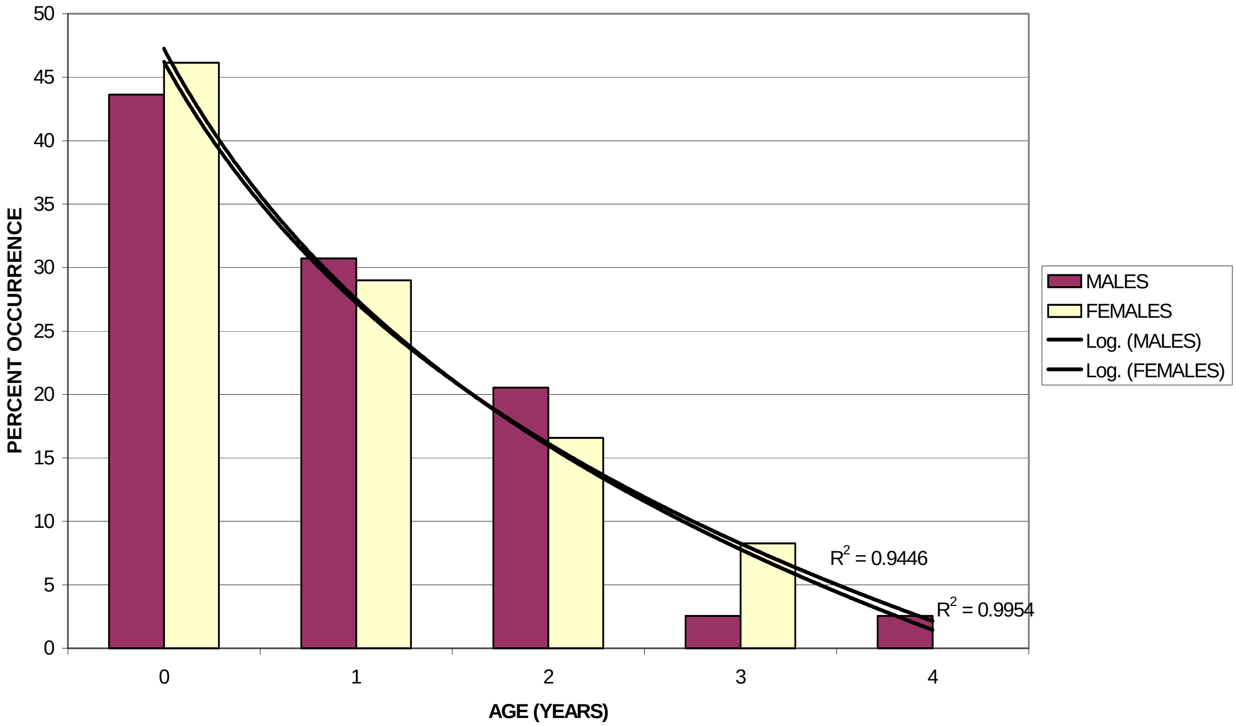
Figure 1. Comparison of age classes in the harvest of two American Mink (*Mustela vison*) harvest regimes from Alaska, where no recent prior harvest had occurred, and from Idaho, where harvest was ongoing but relatively moderate.

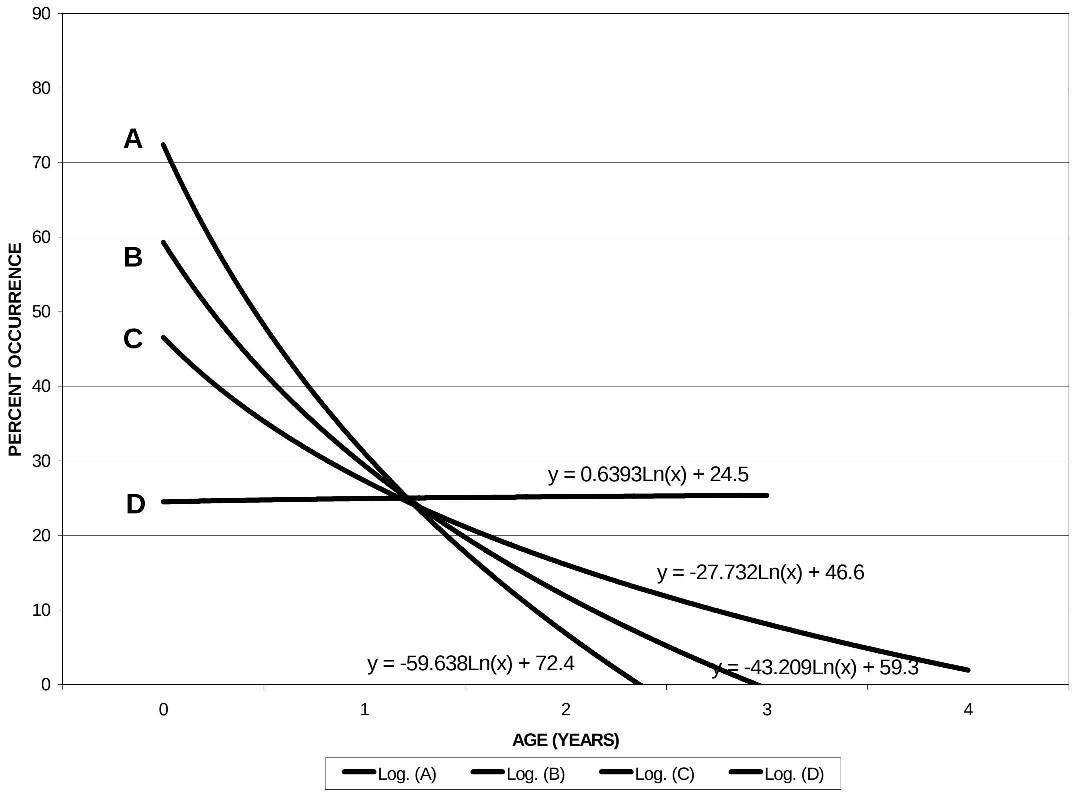
Figure 2. Theoretical (lines A and D) and actual (lines B and C) logarithmic regression lines of American Mink age distribution ranging from a population with very heavy trapping pressure (line A) through a population with light trapper exploitation (line D).

Table 1.

Relative Harvest	**Author**	**Location**	**Juv:Ad Ratio**	**Recommended Management Action**
No Harvest	Mitchell	Montana	0.3:1	Nothing; Perhaps encourage harvest
Very Light Harvest	This Study	Alaska	0.8:1	Nothing
Moderate harvest	This Study	Idaho	1.5:1	Monitor future harvests closely
Heavy Harvest	Mitchell	Montana	4.5:1	Reduce or eliminate open seasons

AGE DISTRIBUTION OF *Mustela vison* IN 1999-2000 HARVEST
GAME MANAGEMENT UNIT 4, SOUTHEAST ALASKA
(No prior harvest)





90
80
70
60
50
40
30
20
10
0
PERCENT OCCURRENCE
A
B
C
D
y = 0.6393Ln(x) + 24.5
y = -27.732Ln(x) + 46.6
y = -59.638Ln(x) + 72.4
y = -43.209Ln(x) + 59.3
0
1
2
3
4
AGE (YEARS)
Log. (A)
Log. (B)
Log. (C)
Log. (D)

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: Unit 5 (5,800 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, land otters, and mink are the common water-associated species; muskrats are noticeably absent although they were once plentiful according to some Yakutat residents. Lynx are present in small numbers, while martens are found in fair abundance. Wolverines probably occur in low numbers over extensive areas. Trapping pressure has historically been light throughout the Malaspina and Yakutat Forelands.

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 Divisions of Fish and Wildlife Protection and Commercial Fisheries and Management 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

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 affect on harvests, as in the marten harvest during this period. Indications are that most furbearer populations are stable in Unit 5. The lynx harvest declined from the spike in the last year of the previous report period, which was probably related to the immigration of lynx to the Yakutat area from Canada. 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	Sep 1–Apr 30	Two
Wolverine	Nov 10–Feb 15	One

Trapping

Beaver	Nov 10–May 15	No limit
Coyote	Dec 1–Feb 15	No limit
Red Fox	Dec 1–Feb 15	No limit
Lynx	Dec 1–Feb 15	No limit
Marten,	Dec 1–Feb 15	No limit
Mink, weasel	Nov 10–Feb 15	No limit
Otter	Nov 10–Feb 15	No limit
Wolverine	Nov 10–Apr 30	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: Table 1 shows the furbearer harvest since 1986. Only 4 trappers brought in furs for sealing during any given year of this reporting period. The beaver harvest was higher than during any of the previous 4 report periods. It is important to note that all the beavers captured in 1998 and 1999 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 because of the low price and the amount of work it takes to catch and prepare beaver hides for sale.

There were no 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 229 martens in 1997 was the second highest in the past 15 years. The harvest declined to 134 in 1998 and no martens were harvested in 1999.

Otter harvest was at an all time high of 10 in 1997 then declined to 4 in 1998, and as with martens, there was no harvest in 1999. The absence of martens and otters harvested in 1999 was likely due to the lack of trapping effort by one individual who typically accounts for a large percentage of the Unit 5 furbearer harvest. The wolverine harvest went from a historical high of 24 during the previous report period to only 8 during 1997–1999. The dramatic decline in the wolverine catch was likely due to a lack of trapper effort more than the absence of wolverines.

Harvest Chronology: Most furbearers were caught in early to mid-winter. 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. Otter and wolverine harvests peaked in December, although several animals were caught in November and January. A large proportion of the 1998 and 1999 beaver harvest was taken in August and September, prior to the trapping season. These animals were taken under a permit issued by ADF&G.

Table 2 shows the chronology of the marten harvest. December accounted for the bulk of the 1997 harvest, while in 1998 January was the most prolific month for marten trappers.

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.

CONCLUSIONS AND RECOMMENDATIONS

We believe harvests were within sustainable limits during the report period. Therefore, furbearer harvests met management objectives. It is not possible to determine if the annual harvest indicates declining, stable, or increasing populations because of the variation in trapper effort from year to year. 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.

LITERATURE CITED

KLEIN, DAVID R. 1965. Postglacial distribution patterns of mammals in the southern coastal regions of Alaska. Arctic, Vol. 18, No. 1. 14 pp.

PREPARED BY:
Neil L. Barten
Wildlife Biologist III

SUBMITTED BY:
Bruce Dinneford
Regional Management Coordinator

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

Barten, N. L. 2001. Unit 5 furbearer management report. Pages 77–82 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 5 furbearer harvest, 1986–2000

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

Table 2 Unit 5 marten harvest chronology by sex, 1994–2000

	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	

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

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

GEOGRAPHIC DESCRIPTION: Prince William Sound and north Gulf Coast

BACKGROUND

Beavers, coyotes, red foxes, lynx, marten, mink, muskrats, land otters 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 trend is mostly anecdotal. We monitored harvests of beavers, lynx, land otters and wolverines by sealing.

Beavers are abundant in Units 6A, 6B and 6C, where the deltas of the Copper and Bering Rivers and other freshwater streams provide suitable habitat. Density is lower in Unit 6D, Prince William Sound (PWS), where less habitat is available. Heller (1910) reported beavers in the Rude River drainage of eastern 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.

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. By 1951, it declined to a low of 27, and then increased again to more than 300 in 1960 and 1963 (Griese 1990).

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

Red foxes are scarce 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 Unit 6C (Griese 1988*b*).

Lynx are also scarce in Unit 6, with few sightings in recent years. O. Koppen (ADF&G files) indicated in 1949 that numbers had always been low. Characteristics of the harvest suggest that Unit 6 may serve as a low-density refugia for lynx when populations decline in adjacent units

(Griese 1988*b*). Harvest between 1969 and 1990 was less than 3 animals, it did not include juveniles, and harvest coincided with population crashes in adjacent populations.

Density of marten is quite variable. In 1949, O. Koppen (ADF&G files) characterized populations as scattered. He believed that 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*).

Mink are common in most of Unit 6. Observations made between 1931 and 1955 (ADF&G files) suggested a potential for high numbers that may not have been realized because of periodic overharvest. Trapping effort declined during the 1980s because of low pelt prices, consequently mink numbers increased throughout the unit (L. Kritchen, pers. comm.). 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 recovery has persisted since (Griese 1988*a*).

Land otters are common in most of Unit 6. Heller (1910) reported that land otters were the most common carnivores 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.

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 greater numbers of wolverines and increased trapper access and effort (Griese 1988b).

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, and wolverines taken by trappers and hunters. Sealing of marten began in 1999. We recorded location and date of harvest, method of take, and type of transportation for all species. Sex was recorded for otters, martin 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.

Preliminary work began on a land otter habitat assessment and monitoring project during June 2000. We searched (by skiff) coastline in eastern PWS for latrine sites actively used by otters.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Beavers were abundant during this reporting period in Units 6A, 6B, and 6C, particularly on the deltas of the Copper and Bering Rivers. On the Copper River Delta in Unit 6C, the population was high and stable. Cache surveys in 1988 and 1990 indicated 2400 and 3100 animals, respectively (Nowlin 1993). Beavers are increasing in abundance on eastern Hinchinbrook Island.

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 and lynx were scarce and did not show signs of increasing during the reporting period. Most trappers reported that marten numbers had increased during 1998–99 and remained high through the following year. Mink and land otters were both common, with stable numbers in most of Unit 6. Muskrats were at low density and were stable. Wolverines were present at low to moderate density and were stable.

MORTALITY

Harvest

Seasons and Bag Limits. The beaver trapping season during 1997–98 through 1998–99 was 1 December to 31 March, and the bag limit was 20 beavers per season. During 1999–00 the season was 1 December–30 April with no bag limit.

The coyote trapping season in that portion Unit 6C south of the Copper River Highway and east of the Heney Range was 10 November to 30 April. The trapping season in the remainder of Unit 6 was 10 November–31 March. Trappers did not have a bag limit for coyotes. The coyote hunting season was 1 September–30 April and the bag limit was 2 coyotes.

The red fox trapping season was 10 November–28 February and there was no bag limit. There was no hunting season for red fox.

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.

The lynx trapping season was 1 January–15 February during the reporting period, with no bag limit. The hunting season for lynx was closed during the entire reporting period.

The trapping season for marten, mink, and weasels during the reporting period was 10 November–31 January, with no bag limit, except that marten season was 10 November–28 February during 1999–00. Muskrat trapping season was 10 November–10 June, and there was no bag limit. Land otter trapping season was 10 November–31 March, with no bag limit.

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.

The Board adopted proposals by the local advisory committee to extend beaver and marten seasons by 1 month beginning in 1999–00.

Trapper Harvest. Beaver harvest ranged from a low of 33 during 1998–99 when heavy snow limited access to beavers, to a high of 108 during 1999–00 (Table 1). 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 only reported lynx harvest was 1 taken during January 1997 near Icy Bay and 1 near Cape Yakataga during 1999.

Land otter harvest ranged from 36–76 during this reporting period (Table 2). A high proportion of females (62%) were taken during 1998–99, but harvest returned to a normal level during 1999–00. Most otters were taken using traps or snares but an unusually high number were shot during 1997–98.

Wolverine harvest was 10–21 (Table 3). Most wolverines were trapped or snared. This was the pattern over the past 5 years.

Marten harvest during 1999–00 (the first year that sealing was required) was 198 (30% females). I expect that this harvest will be high compared to subsequent years because trappers reported an unusual abundance of marten during 1998–99 and 1999–00. Fur acquisition and export reports indicate a harvest of 40–80 marten per year.

Harvest Chronology. Peak beaver harvest varied during the reporting period (Table 4), depending primarily on ice and snow conditions that allow 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 December, although the unusually heavy snow during November 1998–99 contributed to a high harvest during that month (Table 5). There were relatively few otters taken in February during the reporting period compared to previous years.

Most wolverine harvest occurred during January and February (Table 6). Historically, November and December have also been productive.

The highest harvest of marten occurred during January (33%) and December (26%), followed by November (21%) and February (20%). Data were available for 1999–2000 only.

Transport Methods. Beaver trappers consistently used highway vehicles for the majority of transportation (Table 7). Heavy reliance on highway vehicles occurred because the Copper River Highway provided easy access to high beaver populations in Unit 6C. Land otter trappers used primarily boats for transportation (Table 8). Wolverine trappers and hunters used mostly snow machines for transport (Table 9). The exception was increased use of ATVs in 1997–98. During 1999, marten trappers used primarily snowmachines (58%), followed by ATVs (27%).

HABITAT

Assessment

We searched 75 km of coastline in eastern PWS (Orca Inlet and Deep, Nelson, Windy, Cedar and Sheep Bays) for land otter latrine sites and located 45 active sites. During summer, 2001 we will search for additional sites in Port Gravina and Simpson Bay, conduct a habitat assessment at each site, and select sites for long-term monitoring of otter use. 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.

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

LITERATURE CITED

COURTRIGHT, A. M. 1968. Game harvests in Alaska. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Report. Juneau.

GRIESE, H. J. 1990. Unit 6 furbearer survey-inventory progress report. Pages 42–55 *in* S. O. Morgan, editor. Annual report of survey-inventory activities. Part XIV. Furbearers. Volume XX. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Project W-23-2, Study 7.0. Juneau.

———. 1988*a*. Unit 6 furbearer survey-inventory progress report. Pages 24–26 *in* S. O. Morgan, editor. Annual report of survey-inventory activities. Part XIV. Furbearers. Vol. XVII. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Project W-22-5, Job 7.0. Juneau.

———. 1988*b*. Unit 6 furbearer survey-inventory progress report. Pages 31–44 *in* S. O. Morgan, editor. Annual report of survey-inventory activities. Part XIV. Furbearers. Volume

XVIII. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Project W-22-6, Job 7.0. Juneau.

HELLER, E. 1910. Mammals of the 1908 Alexander Alaska expedition, with descriptions of the localities visited and notes on the flora of the Prince William Sound region. University of California Publications in Zoology. 5(11):321–360.

NOWLIN, R.A. 1993. Unit 6 furbearer survey-inventory management report. Pages 47–58 *in* S.M. Abbott, editor. Furbearer survey-inventory management report. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Report Project W-23-3, W-23-4, Study 7.0. Juneau.

RAUSCH, R. 1977. Alaska wildlife management plans, southcentral Alaska. Alaska Department of Fish and Game. Juneau.

PREPARED BY:	**SUBMITTED BY:**
David W. Crowley	Michael G. McDonald
Wildlife Biologist III	Assistant Management Coordinator

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

Crowley, D. W. 2001. Unit 6 furbearer management report. Pages 83–93 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 6 beaver harvest, 1995–2000

Regulatory	Reported harvest				Method of take				Successful
year	Juv.[a] (%)	Adults	Unk.	Total	Trap/snare(%)	Shot	(L&S)	Unk.	trappers
1995–96	5 (11)	39	4	48	48 (100)	0	0	0	10
1996–97	9 (13)	62	20	91	91 (100)	0	0	0	9
1997–98	14 (22)	49	17	80	80 (100)	0	0	0	10
1998–99	4 (17)	20	9	33	33 (100)	0	0	0	5
1999–00	23 (29)	78	7	108	108 (100)	0	0	0	10

[a] Beavers ≤ 52”

Table 2 Unit 6 land otter harvest, 1995–2000

Regulatory	Reported harvest				Method of take				Successful
year	M	F (%)	Unk.	Total	Trap/snare (%)	Shot	(L&S)	Unk.	trappers
1995–96	73	29 (28)	1	103	101 (98)	2	0	0	13
1996–97	58	32 (36)	16	106	102 (96)	4	0	0	11
1997–98	35	23 (40)	18	76	45 (64)	25	0	6	17
1998–99	10	16 (62)	10	36	31 (97)	1	0	4	10
1999–00	32	14 (30)	1	47	33 (89)	4	0	0	14

Table 3 Unit 6 wolverine harvest, 1995–2000

Regulatory	Reported harvest					Method of take				Successful
year	M	F	(%)	Unk.	Total	Trap/snare (%)	Shot	(L&S)	Unk.	trappers
1995–96	15	4	(21)	0	19	18 (95)	1	0	0	9
1996–97	16	9	(36)	0	25	21 (95)	1	0	3	10
1997–98	11	4	(27)	0	15	13 (87)	2	0	0	9
1998–99	15	6	(29)	0	21	18 (86)	3	0	0	9
1999–00	6	4	(40)	0	10	9 (90)	1	0	0	3

Table 4 Unit 6 beaver harvest chronology percent by month, 1995–2000

Regulatory	Harvest periods							
year	October	November	December	January	February	March	April	n
1995–96	0	0	31	27	18	24	0	45
1996–97	0	0	14	14	25	46	0	91
1997–98	6	9	16	19	16	24	0	80
1998–99	0	24	39	27	9	0	0	33
1999–00	0	21	12	8	22	18	19	108

[a] Eight additional beavers taken under beaver damage control permit in May.

Table 5 Unit 6 land otter harvest chronology percent by month, 1995–2000

Regulatory year	Harvest periods: October	November	December	January	February	March	*n*
1995–96	0	1	50	11	34	5	103
1996–97	0	1	25	32	39	3	106
1997–98	0	18	26	21	14	13	76
1998–99	0	53	28	19	0	0	36
1999–00	0	9	49	19	6	17	47

Table 6 Unit 6 wolverine harvest chronology percent by month, 1995–2000

Regulatory year	Harvest periods: October	November	December	January	February	March	*n*
1995–96	0	11	26	32	26	5	19
1996–97	4	32	12	48	4	0	25
1997–98	7	7	20	47	20	0	15
1998–99	5	11	5	21	47	11	19
1999–00	10	30	0	10	50	0	10

Table 7 Unit 6 beaver harvest percent by transport method, 1995–2000

Regulatory year	Boat	3-or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown	*n*
	Percent of harvest						
1995–96	0	0	0	0	98	2	48
1996–97	27	14	0	11	47	0	91
1997–98	0	13	0	0	54	16	80
1998–99	2	0	5	0	13	39	33
1999–00	0	0	7	0	98	3	108

Table 8 Unit 6 land otter harvest percent by transport method, 1995–2000

Regulatory year	Dogsled skis snowshoes	Boat	3-or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown	*n*
	Percent of harvest							
1995–96	0	81	1	3	0	16	0	103
1996–97	0	75	2	2	0	21	0	106
1997–98	0	39	5	12	0	36	0	76
1998–99	0	53	0	0	0	36	0	36
1999–00	43	49	0	2	0	43	0	47

Table 9 Unit 6 wolverine harvest percent by transport method, 1995–2000

	Percent of harvest							
Regulatory year	Airplane	Dogsled skis snowshoes	Boat	3-or 4-wheeler	Snowmachine	Highway vehicle	Unknown	*n*
1995–96	26	11	0	5	32	26	0	19
1996–97	4	0	0	8	32	44	12	25
1997–98	7	7	7	27	33	20	0	15
1998–99	0	10	10	5	57	19	0	21
1999–00	10	0	0	0	90	0	0	10

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNITS: 7 and 15 (8,397 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 reductions in pelt prices. Beaver, land otter, wolverine, lynx, coyote, mink and weasel are found throughout the Kenai Peninsula at varying density levels dependent upon habitat quality or prey abundance. The distribution and density of red fox and marten are limited. Red fox were abundant prior to 1930 according to long-time Kenai residents, however they quickly disappeared as coyotes established and rapidly increased during the 1930s. Unit 15C currently 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.

Marten are moderately abundant in Unit 7 but are rare in Unit 15 with the exception of the portion of 15B East north of Kenai River. Two marten trapped in Unit 15C during 1997–98 and one the previous year were the only ever recorded in this Unit. Because marten have never been common in Unit 15, I suspect that habitat 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 that 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 that 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 most commonly found 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 Kenai Peninsula has not been documented, however, historical 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 Units 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 Unit 15C and Unit 7. Lynx density began to increase in 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 Units 15B and C in 1996–97, with a Jan. 1 to 31 season. These units were last opened in 1987–88. Unit 15A, closed in 19984–85 was reopened in 1997–98 along with the remainder of Units 15 and 7 from January 1 to February 15.

Mink and weasel are common throughout Units 7 and 15. Although their pelt value is generally low they are an important furbearer for recreational trappers and 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 mid-winter 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) to 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 population of marten capable of sustaining an annual harvest of 35 through 2005.

METHODS

Monitor harvest through mandatory sealing program for lynx, land otter, wolverine, beaver and marten and reports from local trappers. Lynx population status and trend was monitored periodically using a track count census technique in Unit 15A. Fur acquisition reports provided additional harvest data for those species not required to be sealed.

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. Preliminary results from their study indicated the population has recovered from a cyclic low period from 1987 to 1992. Distribution and abundance of other furbearers appears to be stable.

Population Size:

No Data Available

Population Composition:

No Data Available

MORTALITY:

Harvest:

<u>Season and Bag Limit.</u>

Beaver

Season was open from February 1 to March 31 in Units 7 and 15 until 1992–93 when it was extended to December 1 to March 31. In 1997–98 the season was extended again to November 10 to March 31. The bag limit was 20 beaver per person.

Coyote

Seasons were open from November 10 to February 28 in Units 7 and 15 until 1996–97. In 1997–98 the season was extended to November 10 to March 31. The bag limit for coyote was not limited.

Wolverine and Red Fox

Season was open from November 10 to February 28 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.

Lynx

Season was closed beginning in 1987 for trapping and 1988 for hunting. Trapping season was reopened from January 1 to 31 in 1996, in Unit 7 and Units 15B and 15C. In 1997–98 Units 7 and 15 were opened to trapping from January 1 to February 15 and for hunting from November 10 to January 31. The number allowed was not limited.

Mink and Weasel

Seasons were open from November 10 to January 31 in Units 7 and 15. The number allowed was not limited.

Marten

Season in that portion of 15B east of Kenai River, Skilak Lake, and north of Skilak River was closed. The remainder of Unit 15 and Unit 7 were open from November 10 to January 31, with no bag limit.

Muskrat

Season was open from November 10 to May 15 for Units 7 and 15, with no bag limit.

Land Otter

Season was open from November 10 to January 31 in Units 15A and 15B and from November 10 to February 28 in Units 15C and Unit 7 until the 1996–97 season. From 1997–98 the season was November 10 to February 28 for Units 7 and 15, with no bag limit.

Board of Game Actions and Emergency Orders. A thorough review of the trapping program on Kenai Peninsula was completed during the March 13 to 23, 1997 Board of Game meeting. The following actions were taken: the beaver trapping season was extended from December 1 to March 31 to November 10 to March 31. The bag limit of 20 beaver per person remained in place. Land otter seasons were extended in Units 15A and 15B to be consistent with the remainder of the peninsula. The season for trapping otters is now November 10 to February 28. Wolverine trapping season was reopened in Unit 15A with the same season as the remainder of the peninsula, November 10 to February 28. Coyote and wolf trapping seasons were extended from November 10 to February 28 to November 10 to March 31 for the peninsula. The mandatory 5-day sealing for wolves taken in Unit 15A was repealed. Lynx season was extended from January

1 to 31 to January 1 to February 15, including Unit 15A. A season allowing hunting for lynx from November 10 to February 15 was also approved with a bag limit of 2 per season.

Hunter–Trapper Harvest. Since 1995–96, the annual beaver harvest has exceeded 150 in 4 of 5 years, averaged 166 and ranged from 132–209, according to sealing certificates (Table 1). Harvest declined from 156 in 1997–98 to 132 in 1998–99 then increased the next year. The decline in 1998–99 was because of the severe winter where deep snow restricted trapper activity rather than a decline in beaver density. Increasing the season length beginning in 1997–98 did not result in a higher harvest the following year. The order of magnitude of harvest by Unit during the past 5 years has been 7> 15C> 15A> 15B. Historically, Unit 15A produced the highest harvest, however with increased restrictions on trapping within the Kenai National Wildlife Refuge portions of 15A, trapping effort has shifted to Unit 7 and 15C. Recreational trappers are responsible for most of the beaver harvest; few trappers take more than 10 beavers annually.

Marten were added to the list of species requiring mandatory sealing during the 1988-89 trapping season. Table 2 shows the past five years of trapping data. The annual harvest averaged 71, ranging from 55–102. The harvest averaged 67 percent males over the past five years. All marten, except 2 trapped in Unit 15C and 1 in 15B, were trapped in Unit 7. Marten 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 mid-winter. However, increased sightings of marten and their tracks in Units 15 B and C suggest marten range may be expanding.

Otter harvests have shown a decline over the past 3 years with mean of 39 compared to 71 for the previous 2 years (Table 3). The mean annual, 5-year harvest was 52 otters with a range of 35-72. Males have outnumbered females in 4 of the past 5 years; the mean 5-year percentage of males in the harvest was 54 percent.

In the past 5 years, the reported wolverine harvest has decreased (Table 4). The mean annual, 5-year harvest was 23 wolverines ranging from 15-34. Males have predominated in the harvests, with a 5-year mean of 61 percent.

Lynx population on Kenai Peninsula increased noticeably during the mid-1990s in response to an increase in the abundance of snowshoe hares. Harvest records indicate lynx density remained high from 1997–98 to 1999–00. The previous high in lynx density in Unit 15A and 15B appeared to peak in either 1985 or 1986 compared to a 1987 peak in Unit 15C according to harvests and reports from experienced trappers. 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 seem to remain moderately abundant in Unit 7 compared to extreme cyclical fluctuations in Unit 15.

Lynx trapping season was reopened in 1996–97 in Unit 7 and Units 15B and C, resulting in a harvest of 52 lynx (Table 5). Unit 15A was not opened because current lynx research conducted by Kenai National Wildlife Refuge staff indicated lynx density in this unit was lower than other areas in the Unit. Unit 15A was opened in 1997–98 and accounting for 66 percent of the Unit 15 harvest, indicating the research efforts had grossly under estimated the density of lynx in Unit

15A. The 15A mean annual harvest over the past 3 years was 66 percent of the Unit 15 harvest. The 1997–98 harvest was comprised of 105 (74%) adults and 37 (26%) kittens. The 1998–99 and 1999–00 harvest and percent kittens were: 152 and 24 percent and 146 and 21 percent, respectively.

Harvest Chronology. Tables 6 through 10 show the chronology for reported harvest by percent for beaver, marten, otter, wolverine and lynx. General analyses show most trapping success occurs early-to-mid season with the exception of wolverine trapping. Because wolverines are generally found in remote, mountainous terrain where access is difficult, they are not readily available to trappers until late in the season when driven out of the mountains by deep snow. The majority of the harvest occurred in January and February in the past 5 years.

Transport Methods. Tables 11 through 15 show harvest percent by transport method for beaver, otter, wolverine 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 trapline. Less than 7% of the trappers used aircraft and dog teams, except to trap otters. However, trappers using these transport methods are generally more successful.

CONCLUSIONS AND RECOMMENDATIONS

The current density, allowing for a mean harvest of 166 beaver over the past 5 years, is acceptable under the stated management objective. In fact, beaver populations are probably underutilized in portions of the Peninsula and, in particular, in Unit 15C. Trapping effort appears to have decreased in 1998–99 because of the severe winter with deep snow accumulation. Initiation of beaver cache surveys along several representative drainages is recommended to monitor population trends and to determine whether additional harvesting is warranted.

Because harvests of marten 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 only 3 marten have been reported from Unit 15 in the past 2 decades, indicating marten are rare in this unit. Because historical records suggesting marten 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 decreased from a mean of 71 between 1995–96 and 1996–97 to 39 from 1997–98 to 1999–00. The sharp decrease in interest was probably due to an shift in effort to trap lynx rather than a reduction in the density of otter in the Units. Reports from trappers and staff observation suggest land otter were as abundant during 1999–00 as the previous four years. The 5-year mean harvest of 52 exceeded the minimum management objective.

Wolverine harvests have decreased steadily over the past 3 years, reaching a low of 15 harvested in 1999–00. Males predominated in the harvest in all years except 1999–00 when trappers reported a catch of 36 percent males and 64 percent females. Overall males composed an average of 61 percent of the harvest and I believe that by and large the impact to the wolverine population was minimal during the past 5 years. The decreased harvest can be attributed to a decreased effort in trapping for wolverine by a few trappers that usually target this species. Lynx trapping was reopened in 1996–97, and I believe this shifted the effort away from both wolverine and otter trapping.

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 that 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 showed a slight increase beginning in 1993–94. Lynx density increased because of hunting and trapping closures and the increase in their primary prey, snowshoe hares.

Trapping for lynx was reopened in Unit 7 and Units 15B and C in 1996–97, following a 9-year closure. Hunting for lynx remained closed until the following year. Although reports from trappers and incidental observations from department staff suggested that lynx density in Unit 15A was higher than other areas on the Kenai and should be reopened, research from Refuge staff demonstrated lower numbers in Unit 15A. Over the next 3 years the harvest indicated the research program grossly under estimated the density in 15A. An annual average of 147 lynx were harvested in the past 3 years with a mean of 66 percent from 15A. The percent kittens in the harvest during that period averaged 24 percent with a slight decreasing trend. The season was reduced in 1999–00 by 1 to 3 in anticipation of the decline in lynx numbers following the decline in snowshoe hare density.

In accordance with our harvest tracking strategy, I recommend we maintain the January 15 to February trapping and November 10 to January 31 hunting (2 lynx limit) seasons through 2001–02.

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.

PREPARED BY:
Ted H. Spraker
Wildlife Biologist

SUBMITTED BY:
Michael G. McDonald
Assistant Management Coordinator

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

Spraker, T. H. 2001. Units 7 & 15 furbearer management report. Pages 94–114 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Summary of annual beaver harvests on Kenai Peninsula by game management unit, 1995–99

Regulatory year	Game Management Units 7	15A	15B	15C	All 15	Total
1995–96	87	43	0	38	81	168
1996–97	102	50	4	53	107	209
1997–98	71	31	12	42	85	156
1998–99	67	25	12	28	65	132
1999–00	70	28	1	68	97	167
Total	397	177	29	229	435	832
x	79	35	6	46	87	166

Table 2 Summary of annual marten harvests on Kenai Peninsula by game management unit, 1995–99

Regulatory year	Unit	Males (%)	Females (%)	Unk.	Total
1995–96	7	68 (67)	34 (33)		102
	15	--		-- --	
1996–97	7	34 (62)	21 (38)		58
	15	--	1 (100)	3 --	1
1997–98	7	26 (57) --	20 (43)	0	49
	15	2 (100)	--	3	2
				--	
1998–99	7	33 (60)	22 (40)		55
	15	--	--	-- --	0
1999–00	7	53 (73)	20 (27)		87
	15	--		14 --	
Total		216 (67)	118 (33)	20	354
x		43		4	
		--		0	
		24		71	

Table 3 Summary of land otter harvest on Kenai Peninsula by game management unit, 1995–99

Regulatory year	Unit	Males (%)	Females (%)	Unk.	Total
1995–96	7	10	4	2	16
	15A	9	13	--	22
	15B	--	1	--	1
	15C	15	13	2	30
	Subtotal	34 (52)	31 (48)	4	69
1996–97	7	10	8	--	18
	15A	17	8	1	26
	15B	1	1	--	2
	15C	14	12	--	26
	Subtotal	42 (59)	29 (41)	1	72
1997–98	7	1	1	--	2
	15A	5	9	--	14
	15B	1	2	2	5
	15C	9	11	--	20
	Subtotal	16 (41)	23 (59)	2	41
1998–99	7	1	1	--	2
	15A	6	--	--	6
	15B	4	7	--	11
	15C	10	6	--	16
	Subtotal	21 (60)	14 (40)	--	35

Table 3 Continued

Regulatory year	Unit	Males (%)	Females (%)	Unk.	Total
1999–00	7	5	3	1	9
		7	5	1	13
		3	--	--	3
		8	9	--	17
Subtotal		23 (58)	17 (42)	2	42
15A					
15B					
Total		136(54)	114 (46)	9	259
15C					
x		27	23	2	52

Table 4 Summary of wolverine harvest on Kenai Peninsula by game management unit, 1995–99

Regulatory year	Unit	Males (%)	Females (%)	Unk.	Total
1995–96	7	5	6	1	12
		--	--	--	--
		2	2	--	4
		12	1	--	13
Subtotal		19 (66)	9 (33)	1	29
15A					
15B					
15C					
1996–97	7	11	7	--	18
		1	--	--	1
		4	1	--	5
		6	3	1	10
Subtotal		22 (66)	11 (33)	1	34
15A					
15B					
15C					
1997–98	7	5	5	--	10
		--	--	--	--
		1	2	--	3
		4	2	--	6
Subtotal		10 (53)	9 (47)	--	19
15A					
15B					
1998–99	7	6	3	3	12
15C					
		--	--	--	--
		1	2	--	3

15A
15B

Table 4 Continued

Regulatory year	Unit	Males (%)	Females (%)	Unk.	Total
		2	--	--	2
Subtotal		9 (64)	5 (36)	3	17
1999–00	7	3	5	4	12
15C		--	--	--	--
		--	--	--	--
		1	2	--	3
Subtotal		4 (36)	7 (64)	4	15
15A Total		64 (61)	41 (39)	9	114
15B					
15C					
X		13	8	2	23

Table 5 Summary of lynx harvest on Kenai Peninsula by game management units, 1995–99

Regulatory year	Unit	Adults M	Adults F	Adults Unk.	Kittens M	Kittens F	Kittens Unk.	%	Unclass	Total
1995–96[a]	7	--	--	--	--	--	--		--	--
	15A	--	1	--	--	--	--		--	1
	15B	--	--	--	--	--	--		--	--
	15C	--	1	--	--	--	--	--	--	1
	Subtotal	--	2	--	--	--	--	--		2
1996–97	7	5	4	6	--	--	3		--	18
	15A[b]		1	--	--	1	--		--	4
	15B	6	6	--	2	4	--		--	18
	15C	6	6	--	--	--	--		--	12
	Subtotal	19	17	6	2	5	3	19	--	52
1997–98[c]	7	10	9	3	2	3	--		1	28
	15A	38	19	1	4	13	1		--	76
	15B	9	7	--	2	4	--		--	22
	15C	3	6	--	2	6	--		--	17
	Subtotal	60	41	4	10	26	1	26	1	143
1998–99	7	7	8	--	1	3	--		2	21
	15A	41	23	1	10	7	4		--	86
	15B	5	5	--	1	2	--		1	14
	15C	10	12	1	5	3	--		--	31
	Subtotal	63	48	2	17	15	4	24	3	152

Table 5 Continued

Regulatory year	Unit	Adults M	Adults F	Adults Unk.	Kittens M	Kittens F	Kittens Unk.	%	Unclass	Total
1999–00	7	6	3	3	2	2	--		--	16
	15A	41	24	--	8	9	--		2	84
	15B	5	8	--	--	2	--		--	15
	15C	15	12	--	1	3	--		--	31
	Subtotal	67	47	3	11	16	--		2	146
Total		209	155	15	40	62	8		6	495
x		42	31	3	8	12	1	21	1	99

a. Trapping was closed in 1995–96 in Unit 7 and 15, incidental take only.

b. Trapping opened in Units 7, 15B and 15C in 1996–97, 15A opened in 1997–98.

c. Hunting season, Nov. 10 to Jan. opened in 1997–98 in Units 7 and 15.

Table 6 Units 7 & 15 beaver harvest chronology percent by month, 1995–2000

Regulatory year	Month November	December	January	February	March	Unknown	Total
1995–96	--	4	33	38	16	9	168
1996–97	--	16	21	42	20	1	209
1997–98	29	27	6	16	21	--	156
1998–99	41	16	15	7	3	17	132
1999–00	59	--	14	9	15	2	167

[a] Season extended to Nov. 10 - March 31 in 1997–98.

Table 7 Units 7 & 15 marten harvest chronology percent by month, 1995–2000

Regulatory year	Month November	December	January	February	March	Unknown	Harvest
1995–96	11	48	41	--	--	--	102
1996–97	17	46	25	--	--	12	59
1997–98	21	48	27	4	--	--	51
1998–99	31	39	30	--	--	--	55
1999–00	35	--	60	4	--	--	87

Table 8 Units 7 & 15 otter harvest chronology percent by month, 1995–2000

Regulatory Year	Month November	December	January	February	March	Unknown	Harvest
1995–96	7	36	42	12	--	3	69
1996–97	14	36	39	11	--	--	72
1997–98	40	28	15	13	--	5	41
1998–99	31	11	37	20	--	--	35
1999–00	25	4	36	32	4	--	42

Table 9 Units 7 & 15 wolverine harvest chronology percent by month, 1995–2000

Regulatory year	Month November	December	January	February	March	Unknown	Harvest
1995–96	10	--	52	24	3	10	29
1996–97	4	32	43	21	--	--	34
1997–98	21	26	5	37	11	--	19
1998–99	--	12	41	35	6	6	17
1999–00	15	--	38	38	--	8	15

Table 10 Units 7 & 15 lynx harvest chronology percent by month, 1995–2000

Regulatory year	Month November	December	January	February	March	Unknown	Harvest
1995–96	--	--	50	50	--	--	2
1996–97	--	2	--	98	--	--	52
1997–98	2	1	56	38	1	--	143
1998–99	1	1	57	38	--	2	152
1999–00	2	--	64	30	1	2	146

Table 11 Units 7 & 15 beaver harvest percent by transport method, 1995–2000

Regulatory Year	Percent of harvest Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	vehicle	Unk.	Harvest
1995–96	--	--	--	--	20	8	61	12	168
1996–97	1	--	--	--	62	--	20	17	209
1997–98	--	--	8	--	58	--	34	--	156
1998–99	2	--	7	2	35	--	54	--	132
1999–00	4	--	--	--	50	4	43	--	167

Highway

Table 12 Units 7 & 15 marten harvest percent by transport method, 1995–2000

	Percent of harvest								
Regulatory year	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unk.	Harvest
1995–96	--	--	--	--	49	4	41	6	102
1996–97	--	--	--	--	29	--	47	24	59
1997–98	--	--	--	--	45	--	55	--	51
1998–99	--	--	--	--	41	--	59	--	55
1999–00	--	--	4	--	71	--	25	--	87

Table 13 Units 7 & 15 otter harvest percent by transport method, 1995–2000

	Percent of harvest								
Regulatory year	Airplane	Dogsled	Boat	3 or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unk.	Harvest
1995–96	19	1	13	--	7	1	38	20	69
1996–97	11	--	3	--	35	--	33	18	72
1997–98	20	--	27	--	27	--	27	--	41
1998–99	--	--	24	10	24	5	38	--	35
1999–00	--	--	24	--	41	--	34	--	42

Table 14 Units 7 & 15 wolverine harvest percent by transport method, 1995–2000

Regulatory year	Percent of harvest								
	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unk.	Harvest
1995–96	--	--	7	--	59	--	3	31	29
1996–97	--	6	--	--	71	--	6	18	34
1997–98	--	--	9	9	45	9	27	--	19
1998–99	--	--	8	--	92	--	--	--	17
1999–00	--	--	25	--	75	--	--	--	15

Table 15 Units 7 & 15 lynx harvest percent by transport method, 1995–2000

Regulatory year	Percent of harvest								
	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unk.	Harvest
1995–96	--	--	--	--	--	--	50	50	2
1996–97	2	--	--	62	--	--	25	12	52
1997–98	1	--	--	--	88	--	11	--	143
1998–99	--	--	2	1	85	--	12	--	152
1999–00	2	--	--	--	77	--	21	--	146

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 8 (5,097 mi^2)

GEOGRAPHIC DESCRIPTION: Kodiak and Adjacent Islands

BACKGROUND

Archeological evidence indicates that 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. 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 now rare. Norway rats are common in the vicinity of Kodiak. Captive red and arctic foxes escaped or were released from the widespread fox farms 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.

MORTALITY

Harvest

Season and Bag Limit. Beaver trapping season was open from 10 November to 30 April. The bag limit was 30 beavers per trapper.

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.

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. The muskrat trapping season was from 10 November to 10 June with no bag limit on muskrats. There was no closed hunting or trapping season (nor bag limit) on squirrels.

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

Hunter/Trapper Harvest. Land otter harvests have fluctuated, with an increasing trend up until the 1999–2000 season. During the past 5 years (1995–2000), the annual harvests ranged from 100 to 173, with an average harvest of 137.2/year (Table 1). The number of otter trappers has fluctuated from 17–20, averaging 18.6/year. The average take per trapper ranged from 5.0 to 8.7, with an average of 7.4 otters/trapper per year.

Beaver harvests have also fluctuated, but no consistent trend was apparent. During the past 5 years (1995–2000), the annual harvests ranged from 38 to 50 and averaged 44.2/year (Table 2). The number of beaver trappers has fluctuated from 8 to 14, averaging 12.0/year. The average take per trapper ranged from 3.3 to 4.8, with an average of 3.8 beavers/trapper per year.

Red foxes are the most commonly pursued furbearer in Unit 8, but current methods of monitoring harvest underestimate the take. The 1991–92 to 1997–98 fur export permit data indicated an average annual harvest of 34.8/year. The average annual harvest by trappers and hunters is estimated at 300 red foxes. Some foxes are home-tanned or dried for wall hangings; we suspect that hides are often shipped without fur export permits.

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.

Harvest Chronology. November is typically the most active month for fur trapping 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), however 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. Clear-cut 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 coast was harvested. Annual harvests have never reached that level again, but they have been steadily 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 Department of Transportation is periodically issued a beaver depredation permit to allow them to control nuisance beavers along the highway.

Ground squirrels are chronic nuisances at the Kodiak State airport where they undermine runway edges and damage runway lights. The Department of Transportation 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 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.

CONCLUSION AND RECOMMENDATIONS

Harvests of all furbearer species were low and furbearer populations were high. Less than 20 trappers were active each year, and the average annual harvest of all species was estimated at 500 animals. Land otters were 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.

LITERATURE CITED

BURRIS, O. E. AND D. E. MCKNIGHT. 1973. Game transplants in Alaska. Wildlife Technical Bulletin 4. Alaska Dep. Fish and Game. Juneau. Federal Aid Wildlife Restoration Project W-17-R. 57pp.

RAUSCH, R.L. 1969. Origin of the terrestrial mammalian fauna of the Kodiak Archipelago IN The Kodiak Island Refugium: Its geology, flora, fauna and history. T.N.V. Karlstrom and G.R. Ball, eds. The Boreal Institute, University of Alberta. Ryerson Press, Toronto, Canada. 262 pp.

YOUNG, E. L. 1990. Unit 4 furbearer survey-inventory progress report. Pages 26–31 *in* S. O. Morgan, ed. Annual report of survey-inventory activities. Part XIV. Furbearers Vol. XX. Alaska Dept. Fish and Game. Federal Aid in Wildlife Restoration Progress Report Juneau, 238 pp.

PREPARED BY:	**SUBMITTED BY**:
Lawrence J. Van Daele	Michael G. McDonald
Wildlife Biologist III	Assistant Management Coordinator

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

Van Daele, L. J. 2001. Unit 8 furbearer management report. Pages 115–122 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 8 land otter harvest 1991–2000

Regulatory Year	Reported Harvest M (%)	F (%)	Unk	Total	Method of Take Trap/Snare (%)	Shot (%)	Unk.	Successful Trappers
1991–92	73 (50)	60 (42)	11	144	117 (82)	8 (6)	5	20
1992–93	38 (42)	36 (40)	17	91	72 (80)	13 (14)	6	17
1993–94	37 (54)	20 (29)	11	68	67 (99)	1 (1)	0	11
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

Table 2 Unit 8 beaver harvest 1991–2000

Regulatory	Reported Harvest					Method of Take					Successful
Year	Juv.[a]	%	Adult	%	Total	Trap/Snare	%	Shot	%	Unk.	Trappers
1991–92	18	23	38	49	78	66	85	12	15	0	16
1992–93	13	20	49	75	65	60	92	9	14	0	8
1993–94	17	25	44	65	68	47	69	21	31	0	11
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

[a] Beavers ≤ 52"

Table 3 Unit 8 land otter harvest chronology percent by month, 1991–2000

	Harvest periods					
Regulatory year	November	December	January	February[a]	Unknown	*n*
1991–92	34	36	30	0	0	144
1992–93	44	35	14	0	7	91
1993–94	24	22	53	0	0	68
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
1999–2000	38	45	15	0	2	100

[a] Season closed 31 January

Table 4 Unit 8 beaver harvest chronology percent by month, 1991–2000

	Harvest periods								
Regulatory year	November	December	January	February	March	April	May	Unknown	*n*
1991–92	14	29	32	0	8	17	0	0	78
1992–93	15	31	6	29	18	0	0	0	65
1993–94	13	25	15	15	16	16	0	0	68
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
1999–2000	52	15	15	15	4	0	0	0	48

Table 5 Unit 8 land otter harvest percent by transport method, 1991–2000

Regulatory year	Percent of harvest								
	Airplane	Boat	3- or 4-wheeler	Snow machine	ORV	Highway vehicle	Foot	Unknown	*n*
1991–92	20	67	6	0	3	1	3	0	144
1992–93	23	44	8	0	13	0	12	0	91
1993–94	41	31	4	0	19	4	0	0	68
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	61	8	0	0	21	5	8	173
1999-2000	3	44	22	0	0	29	0	2	100

Table 6 Unit 8 beaver harvest percent by transport method, 1991–2000

Regulatory year	Percent of harvest								
	Airplane	Boat	3- or 4-wheeler	Snow machine	ORV	Highway vehicle	Foot	Unknown	*n*
1991–92	18	47	13	0	0	1	8	13	78
1992–93	8	17	29	0	0	8	0	28	65
1993–94	19	18	44	0	16	3	0	0	68
1994–95	3	28	0	24	0	28	0	5	29
1995–96	0	10	14	0	0	70	6	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

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

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 this area 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 furbearer species on the islands in both units. On some islands furbearers are present because of past introductions for fur farming or from 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 harvests. 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 approximately every 4 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 USFWS is attempting to eliminate them from many of the islands.

Lynx inhabit the mainland north of Port Heiden. Primary a boreal species, though when prey are scarce lynx venture onto the tundra in search of Arctic hares, lemmings and ptarmigan. 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 on Unimak Island. Microtine populations typically fluctuate drastically and are the primary factor affecting mink abundance. An abundance of mice or hares in upland areas will sometimes prompt mink populations to expand 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. General observations during other survey flights, comments from trappers, and complaints from the public indicated beaver populations remained high north of Unit 9D. Before this reporting period, trappers consistently reported beavers as abundant (e.g., AI averaged 7.6 during 1991–93). However, during the trend index reported by trappers, beavers declined slightly to 6.1, 5.9, and 5.0 for 1991–92, 1992–93 and 1993–94, respectively. The apparent decline in beavers continued as trappers scored the AI at 6.0 and 5.0 and the TI at 6.0 and 4.0 in 1994–95 and 1995–96, respectively. 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 1997–1999, trappers rated beaver as abundant (average AI = 7) and increasing with TI of 5.0, 6.1 and 7.0 for these 3 years.

Coyote. Trappers rated the coyote population as being relatively low (AI of 3.0, 4.2 and 5.6), but increasing (TI of 5.7, 8.2, and 5.6) during 1994–96. Comments from hunters and observations by staff also indicate a slight increase in coyote numbers. During this reporting period coyotes appear to be moderately abundant (AI averaged 4.7) and relatively stable (TI averaged 5.1).

Red Fox. A moderate outbreak of rabies in 1997–1998 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 1999–00 (AI = 7.3 and TI = 7.7).

Lynx. Trappers believed lynx abundance was low during 1997–99 (AI = averaged 3.3) but relatively stable during the period (TI = 4.6). Trappers reported that snowshoe hare abundance and trend were similar to that reported for lynx.

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

Mink. Mink abundance was reported as moderate (AI averaged 5.0) and relatively stable (TI averaged 5.4).

Otter. Otter abundance appears to have declined during 1997–99 (AI = 7.5, 5.0 and 3.9 and TI = 6.3, 4.1, and 3.9) during the reporting period. This decline may be related to weak salmon returns, especially in Unit 9B, during this reporting period

Wolverine. Trappers reported wolverine abundance as relatively scarce (AI averaged 3.4) but stable (TI averaged 4.9) during the reporting period.

MORTALITY

Harvest

Season and Bag Limits. The beaver trapping season in Unit 9 was 1 January to 31 March. The bag limit was 40 beavers per trapper. Starting in spring 2000, trappers in Unit 9B were allowed to take 2 beavers per day using firearms from 15 April–31 May. Unit 10 was not open for beaver trapping.

The coyote trapping season in Units 9 and 10 was 10 November to 31 March with no trapping bag limit. The coyote hunting season in these units was from 1 September to 30 April with a bag limit of 2.

The red fox and arctic fox trapping season in Units 9 and 10 was 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.

The lynx and marten trapping season in Unit 9 was 10 November to 28 February with no trapping 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.

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.

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 1 per hunter.

Board of Game Actions and Emergency Orders. In 1999 the Board allowed trappers in Unit 9B to take 2 beavers per day with firearms only from 15 April–31 May. No other Board actions or emergency orders affected trapping or hunting of furbearers in Units 9 or 10 during this reporting period, except that

Hunter/Trapper Harvest. Beaver harvests have declined dramatically (Table 1) since 865 were taken in 1987–88. This is a result of reduced prices for pelts, high cost in both effort and expenses, and perhaps a diminished interest in trapping amongst village residents.

Lynx harvests have returned to more normal levels (range 19–38, Table 1) compared to previous years. Lynx were unusually abundant in Unit 9C during 1991–95 but harvest have dropped to an average of 4 during 1995–99. During the 9 years prior to 1991, an average of only 1 lynx per year was taken in Unit 9C.

Otter harvests have dropped precipitously since 120 were taken in 1996–97 (Table 1). Environment conditions (e.g. weak salmon escapements) may have reduced otter populations. However, otter harvests may also be related to the drop in interest in beaver trapping (which is clearly not related to any decline in the beaver population).

An average of 64 wolverines per year was taken from Unit 9 during 1974–94, but has ranged from 24 to 47 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.

Permit Hunts. No special permits for trapping nuisance beavers were issued in Unit 9 during this reporting period.

Trapper Residency and Success. Data on trapper residency and success have not been specifically analyzed. Local 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 occurred. Annual variations in chronology usually reflect weather and travel conditions, but January and February consistently are the most important months for trapping (Table 2).

Transport Methods. Snowmachines are the most common means of access for beaver, lynx, otter, and wolverine trappers (Table 3). ATVs were also an important means of access especially in parts of Unit 9 with unreliable or insufficient snowfall.

Other Mortality

Several red foxes, a wolf and the first coyote in Alaska were confirmed rabid during 1997–98.

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 information on population sizes 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 were 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.

PREPARED BY:	**SUBMITTED BY:**
Richard A. Sellers	Mike McDonald
Wildlife Biologist	Assistant Management Coordinator

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

Sellers, R. A. 2001. Unit 9 & 10 furbearer management report. Pages 123–131 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 9 beaver, lynx, otter and wolverine harvests, 1995–2000

Regulatory year	Reported harvest							Method of take			
	M	F	Unk.	Juv.	Adults	Unk.	Total	Trap/snare	Shot	Unk.	Total trappers
Beaver											
1995–96	0	0	83	4	29	50	83	83	0	0	14
1996–97	0	0	127	17	67	43	127	127	0	0	29
1997–98	0	0	92	14	78	0	92	82	5	5	16
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
Lynx											
1995–96	0	0	23	4	16	3	23	17	3	3	12
1996–97	0	0	32	11	18	3	32	29	1	2	13
1997–98	0	0	19	7	7	5	19	17	0	2	8
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
Otter											
1995–96	29	19	9	0	0	57	57	48	1	8	15
1996–97	46	40	34	0	0	120	120	115	1	4	24
1997–98	37	24	10	0	0	71	71	70	1	0	21
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
Wolverine											
1995–96	18	7	1	0	0	26	26	11	10	5	11
1996–97	24	9	1	0	0	34	34	29	5	0	20
1997–98	32	14	1	0	0	47	47	22	25	0	37
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

Table 2 Unit 9 beaver, lynx, otter and wolverine harvests percent[a] chronology by month, 1995–2000

Regulatory year	Sep–Oct	Nov	Dec	Jan	Feb	Mar	Apr–May
	Harvest periods						
Beaver							
1995–96	0	0	4	54	28	14	
1996–97	0	0	2	63	30	4	
1997–98	0	0	14	38	29	19	
1998–99	0	0	0	41	34	15	9
1999–00	3	3	0	51	40	3	4
Lynx							
1995–96	0	5	30	45	20	0	
1996–97	0	7	7	27	60	0	
1997–98	0	0	21	47	32	0	
1998–99	0	0	21	47	32	0	
1999–00	0	3	45	45	6	0	0
Otter							
1995–96	0	8	18	31	35	8	
1996–97	0	4	28	43	20	5	
1997–98	0	4	16	22	29	29	
1998–99	0	10	18	28	20	23	
1999–00	0	0	13	32	23	32	0
Wolverine							
1995–96	14	5	24	24	33	0	
1996–97	0	0	41	35	18	6	
1997–98	15	4	15	34	32	0	
1998–99	3	6	14	36	31	11	
1999–00	8	4	17	54	12	4	0

Table 3 Unit 9 beaver, lynx, otter and wolverine harvests percent by transportation method, 1992–2000

Regulatory year	Percent of harvest							
	Airplane	Dogsled Snowshoes	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway vehicle	Unk
Beaver								
1995–96	0	0	16	12	18	1	29	24
1996–97	0	5	0	39	27	0	17	12
1997–98	7	5	3	30	13	0	13	29
1998–99	0	0	8	60	31	0	0	1
1999–00	3	0	1	12	79	0	3	3
Lynx								
1995–96	0	0	0	57	13	0	17	13
1996–97	3	0	0	28	9	0	16	47
1997–98	0	0	0	5	84	0	0	10
1998–99	0	0	0	87	11	0	2	0
1999–00	9	0	0	6	81	0	0	3
Otter								
1995–96	0	5	2	37	28	0	12	16
1996–97	1	0	0	27	52	0	13	7
1997–98	0	0	0	55	31	0	3	11
1998–99	0	8	5	28	45	0	0	13
1999–00	3	0	0	16	42	0	0	39
Wolverine								
1995–96	15	0	0	15	30	0	4	36
1996–97	6	0	0	18	59	0	12	5
1997–98	9	0	2	17	62	0	2	9
1998–99	6	0	0	14	64	0	6	11
1999–00	17	0	0	4	75	0	4	

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNITS: 11 (13,257 mi^2) and 13 (22,857 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. Other than harvest records, reports by hunters and trappers and field observations by department personnel are the only historic sources of information concerning furbearer abundance.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVE

To develop measurable objectives for management of furbearer populations

METHODS

Yearly trends in lynx abundance for both units were monitored by conducting track surveys within favorable lynx habitat. Twenty-six aerial transects (19 in Unit 13 and 7 in Unit 11) 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.

Beaver, lynx, river otter, and wolverine pelts were sealed, and trappers interviewed at the time of sealing to obtain harvest statistics for these species. A trapper questionnaire survey provided additional harvest and relative abundance information on both sealed and unsealed furbearers.

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 can 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 removal trapping was implemented using Museum Special traps baited with peanut butter. All trapping was conducted from mid-to-late September. Habitats trapped include spruce forests (1995–99), mid successional fields (1995–97), mid aged aspen (1995–99), spruce/birch association (1997), and alder thicket (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 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 were high. Trappers responding to the trapper questionnaire also consider beavers to be abundant on their lines and indicate that current population levels were similar to those reported in previous trappers' surveys.

River otters are common in both units but are not considered abundant. 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.

The lynx population increased in portions of Unit 11 and 13 during the last 4 years. Lynx track transects were not flown in 1994 but results from 1995 until 1998 show lynx numbers increased. Track surveys were not flown in 1999 due to poor snow conditions in March. Lynx were very abundant during the 1999–2000 trapping season, and record number of lynx were taken in both GMU 11 and 13 (115 and 425 respectively). This increase in lynx numbers was not expected since the historic 10-year cycle predicted a population low in 1997–98 after peaking in 1992. In fact, the lynx population in both units appeared to follow a traditional 10-year cycle, until this recent increase, peaking in 1972, 1982, and 1992. The lynx population did start to decline from 1993–95 based on harvest records. However, in 1994 the percent kittens in the harvest started to increase. By 1996 lynx harvests increased dramatically and lynx were considered more abundant than during the expected population peak in 1992. In terms of lynx abundance within cycles, the lynx cycles in both units since the 1960s have been of lower amplitude based on declining harvest trends and trapper reports.

Wolverines are considered abundant in the more remote mountainous regions of each unit but are scarce at lower elevations. Wolverines are the only furbearers for which density estimates are available for portions of Unit 13. A density estimate of 4.5 wolverine/1,000 km^2 was obtained during 1991 in the eastern Talkeetna Mountain portion of Subunit 13A (Gardner and Becker 1991) and 5.2 wolverines/1,000 km^2 by Golden (1996) five years later. These estimates were similar to the 5.2 wolverine/1,000 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 harvests and much of the overwinter mortality had occurred. Also, both were located in areas considered to be favorable wolverine habitat. Wolverine densities in less mountainous portions of the unit were considered much lower than in the areas surveyed. Consequently, extrapolation of the observed densities cannot provide an accurate unit-wide estimate unless adjustments are made for areas lacking in favorable habitat. Trappers responding to the trapper questionnaire also considered wolverine common on their lines but considered overall numbers stable. It appears that wolverine numbers may have increased slightly on some traplines located in favorable wolverine habitat, usually mountainous areas.

Marten numbers increased in Units 11 and 13 during the mid 1980s and peaked about 1988 and have fluctuated annually since. Abundance estimates are developed from the trapper questionnaire. Trappers with traplines located in favorable marten habitats reported marten to be abundant in 1995 and 1996 but in decline by 1997. In 1998 and 1999 marten were again abundant. Yearly fluctuations in marten numbers are thought to represent changes in production and/or survival of young due to food availability. Marten were the most economically important furbearers in Units 13 and 11 during this reporting period.

Trappers reported coyotes to be common or abundant, depending on the habitat type trapped. Overall coyote numbers are considered stable at this time. High coyote numbers occur along the many rivers found throughout the units. River bottoms appear to be favorable habitat for them. Productivity of the coyote population may decrease now that snowshoe hares are back to very low levels.

Trappers reported that fox were common and increasing in number on their lines. Fox are found in both units from forested lowlands to alpine tundra, but fox numbers appear to be more abundant in Unit 13 than in Unit 11.

Muskrat numbers are very low throughout both units. Muskrats were abundant during the early 1980s but their numbers declined dramatically during the mid 1980s. Results from the annual trapper questionnaire indicate trappers consider muskrats were either not present or scarce on their lines from 1993–1998. Recently more push-ups are being observed and trappers have indicated that muskrat numbers may be rebounding slightly.

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

In Unit 13 and 11 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. In fact, after a low amplitude population peak in 1992, hare numbers did start to decline. However, in 1995 hare numbers started increasing again within pockets of favorable habitat. Results of snowshoe hare pellet transects conducted in Unit 11 and 12 by National Park Service biologists support this conclusion (Carl Mitchell, pers. commun.). Instead of a population low in 1997 or 1998 as predicted under a normal 10-year cycle, hare numbers were the highest they had been in 25 years in certain portions of Unit 13 and 11. Hare populations increased through 1999 and then began to decline. Reasons for increased hare abundance during a period of expected cyclic lows are unknown.

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 was the fifth year of this project. 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. Trapping results indicate that small mammals were more abundant in 1995, declined in 1996, and increased slightly in 1997. Catch rates were lower in 1998 and 1999; however, only 2 habitat types were trapped and problems with malfunctioning traps and severe weather may have affected the catch rate. No obvious trends are evident from the data thus far, but continued monitoring of small mammals may prove useful in understanding the relationship between small mammal abundance and furbearers.

Distribution and Movements

Lynx distribution follows that of the spruce forest habitat in both units. During this reporting period lynx numbers were higher in Subunits 13C, B and A along the Copper, Gulkana, Gakona and Chistochina Rivers and in 13D along the Klutina and Tonsina River drainages. Lynx moved freely between units because the favorable habitat types are continuous. Dispersal of marked lynx from both the Kenai Peninsula and Yukon Territory into Unit 13 has been observed. These movements suggest immigration could be an important component of the cyclic increase in lynx in Units 11 and 13, and may contribute a number of animals to the population.

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 than today. Gardner (1985) reported movement patterns for radiocollared wolverines in Unit 13. He observed that movements declined during the fall but increased again in February with the dispersal of juveniles into vacant habitat. Long-distance dispersal of a radiocollared wolverine out of the unit has been reported by Gardner (1985) and Golden (1997).

MORTALITY

Harvest

<u>Seasons and Bag Limits</u>. Beaver trapping season in Unit 13 was 10 October to 30 April during the 1994–95 season, but closed on 15 May starting in 1995–96. The bag limit was 30 beavers in 1994–95, but the bag limit was eliminated in Unit 13 beginning in 1995–96. In Unit 11 the season opened on 10 November and closed on 30 April, and the bag limit was 30 beavers per season throughout this reporting period.

The coyote and river otter trapping season in Units 11 and 13 was from 10 November to 31 March, with no bag limit. The coyote hunting season was from 1 September to 30 April, with a bag limit of 2 coyotes.

The red fox trapping season in Units 11 and 13 was from 10 November to 28 February with no bag limit. The red fox hunting season was from 1 September to 15 February with a bag limit of 2 foxes. Trapping season was lengthened to 10 November–28 February for weasels and mink during the spring 1997 Board of Game meeting. Wolverine season was 10 November to 31 January. The two wolverine bag limit was dropped in 1997. Hunting season for wolverine was 1 September–31 January with a bag limit of one wolverine. The marten season was 10 November–31 December in 13E. The marten season in the remainder of Unit 13 and Unit 11 continues to be 10 November–28 February. String sealing was required for marten caught in 13E, and there was no bag limit throughout Unit 11 and 13. The muskrat trapping season was from 10 November to 10 June and there was no bag limit. The lynx trapping season was 15 December–10 January in 1995 and has been 1 December–15 February since that time, with no bag limit. Hunting season for lynx was 10 November–31 January with a bag limit of 2 lynx.

Hunter/Trapper Harvest. There were zero beaver reported harvested in Unit 11 during the last two trapping seasons (Table 1). Historically, the highest harvest was 56 beaver taken in 1985, but harvests have fluctuated appreciably between years. Recently, there has been little trapping effort for beaver in GMU 11.

Beaver harvest for Unit 13 is presented in Table 2. Harvests over this reporting period have been stable and averaged 215 beaver per year. This is the highest reported 5-year average since sealing records have been maintained. However, current harvest levels are below the historic peak with reported catches of 333 and 300 beavers in 1986 and 1987. Prior to liberalizing seasons, the beaver catch in Unit 13 averaged 92 (range 33-201) between 1972 and 1986. The percentage of kits in the harvest varied between 15% and 32% for the last 5 years

River otter harvests in Unit 11 varied from 0–12 during the last 5 years (Table 3). River otter harvests in this unit have historically been low, averaging only 4 animals per year (range 0-11) between 1977 and 1993. In Unit 13 the average reported harvest during the last 5 years was 31 otters (Table 4), down from the previous 5-year average of 44 otters per year. From 1977, when sealing of otters became a requirement, through 1992, the annual harvest averaged 25 otters (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 lynx harvest for Unit 11 is presented in Table 5. Lynx harvests last peaked in 1991–92 with 107 lynx sealed, declined to 9 lynx in 1995–96 and then increased rapidly to 115 lynx sealed in 1999–00. The percentage of kittens in the harvest also increased (Table 5). The lynx harvest in Unit 13 increased to 200 lynx in 1996 following three years of decline from a cyclic high harvest of 130 lynx in 1992 (Table 6). The percentage of kittens in the harvest has been high over the last five years (Table 6). This increase in reproduction and harvests does not follow the expected population composition and harvest data during a typical 10-year cycle. The predicted 10-year cyclic low was about 1997 or 1998. The cycle peak in the early 1990s was lower than that observed in the 1980s. Historically Subunit 13D provides over half the total unit lynx harvest, but during this reporting period subunit 13C had the highest lynx harvests.

Wolverine harvests from Units 11 and 13 are presented in Tables 7 and 8, respectively. The wolverine harvest has been low in Unit 11 in 4 of the last 5 years. Except for a slight increase in 1996, the wolverine harvest in Unit 13 has remained stable since 1989. During the 1970s, wolverine harvests were much higher in both units than those currently observed. In the 1970s, the average yearly wolverine harvest in Unit 11 was 28, and in Unit 13 it was 86. The lowest wolverine harvest ever reported from Unit 11 has been 4 wolverines, which occurred during the

1995 and 1996 seasons. In Unit 13, the lowest take was 16 in 1988. Composition data showed males have consistently accounted for the majority of the harvest in both GMU 11 and 13. Harvest locations indicate most wolverine harvests occurred in the mountainous portions of both units, especially from the Chugach Range in 13D and 11 and portions of the Talkeetna and Alaska Ranges in 13A and E.

Marten harvest data are not obtained on a unit-wide basis. Sealing of marten has been required for 10 years in Subunit 13E. During this 5-year period the annual harvest from Unit 13E averaged 62 marten (range = 31–93). Males consistently predominated (range = 71–74%) in the harvest in all years. In the remainder of Unit 13 marten are the most important furbearers both in total harvest and value of furs sold, according to trapper survey responses.

Hunter/Trapper Residency and Trapper Success. Interest in beaver trapping in Unit 11 remains low: only 2–4 trappers reported taking beaver during the previous reporting period. During the last 3 years, only one beaver has been reported taken in Unit 11. Most trappers were local residents.

The number of trappers taking otter in Unit 11 varied from zero to five trappers. In Unit 13, an average (1995–99) of 15 trappers (range 10–19) reported an average yearly catch of 2.3 otters per trapper. These figures represent the highest otter trapping effort and harvest per trapper since the early 1980s. Trapping and snaring were the most important methods of take reported for otters taken in Units 11 and 13, although a few otter were reported shot in Unit 13.

In Unit 11 the number of lynx trappers dropped from 18, with an average catch of 5.9 in 1991 during the cyclic high, to only five, with an average catch of 1.8 lynx in 1995–96. Recently participation has rebounded to 11 trappers with an average catch of 8.6 lynx in 1998. In Unit 13, the number of trappers sealing lynx dropped 65%, from 61 in 1992 during the cyclic high to 21 in 1994; however, the catch per trapper increased from 2.1 to 3.7 lynx during this period. Since 1994 the number of trappers taking lynx has rebounded to 62 in 1999. Trapping and snaring are the most important harvest methods, but a few lynx are shot each year.

Three to six trappers take wolverine in GMU 11 annually. The number of trappers taking a wolverine in Unit 11 has been stable, averaging 4 per year for the reporting period. The catch per trapper has remained low over the last 15 years, usually one or two wolverine per trapper. In Unit 13, between 19 and 35 trappers catch wolverine each season and catch per trapper has remained stable throughout the reporting period. All but two of the wolverine taken in Unit 11 were trapped or snared (Table 7). In Unit 13 trapping or snaring were also the most important methods of take; however, shooting accounted for 17% of the take during the reporting period (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 13 years trapping their current lines, which averaged 45 miles in length. Most trappers averaged about 50 sets on their line, but 9 (21%) trappers 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 Valley 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, 1 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. The harvest chronology data for beaver in Unit 11 and 13 are presented in Tables 9 and 10, respectively. In Unit 11 harvests are very low and variable. In Unit 13 chronology data indicates most beaver are taken early or late in the season, with few trappers expending much energy trying to take beaver during January or February. The early part of the season has been popular because the ice is thinner and beaver meat is sought for trap bait and sled dog food. High harvests in March and later spring reflected increased trapper activity associated with longer days, moderating temperatures, and higher pelt quality.

Harvest chronology for otter in Unit 11 has not shown any particular pattern over the past 5 years due to the small number taken (Table 11). The Unit 13 harvest chronology also fluctuated, but it appeared that more otters are taken in the first 3 months of the season (Table 12).

Harvest chronology data for lynx in Unit 11 and 13 are included in Tables 13 and 14, respectively. Chronology data probably reflects access and trapping conditions due to weather and snow depth more than differences in trapper preference. Most trappers start setting traps for lynx as soon as the season opens or whenever snow conditions and freeze-up allow travel to traplines after opening day.

Tables 15 and 16 present chronology data for Units 11 and 13 wolverine harvest. Because the season is so short, the timing of the wolverine harvest, like lynx, probably reflects trapping conditions more than differences in trapping preference.

Transport Methods. The transportation methods most used by successful trappers were snow machines, dog sleds, snowshoes, skis and highway vehicles (Tables 17–24).

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. Questions pertaining to trapping effort in the trapper questionnaire suggest fewer individuals are trapping and those that are, as a group, are getting older with a substantial number of years trapping experience in Units 11 and 13. The amount of effort expended by these individuals declined in the early 1990s but stabilized the last 2 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 wasn't a factor for those still trapping, the price paid is most likely the 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. Fur prices generally remained low despite predictions of increased value. The top price for lynx was 125 dollars for taxidermy quality adults. Most lynx going to the fur market averaged $60–100, much lower than during the last cycle in the 1980s when lynx averaged over 300 dollars. Marten prices are now below a 40-dollar average, a decline of over 50 percent from the 100 dollar average in the late 1980s. Prices paid for wolves have not varied appreciably for the last several years.

Beaver and otter catches in both Unit 11 and 13 were lower during this reporting period than the last, reflecting decreased demand and prices for these fur items. Beaver and otter populations are considered healthy. Both species are harvested over larger portions of both units. Trapping is not concentrated, with the possible exception of some highly visible roadside beaver colonies. Current harvest rates are considered sustainable.

Current harvests of fox, coyote, mink and weasels are lower than in previous years because of reduced trapping pressure and effort. This conclusion is based on responses to trapper questionnaires. A number of individuals reported either not trapping last year, or expending less effort than in previous years. The reason for the decline in trapping pressure and effort is linked to a weak fur market for long-haired furs. 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.

Lynx numbers increased in both Unit 11 and 13 the last five years. This increase followed a rapid build-up of hares within portions of these two units. Harvest data indicate increased lynx reproduction during the last five years, based on the percentage of kittens in the take. This observed increase in lynx does not follow the expected population trend based on the traditional 10-year population cycle. If they had followed the predicted population trend, lynx would have been at or near their cyclic low in 1998. The traditional lynx and hare cycles have changed for unknown reasons.

In Unit 13 lynx 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 trend counts. 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 included in the next year's trapping regulation book.

Wolverine numbers appear to be stable in 13A during this report period. Wolverine censuses were not repeated in 13D. Trapper reports suggest wolverine numbers are stable in mountainous areas; however, numbers remain low in forested habitats at lower elevations in Unit 13. Management objectives included attempting to increase wolverine numbers, promoting increased use of lowland habitats. Management actions over the past 10 years include shortening the season and creating a bag limit of 2 wolverines. These were not successful in increasing wolverine numbers on the forested lowlands. Lack of food resources for wolverine on the Lake Louise Flats is the most likely limiting factor. Dispersing radio-collared wolverines have moved to other mountainous habitats and have not remained on the forested lowlands of the Lake Louise Flats. I believe the management objective to increase wolverine numbers on the Flats may not be biologically feasible.

Wolverine harvests in Unit 13 were stable over this reporting period and well below peak harvests of the early 1980s. Important harvest areas include the Chugach Range in Unit 13D along the Richardson Highway and the eastern Talkeetnas in Unit 13A. In heavily-trapped portions of the eastern Talkeetnas in Unit 13A, marked wolverine 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 from 4–15% of the fall population (Gardner et al. 1993). Because current harvest rates appear to be sustainable, and the objective of increasing wolverine in lowland areas is questionable, I recommend maintaining the current season length.

Marten are considered the most important furbearer to individuals currently trapping in Units 11 and 13, although pelt prices dropped by over 50% from the $100 averages of the late 1980s. Trapping effort for marten declined because marten averaged only $40 in 1996. Marten numbers increased in both units during the 1980s. Responses to the trapper questionnaire suggest marten numbers are currently lower because of normal fluctuations in the food supply or predation. Current harvest levels for marten are considered to be sustainable. The decline in trapping effort, because of lower prices paid for marten over the last 5 years, has increased the size of refugia that should help the marten population to increase more rapidly once the prey base is sufficient. Because marten are such an important furbearer in Unit 13, management efforts should be maintained to monitor population trends and quantify the harvest. The trapper questionnaire should continue to ask how many marten each trapper takes every year. Although the questionnaire is voluntary and, undoubtedly, some trappers will avoid listing their catch, it appears enough trappers comply to make these data worthwhile. I would recommend aligning the Subunit 13E marten season with the remainder of Unit 13. The annual harvest of 30–90 marten from Subunit 13E is biologically insignificant to the population. The shortened season is unnecessarily restricting opportunity in 13E.

LITERATURE CITED

BECKER, E. AND L. VAN DAELE. 1988. Wolverine density estimate in Unit 13. Unpublished Report. Alaska Department of Fish and Game. Anchorage.

GARDNER, C. L., AND E. F. BECKER. 1991. Wolf and wolverine density estimation techniques. Federal Aid in Wildlife Restoration Research Progress Report. Project W-23-4. Alaska Department of Fish and Game. Juneau. 8pp.

GARDNER, C. L. 1985. The ecology of wolverines in south central Alaska. M.S. Thesis, University of Alaska, Fairbanks. 82 pp.

———, M. E. MCNAY, AND R. TOBEY. 1993. Estimates of wolverine densities and sustainable harvests in the Nelchina Basin in southcentral Alaska. Unpubl Rep *In* Abstracts, 7th Northern Furbearer Conference; April 22–23, Whitehorse, Yukon. 33pp.

GOLDEN, H. N. 1996. Federal Aid in Wildlife Restoration Research Progress Report, Project W-24-3. Alaska Department of Fish and Game. Juneau. 9pp.

———. 1997. Federal Aid in Wildlife Restoration Research Progress Report, Project W-24-5. Alaska Department of Fish and Game. Juneau. 8pp.

PREPARED BY:
Bob Tobey
Wildlife Biologist

SUBMITTED BY:
Michael G. McDonald
Assistant Management Coordinator

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

Tobey, B. 2001. Unit 11 & 13 furbearer management report. Pages 132–153 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 11 beaver harvest, 1995–2000

Regulatory	Reported Harvest				Method of Take				
Year	Adult	Juv.	(%)[a]	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	13	5	(28%)	18	18	(100%)	0	(0%)	0
1996–97	22	2	(8%)	24	24	(100%)	0	(0%)	0
1997–98	0	0	(0%)	0	0	(0%)	0	(0%)	0
1998–99	0	0	(0%)	0	0	(0%)	0	(0%)	0
1999–00	1	0	(0%)	1	1	(100%)	0	(0%)	0

[a] Beaver< 52”

Table 2 Unit 13 beaver harvest, 1995–2000

Regulatory	Reported Harvest				Method of Take				
Year	Adult	Juv.	(%)[a]	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	225	47	(17%)	272	270	(99%)	2	(1%)	0
1996–97	173	60	(26%)	233	233	(100%)	0	(0%)	0
1997–98	153	38	(20%)	191	191	(100%)	0	(0%)	0
1998–99	160	29	(15%)	189	189	(100%)	0	(0%)	0
1999–00	129	60	(32%)	189	189	(100%)	0	(0%)	0

[a] Beaver< 52”

Table 3 Unit 11 otter harvest, 1995–2000

Regulatory	Reported Harvest					Method of Take				
Year	Males	(%)	Females	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	8	(67%)	4	0	12	12	(100%)	0	(0%)	0
1996–97	6	(67%)	3	0	9	9	(100%)	0	(0%)	0
1997–98	0	(0%)	0	0	0	0	(0%)	0	(0%)	0
1998–99	0	(0%)	0	1	1	0	(0%)	0	(0%)	1
1999–00	0	(0%)	0	0	0	0	(0%)	0	(0%)	0

Table 4 Unit 13 otter harvest, 1995–2000

Regulatory	Reported Harvest					Method of Take				
year	Males	(%)	Females	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	28	(61%)	18	12	58	55	(95%)	3	(5%)	0
1996–97	12	(67%)	6	20	38	37	(97%)	1	(3%)	0
1997–98	14	(54%)	12	1	27	25	(93%)	2	(7%)	0
1998–99	5	(63%)	3	6	14	13	(93%)	1	(7%)	0
1999–00	7	(88%)	1	13	21	21	(100%)	0	(0%)	0

Table 5 Unit 11 lynx harvest, 1995–2000

Regulatory	Reported Harvest				Method of Take				
Year	Adult	Juv.	(%)[a]	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	6	3	(33%)	9	9	(100%)	0	(0%)	0
1996–97	29	8	(22%)	37	36	(97%)	1	(3%)	0
1997–98	31	17	(35%)	48	48	(100%)	0	(0%)	0
1998–99	60	25	(26%)	95	93	(98%)	2	(2%)	0
1999–00	91	24	(17%)	115	113	(99%)	1	(1%)	1

[a] Lynx ≤ 34” in length.

Table 6 Unit 13 lynx harvest, 1995–2000

Regulatory	Reported Harvest				Method of Take				
Year	Adult	Juv.	(%)[a]	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	40	31	(44%)	71	67	(94%)	4	(6%)	0
1996–97	133	63	(32%)	200	176	(88%)	6	(12%)	18
1997–98	227	148	(40%)	379	367	(98%)	9	(2%)	3
1998–99	179	65	(27%)	244	245	(100%)	0	(0%)	0
1999–00	317	106	(25%)	425	391	(98%)	6	(2%)	28

[a] Lynx < 34” in length.

Table 7 Unit 11 wolverine harvest, 1995–2000

Regulatory	Reported Harvest						Method of Take				
Year	Males	(%)	Females	(%)	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	3	(75%)	1	(25%)	0	4	4	(100%)	0	(0%)	0
1996–97	1	(25%)	3	(75%)	0	4	3	(75%)	1	(25%)	0
1997–98	16	(66%)	8	(33%)	0	24	24	(100%)	0	(0%)	0
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

Table 8 Unit 13 wolverine harvest, 1995–2000

Regulatory	Reported Harvest						Method of Take				
	Males	(%)	Females	(%)	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	20	(65%)	10	(32%)	1	31	27	(87%)	4	(13%)	0
1996–97	27	(61%)	17	(39%)	0	44	37	(84%)	7	(16%)	0
1997–98	21	(64%)	12	(36%)	1	34	26	(76%)	8	(24%)	0
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

Table 9 Unit 11 beaver harvest chronology percent by month, 1995–2000

Regulatory	Harvest periods								
Year	October	November	December	January	February	March	April	Unknown	*n*
1995–96	--	0	0	78	0	22	0	0	18
1996–97	--	13	16	13	54	4	0	0	24
1997–98	--	0	0	0	0	0	0	0	0
1998–99	--	0	0	0	0	0	0	0	0
1999–00	--	0	0	0	1	0	0	0	1

Table 10 Unit 13 beaver harvest chronology percent by month, 1995–2000

Regulatory	Harvest periods									
Year	October	November	December	January	February	March	April	May	Unknown	*n*
1995–96	38	30	19	5	3	4	0			272
1996–97	15	27	17	1	9	17	12			233
1997–98	97	38	34	3	1	7	6	3	2	191
1998–99	95	35	15	7	10	6	6	15	0	189
1999–00	98	30	2	1	7	7	21	17 12	6	189

Table 11 Unit 11 otter harvest chronology percent by month, 1995–2000

Regulatory	Harvest periods							
Year	November	December	January	February	March	April	Unknown	*n*
1995–96	0	17	25	42	17	0	0	12
1996–97	33	44	0	22	0	0	0	9
1997–98	0	0	0	0	0	0	0	0
1998–99	100	0	0	0	0	0	0	1
1999–00	0	0	0	0	0	0	0	0

Table 12 Unit 13 otter harvest chronology percent by month, 1995–2000

Regulatory	Harvest periods							
Year	November	December	January	February	March	April	Unknown	*n*
1995–96	17	29	24	28	2	0	0	58
1996–97	11	47	16	16	11	0	0	38
1997–98	22	7	33	33	4	0	0	27
1998–99	21	21	36	0	21	0	0	14
1999–00	14	57	5	0	24	0	0	21

Table 13 Unit 11 lynx harvest chronology percent by month, 1995–2000

Regulatory	Harvest periods						
Year	October	November	December	January	February	March	*n*
1995–96	0	0	33	56	11	0	9
1996–97	0	11	43	46	0	0	37
1997–98	0	0	15	39	46	0	48
1998–99	0	0	22	63	13	2	95
1999–00	0	1	24	48	27	0	104

Table 14 Unit 13 lynx harvest chronology percent by month, 1995–2000

Regulatory	Harvest Periods					
Year	November	December	January	February	March	*n*
1995–96	1	56	41	0	1	71
1996–97	2	62	35	0	1	200
1997–98	1	40	48	11	0	369
1998–99	0	43	43	13	1	244
1999–00	0	40	39	20	0	410

Table 15 Unit 11 wolverine harvest chronology percent by month, 1995–2000

Regulatory	Harvest Periods						
Year	November	December	January	February	March	Unknown	*n*
1995–96	0	50	50	0	0	0	4
1996–97	25	25	25	0	0	25	4
1997–98	0	13	83	0	4	0	24
1998–99	0	0	86	0	0	14	7
1999–00	0	40	60	0	0	0	5

Table 16 Unit 13 wolverine harvest chronology percent by month, 1995–2000

Regulatory	Harvest periods								
Year	September	October	November	December	January	February	March	Unknown	*n*
1995–96	3	3	10	45	35	0	0	3	31
1996–97	2	0	18	45	23	9	0	2	44
1997–98	15	3	12	26	44	0	0	0	34
1998–99	0	0	10	37	37	3	0	13	30
1999–00	6	0	6	26	58	0	3	0	31

Table 17 Unit 11 beaver harvest percent by transport method, 1995–2000

	Percent of Harvest								
Regulatory Year	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	*n*
1995–96	0	0	0	0	100	0	0	0	18
1996–97	0	0	0	0	71	0	0	29	24
1997–98	0	0	0	0	0	0	0	0	0
1998–99	0	0	0	0	0	0	0	0	0
1999–00	0	0	0	0	100	0	0	0	1

Table 18 Unit 13 beaver harvest percent by transport method, 1995–2000

	Percent of Harvest								
Regulatory Year	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	*n*
1995–96	2	4	16	6	31	0	34	8	272
1996–97	0	11	5	3	56	0	18	7	233
1997–98	5	9	0	0	51	0	65	1	191
1998–99	3	8	11	19	30	2	24	4	189
1999–00	0	15	3	6	12	0	65	0	189

Table 19 Unit 11 otter harvest percent by transport method, 1995–2000

Regulatory Year	Percent of Harvest: Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	*n*
1995–96	0	0	0	0	100	0	0	0	12
1996–97	0	0	0	0	100	0	0	0	9
1997–98	0	0	0	0	0	0	0	0	0
1998–99	0	0	0	0	100	0	0	0	1
1999–00	0	0	0	0	0	0	0	0	0

Table 20 Unit 13 otter harvest percent by transport method, 1995–2000

Regulatory Year	Percent of Harvest: Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	*n*
1995–96	0	7	0	2	72	0	7	12	58
1996–97	0	13	0	0	76	0	11	0	37
1997–98	0	15	0	0	70	0	4	11	27
1998–99	0	14	0	0	86	0	0	0	14
1999–00	0	5	0	0	90	0	5	0	21

Table 21 Unit 11 lynx harvest percent by transport method, 1995–2000

Regulatory Year	Percent of Harvest								
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	*n*
1995–96	0	0	0	0	100	0	0	0	9
1996–97	0	0	0	0	97	3	0	0	37
1997–98	0	2	0	2	96	0	0	0	48
1998–99	0	9	0	0	91	0	0	0	95
1999–00	0	6	0	0	90	2	0	2	115

Table 22 Unit 13 lynx harvest percent by transport method, 1995–2000

Regulatory Year	Percent of Harvest								
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	*n*
1995–96	0	0	0	1	80	6	13	0	71
1996–97	0	0	0	1	85	1	2	11	200
1997–98	4	0	0	0	91	0	3	2	379
1998–99	0	2	0	0	86	0	5	6	245
1999–00	0	2	0	0	80	0	10	8	425

Table 23 Unit 11 wolverine harvest percent by transport method, 1995–2000

Regulatory Year	Percent of Harvest								*n*
	Airplane	Dogsled Skis Snowshoes	Boat	4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	
1995–96	0	0	0	0	100	0	0	0	4
1996–97	25	0	0	0	75	0	0	0	4
1997–98	0	13	0	0	87	0	0	0	24
1998–99	14	0	0	0	86	0	0	0	7
1999–00	0	20	0	0	80	0	0	0	5

Table 24 Unit 13 wolverine harvest percent by transport method, 1995–2000

Regulatory Year	Percent of Harvest								*n*
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	
1995–96	6	0	3	3	77	0	6	3	31
1996–97	5	0	0	0	84	2	5	5	44
1997–98	6	0	0	8	68	6	12	0	34
1998–99	0	0	0	6	73	0	12	9	33
1999–00	0	0	0	6	80	0	13	0	31

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

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, the number of trappers 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 expended on coyotes, red foxes, mink, river otters, ermine, red squirrels, or 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

HARVEST

We obtained annual harvest estimates from sealing certificates. Information collected during the sealing process included location, date, method of take, sex, and age (young-of-the-year or adult). Sealing of pelts was mandatory for wolverines, lynx, river otters, and beavers. 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 trend was also obtained from the Raw Fur Skin Export Report, a record of all furbearer pelts exported from Alaska. Harvest data were summarized by regulatory year (RY = 1 Jul through 30 Jun, e.g., RY99 = 1 Jul 1999 through 30 Jun 2000).

POPULATION STATUS AND TREND

We used several methods to obtain estimates of furbearer population abundance, trend, and distribution. These methods included 1) trapper interviews, 2) a statewide trapper questionnaire, and 3) field observations by Fish and Game personnel. The best information about overall furbearer abundance and trapping pressure was collected during interviews with long-term trappers and pilots. During 1995 through 1997, lynx and snowshoe hare population trends were monitored using an aerial survey technique (M McNay, ADF&G, unpublished data). We begin monitoring snowshoe hare and lynx population trends and distribution again in winter 2000–2001. Lynx population trend was also assessed by evaluating age structure, pregnancy rate, and body condition of harvested lynx.

We estimated the proportion of kits in the harvest for beavers and lynx by using pelt measurements from the sealing certificates. Beaver pelts <53 inches (length plus width) (Buckley and Libby 1953) and lynx pelts <35 inches long (Stephenson 1988) were accepted standards for kits. Some overlap exists between pelt lengths of lynx kits and yearlings but I did not attempt to determine the extent of overlap.

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 2 lynx population cyclic highs in Units 12 and 20E occurred during 1990–1992 and 1997–1999. During these cycles, high kitten production was first reflected in the harvest 3–4 years prior to population highs. Kitten production remained high for 5 years during the early 1990s lynx cycle and for 6 years during the late 1990s lynx cycle. Years of high kitten production corresponded with years of high snowshoe hare numbers. The proportion of kittens in the harvest declined substantially in 1991 and 1992 in Units 12 and 20E, respectively. The lynx population declined to a low level in 1993. Snowshoe hare numbers began increasing in 1993, resulting in increased lynx kitten production and survival beginning in 1994. Increased numbers of lynx were noticeable by 1995. The increasing phase in both snowshoe hare and lynx numbers were earlier than expected based on an historical 10-year cycle. Preliminary data suggest kitten production and survival were low in Units 12 and 20E during 2000 following a reduction in snowshoe hare numbers. Lynx numbers are expected to decline substantially in 2001.

Wolverine

Wolverines were abundant in Units 12 and 20E during the 1960s, corresponding to a period of high ungulate and wolf densities. According to the area's long-term trappers, the wolverine population decline during the 1970s and 1980s coincided with a decline in moose and caribou numbers. During RY97–RY99, wolverines were common only in the mountainous habitats of Unit 12. Unlike Unit 20E, large populations of ground squirrels inhabited this area. There were also high populations of Dall sheep, and small numbers of caribou and moose that ensured a stable amount of carrion available to wolverines. Ungulate carrion and ground squirrels are important foods for wolverines in other areas of Alaska (Gardner 1985). Based on trapper questionnaires and incidental observations, the wolverine population increased in other areas of Unit 12 due to the increased availability of carrion as a result of thousands of Nelchina caribou wintering throughout the unit between 1990 and 1997 and in Unit 20E likely due to the increasing Fortymile caribou herd and 15,000–25,000 Nelchina caribou wintering in the area since 1998.

Marten

Marten populations declined after reaching a high in 1987 and remained low through 1992. Beginning in 1993, trapper observations and incidental sightings by department personnel indicated the marten population increased in Units 12 and 20E. Marten were common in 1995 and 1996 but appeared to have declined in 1997. In 1997, they were common in localized areas but were uncommon in many areas of suitable habitat. Trappers who took most of the RY97 harvest reported taking few juveniles. Marten numbers have remained low through RY00. Factors that may have limited marten population growth were reduced microtine populations and increased avian predators. Observations by long-term trappers in eastern Alaska and adjacent Yukon Territory, Canada indicate that marten numbers decline when numbers of hares, lynx, and raptors are high (unpublished data). Low availability of microtines may affect marten natality rates and kit survival.

Incidental observations by department personnel and trappers indicate that microtine numbers increased and numbers of avian predators declined during RY00. Due to increasing prey base and declining predators, marten numbers are expected to increase during RY01.

Historically in Units 12 and 20E marten trapping contributed most of the income for area trappers. During RY97–RY99 that was still the case, but many trappers did not trap or reduced their trapping effort because of low marten availability and reduced raw fur price.

Red Fox

Trapper interviews, questionnaires, and incidental sightings by department personnel indicate fox numbers declined during 1993 and 1994 in both units. During those years, most of the foxes' main prey populations were depressed (i.e., grouse, ptarmigan, snowshoe hares and microtines). Fox numbers increased substantially in 1995 and remained at high levels until fall 2001 due primarily to increased number of snowshoe hares. Fox numbers declined substantially during the winter of RY00 subsequent to the snowshoe hare decline. During RY97–RY99, there was little trapper demand for foxes because of the low market value.

Muskrat

The Northway–Tetlin Flats have been one of the most productive muskrat trapping areas in Alaska. Muskrat populations were high and were heavily trapped during the mid 1970s and mid 1980s. Between 1990 and 1992, muskrats were at low levels in both units and there was little trapper effort. Based on observations by trappers from Northway, muskrats seemed to increase in 1993 in the Northway Flats, and village residents increased trapping pressure. Extreme cold temperatures and lack of snow in 1995 and several years of drought subsequently caused the muskrat population to decline to low levels. Muskrat numbers remained low through 1999. During summer 2000, above normal rainfall caused high lake levels, and incidental sighting during aerial and ground surveys for other species indicated muskrat numbers increased throughout the lake systems in Units 12 and 20E.

Coyote

Coyote numbers increased in both units between the late 1980s and early 1990s and reached high numbers in certain areas, especially southeastern Unit 12. Coyotes declined following winter 1992 and have remained scarce throughout most of Units 12 and 20E. Based on trapper reports, coyote numbers increased in southeastern Unit 12 subsequent to the high snowshoe hare cycle during 1997–2000. Incidental sightings and trapper reports indicate coyote numbers declined during fall and winter 2000. There is little trapper demand for coyotes because of their low market value. Local residents have harvested high numbers of coyotes where they are abundant.

Beaver

During RY97–RY99 beavers were scarce to common in suitable lowland habitats in both units. Beaver numbers declined following severe freezing conditions during winter 1995. During late summer 1997, high water washed out many beaver houses located on rivers. Discussions with area trappers indicate subsequent beaver population growth was limited and remained at low levels. There was little trapper demand for beavers in Unit 20E. In Unit 12 many Northway trappers selectively trapped for beavers in the Northway Flats during spring.

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 numbers seemed to have increased along the Tanana River but overall are scarce in both units. There was little trapper demand for these species. Trappers also were asked about prey species. Respondents listed hares as common during 1998 through spring 2000. Ptarmigan were common until spring 2000. All 3 grouse species declined substantially during 1999 and currently are at low levels. Microtines were thought to have declined during 1997 and remained stable through 1999. Incidental reports indicate that microtine numbers increased during 2000.

MORTALITY

Harvest

Hunting Seasons and Bag Limits, Units 12 and 20E.

Coyote	1 Sep–30 Apr	10 coyotes
Red Fox	1 Sep–15 Mar	2 foxes
Lynx	1 Nov–31 Jan	2 lynx
Squirrel	No closed season	No limit
Wolverine	1 Sep–31 Mar	1 wolverine

Trapping Seasons and Bag Limits, Units 12 and 20E.

Beaver	1 Nov–15 Apr	15 beavers-Unit 12 25 beavers-Unit 20E
Coyote	15 Oct–28 Feb	No limit
Red Fox	1 Nov–28 Feb	No limit
Lynx	1 Dec–15 Feb	No limit[a]
Marten	1 Nov–28 Feb	No limit
Mink/Weasel	1 Nov–28 Feb	No limit
Muskrat	20 Sep–10 Jun	No limit
River Otter	1 Nov–15 Apr	No limit
Squirrel/marmot	No closed season	No limit
Wolverine	1 Nov–28 Feb	No limit

[a] Lynx trapping season is determined annually based on lynx population trend.

Board of Game Actions and Emergency Orders. The Board of Game adopted a regulation during spring 1992 which allowed 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. That 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. In spring 1998 the Alaska Board of Game changed the coyote hunting bag limit to 10 coyotes, however no more than 2 could be taken before 1 October. In spring 2000 the board extended the lynx season in Units 12 and 20E to 15 March and changed the November bag limit to 5 lynx.

Hunter/Trapper Harvest.

Lynx — 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. The lynx trapping season was 1 December–15 February in RY97, 1 December–28 February in RY98 and RY99, and 1 November–15 March in RY00.

During RY97–RY99, the lynx harvest in Unit 12 ranged from 221 to 353 (Table 1), exceeding any 3-year total since RY77. Lynx pelt prices have been low since RY91 and have not influenced harvest levels. The percentage of kittens in the harvest ranged between 19% and 29% and declined each year. The number of trappers who reported harvesting lynx during RY97 through RY99 was lower ($\bar{x}$ = 33 successful trappers) compared to the last lynx population high during 1990–1992 ($\bar{x}$ = 44 successful trappers) but their catch rate was more than twice as high (8.7 lynx/trapper compared to 4.1). The number of lynx trapped in December declined when the lynx season was lengthened in RY98 to include all of February. The longer season allowed trappers to be more relaxed in setting out their lynx lines, trap when days were longer, and possibly select for better fur quality compared to December (Table 3). Most trappers used snowmachines for transportation (83–92%; Table 4) and used leg-hold traps (65–93%) to catch lynx.

During RY97–RY99, 12–19 trappers reported taking 82–116 lynx (4.3–8.5 lynx/trapper) in Unit 20E (Table 2). This was comparable to harvest during the 1990–1992 lynx population high. The percentage of kittens in the harvest was 16–25%. Preliminary harvest data indicates the percentage of kittens in the RY00 harvest declined substantially. Most lynx were harvested with traps (55–71%). During RY97–RY99 the lynx season was extended to 28 February. Most harvest occurred in January; however, in RY98 the February harvest was similar to January's (Table 5). The primary transportation method was snowmachines (80–93%; Table 6).

The lynx decline following RY99 ends the first lynx cycle since implementing the tracking harvest strategy. It is difficult to determine the effects of this management program on Units 12 and 20E lynx numbers and harvest because we did not determine lynx population size during the past 2 population highs nor do we have methods to factor out other confounding variables such as habitat changes, snowshoe hare population trends, and trapper effort. If lynx harvest is used as an indicator, it would appear the strategy worked. In Unit 12 during the past lynx cycle, trappers enjoyed the highest catch during the 3 population peak years (898 lynx) since at least 1970. Also the lynx harvest during RY94–RY99 (low to high cycle) under the strategy was 1193 lynx compared to the harvest of 841 lynx during the previous cycle (RY86–RY92) when the seasons were much more liberal. Fur price was probably not a factor influencing the higher harvest because it had been low since 1992. Trapper effort does not appear to explain the difference, as fewer trappers reported taking more lynx during the cycle when the strategy was applied. These trends also hold true in Unit 20E but the harvest was lower due to less trapping pressure.

Before we begin to restrict seasons during the low phase of the next lynx cycle, I recommend we analyze the harvest data from the Interior units to which the tracking strategy was applied to see if there are any trends we can show trappers indicating the effects of the program. In general, trappers support the lynx tracking harvest strategy during the lynx population lows but have more difficulty understanding it when the lynx population begins to increase. We need to educate trappers about the benefits of the lynx tracking strategy so we will be assured of their continued support even if lynx prices go up while seasons are restricted. In doing so, we will maintain future trapper support for the lynx management program because trappers will understand that in exchange for reduced lynx trapping opportunity during the population lows and initial recovery phases they will likely have higher catches during the population highs.

Wolverine — During RY97–RY99, the wolverine harvest in Units 12 ranged from 18–30 and in 20E ranged from 3–8 (Tables 1 and 2). The Unit 12 harvest was the highest 3-year total during the past 14 years. Most of the harvest in Unit 12 occurred in mountainous areas along the western and southern boundaries. Fur price influenced several trappers to select for wolverines in this area. The wolverine harvest in Unit 20E has been relatively stable since 1986. Annual harvest was not concentrated in any specific geographic area, but a few wolverines were captured in most areas where trapping occurred. This indicated the wolverine population was distributed at low density across the area. Males composed 66% (range = 56–72%) and 67% (all 3 years combined) of the harvest during RY97–RY99in Units 12 and 20E, respectively.

Beaver — Interest in beaver trapping varied during RY97–RY99in Unit 12. Fur price was low but most of the harvest was by Northway residents who trapped beavers more for food and handicrafts than to sell raw (Table 1). Beaver harvest in Unit 20E is historically low (Table 2). Most harvest was 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 14 years, an average of 4 otters have been taken annually in Unit 12 (Table 1), and only 3 otters have been trapped in Unit 20E (Table 2).

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 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. Three prescribed burns totaling 96,000 acres were ignited in Unit 20E during 1998 and 1999 and over 300,000 acres burned in wildfires during 1999. These areas should become prime habitat for microtines within 5 years and snowshoe hares within 10 years and will ultimately benefit all furbearers. In Unit 12 about 97,000 acres burned in 1990 creating early succession habitat along the Tok River. Snowshoe hares and microtines were common in the burned area within 5–7 years. Foxes, coyotes, lynx, and marten have been observed and trapped within this area since 1997. Over 1000 acres of the Tok River valley is planned to be logged over the next 10 years. The Division of Wildlife Conservation is working with Division of Forestry in planning postlogging treatment to benefit 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 management objective to maintain accurate annual harvest records based on sealing documents was met during RY97–RY99. The management objective to develop specific population and harvest objectives for furbearers as new research and management findings become available was also met.

Trapping is important to many local residents to supplement their income, obtain food, or obtain fur for handicrafts. Most of the local trappers have a long history of trapping in the area ($\bar{x}$ = 19 years) and have developed extensive lines ($\bar{x}$ = 50 miles) with 50 to 400 traps. The fur market primarily drives trapper effort. Local trappers are able to conserve the furbearer populations along their lines because other local trappers respect most established traplines and there is little use of the area by nonlocal trappers. Furbearer populations are heavily exploited along the road system, especially marten, lynx, and fox. Trappers consider public road corridors open lines, which has created intense competition and overexploitation in some areas especially during years of high fur prices.

Trapping effort was not directly measured. However, information collected from sealing data, trapper questionnaires, and discussions with area trappers indicated that trapping effort declined since 1997 due to low pelt prices. However, lynx harvest increased in Units 12 and 20E and wolverine harvest increased in Unit 12. The increase in wolverine harvest was due to several trappers selecting for wolverine due to wolverine's high market value. Lynx harvest increased substantially apparently due to a very high lynx population. The effect of the lynx tracking harvest strategy on the lynx population and harvest was not evaluated but high harvest levels indicate it may have been a benefit. Trapping pressure was low on wolverine, beaver, otter, muskrat, coyote, and fox during RY97–RY99.

In most years marten were the most sought after furbearer in both units. Low price and reduced marten numbers caused a reduction in trapper effort during RY97–RY99. Incidental observations during RY00 indicate that avian predators of marten declined and microtine populations increased. Therefore, I expect marten numbers to increase in Units 12 and 20E in 2001. There is no need for changes in the season length, bag limits, or methods and means of harvest.

Historically, lynx were trapped intensively during periods of high fur price and population highs in Units 12 and 20E. During RY97–RY99 lynx numbers were high in both units and the fur price was below normal. Incidental observations and trapper interviews indicate the snowshoe hare population declined substantially in spring 2000 and preliminary harvest data indicate few lynx kittens were available during the RY00 trapping season. I expect the lynx population to decline rapidly during 2001 and 2002 and the season length to be reduced in RY02. Prior to continuing the strategy for another lynx cycle, I recommend we discuss with the trappers the benefits and effects of the program to further evaluate their support.

Wolverines declined during the 1960s and were stable at low levels in both units throughout the 1970s and 1980s (Kelleyhouse 1990). Ungulate food resources for wolverine increased in Unit 20E and wolverine numbers appear to be increasing slowly. In Unit 12 wolverine numbers probably increased during the early to mid-1990s due to the Nelchina and Mentasta caribou herds wintering in the unit. Wolverine reproductive rates are dependent on food availability

(Magoun 1985). I believe wolverine numbers have increased because of increased food availability in both units. Most area trappers do not select for wolverines but will set for them if they see enough sign. Based on population trend and traditional trapping practices, further restricting the wolverine trapping seasons in Units 12 and 20E is not necessary.

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

LITERATURE CITED

BUCKLEY JL AND WL LIBBY. 1953. Growth rates and age determination in Alaskan beaver. Transactions of the North American Wildlife and Natural Resources Conference. 20:495–507.

GARDNER CL. 1985. The ecology of wolverines in southcentral Alaska. Thesis. University Alaska Fairbanks.

KELLEYHOUSE DG. 1990. Unit 12 furbearer management progress report of survey–inventory activities. Pages 94–101 and 185–190 *in* SO Morgan, editor. Volume XX. Part XIV. Alaska Department Fish and Game. Federal Aid in Wildlife Restoration. Grant W-23-2. Study 7.0. Juneau, Alaska.

MAGOUN AJ. 1985. Population characteristics, ecology, and management of wolverines in northwestern Alaska. Dissertation. University Alaska Fairbanks.

STEPHENSON RO. 1988. Development of techniques for evaluating lynx population status in Alaska. Alaska Department Fish and Game. Federal Aid in Wildlife Restoration. Research Progress Report. Grant W-22-6. Study 7.13. Juneau, Alaska.

PREPARED BY:

Craig L Gardner
Wildlife Biologist III

SUBMITTED BY:

Doreen I Parker McNeill
Assistant Management Coordinator

REVIEWED BY:

Mark E McNay
Wildlife Biologist III

Laura A McCarthy
Publications Technician II

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

Gardner, C. L. 2001. Unit 12 and 20E furbearer management report. Pages 154–175 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 12 beaver, lynx, otter, and wolverine harvest, regulatory years 1986–1987 through 1999–2000

Species/ Regulatory year	Reported harvest: Sex M	F	Unk	Age Juv[a]	Adults	Unk	Estimated harvest: Unreported	Illegal	Method of take: Trap/snare	Shot	L&S[b]	Unk	Total harvest	Successful trappers/ hunters
Beaver														
1986–1987	0	0	55	5	50	0	20	0	44	3	0	8	75	16
1987–1988	0	0	18	5	13	0	20	0	18	0	0	0	38	6
1988–1989	0	0	15	2	13	0	20	0	15	0	0	0	35	7
1989–1990	0	0	14	3	11	0	20	0	13	0	0	1	34	5
1990–1991	0	0	19	6	12	1	20	0	18	0	0	1	39	7
1991–1992	0	0	40	10	30	0	20	0	36	0	0	4	60	11
1992–1993	0	0	34	1	33	0	20	0	34	0	0	0	54	6
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
Lynx														
1986–1987	0	0	80	11	69	0	0	0	78	0	0	2	80	32
1987–1988	0	0	74	21	53	0	0	0	72	2	0	0	74	35
1988–1989	0	0	70	13	57	0	0	0	65	5	0	0	70	29
1989–1990	0	0	78	18	60	0	0	0	74	3	0	1	78	28
1990–1991	0	0	133	23	110	0	0	0	131	2	0	0	133	40
1991–1992	0	0	174	6	163	5	0	0	170	4	0	0	174	49
1992–1993	0	0	232	5	227	0	0	0	218	6	0	8	232	43
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

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		
Otter														
1986–1987	2	2	0	0	0	4	3	0	4	0	0	0	7	3
1987–1988	1	8	1	0	0	10	3	0	7	3	0	0	13	5
1988–1989	2	0	0	0	0	2	3	0	2	0	0	0	5	2
1989–1990	0	0	0	0	0	0	3	0	0	0	0	0	3	0
1990–1991	1	0	0	0	0	1	3	0	1	0	0	0	4	1
1991–1992	0	0	6	0	0	6	3	0	6	0	0	0	9	4
1992–1993	3	3	2	0	0	8	3	0	6	1	0	1	11	6
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
Wolverine														
1986–1987	18	14	0	0	0	32	0	0	27	2	0	3	32	15
1987–1988	13	5	1	0	0	19	0	0	18	0	1	0	19	12
1988–1989	9	5	0	0	0	14	0	0	10	4	0	0	14	8
1989–1990	8	4	0	0	0	12	0	0	10	0	0	2	12	11
1990–1991	13	1	0	0	0	14	0	0	14	0	0	0	14	8
1991–1992	16	10	1	0	0	27	0	0	25	2	0	0	27	16
1992–1993	9	5	0	0	0	14	0	0	14	0	0	0	14	10
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

[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.

Table 2 Unit 20E beaver, lynx, otter, and wolverine harvest, regulatory years 1986–1987 through 1999–2000

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														
1986–1987	0	0	5	0	5	0	5	0	1	0	0	4	10	2
1987–1988	0	0	3	0	3	0	5	0	3	0	0	0	8	1
1988–1989	0	0	1	0	1	0	5	0	1	0	0	0	6	1
1989–1990	0	0	3	0	3	0	5	0	3	0	0	0	8	2
1990–1991	0	0	3	0	3	0	5	0	3	0	0	0	8	2
1991–1992	0	0	10	0	10	0	5	0	10	0	0	0	15	5
1992–1993	0	0	6	1	5	0	5	0	6	0	0	0	11	3
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
Lynx														
1986–1987	0	0	11	0	11	0	0	0	11	0	0	0	11	5
1987–1988	0	0	9	3	6	0	0	0	9	0	0	0	9	5
1988–1989	0	0	25	7	18	0	0	0	25	0	0	0	25	10
1989–1990	0	0	29	10	19	0	0	0	29	0	0	0	29	12
1990–1991	0	0	70	19	51	0	0	0	68	2	0	0	70	22
1991–1992	0	0	113	16	96	1	0	0	111	0	0	2	113	14
1992–1993	0	0	97	3	89	5	0	0	93	3	0	1	97	21
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

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		
Otter														
1986–1987[c]														
1987–1988[c]														
1988–1989[c]														
1989–1990[c]														
1990–1991[c]														
1991–1992		1		0	0	1	0	0	1	0	0	0	1	0
1992–1993[c]														0
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[c]														
1996–1997[c]														
1997–1998[c]														
1998–1999[c]														
1999–2000[c]														
Wolverine														
1986–1987	5	5	0	0	0	10	0	0	8	0	0	2	10	9
1987–1988	5	2	0	0	0	7	0	0	5	0	0	2	7	6
1988–1989	1	0	0	0	0	1	0	0	1	0	0	0	1	1
1989–1990	10	4	0	0	0	14	0	0	14	0	0	0	14	11
1990–1991	3	1	0	0	0	4	0	0	4	0	0	0	4	4
1991–1992	5	4	0	0	0	9	0	0	8	0	0	1	9	7
1992–1993	3	2	0	0	0	5	0	0	5	0	0	0	5	5
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

[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 reported harvest.

Table 3 Unit 12 beaver, lynx, otter, and wolverine reported harvest[a] chronology by month, regulatory years 1986–1987 through 1999–2000

Species/ Regulatory year	Harvest periods Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr
Beaver							
1986–1987	0	7	7	2	7	26	6
1987–1988	0	9	0	0	0	7	2
1988–1989	0	6	2	0	2	5	0
1989–1990	0	9	1	0	0	4	0
1990–1991	0	1	0	1	9	6	1
1991–1992	0	4	4	0	1	9	18
1992–1993	0	7	6	1	0	10	5
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
Lynx							
1986–1987	0	7	46	27	0	0	0
1987–1988	0	0	34	34	1	0	0
1988–1989	0	2	34	25	2	0	0
1989–1990	0	3	51	23	0	0	0
1990–1991	0	4	36	90	0	0	0
1991–1992	0	33	58	79	4	0	0
1992–1993	0	45	78	71	32	0	0
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
Otter							
1986–1987	0	0	0	0	2	2	0
1987–1988	0	0	0	0	0	0	0
1988–1989	0	0	1	0	0	0	1
1989–1990	0	0	0	1	0	0	0
1990–1991	0	0	0	0	0	1	0
1991–1992	0	0	0	1	4	0	0
1992–1993	1	0	0	2	1	3	0

Species/ Regulatory year	Harvest periods						
	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr
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
Wolverine							
1986–1987	0	1	2	5	9	4	0
1987–1988	4	1	1	4	4	0	0
1988–1989	0	1	1	4	4	0	0
1989–1990	0	1	3	6	0	0	0
1990–1991	0	1	3	4	6	0	0
1991–1992	1	2	6	8	10	0	0
1992–1993	0	2	4	3	5	0	0
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
1999–2000	1	0	7	7	15	0	0

[a] Unknown not included.

Table 4 Unit 12 harvest percent by transport method, regulatory years 1986–1987 through 1999–2000

Species/ Regulatory year	Harvest percent by transport method							
	Airplane	Dogsled, Skis, Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown
Beaver								
1986–1987	0	20	0	0	56	0	7	16
1987–1988	0	28	0	0	56	0	17	0
1988–1989	0	0	0	0	73	0	27	0
1989–1990	0	0	0	0	93	0	0	7
1990–1991	0	0	0	0	47	0	5	47
1991–1992	0	3	0	0	68	0	0	30
1992–1993	0	0	38	0	62	0	0	0
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
Lynx								
1986–1987	0	1	0	0	85	0	10	4
1987–1988	3	5	0	0	74	0	7	11
1988–1989	1	1	0	0	86	0	11	0
1989–1990	4	10	0	0	82	0	0	4
1990–1991	2	5	0	0	89	0	2	3
1991–1992	0	1	0	0	83	1	12	3
1992–1993	0	1	0	0	88	0	8	4
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

Species/ Regulatory year	Harvest percent by transport method							
	Airplane	Dogsled, Skis, Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown
Otter								
1986–1987[a]								
1987–1988[a]								
1988–1989[a]								
1989–1990[a]								
1990–1991[a]								
1991–1992	0	0	0	0	100	0	0	0
1992–1993	0	0	38	0	50	0	0	13
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
Wolverine								
1986–1987	34	0	0	0	50	0	6	9
1987–1988	5	5	0	0	90	0	0	0
1988–1989	29	0	0	7	57	0	0	7
1989–1990	17	25	0	0	42	0	0	17
1990–1991	0	21	0	0	57	0	0	21
1991–1992	15	0	0	0	81	0	0	4
1992–1993	0	0	0	0	100	0	0	0
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

[a] No reported harvest.

Table 5 Unit 20E beaver, lynx, otter, and wolverine reported harvest chronology by month, regulatory years 1986–1987 through 1999–2000

Species/ Regulatory year	Harvest periods						
	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr
Beaver							
1986–1987	0	0	0	0	1	2	2
1987–1988	0	1	2	0	0	0	0
1988–1989	0	0	0	0	0	1	0
1989–1990	0	0	2	0	0	1	0
1990–1991	0	0	2	0	0	1	0
1991–1992	0	2	6	0	0	2	0
1992–1993	0	0	0	0	2	2	2
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
Lynx							
1986–1987	0	0	7	4	0	0	0
1987–1988	0	0	5	4	0	0	0
1988–1989	0	0	11	12	0	0	0
1989–1990	0	0	19	9	1	0	0
1990–1991	0	18	23	29	0	0	0
1991–1992	0	20	55	37	0	0	0
1992–1993	1	15	26	32	22	0	0
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
Otter							
1986–1987[a]							
1987–1988[a]							
1988–1989[a]							
1989–1990[a]							
1990–1991[a]							
1991–1992	0	0	1	0	0	0	0
1992–1993[a]							

Species/ Regulatory year	Harvest periods						
	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr
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]							
Wolverine							
1986–1987	1	3	2	3	1	0	0
1987–1988	0	0	0	4	2	0	0
1988–1989	0	0	0	0	1	0	0
1989–1990	0	1	6	7	0	0	0
1990–1991	0	0	1	2	1	0	0
1991–1992	0	1	3	4	1	0	0
1992–1993	0	1	0	0	5	0	0
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
1999–2000	0	0	1	0	2	0	0

[a] No reported harvest.

Table 6 Unit 20E harvest percent by transport method, regulatory years 1986–1987 through 1999–2000

Species/ Regulatory year	Harvest percent by transport method							
	Airplane	Dogsled, Skis, Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown
Beaver								
1986–1987	0	20	0	0	0	0	0	80
1987–1988	0	0	0	0	100	0	0	0
1988–1989	0	0	0	0	100	0	0	0
1989–1990	0	0	0	0	100	0	0	0
1990–1991	0	67	0	0	33	0	0	0
1991–1992	8	20	0	0	80	0	0	0
1992–1993	0	0	0	0	67	0	0	33
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
Lynx								
1986–1987	0	18	0	0	64	0	0	18
1987–1988	0	33	0	0	67	0	0	0
1988–1989	12	24	0	8	48	0	8	0
1989–1990	0	45	0	0	48	0	7	0
1990–1991	0	7	0	0	83	0	1	9
1991–1992	25	4	0	0	66	0	0	5
1992–1993	8	2	0	1	96	0	0	1
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

Species/ Regulatory year	Harvest percent by transport method							
	Airplane	Dogsled, Skis, Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown
Otter								
1986–1987[a]								
1987–1988[a]								
1988–1989[a]								
1989–1990[a]								
1990–1991[a]								
1991–1992	0	0	0	0	100	0	0	0
1992–1993[a]								
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]								
Wolverine								
1986–1987	10	20	0	0	70	0	0	0
1987–1988	29	0	0	0	29	0	14	29
1988–1989	0	0	0	0	100	0	0	0
1989–1990	14	36	0	0	50	0	0	0
1990–1991	25	0	0	0	75	0	0	0
1991–1992	44	0	0	0	44	0	0	11
1992–1993	0	0	0	0	100	0	0	0
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

[a] No reported harvest.

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 14 (6,625 mi^2)

GEOGRAPHIC DESCRIPTION: Eastern Upper Cook Inlet

BACKGROUND

Game Management Unit 14 is divided into 3 subunits, and contains more than half (over 310,000) of the people living in Alaska. The human populations in Anchorage and the Matanuska-Susitna valleys are the fastest growing in the state, with most development occurring in Units 14C and 14A. Most trapping in Unit 14 is low volume, and many resource users do not go far from established roads or trails. Fur trapping and hunting is prohibited or severely restricted in the western half of Unit 14C (the Anchorage bowl), therefore most consumptive use occurs in Units 14A and 14B.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Provide the opportunity to trap and hunt furbearers.
- Maintain an optimal sustained harvest of furbearers.

MANAGEMENT OBJECTIVES

- Develop measurable population objectives for all fur species.
- Monitor annual harvest of furbearers using sealing forms, questionnaires, and trapper interviews.
- Implement track counts to form a long-term population index.

Annual harvest standards used to evaluate long-term harvest levels are: 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. 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 voluntarily from trapper questionnaires.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Trappers reported that most species were common or abundant during the reporting period. They reported muskrat were scarce in 1997–1998, and wolverine and lynx were scarce in 1998–1999 and 1999–2000. They reported the population size of prey species as common or abundant in all years.

No specific investigations of furbearer population size or composition were conducted during the reporting period. Due to sub-optimal weather and other commitments, the track transects in Units 14A and 14B were not surveyed from 1997–2000.

Distribution and Movements

Hare numbers increased notably in the mid to late 1990s, with a concurrent increase in lynx (Masteller 1997). Wolf numbers have increased in recent years as well, but trappers have not reported any declines in coyote or fox numbers.

MORTALITY

Trapping Seasons and Bag Limits.

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

Marten	Nov. 10–Dec. 31	No limit
Mink/Weasels	Nov. 10–Jan. 31	No limit
Muskrat	Nov. 10–May 15	No limit
Land Otter		
Unit 14A and B	Nov. 10–Mar. 31	No limit
Unit 14C	Nov. 10–Feb. 28	No limit
Squirrels/Marmots	No closed season	No limit
Wolverine	Nov. 10–Jan. 31	2 per season

Hunting Seasons and Bag Limits.

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

Board of Game Actions and Emergency Orders. The hunting season for lynx and red fox was reinstated in Unit 14 starting in 1997–1998 due to increasing populations. The Board also extended the marten trapping season 3 weeks in 1997–1998 after the populations rebounded from low numbers in the late 1980s and early 1990s.

Hunter/Trapper Harvest. The harvest of beaver, otter, wolverine, and marten, decreased during the reporting period, although trapping conditions were reported as fair or good. Beaver populations throughout the unit are stable or increasing, yet the harvest has decreased in the past few seasons due to depressed fur prices (Table 1). Conversely, the otter harvest has been relatively high for the last 7 seasons bolstered by high pelt prices (Table 2). Despite a decreasing beaver harvest, both the number of juvenile beavers in the harvest and the average pelt size have been relatively constant the last several seasons (Figure 1).

The lynx harvest increased slightly but was well below the harvest standard level of 12 (Table 3). The lynx harvest has increased as animals from contiguous populations in Unit 13 disperse into unpopulated habitat in Unit 14. The wolverine harvest was above the harvest standard level of 10 only in 1997–1998 when 13 animals were taken (Table 4).

The average price for marten pelts dropped over 10 dollars per pelt in 1997–1998 yet we had the largest harvest on record (Table 5). The marten harvest is probably less market driven than 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 marten 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 inferred from trapper questionnaires. During the reporting period, the total harvest ranges for all respondents were: coyote, 10–17; red fox, 17–45; mink, 35–64; weasels, 18–27; muskrats, 10–94; and red squirrels, 0–17. Many trappers either do not receive or fail to return the questionnaires; therefore, these are 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. We attempted to treat coyotes and wolves within the general area using meat baits medicated with the drug ivermectin. Through examination of 36 coyotes from 14 trappers, we confirmed lice on 4 coyotes caught during the 1998–1999 season. Lice were also reported on wolves and coyotes during the 1999-2000 season but at a reduced frequency.

Harvest Chronology. Weather conditions, such as snow depth, freezing rain, and cold temperatures can determine 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 6-10).

Transport Methods. Snow machine use is still the most popular transport means for trappers (Tables 11–15). However, beaver and otter trappers also used highway vehicles extensively. Aircraft use has increased in the last decade for wolverine trappers (Table 14) and non-mechanized travel methods, such as dogsledding, skiing or snowshoeing, have recently increased for marten trappers (Table 15).

Other Mortality

There were 3 beaver taken under nuisance permits in 1997–1998, 2 taken in 1998–1999, and in 1999–2000, 24 beaver were taken under nuisance permits. As in previous years, road/railroad maintenance personnel identified most problem areas where beavers have plugged culverts and flooded roadbeds. Lengthening of the beaver season in the mid 1990s has not alleviated the nuisance beaver problem. With healthy beaver populations, relatively low fur prices, and reduced trapping levels, nuisance complaints can be expected increase.

HABITAT

Approximately 37,000 acres of mature mixed birch/spruce forest burned in June 1996 during the "Miller's Reach" wildfire, north and east of Big Lake in Unit 14A. Since then, there have not been any other fires or significant habitat disturbances.

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 need to 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 over-harvest of marten in the Matanuska/Susitna Valley in the late 1980s that initiated 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. Often the sex of the animal is unrecorded at the time of sealing and trappers often do not accurately keep precise 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 has been seen in the last 2 years in Unit 14 (Figure 2). This trend is not definite because many sealed marten do not have sex distinguished and the harvest chronology is often uncertain. The percent of females in the harvest is the best available method for managers to assess the health of the population. I believe there needs to be a concerted effort by trappers and sealers to keep precise records in noting the sex of the animal and when it was taken. I suggest a "harvest log card" be sent to trappers to facilitate record keeping of their marten harvest.

LITERATURE CITED

GOLDEN, H.N. 1994. Furbearer track count index testing and development. Federal Aid in Wildlife Restoration Progress Report Project W-24-2. Study 7.17. Juneau. 44pp.

MASTELLER, M. A. 1993. Game Management Unit 14. Pages 132–146 *in* Abbott, S. M., ed. Furbearers, survey-inventory management report, July 1989–June 1991. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Project W-23-3/4. Study 7.0. Juneau. 303pp.

———. 1997. Game Management Unit 14. Pages 144–167 *in* Hicks, M. V., ed. Furbearers, survey-inventory management report, July 1994–June 1997. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Project W-24-3/5. Study 7.0. Juneau. 322pp.

PREPARED BY: **SUBMITTED BY:**

Thomas McDonough Michael G. McDonald

Wildlife Biologist III Assistant Management Coordinator

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

McDonough, T. 2001. Unit 14 furbearer management report. Pages 176–197 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 14 beaver harvest, 1987–2000

Regulatory Year	Reported harvest Juv[a]	(%)	Adults	Method of Take Trap/snare	Shot	Unk	Total	Trappers/hunters Successful
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
1999–00	35	(21)	129	147	2	24	173	33
Average	43	(21)	166	197	1	17	216	44

[a] Beaver measuring ≤ 52 inches (length + width)

Table 2 Unit 14 land otter harvest, 1988–2000

Regulatory Year	Reported harvest: Male	Female	Unk	Method of Take: Trap/snare	Shot	Unk	Total	Successful Trappers/hunters
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
1999–00	18	11	1	30	0	0	30	18
Average	13	10	4	26	1	1	24	13

Table 3 Unit 14 lynx harvest, 1987–2000

Regulatory Year	Sex Composition M	F	(%)	Unk	Age Composition Juv[a]	(%)	Ad	Unk	Method of Take Trap/ Snare	Shot	(L&S)[b]	Unk	Total	Hunters/trappers Successful
1987–88[c]	0	0	(0)	0	0	(0)	0	0	0	0	(0)	0	0	0
1988–89[c]	0	0	(0)	0	0	(0)	0	0	0	0	(0)	0	0	0
1989–90[c]	0	0	(0)	0	0	(0)	0	0	0	0	(0)	0	0	0
1990–91	8	5	(38)	0	7	(54)	6	0	11	2	(0)	0	13	8
1991–92	4	3	(43)	8	2	(17)	10	3	14	1	(0)	0	15	6
1992–93	7	2	(22)	2	3	(30)	7	1	10	1	(0)	0	11	9
1993–94	3	4	(57)	3	0	(0)	7	3	7	1	(0)	2	10	4
1994–95[c]	0	0	(0)	0	0	(0)	0	0	0	0	(0)	0	0	0
1995–96[c]	0	0	(0)	0	0	(0)	0	0	0	0	(0)	0	0	0
1996–97	0	3	(100)	0	1	(50)	1	1	3	0	(0)	0	3	2
1997–98	0	1	(100)	1	0	(0)	1	1	1	0	(0)	1	2	2
1998–99	1	0	(0)	3	0	(0)	2	2	2	1	(0)	1	4	3
1999–00	4	1	(20)	1	2	(50)	2	2	5	0	(0)	1	6	6
Average[d]	3	2	(48)	2	2	(25)	5	2	7	1	(0)	1	8	5

[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 years when season open

Table 4 Unit 14 wolverine harvest, 1987–2000

	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
1999–00	3	2	(40)	0	5	0	(0)	0	5	6
Average	5	3	(38)	0	8	1	(0)	0	9	7

[a] L&S (land and shoot) refers to animals recorded as "ground shot" when transportation indicated was "aircraft".

Table 5 Unit 14 marten harvest, 1992–2000

	Reported harvest			Method of Take				
Regulatory Year	Male	Female	Unk	Trap/snare	Shot	Unk	Total	Successful Trappers/hunters
1992–93[a]	5	1	0	6	0	0	6	2
1993–94	8	3	0	11	0	0	11	3
1994–95	10	8	10	18	0	10	28	5
1995–96	37	16	0	51	0	2	53	12
1996–97	70	32	0	102	0	0	102	12
1997–98	75	50	13	138	0	0	138	16
1998–99	32	25	5	62	0	0	62	14
1999–00	49	23	2	74	0	0	74	13
Average	36	20	4	58	0	1	59	10

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

Table 6 Unit 14 beaver harvest chronology by month, 1989–2000

Year[a]	Percent harvested										Unk	Harvest
	Jun–Aug[b]	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May		
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
1999–00	2	10	2	16	28	13	5	14	4	6	0	173

[a] Information not collected prior to 1989
[b] These are beaver taken on damage control permits

Table 7 Unit 14 land otter harvest chronology by month, 1987–2000

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
1999–00	0	0	30	47	10	3	10	0	30

Table 8 Unit 14 lynx harvest chronology by month, 1987–2000

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
1999–00	17	33	0	33	0	17	6

[a] Season closed

Table 9 Unit 14 wolverine harvest chronology by month, 1987–2000

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
1999–00	0	0	0	41	60	0	0	0	5

Table 10 Unit 14 marten harvest chronology by month, 1992–2000

Year	Percent of Harvest								Harvest
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
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
1999–00	0	0	55	45	0	0	0	0	74

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

Table 11 Unit 14 beaver trapper transport methods, 1989–2000

	Percent of Harvest								
Regulatory Year	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snow-machine	ORV	Highway Vehicle	Unk	Total Harvest
1989–90[a]		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 3	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
1999–00	0	32	0	6	33	0	29	0	173

[a] Information not collected before 1989

Table 12 Unit 14 land otter trapper transport methods, 1987–2000

Regulatory Year	Percent of Harvest: Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snow-machine	ORV	Highway Vehicle	Unk	Total Harvest
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
1999–00	0	24	0	3	33	0	33	7	30

Table 13 Unit 14 lynx trapper transport methods, 1987–2000

Regulatory Year	Percent of Harvest: Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snow-machine	ORV	Highway Vehicle	Unk	Total Harvest
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
1999–00	0	33	0	0	33	0	17	17	6

[a] Lynx season closed

Table 14 Unit 14 wolverine trapper transport methods, 1987–2000

Regulatory Year	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snow-machine	ORV	Highway Vehicle	Unk	Total Harvest
	Percent of Harvest								
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
1999–00	40	0	0	0	60	0	0	0	5

Table 15 Unit 14 marten trapper transport methods, 1992–2000

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	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 0	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
1999–00	0	43	0	0	54	0	3	0	74

[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, 1991-2000. (Juvenile beaver measure ≤ 52 inches). Harvest numbers are incomplete due to some beaver measurements unrecorded at time of sealing.

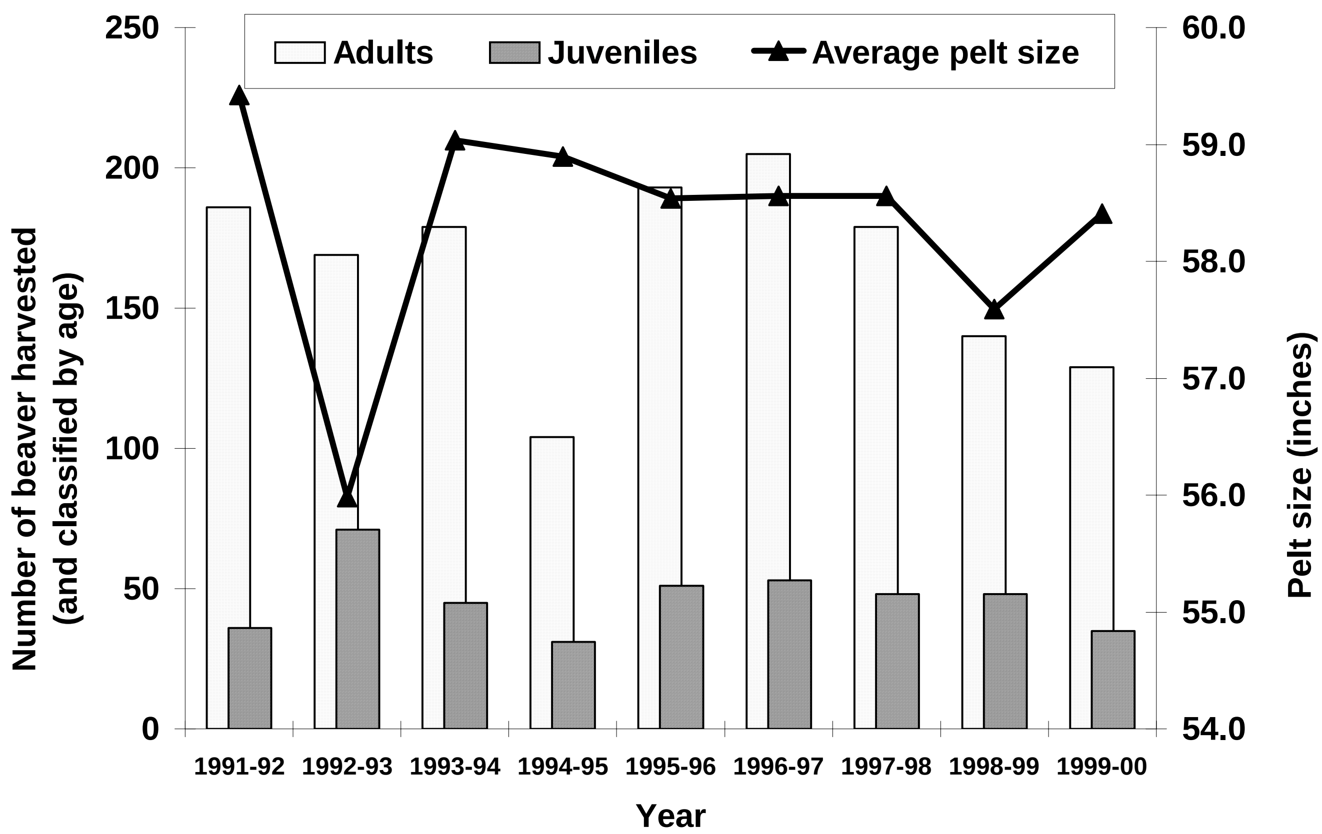
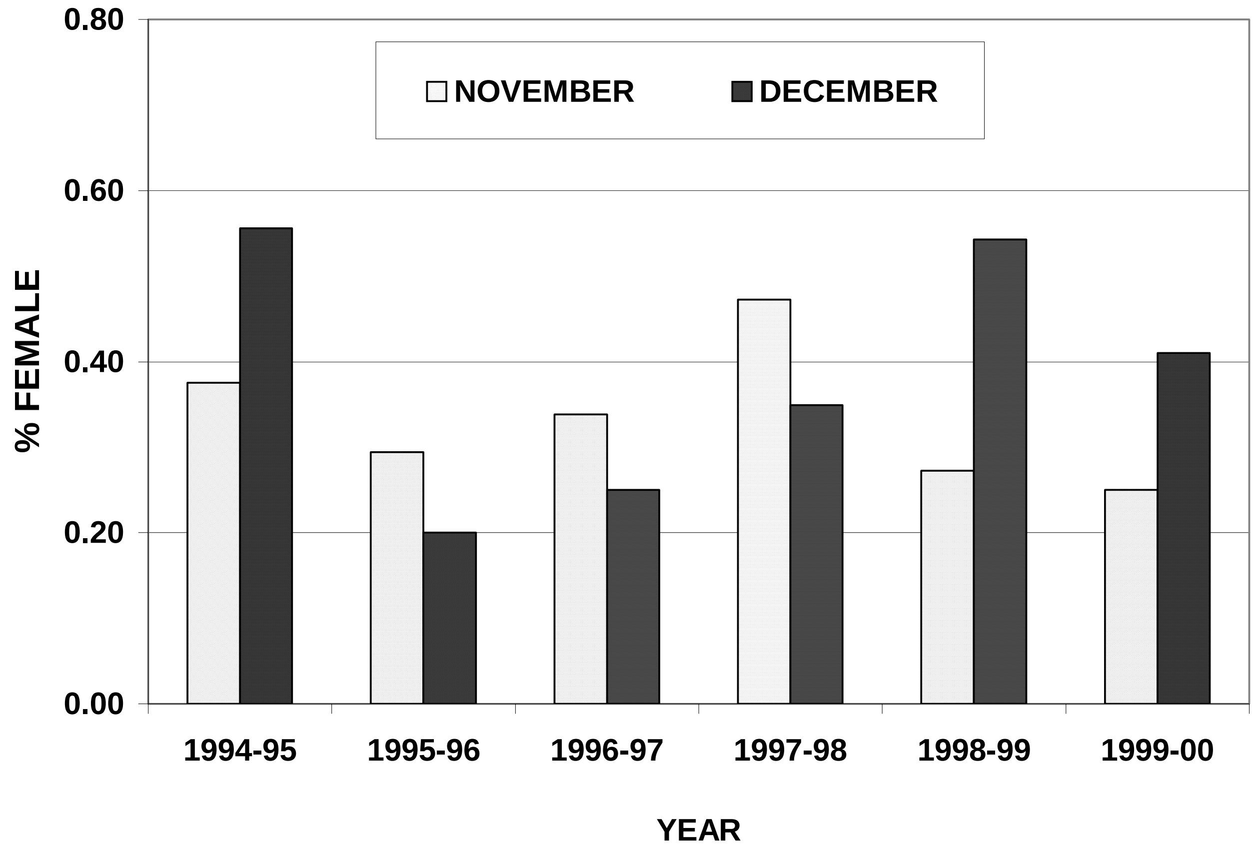


Figure 2 Percent female marten trapped over time in Unit 14, 1994–2000



Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

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. There have been no major wildfires since the 1950s, but hundreds of acres of white spruce have been killed in the last decade by a major spruce bark beetle infestation. 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 and the Petersville Road, and in the settlements of Skwentna, Beluga and Tyonek. 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 still actively 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.

MANAGEMENT OBJECTIVES

- Develop measurable population objectives for all fur species.
- Monitor annual harvest of furbearers using sealing forms, questionnaires, and trapper interviews.
- Implement track counts to form a long-term population index.

Annual harvest standards used to evaluate long-term harvest levels are: 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, 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 information volunteered on trapper questionnaires.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Trappers reported that all species were common or abundant, except muskrat were scarce in 1997–1998, and wolverine and lynx were scarce in 1998–1999 and 1999–2000. Trappers reported the abundance of 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 were not surveyed from 1997–2000.

MORTALITY

Trapping Seasons and Bag Limits.

Species	Season	Bag Limit
Beaver (1997–98, 1998–99)	Nov 10–May 15	No limit
(1999–00)	Oct 10–May 15	No limit
Coyote	Nov 10–Mar 31	No limit
Red Fox	Nov 10–Feb 28	No limit
Lynx	Dec 15–Jan 15	No limit
Marten		
Unit 16A	Nov 10–Dec 31	No limit
Unit 16B	Nov 10–Jan 31	No limit
Mink/Weasels	Nov 10–Jan 31	No limit
Muskrat	Nov 10–Jun 10	No limit
Land Otter	Nov 10–Mar 31	No limit
Squirrels/Marmots	No closed season	No limit
Wolverine		
Unit 16A	Nov 10–Jan 31	2 per season
Unit 16B	Nov 10–Feb 28	No limit

Hunting Seasons and Bag Limits.

Species	Season	Bag Limit
Coyote	Sep 1–Apr 30	2 per season
Red Fox	Sep 1–Feb 15	2 per season
Lynx	Dec 15–Jan 15	2 per season
Wolverine		
Unit 16A	Sep 1–Jan 31	1 per season
Unit 16B	Sep 1–Mar 31	1 per season

Board of Game Actions and Emergency Orders. In response to increasing marten populations, the Board extended the marten trapping season 3 weeks in Unit 16A, and 4 weeks in the northern portion of 16B. These changes took effect on 1 July 1997. In 1999, the Board also extended the Unit 16 beaver season 1 month in the spring to allow more open water trapping opportunities. The hunting season for lynx in Units 14 and 16 was reinstated starting in the 1997–1998 season due to increasing populations.

Hunter/Trapper Harvest. Fur harvest fluctuates with trapping conditions, effort, and fur prices. Trapping conditions were described as fair or good during the reporting period. In general, fur prices have been stable or declining for most species during the reporting period. Most notable, the average pelt price for Alaska beaver has decreased over 30% in the last 3 seasons.

Beaver and otter harvests have increased since the early 1990s (Tables 1 and 2), but remain well below historical levels. The previous peak in harvest occurred during 1986–1987 when trappers took 651 beavers and 68 otters in Unit 16 (Masteller 1997). Beaver populations throughout the unit are stable or increasing, yet the harvest remains below objective levels due to depressed fur prices (Table 1). Conversely, the harvest of 42 otters in 1999–2000, bolstered by high pelt prices, was the highest harvest in the last decade (Table 2). Both the number of juvenile beaver in the harvest and the average pelt size have been relatively constant the last 4 seasons (Figure 1), indicating a stable adult/juvenile age structure in the population.

Lynx season opened in 1996–1997 after 2 closed seasons but subsequent harvests were low (Table 3). The lynx harvest has been historically low in Unit 16, reflecting a lack of good hare habitat. The wolverine harvest has consistently been around the 10-year average of 17 animals (Table 4). However, the 1999–2000 wolverine harvest of 29 was the highest in recent history (Table 4). The marten harvest has remained high since populations recovered from a decline in the early 1990s (Table 5).

Information for the harvest of species that do not require sealing was taken from trapper questionnaires. During the reporting period, the total harvest ranges were: coyotes, 0–4; red fox, 2–9; mink, 0–17; weasels, 5–73; muskrats, 0–6; and squirrels, 5–63. 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. We attempted to treat coyotes and wolves within the general area using meat baits medicated with the drug ivermectin. Through examination of 36 coyotes from 14 trappers, we confirmed lice on 4 individuals caught during the 1998–99 season. Lice were also reported on wolves and coyotes during the 1999–2000 season.

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 took advantage of the extra 2 weeks of beaver trapping in May 1996, and the 4 week extension in October 1999.

Transport Methods. Most Unit 16 trappers use snowmachines to access their trapping areas (Tables 10–13). The lack of roads in the unit limits the use of highway vehicles.

Other Mortality

There were 0, 4, and 0 beavers taken under nuisance permits in 1997–1998, 1998–1099, and 1999–2000, respectively. 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 increase.

HABITAT

There were no fires or other significant habitat disturbances 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 need to 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 over-harvest of marten in the Matanuska/Susitna Valley in the late 1980s that initiated 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. Often the sex of the animal is unrecorded at the time of sealing and trappers often do not accurately keep precise records of their harvest by sex and month. A relatively high proportion of females caught late in the season is an indication of 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. I believe there needs to be a concerted effort by trappers and sealers to keep precise records in noting the sex of the animal and when it was taken. The percent of females in the harvest is the best available method for managers to assess the health of the marten population.

LITERATURE CITED

GOLDEN, H.N. 1994. Furbearer track count index testing and development. Federal Aid in Wildlife Restoration Progress Report Project W-24-2. Study 7.17. Juneau. 44pp.

MASTELLER, M. A. 1993. Game Management Unit 14. Pages 132–146 *in* Abbott, S. M., ed. Furbearers, survey-inventory management report, July 1989–June 1991. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Project W-23-3/4. Study 7.0. Juneau. 303pp.

———. 1997. Game Management Unit 14. Pages 144–167 *in* Hicks, M. V., ed. Furbearers, survey-inventory management report, July 1994–June 1997. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Project W-24-3/5. Study 7.0. Juneau. 322pp.

PREPARED BY:

Thomas McDonough
Wildlife Biologist II

SUBMITTED BY:

Michael G. McDonald
Assistant Management Coordinator

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

McDonough, T. 2001. Unit 16 furbearer management report. Pages 198–216 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 16 beaver harvest, 1987–2000

Regulatory Year	Reported harvest Juv [a]	(%)	Adults	Unk	Method of Take Trap/snare	Shot	Unk	Total	Successful 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
Average [b]	24	(19)	98	3	126	1	3	130	18

[a] Beaver measuring ≤ 52 inches (length + width).
[b] For 1989–90 through 1999–00

Table 2 Unit 16 land otter harvest, 1987–2000

Regulatory Year	Reported harvest				Method of Take				Successful
	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	(48)	6	27	0	0	27	8
1997–98	14	7	(33)	3	24	0	0	24	10
1998–99	11	4	(26)	3	18	0	0	18	10
1999–00	22	17	(43)	3	42	0	0	42	17
Average[a]	11	8	(42)	9	22	1	4	26	19

[a] For years when data available.

Table 3 Unit 16 lynx harvest, 1984–2000

Regulatory Year[a]	Reported Harvest M	F	(%)	Unk	Juv[b]	(%)	Ad	Unk	Method of Take Trap/Snare	Shot	(L&S)[c]	Unk	Total	Successful 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
Average[d]													2	1

[a] Season closed during 1987–88, 1988–89, 1989–90, 1994–95 and 1995–96.
[b] Lynx measuring ≤ 34 inches in length.
[c] L&S (land and shoot) refers to animals recorded as “ground shot” when transportation indicated was “aircraft”.
[d] For years when season open; some columns not averaged due to low sample sizes.

Table 4 Unit 16 wolverine harvest, 1987–2000

	Reported Harvest				Method of Take					Successful
Year	Male	Female	(%)	Unk	Trap/snare	Shot	(L&S)[a]	Unk	Total	Trappers/hunters
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
Average[b]	10	6	(37)	1	12	4	(0)	0	17	12

[a] L&S (land and shoot) refers to animals recorded as “ground shot” when transportation indicated was “aircraft”).
[b] Data from 1987–88 not used in calculations.

Table 5 Unit 16 marten harvest, 1992–2000

	Reported Harvest				Method of Take					
Year[a]	Male	Female	(% female)[b]	Unk	Trap/snare	Shot	(L&S)[c]	Unk	Total	Successful 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
Average	146	69	(31)	95	300	0	(0)	10	310	22

[a] Sealing not required until 1992–93

[b] Not calculated in years when a large proportion were of unknown sex.

[c] L&S (land and shoot) refers to animals recorded as “ground shot” when transportation indicated was “aircraft”).

Table 6 Unit 16 beaver harvest chronology, 1989–2000

	Percent harvested											
Year[a]	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[b]	0	0	0	0	6	0	14	32	6	41	0	65
1996–97[b]	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[c]	0	0	9	19	13	6	12	4	37	0	0	173

[a] Data not collected prior to 1989
[b] Season lengthened to include first 2 weeks of May
[c] Season lengthened 1 month in fall.

Table 7 Unit 16 land otter harvest chronology, 1989–2000

	Percent of Harvest								
Year[a]	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

[a] Data not collected before 1989

Table 8 Unit 16 wolverine harvest chronology, 1989–2000

Year[a]	Percent of Harvest								Harvest
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
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[b]	8	0	0	15	15	54	8	0	13
1993–94[b]	8	8	0	25	34	8	16	0	12
1994–95[b]	0	0	4	8	48	32	8	0	25
1995–96[b]	0	0	0	11	22	67	0	0	9
1996–97[b]	4	0	9	23	14	45	4	0	22
1997–98[b]	13	0	0	19	19	31	19	0	16
1998–99[b]	0	0	7	20	20	47	7	0	15
1999–00[b]	3	0	3	24	14	31	24	0	29

[a] Data not collected before 1989
[b] Season length different for Units 16A (Nov. 10–Jan. 31) and 16B (Nov 10–Feb. 28).

Table 9 Unit 16 marten harvest chronology, 1992–2000

	Percent of Harvest								
Year[a]	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	Harvest
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

[a] Sealing not required before 1992–93.

Table 10 Unit 16 beaver trapper transport methods, 1987–2000

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

Table 11 Unit 16 land otter trapper transport methods, 1987–2000

	Percent of Harvest								
Regulatory Year	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snow-machine	ORV	Highway Vehicle	Unk	Total Harvest
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

Table 12 Unit 16 wolverine trapper transport methods, 1987–2000

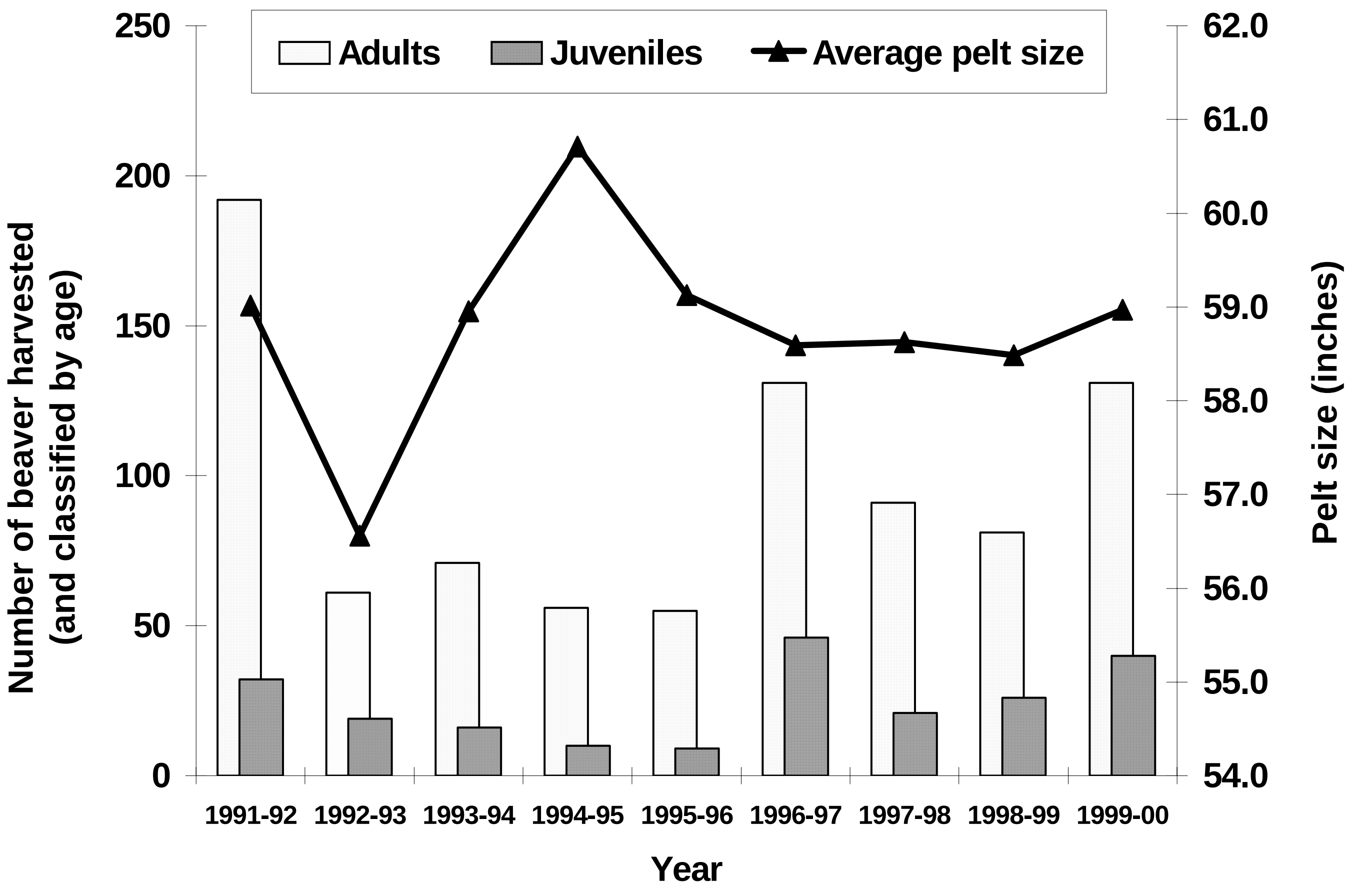
	Percent of Harvest								
Regulatory Year	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snow-machine	ORV	Highway Vehicle	Unk	Total Harvest
1987–88	0	0	0	0	0	0	0	100	25
1988–89	33	13	0	0	27	0	0	27	15
1989–90	38	16	0	0	38	0	0	8	13
1990–91	50	12	0	0	38	0	0	0	8
1991–92	33	0	0	0	52	5	5	5	21
1992–93	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

Table 13 Unit 16 marten trapper transport methods, 1992–2000

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

[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.



Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 17A, B, and C (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 cash 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, furbuyers purchased thousands of pelts during the weeklong 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.

Historically beaver have been the most important furbearer in Game Management Unit 17. They are abundant throughout most of unit, occurring in all major drainages and most of the smaller tributaries. Beaver dams and the resulting reservoirs enhance waterfowl nesting habitat, provide aquatic plant species used by moose and other herbivores, and are frequented by a variety of wildlife species. 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 weather conditions in winter, and predation are the most significant mortality factors for beavers in Unit 17. Season closures in portions of the unit were imposed on several occasions to allow populations to recover. Bristol Bay 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 present 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 fox are another common furbearer in Unit 17. They occur throughout the unit, preying on ptarmigan, grouse and various small mammals. 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 fur 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 influenced most by 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.

Wolverine occur throughout Unit 17, ranging from ridgetops 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 have remained constant since 1976.

Marten 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. Marten 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. Pelt sizes 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.

Other furbearers in the unit include coyote, arctic fox, short-tailed weasels, and muskrats. 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 River 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 OBJECTIVE

Beaver: To maintain beaver populations in Unit 17A at an average stream density index of 1.0 cache per river mile. To maintain beaver populations throughout Units 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 of land otters in Unit 17 capable of sustaining an average annual harvest of 200 otters.

Red Fox: To maintain a population of red foxes in Unit 17 capable of sustaining a 5-year average annual harvest of 400 foxes.

Wolverine: To maintain a population of wolverines 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 presented for sealing. 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 2000 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 fur prices kept harvests low during this reporting period. Reports of nuisance beavers, particularly on 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 been collected on these species in Unit 17.

Although never common in the unit, lynx populations appeared to increase in the early 1990s. Population data for lynx are derived from incidental observations and harvest records. Snowshoe hare populations appeared to be moderate in Units 17B and 17C during this reporting period.

Red fox populations were stable to increasing during this reporting period though trends are difficult to determine because of low trapping effort. Ptarmigan and microtine populations were at moderate levels and appeared to be stable.

Coyotes were becoming more common in the unit, as their numbers and range continued to increase. Highest densities were along the lower Nushagak River.

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 open from November 10 through February 28 during the 1997–1998 and 1998–1999 regulatory years. Beginning in the 1999–2000 regulatory year, beaver season was open November 10 through March 31, and from April 15 through May 31 firearms could be used to take up to 2 beaver per day for food. The season bag limit was 40 beavers per trapper.

Marten, mink, weasel, and wolverine seasons were open from November 10 through February 28. There was no bag limit on these animals. Wolverine could also be taken during the September 1 through March 31 hunting season. There is a bag limit of one wolverine per season if taken on a hunting license.

Coyote, arctic fox, red fox, and lynx seasons were open from November 10 through March 31. There was no bag limit on these animals.

Land otter season was open from November 10 through February 28 for the 1997–1998 and 1998–1999 regulatory years. Beginning with the 1999–2000 regulatory year, otter trapping season was November 10 through March 31. There was no limit on otters.

Muskrat season was open from November 10 to February 28, with a bag limit of 2 muskrats per season.

Board of Game Actions and Emergency Orders. During their spring 1999 meeting, the Board of Game extended the beaver trapping season through March 31 to provide additional beaver trapping opportunity. Otter season was also extended because of the possibility of catching otters while beaver trapping. No Emergency Orders affecting trapping were issued during this reporting period.

Human-Induced Mortality. Beaver harvests during this reporting period were 382 in 1997–1998; 436 in 1998–1999; and 215 in 1999–2000, all dramatically lower than the mean annual harvest for the previous 5 years (1992/93–1996/97, $\bar{x}$ = 706) (Table 1). Trappers indicated that the main reasons for the reduced harvest were low prices and unfavorable weather conditions during the trapping season. The number of trappers afield was also affected by these factors (Table 2). The percentage of kits in the harvest remained consistent until the 1999–2000 season in spite of dramatic fluctuations in the number of beavers harvested (Table 1). The high proportion of kits in the 1999–2000 season is probably more a reflection of the low harvest rather than any change in the beaver population. Snares and conibear traps are equally important methods of trapping beavers in Unit 17 in recent years (Table 2).

The number of lynx caught this reporting period remained stable, with 14 reported in 1997–1998; 9 in 1998–1999; and 12 in 1999–2000. The average annual harvest from the previous 5 years (1992–1993 through 1996–1997 was 14 lynx (Table 1). Most lynx caught in the past 5 years have been taken by a trap or snare (Table 3).

Otter harvests during this reporting period declined from the previous reporting period and is probably related to the decrease in beaver trapping effort. Reported harvests were 86 in 1997–1998, 50 in 1998–1999 and 42 in 1999–2000. These harvests were lower than the average annual harvest of 118 for the previous 5 years (1992/93–1996/97) (Table 1). During the past 5 years the sex ratio of the harvest remained even (Table 4). Traps (probably conibears) are the most common method used by successful trappers, followed by snares and firearms (Table 4).

Wolverine harvests during this reporting period generally declined from the previous reporting period. Reported harvests were 47 in 1997–1998, 27 in 1998–1999 and 30 in 1999–2000. Wolverine harvests averaged 35 per year during this reporting period, similar to the average annual harvest of 36 during the previous 5 years (1992/93–96/97) (Table 1). Traps were the most common method of harvest, followed by firearms and snares (Table 5).

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.

Permit Hunts. Permits for trapping nuisance beavers were issued each fall during this reporting period, to remove beaver that were damming a culvert on the road to the local hospital.

Hunter Residency and Success. Data on trapper residency and success have not been specifically analyzed. Most of the furbearers trapped in Unit 17 are taken by local residents. Individuals from villages within the unit 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 Unit 17B to harvest wolverine. Several wolverine were taken by nonresidents using their nonresident hunting license and big game tags during the fall while hunting for moose or caribou.

Transport Methods. Snowmachines were 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.

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 individual beavers were trapped during the course of the season. Most lynx harvested during this reporting period were taken in January or February (Table 11). Otters were caught throughout the trapping season with the majority 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 occasionally otter, are sometimes caught in gill nets 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. Beaver mortality rates can be high along major rivers during severe spring break-up 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 and Mulchatna 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 man-caused habitat enhancement activities have been documented in Unit 17. Because the unit is mostly inaccessible and natural enhancement is ongoing, man-caused habitat enhancement is not practical or necessary at this time.

NONREGULATORY PROBLEMS/NEEDS:

Commercial Fisheries biologists reported conflicts with beaver activity and spawning salmon along streams throughout the unit (J. Browning, ADF&G, pers. comm.).

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 consistent for the past several years and populations seemed to be stable. Prohibition of same-day airborne hunting and elimination of the March portion of the trapping season have not reduced the harvest. Most wolverine pelts are used by local fur sewers and prices have remained consistently high in spite of lower prices for wolverine outside of the local area.

Lynx populations have rebounded from the low levels first noted in 1987–1988 and peaked in 1994–1995. Liberal seasons have probably had little effect on the recovery of the lynx population because most trappers in the unit catch lynx incidentally in marten sets.

Red fox populations remained 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.

PREPARED BY:

James D. Woolington
Wildlife Biologist III

SUBMITTED BY:

Michael G. McDonald
Assistant Management Coordinator

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

Woolington, J. D. 2001. Unit 17 furbearer management report. Pages 217–233 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Reported harvest of furbearers in Unit 17, 1956–5 through 1999–00 (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 Year	Beaver % Kits	Beaver Total	Lynx % Kits	Lynx Total	Land Otter Male	Land Otter Female	Land Otter Unk	Land Otter Total	Wolverine Male	Wolverine Female	Wolverine Unk	Wolverine 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	---	1	133	133	1	267	22	20	2	44
1988–89	18.8	965	---	1	66	57	19	142	21	16	7	44
1989–90	19.7	1245	---	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	---	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	---	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	---	12	14	18	10	42	21	9	0	30

[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 unit-wide.

Table 2 Unit 17 beaver harvest, 1992–93 through 1999–00

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

[a] In 1993–94 the Unit 17A season was extended to Feb. 28 by emergency regulation.

[b] juveniles < 52"

Season dates:	1992/93–1996/97	Unit 17A	Jan. 1–Jan. 31: 20 per season
		Units 17B & C	Jan.1–Feb. 28: 20 per season
	1999/00	Unit 17	Nov. 10–Mar. 31: 20 per season
			April 15–May 31: 2 beaver/day can be taken with a firearm.

Table 3 Unit 17 lynx harvest, 1992–93 through 1999–00

Regulatory year[a]	Reported harvest Males (%)	Females (%)	Unk.	Juveniles[b] (%)	Adults (%)	Total	Method of take Trap/Snare (%)	Shot (%)	Unk.	Successful Trappers
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

[a] Trapping season dates: 1992/93–1996/97 Unit 17 Nov. 10–Feb. 28 No limit
1 1997/98–1999/00 Unit 17 Nov. 10–Mar. 31 No Limit

Hunting season dates: 1992/93–1999/00 Unit 17 Nov. 10–Feb. 28 2 lynx

[b] juveniles < 34" in length

Table 4 Unit 17 otter harvest, 1992–93 through 1999–00

Regulatory year[a]	Reported harvest Males (%)	Females (%)	Unk.	Total	Method of take Trap (%)	Snare (%)	Shot (%)	Unk.	Successful Trappers
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
1999–00	14 (33.3)	18 (42.9)	10	42	30 (71.4)	3 (7.1)	1 (2.4)	8	19

[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
1999/00–present	Unit 17	Nov. 10–Mar. 31	No limit

Table 5 Unit 17 wolverine harvest, 1992–93 through 1999–00

Regulatory Year[a]	Reported harvest Males (%)	Females (%)	Unk.	Total	Method of take Trap (%)	Snare (%)	Shot (%)	Unk.	Successful Trappers
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
1999–00	21 (70.0)	9 (30.0)	0	30	13 (43.3)	0 (---)	17 (56.7)	0	22

[a] Trapping season dates: 1992/93–1996/97 Unit 17 Nov. 10–Feb. 28 No limit

Hunting season dates: 1992/93–1996/97 Unit 17 Sep. 1–Mar. 31 1 wolverine

Table 6 Unit 17 beaver harvest percentage by transport method, 1992–93 through 1999–00

Regulatory year	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown	Total
				Percent of harvest					
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

Table 7 Unit 17 lynx harvest percent by transport method, 1992–93 through 1999–00

Regulatory year	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown	Total
				Percent of harvest					
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

Table 8 Unit 17 otter harvest percentage by transport method, 1992–93 through 1999–00

Regulatory year	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown	Total
	Percent of harvest								
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
1999–00	---	---	16.7	---	50.0	---	---	33.3	42

Table 9 Unit 17 wolverine harvest percentage by transport method, 1992–93 through 1999–00

Regulatory year	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown	Total
	Percent of harvest								
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
1999–00	16.7	---	6.7	---	73.3	---	---	3.3	30

Table 10 Unit 17 beaver harvest chronology percentage by month, 1992–93 through 1999–00

Regulatory Year	Month							
	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
1999–00	5.1	5.6	70.2	13.0	4.2	---	1.9	215

Table 11 Unit 17 lynx harvest chronology percentage by month, 1992–93 through 1999–00

Regulatory year	Month						
	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
1999–00	---	8.3	66.7	16.7	8.3	---	12

Table 12 Unit 17 otter harvest chronology percent by month, 1992–93 through 1999–00

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
1999–00	4.8	9.5	35.7	19.1	7.1	23.8	42

Table 13 Unit 17 wolverine harvest chronology percentage by month, 1992–93 through 1999–00

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
1999–00	3.3	10.0	20.0	36.7	10.0	20.0	30

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

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

GEOGRAPHIC DESCRIPTION: Yukon–Kuskokwim Delta

BACKGROUND

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

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

MANAGEMENT DIRECTION

MANAGEMENT GOALS

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

MANAGEMENT OBJECTIVES

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

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

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

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

METHODS

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

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

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Population Composition

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

Distribution and Movements

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

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

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

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

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

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

Wolverines and small numbers of coyotes are found in the Kilbuck Mountains and the Andreafsky Mountains as well. These populations seem to be growing and expanding into larger areas as caribou from the Mulchatna herd utilize larger areas, particularly the foothills and flats between the Kuskokwim River and the Kilbuck Mountains.

MORTALITY

Harvest

Seasons and Bag Limit.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Other Mortality

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

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

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

HABITAT

Assessment

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

Enhancement

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

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

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

CONCLUSIONS AND RECOMMENDATIONS

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

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

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

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

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

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

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

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

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

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

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

LITERATURE CITED

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

PREPARED BY:

Roger Seavoy
Wildlife Biologist III

SUBMITTED BY:

Peter Bente
Survey-Inventory Coordinator

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

Seavoy, R. 2001. Unit 18 furbearer management report. Pages 234–245 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

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

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

*Not included in the survey.

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

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

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

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

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 19 (36,490 mi^2)

GEOGRAPHIC DESCRIPTION: All drainages of the Kuskokwim River upstream from Lower Kalskag

BACKGROUND

Furbearers have historically played an important part in the subsistence lifestyle and have contributed to the economic base in western Interior Alaska. 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 twentieth 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 the sale of various furs. Most income realized from the sale of wild pelts is cycled through the local economy several times. 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.

Seasons and bag limits have varied dramatically since original regulations were adopted in the early twentieth century. Several factors influence the annual harvest levels of various furbearer species. These include population levels, snow conditions, pelt prices, overall abundance of furbearers, availability of alternate income, fuel prices, and regulations.

MANAGEMENT DIRECTION

Furbearer management is designed to annually assess populations, maintain or enhance those populations, and design regulations to encourage sustainable harvests.

MANAGEMENT GOALS AND OBJECTIVES

Management goals and objectives are to 1) annually determine both current status and trend of the various subpopulations for each furbearer species and their primary prey species, 2) obtain estimates of harvest for all furbearer species, 3) assess trapper effort and distribution, and 4) maintain open communications with area trappers.

Beaver

- Manage the various subpopulations to maintain a mean pelt size >50 inches, while maintaining <25% kits in the annual harvest.

- Manage the population to maintain a mean density of not less than 1 active colony per 3.2 km of suitable waterway, or 0.2 active colonies per square kilometer in suitable habitat, as determined during periodic fall cache surveys.

Marten

- Obtain estimates of annual harvests through comparisons of fur acquisition reports, fur export reports, and trapper questionnaires.

- Manage the population to maintain >50% males in the annual harvest and a ratio of not more than 1 adult female per 2.0 juveniles in the annual harvest.

Lynx, River Otter, and Wolverine

- Maintain accurate harvest records based on sealing documents and trapper questionnaires.

- For wolverine, manage the population to maintain >50% males in the annual harvest.

Muskrat, Mink, Red Fox, Coyote, Ermine, and Squirrel

- Annually estimate numbers harvested, as well as trends in the respective populations.

METHODS

Population status and trend were determined from Alaska Department of Fish and Game Trapper Questionnaire, Statewide Annual Reports for regulatory years 1997–1998 through 1999–2000. 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. Total harvest, harvest chronology, sex and age of some species, method of take, and transportation were summarized by regulatory year (RY), e.g., regulatory year 1 July 1998 through 30 June 1999 = RY98.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Beaver

No beaver cache surveys were conducted after RY97. Previously, Whitman (1998) estimated beaver densities were high, 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. Results of the Trappers Questionnaire indicated that beaver abundance was high in Unit 19 during RY97 through RY99 (Parker-McNeill 1999; Kephart 2000, 2001). Trappers also reported that the trend in the population was increasing as in previous years.

Lynx

Trappers reported that lynx were scarce during RY97 through RY99 (Parker-McNeill 1999; Kephart 2000, 2001). However, trappers indicated they had seen more lynx during the past 3 years, which is similar to the overall trend observed in Interior Alaska. Whitman (1998) suggested that lynx have probably never been 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. Hares were abundant in the Interior during RY97–RY99.

River Otter

River otters were common and the population was probably stable during RY97–RY99 (Parker-McNeill 1999; Kephart 2000, 2001).

Wolverine

Wolverines were scarce and trappers reported seeing few wolverine or their sign in RY97. 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).

Marten

Trappers indicated that marten were common, but not abundant in RY97, and reported by RY98 and RY99 they were abundant and the population trend was increasing (Parker-McNeill 1999; Kephart 2000, 2001).

Mink

Mink were common in Unit 19 and populations appeared to be stable during RY97–RY99 (Parker-McNeill 1999; Kephart 2000, 2001).

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 was a widespread pursuit. However, populations declined by about 1975. Since that time, populations have not rebounded. 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).

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 and RY99 (Parker-McNeill 1999; Kephart 2000, 2001).

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 fox in RY97; but by RY98 and RY99 red fox had again increased (Parker-McNeill 1999; Kephart 2000, 2001).

MORTALITY

Harvest

Unit 19 Trapping Seasons and Bag Limits, regulatory years 1997–1998 through 1999–2000.

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.

Species	Season	Bag limit
Coyote	1 Sep–30 Apr	2
Red Fox	1 Sep–15 Mar	10
Lynx	1 Nov–28 Feb	2
Wolverine	1 Sep–31 Mar	1

Board of Game Actions and Emergency Orders. During the March 1996 Board of Game meeting, beaver seasons were extended in Unit 19 until 10 June, to align with current muskrat trapping seasons in Unit 19D. In addition, the board adopted regulations allowing the use of firearms during spring, with a daily bag limit of 2 beavers (by shooting), with the stipulation that meat was to be salvaged for human consumption. No regulation changes have been made since then.

Trapper Harvest, Residency, and Chronology.

Beaver — Beaver harvests have fluctuated widely, and generally declined, since the mid 1960s (Whitman 1998). The low harvests reflect low pelt prices rather than low populations (Whitman 1998). Thus, in recent years a significant portion of the beaver harvest was motivated by recreation, rather than by economics (Whitman 1998). 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 was low in regulatory years 1995, 1998, and 1999 (<90) and substantially higher in RY96 and RY97 (>200; Table 1). The percent of kits in the harvest was very low during RY96–RY99 (Table 2). This may be the result of severe weather, high populations and reduced food supply or trappers using larger snares to target adult beavers. Beaver pelt prices were slightly higher ($11–$16) and there were more trappers in the field in RY96 and RY97 than during the other 3 regulatory years (Table 2). This may account for the increase in harvest in RY96 and RY97 (Table 3).

During RY95–RY99, beaver were harvested throughout the winter and spring with most of the harvest occurring in January and March (Table 4). In previous years most harvest occurred in February and March (>75%; Whitman 1998). The reasons for the apparent change in trapping effort are unknown. Weather conditions and pelt prices were probably contributing factors.

Lynx — As mentioned previously, lynx are not abundant in Unit 19. During RY95–RY99, harvest ranged from 9 to 31 (Table 1 and 2). The harvest of 31 lynx in RY99 coincided with an overall population high observed in the Interior. Most lynx were harvested in December, January, or February (Table 4). Pelt prices for lynx were higher during RY95–RY97 than in previous and subsequent years (Whitman 1998; Table 3).

River Otter —River otter harvest was low during RY95–RY99 (x = 19; Table 1), except in RY96 when 50 animals were harvested. The harvest of river otters in Unit 19 had declined during the 15 years prior to RY96 (Whitman 1998). Pelt prices for otter increased from $55 in 1994 to $90 in RY95. Prices remained relatively high in RY96 and RY97 and declined somewhat after that (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–RY99 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–RY99 (Range: 37–76; 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 — Marten are the most sought after and valuable furbearer species in Unit 19. Most trappers target marten, 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), and then remained stable for RY97–RY99 (Range: 822–912; Table 5). Pelt prices in RY94 were especially low but almost doubled for RY95, RY96, and RY97 (Table 3). Although harvest was low in RY95, it increased in RY96, in part because of the increase in price.

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–RY99, estimated harvest ranged from 10–35, except in RY96, when harvest was 92, following the trend seen in other species in RY96.

Muskrat — Poor pelt prices and low population density combined to make muskrat 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.

Ermine and Red Squirrel — These species have little recreational or economic value in the region. Most harvest occurs incidental to marten trapping (Table 5). Pelt prices were very low for both ermine and red squirrel.

Coyote — Similar to previous years (Whitman 1998), estimated unitwide harvest of coyotes was less than 10 annually during RY95–RY99 (Table 5).

Red Fox — Red fox were generally captured incidentally to other species. Little effort was expended specifically for them, although some pelts were used in garments and craft items. During RY95–RY99 harvest was <50, except in RY96 when reported 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–RY99 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–RY99, trappers used snowmachines more than 55% of the time. Snowshoes and airplanes were the next most common transport method for taking beaver (Table 6). Snowmachines were used to harvest most lynx and river otter (Table 6). Snowmachines were also the predominant transport method for wolverines, but aircraft were also a frequently used method of transport (Table 6).

CONCLUSIONS AND RECOMMENDATIONS

Trappers 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 in regulatory years 1995 through 1997. 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 should be revised as follows:

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)

LITERATURE CITED

KEPHART J. 2000. 1 July 1998–30 June 1999 Trappers Questionnaire Statewide Annual Report. Alaska Department of Fish and Game, Division of Wildlife Conservation. Juneau, Alaska.

———. 2001. 1 July 1999–30 June 2000 Trappers Questionnaire Statewide Annual Report. Alaska Department of Fish and Game, Division of Wildlife Conservation. Juneau, Alaska.

PARKER-MCNEILL D. 1999. 1 July 1997–30 June 1998 Trappers Questionnaire Statewide Annual Report. Alaska Department of Fish and Game, Division of Wildlife Conservation. Juneau, Alaska.

WHITMAN J. 1998. Unit 19 furbearer management progress report of survey-inventory activities. Pages 211–237 *in* MV Hicks, editor. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration. Grants W-24-3, W-24-4, and W-24-5. Study 7.0. Juneau, Alaska.

PREPARED BY:

Elizabeth A Lenart
Wildlife Biologist II

SUBMITTED BY:

Roy A Nowlin
Management Coordinator

REVIEWED BY:

Mark E McNay
Wildlife Biologist III

Laura A McCarthy
Publications Technician II

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

Lenart, E. A. Unit 19 furbearer management report. Pages 246–259 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 19 furbearer harvest by subunit, regulatory years 1995–1996 through 1999–2000

	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	12	5	2	35	0	54
1999–2000	17	13	0	57	0	87
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
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
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	6	22	9	5	1	43
1999–2000	10	22	15	15	0	62

Table 2 Unit 19 beaver, lynx, otter, and wolverine reported harvest by sex, age, and method of take, regulatory years 1995–1996 through 1999–2000

Regulatory year	Reported harvest						Method of take				Total harvest	Successful trappers/ hunters
	Sex			Age								
	M	F	Unk	Juv[a]	Adults	Unk	Trap/snare	Shot	L&S	Unk		
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			54	1	51	2	41	0	0	3	54	12
1999–2000			87	2	85	0	78	0	0	9	87	15
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			12	1	7	4	12	0	0	0	12	7
1999–2000			31	3	26	2	30	1	0	0	31	8
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
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	31	12	0			43	34	7	1	1	43	22
1999–2000	43	16	3			62	52	9	0	1	62	35

[a] Beaver (length × width) ≤52" = juvenile. Lynx (length) <34" = juvenile. River otter (length) <42" = juvenile.

Table 3 Average North American furbearer pelt prices (US dollars), regulatory years 1995–1996 through 2000–2001

Species	Regulatory year					
	1995–1996	1996–1997	1997–1998	1998–1999[a]	1999–2000[b]	2000–2001[c]
Beaver Good quality large brown	22	33	35	22	18	17
Marten Large I-II dark brown	66	66	66	22	32	29
Mink Large-medium I-II dark brown North	19	26	23	10	14	15
Red fox XL-large I-II Northwest	27	38	34	10	17	23
Lynx Large-medium I-II first color	82	90	95	58	48	40
River otter XL-large I-II dark brown	90	74	86	43	64	61
Wolverine XL I-II brown	170	160	249[d]	n/a	187	136

[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] Not graded. Only 198 offered for sale with 85% sold.

Table 4 Unit 19 beaver, lynx, otter, and wolverine harvest chronology by month, regulatory years 1995–1996 through 1999–2000

Regulatory	Harvest periods								
year	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	3	8	6	18	1	0	0
1999–2000	0	1	19	22	9	17	19	0	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	6	1	0	0	0
1999–2000	0	12	11	6	1	0	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	1	2	0	0	0	0
1999–2000	0	0	0	13	1	0	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	0	5	9	10	10	9	0	0	0
1999–2000	6	7	18	13	8	9	0	0	0

Table 5 Unit 19 estimated harvest[a] of unsealed furbearer species, regulatory years 1995–1996 through 1999–2000

Regulatory	Species						
year	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	912	10	0	0	0

[a] Estimates calculated by combining Fur Acquisition Reports and Fur Export Permits.

Table 6 Units 19A, 19B, 19C, and 19Z beaver, lynx, otter, and wolverine harvest percent by transport method, regulatory years 1995–1996 through 1999–2000

Species/Regulatory year	Harvest percent by transport method: 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	4	31	0	0	59	0	0	6
1999–2000	1	10	0	0	78	0	0	10
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
1999–2000	6	77	0	0	13	0	0	3
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
1999–2000	0	7	0	0	87	0	0	7
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	56	0	0	2
1999–2000	14	26	2	2	53	0	2	2

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

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 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 25 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^2 of river and mitigate problems arising from beaver activities.

  - 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 wolverine 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 R-22 helicopter in 1998 and from a riverboat in 1999 and 2000 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' boat used to conduct the surveys (<18' = small, 18' = medium, >18' = 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. In 1999 we initiated a program 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, lynx, otters, and wolverines. 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 (NAFE). Prices were the averages from December and February sales prior to 1998 when the NAFE started offering limited sales. From 1998 to the present, prices given are the average for each species at select sales as indicated.

We sent questionnaires to 100–150 trappers to get information regarding their trapping activities. In previous reports, trapper questionnaires were used to get trapper opinions on furbearer population levels and trends. During 1994–1995 and 1995–1996 the format for the report and the compiling of the information collected from trappers was changed. The new format focused mainly on effort and methods and did not address trapper impressions of local furbearer populations. The questionnaire format was changed again during 1996–1997 to focus on species abundance, but with a more subjective basis than in the pre-1994 trapper questionnaire reports.

The term "regulatory year" means 1 July through 30 June of the following calendar year, and unless otherwise noted all years refer to the regulatory year.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Cache surveys indicated beaver colony density in the lower Chena River varied from 0.5 caches/km^2 to 0.8 caches/km^2 between 1995 and 2000 (Table 1). Density was highest in the Fort Wainwright area of the Chena River survey area. I estimate that approximately 300 beaver inhabit the lower Chena drainage, by using a mean of 5 beavers per colony (Boyce 1974) and considering gravel pits and other waterways.

Boyce (1981) concluded that 0.5 colonies/km^2 was a saturation density for beaver in Interior Alaska. By fall 2000, colony density observed in the lower Chena River (0.5 colonies/km^2) met the high end of our objective of 0.2 to 0.5 colonies/km^2 (Table 1).

MORTALITY

Harvest

Seasons and Bag Limits. Seasons and bag limits varied among subunits over time (Tables 2–5).

Board of Game Actions and Emergency Orders. The board took no actions during this reporting period and no emergency orders were issued.

Hunter/Trapper Harvest.

Beaver — Since the 1996–1997 season the reported beaver harvest has decreased each year (1049 during 1996–1997 to 342 during 1999–2000; Table 6). The low harvest probably reflected lower beaver trapping effort because of depressed prices. The average pelt price from February 2000 was $18 (Table 7).

Since the 1995 trapping season, combined Chena River and Badger Slough harvests fluctuated from 7 to 27 beaver/year (Table 8). Trapper success was affected by weather, including deep snow and cold temperatures, which directly affect the amount of overflow on the Chena River. Prior to 1999 this area was harvested using a registration permit system. Due to numerous public complaints about the registration system and increasing nuisance beaver reports during the summer of 1999, a new harvest strategy was adopted. Now ATA representatives serve as mentors to teach local youth ethical and responsible beaver trapping principles. The program has been well accepted by the vast majority of the public that I have contact with and nuisance beaver complaints have decreased.

Lynx — The reported lynx harvest has increased annually since 1995 (77 during 1995 to 1062 during 1999; Table 6). The lynx harvest increased because the population has been increasing after reaching a low point in the cycle. The February 2000 price for lynx of $48 is about half the price in 1998 when the average pelt sold for $95 (Table 7). Unlike most furbearers, harvest effort for lynx is dictated more by abundance than by price, probably because they can be caught and prepared with relatively little effort. During the 1999–2000 season, most lynx (91%) were taken in Units 20A, 20B, or, 20C, with Unit 20A alone accounting for 41% of the total harvest.

Substantive changes in the lynx harvest probably reflected changes in the lynx population. 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.

Lynx track survey transects have been established in Units 20A and 20B, but inconsistency between years (timing and snow conditions) limits the usefulness of the data. However, when track survey data are combined with other sources of information, important trends can be identified. Currently, Mark McNay (Research Biologist, ADF&G, Fairbanks) is analyzing data from lynx carcasses collected from Units 20A and 20B during the past several years. Preliminary indications from carcass examinations, track survey data, and harvest data, all suggest that we are currently at or near the peak in the lynx population cycle. Information from the trapper questionnaires also support this, indicating that the snowshoe hare population has started to decrease after several years with moderate-to-high numbers.

River Otter — The reported harvest of otters ranged from 21 to 38 between the1997–1998 and 1999–2000 seasons (Table 6). Average otter pelt prices ranged from $43–$86 (Table 7).

I believe weather and trapping conditions influence otter harvests. Price increases may also create increased effort by trappers who normally do not set traps for otters.

Wolverine — Wolverine harvests ranged from 27–42 wolverines during the 1997–1998 and 1999–2000 seasons (Table 6). The average pelt price ranged from $136–$187 (Table 7).

The percentage of males in the harvest was 60–78% during the last 3 years (Table 9). 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 harvests could indicate unsustainable harvests and should trigger more in-depth analysis of the population. This should include using 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, I determined trends in these species using the trapper questionnaire and personal conversations with trappers. According to the questionnaires (only summaries for the 1997–1998 and 1998–1999 seasons were available for this reporting period) ermine, muskrat, and red squirrel were reported as stable, coyote and red fox numbers were up, and there were fewer marten and mink. The only exception to these trends was that mink numbers seemed to be up during the last two (1999–2000 and 2000–2001) seasons. This trend may be indicated when more recent questionnaires are summarized.

Method of Take and Transportation. From the 1997–1998 season through the 1999–2000 season, snares were the most common method of harvesting beavers (Table 10). Traps were the most common method of harvesting lynx, wolverines, and river otter. Snowmachines were the most commonly used method of transportation for harvesting all 4 species (Table 10).

CONCLUSIONS AND RECOMMENDATIONS

Management objectives for the Chena River beaver populations were met, utilizing registration, ATA, and nuisance permits. Further efforts to reduce the number of 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.

Lynx management objectives were met. We managed lynx seasons using the Tracking Harvest Strategy. We estimated sex and age of the harvest through carcass collection and conducted aerial track surveys.

Wolverine management objectives were not met. Wolverine harvest modeling was not accomplished during this reporting period. Population estimates must be done before the modeling exercise can be completed.

For other furbearer species, we did not detect any problems requiring management changes. 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) trying to keep trappers informed about issues affecting them. I recommend no regulatory changes at this time.

Snowshoe hare populations have probably peaked and are currently experiencing an overall decrease and grouse populations have been low for the past two years. I expect lynx and possibly fox populations to decrease during the next reporting period.

LITERATURE CITED

BERRIE PM. 1973. Ecology and status of the lynx in Interior Alaska. Pages 4–41 *in* RL Eaton, editor. The world's cats, Volume I. *World Wildlife Safari*. Winston, Oregon.

BOYCE MS. 1974. Beaver population ecology in interior Alaska. Thesis, University of Alaska Fairbanks.

———. 1981. Habitat ecology of an unexploited population of beavers in Interior Alaska. Pages 155–186 *in* JA Chapman and D Pursley, editors. Proceedings of worldwide furbearer conference. Frostburg, Maryland.

GARDNER CL. 1985. The ecology of wolverines in southcentral Alaska. Thesis, University of Alaska Fairbanks.

———, ME MCNAY, AND R TOBEY. 1993. Estimates of wolverine densities and sustainable harvests in the Nelchina Basin in southcentral Alaska. Seventh northern fur conference. Abstracts, page 32.

GOLDEN HN. 1987. Survey of furbearer populations on the Yukon Flats National Wildlife Refuge. Final Report. Alaska Department of Fish and Game and US Fish Wildlife Service Cooperative Agreement. Project 14-16-007-84-7416.

MAGOUN AJ. 1985. Population characteristics, ecology, and management of wolverines in northwestern Alaska. Dissertation, University of Alaska Fairbanks.

———, AND DJ VERNAM. 1986. An evaluation of the Bear Creek burn as marten (*Martes americana*) habitat in Interior Alaska. Bureau of Land Management and Alaska Department of Fish and Game. Spec Coop Project AK-950-CAH-0. Final Report.

NAVA JA, JR. 1970. The reproductive biology of the Alaska lynx (*Lynx canadensis*). Thesis, University of Alaska Fairbanks.

O'CONNOR RM. 1984. Population trends, age structure, and reproductive characteristics of female lynx in Alaska, 1961 through 1973. Thesis, University of Alaska Fairbanks.

SCHWARTZ CC, E BECKER, AND KJ HUNDERTMARK. 1988. Development of population assessment techniques for lynx. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration. Final Research Report. Grant W-23-1. Study 7.14. Juneau, Alaska.

STEPHENSON RO. 1984. The relationship of fire history to furbearer populations and harvest. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration. Final Report. Project W-22-2. Job 7.13. Juneau, Alaska.

———. 1988. Development of techniques for evaluating lynx population status in Alaska. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration. Progress Report. Grant W-22-6. Study 7.13. Juneau, Alaska.

PREPARED BY:

Jeff Selinger
Wildlife Biologist II

SUBMITTED BY:

Roy A Nowlin
Management Coordinator

REVIEWED BY:

Mark E McNay
Wildlife Biologist III

Laura A McCarthy
Publications Technician II

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

Selinger, J. 2001. Unit 20 and 25 furbearer management report. Pages 260–275 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Fall beaver cache surveys in the lower Chena River, Badger Slough and Noyes Slough, Unit 20B, 1995–2000

Date	Location[a]	Caches	Stream distance (km^2)	Density ($caches/km^2$)
1995				
27 Sep	Chena River	26	40	0.7
1996				
2 Oct	Chena River	21	40	0.5
1997				
2 Oct	Chena River	28	40	0.7
1998				
5 Oct	Chena River	32	40	0.8
1999				
5 Oct	Chena River	24	40	0.6
2000				
28 Sep	Chena River	20	40	0.5

[a] Chena River downstream from confluence with Little Chena River, Badger Slough downstream from Plack Road.

Table 2 Trapping seasons and bag limits for selected furbearers within the Fairbanks Area (Units 20A, 20B, 20C, 20F, and 25C), 1983–2001

Species	Season dates	Season length	Years	Bag limit
River otter	1 Nov–15 Apr	167	1983–2001	No limit
Wolverine	1 Nov–31 Mar	152	1983–1986	No limit
	1 Nov–28 Feb	121	1987–2001	No limit
Coyote	1 Nov–31 Mar	152	1983–2001	No limit
Marten, Mink Weasel, Fox	1 Nov–28 Feb		1983–2001	No limit
Muskrat	1 Nov–10 Jun	223	1983–2001	No limit

Table 3 Hunting seasons and bag limits for selected furbearers within the Fairbanks Area (Units 20A, 20B, 20C, 20F, and 25C), 1983–2001

Species	Season dates	Season length	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	1990–2001	2
Wolverine	1 Sep–31 Mar	213	1983–2001	1
Red Fox	1 Nov–15 Feb	117	1983–1990	2
	1 Sep–15 Mar	197	1991–2001	10
Coyote	1 Sep–30 Apr	243	1983–2001	2
Squirrel	No closed season		1983–2001	No limit

Table 4 Trapping seasons and bag limits for beaver within the Fairbanks Area (Units 20A, 20B, 20C, 20F, and 25C), 1983–2001

Unit	Season dates	Season length (days)	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	1998–2001	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	1998–2001	No limit
20C	1 Nov–15 Apr	167	1983–1997	25
	1 Nov–15 Apr	167	1998–2001	No limit
20F	1 Nov–15 Apr	167	1983–1987	25
	1 Nov–15 Apr	167	1988–1997	50
	1 Nov–15 Apr	167	1998–2001	No limit
25C	1 Nov–15 Apr	167	1983–1997	25
	1 Nov–15 Apr	167	1998–2001	No limit

[a] A portion of the lower Chena River and Badger Slough has been either closed to trapping without a permit since 1983.

Table 5 Trapping seasons and bag limits for lynx within the Fairbanks Area (Units 20A, 20B, 20C, 20F, and 25C), 1983–2001

Season dates	Season length	Year(s)	Bag limit
1 Nov–15 Mar	136	1983–1984	No limit
1 Dec–31 Jan	62	1985–1986	No limit
1 Dec–15 Jan	46 (Unit 20A)	1987	No limit
1 Dec–31 Dec	31 (Units 20B, 20C, 20F, and 25C)	1987	No limit
15 Dec–15 Jan	31	1988–1989	No limit
1 Dec–31 Jan	62	1990–1991	No limit
1 Nov–31 Jan	92	1992	No limit
1 Dec–31 Jan	62	1993	No limit
1 Dec–15 Jan	46	1994	No limit
15 Dec–15 Jan	31 (Units 20A, 20B, and 20C east of Teklanika)	1995	No limit
1 Dec–31 Jan	(Units 20F, 25C, and remainder of 20C)	1995	No limit
15 Dec–15 Jan	31 (Units 20A, 20B, and 20C east of Teklanika)	1996	No limit
1 Dec–31 Jan	62 (Units 20F, 25C, and remainder of 20C)	1996	No limit
1 Dec–15 Feb	77 (Units 20A, 20B, and 20C east of Teklanika)	1997	No limit
1 Nov–28 Feb	121 (Units 20F, 25C, and remainder of 20C)	1997–2001	No limit
1 Dec–28 Feb	91 (Units 20A, 20B, and 20C east of Teklanika)	1998–1999	No limit
1 Nov–28 Feb	121 (Units 20A, 20B, and 20C east of Teklanika)	2000–2001	No limit

Table 6 Number of pelts sealed[a] from selected furbearers in portions of Units 20 and 25C, regulatory years 1995–1996 through 2000–2001

Species	Unit	Regulatory year					
		1995–1996	1996–1997	1997–1998	1998–1999	1999–2001	2000–2001[b]
Beaver	20A	61	125	29	82	35	
	20B	217	647	599	405	230	
	20C	103	239	137	128	70	
	20F	0	29	11	3	0	
	25C	1	9	5	3	7	
Total		436	1049	781	621	342	
Lynx	20A	16	42	168	260	440	
	20B	34	104	251	371	388	
	20C	20	89	186	173	135	
	20F	2	8	50	29	56	
	25C	5	37	29	2	43	
Total		77	280	684	835	1062	
River Otter	20A	10	9	0	4	20	
	20B	32	40	27	12	6	
	20C	5	8	9	4	6	
	20F	0	1	2	1	0	
	25C	0	1	0	0	0	
Total		47	59	38	21	32	
Wolverine	20A	5	7	10	11	22	
	20B	2	13	10	9	10	
	20C	5	11	17	4	7	
	20F	0	1	1	1	3	
	25C	4	6	4	2	0	
Total		16	38	42	27	42	

[a] Includes only sealed beavers that were dried and stretched.

[b] Data not available at time or report writing.

Table 7 Average North American furbearer pelt prices (US dollars), regulatory years 1995–1996 through 2000–2001

Species	Regulatory year					
	1995–1996	1996–1997	1997–1998	1998–1999[a]	1999–2000[b]	2000–2001[c]
Beaver Good quality large brown	22	33	35	22	18	17
Marten Large I-II dark brown	66	66	66	22	32	29
Mink Large-medium I-II dark brown North	19	26	23	10	14	15
Red fox XL-large I-II Northwest	27	38	34	10	17	23
Lynx Large-medium I-II first color	82	90	95	58	48	40
Otter XL-large I-II dark brown	90	74	86	43	64	61
Wolverine XL I-II brown	170	160	249[d]	n/a	187	136

[a] Data compiled by T Boudreau from North American Fur Exchange Prices only.

[b] Prices from 25 Feb 2000 sale.

[c] Prices from 11 Jan 2001 sale.

[d] Not graded. Only 198 offered for sale with 85% sold.

Table 8 Summary by year of the results of the registration beaver trapping season in the lower Chena River portion of Unit 20B, 1995–2001

Year	Season dates	Trappers	Caches available	Lodges trapped	Total available limit	Beavers trapped		
						Adults	Kits	Total
1995	1 Dec 1995 31 Jan 1996	7	26	10	35	21	0	21
1996	1 Dec 1996 31 Jan 1997	5	21	6	25	7	0	7
1997	1 Dec 1997 31 Jan 1998	8	unk	7	40	20	2	22
1998[a]	1 Dec 1998 31 Jan 1999	8	32	8	40			12
1999[b]	1 Feb 2000 31 Mar 2000	n/a	24	24	50			27
2000	1 Feb 2001 31 Mar 2001	n/a	20	12	75			11

[a] Starting in 1998 we no longer kept track of kits in the harvest.
[b] Starting in 1999 the lower Chena River section was trapped by the Alaska Trapper's Association as a mentoring program for local youth.

Table 9 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 2000–2001

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[b]	9	7	78

[a] Excludes wolverines of unknown sex.
[b] Preliminary data.

Table 10 Percent method of take and transportation used to harvest furbearers from Units 20A, 20B, 20C, 20F, and 25C, regulatory years 1997–1998 through 1999–2000

	Method of take				Method of transportation			
Regulatory year/Species	Ground shooting	Trapping	Snaring	Other/ unk	Airplane	Dogsled/ snowshoe/skis	Snowmachine	Other/Unk/ Highway
<u>1997–1998</u>								
Beaver	1	15	83	0	0	9	72	20
Otter	3	74	24	0	0	11	84	5
Lynx	0	85	14	0	0	10	85	5
Wolverine	0	86	14	0	0	2	98	0
<u>1998–1999</u>								
Beaver	1	15	81	4	0	13	68	18
Otter	10	62	29	0	0	14	76	10
Lynx	0	78	19	3	0	6	82	13
Wolverine	7	81	11	0	11	19	67	4
<u>1999–2000</u>								
Beaver	4	13	81	3	0	20	69	12
Otter	0	94	3	3	0	13	84	3
Lynx	2	78	18	3	0	9	82	9
Wolverine	7	57	33	2	0	12	81	7

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

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

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 trap line 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 one-half mile intervals for 3 minutes at each stop. The survey was begun at one-half hour before sunrise (approximately 3:00 A.M.) in late June or early July. All hares seen during the survey were counted.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Lynx carcasses were purchased from Unit 20D trappers with 35 purchased during RY97, 62 during RY98, and 82 carcasses purchased during RY99 (Table 1). Percent kittens among the necropsy samples decreased from 46% in RY97 to 26% in RY99 indicating decreased reproductive performance among lynx in Unit 20D. Mean age decreased from 2.3 years in RY97 to 1.5 in RY99. This data will be pooled with results from the remainder of Game Management Unit 20 to determine overall productivity and population trends.

Counts of snowshoe hares, obtained during the Donnelly Dome BBS continued to increase from a low of 4 in 1995 to a high of 85 in 1999. The number of hares then declined substantially after 1999 to 43 in 2000 indicating that the hare population has likely peaked and started to decline in this portion of Unit 20D (Table 2).

Furbearer and prey population abundance and trends based on responses to trapper questionnaires during RY97 and RY98 of this reporting period were reviewed and discussed in Parker-McNeil (1999) and Kephart (2000).

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.

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 November 10 instead of the correct date of November 1.

Hunter/Trapper Harvest. Estimates of Unit 20D furbearer harvest are available for species that were sealed.

The RY97 through RY99 beaver harvest averaged 30 beaver/year (range = 16–40) (Table 4). Although this is an increase over the mean harvest of 23/year during the last reporting period, it is still substantially lower than the high harvest reported in RY86 and 87. Juveniles represented 19% of the harvest during this reporting period.

Reported lynx harvest increased significantly this reporting period, averaging 142/year (range = 122–160) compared to an average harvest of 36/year during the last reporting period (Table 3). The increased harvest was due to higher numbers of lynx, longer trapping seasons, and greater interest by trappers to trap lynx.

Otter harvest during this reporting period was typically low, with an average harvest of 4 otter/year (range = 3–4), compared to an average harvest of 3 otters/year during the last reporting period (Table 4).

Wolverine harvest during this reporting period was highly variable and did not vary significantly from previous years. Harvest ranged from a high of 13 in RY97 to a low of only 3 in RY98 (Table 4).

Harvest Chronology. The majority of beavers were harvested in March during this reporting period (Table 5).

Lynx were only captured during the legal trapping season, which included portions of December, January, and February (Table 3). Lynx were caught continuously during the trapping season with no clear trends in chronology (Table 5).

There was no clear pattern in otter or wolverine harvest and 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

No habitat assessment or enhancement was accomplished during this report period.

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 increasing but was still below the high harvest of RY86 and RY87. Lynx harvest increased substantially due to increased population size, longer trapping seasons, and greater trapping pressure. The trend in snowshoe hare population size peaked and began declining during this reporting period indicating that lynx populations will begin declining in the near future. Reported harvest of otter and wolverine 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.

LITERATURE CITED

PARKER-MCNEIL D. 1999. 1997–1998 Trapper Questionnaire Statewide Report. Alaska Department of Fish and Game. Juneau, Alaska.

KEPHART J. 2000. Statewide Annual report 1 July 1998–30 June 1999 Trapper Questionnaire. Alaska Department of Fish and Game. Juneau, Alaska.

PREPARED BY:

Stephen D DuBois
Wildlife Biologist III

SUBMITTED BY:

Roy A Nowlin
Regional Management Assistant

REVIEWED BY:

Mark E McNay
Wildlife Biologist III

Laura A McCarthy
Publications Technician II

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

DuBois, S. D. 2001. Unit 20D furbearer management report. Pages 276–289 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 20D lynx carcass data, regulatory years 1994–1995 through 1999–2000

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	8
1995–1996	5 (56)	4 (44)	6 (67)	2 (22)	na	na	9
1996–1997	0 (0)	0 (0)	0 (0)	0 (0)	na	na	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

Table 2 Snowshoe hare numbers seen during the Donnelly Dome Breeding Bird Survey, Unit 20D, 1995–2000

Year	Number of hares
1995	4
1996	24
1997	46
1998	73
1999	85
2000	43

Table 3 Furbearer trapping and hunting seasons in Unit 20D, regulatory years 1997–1998 through 1999–2000

Species/	Trapping		Hunting	
Regulatory year	Trapping season	Bag limit	Hunting season	Bag limit
Beaver				
1997–1998	1 Nov–15 Apr	25	No open season	
1998–1999	1 Nov–15 Apr	25	No open season	
1999–2000	1 Nov–15 Apr	25	No open season	
Coyote				
1997–1998	1 Nov–31 Mar	No limit	1 Sep–30 Apr	2
1998–1999	1 Nov–31 Mar	No limit	1 Sep–30 Apr	10, no more than 2 before 1 Oct
1999–2000	1 Nov–31 Mar	No limit	1 Sep–30 Apr	10, no more than 2 before 1 Oct
Lynx				
1997–1998	1 Dec–15 Feb	No limit	1 Dec–31 Jan	2
1998–1999	1 Dec–28 Feb	No limit	1 Dec–31 Jan	2
1999–2000	1 Dec–28 Feb	No limit	1 Dec–31 Jan	2
Marten				
1997–1998	1 Nov–28 Feb	No limit	No open season	
1998–1999	1 Nov–28 Feb	No limit	No open season	
1999–2000	1 Nov–28 Feb	No limit	No open season	
Mink				
1997–1998	1 Nov–28 Feb	No limit	No open season	
1998–1999	1 Nov–28 Feb	No limit	No open season	
1999–2000	1 Nov–28 Feb	No limit	No open season	
Muskrat				
1997–1998	1 Nov–10 Jun	No limit	No open season	
1998–1999	1 Nov–10 Jun	No limit	No open season	
1999–2000	1 Nov–10 Jun	No limit	No open season	

Species/ Regulatory year	Trapping		Hunting	
	Trapping season	Bag limit	Hunting season	Bag limit
Otter				
1997–1998	1 Nov–15 Apr	No limit	No open season	
1998–1999	1 Nov–15 Apr	No limit	No open season	
1999–2000	1 Nov–15 Apr	No limit	No open season	
Red Fox				
1997–1998	1 Nov–28 Feb	No limit	1 Sep–15 Mar	10, no more than 2 before 1 Oct
1998–1999	1 Nov–28 Feb	No limit	1 Sep–15 Mar	10, no more than 2 before 1 Oct
1999–2000	1 Nov–28 Feb	No limit	1 Sep–15 Mar	10, no more than 2 before 1 Oct
Red Squirrel				
1997–1998	No closed season	No limit	No closed season	No limit
1998–1999	No closed season	No limit	No closed season	No limit
1999–2000	No closed season	No limit	No closed season	No limit
Weasel				
1997–1998	1 Nov–28 Feb	No limit	No open season	
1998–1999	1 Nov–28 Feb	No limit	No open season	
1999–2000	1 Nov–28 Feb	No limit	No open season	
Wolverine				
1997–1998	1 Nov–28 Feb	No limit	1 Sep–31 Mar	1
1998–1999	1 Nov–28 Feb	No limit	1 Sep–31 Mar	1
1999–2000	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 1999–2000

Regulatory	Reported harvest						Method of take				Total
	Sex			Age							
year	M	F	Unk	Juv[a]	Adults	Unk	Trap/snare	Shot	L&S[b]	Unk	harvest
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
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

Regulatory year	Reported harvest: Sex M	F	Unk	Age Juv[a]	Adults	Unk	Method of take: Trap/snare	Shot	L&S[b]	Unk	Total harvest
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
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

[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.

Table 5 Unit 20D beaver, lynx, otter, and wolverine harvest chronology percent, regulatory years 1986–1987 through 1999–2000

Species/	Harvest periods							
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
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
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
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

Species/ Regulatory year	Harvest periods							
	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr	Unk
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

Table 6 Unit 20D harvest percentage by transport method[a], regulatory years 1986–1987 through 1999–2000

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
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

Species/Regulatory year	Harvest percent by transport method									
	Airplane	Dogsled	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway vehicle	Skis, Snowshoes	Other	Unk
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
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
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

[a] Transportation codes were revised in 1989, however, some errors may exist due to use of some old sealing certificates.

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

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. With the arrival of Europeans, furbearers also became an item of commerce. Fur populations have always been sufficient to meet local demand but were subject to cycles of abundance dependant on prey populations. 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. The innumerable lakes, rivers and streams found in Unit 21 support a large number of water dependant 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

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 Alaskan residents who have customarily and traditionally used the population.
- Provide an opportunity to view and photograph furbearers.
- Provide for scientific and educational use of furbearers.

MANAGEMENT OBJECTIVE

- Monitor populations through fur sealing.

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 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 1999 counted 170 active caches (0.8/mi^2) on the Northern Innoko NWR, and a survey in 2000 on the Koyukuk NWR counted 351 active caches (1.1/mi^2). The number of active caches had declined on the Northern Innoko NWR where 280 caches (1.3/mi^2) were counted in 1991. The number increased on the Koyukuk NWR where only 291 active caches (0.9/mi^2) were counted in 1991. A survey conducted on the Nowitna NWR in 1993 counted 257 active caches (0.6/mi^2) (US Fish and Wildlife Service [FWS], unpublished data).

Muskrats were on a long-term decline during this report period. Numerous hypotheses were suggested for this decline, ranging from of loss of habitat resulting from pond succession to predation by pike. Lynx were in the high phase of their 10-year cycle during the RY00 season. Red foxes were numerous throughout the unit, but appeared stable or slightly increasing.

Marten populations were moderate throughout most of the northern half of the unit during this reporting period. Local pockets of lower or higher marten numbers occurred but the population trend appeared stable. Most trappers reported that martens 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.

In Unit 21B, the FWS trapped in post-fire forest stands (Johnson et al. 1995). They found highest densities of voles and shrews in a new burn (1985) followed by the mature forest and old burn (1966). Hare populations were increasing throughout the unit in RY99 and RY00, based on observed increases in track density. Willow ptarmigan were at very high numbers in RY00 and RY01. Grouse populations appeared higher in RY99.

Distribution and Movements

All furbearer species were found throughout the unit. FWS radiotagged martens in the Nowitna River drainage in Unit 21B from 1991 through 1994 (Johnson et al. 1995). Results of this study, indicated marten were most abundant in a 1985 burn and least abundant in a 1966 burn. The upland area of the unburned mature forest was preferred to drainage areas.

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	1 Sep–30 Apr	10
Red Fox	1 Sep–15 Mar	10
Lynx	1 Nov–28 Feb	2
Wolverine	1 Sep–31 Mar	1

Board of Game Actions and Emergency Orders. In 1997 the Board of Game standardized the season and bag limit for beaver in all for Unit 21 to 1 November through 10 June with no limit. During the past 13 years trapping seasons and bag limits remained the same for marten, coyote, lynx, fox, mink, muskrat, otter, and wolverine.

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 population, mostly attributable to low pelt prices. Total harvest is certainly higher than the reported harvest from sealing reports. Many rural residents still do not understand that sealing is also required for personal-use furs. Also, harvest of beavers is often for food, therefore fur handling has a lower priority.

Kit harvest was low mainly because of the trapping techniques employed (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 the 1991–1992 season, then declined. Lynx numbers were increasing toward the end of this reporting period, and harvest had increased (Tables 1 and 2). However, trapper effort was still relatively minimal because of low pelt prices. If pelt prices increase, trapper effort and harvest are expected to increase.

Otter — Although otters were abundant in the unit, harvest remained relatively low but stable (Tables 1 and 2). Pelt prices for Interior otters were low, and trapping effort was minimal. Most of the 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). Numerous wolverine tracks were seen in Unit 21D during aerial wolf surveys in March 1999 and 2000 and moose stratification surveys in Unit 21B in April 2000. These observations suggested population levels were stable as well. Wolverines were one of the few species for which fur prices held stable at a reasonably high level during the reporting period.

Other Species — Marten numbers were moderate in the northern part of the unit, and are typically found in pockets of relatively higher or lower densities in different areas of the unit. Harvest during the mid 1990s was greatly reduced due to low trapping effort and low prices. Increased pelt prices for the 1996–1997 season resulted in a more than 5-fold increase in harvest (Table 4). Fox populations were high; however, pelt prices were low and trappers had little incentive to pursue this species. Coyotes were scarce, but a few were caught each year. Wolves were abundant in the unit, and predation of wolves on coyotes may have kept coyote numbers low. Mink were a minor furbearer in the unit. Pelt prices for wild-caught, Interior mink was low, therefore few trappers target them.

Trapping Conditions — Weather varied over the past 3 years, with some extended periods of cold weather in RY98 and RY99. Snowfall was lower than normal however, so access was not limiting. 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 seasons should be reviewed annually. Population trend information for all species can be gathered from trapper questionnaires, discussions with local fish and game advisory committees, and trapper interviews.

All of the management goals for the previous reporting period were apparently met. However, no efforts were made to determine an amount of interest in photographing, viewing or other uses of furbearers in the area. I assume that because furbearer population levels were relatively stable, the potential for all other activities was maintained. The goal of maintaining adequate populations to support traditional uses was met. The objective of monitoring harvest through fur sealing was also met. Management goals and objectives will be changed to the following for the next management period:

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 Alaskan 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–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.

LITERATURE CITED

JOHNSON WN, TF PARAGI, AND DD KATNIK. 1995. The relationship of wildfire to lynx and marten populations and habitat in interior Alaska. Final Report 95-01. US Fish and Wildlife Service, Koyukuk/Nowitna Refuge complex, Galena, Alaska.

PREPARED BY:

Glenn W Stout
Wildlife Biologist III

SUBMITTED BY:

Roy A Nowlin
Regional Management Assistant

REVIEWED BY:

Mark E McNay
Wildlife Biologist III

Laura A McCarthy
Publications Technician II

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

Stout, G. W. 2001. Unit 21 furbearer management report. Pages 290–300 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 21 reported harvest of sealed furbearer species, regulatory years 1989–1990 through 1999–2000

Regulatory	Species			
year	Beaver	Lynx	Otter	Wolverine
1989–1990	279	13	17	15
1990–1991	365	12	32	23
1991–1992	319	69	26	29
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

Table 2 Unit 21 beaver, lynx, otter, and wolverine harvest regulatory years 1989–1990 through 1999–2000

Regulatory	Reported harvest						Estimated harvest		Method of take					Successful
year	M	F	Unk	Juv[a]	Adults	Unk	Unreported	Illegal	Trap/snare	Shot	(L&S)	Unk	Total	Trappers/hunters
Beaver														
1989–1990	--	--	--	23	279	0	0	0	265	0	--	14	302	33
1990–1991	--	--	--	38	365	0	0	0	345	20	--	0	403	32
1991–1992	--	--	--	46	269	0	0	0	315	0	--	4	319	25
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	--	0	263	25
1999–2000	--	--	--	35	233	0	0	0	251	0	--	17	268	27
Lynx														
1989–1990	--	--	--	1	12	0	0	0	13	0	--	0	13	6
1990–1991	--	--	--	5	7	0	0	0	10	0	--	2	12	7
1991–1992	--	--	--	7	62	0	0	0	69	0	--	0	69	15
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
Otter														
1989–1990	4	4	9	--	--	--	0	0	15	1	--	1	17	8
1990–1991	15	13	4	--	--	--	0	0	28	4	--	0	32	11
1991–1992	9	12	5	--	--	--	0	0	26	0	--	0	26	13
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

Regulatory	Reported harvest						Estimated harvest		Method of take					Successful
year	M	F	Unk	Juv[a]	Adults	Unk	Unreported	Illegal	Trap/snare	Shot	(L&S)	Unk	Total	Trappers/hunters
1998–1999	3	1	6	--	--	--	0	0	10	0	--	0	10	7
1999–2000	3	3	10	--	--	--	0	0	14	1	--	1	16	8
<u>Wolverine</u>														
1989–1990	10	4	1	--	--	--	10	0	15	0	--	10	25	11
1990–1991	12	9	2	--	--	--	10	0	22	1	--	10	33	21
1991–1992	16	8	5	--	--	--	10	0	26	3	--	10	39	24
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

[a] Juveniles: Beavers <52" (length + width); lynx <34" in length.

Table 3 Unit 21 beaver, lynx, otter, and wolverine harvest chronology by month, regulatory years 1989–1990 through 1999–2000

Regulatory	Harvest periods							
year	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Beaver								
1989–1990	13	45	20	48	126	27	--	--
1990–1991	17	22	68	68	210	5	--	--
1991–1992	44	15	17	102	110	27	--	--
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
Lynx								
1989–1990	0	3	4	6	--	--	--	--
1990–1991	5	1	3	3	--	--	--	--
1991–1992	2	17	17	32	--	--	--	--
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	--	--	--
Otter								
1989–1990	2	10	0	1	4	0	--	--
1990–1991	3	7	12	9	1	0	--	--
1991–1992	7	3	4	7	4	0	--	--
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	--	--

Wolverine								
1989–1990	0	8	4	1	2	--	--	--
1990–1991	3	6	6	3	4	--	--	--
1991–1992	5	5	14	6	3	--	--	--
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	--	--	--

Table 4 Unit 21 estimated harvest[a] of unsealed furbearer species regulatory years 1989–1990 through 1999–2000

Regulatory	Species				
year	Coyote	Marten	Mink	Muskrat	Red Fox
1989–1990	0	2591	20	0	55
1990–1991	1	1608	27	0	15
1991–1992	0	1502	45	0	21
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

[a] Estimates derived from Fur Acquisition Reports and Fur Export Permits.

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

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

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

BACKGROUND

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

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

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

MANAGEMENT DIRECTION

MANAGEMENT GOALS

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

MANAGEMENT OBJECTIVES

Management objectives for furbearers are to:

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

- Assess population status and trends utilizing sealing records, hunter/trapper interviews and questionnaires, village harvest surveys and observations by staff and the public.
- Maintain license vendors and sealing agents in all Unit 22 villages.
- Improve compliance with current sealing requirements through public communication and education.
- Minimize conflicts between furbearers and the public.
- Develop updated population management objectives in consultation with the public and other agencies.

METHODS

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

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

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

Population Size

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

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

Lynx — Lynx, which had been scarce unitwide since the mid 1980s, are increasing in some areas along with hares, their primary food source. In 1998–1999 reports from Unit 22A indicated lynx were scarce, but increasing, and by 1999–2000 they were reported to be common and increasing. Lynx appear to be most abundant in southwestern Unit 22A. In Unit 22B survey respondents reported lynx were scarce, but increasing. Survey respondents from the remainder of the unit said lynx were scarce or not present in their hunting/trapping areas. Hares appear to be increasing in many parts of the unit.

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

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

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

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

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

Population Composition

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

Distribution and Movements

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

MORTALITY

Harvest

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Other Mortality

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

HABITAT

Assessment

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

Enhancement

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

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

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

CONCLUSIONS AND RECOMMENDATIONS

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

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

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

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

PREPARED BY:	**SUBMITTED BY:**
Kate Persons	Peter Bente
Wildlife Biologist III	Survey-Inventory Coordinator

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

Persons, K. 2001. Unit 22 furbearer management report. Pages 301–309 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

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

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

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

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

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 23

GEOGRAPHIC DESCRIPTION: Kotzebue Sound and Western Brooks Range

BACKGROUND

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

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

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

MANAGEMENT DIRECTION

MANAGEMENT GOALS

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

MANAGEMENT OBJECTIVES

Management objectives for furbearers are to:

- Seal furs and maintain accurate harvest records to evaluate harvest patterns.
- Provide for subsistence, commercial and recreational uses of furbearers.

METHODS

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

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

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

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

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

Lynx have increased in areas where snowshoe hares have increased. In fact, lynx had become abundant in the Selawik River drainage by March 2001. During a March 2001 moose census in the lower Tagagawik River drainage, a major tributary of the Selawik River, all 4 survey aircraft opportunistically observed lynx. I observed a minimum of 50 lynx over the course of 3 days. I saw many 'stumps' that were likely lynx as well that I didn't have time to investigate. On 2 occasions we thought we saw copulating pairs. Survival of kits born in 2000 appeared to have been good as we saw many groups of 5–7 individuals.

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

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

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

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

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

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

For several years the National Park Service (NPS) has conducted a wolverine research project in the middle Noatak River drainage. A component of this study has been to purchase carcasses from hunters and trappers throughout Unit 23. Several hunters and fur sealers have remarked that this has probably reduced the proportion of harvest sealed by local hunters and trappers because they feel they have satisfied reporting requirements by selling their carcasses to a management organization. This observation is not intended to criticize the NPS, but to note that the relatively low harvests reported during 1997–1998 and 1998–1999 may be attributable to this effect. In contrast, the high number of wolverines reported for 1999–2000 is partly attributable to the Department of Public Safety protection officer traveling to Ambler to speak to 2 individuals known to have taken many wolves and wolverines during that regulatory year. If he had not done so, at least some of these furs probably would not have been sealed. Compliance with sealing requirements by local residents has historically been low and has varied through time and space in relation to the activity of fur sealers and protection officers.

Population Composition

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

Distribution and Movements

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

MORTALITY

Harvest

Hunting Season and Bag Limits.

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

Trapping Seasons and Bag Limits.

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

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

Board of Game Actions and Emergency Orders. At the fall 1999 Board meeting a year-round hunting season was established for beaver in Unit 23 with no bag limit or sealing requirement. In addition, the trapping season was extended to year round with no bag limit and no sealing requirement. At the spring 2000 Board meeting beaver was defined as a ‘fur animal’ and adopted in regulation. The designation of beaver as a 'furbearer', as well as a 'fur animal', allows take under both trapping and hunting regulations. These regulations went into effect 1 July 2000.

Human-Induced Harvest.

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

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

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

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

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

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

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

Other Mortality

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

HABITAT

Assessment

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

Enhancement

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

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

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

CONCLUSIONS AND RECOMMENDATIONS

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

- Simplify regulations when possible. Consistency between hunting and trapping regulations would substantially reduce regulatory complexity.
- Encourage the public to vaccinate their dogs against rabies and distemper and improve communication with Maniilaq Association regarding these viruses in animals.
- Distribute the publication "A Field Guide to Common Wildlife Diseases and Parasites in Alaska" (Elkin and Zarnke 2001) to individuals who hunt, trap or use furbearers in Unit 23.

LITERATURE CITED

ANDERSON, DD., R BANE, RK NELSON, WW ANDERSON AND N SHELDON. 1977. Kuuvangmiut: Traditional Eskimo Life in the Latter Twentieth Century. National Park Service, U.S. Department of the Interior, Washington, D.C.

ELKIN, B AND R ZARNKE. 2001. Common wildlife diseases and parasites in Alaska. Alaska Department of Fish and Game, Anchorage, Alaska USA 58pp.

ERLICH, J AND J MAGDANZ. 1994. Qikiqtagrunmiut Subsistence: Conservation in an *Inupiaq* Context. Kotzebue IRA Council, Kotzebue AK. 75pp.

PREPARED BY:
Jim Dau
Wildlife Biologist III

SUBMITTED BY:
Peter Bente
Survey-Inventory Coordinator

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

Dau, J. 2001. Unit 23 furbearer management report. Pages 310–319 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

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

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

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

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

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

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

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

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

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

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. With the arrival of Europeans, furbearers also became an item of commerce. Fur populations have always been sufficient to meet local demand but were subject to cycles of abundance dependant on prey populations. 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. The innumerable lakes, rivers and streams found in Unit 24 support a large number of water dependant 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. Weasels and red squirrels are common but not usually targeted by trappers.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Protect, maintain, and enhance furbearer populations and their habitats in concert with other components of the ecosystem.
- Provide for continued use of furbearers by local Alaskan residents who have customarily and traditionally used the populations.
- Provide an opportunity to view and photograph furbearers.
- Provide for scientific and educational use of furbearers.

MANAGEMENT OBJECTIVES

No detailed furbearer management objectives were established for the unit. The general objective was to maintain populations at levels sufficient to provide people with sustained consumptive and nonconsumptive uses.

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

Marten and red fox 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.

Beavers and river otters were increasing in the southern portion of the unit and were high and increasing in the northern portions. Beaver cache surveys conducted in 1995 established a baseline of 484 active caches (Kanuti NWR unpublished data, Fairbanks). A large number of otter tracks were seen on the Kanuti River Flats during the 1999 moose survey (ADFG files, Galena). 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 Game Management Units 24 and 21D.

Muskrats were on a longterm decline as they were in neighboring Unit 21D. One factor in this decline may be habitat loss. Many lakes and sloughs in the area were filling in with silt and drying up as a result of a longterm drying trend that is taking place throughout much of the Interior. Lynx were increasing in many parts of the unit during the end of the reporting period (2000 wolf survey observations, trapper interviews). The last peak of the lynx cycle was in RY91 (RY= 1 Jul through 30 Jun, e.g., RY99 = 1 Jul 1999 through 30 Jun 2000). Coyotes are rarely seen in Unit 24.

Small mammal prey populations in the southwestern part of the unit are abundant, based on the snap-trap collections by Koyukuk National Wildlife Refuge staff. Snowshoe hare populations were building toward the end of the reporting period. Hare populations were moderate to high in some parts of the unit. The grouse densities were moderate to low but ptarmigan numbers were very high near the end of the 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 & 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	1 Sep–30 Apr	2
Red Fox	1 Sep–15 Mar	10
Lynx	1 Nov–28 Feb	2
Wolverine	1 Sep–31 Mar	1

Board of Game Actions and Emergency Orders. Beginning in RY92, the 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. During the past 13 years, trapping seasons and bag limits remained the same for marten, coyote, lynx, fox, mink, muskrat, otter, and wolverine.

Trapper Harvest. Beaver harvest declined to low levels in the early 1990s, but increased to a one-year high of 654 in RY96 (Table 1). Harvest during the reporting period was greater than the 11-year average of 278 in RY97, but lower in RY98 and RY99. Prices have typically determined the harvest more than bag limits. Total harvest is certainly higher than the reported harvest from sealing reports. Many rural residents still do not understand that sealing is also required for personal-use furs. 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 employed (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).

Harvest data supported field observations that lynx reached a high point in their 10-year cycle in RY91, and did not dramatically decline until RY94 (Table 1). Percent kittens in the harvest (Table 2) was moderate to high from RY89 through RY91 (12–24%), and declined to low levels since then. During the reporting period, increasing harvest levels, comments by trappers and incidental observations indicated the lynx population was increasing in most areas. Low pelt prices for lynx probably reduced trapper effort. No trends were evident in harvest chronology of lynx (Table 3).

Otters were abundant. However, the harvest throughout the 1990s 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 harvest varied during the reporting period (Table 1). Actual harvest may be higher by 10 per year because furs used for subsistence purposes were seldom sealed (Table 2). No harvest chronology pattern was readily discernible (Table 3). Swanson (1994) found a ratio of 2:1 (male:female) in 44 wolverine carcasses she examined from 1988 through 1993.

Fox populations were high, but low prices elicited little trapper interest (Table 4). The RY96 marten harvest increased tremendously compared to the previous 4 years. That increase was probably due as much to population increase as trapper effort, because marten prices remained low.

The weather was mild for most of the trapping seasons. Recent winters were characterized as having moderate-to-low snow accumulation, enabling trappers to travel freely.

CONCLUSIONS AND RECOMMENDATIONS

Furbearer populations were in good condition 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.

All of the management goals for the previous reporting period were apparently met. However, no efforts were made to determine the amount of interest in photographing, viewing or other uses of furbearers in the area. I assume that because furbearer population levels were relatively stable, and the potential for all other activities was maintained. The goal of maintaining adequate populations to support traditional uses was met. The objective of monitoring harvest through fursealing was also met. Management goals and objectives will be changed to the following for the next management period:

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 Alaskan 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.

LITERATURE CITED

SWANSON SA. 1994. Furbearer harvest study, Gates of the Arctic National Park and Preserve, Alaska. National Park Service, Fairbanks, Alaska. Technical Report NPS/ARRNR/NRTR-94-21.

PREPARED BY:

Glenn W Stout
Wildlife Biologist III

SUBMITTED BY:

Roy A Nowlin
Regional Management Assistant

REVIEWED BY:

Mark E McNay
Wildlife Biologist III

Laura A McCarthy
Publications Technician II

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

Stout, G. W. 2001. Unit 24 furbearer management report. Pages 320–331 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 24 estimated harvest of sealed furbearer species, regulatory years 1989–1990 through 1999–2000

	Species			
Regulatory year	Beaver	Lynx	Otter	Wolverine
1989–1990	281	128	7	22
1990–1991	380	126	5	14
1991–1992	120	158	1	30
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

Table 2 Unit 24 beaver, lynx, otter, and wolverine harvest, regulatory years 1989–1990 through 1999–2000

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	Unk		
Beaver														
1989–1990				6	275	0	0	0	281	0		0	281	42
1990–1991				39	341	0	0	0	379	0		1	380	20
1991–1992				8	112	0	0	0	120	0		0	120	16
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
Lynx														
1989–1990				16	112	0	0	0	88	0		40	128	36
1990–1991				24	102	0	0	0	100	10		16	126	27
1991–1992				12	146	0	0	0	152	3		3	158	43
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

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	Unk		
Otter														
1989–1990	1	0	6				0	0	4	0		3	7	4
1990–1991	2	2	1				0	0	5	0		0	5	2
1991–1992	1	0	0				0	0	1	0		0	1	1
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
Wolverine														
1989–1990	14	5	3				10	0	21	0		1	32	12
1990–1991	8	2	4				10	0	12	1		1	24	9
1991–1992	21	8	0				10	0	29	1		0	40	16
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

[a] Juveniles: Beavers <52" (length+width); lynx <34" in length.

Table 3 Unit 24 beaver, lynx, otter, and wolverine harvest chronology by month, regulatory years 1989–1990 through 1999–2000

Regulatory	Harvest periods							
year	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Beaver								
1989–1990	0	15	23	3	125	31		
1990–1991	10	4	31	153	177	5		
1991–1992	0	4	5	15	80	2		
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
Lynx								
1989–1990	7	32	30	38				
1990–1991	4	30	26	66				
1991–1992	22	35	48	52	1			
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			
Otter								
1989–1990	1	1	2	0	0	0		
1990–1991	1	0	0	4	0	2		
1991–1992	0	0	0	1	0	0		
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		

Regulatory	Harvest periods						
year	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1999–2000	0	1	0	7	1	0		
Wolverine								
1989–1990	0	7	6	9	0			
1990–1991	2	6	2	3	1			
1991–1992	7	7	6	9	1			
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		

Table 4 Unit 24 estimated harvest[a] of unsealed furbearer species, regulatory years 1989–1990 through 1999–2000

Regulatory	Species				
year	Coyote	Marten	Mink	Muskrat	Red Fox
1989–1990	0	1489	6	0	18
1990–1991	0	756	9	0	9
1991–1992	0	945	14	0	23
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

[a] Estimates derived from Fur Acquisition Reports and Fur Export Permits.

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

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. Furbearer abundance and species composition on the arctic slope are comparatively 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). Limited surveys of other furbearers were conducted in the 1980s (Golden 1987).

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 some reduction in the number of active lodges during the late 1990s (FWS-YFNWR, unpublished data). Beaver populations have been generally stable or slightly increasing since 1982. The possible limiting effects of beaver dams on migratory whitefish populations are a concern among 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. Lynx numbers and harvest were low during the mid 1990s, but were relatively high during regulatory years (RY) 1996, 1997 and 1998 (RY = 1 Jul–30 Jun, e.g., RY97 = 1 Jul 1997 through 30 Jun 1998).

Trappers reported that mink, muskrats, weasels, and wolverines were moderately abundant. Muskrats appeared to decline following cold winters and dry summers in the mid-1990s, but some increase was apparent by the late 1990s. High water during spring 1992 reestablished 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. Red and arctic foxes continue to be common in Units 26B and 26C, and wolverines are still at low density throughout the area.

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		No season	No season
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 25:		
Beaver	50 beavers	1 Nov–15 Apr
	2 beavers/day by shooting	16 Apr–1 Jun
Coyote	No limit	1 Nov–31 Mar
Arctic Fox	No season	No season
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

Board of Game Actions and Emergency Orders. There were no regulatory changes during this report period. 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 RY88. This season remained in place through RY99. 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 beaver 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.

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). The proportion of kits in the harvest increased from 17 to 28% during the report period (Table 2). The low harvest was 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 declined abruptly to 290 in RY99 (Table 1). The recent increase reflected the increase in snowshoe hares and lynx in the last few years.

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, RY96, and RY97 and to 16% in RY98 and 24% in RY99 (Table 2). These observations agreed with trapper reports indicating that snowshoe hares were abundant in most areas 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).

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.

River Otter and Wolverine — Otter harvest was low, probably because of lower fur prices and generally low trapping effort. Harvests ranged from 2 to 3 between RY97 and RY99 (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 came from Unit 25 (Table 1). Harvest was relatively stable, ranging from 24 to 48, during the past 5 years. The only area where wolverine harvest increased

Most of the wolverine harvest came from Unit 25 (Table 1). Harvest was relatively stable, ranging from 24 to 48, during the past 5 years. The only area where wolverine harvest increased in the last decade was in Unit 26B (Table 1). This was probably a result of improved access from the Dalton Highway. 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 during the late 1980s and 1990s (Table 3). Fur prices declined to low levels for most species during this period. A resulting decline in trapping effort probably accounted for much of the decline in harvest. Temporary declines in furbearer population numbers 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 longterm decline in mink populations was probably also related to the drying trend. 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 allowing some increase in muskrat and mink populations. Muskrat harvests increased somewhat in 1994 and 1995 before declining in 1996. Local residents report some increase in muskrat populations during the late 1990s.

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 longterm 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 especially low harvests during the early and late 1990s.

Trapper Success. Among sealed species, beaver and lynx were the most commonly taken animals (Table 1). The average number taken by each reporting trapper ranged from 4 to 16 (Table 2). The number of marten 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 were distributed over a broader period. 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 being met. 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.

LITERATURE CITED

GOLDEN HM. 1987. Survey of furbearer populations on the Yukon Flats National Wildlife Refuge. Final Rep 14-16-007-84-2416. Alaska Department of Fish and Game. US Fish and Wildlife Service, Yukon Flats National Wildlife Refuge, Fairbanks, Alaska.

MCLEAN LS. 1986. Beaver food cache survey, Yukon Flats National Wildlife Refuge, Alaska, 1985. Project Report 86-5. US Fish and Wildlife Service, Yukon Flats National Wildlife Refuge, Fairbanks, Alaska.

STEPHENSON RO AND PF KARCZMARCZYK. 1989. Development of techniques for evaluating lynx population status in Alaska. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration. Final Report. Study 7.13. Grant W-23-1. Juneau, Alaska.

PREPARED BY:

Robert O Stephenson
Wildlife Biologist III

SUBMITTED BY:

Roy A Nowlin
Regional Management Assistant

REVIEWED BY:

Mark E McNay
Wildlife Biologist III

Laura A McCarthy
Publications Technician II

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

Stephenson, R. O. 2001. Unit 25 and 26 furbearer management report. Pages 332–350 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Units 25A, 25B, 25D, 26B, and 26C furbearer harvest, regulatory years 1986–1987 through 1999–2000

Species/Year	Unit 25A	25B	25D	26B	26C	Unk[a]	Total
Beaver							
1986–1987	24	171	333	0	0	0	528
1987–1988	23	136	287	0	0	0	446
1988–1989	9	175	129	0	0	0	313
1989–1990	5	51	67	0	0	0	123
1990–1991	7	26	128	0	0	0	161
1991–1992	6	38	71	0	0	0	115
1992–1993	7	15	12	0	0	0	34
1993–1994	8	3	68	0	0	0	79
1994–1995	14	38	70	0	0	0	122
1995–1996	2	20	66	0	0	0	88
1996–1997	14	10	164	0	0	0	176
1997–1998	20	36	62	0	0	0	118
1998–1999	1	13	32	0	0	0	46
1999–2000	9	2	100	0	0	0	111
Lynx							
1986–1987	77	124	282	0	0	0	484
1987–1988	117	127	278	0	0	0	522
1988–1989	59	298	329	0	0	0	686
1989–1990	41	430	214	0	0	0	685
1990–1991	25	232	208	0	4	0	465
1991–1992	34	267	334	0	0	0	635
1992–1993	13	51	128	3	0	0	195
1993–1994	8	89	262	4	0	0	363
1994–1995	6	50	173	3	0	0	232
1995–1996	1	62	155	0	0	0	218
1996–1997	0	227	524	0	0	17	768
1997–1998	0	429	350	0	0	6	785
1998–1999	31	434	219	0	0	6	690
1999–2000	5	126	159	0	0	0	290[b]
River Otter							
1986–1987	3	1	6	0	0	3	13
1987–1988	3	0	2	0	0	0	5
1988–1989	0	2	2	0	0	0	4
1989–1990	1	0	0	0	1	0	3
1990–1991	0	1	0	0	0	0	1
1991–1992	0	1	5	0	0	0	6
1992–1993	0	1	4	0	0	0	5
1993–1994	0	0	1	0	0	0	1

Species/Year	Unit 25A	25B	25D	26B	26C	Unk[a]	Total
1994–1995	1	4	1	0	0	0	6
1995–1996	1	2	6	0	0	0	9
1996–1997	1	0	4	0	0	0	5
1997–1998	0	1	2	0	0	0	3
1998–1999	2	1	0	0	0	0	3
1999–2000	2	0	0	0	0	0	2
Wolverine							
1986–1987	16	19	19	0	0	0	54
1987–1988	13	11	14	1	1	0	40
1988–1989	13	10	21	4	1	0	49
1989–1990	17	14	21	4	0	0	56
1990–1991	15	14	18	5	0	0	52
1991–1992	25	19	7	2	1	0	54
1992–1993	16	17	6	3	1	0	43
1993–1994	17	14	13	11	1	0	56
1994–1995	25	18	9	8	0	0	60
1995–1996	7	5	5	6	1	0	24
1996–1997	14	14	7	11	0	0	46
1997–1998	13	10	1	8	0	0	32
1998–1999	11	11	3	8	2	0	35
1999–2000	16	9	3	19	1	0	48

[a] Includes 25Z unknowns; these are not included in any other analyses.

[b] Preliminary data.

Table 2 Units 25A, 25B, 25D, 26B, and 26C beaver, lynx, otter, and wolverine harvest, regulatory years 1986–1987 through 1999–2000

Species/Regulatory year	Reported harvest M	F	Unk sex	Juv[a]	Adults	Unk age	Method of take Trap/snare	Shot	(L&S)[b]	Unk	Total harvest	Successful trappers and hunters
Units 25A, 25B, and 25D:												
Beaver												
1986–1987			528	79	409	40	520	0	0	8	528	unk
1987–1988			446	66	380	0	444	0	0	2	446	58
1988–1989			313	67	246	0	313	0	0	0	313	29
1989–1990			123	18	104	1	121	1	0	1	123	29
1990–1991			161	34	122	5	159	2	0	0	161	26
1991–1992			115	19	96	0	111	4	0	0	115	18
1992–1993			34	7	26	1	34	0	0	0	34	8
1993–1994				11	59	9	79	0	0	0	79	15
1994–1995			122	26	96	0	114	0	0	8	122	18
1995–1996		79		25	62	1	88	0	0	0	88	15
1996–1997			188	51	137	0	168	20	0	0	188	18
1997–1998		88	118	33	85	0	110	6	0	2	118	19
1998–1999			46	8	38	0	45	1	0	0	46	11
1999–2000[c]			111	24	87	0	106	5	0	0	111	12
Lynx												
1986–1987				100	380	4	481	1	0	2	484	unk
1987–1988		484		110	412	0	510	2	0	10	522	119
1988–1989		522		128	569	0	673	0	4	9	686	126
1989–1990		686		136	549	0	648	5	0	32	685	90
1990–1991		685	465	82	381	2	463	1	0	1	465	72
1991–1992			635	52	582	1	589	0	0	45	635	84
1992–1993			192	7	185	0	190	2	0	0	192	55
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				177	574	0	744	0	0	7	751	83
1997–1998		751		177	594	8	779	0	0	0	779	55
1998–1999		779		112	565	7	681	1	0	2	684	42
1999–2000[c]		684	290	57	233	0	290	0	0	0	290	28
Otter												
1986–1987	unk	unk	unk	--	--	13	12	0	0	1	13	unk
1987–1988	unk	unk	unk	--	--	5	5	0	0	0	5	5
1988–1989	1	1	2	--	--	4	4	0	0	0	4	4

	Reported harvest						Method of take					
Species/Regulatory year	M	F	Unk sex	Juv[a]	Adults	Unk age	Trap/snare	Shot	(L&S)[b]	Unk	Total harvest	Successful trappers and hunters
1989–1990	1	0	2	--	--	2	2	0	0	1	3	3
1990–1991	1	0	0	--	--	1	1	0	0	0	1	1
1991–1992	0	3	0	--	--	3	6	0	0	0	6	4
1992–1993	4	1	0	--	--	5	5	0	0	0	5	4
1993–1994	1	0	0	--	--	1	1	0	0	0	1	1
1994–1995	1	2	3	--	--	6	6	0	0	2	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
Wolverine												
1986–1987	unk	unk	unk	--	--	54	48	0	1	5	54	unk
1987–1988	unk	unk	unk	--	--	40	36	0	4	0	40	29
1988–1989	31	12	1	--	--	44	42	0	1	1	44	30
1989–1990	29	19	4	--	--	52	52	0	0	0	52	31
1990–1991	27	13	7	--	--	54	45	2	0	0	47	28
1991–1992	32	18	1	--	--	51	46	5	0	0	51	27
1992–1993	28	11	0	--	--	39	36	3	0	0	39	15
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	18	7	3	--	--	28	28	0	0	0	28	9
<u>Units 26B and 26C</u>:												
Lynx												
1990–1991				0	0	4	4	0	0	0	4	1
1991–1992				0	0	0	0	0	0	0	0	0
1992–1993				0	3	0	3	0	0	0	3	2
1993–1994				0	4	0	4	0	0	0	4	1
1994–1995				0	3	0	3	0	0	0	3	1
1995–1996				0	0	0	0	0	0	0	0	0
1996–1997				0	0	0	0	0	0	0	0	0

4
0
3
4
3
0
0

	Reported harvest						Method of take					
Species/Regulatory year	M	F	Unk sex	Juv[a]	Adults	Unk age	Trap/snare	Shot	(L&S)[b]	Unk	Total harvest	Successful trappers and hunters
1997–1998				0	1	0	0	0	0	0	0	0
1998–1999				0	0	0	0	0	0	0	0	0
1999–2000[c]		10	0	0	0	0	0	0	0	0	0	0
Wolverine												
1988–1989	2	2	1	--	--	5	2	1	1	1	5	5
1989–1990	3	1	0	--	--	4	0	4	0	0	4	4
1990–1991	3	2	0	--	--	5	0	5	0	0	5	4
1991–1992	2	0	1	--	--	3	2	1	0	0	3	3
1992–1993	3	1	0	--	--	4	2	2	0	0	4	4
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	12	8	0	--	--	20	15	5	0	0	20	6

[a] Beavers ≤52"; lynx ≤34" in length.

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

[c] Preliminary data.

Table 3 Unit 25 estimated harvest[a] of unsealed furbearer species, regulatory years 1986–1987 through 1998–1999

	Regulatory year												
Species	1986–1987	1987–1988	1988–1989	1989–1990	1990–1991	1991–1992	1992–1993	1993–1994	1994–1995	1995–1996	1996–1997	1997–1998	1998–1999
Coyote	0	0	0	0	0	1	1	2	1	0	1	0	0
Arctic fox	0	2	0	0	0	1	2	5	7	0	0	0	1
Red fox	464	286	198	47	171	187	41	115	139	86	235	69	3
Marten	5707	5086	3476	2357	2070	2769	883	1234	1422	748	2233	536	152
Mink	211	80	72	32	42	46	17	34	54	81	232	26	6
Muskrat	2360	1141	657	0	23	299	167	92	784	558	126	9	138
Weasel	60	55	87	9	6	17	5	11	19	31	13	0	0
Squirrel	6	31	53	0	25	54	24	4	55	13	43	8	2

[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 1986–1987 through 1999–2000

Species/	Harvest periods							
Regulatory year	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Beaver								
1986–1987	0	44	37	51	84	286	13	
1987–1988	0	32	23	50	55	234	52	
1988–1989	0	33	27	6	60	165	16	
1989–1990	0	16	12	12	22	52	0	
1990–1991	0	4	21	52	45	38	1	
1991–1992	0	13	10	6	18	63	5	
1992–1993	0	6	5	11	0	10	2	
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	14	64	4	4
Lynx								
1986–1987	0	1	273	196	2	1	0	
1987–1988	0	1	267	247	2	2	0	
1988–1989	0	77	268	137	184	0	0	
1989–1990	0	55	328	184	102	1	0	
1990–1991	0	20	200	102	93	28	0	
1991–1992	0	56	260	213	86	2	0	
1992–1993	0	27	83	30	29	2	0	
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	101	120	63	0	0	
River Otter								
1986–1987	0	0	6	3	1	1	0	
1987–1988	0	1	1	3	0	0	0	
1988–1989	0	0	3	0	1	0	0	
1989–1990	0	1	1	0	0	0	0	
1990–1991	0	0	0	1	0	0	0	

Species/ Regulatory year	Harvest periods							
	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1991–1992	0	1	2	2	1	0	0	
1992–1993	0	0	4	0	1	0	0	
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	
Wolverine								
1986–1987	0	4	16	20	5	9	0	
1987–1988	0	2	14	15	5	3	1	
1988–1989	0	5	14	6	15	4	0	
1989–1990	0	6	18	9	16	3	0	
1990–1991	1	11	13	5	16	0	0	
1991–1992	0	9	16	10	13	3	0	
1992–1993	0	4	14	3	9	9	0	
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	11	1	0	

Table 5 Units 26B and 26C lynx and wolverine harvest chronology by month, regulatory years 1990–1991 through 1999–2000

Species/ Regulatory year	Harvest periods						
	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr
Lynx							
1990–1991	0	0	0	0	4	0	0
1991–1992	0	0	0	0	0	0	0
1992–1993	0	0	0	2	1	0	0
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
Wolverine							
1986–1987	unk	unk	unk	unk	unk	unk	unk
1987–1988	unk	unk	unk	unk	unk	unk	unk
1988–1989	0	0	1	2	1	1	0
1989–1990	1	1	0	0	1	0	1
1990–1991	3	2	1	2	0	0	0
1991–1992	0	2	1	0	0	0	0
1992–1993	1	0	0	0	0	2	1
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	0	0	3	4	6	4	3

Table 6 Units 25A, 25B, and 25D beaver, lynx, otter, and wolverine harvest percent by transport method, regulatory years 1986–1987 through 1999–2000

Species/Regulatory year	Harvest percent by transport method							
	Airplane	Dogsled, Skis, or Snowshoes	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway vehicle	Unknown
Beaver								
1986–1987	1	8	0	0	92	0	0	0
1987–1988	6	4	0	0	90	0	0	0
1988–1989	0	8	0	0	92	0	0	0
1989–1990	0	2	0	0	98	0	0	0
1990–1991	21	3	0	0	76	0	1	0
1991–1992	0	0	0	0	98	0	0	2
1992–1993	0	0	0	0	94	0	0	6
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	15	0	0	83	0	2	0
Lynx								
1986–1987	3	8	0	0	89	0	0	0
1987–1988	3	10	0	0	86	0	0	0
1988–1989	13	7	1	0	80	0	0	0
1989–1990	2	8	0	0	88	0	1	0
1990–1991	2	7	0	0	91	0	0	0
1991–1992	1	9	3	0	82	0	0	5
1992–1993	3	4	0	0	88	0	1	4
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	22	6	0	0	72	0	0	0

Species/Regulatory year	Airplane	Dogsled, Skis, or Snowshoes	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway vehicle	Unknown
	Harvest percent by transport method							
River Otter								
1986–1987	0	9	0	0	91	0	0	0
1987–1988	0	20	0	0	80	0	0	0
1988–1989	0	25	0	0	75	0	0	0
1989–1990	0	0	0	0	100	0	0	0
1990–1991	0	100	0	0	0	0	0	0
1991–1992	0	0	0	0	100	0	0	0
1992–1993	0	0	0	0	100	0	0	0
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
Wolverine								
1986–1987	12	16	0	0	71	0	0	0
1987–1988	10	18	0	0	69	0	3	0
1988–1989	8	10	0	0	82	0	0	0
1989–1990	2	17	0	0	81	0	0	0
1990–1991	2	20	0	0	77	0	0	0
1991–1992	2	14	0	0	80	0	0	4
1992–1993	5	10	0	0	64	0	0	21
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	7	7	0	0	86	0	0	0

Table 7 Units 26B and 26C lynx and wolverine harvest percent by transport method, regulatory years 1990–1991 through 1999–2000

Species/Regulatory year	Harvest percent by transport method							
	Airplane	Dogsled, Skis, or Snowshoes	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway vehicle	Unknown
Lynx								
1990–1991	100	0	0	0	0	0	0	0
1991–1992	0	0	0	0	0	0	0	0
1992–1993	0	0	0	0	0	0	67	33
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
Wolverine								
1990–1991	25	25	0	0	0	0	50	0
1991–1992	0	33	0	0	33	0	33	0
1992–1993	33	0	0	0	33	0	0	33
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	5	10	0	0	55	0	30	0

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

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

GEOGRAPHIC DESCRIPTION: Western North Slope

BACKGROUND

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

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

MANAGEMENT DIRECTION

MANAGEMENT GOALS

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

MANAGEMENT OBJECTIVES

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

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

METHODS

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

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size, Composition, and Distribution

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

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

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

MORTALITY

Harvest

Hunting Seasons and Bag Limits.

Unit 26A

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

Trapping Seasons and Bag Limits.

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

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

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

Human-Induced Harvest, Transport Methods, Harvest Chronology .

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

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

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

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

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

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

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

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

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

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

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

Other Mortality

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

HABITAT

Assessment

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

Enhancement

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

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

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

CONCLUSIONS AND RECOMMENDATIONS

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

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

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

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

LITERATURE CITED

BECKER, EF 1991. A terrestrial furbearer estimator based on probability sampling. Journal of Wildlife Management. 55(4):537–562.

BROWER, HK, AND RT OPIE. 1996. North Slope Borough Subsistence Documentation Project: Data for Anaktuvuk Pass, Alaska for the Period July 1, 1994–June 30, 1995. North Slope Borough Department of Wildlife Management Report. 36 pp. Available from North Slope Borough Department of Wildlife Management, Box 69, Barrow, Alaska 99723.

———, AND ———. 1997. North Slope Borough Subsistence Documentation Project: Data for Nuiqsut, Alaska for the Period July 1, 1994–June 30, 1995. North Slope Borough Department of Wildlife Management Report. 44 pp. Available from North Slope Borough Department of Wildlife Management, Box 69, Barrow, Alaska 99723.

FULLER, AS AND JC GEORGE.1997. Evaluation of Subsistence Harvest Data from the North Slope Borough 1993 Census for Eight North Slope Villages: for the Calendar Year 1992. Report by Department of Wildlife Management, North Slope Borough, Barrow, Alaska.

HEPA, RT, AND HK BROWER. 1997. North Slope Borough Subsistence Documentation Project: Data for Atqasuk, Alaska for the Period July 1, 1994–June 30, 1995. North Slope Borough Department of Wildlife Management Report. 41 pp. Available from North Slope Borough Department of Wildlife Management, Box 69, Barrow, Alaska 99723.

MAGOUN, AJ 1984. Population character ristics, ecology, and management of wolverines in northwestern Alaska. PhD Dissertation, University of Alaska, Fairbanks. 197pp.

TRENT, JN 1988. Unit 26A furbearer survey-inventory progress report. Pages 87–89 *in* S. Morgan, ed. Annual report of survey-inventory activities. Part XIV. Furbearers. Vol. XVII. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Grant W–22–5. Job 7.0. Juneau. 109 pp.

PREPARED BY:
Geoff Carroll
Wildlife Biologist III

SUBMITTED BY:
Peter Bente
Survey-Inventory Coordinator

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

Carroll, G. 2001. Unit 26A furbearer management report. Pages 351–357 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

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

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

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

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

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.

ADF&G