Black Bear Management Report and Plan, Game Management Unit 1C:

Report Period 1 July 2013–30 June 2018, and

Plan Period 1 July 2018–30 June 2023

Roy Churchwell

2020

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 Stephen Bethune, Area Wildlife Biologist for the Division of Wildlife Conservation.

Species management reports and plans are available via the Alaska Department of Fish and Game's public website (www.adfg.alaska.gov) or by contacting Alaska Department of Fish and Game's Division of Wildlife Conservation, PO Box 115526, Juneau, AK 99811-5526; phone: (907) 465-4190; email: dfg.dwc.publications@alaska.gov. The report may also be accessed through most libraries, via interlibrary loan from the Alaska State Library or the Alaska Resources Library and Information Services (www.arlis.org).

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Cover Photo: © 2011 ADF&G. Photo by Boyd Porter. Black bear fishing for salmon.

Contents

List of Figures

List of Tables

Purpose of this Report

This report provides a record of survey and inventory management activities for black bears in Unit 1C for the 5 regulatory years 2013–2017 and plans for survey and inventory management activities in the following 5 regulatory years 2018–2022. 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 (ADF&G, the department) Division of Wildlife Conservation (DWC) 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 black bear management report of survey and inventory activities that was previously produced every 3 years.

I. RY13–RY17 Management Report

Management Area

Game Management Unit (GMU) 1C includes the mainland area of Southeast Alaska from Cape Fanshaw north to the latitude of Eldred Rock on both the east and west side of Lynn Canal, and out to the Pacific Ocean at Cape Fairweather (Fig. 1). Unit 1C also includes several islands of which Douglas, Shelter, Lincoln, and Sullivan are the largest. Other landmarks within the unit are Port Houghton, Hobart Bay, Endicott Arm, Tracy Arm, Snettisham, the Taku River, Berners Bay, most of the Chilkat Mountain Range, and most of Glacier Bay National Park. Juneau is the largest community in the unit with approximately 32,000 people (United States Census Bureau 2020). Gustavus has an estimated population of 442 people (United States Census Bureau 2020). The unit is more than 13,000 mi^2 in area and measures approximately 200 miles in distance from north to south. The economy of the region is based on tourism, fishing, and mining. Most of Unit 1C is included in the Juneau nonsubsistence area (5 AAC 99.015(a)(2)). Most of the unit is managed by the U.S. Forest Service, Tongass National Forest including the Endicott River Wilderness (98,700 acres) and Tracy Arm-Fords Terror Wilderness (653,200 acres) that were designated as a provision of the Alaska National Interest Lands Conservation Act (ANILCA) legislation in 1980 (USDA n.d.). The other large land management unit is Glacier Bay National Park which was established in 1925 (U.S. Department of the Interior 2020). Most of its 3.3 million acres lie within Unit 1C.

Much of the Unit 1C mainland is comprised of glaciers, but between the icefields and the coast are upland alpine areas, alder (*Alnus* spp.) covered slopes, and coniferous rainforest. Berry species are important to black bears including blueberry (*Vaccinium* spp.), salmonberry (*Rubus spectabilis*), and devil's club (*Oplopanax horridus*) that are common in forests while blueberry, crowberry (*Empetrum nigrum*), and cranberry (*Vaccinium* spp.) are common in alpine habitat. Most of the low gradient streams and rivers support spawning salmon from late summer into the fall. In the spring, bears find new grass shoots and other vegetation springing up in coastal meadows and on mountain slopes with a southerly exposure. The average daily high temperature for the region in January is 30°F and in July is 57°F (NOAA 2018a). Rainfall ranges from 28 to 85 inches (NOAA 2018b). Snowfall averages 94 inches and falls mostly November through March (NOAA 2018b).

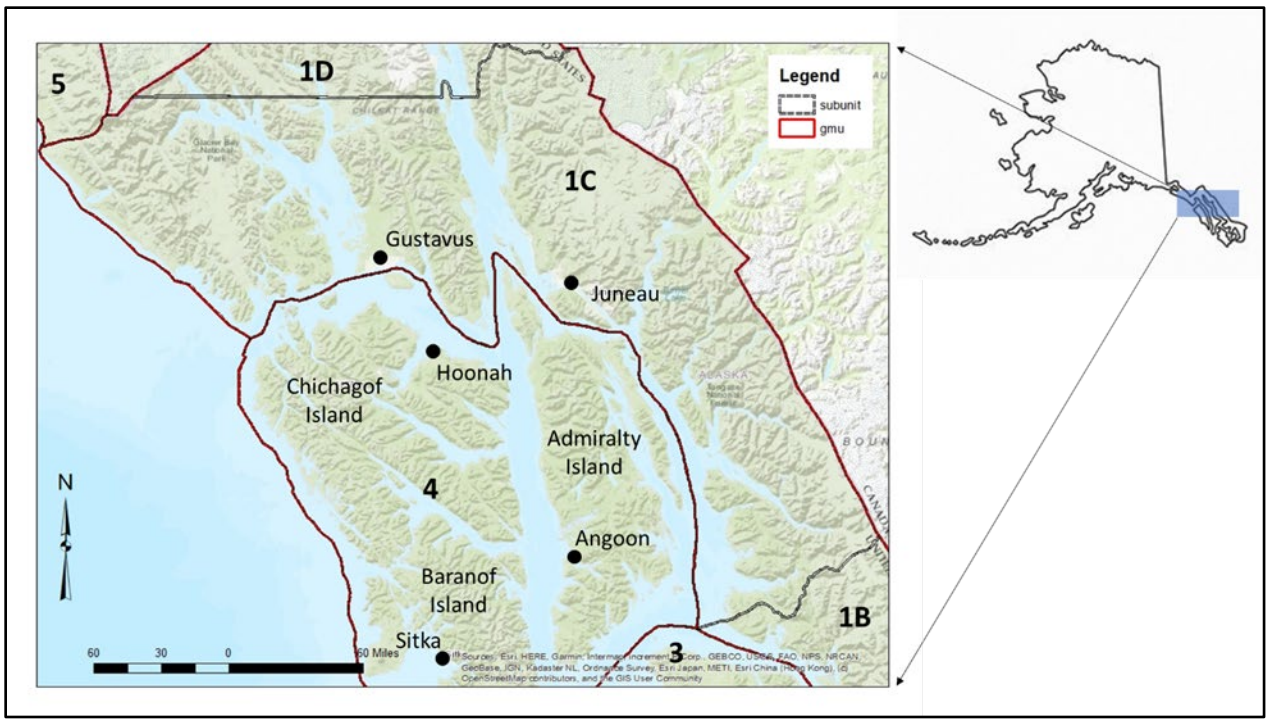

Figure 1. Map showing Game Management Unit 1C boundaries, and local communities in Southeast Alaska.

Summary of Status, Trend, Management Activities, and History of Black Bear in Unit 1C

Black bears are a heavily harvested species in Unit 1C with most of the harvest occurring in the spring (Beaudin 1977; Sell 2014). Boats are used to hunt the coast during green-up. Historically, resident hunters have outnumbered nonresident hunters up until the early 2000s. Since that time, the number of nonresident hunters has increased across Southeast Alaska, including Unit 1C.

Sealing of black bears started in 1973 in Unit 1C, and the first management report was written in 1974 with a harvest of 47 black bears (Johnson 1974). Sealing refers to the placement of a locking metal or plastic band affixed to the skull or hide of the bear after harvest by an authorized ADF&G representative referred to as a sealer. At the time an animal is sealed, data is collected for each animal such as location of harvest, date of harvest, method of take, transportation mode, skull width and length, sex, and age. Starting with early records from the 1960s, harvest was around 50 bears annually until the mid-1980s. During the following 6 years, there was a restricted harvest of one bear per year until 1986; after which, the harvest of 2 bears per year was allowed for resident hunters. Through the 1980s and 1990s harvest began increasing and was more than 150 by 2000 (Barten 2002). Until 2012, annual harvest averaged about 100 bears (Sell 2014). In 2012 there was a change to the federal regulation of guide use across Southeast Alaska that decreased nonresident hunting pressure, and as a result, harvest declined to about 50 bears. Furthermore, in 2012 the BOG allowed a switch for harvest tickets to go to a draw for nonresident nonguided black bear hunters across Southeast Alaska (except in Unit 5) with the goal of reducing the number of nonresident hunters.

There are 3 color phases that occur in Unit 1C black bears. About 12% of the harvest are cinnamon phase bears, and <1% are blue or glacier phase bears. The blue and cinnamon phases are color variants of the black-colored black bear species. The blue-phase black bear is a world-renowned big game animal that brings hunters from all over the world to Southeast Alaska. The first recorded blue-phase bear was harvested in Unit 1C in 1995 and the blue phase has been harvested irregularly since then. Cinnamon-phase bears are harvested every year.

Because of the large human population and regulations regarding shooting firearms in town, Juneau has more problems with nuisance bears than other towns in Southeast Alaska. Furthermore, there is excellent bear habitat, including salmon streams, found within the city itself. ADF&G has kept records of euthanized nuisance bears and other nonhunting mortality since 1982 (Zimmerman 1982). Mortality of nuisance bears seems to be cyclical with roughly a 5- to 7-year pattern (Barten 2002). This is likely due to the fact that after a large number of bears are culled from the population in town, it takes 5–7 years for the population to increase to a point where bears are causing nuisance issues again. Weather, fish returns, the berry crop, and bear population levels all likely influence the prevalence of problem bears in Juneau during any given year. A city-wide adoption of regulations requiring bear resistant trash cans, and electric fencing for chickens and other livestock, would curb a majority of the bear problems in Juneau, but after at least 30 years of ADF&G suggesting this (McCarthy 1990), the city is not willing to take those measures. In 1988 the city increased the fine for leaving garbage out and feeding bears from $15 to $100 per offense (McCarthy 1990). There was also an extensive public education campaign using flyers, radio time, and signs on public buses to educate the public about the importance of keeping trash secure. Wildlife managers thought that the campaign was working with less nuisance bears being reported, but later realized that low numbers in the local bear population were responsible for the down turn in nuisance bears, which became clear when nuisance incidences began to increase. In 2000, the city implemented a trash ordinance forbidding the storage of trash outside until trash pick-up day (Barten 2002). Many homeowners built small structures (fenced enclosures and sheds) to protect trash cans until they could be put out on the curb on trash day in response to this ordinance. This helped to lessen nuisance bear activity, but when Alaska Waste assumed the contract for trash collection in 2017, and switched to a larger trash bin, it was too large for the constructed structures. Now we have continuous bear issues once again in the Juneau area.

Research has been conducted in Unit 1C on black bears, including a study that started in 1988 which investigated ways to deter black bears from eating human refuse (McCarthy and Seavoy 1994). The study investigated both moving bears to another area as well as using deterrents fired from a shotgun at bears. When neither of these methods proved successful, the researchers also tried soaking garbage in vomit inducing chemicals. This method was also unsuccessful. Another study determined territory size and habitat use prior to mine development at the Kensington mine, north of Berners Bay (Robus and Carney 1994). Home ranges for black bears were estimated using radiocollared animals (n = 9). The average home range size was 65 km^2 (25 mi^2; 6–286 km^2 or 2.3–110.4mi^2). Another study conducted between 2003 and 2015 investigated movements of black bears inside Juneau as well as movements of bears translocated outside of the city. Urban bear home range estimates were calculated using Global Positioning System (GPS) equipped radiocollar data. The mean home range size was 13 km^2 (5 mi^2; n = 4, range 5–23 km^2; or 2–8.9 mi^2; A. Crupi, Wildlife Biologist, ADF&G, unpublished data). All 4 of the translocated bears returned to their original home range. When considering research in the future,

the Juneau area provides a useful study environment to investigate human-bear interactions and the management of urban nuisance bears.

Population estimates calculated from Unit 1C are not available for black bears. Although harvest information gained from ADF&G sealing records, such as skull size (length plus width), age, and sex ratios, may provide some indication of population trends, information obtained during the sealing process cannot reliably be used to measure trends. Research is needed to identify population parameters that better assess population trends and harvest sustainability. Estimates of population size or density are difficult to obtain. Black bears generally inhabit forested areas, where aerial surveys are impractical. Vast remote areas in the unit also make studies difficult and expensive to undertake. Density estimates for Unit 1C are based on studies conducted in similar habitats in western Washington State in the 1960s (Poelker and Hartwell 1973). We believe minimum densities in mainland Southeast Alaska are slightly higher than the 1.4 bears per mi^2 found in the Washington study area. Assuming a density of 1.5 bears per mi^2 of forested habitat, ADF&G estimates 1,950 black bears in Unit 1C. Black bear densities are probably similar in Unit 1C to other Southeast mainland areas, and we have assumed density to be consistent throughout the forested areas of the unit. Depending on the availability of human food to bears, mainly garbage, and the tolerance of the human population, bear density near communities may differ from elsewhere in the unit. For example, in comparing bear densities near Juneau with Gustavus, because of conditions noted above, the bear density near Juneau is likely higher than the extended natural habitat. In Gustavus, where there are no restrictions on firearms discharge and most bears that frequent residential areas are killed, there is undoubtedly a lower bear density near the community than away from it.

Management Direction

Existing Wildlife Management Plans

Southeast Alaska Black Bear Management Plan in 1976 Alaska Wildlife Management Plans (ADF&G 1976).

Goals

1. To provide for a sustainable harvest of black bear in Unit 1C.

2. To provide the greatest opportunity to participate in hunting of black bear in Unit 1C.

Codified Objectives

Amounts Reasonably Necessary for Subsistence Uses

The Alaska Board of Game has made a positive finding for customary and traditional use of black bears in Unit 1C and set 50–70 black bears as the amount necessary for subsistence (ANS) outside the Juneau Nonsubsistence Area (5 AAC 99.025(2)).

Intensive Management

Not applicable.

MANAGEMENT OBJECTIVES

- Maintain a mean annual male skull size of at least 17.5 inches (length plus width).
- Maintain a 3:1 male-to-female ratio in the harvest.
- Minimize human-bear conflicts by providing information and assistance to the public and to other agencies.

MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Monitor the population of black bears in Unit 1C.

Data Needs

To assess population trends and manage for a sustainable black bear harvest.

Methods

Density estimates for Unit 1C are based on studies conducted in similar habitats in western Washington State in the 1960s (Poelker and Hartwell 1973).

Results and Discussion

There have been no black bear population studies in Unit 1C. Estimates of population size or density are difficult to obtain because the species generally inhabits forested areas, where aerial surveys are impractical. Density estimates for Unit 1C are based on studies conducted in similar habitats in western Washington State in the 1960s (Poelker and Hartwell 1973). ADF&G biologists believe that minimum densities in mainland Southeast Alaska are slightly higher than the 1.4 bears per 1 mi^2 found in the Washington study area. Assuming a density of 1.5 bears per 1 mi^2 of forested habitat, we estimate a population of 1,950 black bears in Unit 1C.

Recommendations for Activity 1.1

Continue to estimate the black bear population based on Poelker and Hartwell's studies until methods can be identified to better assess the population trends in Unit 1C.

2. Mortality-Harvest Monitoring and Regulations

ACTIVITY 2.1. Monitoring black bear harvest through sealing records.

Data Needs

Since 1973, all black bears legally harvested in Unit 1C have been sealed by ADF&G. During sealing, data on skull size (length plus width), sex, and age are collected. These data are used to assess trends in the harvest.

Methods

ADF&G representatives collected harvest data by sealing hides and skulls of black bears. Location, date of harvest, method of take, transportation mode, sex, age, skull width, and skull length were recorded. Sealing must be conducted by an authorized ADF&G staff member or a state appointed sealer within 30 days of the kill. These data are then 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

Season	Residency	Bag Limit
1 Sep–30 Jun	Resident	2 bears, not more than 1 of which may be a blue or glacier bear
1 Sep–30 Jun	Nonresident	1 bear

Results and Discussion

Harvest by Hunters

Black bear harvest occurs throughout Unit 1C (Table 1), but there are 3 areas that continuously stand out as areas with high harvest. These are the east side of Excursion Inlet on the Chilkat Peninsula also known as wildlife analysis area (WAA) 2306, the road system around Juneau (WAAs 2514 and 2515), and Windham Bay to Port Houghton (WAAs 2926 and 2927). Hunter reports from the Chilkat Peninsula suggest that brown bears may be increasing in this area, especially along the Endicott River at the northern end of the unit, and there may be a corresponding decline in black bears in the area; however, the department (ADF&G) does not have any further evidence to support this anecdotal information. Furthermore, hunters from Windham Bay to Port Houghton have observed fewer black bears in this area, and harvest has decreased during this reporting period, suggesting that bear numbers in this portion of the unit may be lower than in the past.

Table 1. Reported black bear harvest from Wildlife Analysis Areas (WAAs), regulatory years 2008–2017, Unit 1C, Southeast Alaska.

	Regulatory year										
WAA	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
2202	1	1	0	0	0	0	1	0	0	1	4
2203	0	0	0	1	3	0	0	0	0	0	4
2304	6	3	5	6	3	6	1	1	1	4	36
2305	4	5	7	5	3	0	4	0	2	1	31
2306	2	11	13	11	16	3	3	3	5	4	71
2307	9	0	5	9	4	1	0	2	2	4	36
2408	2	8	2	3	0	2	0	0	0	0	17
2409	2	3	3	6	1	2	4	0	1	2	24
2410	0	0	0	1	0	0	0	0	0	1	2
2411	0	1	0	0	0	0	0	0	0	0	1
2412	0	0	0	0	0	0	0	0	0	0	0
2413	2	0	0	0	0	0	0	0	0	0	2
2514	2	3	12	8	6	8	2	6	6	9	62
2515	6	2	3	6	1	0	3	4	2	7	34
2516	0	0	0	0	0	0	0	0	0	0	0
2517	3	7	3	1	1	0	2	0	5	4	26
2518	5	1	2	6	2	0	0	0	2	0	18
2519	3	0	1	3	2	1	3	0	0	1	14
2722	3	0	3	1	3	0	2	1	2	0	15
2823	4	0	6	10	5	2	1	2	9	4	43
2824	3	3	1	1	0	0	0	2	6	0	16
2825	9	8	5	4	3	1	4	2	3	2	41
2926	14	9	15	10	9	10	15	7	6	14	109
2927	7	12	17	7	11	3	6	10	8	8	89
Total	87	77	103	99	73	39	51	40	60	66	695

Black bear harvest was down substantially during this reporting period compared to the previous 5 years (Table 2). This reporting period (RY13–RY17) had a minimum harvest of 39 bears, a maximum harvest of 66 bears, and an average harvest of 51 bears each year. The previous 5-year period (RY08–RY12) had a minimum harvest of 73 bears, maximum harvest of 103 bears, and an average harvest of 88 bears. In RY12, the BOG required unguided nonresidents to draw a black bear tag instead of using a harvest ticket. This was the probable cause for this decrease in harvest.

The stability of the bear population is tracked through male skull size, age data, and sex ratio of the harvest, which is collected during sealing (Table 3). Adult male bears are the target demographic of the population, and in the case of over-harvest, wildlife managers would expect to observe a decrease in bear age, skull size, and an increase in female harvest as adult male bear population numbers decrease (Miller and Miller 1988). In practice, changes in these indices might not be observed until there has been a dramatic change in the population and a management response could be late in recovering the population. (D. Person, ADF&G, unpublished data). The percentage of harvested males has increased in this reporting period compared to the previous period (Table 2). Male skull size averaged 17.4 inches and average age was 8.2 years during this reporting period. However, during RY17, the skull size was 16.7 inches. It is difficult to determine if there is a population impact with a drop in the skull size index without multiple years of data with the same trend or a similar pattern in other indices we measure such as male-to-female sex ratio. During the previous 5-year reporting period the average male skull size was 17.7 inches, and age 8.8 years, which was slightly higher than the average for this reporting period. The 17.4-inch average skull size found in RY13–RY17 is just under the management objective to maintain an average annual skull size of 17.5 inches. This indicates that skull sizes, as well as the slight decrease in bear age, should be monitored to determine if this trend continues.

Table 2. Black bear harvest and other mortality, regulatory years 2008–2017, Unit 1C, Southeast Alaska.

Regulatory year	Reported harvest: Hunter harvest Male	Female	Unknown	Total	Nonhunting mortality[a] Male	Female	Unknown	Total	Male	(%)	Female	(%)	Unknown	Total
2008														
Fall 2008	14	7	0	21	4	2	1	7	18	(67)	9	(33)	1	28
Spring	55	11	0	66	2	1	0	3	57	(83)	12	(17)	0	69
Total	69	18	0	87	6	3	1	10	75	(78)	21	(22)	1	97
2009														
Fall 2009	8	5	0	13	7	1	1	9	15	(71)	6	(29)	1	22
Spring	53	11	0	64	0	1	0	1	53	(82)	12	(18)	0	65
Total	61	16	0	77	7	2	1	10	68	(79)	18	(21)	1	87
2010														
Fall 2010	13	6	0	19	3	1	2	6	16	(70)	7	(30)	2	25
Spring	73	11	0	84	0	0	1	1	73	(87)	11	(13)	1	85
Total	86	17	0	103	3	1	3	7	89	(83)	18	(17)	3	110
2011														
Fall 2011	13	7	0	20	4	6	0	10	17	(57)	13	(43)	0	30
Spring	66	13	0	79	1	0	1	2	67	(84)	13	(16)	1	81
Total	79	20	0	99	5	6	1	12	84	(76)	26	(24)	1	111
2012														
Fall 2012	13	5	0	18	4	2	2	8	17	(71)	7	(29)	2	26
Spring	47	8	0	55	0	0	1	1	47	(85)	8	(15)	1	56
Total	60	13	0	73	4	2	3	9	64	(81)	15	(19)	3	82
2013														
Fall 2013	1	2	0	3	3	0	0	3	4	(67)	2	(33)	0	6
Spring	27	7	2	36	4	1	1	6	31	(79)	8	(21)	3	42
Total	28	9	2	39	7	1	1	9	35	(78)	10	(22)	3	48

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Table 2. Page 2 of 2.

Regulatory year	Reported harvest: Hunter mortality Male	Female	Unknown	Total	Nonhunting mortality Male	Female	Unknown	Total	Male	(%)	Female	(%)	Unknown	Total
2014														
Fall 2014	5	0	0	5	13	1	0	14	18	(95)	1	(5)	0	19
Spring 2015	39	7	0	46	1	4	0	5	40	(78)	11	(22)	0	51
Total	44	7	0	51	14	5	0	19	58	(83)	12	(17)	0	70
2015														
Fall 2015	4	0	0	4	3	0	1	4	8	(100)	0	(0)	1	9
Spring 2016	36	0	0	36	1	0	0	1	37	(100)	0	(0)	0	37
Total	40	0	0	40	4	0	1	5	45	(100)	0	(0)	1	46
2016														
Fall 2016	6	1	0	7	3	1	0	4	9	(82)	2	(18)	0	11
Spring 2017	45	8	0	53	1	0	0	1	46	(85)	8	(15)	0	54
Total	51	9	0	60	4	1	0	5	55	(85)	10	(15)	0	65
2017														
Fall 2017	5	0	0	5	7	3	0	10	12	(80)	3	(20)	0	15
Spring 2018	53	8	0	61	4	0	0	4	57	(88)	8	(12)	0	65
Total	58	8	0	66	11	3	0	14	66	(87)	10	(13)	0	76

[a] Nonhunting mortality represents the number of bears killed due to defense of life and property (DLP), car collisions, and agency euthanized bears.

Table 3. Successful black bear hunter effort, mean skull size, and mean age, regulatory years 2008–2017, Unit 1C, Southeast Alaska.

	Successful hunter effort			Mean skull size (inches)				Average age (years)			
Regulatory year	Total days	Number of hunters	Mean days per hunter	Male	n[a]	Female	n[a]	Male	n[b]	Female	n[b]
2008											
Fall 2008	53	21	2.5	17.3	14	15.0	7	7.2	14	7.4	7
Spring 2009	157	66	2.4	18.0	54	15.5	11	8.9	68	8.1	18
Total	210	87	2.4	17.9	68	15.3	18	8.9	68	8.1	18
2009											
Fall 2009	31	13	2.4	17.6	6	16.4	5	9.9	8	11.8	5
Spring 2010	200	64	3.1	17.8	53	15.7	11	8.5	53	9.6	11
Total	231	77	3.0	17.8	59	15.9	16	8.7	61	10.3	16
2010											
Fall 2010	78	19	4.1	18.1	13	15.0	6	9.2	13	9.6	5
Spring 2011	267	84	3.2	17.9	73	15.6	11	8.6	71	8.6	11
Total	345	103	3.3	18.0	86	15.4	17	8.7	84	8.9	16
2011											
Fall 2011	58	20	2.9	16.8	13	13.7	7	8.4	13	8.8	5
Spring 2012	270	79	3.4	17.7	66	16.0	13	9.1	60	9.0	12
Total	328	99	3.3	17.5	79	15.1	20	9.0	73	8.9	17
2012											
Fall 2012	57	18	3.2	16.8	13	16.0	5	7.0	13	11.6	5
Spring 2013	125	55	2.3	17.8	47	11.5	8	9.0	47	11.9	8
Total	182	73	2.5	17.5	60	13.2	13	8.6	60	11.8	13
2013											
Fall 2013	13	3	4.3	17.5	1	15.5	2	3.0	1	12.0	2
Spring 2014	132	35	3.8	17.4	25	15.0	6	8.6	25	5.5	7
Total	145	38	3.8	17.4	26	15.1	8	8.4	26	7.0	9

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Table 3. Page 2 of 2.

Regulatory year	Successful hunter effort: Total days	Number of hunters	Mean days per hunter	Mean skull size (inches): Male	*n*[a]	Female	*n*[a]	Average age (years): Male	*n*[b]	Female	*n*[b]
2014											
Fall 2014	14	5	2.8	17.7	5	0.0	0	8.0	5	0.0	0
Spring 2015	106	38	2.8	17.6	39	15.4	7	8.5	39	8.4	7
Total	120	43	2.8	17.6	44	15.4	7	8.5	44	8.4	7
2015											
Spring 2015	10	3	3.3	16.2	3	0.0	0	3.0	3	0.0	0
Fall 2016	110	36	3.1	17.8	36	0.0	0	8.1	29	0.0	0
Total	120	39	3.1	17.7	39	0.0	0	7.5	33	0.0	0
2016											
Fall 2016	26	7	3.7	16.5	6	16.2	1	5.3	6	15.0	1
Spring 2017	165	53	3.1	17.7	44	15.2	8	8.4	44	7.1	8
Total	191	60	3.2	17.5	50	15.3	9	8.1	50	8.0	9
2017											
Fall 2017	12	5	2.4	17.3	5	0.0	0	7.3	3	0.0	0
Spring 2018	220	61	3.6	16.7	53	15.5	7	8.3	50	5.4	7
Total	232	66	3.5	16.7	58	15.5	7	8.3	53	5.4	7

[a] Totals may not match other tables because sometimes skull measurements are unobtainable.

[b] Due to lab results we do not obtain age for every bear harvested.

Permit Hunts

In Unit 1C nonresident hunters who do not use a registered guide must draw a black bear permit. This regulation was addressed during the 2010 Board of Game (BOG) meeting due to a steady increase in nonresident hunting pressure and indications that harvest might be impacting local black bear populations in Unit 2 and 3 (Sell 2014). The regulation was instituted throughout most of the region (Units 1–3) because of the potential for hunters to shift efforts to neighboring units if the regulation was only implemented in Units 2 and 3. The regulation went into effect in 2012 and nonresident hunter harvest declined as was expected. Unit 1C has 3 draw units within its boundary (DL018, DL019, and DL020; Fig. 2). DL018 and DL019 each have 10 permits available, while DL020 has 24 available permits.

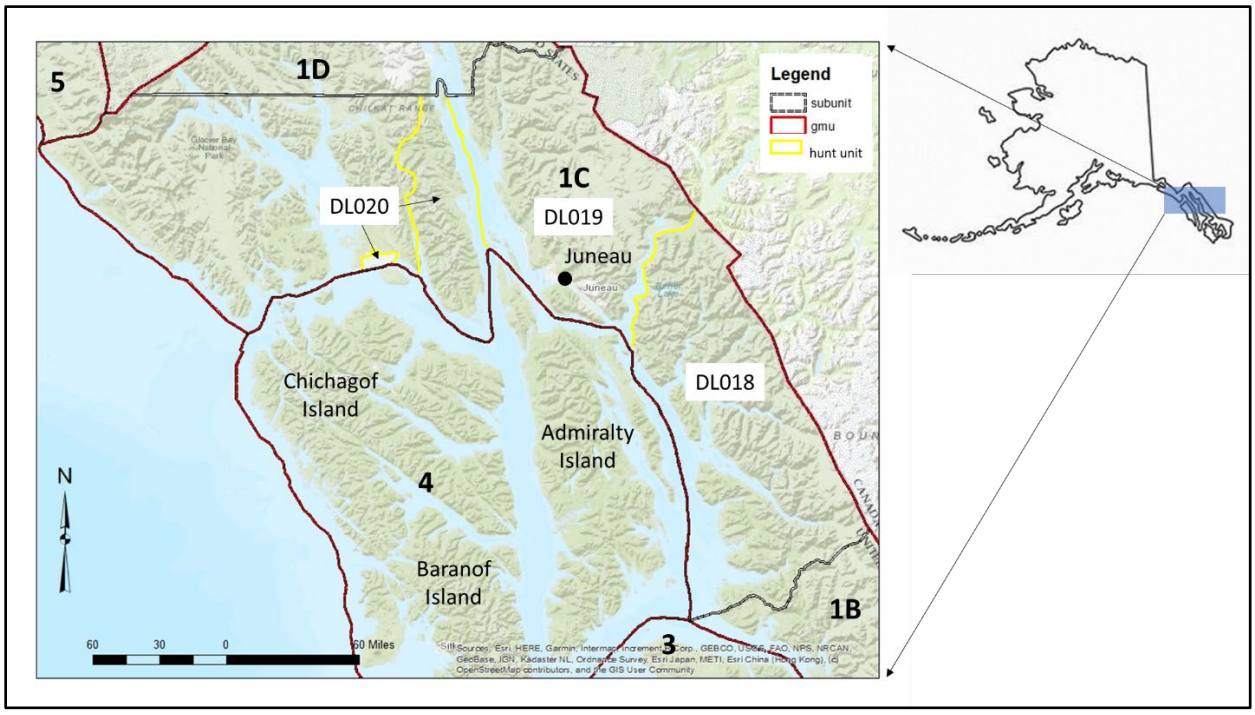

Figure 2. Map showing black bear draw hunts DL018, DL019, and DL020 in Unit 1C, Southeast Alaska.

All 3 of these hunts are chronically undersubscribed (i.e., we have fewer applicants than available permits; Table 4). Total permits issued for DL018 are regularly at or near the allowable number of draw permits, but the number of hunters who apply for DL019 and DL020 average less than half the number of permits available. After observing little hunting pressure in some draw units after the draw was instituted across the region, some of the units will be withdrawn from the draw in RY20, including DL019 and DL020, and returned to a harvest ticket for nonresident hunters.

Table 4. Unit 1C black bear hunt participation by unguided nonresident hunters (DL018, DL019, and DL020), Southeast Alaska, regulatory years 2008–2017.

Regulatory year	Hunt	Total permits	Reported	Male harvest	Female harvest	Unknown harvest	Hunted	Did not hunt
2013	DL018	10	9	1	0	0	6	3
	DL019	9	9	1	1	0	5	4
	DL020	17	17	2	1	0	14	3
	Total	36	35	4	2	0	25	10
2014	DL018	10	10	5	1	0	9	1
	DL019	10	10	0	0	0	5	5
	DL020	6	6	1	0	0	3	3
	Total	26	26	6	1	0	17	9
2015	DL018	9	9	3	0	0	9	0
	DL019	2	2	0	0	0	2	0
	DL020	5	5	1	0	0	5	0
	Total	16	16	4	0	0	16	0
2016	DL018	6	6	4	0	0	4	2
	DL019	7	6	1	0	0	2	4
	DL020	9	9	2	0	0	7	2
	Total	22	21	7	0	0	13	8
2017	DL018	10	10	2	0	0	5	5
	DL019	4	4	0	1	0	2	2
	DL020	10	10	1	2	0	9	1
	Total	24	24	3	3	0	16	8

Hunter Residency and Success

Most hunters during this reporting period were local resident hunters (Table 5; Average RY13–RY17 = 33 resident hunters), which were twice the number of hunters on average compared to nonresident hunters (Average RY13–RY17 = 15 nonresident hunters). Nonlocal resident hunters make up less than 10% of hunters annually. The number of nonresident hunters has declined from an average of 37 hunters in the previous reporting period, indicating that nonresident hunter participation has declined by more than 50%, which was expected with the initiation of the draw for unguided nonresident hunters.

Table 5. Unit 1C black bear successful hunter residency, regulatory years 2008–2017.

Regulatory year	Local resident[a]	(%)	Nonlocal resident[b]	(%)	Nonresident	(%)	Unknown residency	Total
2008	41	(47)	3	(4)	43	(49)	0	87
2009	37	(48)	9	(12)	31	(40)	0	77
2010	48	(46)	9	(9)	46	(45)	0	103
2011	53	(54)	4	(4)	42	(42)	0	99
2012	44	(60)	6	(8)	23	(32)	0	73
2013	16	(42)	7	(18)	15	(39)	1	39
2014	30	(59)	3	(6)	18	(35)	0	51
2015	22	(55)	3	(7)	15	(38)	0	40
2016	46	(77)	2	(3)	12	(20)	0	60
2017	47	(71)	2	(3)	17	(26)	0	66

[a] A local resident lives within Game Management Unit 1C.
[b] A nonlocal resident lives in Alaska, outside of Game Management Unit 1C.

The number of days per successful hunt is a metric that ADF&G wildlife managers use to monitor population trends, including Unit 1C. During this reporting period days per successful hunt ranged from 2.8 to 3.8 with an average of 3.3 days to harvest a bear (Table 3). During the previous reporting period the range was 2.4 to 3.3 and the average was 2.9 days per successful hunt suggesting bears were not as easy to find during this reporting period.

Harvest Chronology

Most harvest in Unit 1C historically occurs in May. This was also true for this reporting period with approximately 66% of the harvest occurring in May (Table 6). June (12%) and September (10%) were the next most popular months for black bear harvest. Minimal harvest (12%) occurred in October, November, and April combined. The previous reporting period had similar harvest in May (68%), but harvest in September was a little higher (17%) than in June (7%).

Table 6. Unit 1C black bear harvest chronology by month, Southeast Alaska, regulatory years 2008–2017.

Regulatory year	Harvest period												
	Sep	(%)	Oct	(%)	Nov	(%)	Apr	(%)	May	(%)	Jun	(%)	Total
2008	16	(18)	5	(6)	0	(0)	2	(2)	59	(68)	5	(6)	87
2009	10	(13)	2	(3)	1	(1)	4	(5)	58	(75)	2	(3)	77
2010	15	(14)	4	(4)	0	(0)	6	(6)	70	(68)	8	(8)	103
2011	18	(18)	2	(2)	0	(0)	4	(4)	63	(64)	12	(12)	99
2012	15	(20)	3	(4)	0	(0)	2	(3)	48	(66)	5	(7)	73
2013	3	(8)	0	(0)	0	(0)	2	(5)	26	(66)	8	(21)	39
2014	5	(10)	0	(0)	0	(0)	3	(6)	39	(76)	4	(8)	51
2015	4	(10)	4	(10)	1	(3)	8	(20)	22	(54)	1	(3)	40
2016	7	(12)	0	(0)	0	(0)	5	(8)	46	(77)	2	(3)	60
2017	5	(8)	0	(0)	0	(0)	4	(6)	39	(59)	18	(27)	66

Transport Methods

Boating was the most common mode of transportation for hunters in Unit 1C during this reporting period, with 71% of hunters using that method (Table 7). The next most common transport method for hunters was highway vehicle, with 20% of harvest attributed to this method. Walking was another method used regularly, but less than 5% of hunters hunted by foot. Other sporadically used methods include off-road vehicles (2%) and aircraft (1%) in Unit 1C.

Table 7. Unit 1C black bear harvest percent by transport method, Southeast Alaska, regulatory years 2008–2017.

Regulatory year	Air	(%)	Boat	(%)	Highway vehicle	(%)	Walk	(%)	Other	(%)	Unk	Total
2008	0	(0)	67	(77)	14	(16)	5	(6)	1	(1)	0	87
2009	0	(0)	63	(82)	9	(12)	3	(4)	2	(2)	0	77
2010	5	(5)	72	(70)	21	(20)	2	(2)	3	(3)	0	103
2011	1	(1)	73	(74)	19	(19)	6	(6)	0	(0)	0	99
2012	1	(1)	56	(77)	9	(12)	9	(12)	3	(4)	0	73
2013	0	(0)	30	(77)	6	(15)	3	(8)	0	(0)	0	39
2014	0	(0)	42	(82)	7	(14)	0	(0)	2	(4)	0	51
2015	2	(5)	25	(63)	11	(27)	2	(5)	0	(0)	0	40
2016	0	(0)	44	(73)	10	(17)	5	(8)	1	(2)	0	60
2017	0	(0)	41	(63)	19	(29)	3	(5)	2	(3)	1	66

Other Mortality

The average number of bears killed due to nonhunting mortality, including defense of life and property (DLP), car collisions, and agency euthanized bears, was up slightly during this reporting

period (Table 2). The current reporting period (RY13–RY17) had a minimum of 5, a maximum of 19, and average of 10 bears killed. The number of bears euthanized by the department during this reporting period due to human/bear conflicts in the Juneau area was between 2 and 5 bears each year and averaged 3 animals. During the previous 5-year reporting period (RY08–RY12) an average of 10 bears annually were killed due to human/bear conflicts in Juneau (range 7–12).

Alaska Board of Game Actions and Emergency Orders

During the fall 2010 BOG meeting proposal #37 passed which established draw permit hunts for unguided nonresident hunters. This regulation went into effect in RY12. The regulation was established across the region to prevent a shift in hunting pressure from currently popular hunt areas to areas without the draw. We observed a decrease in harvest after 2012 that directly correlated to this change.

Recommendations for Activity 2.1

Although the relationship between population estimates, age, and skull size are not fully understood, this is the only information being collected long-term to monitor black bear populations in Unit 1C. Therefore, we will continue collecting bear sealing and harvest information at ADF&G. Population monitoring techniques using trail cameras and genetics data are becoming more affordable, however, these methods are not yet developed to the point where they could replace our current regional monitoring program using bear sealing.

3. Habitat Assessment-Enhancement

Currently, there are no projects to manage bear habitat. In the past, there have been efforts to haze bears and improve bear resistant garbage cans in portions of Juneau.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

Sealing data are archived in the WinfoNet database dating back to 1973, including a complete set of scanned original data sheets dating back to 2000, and with some scanned data sheets of previous years. Hard copies from earlier dates are on file in the Douglas office.

Agreements

There were no agreements during this reporting period.

Permitting

There were no permits during this reporting period.

Conclusions and Management Recommendations

Black bear harvest was down by nearly half compared to the previous reporting period because of changes in the hunt structure for unguided nonresident hunters, which caused a decline in hunt

participation by nonresident hunters. Skull measurements averaged 17.5 inches until 2017, the last year of the reporting period, when the average skull size was 16.7 inches. It is unlikely that this one-year decline indicates a decline in the population, especially when this area used to support a much greater harvest. The average age and days hunted have stayed relatively stable. We will continue to monitor all indices to see if a declining pattern emerges that is indicative of the observation in skull size.

At this time there is no concerted management effort for black bears based on their population in Unit 1C. Without area specific population estimates or other vetted reliable indices, there is little information to guide management decisions. The best data available are anecdotal comments from hunters, and bear skull measurements, age determination, and sex ratios from sealing that do not directly monitor the black bear population. Sealing data provide a robust data set of harvest back to 1973, but without hunter effort data from unsuccessful hunters, it is not possible to relate these data to the black bear population. Harvest tickets for black bears were required starting in RY09. Currently, unsuccessful hunters do have an opportunity to report on their black bear hunts, but reporting percentages are not high and the hunt reporting data does not match our sealing data, thus, making these data less useful. Although we do not currently have a method to determine annual regional population estimates for black bears, there are promising genetic and trail camera methods in development that may lead to successful methods in the future.

Based on the long-term numbers of animals harvested in Unit 1C and the current decline in harvest, ADF&G does not believe harvest pressure is approaching the limits of the harvestable surplus in most years. Changing the northern portion of Unit 1C from a draw for unguided nonresidents back to a harvest ticket (expected in 2020) could increase hunting pressure to levels observed prior to the 2012 change by the BOG. At the time of the BOG decision, the department determined that Unit 1C should be able to sustain an annual mortality including unrecovered animals of approximately 165 bears (ADF&G 2011).

Unsecured trash continues to create food conditioned bears in Juneau. The effort that began around 2000 to change the department response from an in-person response, to advising callers about how to reduce attractants, is now standard operating procedure. Collaborating with the Juneau Police Department (JPD) has worked out well. JPD has been issuing citations for leaving trash outside and putting out trash cans before the morning of pickup. However, enforcement is ongoing and trash storage compliance does not seem to be increasing. The number of bears euthanized each year in Juneau has been cyclical, displaying a 5- to 7-year cycle, and this pattern is expected to continue with an increasing number of bears removed as the number of bears in town increases. The number of bears removed from town is also influenced by interactions among weather and food, in which drought conditions and other weather patterns can reduce fish runs, berry crops, and other forage.

II. Project Review and RY18–RY22 Plan

Review of Management Direction

The existing management and goals appropriately direct the management of black bears in Unit 1C. The management direction for Unit 1C ensures that black bears will persist as part of the natural ecosystem and ensures continued hunting and viewing opportunities. Changes in the

nonresident hunt structure could result in an increase in harvest in the northern portion of Unit 1C, and harvest in these units should continue to be monitored.

MANAGEMENT DIRECTION

GOALS

1. To provide for sustainable harvest of black bear in Unit 1C.

2. To provide the greatest opportunity to participate in hunting of black bear in Unit 1C.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

The Alaska Board of Game has made a positive finding for customary and traditional use of black bears in in Unit 1C and set 50–70 black bears as the amount necessary for subsistence (ANS) outside the Juneau Nonsubsistence Area (5 AAC 99.025(2)).

Intensive Management

Not applicable.

MANAGEMENT OBJECTIVES

- Maintain a mean annual male skull size (length plus width) of at least 17.5 inches.

- Maintain a 3:1 maleto-female ratio in the black bear harvest.

- Minimize human-bear conflicts by providing information and assistance to the public and to other agencies.

REVIEW OF MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. ADF&G does not plan to monitor black bear populations during the project plan period. There are plans for ADF&G staff to set up a camera trap grid on Douglas Island starting summer 2019, however the focus of the cameras will be to collect information on deer. Secondarily, if a significant number of pictures are taken of bears, these pictures will be assessed to try to determine how many individual black bears might be present, and if an occupancy model for black bears is appropriate for the data collected.

2. Mortality-Harvest Monitoring

ACTIVITY 2.1. Draw hunts in Unit 1C, except DL018, were rescinded due to low participation by nonresident hunters. DL018 is the most popular draw hunt in Unit 1C, and an area where

some indices suggest a lower bear population, which is why the draw hunt was retained for this unit.

Data Needs

We will continue to monitor harvest through sealing to understand the potential impact of harvest on the Unit 1C black bear population.

Methods

Sealers collect harvest data by placing an official locking tag on the hide and skull of each black bear. The sealer will record location and date of harvest, method of take, transportation mode, sex, coat color, skull size, and any previous captures if applicable. Sealing must be conducted by authorized ADF&G staff or a state appointed sealer within 30 days of kill. These data are entered into an ADFG database (WinfoNet). Harvest data are 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 no habitat projects planned to manage bear habitat for RY18–RY22. Throughout Southeast Alaska, black bear habitat is prevalent. If habitat changes did occur in Unit 1C, they would likely be in urban areas to help deter bears from accessing garbage. Examples of this might be installing an electric fence at a landfill or supplying a neighborhood with bear resistant trash cans. ADF&G does conduct these projects periodically, when there is interest in the community, and we are always looking for such opportunities. However, there are no projects of this type planned for this plan period, RY18–RY22.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

Species management reports and plans are stored on ADF&G's website at the following location: www.wildlifepublications.adfg.alaska.gov. Memos and data forms will be stored in the Region I, ADF&G office in Douglas, Alaska.

Agreements

None.

Permitting

None.

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