Species Management Report and Plan ADF&G/DWC/SMR&P–2019–9

Furbearer Management Report and Plan, Game Management Unit 4:

Report Period 1 July 2012–30 June 2017, and

Plan Period 1 July 2017–30 June 2022

Stephen Bethune

2019

Alaska Department of Fish and Game Division of Wildlife Conservation

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Hunters are important founders of the modern wildlife conservation movement. They, along with trappers and sport shooters, provided funding for this publication through payment of federal taxes on firearms, ammunition, and archery equipment, and through state hunting license and tag fees.

Species management reports and plans provide information about species that are hunted or trapped and management actions, goals, recommendations for those species, and plans for data collection. Detailed information is prepared for each species every 5 years by the area management biologist for game management units in their areas, who also develops a plan for data collection and species management for the next 5 years. This type of report is not produced for species that are not managed for hunting or trapping or for areas where there is no current or anticipated activity. Unit reports are reviewed and approved for publication by regional management coordinators and are available to the public via the Alaska Department of Fish and Game's public website.

This species management report and plan was approved for publication by Tom Schumacher, Regional Supervisor for the Division of Wildlife Conservation.

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Cover Photo: An ermine looks out from an alpine rock pile on Baranof Island ©2018 ADF&G. Photo by Stephen Bethune.

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Purpose of this Report

This report provides a record of survey and inventory management activities for furbearers in Unit 4 for the previous 5 regulatory years and plans for survey and inventory management activities in the 5 years following the end of that period. A regulatory year (RY) begins 1 July and ends 30 June (e.g., RY10 = 1 July 2010–30 June 2011). This report is produced primarily to provide agency staff with data and analysis to help guide and record its own efforts, but is also provided to the public to inform them of wildlife management activities. In 2016 the Alaska Department of Fish and Game's Division of Wildlife Conservation launched this 5-year report to more efficiently report on trends and describe potential changes in data collection activities over the next 5 years. It replaces the furbearer management reports of survey and inventory activities that were previously produced every 3 years.

I. RY12–RY16 Management Report

Management Area

Game Management Unit 4 encompasses Admiralty, Baranof, Chichagof and adjacent islands (Fig. 1). It consists of approximately 5,820 square miles of land and over 5,000 miles of shoreline. Approximately 90% of the unit is Tongass National Forest lands. Sitka, located on Baranof Island, is the largest community in the unit with approximately 9,000 residents. Other communities include Hoonah, Pelican, Elfin Cove and Tenakee Springs on Chichagof Island and Angoon on Admiralty Island. All residents of Unit 4 are qualified to trap under federal subsistence regulations.

North 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 and north of Tenakee Inlet is treated separately from the remainder of Unit 4 with regard to marten, mink and weasel (Fig. 2). This area has a shorter season. This area traditionally has higher than average (for Unit 4) snowfalls and is highly roaded due to past logging activity. However, rural residents trapping under federal regulations are not restricted to this shorter season.

Unit 4 has three large and one small federally protected wilderness areas. The West Chichagof-Yakobi Wilderness was Alaska's first federally designated wilderness area which was the result of a citizen petition led by Chuck Johnstone. Johnstone co-founded the Sitka Conservation Society in opposition to large scale commercial logging in Southeast Alaska. It encompasses 265,286 acres and includes most of Yakobi Island and the entire west side of Chichagof Island as well as numerous smaller associated islands. The 956,255-acre Kootznoowoo Wilderness is all of Admiralty Island with the exception of the Mansfield Peninsula and Alaska Native Corporation lands on the west shore associated with the village of Angoon. The South Baranof Wilderness is 319,568 acres and encompasses much of the south half of Baranof Island. All three of these wilderness areas were designated by Congress in 1980 as part of the Alaska National Interest Lands Conservation Act. The fourth and smaller designated wilderness is the Pleasant/Lemesurier/Inian Islands Wilderness. The 23,151 acres are situated in Icy Straits between the north end of Chichagof Island and Glacier Bay National Park to the north. These Islands were designated by Congress in 1990.

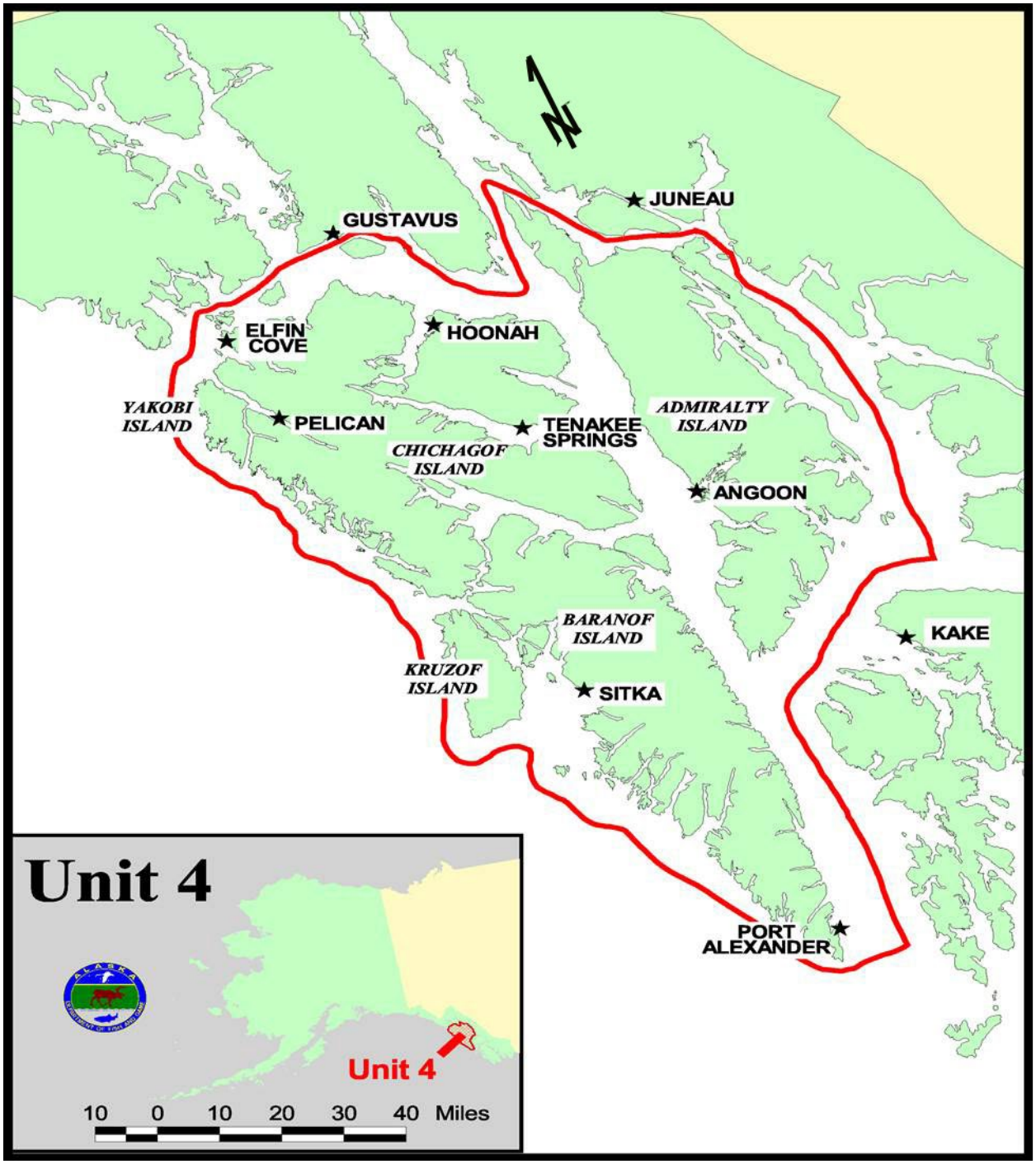

Figure 1. Map of Game Management Unit 4, Alaska Department of Fish and Game, Southeast Alaska.

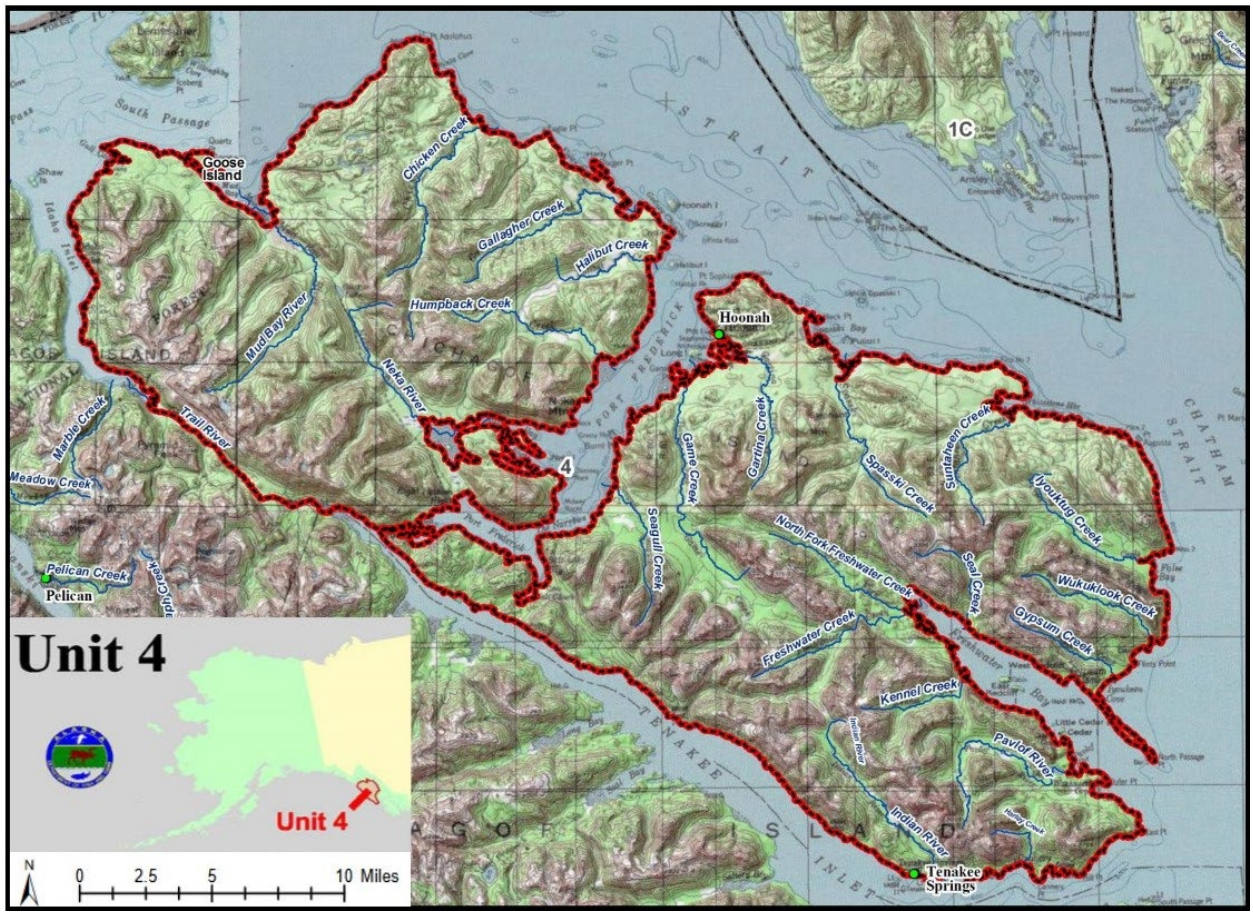

Figure 2. Map of Northeast Chichagof Island, Alaska.

Summary of Status, Trend, Management Activities, and History of Furbearers in Unit 4

The quest for fur has done much to shape the history and culture of the people of Game Management Unit 4. Russian settlement and battles with the local Tlinget tribes were centered on the acquisition of fur, particularly sea otters. Local natives have historically trapped for cultural and subsistence purposes and as an income generator. In the more modern era, trapping is more of a recreational opportunity though income potential is still an influencing factor. Trapping effort is based on a combination of factors such as fur prices, the strength of the local economy, fuel prices and to a lesser degree, furbearer abundance. Although there are some limited road accessible areas in Unit 4 to trap, most effort is via boat. Severe winter weather can preclude trapper access and have a significant impact on annual harvest levels (Mooney 2007).

Marten (*Martes Americana*), river otters (*Lontra canadensis*) and Beavers (*Castor canadensis*) are the main furbearer species targeted in Unit 4. In addition, mink (*Neovison vison*), weasels or ermine (*Mustela spp*.) and American red squirrels (*Tamiasciurus hudsonicus*) are present in Unit 4 and are taken incidentally. ADF&G does not require sealing or track harvest of these incidental takes. Density of individual species is variable, depending upon a variety of ecological factors

and levels of harvest. Historical information on population status and trends is mostly anecdotal. Harvests of Marten, river otters and beavers are monitored by sealing.

Marten are common throughout GMU 4 and are by far the most targeted furbearer and provide the bulk of the annual harvest. Coastal marten (*Martes caurina*) are found only on Admiralty Island and are an indigenous. American marten (*Martes Americana*) are the result of introductions on Baranof and Chichagof Islands. Marten populations on Baranof Island stem from a 1934 effort in which 7 animals were released. This transplant was successful despite the relatively small number of animals released (Elkins and Nelson 1954). The Chichagof population is the result of 21 martens released near Pelican in 1951 and 1952 (Elkins and Nelson 1954). An interesting anecdote is that part of the successful and rapid expansion of marten on Chichagof Island is likely the result of unofficial citizen efforts. Former ADF&G biologist Loyal Johnson reported in Paul 2009 (personal communication) that at least one local trapper would release any female caught on Baranof but still alive to Chichagof. Marten have delayed implantation, so females caught in the fall would already be pregnant.

The U.S. Forest Service (USFS) and the Alaska Department of Fish and Game (ADF&G) conducted a marten ecology study on northeast Chichagof Island in the early 1990's (Flynn 1993). Marten densities were quantified using mark-recapture techniques (Flynn and Schumacher 2016). Data from this study highlighted how variable marten numbers are over time. During the study, populations of small mammals, particularly long-tailed voles (*Microtus longicaudus)*, a primary prey of marten showed similar trends. No other formal population estimations have been conducted for any furbearer species in Unit 4. The department relies on information acquired from trappers responding to an annual questionnaire along with harvest trends and anecdotal information, which is adequate to evaluate general trends.

Otter and mink are abundant throughout the unit. The vast intertidal and estuarine habitats in Unit 4 provide excellent habitat (Whitman 2001). Mink harvests are not tracked. Otter harvest is variable based on fur prices and some harvest is opportunistic as deer hunters come across them while travelling by boat. It is legal to shoot otters from a boat in Southeast Alaska. Based on long-term harvest data, populations are thought to be stable (Mooney 2013).

Beavers generally occur at low but stable densities on the Admiralty, Baranof, and Chichagof (ABC) islands. However, higher densities occur in localized areas, particularly related to disturbed areas from previous logging areas near river bottoms. These disturbed soils often regenerate into alder and willow stands and provide suitable habitat (Mooney 2007).

Red squirrels, though not tracked in Unit 4, have a colorful history that bears mentioning. They are abundant throughout the unit and are a result of a transplant that occurred in 1930 of 105 individuals which were live-trapped near Juneau and released on Baranof and Chichagof Islands (Alaska Game Commission 1935 *in* Paul 2009). Populations on Admiralty are attributed to private citizens releasing them near Young Bay in the late 1970's (Paul 2009). Red squirrel transplants were primarily conducted to augment food resources for marten. Though it is now understood that squirrels are a limited part of a marten's diet (Lensink et al. 1955; Buskirk and Ruggiero 1994; Ben-David et al. 1997; Flynn et al. 2004) and it is unlikely squirrel transplants made much of a difference on the outcome of marten introductions. Local rumor is that the 1930 introduction was conducted as an "air drop" due to poor weather and that the forest canopy

provided a soft enough landing for at least part of the transplant to survive and eventually expand.

Squirrel introductions may have had unintended consequences for upland birds. Several former ADF&G biologists stationed in Sitka believed that squirrels are at least partly to blame for diminished populations of dusky grouse (or hooters as they are popularly known) and ptarmigan on the ABC islands (Paul 2009). Currently Dusky grouse populations remain depressed on Baranof Island are moderate on Chichagof but high on Admiralty Island.

The Alaska Trapper Report (Parr 2018) provides an abundance index derived from a mathematical equation based on response by trappers, ranking species as scarce, common or abundant. For Unit 4, beavers are ranked as scarce, marten as common, mink as abundant and river otter as common.

Management Direction

Existing Wildlife Management Plans

Greater Alaska Furbearer Management Plan in 1976 Species Management Plan (ADF&G 1976)

Goals

To provide the following:

1. An optimum harvest of furbearers.
2. The greatest opportunity to participate in hunting and trapping furbearers.

Codified Objectives

Amounts Reasonably Necessary for Subsistence Uses

The Alaska Board of Game (BOG) has made a positive subsistence finding for furbearers in all units, including Unit 4, with a harvestable surplus to be 90% of the harvestable portion (5 AAC 99.025(13).

Intensive Management

Not applicable.

Management Objectives

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

- Through regulatory restrictions, allow beaver populations to expand in western portions of the unit (Chichagof and Baranof Islands).
- Seal harvested beaver, marten, and river otter pelts as they are presented for sealing.
- Contact reliable observers for general information about the status and trends of furbearer populations, including the use of an annual trapper survey.
- Continue to monitor mink, marten, and river otter populations through carcass necropsies and evaluation of those data.

MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1.

Record observations of furbearers seen incidentally during other survey work and anecdotal reports from the public.

Data Needs

Incidental observations are insufficient for estimating the population or detecting changes that would trigger management action. However, a statistical estimate derived from a sample-based estimator, including a measure of precision that would be needed to detect changes in the population are not currently a regional priority.

Methods

GPS locations and characteristics are recorded for any furbearers observed during other field work. Most observations occur during spring deer pellet, mortality and body condition surveys. Anecdotal reports are recorded to the maximum level of detail available.

Results and Discussion

None.

Recommendations for Activity 1.1

Continue to actively seek information from trappers and others that observe furbearers.

2. Mortality-Harvest Monitoring and Regulations

ACTIVITY 2.1.

Monitor harvest through sealing records.

Data Needs

Harvest must be assessed to understand the potential impact of furbearer harvest.

Methods

Harvest data was collected by sealing hides of beaver, marten, and otter taken by trappers. Location and date of harvest, method of take, transportation mode, and sex were recorded. In the case of otters and beavers, hides were measured. Sealing must occur by ADF&G or a State appointed sealer within 30 days of the close of the season. These data are entered into ADF&G's Wildlife Information Network database (Winfonet). Harvest data were summarized by regulatory year (RY), which begins 1 July and ends June 30 (e.g., RY15 = 1 July 2015–30 June 2016).

Season and Bag Limit

Trapping Season and Bag Limits RY12–RY16

Species	Season	Bag Limit
Beaver	10 Nov-Apr 30	No limit
Marten (NE Chichagof)	1 Dec–31 Dec	No limit
Marten (Remainder)	1 Dec-15 Feb	No limit
Mink (NE Chichagof)	1 Dec–31 Dec	No limit
Mink (Remainder)	1 Dec-15 Feb	No limit
River otter	1 Dec- 15 Feb	No limit

Results and Discussion

Harvest by Hunters-Trappers

MARTEN

Harvest ranged 405–2357 for this reporting period (Table 1). The 5-year average is 909, though the RY12 season skews that number. RY12 was an exceptional year for Unit 4 trappers. Removing that year from the average results in an average annual take of 547 (RY13–RY16). Trappers reported average marten prices of over $143 per pelt in 2012 with some going for as much as $400. Up from an average of $32.92 per pelt in 2009 (Parr 2018). This likely led to higher than normal participation rates in 2012 and again in 2013, though the high take in 2012 likely influenced the 2013 harvest. Normally about 30 trappers participate each year. In 2012 and 2013 about 50 trappers successfully harvested martens. Males averaged approximately 64% of the harvest during this reporting period.

RIVER OTTER

Harvests ranged 96–178 for this reporting period (Table 2). The 5-year average is 138. Otters are both trapped and shot. On average, about 45% of otters are shot and 55% are trapped. Participation level was fairly consistent with an average of 22 successful trappers annually. Males averaged 53% of the harvest during this reporting period. Juveniles made up 36% of the harvest.

Table 1. Harvest and method of take for marten sealed in Unit 4, Alaska, RY12–RY16.

Regulatory Year	Total Harvest	Successful Participants	Percent Males	Method of Take (%)			
				Shot	Trapped	Snared	Unknown
RY12	2,357	51	64	0	100	0	0
RY13	495	49	61	0	100	0	0
RY14	405	26	62	0	100	0	0
RY15	484	29	67	0	100	0	0
RY16	804	35	64	0	100	0	0

Table 2. Harvest and method of take for otter sealed in Unit 4, Alaska, RY12–RY16.

Regulatory Year	Total Harvest	Successful Participants	Percent Males	Percent Juveniles[a]	Method of Take (%)			
					Shot	Trapped	Snared	Unknown
RY12	178	19	50	31	32	61	0	7
RY13	124	24	57	32	46	48	1	5
RY14	129	25	55	34	51	48	0	1
RY15	165	20	44	39	45	55	0	0
RY16	96	23	58	42	45	53	0	2

[a] Juvenile otter measure (length) <42"

BEAVER

Harvest ranged 26–49 for this reporting period (Table 3). The 5-year average harvest is 38 beavers. Traps were the most common method of take, and the proportion of juveniles in the harvest varied greatly. Beavers reported as shot were a result of new regulatory action in RY15 that allowed for the take of beaver with firearms. Very few people target beavers in Unit 4 with only 3–5 participants. Sex ratio of beavers in the harvest is unknown due to the difficulty of sexing beavers. Juveniles averaged 30% of the harvest during this reporting period.

OTHER SPECIES

There are no harvest data for mink, squirrels and weasels due to the absence of sealing requirements and minimal harvest and effort. Mooney (2013) derived a conversion factor based on marten sealed/marten reported on the annual trapper questionnaire and used this conversion factor to estimate that 200–400 mink are taken annually in Unit 4.

Table 3. Harvest and method of take for beavers sealed in Unit 4, Alaska, RY12–RY16.

Regulatory Year	Total Harvest	Successful Participants	Percent Juveniles[a]	Method of Take (%)			
				Shot	Trapped	Snared	Unknown
RY12	26	5	46	0	100	0	0
RY13	33	3	45	0	100	0	0
RY14	49	5	20	0	100	0	0
RY15	45	5	13	7[b]	93	0	0
RY16	35	4	26	3	97	0	0

[a] Juvenile beavers measure (length + width) < 52"
[b] Beginning in RY15 beavers could legally be taken with a firearm

Harvest Chronology

December is the peak month for both marten and river otter (Table 4). Approximately three-fourths and one-half of the harvest occurs this month, respectively. Beaver harvest is more variable and unpredictable in timing which is understandable given only 3–5 trappers participate.

Table 4. Unit 4 marten, river otter and beaver harvest chronology (%), RY12–RY16.

Regulatory Year	Month								
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	*n*
Marten									
RY12	0	0	0	76	23	1	0	0	2357
RY13	0	0	0	69	29	2	0	0	495
RY14	0	0	0	67	27	6	0	0	405
RY15	0	0	0	76	22	2	0	0	484
RY16	0	0	0	73	23	4	0	0	804
River otter[a]									
RY12	0	0	0	51	42	7	0	0	178
RY13	0	0	0	54	37	9	0	0	124
RY14	0	0	0	50	27	23	0	0	128[a]
RY15	0	0	0	57	22	21	0	0	164
RY16	0	0	0	45	20	35	0	0	56
Beaver									
RY12	0	0	0	15	31	31	19	4	26
RY13	0	0	0	0	0	42	3	55	33
RY14	0	0	12	10	0	14	27	37	49
RY15	0	0	0	9	27	11	49	4	45
RY16	0	0	17	14	6	49	0	14	35

[a] Otters taken under damage control permits outside season dates are not included in this table.

Transport Methods

Trappers in Unit 4 consistently use boats as the primary mode of transportation for all species (Table 5).

Table 5. Unit 4 marten, river otter, and beaver harvest by transport method, RY12–RY16.

	Percent of Harvest							
Regulatory Year	Airplane	Foot	Boat	3 or 4-wheeler	Snow-machine	Highway Vehicle	Unknown	*n*
Marten								
RY12	1	3	79	9	6	2	0	2357
RY13	0	3	78	9	10	0	0	495
RY14	0	6	58	2	0	34	0	405
RY15	0	12	51	6	0	31	0	484
RY16	0	5	71	7	6	10	1	804
River otter								
RY12	0	6	94	0	0	0	0	178
RY13	0	3	91	1	0	0	5	124
RY14	0	6	82	2	0	9	1	129
RY15	0	8	88	0	0	4	0	165
RY16	0	15	83	0	0	2	0	94
Beaver								
RY12	0	0	73	0	0	27	0	26
RY13	0	6	94	0	0	0	0	33
RY14	0	0	59	23	0	10	8	49
RY15	0	5	90	0	0	5	0	45
RY16	0	0	51	49	0	0	0	35

Alaska Board of Game Actions and Emergency Orders

At the March 2016 statewide Board of Game meeting the board rescinded the requirement for all traps and snares to be marked with a trapper's permanent identification or to post a sign nearby with the same information. At the 2013 BOG meeting a proposal was passed to allow the take of beavers with a firearm. No other BOG changes were made during this reporting period.

No emergency orders were issued during this reporting period.

Recommendations for Activity 2.1

Continue.

3. Habitat Assessment-Enhancement

Not Applicable.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

- Data sheets are scanned and stored on the Shared DWC server (S:\Offices\Sitka\Furbearer) and the local area biologist's hard drive.
- Original datasheets are stored in file folders located in the Sitka area biologist's office.
- Historical survey notes and data sheets are being digitized and scanned for permanent storage on the file server.

Agreements

None.

Permitting

None.

Conclusions and Management Recommendations

It is impractical to set harvest and population objectives for furbearers without any data on population levels. Quantifiable management objectives need to be established for beavers, river otters and marten. 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.

The general approach for furbearer management is to expect population levels to self-regulate trapper effort and harvest. This approach has been successful and populations though cyclical at times harvests of furbearers appear to be within sustainable limits, and no changes in seasons or bag limits are recommended.

II. Project Review and RY17–RY21 Plan

Review of Management Direction

MANAGEMENT DIRECTION

The existing management direction and goals appropriately direct management of furbearers in Unit 4. The management direction for Unit 4 ensures that furbearers will persist as part of the

natural ecosystem and ensures continued trapping (on applicable species) and viewing opportunities. There is no indication that the long-term sustainability of the furbearer populations or that statewide goals (ADF&G 1976) for human uses cannot be met; therefore, the Unit 4 management direction should continue to be that furbearers will be managed in a manner that complements the statewide furbearer management goals. There are no area-specific issues in Unit 4 that require a departure from statewide goals for furbearer management, and furbearers are not currently managed at a subunit scale.

GOALS

To provide the following:

1. An optimum harvest of furbearers.

2. The greatest opportunity to participate in hunting and trapping furbearers.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

The Alaska Board of Game has made a positive subsistence finding for furbearers in all units, including Unit 4, with a harvestable surplus to be 90% of the harvestable portion (5 AAC 99.025(13).

Intensive Management

Not applicable.

MANAGEMENT OBJECTIVES

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

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

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

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

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

REVIEW OF MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1.

Record observations of furbearers seen incidentally during other survey work and anecdotal reports from the public.

Data Needs

Incidental observations are insufficient for estimating the population or detecting changes that would trigger management action. However, a statistical estimate derived from a sample-based estimator, including a measure of precision that would be needed to detect changes in the population are not currently a regional priority.

Methods

GPS locations and characteristics are recorded for any furbearers observed during other field work. Most observations occur during spring deer pellet, mortality and body condition surveys. Anecdotal reports are recorded to the maximum level of detail available.

2. Mortality-Harvest Monitoring

ACTIVITY 2.1.

Monitor harvest through sealing records.

Data Needs

Harvest must be assessed to understand the potential impact of furbearer harvest.

Methods

We collected harvest data by sealing hides of beaver, marten, and otter taken by trappers. We recorded location and date of harvest, method of take, transportation mode, sex, and in the case otters and beavers, hides are measured. Sealing must occur by ADF&G or a State appointed sealer within 30 days of the close of the season. These data are entered into ADF&G's Wildlife Information Network database (Winfonet). Harvest data were summarized by regulatory year (RY), which begins 1 July and ends June 30 (e.g., RY15 = 1 July 2015–30 June 2016).

3. Habitat Assessment-Enhancement

Not Applicable.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

Data collected during surveys will be recorded on datasheets and transcribed into the furbearer observations spreadsheet located on the Sitka server.

Agreements

None.

Permitting

None.

References Cited

Alaska Department of Fish and Game. 1976. Alaska wildlife management plans: A public proposal for the management of Alaska's wildlife: Southeastern Alaska. Draft proposal subsequently approved by the Alaska Board of Game. Division of Game, Federal Aid in Wildlife Restoration Project W-17-R, Juneau.

Alaska Game Commission. Annual Reports, 1925 to 1937. Juneau, Alaska. Mimeo.

Ben-David, M., R. W. Flynn, and D. M. Schell. 1997. Annual and seasonal changes in diets of martens: evidence from stable isotope analysis. Oecologia 111:280–291.

Buskirk, S. W., and L. F. Ruggiero. 1994. The American marten. Pages 7–37 in L. F. Ruggiero, K. B. Aubry, S. W. Buskirk, L. J. Lyon, and W. J. Zielinski, editors. The scientific basis for conserving forest carnivores: American marten, fisher, lynx, and wolverine in the western United States. U.S. Forest Service General Technical Report RM-254.

Elkins, W. A. and U. C. Nelson. 1954. Wildlife introductions and transplants in Alaska. Proceedings 5th Alaska Science Conference. 21pp.

Flynn, R. W. 1993. Ecology of martens in Southeast Alaska. Alaska Department of Fish and Game, Division of Wildlife Conservation, Federal Aid Research Progress Report 1 July 1992-30 June 1993, Federal Aid in Wildlife Restoration Study 7.16, Juneau.

Flynn, R. W., and T. V. Schumacher. 2016. Age structure and fecundity of martens trapped on Chichagof Island, Southeast Alaska, 1991–1998. Alaska Department of Fish and Game, Wildlife Research Report ADF&G/DWC/WRR-2016-8, Juneau.

Flynn, R. W., T. V. Schumacher, and M. Ben-David. 2004. Abundance, prey availability and diets of American martens: Implications for the design of old-growth reserves in Southeast Alaska. Alaska Department of Fish and Game, Division of Wildlife

Conservation, U.S. Fish and Wildlife Service Grant, Final Report, DCN 70181-1-G133, Douglas.

Lensink, C. J., R. O. Skoog and J. L. Buckley. 1955. Food habits of marten in Interior Alaska and their significance. Journal of Wildlife Management (19):364–368.

Mooney, P. 2007. Unit 4 furbearer management report. Pages 64–74 [*In*] P. Harper, editor. Furbearer management report of survey and inventory activities 1 July 2003–30 June 2006. Alaska Department of Fish and Game, Division of Wildlife Conservation, Federal Aid in Wildlife Restoration Project 7.0, Juneau.

Mooney, P. 2013. Unit 4 furbearer management report. Pages 75–86 [*In*] P. Harper and Laura A. McCarthy, editors. Furbearer management report of survey and inventory activities 1 July 2009–30 June 2012. Alaska Department of Fish and Game, Species Management Report, ADF&G/DWC/SMR-2013-5, Juneau.

Parr, B. L. 2018. 2013 Alaska trapper report: 1 July 2013–30 June 2014. Alaska Department of Fish and Game, Wildlife Management Report ADF&G/DWC/WMR-2018-1, Juneau.

Paul, T. W. 2009. Game transplants in Alaska. Alaska Department of Fish and Game, Division of Wildlife Conservation, Technical Bulletin No. 4, 2nd edition, Juneau.

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, Division of Wildlife Conservation, Federal Aid in Wildlife Restoration Project 7.0. Juneau.


ALASKA
DEPARTMENT OF FISH AND GAME