Species Management Report and Plan ADF&G/DWC/SMR&P–2022–5

Mountain Goat Management Report and Plan, Game Management Unit 1D:

Report Period 1 July 2013–30 June 2018, and

Plan Period 1 July 2018–30 June 2023

Carl H. Koch

2022

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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Please contact the authors or the Division of Wildlife Conservation at (907) 465-4190 if you have questions about the content of this report.

Cover Photo: Adult male mountain goat on Baranof Island in Southeast, Alaska. ©2015 ADF&G. Photo by Phil Mooney, ADF&G.

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Purpose of this Report

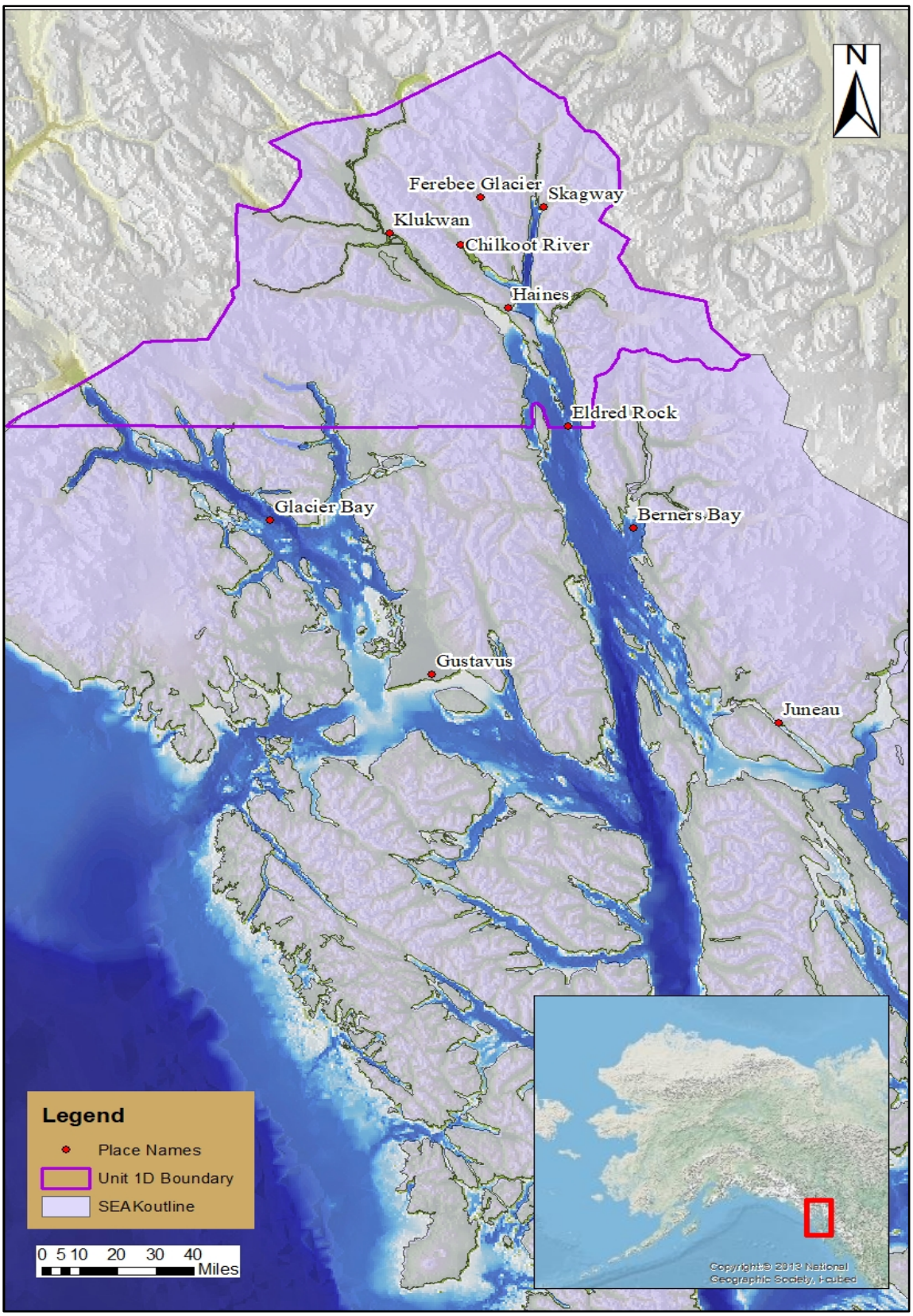
This report provides a record of survey and inventory management activities for mountain goat in Unit 1D for the 5 regulatory years 2013–2017 and plans for survey and inventory management activities in the following 5 regulatory years 2018–2022. A regulatory year (RY) begins 1 July and ends 30 June (e.g., RY14 = 1 July 2014–30 June 2015). This report is produced primarily to provide agency staff with data and analysis to help guide and record agency 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 report more efficiently on trends and to describe potential changes in data collection activities over the next 5 years. It replaces the mountain goat management report of survey and inventory activities that was previously produced every *2* years.

I. RY13–RY17 Management Report

Management Area

Game Management Unit 1D is located on the northern Southeast Alaska mainland and is 2,854 mi^2 in area. It lies north of the latitude of Eldred Rock, excluding Sullivan Island and the Berners Bay drainages (Fig. 1). The area is bordered to the north, east, and west by Canada; and to the south by the Unit 1C border. Communities include Haines, Skagway, and the Chilkat Indian Village of Klukwan. The economy of the region is based on fishing, logging, mining, and tourism. Most of the land in Unit 1D is publicly owned. Lands accessible to hunting include 447 mi^2 owned by the State of Alaska (Alaska Department of Natural Resources 2002), with most of the remainder owned by the federal government. Federal lands in Unit 1D are managed by the Bureau of Land Management, the Tongass National Forest, and the National Park Service (Sell 2014). In addition to mountain goat (*Oreamnos americanus*), other large mammals common in Unit 1D include, black bear (*Ursus, americanus*), brown bear (*Ursus arctos*), moose (*Alces alces*), small numbers of Sitka black-tailed deer (*Odocoileus hemionus sitkensis*) and mule deer (*Odocoileus hemionus*), and wolf (*Canis lupus*). There are numerous mountain ridges in Unit 1D providing habitat for mountain goats, many of which are separated by deep river valleys and glaciers that limit mountain goat migration between ridges (Shafer et al. 2011).

Climate in Unit 1D transitions from coastal biomes to interior biomes further inland. Summers are cool and wet; and winter snowfall ranges from an average of 4.7m at sea level to 6.2m at the Haines Custom Station which is at 260 m elevation (White and Gregovich 2018). The Haines area, in the lower Chilkat Valley, often experiences a mix of rain and snow with temperatures near freezing. Further up the valley temperatures are colder with more persistent snowfall. The Haines Airport received an average of 46 inches of precipitation annually from 2000 through 2014 (data not available for 2015–2017) which was similar to the mean annual precipitation (45.9 inches) at the Canadian border (National Weather Service 2018). Mean seasonal winter snowfall at the Canadian border was 256 inches (range 156 to 368 inches) during the same period (National Weather Service 2018). Forested areas are dominated by Sitka spruce (*Picea sitchensis*) and western hemlock (*Tsuga heterophylla*), mixed-conifer, and deciduous riparian



Produced by ADF&G using ArcGIS software (Esri, Redlands, California).

Figure 1. Map of Game Management Unit 1D, Southeast Alaska.

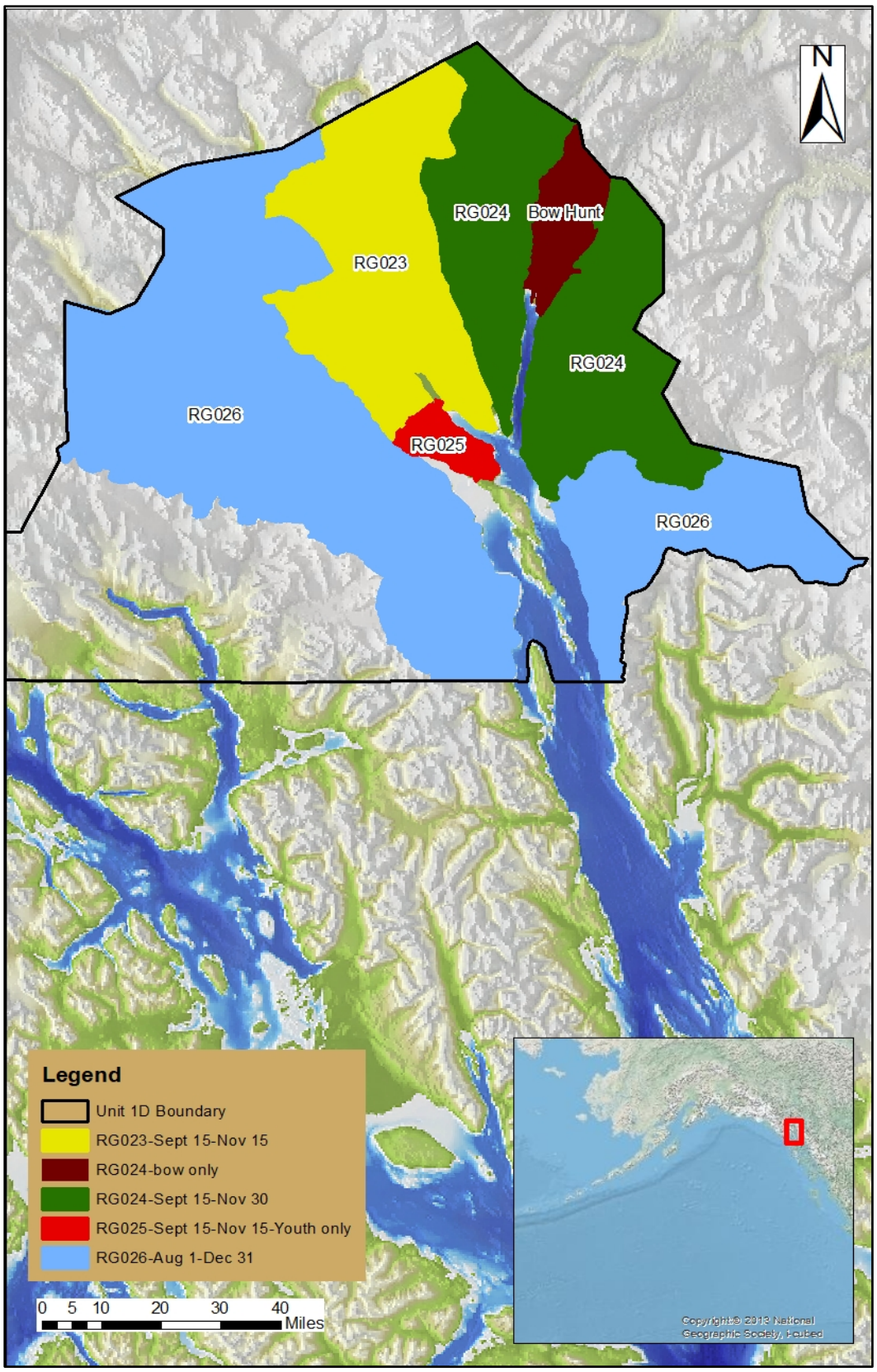
forests at low to moderate elevations (<1509 ft). Subalpine areas include a band of mountain hemlock (*Tsuga heterophylla*) Krummholz forest at timberline between about 1541 and 2493 feet. Alpine areas consist of dry heathlands and moist meadows which are dominated by sedges and forbs (White and Gregovich 2018). Avalanche shoots are prevalent in Unit 1D and cross all types of plant communities, often ending at sea level.

Summary of Status, Trend, Management Activities, and History of Mountain Goat in Unit 1D

Mountain goat hunting was unregulated in Unit 1D prior to 1971 when the first season was established. There was originally a bag limit of 2 goats, which remained in effect until 1975 when the bag limit was lowered to 1 goat (Hinman 1977). The first registration permit hunts (RG804/805/806) began in 1980. Since then, there have been various changes to season lengths and reporting requirements intended to reduce overharvest, especially near roads and towns. Registration permit boundaries and seasons dates changed again in 1995 when RG023, RG024, and RG026 were created. In 1985 the area known as the Skagway Pie was closed to mountain goat hunting due to a decline in the number of mountain goats observed during aerial surveys. It was reopened by the BOG, effective RY09, as an archery-only hunt (an addition to the RG024 permit) after ADF&G biologists observed an increase in goat numbers during an aerial survey conducted in RY08 (Scott 2010). No other changes to permit area boundaries occurred until RY15 when the Upper Lynn Canal Advisory Committee requested the RG025 youth hunt in the Mt. Ripinski and Tukgahgo Mountain area (Fig. 2). To date, this is the only youth mountain goat hunt in Alaska. The hunt area provides easy access via the Haines Highway and the Mt. Ripinski trail. Youth hunters must be accompanied by an adult mentor that is at least 21-years old. Successful RG025 hunters must wait 4 years before hunting again in the RG025 permit area, which provides opportunity for more youth hunters. The harvest also counts against the mentor's annual bag limit. Anecdotal reports indicate that the hunting community continues to support this opportunity to introduce youth to mountain goat hunting, although some hunters have requested it also be opened to seniors.

Female mountain goats rarely have twins, are not reproductive until 4 years of age, and often have a reproductive pause in their fifth year. Therefore, mountain goat populations are slow to recover from overharvest. Furthermore, mountain goat populations in some areas of Unit 1D (e.g., Takhin Ridge, Four Winds Mountain) are discrete with low immigration (Shafer et al. 2011). Their reproductive biology puts these populations at higher risk of extirpation and close monitoring is recommended. To encourage hunters to target male mountain goats, ADF&G has provided educational outreach and worked with the Upper Lynn Canal Advisory Committee. Beginning in RY16, ADF&G implemented a permit condition requiring all mountain goat hunters to read educational material and pass an online mountain goat quiz (ADF&G [n.d.]).

Nonresident mountain goat hunters must be accompanied by a registered guide or an Alaska resident that is 2nd degree of kindred. Guided hunters are typically trophy hunting and therefore are likely to successfully target males. Unlike many other areas in Southeast Alaska, mountain goats are popular among local subsistence hunters. There are not enough Sitka black-tailed deer to support a hunting season in Unit 1D and the only other ungulate species available to subsistence hunters in Unit 1D are moose. Because local hunters tend to focus on meat,



Produced by ADF&G using ArcGIS software (Esri, Redlands, California).

Figure 2. Map of Unit 1D goat registration hunt areas, Southeast Alaska.

they are much more likely than nonresident hunters to harvest female goats which are more easily accessed. Mountain goats are habitat specialists that utilize steep, rugged terrain near cliffs and are sensitive to disturbance from helicopters and industrial activity (White and Gregovich 2017). Mountain goats occupy the same seasonal home ranges from year-to-year, making them particularly vulnerable to the negative effects of disturbance. The Northern Wild Sheep and Goat Council recommends avoidance of helicopter use within 1.5–2.0 km (0.9–1.2 mi) of winter habitat, kidding habitat, or mineral licks to reduce potential negative effects on mountain goat populations (Northern Wild Sheep and Goat Council 2020).

Mining, logging, commercial helicopter tourism, guided hunting, and wildlife viewing are important parts of the economy in Unit 1D. Because of intense public interest in these activities and their potential effects on mountain goats, ADF&G has been conducting research in Unit 1D since 2010 to identify important winter and summer (i.e., kidding) habitats for mountain goats (White and Gregovich 2018). Models from this research predict habitat use during critical overwintering and kidding timing windows. The resulting maps are an important tool in helping land managers (e.g., Haines Borough, Alaska Department of Natural Resources (DNR), U.S. Bureau of Land Management (BLM), etc.) plan activities in a manner that minimizes negative effects of disturbance on mountain goat populations.

Management Direction

Existing Wildlife Management Plans

Southeast Mainland Goat Management Plan in 1976 Alaska Wildlife Management Plans (ADF&G 1976).

Goals

Manage Southeast Alaska goat populations to provide for sustained annual use by hunters and wildlife viewers.

Codified Objectives

Amounts Reasonably Necessary for Subsistence Uses

The Alaska Board of Game (BOG) has made a positive customary and traditional finding for mountain goats in Unit 1D with an amount necessary for subsistence (ANS) set at 10–15 mountain goats per year (5 AAC 99.025(a)(7)).

Intensive Management

Not applicable.

MANAGEMENT OBJECTIVES

- Continue working towards identifying discrete geographic areas for use as goat trend count and management areas.
- Maintain a guideline harvest within management areas not to exceed 6 points (male = 1 goat point, female = 2 goat points) per 100 adult goats observed during aerial surveys.
- Conduct aerial surveys to establish the minimum number of goats needed to provide harvest opportunities.
- Maintain goat-viewing opportunities along the Haines and Skagway Road systems.

MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Monitor the population of mountain goats in Unit 1D.

Data Needs

ADF&G has conducted minimum counts in several areas of Unit 1D since 1974. Efforts have traditionally focused on areas where hunting occurs. Count data is needed to determine the number of points available for harvest in each goat management area. These data help support the development of the mountain goat sightability model.

Methods

Department biologists flew aerial surveys in mountain goat management areas (weather permitting) to obtain minimum counts of observed goats. We recorded the flight tracks and goat locations in a handheld GPS device, then downloaded and archived the data. We used an established hard copy data form to record the number of adults and kids, group size, and behavior (e.g., bedded, standing, feeding). Also recorded are habitat, terrain, aircraft, and weather information, factors which likely affect the observer's ability to detect goats. In areas with collared (i.e., marked) mountain goats we also recorded the number of marked animals that were and were not observed. Results from aerial surveys were used to assign harvest objectives. Harvest guideline levels (HGL) of 6 points per 100 goats were tallied based on the most recent aerial survey and trend data. Harvested male goats count as 1 point and females as 2 points toward the HGL. When HGL is met for a discrete hunt area, then emergency orders are issued closing the mountain goat hunting season in that area. This helps prevent localized depletion of goats within larger registration permit hunt areas.

Results and Discussion

The Alaska Board of Game opened the Skagway Pie area to archery hunting in RY09 after 118 total goats were counted during an aerial survey conducted via helicopter in RY08 (Table 1). Since RY09 the counts have been consistently lower, and only 18 goats were observed during a RY15 survey which is 85% fewer goats than observed in RY08 (Table 1). Due to the declining trend in the number of observed goats, the season was closed by emergency order during RY16

and RY17 to give the population time to recover. The total number of observed goats increased from 18 to 60 during the RY17 aerial survey indicating that some recovery may have occurred. The season will be reopened in RY18.

Table 1. Unit 1D mountain goat surveys, Skagway Pie area, 2001–2017, Southeast Alaska.

Year	Number adults	Number kids	Total goats	Kids: 100 adults	Kids (%)	Goats per hour
2001	32	7	39	22	18	93
2002–2007[a]	–	–	–	–	–	–
2008[b]	99	19	118	19	16	59
2009[c,a]	–	–	–	–	–	–
2010[a]	–	–	–	–	–	–
2011	27	4	31	15	13	31
2012[a]	–	–	–	–	–	–
2013	27	2	29	7	7	53
2014[a]	–	–	–	–	–	–
2015	12	6	18	50	33	–[d]
2016	24	9	33	38	27	–[d]
2017	47	13	60	28	22	–[d]

[a] No survey was conducted.
[b] Survey was conducted by helicopter all other surveys by fixed-wing aircraft.
[c] First year open for goat harvest-archery only.
[d] Not applicable.

During RY13–RY17, the number of observed goats in other parts of Unit 1D fluctuated annually (Table 2 and Table 3). The east and west sections (E, W) of the Takshanuk Range had consistently higher numbers of observed goats than in many other portions of the unit. In contrast, coastal areas along Taiya Inlet (e.g., Halutu Ridge, Kasidaya Creek, and Mount Yeatman) had some of the lowest numbers of goats observed throughout the unit. It will be important to monitor areas with low goat numbers closely to ensure that the harvest continues to be sustainable.

Recommendations for Activity 1.1.

Aerial surveys will be continued because they provide information about population trends. In addition, ADF&G research staff are developing sightability models that depend on data collected during aerial surveys, which will provide more formal population estimates.

Table 2. Unit 1D mountain goat surveys, 2000–2012, Alaska

Year	Number of adults	Number of kids	Total goats	Kids: 100 adults	Kids (%)	Area
2000	97	21	118	22	19	Katzehin River north to Twin Dewey Peaks
2001	150	39	189	26	21	Takshanuk Mountains (east, west)
2001[a]	60	13	73	22	18	Katzehin River north to Twin Dewey Peaks
2002	79	17	96	22	18	Takhin Ridge (north, south)
2003	140	44	184	31	24	Klukwah Mountain and Ferebee Glacier/River to Chilkoot Inlet
2003	34	15	49	44	31	Tsirku River
2003	104	27	131	26	21	Takhin Ridge (north, south)
2004	55	17	72	31	24	Tsirku River
2004	97	23	120	24	19	Takhin Ridge (north, south)
2004	34	8	42	24	19	North of Klehini River and West of Chilkat River
2005–2006[b]	–	–	–	–	–	–
2007	67	16	83	24	19	Takhin Ridge (north, south)
2007	219	45	264	21	17	Takshanuk Mountains (east, west)
2008	84	19	103	23	18	Takhin Ridge (north, south)
2009	49	11	60	22	18	Takhin Ridge (north, south)
2009	168	37	205	22	18	Takshanuk Mountains (east, west)
2010	134	41	175	31	23	Klukwah Mountain and Ferebee Glacier/River
2010	311	73	384	24	19	Takshanuk Mountains (east, west)
2010[a]	28	8	36	29	22	East of Ferebee Glacier, Chilkoot/Taiya Inlet
2010	30	3	33	10	10	Harding Mtn., upper West Cr., upper Norse R., and Chilkoot Pass
2010	66	19	85	29	22	Katzehin River north to Twin Dewey Peaks
2011	172	34	206	20	17	Klukwah Mtn. and Ferebee Glacier/River to Chilkoot Inlet
2011	275	90	365	33	25	Takshanuk Mountains (east, west)
2011	52	3	55	6	5	East of Ferebee Glacier, Chilkoot/Taiya Inlet
2011	41	6	47	15	13	Harding Mtn., upper West Cr., upper Norse R., and Chilkoot Pass
2012	136	37	173	27	21	Klukwah Mtn. and Ferebee Glacier to Chilkoot Inlet
2012	225	50	275	22	18	Takshanuk Mountains (east, west)
2012	23	1	24	4	25	North of Klehini River and West of Chilkat River
2012	33	6	39	18	15	East of Ferebee Glacier, Chilkoot/Taiya Inlet
2012	41	6	47	15	13	Harding Mtn., upper West Cr., upper Norse R., and Chilkoot Pass
2012	126	20	146	16	14	Katzehin River north to Twin Dewey Peaks
2012	79	22	101	28	22	Tsirku and Takhin Ridge (north, south)

[a] Not a complete survey.

[b] No Surveys were conducted during 2005–2006 in Unit 1D.

Table 3. Unit 1D Mountain goat survey data, 2013–2017, Alaska.

Year	Number of adults	Number of kids	Total goats	Kids: 100 adults	(%) Kids	Area
2013	160	47	207	29	22.7	Chilkoot (north, south) Ferebee Glacier/River
2013	42	12	54	29	22.2	Halutu Ridge
2013	46	11	57	24	19.3	Four Winds Mountain-US
2013	88	25	113	28	22.1	Hiteshitak Mountain-US
2013	84	20	104	24	19.2	Takhin Ridge
2013	72	14	86	19	16.3	Takhinsha Range (upper, middle, Kicking Horse to Davidson Glacier)
2013	85	14	99	16	14.1	Porcupine Peak
2013	99	7	106	7	7.0	East Taiya-Dayebas Creek to the Canada Border including Skagway Pie
2014	71	16	87	23	18.4	Takhinsha (upper, middle, Kicking Horse to Davidson Glacier)
2014	83	23	106	28	21.7	Takhin Ridge
2014	53	6	59	11	10.2	Porcupine Peak
2014	31	6	37	19	16.2	Takshanuk Mountains (Tukgahgo and Ripinski)
2014	104	23	127	22	18.1	Takshanuk Mountains (middle, east, west)
2014	33	5	38	15	13.2	Takshanuk Mountains North
2014	42	13	55	31	23.6	Four Winds Mountain-U.S.
2014	69	16	85	23	18.8	Hiteshitak Mountain-U.S.
2014	40	6	46	15	13.0	Upper Chilkat River
2014	110	40	150	36	26.7	Chilkoot River (North, South, Ferebee)
2014	19	4	23	21	17.4	Halutu Mountain
2014	0	0	0	–	0.0	Face Mountain
2014	4	2	6	50	33.3	Mount Yeatman
2014	5	0	5	0	0.0	Nourse River, west
2014	16	1	17	6	5.9	Nourse River, east
2015	66	10	76	15	13.2	Takhinsha Range (upper, middle, Kicking Horse to Davidson Glacier)
2015	97	24	121	25	19.8	Takhin Ridge
2015	60	26	86	43	30.2	Porcupine Peak
2015	60	23	83	38	28.0	Takshanuk Mountains (Tukgahgo Mtn. and Mount Ripinski)

-continued-

Table 3. Page 2 of 3.

Year	Number of adults	Number of kids	Total goats	Kids: 100 adults	(%) Kids	Area
2015	147	42	189	29	22.0	Takshanuk Mountains (middle, E, W)
2015	51	9	60	18	15.0	Takshanuk Mountains North
2015	42	11	53	26	20.8	Four Winds Mountain-US
2015	3	0	3	0	0.0	Warm Pass
2015	26	5	31	14	16.1	Laughton Glacier
2015	21	0	21	0	0.0	Twin Dewey Peaks/Denver Glacier
2016	87	14	101	16	13.9	Takhinsha Range (upper, middle, Kicking Horse to Davidson Glacier)
2016	69	16	85	23	18.8	Takhin Ridge
2016	57	17	74	30	23.0	Porcupine Peak
2016	4	3	7	75	42.9	Jarvis Glacier
2016	88	20	108	23	18.5	Takshanuk Mountains (Tukgahgo and Ripinski)
2016	129	20	149	16	13.4	Takshanuk Mountains (middle, E, W)
2016	46	10	56	22	17.9	Takshanuk Mountains North
2016	33	14	47	42	29.8	Four Winds Mountain-US
2016	42	6	48	14	12.5	Hiteshitak Mountain-US
2016	10	3	13	30	23.1	Mt. Raymond
2016	24	5	29	21	17.2	Upper Chilkat
2016	81	17	98	21	17.3	Chilkoot River (North, South, Ferebee)
2016	42	9	51	21	17.6	Halutu Ridge
2016	8	0	8	0	0.0	Face Mountain
2016	6	2	8	33	25.0	Mt. Yeatman
2016	7	0	7	0	0.0	Nourse River -West
2016	21	5	26	24	19.2	Nourse River -East
2016	4	0	4	0	0.0	Warm Pass
2016	37	8	45	22	17.8	Laughton Glacier
2016	32	3	35	9	8.6	Twin Dewey Peaks/Denver Glacier

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Table 3. Page 3 of 3.

Year	Number of adults	Number of kids	Total goats	Kids: 100 adults	(%) Kids	Area
2016	7	1	8	14	12.5	Kasidaya Creek
2017	65	12	77	18	15.6	Takhinsha Range (upper, middle, Kicking Horse to Davidson Glacier)
2017	85	21	106	25	19.8	Takhin Ridge
2017	38	5	43	13	11.6	Four Winds Mountain-US
2017	2	0	2	0	0.0	Jarvis Glacier
2017	37	4	41	11	9.8	Takshanuk Mountains (Tukgahgo and Ripinski)
2017	99	23	122	23	19.0	Takshanuk Mountains (middle, E, W)
2017	20	8	28	40	28.6	Takshanuk North
2017	91	24	115	26	20.9	Hiteshitak Mountain-US
2017	110	30	140	27	21.4	Chilkoot River (North, South, Ferebee)
2017	5	1	6	20	16.7	Warm Pass
2017	22	5	27	23	18.5	Laughton Glacier
2017	35	8	43	23	18.6	Twin Dewey Peaks/Denver Glacier
2017	7	1	8	14	12.5	Kasidaya Creek

2. Mortality-Harvest Monitoring and Regulations

ACTIVITY 2.1. Monitor mountain goat harvest through registration permit.

Data Needs

Harvest data is used to track trends and to manage hunt areas throughout the season. When total harvest points are met, hunt areas are closed by emergency order to avoid overharvest.

Methods

Harvest is monitored with a registration permit system. Unsuccessful hunters are required to report within 15 days of the close of the season, and successful hunters are required to report within 3–5 days of the kill depending on the permit area. Required information on the permit includes location of hunt, number of days hunted, transportation used to get to the field, and the type of commercial services used. Successful hunters are also required to report the method used, date of kill, and sex of the animal. Successful hunters must also present the horns and skull cap for sealing by authorized personnel. All hunters must successfully pass the online mountain goat quiz before they can legally obtain any Unit 1D permits.

Season and Bag Limit — Resident and nonresident

Area	Bag limit	Season
RG023 Unit 1D: That portion north of the Northwest saddle of Tukgahgo Mountain east of the Chilkat River, south of the Canada border, and south and west of the Ferebee River and Glacier to Lutak Inlet, excluding that portion of the Takshanuk Mountains north of the mouth of Goat Hollow east to Assignation Pass.	1 goat by registration permit only; the taking of nannies with kids is prohibited.	15 September–15 November (General hunt only)
RG024 Unit 1D: That portion between the Ferebee River and Glacier and Taiya River and Inlet, and between the White Pass and Yukon Railroad and the Katzehin River. That portion between Taiya Inlet/River and the White Pass and Yukon Railroad is by bow and arrow only.	1 goat by registration permit only; the taking of nannies with kids is prohibited.	15 September–30 November (General hunt only)

-continued-

Season and Bag Limit — Resident and nonresident continued

Area	Bag limit	Season
RG025 Unit 1(D), that portion of the Takshanuk Mountains extending from the northwest saddle of Tukgahgo Mountain to the city of Haines, youth hunt.	1 goat by registration permit only; the taking of nannies with kids is prohibited.	15 September–15 November (Alaska Residents Only)
RG026 Unit 1(D), remainder	1 goat by registration permit only; the taking of nannies with kids is prohibited.	1 August–December 31 (General hunt only)

Results and Discussion

Harvest by Hunters

Mountain goat harvest occurs throughout most of Unit 1D. However, during RY08–RY17, an average of 50% of the harvest occurred in WAA 4302 which includes the west side of the Chilkat River and a large portion of the Takshanuk Range which is accessible by road (Table 4). In the same period, the east side of Taiya Inlet (WAA 4407), which is accessible by boat, had the second highest harvest averaging 21% of the total. The Skagway Pie (WAA 4406) had the lowest harvest of any WAA in Unit 1D, and this was likely because it is an archery-only hunt, has a small area, and there was not an open season in RY16 and RY17.

Table 4. Unit 1D Goat harvest by Wildlife Analysis Areas (WAA), regulatory words 2008–2017, Southeast Alaska.

	WAA						
Regulatory year	4302	4303	4405	4406	4407	4408	Total
2008	15	0	3	0	7	1	26
2009	13	1	6	0	9	2	31
2010	21	2	5	2	8	0	38
2011	12	0	5	0	6	4	27
2012	11	1	5	0	6	0	23
2013	13	5	1	1	3	0	23
2014	20	3	3	1	5	1	33
2015	9	0	4	1	6	0	20
2016	15	9	2	0	2	0	28
2017	8	5	3	0	5	0	21

During RY13–RY17 harvest averaged 25 goats per year (range 20–33), which decreased from RY08–RY12 when 29 goats per year were harvested (range 23–38; Table 5). In RY16 the highest female harvest in a decade occurred when 13 female goats were harvested (range 3–13, RY13–RY17). This was followed by a 10-year low, when only 3 females were harvested in

RY17. This may be an indication that our educational efforts to encourage male harvest are beginning to work.

Table 5. Unit 1D harvested goats by sex, regulatory years 2008–2017, Southeast Alaska.

Regulatory year	Males	Females	Percent female	Unknown	Total
2008	16	10	38	0	26
2009	21	10	32	0	31
2010	24	14	37	0	38
2011	17	10	37	0	27
2012	18	5	22	0	23
2013	14	8	36	0	22
2014	23	10	30	0	33
2015	14	6	30	0	20
2016	15	13	46	0	28
2017	18	3	14	0	21

Permit Hunts

Permit hunts in Unit 1D include RG023, RG024 (including an archery only area), RG025 (youth-only hunt), and RG026 (season lengths and hunt areas for each permit are described above). RG023, RG024, and RG026 are combined under a single registration permit (RG023). This allows hunters to only obtain one of the above permits as long as they are aware that the hunt areas and season lengths differ. The number of permits issued under RG023 decreased from a high of 183 issued in RY13 to a low of 97 in RY16 (Table 6). The decrease in the number of RG023 permits coincided with the designation of the RG025 youth hunt and its associated age restrictions. The number of RG025 permits ranged from a low of 5 in RY16 to a high of 10 in RY15 (the first year of the hunt).

Table 6. Mountain goat permits issued in Unit 1D regulatory years 2013–2017, Southeast Alaska.

Regulatory year	RG023	RG024	RG025	RG026	Unit 1D total
2013[a]	183	0	–	0	183
2014[a]	140	8	–	15	163
2015	121	12	10	11	154
2016	97	7	5	20	129
2017	102	9	6	26	143

[a] RG025 did not go into effect until RY15.

Hunter Residency and Success

During RY13–RY17 it took successful hunters an average of 2.2 days to harvest a goat which was only slightly higher than in RY08–RY12 (Table 7). The success rate of Unit 1D residents (27%) was less than half that of nonresident hunters (61%) during RY13–RY17 (Table 8). The higher success among nonresident hunters is likely due to the requirement to hunt with a

professional guide (except for a small number that hunt with a relative under the 2nd degree of kindred).

Table 7. Unit 1D mountain goat hunter effort and success, regulatory years 2008–2017, Southeast Alaska.

		Successful hunters			Unsuccessful hunters			Total hunters		
Regulatory year	Permits issued	No. hunters	Total days	Average days	No. Hunters	Total days	Avg Days	No. Hunters	Total days	Average days
2008	164	26	53	2.0	59	184	3.1	85	237	2.8
2009	188	31	64	2.1	66	227	3.4	97	291	3.0
2010	190	38	80	2.1	78	231	3.0	116	311	2.7
2011	185	27	34	1.3	64	178	2.8	91	212	2.3
2012	160	23	42	1.8	61	209	3.4	84	251	3.0
2013	181	23	44	1.9	66	217	3.3	89	261	2.9
2014	163	33	73	2.2	53	137	2.6	86	210	2.5
2015[a]	152	20	43	2.2	54	176	3.3	74	219	3.0
2016[a]	129	28	57	2.0	45	138	3.2	73	195	2.7
2017[a]	141	21	50	2.5	51	152	3.0	72	202	2.8

[a] Includes new RG025 youth hunt permits.

Table 8. Unit 1D mountain goat hunter success by residency regulatory years 2008–2017, Southeast Alaska.

		Successful hunters			Unsuccessful hunters		
Regulatory year	Percent success	Unit resident	Other Alaska	Nonresident	Unit resident	Other Alaska	Nonresident
2008	31	18	1	7	49	7	3
2009	32	23	2	6	49	12	5
2010	33	26	6	6	58	15	5
2011	30	19	4	4	53	8	3
2012	27	19	1	3	50	8	3
2013	26	13	6	4	54	7	5
2014	38	25	1	7	41	7	5
2015	27	14	4	2	37	13	4
2016	38	13	4	11	35	8	2
2017	29	11	1	9	37	9	5

The average number of hunters in this report period ranged from 72 to 89 which was 17% lower than the previous 5-year period (Table 7). The decline in the number of hunters began in RY15 with the implementation of the RG025 youth hunt. Average hunter success during this report period (32%) was similar to the previous 5-year period (31%) despite the decline in the number of hunters (Table 8). Only 19% of RG025 hunters were successful which was 13% lower than the overall average during the report period. However, the seasons had to be closed early in RY16 when hunters harvested two females and again in RY17 due to low numbers of goats. If

hunters target male goats, the population in this area has the potential to grow offering more opportunity.

Harvest Chronology

The bulk of the harvest in Unit 1D occurs during the first half of the season. This is due in part to emergency closures which shorten season length and are common in some hunt management areas (e.g., Takshanuk Range). Many subsistence hunters are less interested in prime hides and prefer to hunt the early part of the season when weather is often milder. During RY13–RY17 38% of the harvest occurred in September, 41% occurred in October, 18% occurred in November, and only 3% occurred in December.

Transport Methods

The average portion of successful hunters using boats (32%) during RY13–RY17 was 14% lower than RY08–RY12 when nearly half (46%) used boats to get to hunt locations (Table 9). During the same 5-year periods the average portion of hunters using highway vehicles to access their hunt location was nearly identical, 44% in RY13–RY17 and 38% in RY08–RY12. Approximately 18% of hunters reported using other means of transportation to harvest goats.

Table 9. Unit 1D transport methods used by successful hunters, regulatory years 2008–2017, Southeast Alaska.

Regulatory	Boat		Foot		Highway vehicle		Other	
year	Total	(%)	Total	(%)	Total	(%)	Total	(%)
2008	13	50	1	4	9	35	3	12
2009	19	61	1	3	7	23	4	13
2010	13	34	3	8	18	47	4	11
2011	14	52	0	0	11	41	2	7
2012	8	35	0	0	10	43	5	22
2013	6	26	1	4	12	52	4	17
2014	11	33	2	6	13	39	7	21
2015	7	35	3	15	7	35	3	15
2016	8	29	1	4	13	46	6	21
2017	8	38	0	0	10	48	3	14

Other Mortality

Other sources of human caused mortality of mountain goats are uncommon and not closely monitored. ADF&G wildlife research staff found that 43% of investigated mountain goat mortalities in Unit 1D were caused by avalanches (K. S. White, Wildlife Biologist, ADF&G, Douglas, personal communication).

Alaska Board of Game Actions and Emergency Orders

In January of 2015, BOG adopted a proposal to establish the RG025 youth mountain goat hunting season in the Mount Ripinski and Tukgahgo Mountain area of Unit 1D. Emergency

orders closing areas to mountain goat hunting are common in this unit, especially the easily accessed hunt areas along the road system.

Emergency orders were issued closing hunting for mountain goat in the following areas within Unit 1D during RY13–RY17:

RY13

- East Fork of Skagway River (north to Canada and south to Kasidaya Creek).
- Takshanuk Mountains (middle).
- Takshanuk Mountains (Tukgagho).

RY14

- Dayebas Creek to Kasidaya Creek.
- East Fork of Skagway River (north to Canada and south to Kasidaya Creek).
- East Side Chilkoot Lake.
- Kicking Horse to Unit 1C border.
- Takshanuk Range (middle).
- Takshanuk Range (Tukgagho).
- Halutu Ridge to Parsons Peak.

RY15

- East Fork of Skagway River (north to Canada and south to Kasidaya Creek).
- East Side Chilkoot Lake.
- Dayebas Creek north to Kasidaya Creek.
- Skagway Pie.
- Takshanuk Range (middle).

RY16

- Boulder and Nataga Creek.
- Dayebas Creek north to Kasidaya Creek.
- East Fork of Skagway River (south to Kasidaya Creek).
- East side of Chilkoot Lake.
- Flower and Porcupine Mountains.
- Kicking Horse River to Unit 1C boundary.
- Skagway Pie.
- Takhin Ridge.
- Takshanuk (middle).
- Tohika and Mount Raymond.
- Tukgahgo Mountain (youth area).

RY17

- Boulder and Nataga Creek.
- Dayebas Creek north to Kasidaya Creek.
- East Fork of Skagway River (north to Canada).
- East side Chilkoot Lake.
- Kicking Horse to Unit 1C Boundary.
- Skagway Pie.
- Tohika Mountain and Mount Raymond.

Recommendations for Activity 2.1

We will continue to monitor harvest trends through registration permits.

3. Habitat Assessment-Enhancement

No habitat assessment or enhancement projects are being conducted by ADF&G in Unit 1D. However, since 2010 ADF&G research staff have been conducting research to identify important winter and summer habitat for mountain goats in Unit 1D. As part of that ongoing effort, resource selection modeling was conducted and maps that delineated important habitat were produced to help land managers understand and mitigate potential negative effects of disturbance on mountain goat populations. As more data becomes available, these maps will be further refined by research staff.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

- Harvest data are recorded on hunt reports associated with mountain goat registration permits.
- Records from harvest data are stored in ADF&G's Wildlife Information Network database.
- Hard copies of horn sealing records and aerial survey data are stored in the Douglas area ADF&G office.

Agreements

ADF&G has data sharing agreements with the U.S. Bureau of Land Management (BLM) and the Haines Borough. In the past ADF&G had a funding agreement with BLM which is likely to be renewed during RY18–RY23.

Permitting

None.

Conclusions and Management Recommendations

Department staff have attended numerous community meetings providing information intended to help stakeholders understand the potential consequences of anthropogenic activities on mountain goat populations. Expansion of industrial disturbance (e.g., mining, helicopter tourism, etc.) have the potential to negatively affect some mountain goat populations in Unit 1D. However, habitat maps developed by ADF&G (and shared with stakeholders) could be used by land managers to develop mitigation measures. For example, we often recommend that permittees follow the guidelines developed by the NWSGC (Northern Wild Sheep and Goat Council 2020) including buffer zones (e.g., around important mountain goat habitat) that should be avoided during specific timing windows (e.g., winter habitat and summer kidding habitat).

The reduction in the number of hunters in the Mt. Tukgagho/Ripinski hunt area after BOG changed it to RG025 youth hunt has slowed the pace of the hunting season in that area which helps reduce the potential for overharvest. In addition, adult mentors may help hunters target male mountain goats. If that trend continues, it will likely lead to increased hunting opportunities if the population rebounds.

In some areas of Unit 1D (e.g., Skagway Pie, Taiya Inlet) mountain goat populations have remained low for several years and should be monitored closely to document further declines. Areas in which goat numbers continue to decline may have to be closed to allow populations to recover. The mountain goat identification quiz, staff interactions with hunters, and media outreach may have begun to reduce the proportion of females in the harvest, but more time is needed to assess the effectiveness of these efforts. If high female harvest continues to occur in some areas, managers may need to be more conservative when assigning harvest guideline levels. ADF&G should continue using the mandatory mountain goat identification quiz and other educational materials to assist hunters in successfully targeting male mountain goats. If hunters target male mountain goats, populations could grow allowing for increased hunting opportunity in Unit 1D.

II. Project Review and RY18–RY23 Plan

Review of Management Direction

Our management practice of conducting aerial surveys to assign harvest guideline levels (HGL) to discrete areas and closing them when the HGL has been met, will help ensure that sustainable harvest continues. We will encourage hunters to target male mountain goats and continue to provide education to help them achieve success. The potential for negative effects on mountain goat habitat and populations from industrial activities and tourism is ongoing in Unit 1D. We will work with interested land managers and other stakeholders to help mitigate negative effects on mountain goat populations.

MANAGEMENT DIRECTION

GOALS

Manage Southeast Alaska goat populations to provide for sustainable annual use by hunters and wildlife viewers.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

The Alaska Board of Game (BOG) has made a positive customary and traditional finding for mountain goats in Unit 1D with an amount necessary for subsistence (ANS) set at 10–15 mountain goats per year (5 AAC 99.025(a)(7)).

Intensive Management

Not Applicable.

MANAGEMENT OBJECTIVES

- Continue working towards identifying discrete geographic areas for use as goat trend count and management areas.
- Maintain a guideline harvest within management areas not to exceed 6 points (male = 1 goat point, female = 2 goat points) per 100 adult goats observed during aerial surveys.
- Conduct aerial surveys to establish the minimum number of goats needed to provide harvest opportunities.
- Maintain goat-viewing opportunities along the Haines and Skagway Road systems.

REVIEW OF MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Monitor the population of mountain goats in Unit 1D.

Data Needs

ADF&G has conducted minimum counts in several areas of Unit 1D since 1974. Efforts have traditionally focused on areas where hunting occurs. Count data is needed to determine the number of points available for harvest in each goat management area. These data help support the development of the mountain goat sightability model (White and Pendleton 2013).

Methods

Department staff will continue to conduct aerial surveys annually when possible but at least once every 3 years in areas where hunting activity is high or there is a concern about low goat numbers. Once the Region I goat sightability model is completed and tested it will be integrated into future surveys. We plan to use this model to control for variation in survey conditions, observers, and aircraft type.

2. Mortality-Harvest Monitoring

ACTIVITY 2.1. Continue the use of registration permit hunts with required reporting and permit conditions (e.g., required online mountain goat quiz, mandatory reporting, etc.).

Data Needs

Mandatory reporting is necessary so that department staff can understand the potential impacts of harvest on goat populations and issue emergency closures when harvest quotas are met to prevent overharvest.

Methods

Department staff collect harvest data from registration hunt reports. Hunt location, date of harvest, method of take, mode of transportation, and sex will be recorded. Data will be archived in the ADF&G's Wildlife Information Network (WinfoNet).

3. Habitat Assessment-Enhancement

ADF&G management staff have no plans to directly assess or manage goat habitat within Unit 1D. However, ADF&G research staff will continue to collect GPS location data from radiocollared mountain goats in order to further refine winter and summer habitat selection maps.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

Species management reports and plans for mountain goats in Unit 1D are stored online at: www.wildlifepublications.adfg.alaska.gov.

Agreements

ADF&G has data sharing agreements with BLM and the Haines Borough. In the past ADF&G had a funding agreement with the U.S. Bureau of Land Management which is likely to be renewed during RY18–RY23.

Permitting

None.

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