Species Management Report and Plan ADF&G/DWC/SMR&P–2021–3

Brown Bear Management Report and Plan, Game Management Unit 5:

Report Period 1 July 2014–30 June 2019, and

Plan Period 1 July 2019–30 June 2024

Roy Churchwell

2021

Alaska Department of Fish and Game Division of Wildlife Conservation

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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 reviewed and approved for publication by Richard Nelson, Management Coordinator for the Division of Wildlife Conservation.

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Cover Photo: ©2015 ADF&G. Photo by Ken Kollmo. Brown bears fishing in a stream littered with salmon carcasses.

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Purpose of this Report

This report provides a record of survey and inventory management activities for brown bear (*Ursus arctos*) in Unit 5 for the 5 regulatory years 2014–2018 and plans for survey and inventory management activities in the following 5 regulatory years 2019–2023. 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 it 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 brown bear management report of survey and inventory activities that was previously produced every 2 years.

I. RY14–RY18 Management Report

Management Area

The Unit 5 management area is 5,800 mi^2, including the mainland Gulf of Alaska coast from Cape Fairweather to Icy Bay and inland to the Canadian border (Fig. 1). Unit 5A extends from Cape Fairweather to Yakutat Bay. The Yakutat Forelands and foreland habitat down to Dry Bay within Unit 5A is split roughly in half east and west by the Dangerous River. The area west of the Dangerous River is close to Yakutat with more road and river access compared to the area east of the Dangerous River which is more remote and accessed primarily by aircraft or boat. Unit 5B, from Yakutat Bay to Icy Bay, is also remote and accessed primarily by aircraft or boat. Yakutat is the only municipality in Unit 5 (population 579; United States Census Bureau 2020), and the major economic drivers are fishing, logging, and government employment (native, municipal, state, and federal government). Nearly all of Unit 5A is Tongass National Forest, Glacier Bay National Park, or Glacier Bay National Preserve. The Park was established in 1925 (U.S. Department of the Interior 2020a). Almost all of Unit 5B is Wrangell-St. Elias National Park and Wrangell-St. Elias National Preserve, which was designated as a provision of the Alaska National Interest Lands Conservation Act (ANILCA) legislation in 1980 (U.S. Department of Interior 2020b).

The entire Yakutat Forelands between the coast and the ice fields is potential brown bear habitat. The forelands contain a variety of habitats, including open sedge meadows, willow flats, mixed stands of spruce and cottonwood, thick stands of spruce and hemlock, riparian stream corridors, beach fringes, and mountainous regions. These habitats contain vegetative forages such as grasses, sedges, devil's club, skunk cabbage, cow parsnip, blueberries, salmonberries, strawberries, and cranberries. In addition, the forelands are rich in all 5 species of salmon that are found in Alaska: sockeye, chum, pink, Chinook, and coho. Streams containing salmon are distributed throughout the forelands, and bears have widespread access to fish. There are also eulachon present in some streams during the early spring. Moose calves might provide an additional food source in the spring; the forelands harbor an estimated 600–800 moose (Scott 2014).

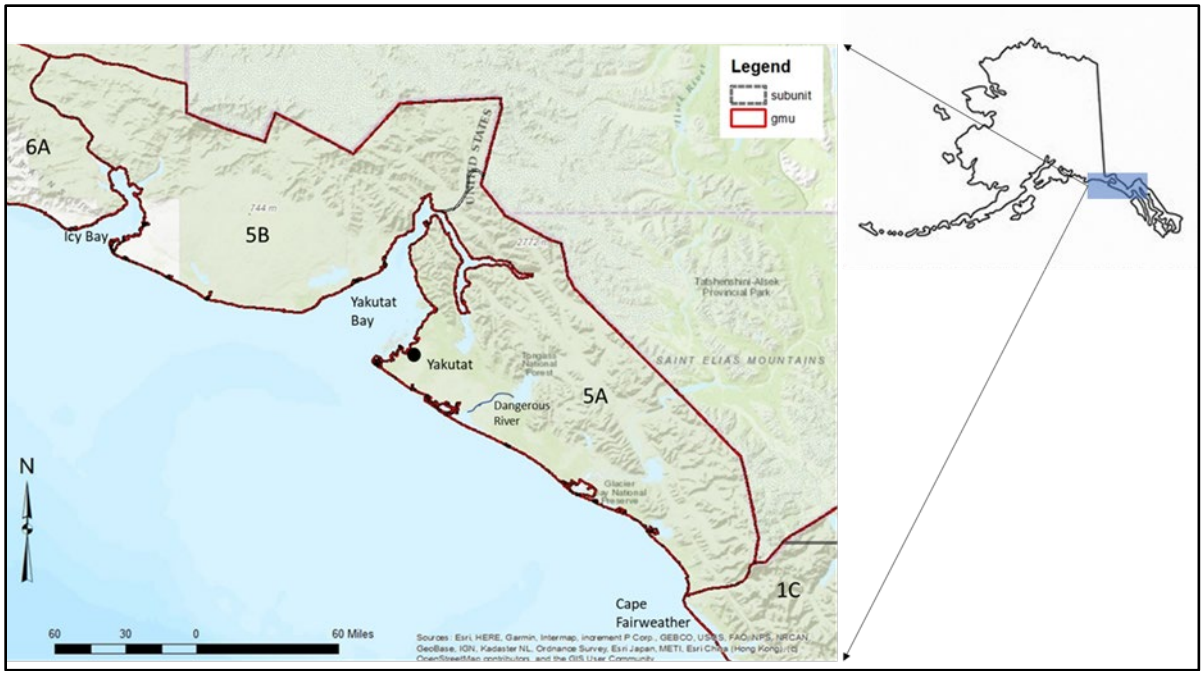

Figure 1. Map of Game Management Unit 5, Yakutat area, Southeast Alaska.

The Unit 5 area has a subarctic climate with temperate rainforests. The average January high temperate is 36°F and the August high temperature is 57°F (NOAA 2018). Yakutat is considered one of the wettest towns in the state with a recorded average annual precipitation of 130 inches including 150 inches of snow that typically falls between November and April (NOAA 2018).

Summary of Status, Trend, Management Activities, and History of Brown Bear in Unit 5

In the early 1990s, Brown bear populations were estimated to be 108 bears in Unit 5B and 522 bears in Unit 5A (Miller 1993). These estimates were based on density estimates derived from brown bear research on Admiralty and Chichagof Islands. Starting in 2008, brown bear population research began in Unit 5. This research concluded that the 5A population estimate was 354 ± 29 bears (95% CI 301–416; Crupi et al. 2017). The difference in these estimates is due to different methods and not changes in the population. The more recent effort is considered the most reliable brown bear population estimate. Research in 5B did not estimate the population size but reported that females had similar home range size in the units (5B = 144 km^2 and 5A = 184 km^2), but 5B male home range size (460 km^2) was almost double 5A (211 km^2; Crupi et al. 2014, 2017).

The history of brown bear management and regulations in Unit 5 includes the prohibition of harvesting both cubs and sows with cubs which was instated in 1960; and the requirement for bears to be sealed (Thornton 1992). Sealing refers to the process of a bringing the skull and hide to an authorized sealing officer to have a locking tag placed and biological information collected. The regulation that limited brown bear harvest to 1 bear every 4 years was initiated in 1968 (5AAC 85.020(a)(4)). The Board of Game approved the registration permit for Unit 5 brown bear hunts in 2000 (RB090; Barten 2003). The RB090 registration permit provides managers with timely information during the current hunting season which allows managers to monitor the harvest closely and issue Emergency Orders as needed. Following the implementation of RB090,

regulations were lifted that limited the number of guides in Southeast Alaska, which ADF&G managers expected to increase guided hunting pressure (Dinneford 1991). In response, the U.S Forest Service limited guided hunting in 2001 by issuing a limited number of Special Use Permits to guide on federal lands. The number of permits were set to reflect the mean number of permits held in 1998 and 1999 guide seasons. This provided insurance that guided hunter harvest would not increase beyond bear population sustainability. There are 4 Guide Use Areas in Unit 5A and 1 in Unit 5B. However, there are no guides that hunt brown bear in Unit 5B, and guide use of Unit 5A includes 3 brown bear and 31 any-bear Special Use Permits provided by the U.S. Forest Service. Finally, to increase reporting compliance "Failure To Report" (FTR) regulations were adopted at the 2003 Board of Game (BOG) meeting creating a penalty of reduced hunting opportunity and a citation when hunters did not report their hunting effort regardless of success (Scott 2009).

Management Direction

Existing Wildlife Management Plans

The most recent formally adopted plan was the Southeast Alaska Mainland brown bear management plan included in wildlife management plans for the region that were developed in 1976 (ADF&G 1976). Management objectives, as adapted through the years since the 1976 plan, based on public input and Board of Game action, are documented in previous brown bear management reports for Unit 5.

Goals

To provide the greatest opportunity to participate in hunting brown bears in Unit 5.

Codified Objectives

Amounts Reasonably Necessary for Subsistence Uses

The Alaska Board of Game has made a positive finding for customary and traditional use of brown bears in Unit 5 and set 3–6 brown bears as the amount necessary for subsistence (ANS; 5 AAC 99.025(a)(3)).

Intensive Management

Not applicable.

Management Objectives

Maintain a male-to-female harvest ratio of at least 3:2 and an average age of harvested males of at least 6.5 years.

Management Activities

1. Population Status and Trend

Activity 1.1. Monitor the brown bear population in Unit 5.

Data Needs

Harvest metrics are considered useful in detecting a notable change in brown bear populations; however, significant population change would be required to observe a population-level change using harvest data metrics. Low harvest equates to a small samples size can also make monitoring harvest indices difficult because estimates from a few animals may not represent the population.

Methods

Monitoring the population status and trend was accomplished by collecting and analyzing the data for harvested bear sex ratios, age, and skull sizes. For example, Unit 5 hunters commonly target large male brown bears for harvest, and an observed increase in female harvest is an indicator of a decline in mature male bears, signaling a decline in the overall brown bear population. Similarly, a decline in age and skull size could indicate a decline in the proportion of mature bears in the population because hunters are harvesting younger bears with smaller skulls.

Sex, age, and skull size data were collected during the brown bear sealing process. Hunters were required to keep evidence of sex naturally attached to the hide until the animal was sealed, and the sex was determined at the time of sealing through observation of a penis sheath or teats and vulva. Age was measured by counting cementum layers in a premolar tooth. Teeth were sent to Matson's Laboratory (Matson et al. 1993) each year for age analysis. Skull size was measured as the sum of the skull length (measured from the top of the occipital bone to the end of the nose/front teeth) plus the skull width (measured across the skull at the zygomatic arch).

Results and Discussion

Monitoring indices fell within management guidelines for the current reporting period. The average female sex ratio for the reporting period (RY14–RY18) is 29% (range = 19–40%; Table 1). This is a decrease from the average of the previous reporting period (RY09–RY13), which was 32% (range = 14–44%). The male-to-female harvest ratio averaged across the reporting period was less than the management objective of 3:2, but 2 individual years were higher than the objective (RY14 and RY18). The average age for a male brown bear during RY14–RY18 was 7.4 years, which is similar to the previous reporting period (RY09–RY13), which was 7.7 years (Table 2). The male bear age was older than our management objective of 6.5 years during RY14–RY18. Finally, skull size for male bears was also similar in the current reporting period compared to the previous period with an average of 23.8 inches for RY14–RY18 and 23.2 inches for RY09–RY13. The high variability among years in these indices is due to low samples size as harvest is less than 10 bears in some years.

Recommendations for Activity 1.1

Monitoring of population status and trend through harvested bear sex ratio, age, and skull size will continue to build upon a long-term data set allowing the continued evaluation of these indices.

Table 1. Unit 5, Alaska, brown bear harvest and other mortality, regulatory years 2009–2018.

Regulatory year	Reported										
	Hunter kill				Nonhunting kill[a]			Total estimated kill			
	M (%)	F (%)	Unk	Total	M	F	Unk	M (%)	F (%)	Unk	Total
2009											
Fall 2008	(67)	(33)	0	18	1	1	0	(65)	(35)	0	20
Spring 2009	(78)	(22)	0	9	0	0	0	(78)	(22)	0	9
Total	(70)	(30)	0	27	1	1	0	(69)	(31)	0	29
2010											
Fall 2009	(75)	(25)	0	8	5	0	0	(85)	(15)	0	13
Spring 2010	(100)	(0)	0	6	1	0	3	(70)	(0)	3	10
Total	(86)	(14)	0	14	6	0	3	(78)	(9)	3	23
2011											
Fall 2011	(47)	(53)	0	15	4	3	1	(48)	(48)	1	23
Spring 2012	(70)	(30)	0	10	0	1	0	(64)	(36)	0	11
Total	(56)	(44)	0	25	4	4	1	(53)	(44)	1	34
2012											
Fall 2012	(63)	(37)	0	16	3	2	0	(62)	(38)	0	21
Spring 2013	(67)	(33)	0	3	0	2	1	(33)	(50)	1	6
Total	(63)	(37)	0	19	3	4	1	(56)	(41)	1	27
2013											
Fall 2013	(55)	(45)	0	9	0	0	0	(56)	(44)	0	9
Spring 2014	(80)	(20)	0	5	3	3	0	(64)	(36)	0	11
Total	(64)	(36)	0	14	3	3	0	(60)	(40)	0	20
2014											
Fall 2014	(63)	(37)	0	8	3	4	0	(53)	(47)	0	15
Spring 2015	(100)	(0)	0	8	0	0	1	100)	(0)	0	8
Total	(81)	(19)	0	16	3	4	1	(70)	(30)	0	23
2015											
Fall 2015	(50)	(50)	0	4	1	2	0	(43)	(57)	0	7
Spring 2016	(100)	(0)	0	1	0	0	0	100)	(0)	0	1
Total	(60)	(40)	0	5	1	2	0	(50)	(50)	0	8
2016											
Fall 2016	(33)	(67)	0	3	1	1	0	(40)	(60)	0	5
Spring 2017	(100)	(0)	0	5	0	0	0	(100)	(0)	0	5
Total	(75)	(25)	0	8	1	1	0	(70)	(30)	0	10
2017											
Fall 2017	(60)	(40)	0	5	0	0	1	(50)	(33)	1	6
Spring 2018	(100)	(0)	0	3	0	0	0	(100)	(0)	0	3
Total	(75)	(25)	0	8	0	0	1	(67)	(22)	1	9
2018											
Fall 2018	(62)	(38)	0	13	3	0	0	(69)	(31)	0	16
Spring 2019	(67)	(33)	0	3	0	0	0	(67)	(33)	0	3
Total	(63)	(37)	0	16	3	0	0	(68)	(32)	0	19

[a] Includes defense of life or property (DLP; 5 AAC 92.410), illegal harvest, research mortalities, natural mortalities, and other known human-caused accidental mortalities.

Table 2. Unit 5, Alaska, annual mean skull size and age for male and female brown bears, regulatory years 2009–2018.

Regulatory	Mean skull size[a]				Mean age[b]			
year	Male	(*n*)	Female	(*n*)	Male	(*n*)	Female	(*n*)
2009	22.4	18	20.1	8	9.6	19	6.4	7
2010	23.9	12	20.9	2	8.7	11	2.5	2
2011	23.0	14	21.3	11	6.7	12	8.1	10
2012	22.7	12	21.0	7	5.7	12	8.0	7
2013	24.1	9	20.9	4	7.9	9	5.5	4
2014	24.6	13	22.2	3	8.2	13	10.3	3
2015	22.8	3	21.5	2	6.0	3	12.0	2
2016	23.2	6	22.4	2	8.2	6	8.5	2
2017	23.9	6	21.0	2	7.3	6	8.5	2
2018	24.7	10	21.7	4	7.5	10	9.5	6
$\bar{x}$[c]	23.8	–	21.8	–	7.4	–	9.8	–
Total	–	38	–	13	–	38	–	15

[a] Mean skull size is measured in inches. Skull size is equal to length plus zygomatic width.
[b] Mean age is measured in years. Determined through successful analyses of extracted premolar teeth. Some samples are not viable for aging.
[c] Average ($\bar{x}$) of regulatory years 2014–2018.

2. Mortality-Harvest Monitoring and Regulations

ACTIVITY 2.1. Monitoring brown bear harvest through sealing records.

Data Needs

Sealing of legally harvested brown bears has been required since 1960. Registration hunt reporting on nonharvest hunts has been required since 2003. During sealing, data are collected for indices of trends, but also information on hunt location, date of harvest, method of take, transportation mode, and the use of any services including a guide.

Methods

ADF&G staff collected harvest data by sealing hides and skulls of brown bears and through registration permit reporting. At the time of sealing a locking tag was attached to the skull and hide and the following were recorded: the location and date of harvest, method of take, transportation mode, services used (including use of a guide), sex, age, skull width, and skull length. Harvest was required to be reported within 10 days of kill. Sealing must be completed by an authorized ADF&G staff member or a state-appointed sealer within 30 days of the kill. These data were 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

Area	Season	Bag Limit	Residency
Unit 5	1 September–31 May	1 bear every 4 regulatory years	Resident and nonresident

Results and Discussion

Harvest by Hunters

Unit 5 brown bear harvest was lower this reporting period (RY14–RY18) with an average harvest of 10.6 bears (range = 5–16) compared to the previous reporting period (RY09–RY13) which had an average harvest of 19.8 bears (range = 14–27; Table 1). On average, during the reporting period, 62% of the harvest occurred in the fall which is a similar trend as RY09–RY13 where 66% of the harvest occurred in the fall. (Table 3). During this reporting period 2% (3 animals) of the harvest occurred in Unit 5B, 40% in the Glacier Bay National Preserve at the southern end of Unit 5A, and the remainder of the harvest was scattered throughout the remainder of Unit 5A.

Table 3. Unit 5, Alaska, timing of brown bear harvest, regulatory years 2009–2018.

Regulatory	Fall		Spring	
year	Harvest	Percent of total	Harvest	Percent of total
2009	18	(67)	9	(33)
2010	8	(57)	6	(43)
2011	15	(60)	10	(40)
2012	16	(84)	3	(16)
2013	9	(64)	5	(36)
2014	8	(50)	8	(50)
2015	4	(80)	1	(20)
2016	3	(37)	5	(63)
2017	5	(63)	3	(37)
2018	13	(81)	3	(19)
$\bar{x}$[c]	6.6	(62)	4	(38)

[c] Average ($\bar{x}$) of regulatory years 2014–2018.

Permit Hunts

The fall and spring hunts are administered under 1 registration hunt for Unit 5 (RB090). The number of hunters getting a permit and participating in this hunt decreased during this reporting period (RY14–RY18), with an average of 60 permits and 28 hunters compared to the previous period (RY09–RY13) which averaged 87 permits and 50 hunters (Table 4); this indicates that there were about half as many hunters this reporting period compared to the previous reporting period. Even with the change in the number of hunters, hunter success was similar, with a 39% success rate during the RY14–RY18 reporting period and 38% success in the previous reporting period (RY09–RY13).

Table 4. Unit 5, Alaska, brown bear registration spring/fall permit hunt number RB090 participation and success, regulatory years 2009–2018.

Regulatory year	Permits issued	Number hunted	Number did not hunt	Percent successful hunters	Bear harvest			
					Males	Females	Unknown	Total
2009	109	68	38	(40)	19	8	0	27
2010	83	39	44	(38)	13	2	0	15
2011	88	53	33	(47)	15	10	0	25
2012	82	46	35	(39)	13	5	0	18
2013	75	43	32	(33)	9	5	0	14
2014	79	47	31	(34)	13	3	0	16
2015	52	16	35	(31)	3	2	0	5
2016	55	23	32	(35)	6	2	0	8
2017	50	23	27	(35)	6	2	0	8
2018	62	30	32	(57)	10	6	1	17

Hunter Residency and Success

During RY14–RY18, the majority of the Unit 5 harvest (55%) was taken by nonresident hunters compared to 23.2% by resident hunters, and 21.8% by nonlocal resident hunters (Table 5). Nonresident participation decreased and resident participation increased from the previous reporting period (7.6% for residents, 64.6% nonresidents, and 27.8% for nonlocal residents; Table 5).

Table 5. Unit 5, Alaska, brown bear hunt success by residency, regulatory years 2009–2018.

Regulatory year	Local resident (%)	Nonlocal resident (%)	Nonresident (%)	Unknown (%)	Total successful hunters
2009	(7)	(37)	(56)	(0)	27
2010	(7)	(36)	(57)	(0)	14
2011	(8)	(20)	(72)	(0)	25
2012	(16)	(32)	(52)	(0)	19
2013	(0)	(14)	(86)	(0)	14
2014	(6)	(13)	(81)	(0)	16
2015	(40)	(20)	(40)	(0)	5
2016	(38)	(38)	(24)	(0)	8
2017	(13)	(13)	(74)	(0)	8
2018	(19)	(25)	(56)	(0)	16

Harvest Chronology

Harvest was highest in the fall during September and October with an average of 34% and 25%, respectively, for RY14–RY18 with some harvest in April (6%) and May (32%; Table 6). A single bear was occasionally harvested in November and December. The pattern of harvest from the previous reporting period was similar with 44% and 21% in September and October, and 7% and 26% in April and May, respectively.

Table 6. Unit 5, Alaska, brown bear harvest chronology by month, regulatory years 2009–2018.

Regulatory	Harvest periods							
year	September	October	November	December	April	May	June	Total
2009	10	7	1	0	2	7	0	27
2010	5	3	0	0	1	5	0	14
2011	13	2	0	0	2	8	0	25
2012	12	4	0	0	0	3	0	19
2013	4	5	0	0	2	3	0	14
2014	6	2	0	0	3	5	0	16
2015	2	2	0	0	0	1	0	5
2016	1	1	1	0	0	5	0	8
2017	3	2	0	0	0	3	0	8
2018	6	6	0	1	0	3	0	16

Transport Methods

Hunters in Unit 5 use a variety of transportation types including airplanes (20%), boats (17%), off-road vehicles (ORV; 38%), and highway vehicles (23%; Table 7). There was a decrease from the previous reporting period in airplane use from 45% during RY09–RY13 to 20% during RY14–RY18; boat and ORV use for hunting remained about the same as the previous reporting period. Local hunters have reported a lack of aerial transport at the Yakutat airport for brown bear hunters which they believe to be responsible for the decline in bear harvest.

Other Mortality

Nonhunt mortality was high in and around Yakutat. In 2014 there were 3 brown bears killed in defense of life or property (DLP; 5 AAC 92.410), 3 agency kills, and 2 mortalities from natural or unknown causes; in 2015 there was 1 DLP and 2 agency kills; in 2016 there were 2 DLPs; in 2017 there was 1 natural/unknown mortality; and in 2018 there was 1 DLP, 1 agency kill, and 1 natural/unknown mortality; that is a total of 17 nonhunt mortalities during the reporting period with 2014 having the highest annual mortality of 8 bears (Table 1). The City and Borough of Yakutat landfill has been a longstanding attractant for bears to the outskirts of Yakutat. None of the mortalities during this period occurred at the landfill, but some bears could be attracted to the townsite by the landfill because the trash is still not secured from bears.

Table 7. Unit 5, Alaska, brown bear percent harvest by transport method, regulatory years 2009–2018.

Regulatory year	Number of hunters						No. successful hunters
	Airplane	Boat	Walk	ORV[a]	Highway vehicle	Other/ unknown	
2009	19	7	0	0	1	0	27
2010	4	5	0	3	2	0	14
2011	11	3	1	9	1	0	25
2012	8	3	0	4	4	0	19
2013	3	3	0	6	2	0	14
2014	1	2	0	11	2	0	16
2015	2	0	0	2	1	0	5
2016	1	2	0	2	3	0	8
2017	3	3	0	0	2	0	8
2018	4	2	1	5	4	0	16

[a] off-road vehicle.

Alaska Board of Game Actions and Emergency Orders

There were no BOG actions during this reporting period.

No emergency orders were issued during this reporting period.

Recommendations for Activity 2.1

Monitoring of brown bear harvest in Unit 5 should continue. Overall harvest is low, averaging 10 bears during RY14–RY18 (Table 4). With low harvest, variability between years can be high, and averages based on only 1 year should be assessed with consideration of the sample size.

3. Habitat Assessment-Enhancement

Although the focus of the research was a population estimate, there was some assessment of habitat during the brown bears research that was conducted in the Yakutat area (Crupi et al. 2017). This research found 1,133 km^2 of bear habitat in Unit 5A. Furthermore, an extensive assessment was completed of the brown bear habitat in Unit 5B (Crupi et al. 2014). Researchers highlighted that brown bears in this unit selected low-elevation areas near herbaceous habitats and preferred a mosaic of coniferous and deciduous forests.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

Sealing data are archived in WinfoNet back to 1960, including scans of the original data sheets. Scans between 1978 and 1985 are incomplete or missing. Hard copies of some years, especially the most recent years, are on file in the Douglas ADF&G office.

Agreements

There are currently no agreements regarding brown bear in Unit 5.

Permitting

All brown bear hunting in Unit 5 is managed using registration permits with an associated hunt report requirement.

Conclusions and Management Recommendations

The total brown bear harvest (n = 53) across Unit 5 was about half the harvest of the previous reporting period (n = 99). Local residents believe that this is due to a lack of aircraft available to transport bear hunters. The estimated brown bear population for Unit 5A of 354 bears (Crupi et al. 2017) and a 4% management harvest allowance would allow the take of 14 bears. For most of this reporting period the harvest was lower, ranging from 5 to 17 brown bears. The population estimate in Unit 5B was 108 bears with an annual allowable harvest of about 4 bears using a 4% management harvest allowance. Therefore, the 3 bears harvested in Unit 5B during the entire reporting period did not approach the harvest limit. Management objectives were met or exceeded during the reporting period. There are no recommendations for changes in seasons or regulations.

II. Project Review and RY19–RY23 Plan

Review of Management Direction

The existing management and goals appropriately direct the management of brown bears in Unit 5. The management direction for Unit 5 ensures that brown bears will persist as part of the natural ecosystem and ensures continued hunting and viewing opportunities.

MANAGEMENT DIRECTION

GOALS

To provide the greatest opportunity to participate in hunting brown bears in Unit 5.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

The Alaska Board of Game has made a positive finding for customary and traditional use of brown bears in Unit 5 and set 3–6 brown bears as the amount necessary for subsistence (ANS; 5 AAC 99.025(a)(3)).

Intensive Management

Not applicable.

MANAGEMENT OBJECTIVES

Maintain a male-to-female harvest ratio of at least 3:2 and an average age of harvested males of at least 6.5 years.

REVIEW OF MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Monitor the brown bear population in Unit 5.

Data Needs

Harvest metrics are considered useful in detecting a notable change in brown bear populations; however, significant population change would be required to observe a population-level change using harvest data metrics.

Methods

Monitoring the population status and trend will be accomplished by following changes in the data for harvested bear sex ratios, age, and skull sizes. For example, Unit 5 hunters commonly select large male brown bears for harvest, and an observed increase in female harvest is an indicator of a decline in mature male bears, signaling a decline in the overall brown bear population. Similarly, a decline in harvest age and skull size could indicate a decline in the proportion of mature bears in the population because hunters are harvesting young bears with smaller skulls.

Sex, age, and skull size data will be collected during the brown bear sealing process. Hunters are required to keep evidence of sex naturally attached to the hide until the animal is sealed and the sex will be determined at the time of sealing through observation of a penis sheath or teats and vulva. Age will be measured by counting cementum layers in a premolar tooth. These teeth will be sent to Matson's Laboratory (Matson et al. 1993) each year for analysis. Skull size will be measured as the sum of the skull length (measured from the top of the occipital bone to the end of the nose/front teeth) plus the skull width (measured across the skull at the zygomatic arch).

2. Mortality-Harvest Monitoring

ACTIVITY 2.1. Monitoring brown bear harvest through sealing records.

Data Needs

During sealing, data will be collected for indices of trends, but also information on hunt location, date of harvest, method of take, transportation mode, and the use of any services including a guide.

Methods

ADF&G staff will collect harvest data by sealing hides and skulls of brown bears and through registration permit reporting. At the time of sealing, ADF&G sealers will collect the following

information: the location and date of harvest, method of take, transportation mode, services used (including guide use), sex, age, skull width, and skull length. Harvest is required to be reported within 10 days, and sealing should be completed by ADF&G staff or a state-appointed sealer within 30 days of the kill. These data will be entered into ADF&G's Wildlife Information Network database (WinfoNet). Harvest data will be 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

There are currently no projects planned for brown bear habitat management in Unit 5. There are several small-scale logging projects near Yakutat that are likely to impact brown bear denning habitat and feeding areas until berry shrubs regrow.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

Species management reports and plans and the management operational plan for brown bear in Unit 5 are available online at: www.wildlifepublications.adfg.alaska.gov. Memoranda, data forms, and additional hard copies will be stored in the Juneau/Douglas area biologist's files in Douglas.

Agreements

None.

Permitting

None.

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