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CHAPTER 4: MOOSE MANAGEMENT REPORT

From: 1 July 2011
To: 30 June 2013

LOCATION

GAME MANAGEMENT UNIT: 1D (2,854 mi^2)

GEOGRAPHICAL DESCRIPTION: That portion of the Southeast Alaska mainland lying north of the latitude of Eldred Rock, excluding Sullivan Island and the drainages of Berners Bay.

BACKGROUND

Most Unit 1D moose inhabit the Chilkat River watershed and the Chilkat Peninsula. Within this area there are an estimated 200–250 mi^2 of summer range and 110–120 mi^2 of winter range, including 80 mi^2 of preferred winter range. Small areas of moose habitat are also located in the Chilkoot, Katzehin, and Warm Pass valleys, and along the western shore of Lynn Canal (ADF&G 1990a).

Moose migrated to the Chilkat River valley from drainages in Canada around 1930. Moose numbers peaked in the Chilkat Valley in the mid-1960s, when as many as 700 animals may have been present. By the early 1970s the moose population had sharply declined, possibly because of overuse of the range and overharvest. Survey data collected during the mid-1980s suggested that the herd had declined to 400 animals. More recent surveys suggest that the moose population is around 250 to 350 animals. Some care must be taken in interpreting the survey data because not all areas of the unit were surveyed each year, which undoubtedly accounts for some discrepancy in moose numbers between years.

During the late 1980s and early 1990s, Unit 1D residents expressed concern over the decrease in moose numbers from the highs seen in the 1960s, the subsequent decline in hunting opportunity, and the "stampede" nature of the “any-bull” registration permit hunts with low harvest quotas. To control the unpredictable nature of the hunt, regulations were introduced (a spike-fork/50-inch/3 brow tine requirement) but these were preempted when a Tier II subsistence hunt was implemented by the Alaska Board of Game (BOG) for the 1990 season. Widespread dissatisfaction with the allocation of 20 Tier II permits and concern over the status of the herd contributed to local opposition to holding a hunt in 1991, and no permits were issued that year. In 1992 the season was closed by emergency order before Tier II permits were issued. In March 1993 the BOG authorized a Tier II restricted antler hunt for Unit 1D. This hunt allowed more hunter opportunity while affording protection to bulls that did not meet antler requirements. The objective of restricted antler hunts is to spare a large proportion of the young and middle-aged

bulls from harvest to strengthen the breeding age segment of the population while allowing many local hunters the opportunity to pursue a moose.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

Population management objectives identified by staff for Unit 1D are as follows:

1. Maintain a post-hunt population of at least 200 moose
2. Maintain a post-hunt bull-to-cow ratio of 25:100
3. Sustain a harvest of 20–25 moose annually

METHODS

Chilkat River valley aerial surveys were conducted in both RY11 and RY12 (Table 1). Areas covered included the Chilkat River valley from Murphy Flats to Turtle Rock, and the Klehini, Takhin, Tsirku, Kelsall, and Chilkoot river valleys. Survey conditions for both years were considered good based on snow cover, overcast skies, and light winds.

Each year, prior to the moose hunt, we held an informational meeting in Haines to discuss the identification of legal and illegal moose. We showed the video "Is This Moose Legal?" to help hunters interpret the spike-fork/50-inch/3 brow tine regulation used to manage the Unit 1D hunt.

In both years of the report period we maintained a moose check station in Haines and required hunters to check in their harvested moose within 3 days of the kill. Incisors were collected from harvested moose as a condition of the Tier II permit. All permittees were required to turn in a hunt report card specifying if they hunted, hunt duration, hunt location, transport means (for all hunters), and date of kill (for successful hunters). We also collected data on antler measurements and configurations.

Harvest data were summarized by regulatory year (RY), which begins 1 July and ends 30 June (e.g., RY11 = 1 July 2011–30 June 2012).

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

We conducted aerial surveys in the fall of 2011 and fall of 2012. In fall 2011 we counted 212 moose and in fall 2012 we counted 177 moose. The number of moose counted during surveys for this report period is comparable to the surveys going back to the early 1980s (Table 1). Based on the number of observed animals, we estimate the moose population in the Chilkat Valley is between 250 and 350 animals.

Population Composition

Survey conditions during the fall 2011 survey were adequate to classify animals that were observed (212 total) as bulls, cows, or calves. We classified 28 (13%) of the moose seen on this survey as calves, which is slightly lower than the 15% and 14% of calves seen in the fall 2009

and fall 2010 surveys, respectively (Table 1). The bull:cow ratio was determined to be 45:100 and the calf:cow ratio was 22:100. Survey conditions in fall 2012 were also adequate to collect reliable herd composition, and we were able to classify 175 animals as bulls, cows or calves. We classified 24 (14%) of the moose seen as calves, while the bull:cow and calf:cow ratios were determined to be 38:100 and 22:100 respectively. The high bull:cow ratio during the R11 and RY12 surveys may have been a function of survey timing as most of the bulls apparently still retained their antlers, whereas some of the earlier surveys may have occurred after antler drop had begun. Often in Southeast Alaska, we do not get sufficient snow for conducting surveys until late December or January, long after antlers have begun dropping. Further review of Table 1 illustrates the variable nature of both the number of bulls and calves counted. The number of calves counted in each of the reporting period years was 16% below the 10-year mean count of 31 calves. It is more difficult to quantify bull moose because of survey timing. The highest bull:cow ratios in the last 10 years were recorded in RY06 and RY11 (Table 1).

The harvest age structure has remained consistent between the current and past reporting periods (RY07–RY10). Mean age at harvest during this report period was 3.8 years, which was similar to the mean age of 3.7 during the last report period.

MORTALITY

Harvest

Season and bag limit	Resident hunters	Nonresident hunters
1 bull with spike-fork or 50-inch antlers or antlers with 3 or more brow tines on 1 side by Tier II subsistence hunting permit only; up to 250 permits may be issued.	15 Sep–7 Oct (Subsistence hunt only)	No open season.

Alaska Board of Game Actions and Emergency Orders: During the fall 2010 BOG meeting there were no proposals submitted that pertained to Unit 1D moose. Similarly, there were no closures to the TM059 moose harvest during either of these reported periods.

Hunter Harvest: During this report period, the mean annual harvest was 22 moose, an increase from the 16 reported during the previous report period. In RY11, 21 bull moose were taken, and in RY12, 22 bull moose were harvested. The RY08 harvest had been the highest harvest during the past 10 years (n=30), and was likely due to the increased season length (approved by the BOG in fall 2006), which provided an extra week of hunting opportunity (Table 2).

Permit Hunts: All moose hunting in Unit 1D is administered under a Tier II subsistence permit system. Two hundred and fifty permits were available during each year of the report period (Table 3), and all 250 permits were issued in each of the RY11 and RY12 seasons.

Hunter Residency and Success: During the report period local residents were the primary Unit 1D moose hunters even though all Alaska residents are eligible to apply for this or any other Tier II hunt. Residents of Haines and Klukwan (Table 4) took 42 of the 43 moose harvested during the report period. Hunter success was 11% in each of RY11 and RY12. Success rates during this

report period are similar to those over the past decade (Table 5). Successful hunters took an average of 4.0 days in RY11 and 7.0 days in RY12 to harvest a bull moose (Table 3). Hunter days were 1,501 in RY11 and 1,590 in RY12 (Table 3).

Harvest Chronology: During each year of the report period, the Unit 1D moose season remained open for the entire 3 weeks of the season. Hunters took 57% and 36% of the harvest in the first week of the season in RY11 and RY12, respectively. This is partly due to the high level of participation during the early part of the season, but also reflects the quick harvest of bulls that have obviously legal antler formations. Six of the 11 bulls (27% of the total harvest) harvested the first week had spike/fork configuration, 3 bulls had 3 or more brow tines on at least one side, and 3 bulls with a more than a 50 inch spread were taken during this period in RY11. Three sublegal moose in RY11 were taken with 2 bulls having fewer than 3 brow tines, and 1 illegal bull being left unsalvaged in the field. In RY12 four bulls with spike/fork antlers, 2 bulls with 3 brow tines (9% of the total harvest), and 1 bull with more than a 50 inch spread was taken in the first week. Three sublegal bulls were taken after the first week in RY12 with 2 bulls harvested having less than 3 brow tines, and 1 bull with less than a 50 inch spread.

Transport Methods: Most Unit 1D moose hunters use boats or highway vehicles during the harvest (Table 6). During the RY11 and RY12 hunting seasons, 57% and 73% of successful hunters used boats, respectively. Many of the remaining successful hunters used highway vehicles (29% in RY11 and 18% in RY12; Table 6).

Commercial Services: No resident or nonresident hunters reported using commercial services during the report period (Table 7). Although hunters indicated they used commercial services in other report periods, hunters reporting use of commercial services may have been reporting incorrectly (e.g., listing commercial airline to Haines as a transporter). Virtually all hunters reside within or near the subunit, and are well equipped for moose hunting. Also, many hunters have hunted together for a number of years, and in some instances share transportation and camps.

Other Mortality:

Local residents continue to have interest in harvesting/accepting moose for cultural education and traditional funeral ceremonies. A sublegal bull moose was donated in both RY11 and RY12 for cultural education and another bull was harvested in RY11 for a potlatch ceremony. These types of harvests/donations are important for passing traditional subsistence knowledge from generation to generation. If interest increases, the department will work with interested parties and monitor these harvests to ensure compatibility with current management objectives and harvest strategies (i.e., spike/fork, 50 inch, or 3-brow-tine bull moose).

Unit 1D residents have suggested that local brown bear and wolf populations continue to predate moose calves and may be partly responsible for low recruitment rates we observe during aerial surveys. Unit 1D brown bear harvest accounts for the majority of mainland Southeast Alaska harvest, averaging 14 bears each year for the period RY98–RY09 (range 7–18; Bethune 2011), and has remained stable for the last several report periods. The skull size and age indices we have from these harvested bears do not indicate a change in the bear population. The wolf harvest is low in Unit 1D, averaging 5 wolves per year over the last 10 years (range 0–12; Sell 2012). Wolf data are not currently available for this reporting period; however, 7 and 11 wolves

were taken in RY09 and RY10, respectively. Wolf harvest data are inadequate to provide anything but general information on the wolf population in this area. Quantifiable data are not available to support the contention that the predator populations are increasing. However, we can and do measure the number of calves seen during our annual surveys. Based on these data, the percentage of calves in the herd during RY11 and RY12 (13% and 14% respectively) is on par or just above the 10-year average of 14% calves. In some years deep snow may contribute to calf mortality and this may have been the case during the heavy snow winters in the previous report period. Deteriorating range conditions may also play a role in low calf production and survival (Hundertmark et al. 1983), and this is something we hope to examine more closely through browse vegetation surveys.

The abundance of shrubs for both foraging and cover adjacent to the Haines Highway attracts moose, and has led to several moose-vehicle collisions over the years. However, we have not collected information on these kills consistently over time, nor have we been able to obtain jaws, and thus ages, from these moose. When possible these moose are salvaged and distributed to local charities.

Only one unreported hunter kill was discovered in either year of the report period. It appears that preseason education and a systematic approach for addressing moose that do not meet the antler requirements (enforcement action and meat distribution) has reinforced a positive working relationship with area moose hunters. Sublegal bull harvest does not appear to be a significant problem in Unit 1D although it is inherent with some populations managed under the spike-fork, 3-brow-tine, or 50-inch hunts.

HABITAT

Nearly all moose habitat in this subunit lies within the Haines State Forest, managed under multiple-use guidelines of the 2002 Haines State Forest Management Plan (Alaska Department of Natural Resources 2002). Increased browse production may occur in logged areas, though the extent, duration, and value of deciduous reproduction in these areas has not been determined. The long-term usefulness of recently logged areas to moose will be reduced if timber harvest occurs in high-value wintering areas, and if those areas are managed to produce second-growth coniferous stands rather than deciduous browse species. It is also important to note that in Southeast Alaska it has not been determined how important coniferous stands are for moose during periods of deep snow. Moose seem to respond similarly to deer when snow depth increases, selecting coniferous forest habitats where snow accumulates to a lesser degree than open habitats. These habitats may also play an important role in predator avoidance.

Habitat changes within nonforested portions of the area are also of concern, although only anecdotally documented in recent years. Research in the early 1980s showed a low proportion of young willow plants in shrub stands in the Chilkat River valley, and it is suspected that post glacial land uplift (isostatic rebound) is causing permanent habitat change. In May 2007 and 2008 department staff conducted moose browse surveys in three areas of the Unit 1D moose range. The department has interest in continuing browse surveys in the future; however, time constraints and staff availability prevented a survey from occurring during both this and the previous report period. Winter weather is an important factor to consider when reviewing these data. Current browse surveys are intended to provide general browsing information and to

identify locations that can be surveyed long term. Browse surveys are scheduled to continue in the next report period.

CONCLUSIONS AND RECOMMENDATIONS

The management objectives at the beginning of this report were adapted from the Strategic Plan for Management of Moose in Region I, Southeast Alaska 1990–94 (ADF&G 1990b). Based on existing aerial survey data and the lack of correction or sightability data, we believe it is practical to use a minimum population level of 200 moose, post hunt, as a management objective. The harvest objective of 20–25 bulls was met in RY11 (21) and RY12 (22). We were close to meeting the objective of a 12% hunter success rate in RY11 (11%) and in RY12 (11%).

The effect of predation upon moose calf survival in this area is unknown. An apparently healthy brown bear population (as well as a less prominent black bear population) may account for substantial early summer mortality, according to anecdotal accounts, but predator-prey relationships have not been investigated in the Chilkat River valley. Winter wolf predation does not appear to be a serious problem, except when moose movements are restricted by extremely deep snow. However, the active trapping populace likely maintains a check on this source of predation.

McCarthy (ADF&G 1990a) called for investigation into the relationship between timber harvest and moose habitat in the Chilkat River valley. Other means of converting decadent hardwood stands to encourage growth of browse species should be pursued and tried on a pilot basis, while maintaining adequate conifer growth for moose to use for winter shelter.

Aerial surveys conducted the last few years suggest that moose numbers in Unit 1D have remained relatively stable over the past 20 years. During this report period, the harvest of yearling and 2.5 year age classes were well represented (51%), which suggests that calf survival and recruitment of young bulls into the harvestable age classes has been good the past 2 years. The present regulatory structure supports a moose population concomitant with habitat capabilities. Predation, deep snows, and possible habitat constraints point to the need for regular surveys to better understand the status and trend of the population.

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While this unit report was actually published in 2016, it is part of the set of 2014 unit species management reports, so we suggest citing the report as a 2014 report to maintain its relationship to the other 2014 unit reports.

Table 1. Unit 1D (Chilkat Valley) moose aerial survey data, regulatory years 1998 through 2012[a].

Regulatory year	Total Bulls	Total Cows	Total calves	Unk	Total moose	Count time (hrs)	Bulls per 100F	Calves per 100F	Calves % in herd	Moose per hour
1998	20	23	25	103	171	5.2	---	---	15	33
1999	---	4	4	67	75	4.9	---	---	---	15
2000	28	30	35	129	222	5.5	---	---	16	40
2001	38	153	30	---	221	5.2	25	20	14	42
2002	No Survey									
2003	29	103	26	---	158	4.4	28	25	16	36
2004	23	45	52	119	239	4.4	---	---	22	54
2005	46	118	39	---	203	5.0	39	33	19	41
2006	49	106	31	2	188	4.4	46	29	16	43
2007	43	144	23	1	211	4.3	30	16	11	49
2008	25	22	23	140	210	5.7	---	---	11	37
2009	38	110	27	8	183	4.7	35	25	15	39
2010	47	120	27	3	197	6.0	39	23	14	33
2011	57	127	28	0	212	6.0	45	22	13	35
2012	42	109	24	2	177	4.4	38	22	14	40

[a] Missing data is due to surveys conducted "post" antler drop which prevented us from acquiring herd composition data.

Table 2. Unit 1D age structure of harvested moose, regulatory years 2001 through 2012.

	Age Class																		
Year	0.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	Total kill	% aged	Mean age
2001	0	8	1	1	3	1	1	1	1	0	0	0	0	0	0	0	17	100	3.5
2002	0	3	2	4	5	1	1	2	2	0	0	0	0	0	0	0	22	91	4.5
2003	0	3	1	3	3	8	0	2	0	0	0	0	0	0	0	0	21	95	4.5
2004	0	4	2	4	3	3	0	3	0	0	0	0	0	0	0	0	19[a]	100	4.1
2005	0	8	1	5	1	2	0	0	0	0	0	0	0	0	0	0	18	94	2.8
2006	0	12	3	3	3	2	2	2	0	0	0	0	0	0	0	0	27	100	3.3
2007	0	6	8	4	1	0	2	0	0	0	1	0	0	0	0	0	22	100	3.2
2008	0	6	7	2	1	8	2	1	1	1	0	0	0	1	0	0	30	100	4.5
2009	0	6	3	2	2	1	2	1	1	0	0	0	0	0	0	0	18	100	3.7
2010	0	7	4	1	4	2	1	1	0	0	1	0	0	0	0	0	21	100	3.7
2011	0	10	1	2	3	0	1	2	0	0	1	0	1	0	0	0	21	100	3.9
2012	0	7	4	4	2	2	0	0	2	1	0	0	0	0	0	0	22	100	3.7

[a] Does not include 1 unsalvaged illegal harvest.

Table 3. Unit 1D moose hunter effort and success, regulatory years 2001 through 2012.

		Successful hunters			Unsuccessful hunters			Total hunters		
Year	Permits Issued	No. hunters	Total No. days	Avg No. days	No. hunters	Total No. days	Avg No. days	No. hunters	Total No. days	Avg No. days
2001	200	17	68	4.0	137	963	7.0	154	1,031	6.7
2002	200	22	78	3.5	135	971	7.2	157	1,049	6.7
2003	222	21	80	3.8	140	895	6.4	161	975	6.1
2004	202	19	86	4.5	142	1,029	7.2	161	1,115	6.9
2005	220	18	87	4.8	148	934	6.3	166	1,021	6.2
2006	220	27	77	2.9	150	934	6.2	177	1,011	5.7
2007	220	22	104	4.7	156	1,430	9.2	178	1,534	8.6
2008	220	30	203	6.8	155	1,365	8.8	185	1,568	8.5
2009	251	15	75	5.0	199	1,876	9.4	214	1,951	9.1
2010	250	16	85	5.3	174	1,470	8.4	190	1,555	8.2
2011	250	21	84	4.0	172	1,417	8.2	193	1,501	7.8
2012	250	22	154	7.0	177	1,436	8.1	199	1,590	8.0

Table 4. Unit 1D annual moose kill by community of residence, regulatory years 2001 through2012.

Regulatory year	Total kill	Haines	Skagway	Juneau	Sitka	Other Alaska	Non-resident
2001	17[a]	16	0	0	1	0	0
2002	22	21	1	0	0	0	0
2003	21	18	0	3	0	0	0
2004	19[b]	18	1	0	0	0	0
2005	18	15	0	2	0	1	0
2006	27	25	0	1	1	0	0
2007	22	20	0	1	1	0	0
2008	30	30	0	0	0	0	0
2009	15	14	0	1	0	0	0
2010	16	15	0	0	1	0	0
2011	21[b]	20	0	1	0	0	0
2012	22	22	0	0	0	0	0

[a] Includes 1 illegally harvested bull.
[b] Does not include 1 unsalvaged illegal harvest.

Table 5. Unit 1D historical moose harvests, number of hunters, and percent success, regulatory years 2001 through 2012.

Regulatory year	No. males	No. females	No. unknown	Total kill	No. hunters	Percent success
2001	17	0	0	17	154	11
2002	22	0	0	22	157	14
2003	21	0	0	21	161	13
2004	19[a]	0	0	19	161	12
2005	18	0	0	18	166	11
2006	27	0	0	27	177	15
2007	22	0	0	22	178	12
2008	30	0	0	30	185	16
2009	15	0	0	15	214	7
2010	16	0	0	16	190	8
2011	21[a]	0	0	21	193	11
2012	22	0	0	22	199	11

[a] Does not include 1 unsalvaged illegal harvest.

Table 6. Unit 1D transport methods used by successful moose hunters, regulatory years 2001 through 2012.

	Airplane		Boat		ORV		Highway vehicle		Other	
Year	Total	(%)	Total	(%)	Total	(%)	Total	(%)	Total	(%)
2001	1	(6)	14	(82)	0	---	2	(12)	0	---
2002	2	(9)	12	(55)	2	(9)	5	(23)	1	(5)
2003	1	(5)	13	(62)	1	(5)	3	(14)	3	(14)
2004	0	---	11	(58)	1	(5)	6	(32)	1	(5)
2005	0	---	12	(66)	3	(17)	3	(17)	0	---
2006	2	(7)	14	(52)	3	(11)	7	(26)	1	(4)
2007	0	---	14	(64)	5	(23)	3	(14)	0	---
2008	0	---	16	(53)	2	(7)	11	(37)	1	(3)
2009	0	---	10	(67)	3	(17)	2	(11)	0	---
2010	1	(5)	8	(50)	3	(19)	4	(25)	0	---
2011	0	---	12	(57)	3	(14)	6	(29)	0	---
2012	0	---	16	(73)	0	---	4	(18)	2	(9)

Table 7. Unit 1D commercial services[a] used by moose hunters, regulatory years 2001 through 2012.

	Unit residents		Other AK residents		Total use		Other
Year	No	Yes	No	Yes	No	Yes	services
2001	128	1	8	0	136	1	0
2002	134	0	9	0	143	0	0
2003	136	3	6	1	142	4	0
2004	135	1	10	0	145	1	0
2005	145	2	9	1	154	3	0
2006	169	0	8	0	177	0	0
2007	174	0	4	0	178	0	0
2008	178	0	7	0	185	0	0
2009	202	1	11	0	213	1	0
2010	181	0	9	0	190	0	0
2011	182	0	11	0	193	0	0
2012	187	0	12	0	199	0	0

[a] Commercial service use may not be accurate due to reporting errors.