

Moose Management Report and Plan, Game Management Unit 1B:

Report Period 1 July 2010–30 June 2015, and
Plan Period 1 July 2015–30 June 2020

Richard E. Lowell



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This species management report and plan was reviewed and approved for publication by Thomas Schumacher, Management Coordinator for Region I for the Division of Wildlife Conservation.

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Purpose of this Report

This report provides a record of survey and inventory management activities for moose in Unit 1B during the 5 regulatory years 2010–2014 and plans for survey and inventory management activities in the following 5 regulatory years 2015–2020. A regulatory year (RY) runs from 1 July through 30 June (e.g., RY10 = 1 July 2010–30 June 2011). This report is produced primarily to provide agency staff with data and analyses to help guide and record its own efforts but is also provided on our website to inform the public about wildlife management activities. In 2016 the Alaska Department of Fish and Game’s Division of Wildlife Conservation (ADF&G/DWC) launched this new type of 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 moose management report of survey and inventory activities that was previously produced every 2 years.

I. RY10–RY14 Management Report

Management Area

Game Management Unit 1B encompasses Alaska mainland, extending from Cape Fanshaw south to Lemesurier Point and northeast of these points to the Canadian Border (Fig. 1). It is within ADF&G/DWC’s Region I, Southeast Alaska, management area. Southeast Alaska is also referred to as Alaska’s Panhandle. There are no major communities in Unit 1B; however, small settlements exist at Point Agassiz near Thomas Bay, on Farm Island in the Stikine River Delta, and at Meyer’s Chuck on the Cleveland Peninsula.

The Stikine River is a transboundary mainland river system that originates in the Spatsizi Plateau of British Columbia and bisects the Coast Range before flowing into Sumner Strait near Wrangell, Alaska. About 30 miles (48.3 km) of the river lie within Alaska, flowing through a steep valley approximately 1–2 miles (1.2–1.9 km) wide. The area used by Stikine moose encompasses the Stikine River drainage and the Stikine River Delta and parts of adjacent drainages. The principal use area consists of about 55 mi² (142 km²) of riparian habitat that lies entirely within the boundaries of the Stikine–LeConte Wilderness Area. The Stikine River Delta is the largest intertidal wetland in Southeast Alaska and consists of 77mi² (200 km²) of marsh and tidal flats (Craighead et al. 1984).

Elevation within Unit 1B ranges from sea level to 9,078 feet (2767 meters). Predominant vegetative communities occurring at low-moderate elevations (<1,500 ft) (457 meters) include Sitka spruce (*Picea sitchensis*) and western hemlock (*Tsuga heterophylla*) coniferous forest, mixed-conifer muskeg, and deciduous riparian forests. Mountain hemlock (*Tsuga mertensiana*) dominated forest comprises a subalpine, timberline band between 1,500 and 2,500 feet (457 and 762 meters) elevation.

Summary of Status, Trend, Management Activities, and History of Moose in Unit 1B

Moose are indigenous but recently established in Unit 1B. Since the mid-twentieth century, isolated populations of moose on the U.S. side of the Stikine River Valley and at Thomas Bay have been hunted for food and trophies. Isolated populations of moose (*Alces alces*) occur in Unit 1B and are believed to be the *andersoni* subspecies. They migrated from interior British Columbia through the Coast Range via the Stikine River Valley around the turn of the twentieth century.

Moose occur in several areas of Unit 1B, with concentrations in the Stikine River drainage, and at Thomas Bay and Farragut Bay. Moose also occur south of the Stikine River around Virginia Lake, Mill Creek, and Aaron Creek, with a few moose occupying suitable habitat adjacent to Bradfield Canal. The vast majority of moose harvested in the unit are taken either from the Stikine River drainage or in the vicinity of Thomas Bay. In recent years moose in Unit 1B have appeared to be expanding their range outward from the Stikine River and Thomas Bay.

Moose inhabiting the Alaska portion of the Stikine drainage represent the westernmost tip of a mainland population emanating from Canada. The Alaska portion of this population was estimated at 300 animals in 1983 (Craighead et al. 1984). Moose populations at Thomas Bay and Farragut Bay are isolated from populations in Canada by the Coast Mountains. For the most part, moose at Thomas Bay occupy an area that was heavily logged from the late 1950s through the early 1970s. The Thomas Bay moose population now appears to be in decline and will likely continue to decline as conifer regeneration in clearcuts matures and reduces forage production.

Information on the distribution of moose in Unit 1B is derived primarily from hunter harvest locations, observations by state and federal biologists, and anecdotal reports from the public. With the exception of a single radiotelemetry study of Stikine River moose conducted during the early 1980s (Craighead et al. 1984) no recent radiotelemetry studies have been conducted on moose in the unit, and little is currently known about moose movement patterns. Craighead et al. (1984) found minimal movement of Stikine moose between Canada and Alaska, and no major seasonal migrations across the international border. Collared moose were most often found at elevations below 2,000 feet, with 60% of telemetry locations below 100 feet.

In 1995 antler restrictions were implemented in the drainages of the Stikine River and as a result now apply to moose hunting throughout Unit 1B. From 1995 to 2008 the entire RM038 hunt area, including Unit 1B (Fig. 2), was managed with season dates of 15 September–15 October, and a 1-bull bag limit with a spike-fork, 3-brow tine, or 50-inch antler restriction. The antler restrictions adopted throughout the RM038 hunt area in 1995 were originally developed for Alaska–Yukon moose (*Alces alces gigas*) on the Kenai Peninsula and later applied to Western Canada moose (*Alces alces andersoni*) inhabiting the central Southeast Alaska Panhandle.

Speculation had long existed that the moose antler restrictions in effect 1995–2008 were overly protective when applied to the smaller *andersoni* subspecies inhabiting the central Panhandle region. Moose in the RM038 hunt area seldom acquire antler spreads in excess of 50 inches and it was widely believed that the spike-fork, 3-brow tine, or 50-inch antler restrictions failed to partition the harvest among various age classes as intended and were protecting mature bulls in



Figure 1. Map showing Units 1A and 1B in Southeast Alaska.

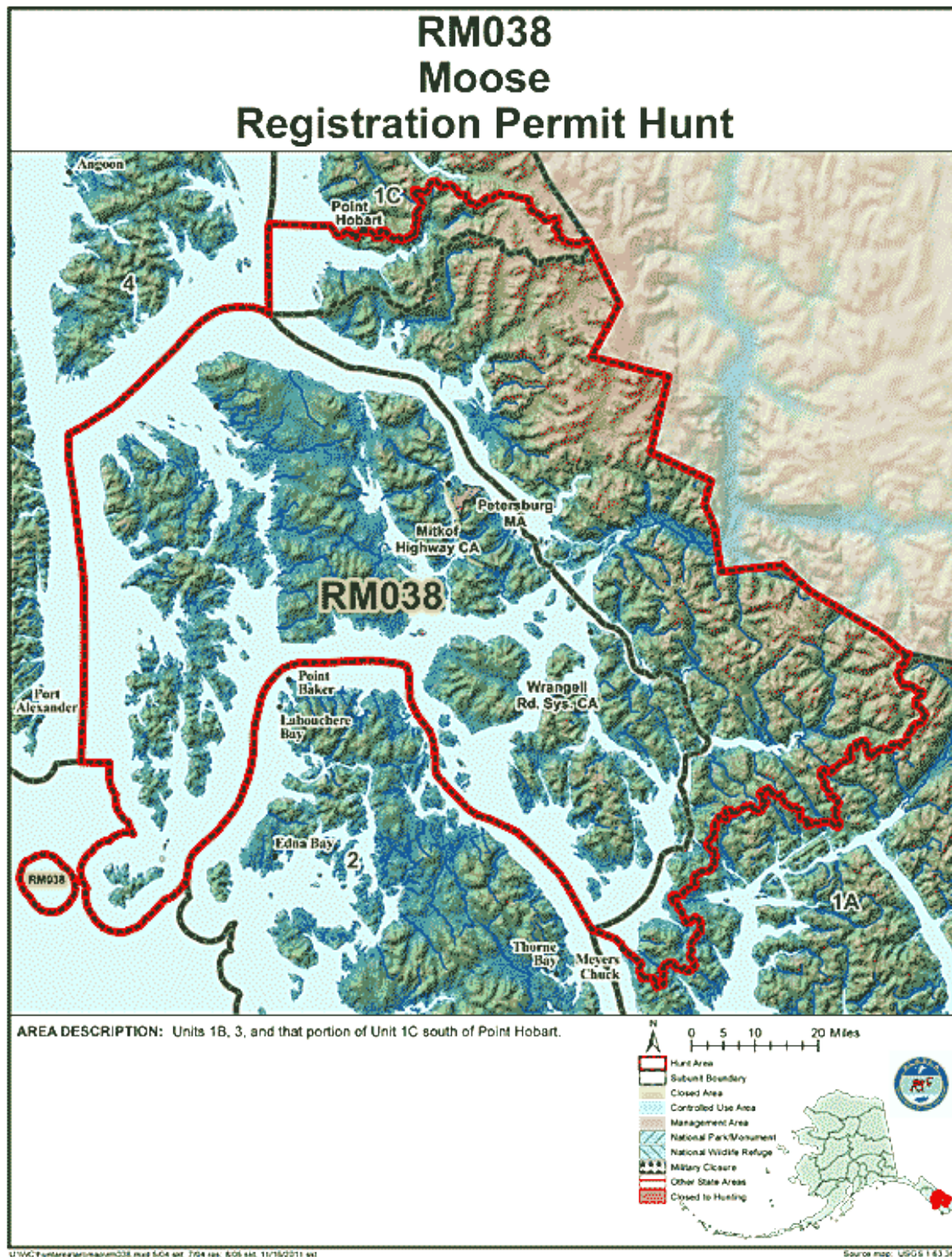


Figure 2. Map showing the RM038 registration permit hunt area in Southeast Alaska.

excess of those needed for timely and complete breeding of cows. Nonetheless, the antler restrictions in place at the time did a good job of constraining the moose harvest to sustainable levels given the high level of interest and participation in the RM038 moose hunt.

Modifying the moose antler restrictions to allow the harvest of bulls with 2 brow tines on both antlers had been proposed by the public in the past. At the time, however, bulls with 2 brow tines on both antlers were among the protected segment of the population and as a result the department lacked sufficient information on the age structure of these bulls to allow their harvest without risking overharvest.

At the request of the department, in 2004 the board established a limited number of any-bull drawing permit hunts within portions of the RM038 hunt area, including Unit 1B. The any bull drawing hunts were intended to gather information on the age structure and antler characteristics of that segment of the bull population otherwise protected under the existing antler restrictions. After 3 seasons of limited any-bull harvest, the department felt it had sufficient information to safely recommend that the then-existing spike-fork, 3-brow tine, or 50-inch antler restrictions be modified to also allow the harvest of bulls with 2-brow tines on both antlers.

Analysis of the antler and age data collected from the any-bull drawing permit hunts indicated that the median age of a bull with 2 brow tines on both antlers is 6 years of age in Units 1B and 3. Under the existing selective harvest strategy that put most bulls with 2 brow tines on both antlers in an age class considered suitable for harvest. It appeared that liberalizing the antler restrictions on the bag limit to allow harvest of bulls with 2 brow tines on both sides would provide additional harvest opportunity without jeopardizing the health of the RM038 moose herd.

In fall 2008, based in large part on age and antler data collected during the any-bull moose drawing permit hunts conducted from 2005 to 2008, the Board of Game authorized liberalization of the moose antler restrictions for the RM038 hunt area. As a result, beginning with the 2009 season, the RM038 antler restrictions were liberalized to allow the harvest of bulls that possessed spike-forked antlers or 50-inch antlers or antlers with 3 or more brow tine at least 1 side, or 2 or more brow tines on both sides.

The antler restrictions currently in place for moose in the RM038 hunt area, including Unit 1B, are among the most liberal in the state. The liberal antler restrictions, combined with a month-long season that fully encompasses the rut, affords hunters with ample opportunity to harvest a moose. If not for several factors, including that much of Unit 1B is remote and inaccessible to hunters, and that moose sightability is hampered by dense coniferous forests, the population might otherwise be incapable of sustaining such liberal antler restrictions and season dates.

STIKINE RIVER

The Stikine River moose population is an indigenous but recently established population. Moose migrated into the valley of the lower river from the interior of British Columbia on the Canadian side of the Coast Range. Few moose were noted on the American side of the boundary in the early part of the twentieth century, but, by the early 1950s U.S. Fish and Wildlife Service reports show that hunting pressure for moose had become intense.

The focus of moose management in Unit 1B is on the Stikine drainage and immediate area, which corresponds to ADF&G Wildlife Analysis Areas (WAAs) 1707 and 1708. Moose also occur and are occasionally hunted and killed in drainages on the mainland coast south of the Stikine to the head of Bradfield Canal. Hunting regulations for the Stikine apply to these areas as well, and Stikine harvest figures include the kill from these areas.

Observations of Stikine moose show that they are more often associated with vegetation in early successional stages than with advanced stages. Alder and willow dominated vegetation types are used most frequently, and Stikine moose thrive where there is a wide mix of habitat types in an area. During heavy rain, snow, or strong winds, Stikine moose seek shelter in old-growth spruce stands. Because the Stikine valley is subject to heavy snow accumulation, the availability of old-growth spruce may be essential to winter survival of moose there. Willow and red osier dogwood are the preferred browse species, and both occur in abundance in the area (Craighead et al. 1984).

THOMAS BAY

Thomas Bay moose are believed immigrated from the nearby Stikine River. There were no moose in the area in 1930, but homesteaders on the Muddy River report that moose moved in as early as 1937, when a large bull was seen by several people. Leif Loseth, a dairy farmer, recalls killing a bull moose as early as 1942. Mr. Loseth said that the population grew at a rapid rate after 1937 with moose seeming to immigrate from the direction of Horn Cliffs and the Muddy River glacier. With the advent of roading and clearcut logging in the early 1950s, residents of Petersburg became aware of the moose and more hunters were attracted to the area each year.

U.S. Fish and Wildlife Service records indicate that 3 bulls were taken in the Thomas Bay area in 1953. Subsequently, harvest reports for the Thomas Bay area were sporadic until the 1970s. The average annual reported take for the period 1972 through 1988 was 14 bulls. The highest reported harvests occurred during 1988, 1992, and 1993, each with 27 bulls taken.

In response to hunter desires, vehicle restrictions are in effect that prohibit the use of motorized land vehicles for hunting moose. One result of the vehicle restriction is the extensive use of bicycles by moose hunters. Some hunters obtain annual U.S. Forest Service permits to maintain tent platforms.

Moose populations at Thomas Bay responded favorably to the initial increase in available browse resulting from extensive clearcut logging between 1958 and 1975. Since that time the dense, closed-canopy forests resulting from natural regeneration of second growth stands has reduced available understory browse vegetation, and the annual moose harvest has declined.

Management Direction

EXISTING WILDLIFE MANAGEMENT PLANS

Region I developed a moose management plan in the late 1980s (ADF&G 1990) that was intended to guide management through RY94. That plan was never formally updated. With the exception of the *Gustavus* population, the 1990 plan includes objectives and management strategies for moose populations throughout the region, including Unit 1B.

Although the overall goals of the original plan are important, the management objectives and harvest management strategies have changed since the plan was written based on public comment, staff recommendations, and Board of Game actions. These periodic changes in management planning have been reported in the division's previous species management reports.

GOALS

Regionwide moose management goals were established during creation of the Region I moose management plan (ADF&G 1990). The following goals are general and applicable to the entire region:

1. To maintain, protect, and enhance moose habitat and other components of the ecosystem.
2. To maintain viable populations of moose in their historic range throughout the region.
3. To manage moose on a sustained yield basis.
4. To manage moose in a manner consistent with the interests and desires of the public.
5. To manage primarily for meat, rather than trophy hunting of moose.
6. To manage for the greatest hunter participation possible consistent with maintaining viable populations, sustained yield, subsistence priority, and the interests and desires of the public.
7. To provide opportunities to view and photograph moose for the benefit of nonhunters (nonconsumptive users) of moose.
8. To develop and maintain a database useful for making informed management decisions.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

Prior to 2006, state law contained a positive customary and traditional use finding for moose in Stikine River drainages, specifying that an annual harvest of 40 moose was the Amount Reasonably Necessary for Subsistence (ANS). In fall 2006, the Alaska Board of Game expanded the customary and traditional use finding beyond the Stikine drainages to include all of Units 1B and 3. As a result, the ANS of 40 moose now applies to all of Units 1B and 3.

Intensive Management

In 1998 the Alaska Board of Game made negative determinations for Intensive Management (5 AAC 92.108) of moose populations in Unit 1B and 3.

MANAGEMENT OBJECTIVES

<u>Stikine River</u>	<u>Plan Objective</u>
Post-hunt numbers	300
Annual hunter kill	30
Number of hunters	250
Hunter-days of effort	1,750
Hunter success	12%

<u>Thomas Bay</u>	<u>Plan Objective</u>
Post-hunt numbers	200
Annual hunter kill	20
Number of hunters	160
Hunter-days of effort	675
Hunter success	12%

MANAGEMENT ACTIVITIES

Before acquiring an RM038 registration permit, all hunters are required to watch ADF&G's video "Is This Moose Legal" (1995; an updated version is in development) to familiarize themselves with moose antler architecture and antler restrictions. All successful hunters are required to present the antlers attached to the skull plate to ADF&G representatives to verify compliance with antler restrictions. They are also required to turn in the lower front teeth for aging. Since 1997 all RM038 hunters have been asked to report the number of moose (by sex and age class), wolves, and bears they observed during the hunting season.

Aerial surveys of the Stikine River moose population date back to the mid-1950s. We attempt to monitor minimum abundance and age and sex ratios in the Stikine River drainage by aerial counts one or more times per year when conditions allow. Although dense vegetation in portions of the drainage substantially reduces the effectiveness of the aerial survey technique, no satisfactory alternative has been discovered. Inadequate survey conditions prior to antler drop (e.g., lack of snow cover, high winds, and limited pilot availability) frequently hinder our ability to regularly obtain information on sex and age composition for the Stikine River herd.

The number of moose observed during aerial counts can vary widely from year to year depending on environmental conditions and survey timing. In general, aerial surveys of the Stikine River tend to yield higher counts when surveys are conducted in late winter, when animals are congregated on winter range and tend to be sedentary. However, it is not possible to obtain reliable herd composition counts during late winter months after bulls have shed their antlers, as distinguishing yearling moose from adults becomes more difficult.

1. Population Status and Trend

With the exception of the Stikine River drainage, population size, distribution, sex and age ratios, and other population characteristics of moose in Unit 1B are unknown. Although dense vegetation along the river substantially reduces the effectiveness of the aerial survey technique,

uniform dense forest cover and the lack of concentrated wintering habitat make aerial surveys elsewhere in the unit make aerial surveys impractical. Results of the Stikine River counts of the moose are difficult to interpret because poor weather and/or survey conditions often prevent flights during the optimum fall and early winter period. As a result, survey results can vary widely from year to year, and without a sample of radiocollared moose, sightability cannot be estimated. Aerial surveys, therefore, represent minimum counts.

The number of moose observed and reported by hunters on registration hunt reports provides some of the limited information on population composition in the unit. Because these data are based on anecdotal accounts from hunters, there is a high likelihood of replicate sightings, and the data must be interpreted cautiously. The accuracy of the hunter sighting information is not known, but during the report period it was more consistent than the Stikine aerial survey results, supporting the idea that the population is stable and lightly harvested. Hunter observations have been validated with biological data for detecting change in abundance and age-sex composition of moose in Norway (Solberg and Saether 1999) and Sweden (Ericsson and Wallin 1999).

ACTIVITY 1.1. Monitor minimum abundance and age and sex ratios in the Stikine River drainage by aerial counts one or more times per year when conditions allow.

ACTIVITY 1.2. Monitor abundance and age and sex ratios of moose through observations of hunters reported on required registration permit hunt reports.

Data Needs

Estimates of abundance and age-sex composition are commonly used to inform harvest strategies. Moose range throughout lower and mid elevation habitat in Unit 1B. However, due to dense coniferous forest cover across most of Unit 1B, only moose in the Stikine River drainage (<2% of Unit 1B) can be routinely seen from the air, and then only when adequate snow cover, favorable survey weather, and aircraft availability coincide. There are currently no unitwide estimates of moose numbers in Unit 1B. With the exception of the Stikine River drainage, there is dense forest cover and a lack of concentrated wintering areas on the mainland, making aerial surveys of the unitwide moose population impractical. Hunter observations of moose provide an index to relative abundance and composition over time.

Methods

During the report period, 1 to 2 winter population surveys were conducted annually along the Stikine River Valley to count moose and when possible gather age and sex composition data (adults and calves); data were recorded on a survey form (Appendix A) Population surveys should be conducted during periods when there is 100% snow cover, but this was not always possible due to inequitable distribution of snow cover from the river delta to the international border. As a result, surveys have been conducted under less than ideal conditions at times to obtain age and sex composition data prior to the loss of antlers.

Over the last decade, population surveys have been conducted exclusively with a helicopter (Hughes 500), which provides greater maneuverability than fixed wing aircraft. Except where dense coniferous forest severely reduces sightability of moose, a pilot and single observer maintain approximately 500 foot altitude above ground level and fly transects separated by approximately 400 to 500 meters depending on ground cover vegetation.

Similar to information on hunter effort and harvest, observations of moose by hunters, including sex and age class, are reported on mandatory registration permit hunt reports.

Results and Discussion

A total of 5 aerial moose surveys of the Stikine River were conducted from 2010 to 2014, including 1 survey each in 2010, 2011, and 2014, and 2 surveys in 2012. No surveys were conducted in 2013 due to poor survey conditions and limited pilot availability. Of the 5 surveys conducted during the report period, 3 were conducted during early to mid-December prior to antler drop, thereby obtaining information on the sex and age composition of the Stikine moose population.

Table 1 summarizes the results of all Stikine River valley moose surveys during the report period. Dense coniferous forest, variable snowfall, and inclement weather make thorough surveys difficult. Except in instances when early snowfall facilitates aerial surveys prior to antler-drop, no attempts are made to differentiate between bulls and cows; however, the numbers of adults and calves during late winter aerial surveys is still recorded.

Table 1. Unit 1B Stikine River, Alaska area aerial moose surveys, regulatory years^a 2010 through 2014.

Year month/day	Adults	Calves	(%) Calves	Unidentified	Total moose	Moose/hour
2010						
12/14 ^b	96	26	(21)	3	125	49
2011						
12/07 ^b	67	14	(17)	1	82	24
2012						
3/21 ^b	—	—	—	—	86	34
12/12 ^b	49	16	(25)	0	65	27
2013	No data					
2014						
2/21 ^b	117	36	(24)	0	153	56

^a A regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.

^b Helicopter survey.

Five surveys were conducted during this report period (Table 1). The Stikine drainage experienced early winter snowfall and good survey conditions in December of RY10, RY11, and RY12, and surveys were conducted to obtain the data required to estimate bull:cow ratios. Total moose seen varied from 65 in December 2012 to 153 in February 2014. Bull:cow ratios varied from 10 bulls:100 cows in December 2011 to 20 bulls:100 cows in December 2012, and calf:cow ratios varied from 23 calves:100 cows in December 2011 to 39 calves:100 cows in December 2012. Sex and age of moose seen during surveys in March 2012 and February 2014 could not be reliably determined. Due to the known limitations of aerial survey in this unit, it is not clear if the dramatic changes in survey results are a product of differences in sightability and moose distribution between the surveys or if they represent actual changes in the moose population.

Table 2 summarizes unitwide moose sightings reported by hunters participating in RM038. Numbers of moose reported seen ranged from 4.3 to 5.7 moose per hunter. Bull:cow ratios were 3 to 4 times higher and calf:cow ratios were about double those seen on aerial surveys. Differences between hunter reports and aerial survey findings may be explained by hunters seeing the same moose several times over a period of days and several different hunters reporting sightings of the same moose, whereas individual moose are only sighted once during aerial surveys. The more conservative aerial survey data are used to inform management decisions.

Table 2. Number of moose observed and reported by Unit 1B, Alaska moose hunters on registration hunt reports, regulatory years^a 2010 through 2014.

Regulatory year	No. hunters	Bulls	Cows	Calves	Total	Bull:cow	Calf:cow
2010	245	442	625	251	1,318	71:100	40:100
2011	234	458	627	240	1,325	73:100	38:100
2012	259	495	669	314	1,478	74:100	47:100
2013	259	425	535	215	1,175	79:100	40:100
2014	240	335	522	167	1,024	64:100	32:100

^a A regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.

Recommendations for Activity 1.1. Annual aerial counts to monitor minimum abundance and age and sex ratios in the Stikine River drainage should be continued.

Recommendations for Activity 1.2. Efforts to monitor the abundance of moose and the age and sex composition of the population using hunter observations that are recorded on required registration permit hunt reports should be continued.

2. Mortality–Harvest Monitoring and Regulations

ACTIVITY 2.1. Monitor hunter harvest, effort and success.

Data Needs

We gather data on hunter harvest, effort and success as another way of monitoring hunter interest and the abundance of moose in the unit.

Methods

Hunters in Unit 1B must possess an RM038 registration permit before taking to the field in search of moose. At the time the permit is issued hunters are also provided with a mail-in hunt report card. Submitting a hunt report is mandatory for all permittees whether they hunt or not. Hunt reports provide the department with information, including the number of participants in the hunt, number of days hunted, date and location of hunt, transportation method, and use of commercial services.

Results and Discussion

Permit Hunts

Action by the Alaska Board of Game (BOG) effective 1 July 1995 put all of Units 1B and 3 and that portion of Unit 1C south of Point Hobart under one registration permit hunt (RM038).

Season and Bag Limit

Season and Bag Limit

Unit 1B

Nonresident and resident hunters

15 Sep–15 Oct

1 bull with spike-fork antlers or 50-inch antlers
or antlers with 3 or more brow tines on 1 side,
or 2 or more brow tines on both sides by
registration permit only

Harvest by Hunters–Trappers

Harvest levels and population characteristics can fluctuate from year to year as a result of both hunting and natural processes. Because antler restrictions are intended to focus harvest pressure on younger and older bulls, overwinter survival and the number of calves and yearlings recruited into the population can greatly influence harvest levels from one year to the next. During the reporting period (RY10–RY14), the Unit 1B moose harvest averaged 34 bulls per year, ranging from a low of 28 in RY10, to a high of 45 in RY14 (Table 3).

The average annual harvest from the Stikine River (including Unit1B south of LeConte Bay and Glacier) was 24 moose per year, ranging from a low of 19 in RY11 to a high of 37 in RY14 (Table 4).

During the report period the average annual harvest in the Thomas Bay area (including Farragut Bay) was 9 moose per year, ranging from a low of 6 in RY10, to a high of 13 in RY13 (Table 5).

Table 3. Unit 1B, Alaska (unitwide) moose harvest, regulatory years^a 2010 through 2014.

Year	Hunter harvest reported				Illegal ^b	Unk	Total
	M	(%)	F	(%)			
2010	27	(100)	0	(0)	1	0	28
2011	26	(100)	0	(0)	3	0	29
2012	27	(100)	0	(0)	3	0	30
2013	33	(100)	0	(0)	3	0	36
2014	44	(100)	0	(0)	1	0	45

^a A regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.

^b Moose that failed to meet the antler restrictions.

Table 4. Unit 1B, Alaska (Stikine^a) moose harvest, regulatory years^b 2010 through 2014.

Year	Hunter harvest reported				Illegal ^c	Unk	Total
	M	(%)	F	(%)			
2010	22	(100)	0	(0)	0	0	22
2011	18	(100)	0	(0)	1	0	19
2012	18	(100)	0	(0)	2	0	20
2013	20	(100)	0	(0)	3	0	23
2014	36	(100)	0	(0)	1	0	37

^a Includes Unit 1B south of Le Conte Bay.

^b A regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.

^c Moose that failed to meet the antler restrictions.

Table 5. Unit 1B, Alaska (Thomas and Farragut bays^a) moose harvest, regulatory years^b 2010 through 2014.

Year	Hunter harvest reported				Illegal ^c	Unk	Total
	M	(%)	F	(%)			
2010	5	(100)	0	(0)	1	0	6
2011	8	(100)	0	(0)	2	0	10
2012	9	(100)	0	(0)	1	0	10
2013	13	(100)	0	(0)	0	0	13
2014	8	(100)	0	(0)	0	0	8

^a Includes that portion of Unit 1B located north of LeConte Bay and Glacier.

^b A regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.

^c Moose that failed to meet the antler restrictions.

Hunter Effort, Residency, and Success

During RY10–RY14 the number of hunters in the Stikine River area average 174 annually, ranging from 162 to 198 hunters per year, and the hunter-days of effort averaged 1,319 per year, ranging from 1,121 to 1,532 hunter-days of effort annually. Hunter success averaged 14%, ranging from 10% to 23%.

During RY10–RY14, the number of hunters in the Thomas and Farragut bays area averaged 73 per year, ranging from 61 to 83 hunters per year, and the hunter-days of effort averaged 561 per year, ranging from 386 to 662 hunter-days of effort per year. Hunter success averaged 13%, ranging from 7% to 17%.

The majority of Unit 1B moose hunters are local residents and participation by nonlocal residents and particularly nonresidents is typically low. During the report period, local residents of Wrangell and Petersburg represented 97% of successful hunters on the Stikine River, with non-local hunters representing just 3%. No nonresident moose hunters were successful on the Stikine (Table 6).

Petersburg residents continued to dominate the Thomas Bay and Farragut Bay moose hunts. During the report period, local residents of Petersburg represented 87% of successful hunters at Thomas and Farragut bays, with nonlocal hunters representing 11%. Only 1 of 47 moose harvested in the Thomas Bay or Farragut Bay areas was taken by a nonresident hunter (Table 7).

Table 6. Unit 1B, Alaska (Stikine^a) moose hunter residency and success by permit hunt, regulatory years^a 2010 through 2014.

Regulatory Year	Successful						Unsuccessful						Total hunters
	Local ^c resident	Nonlocal resident	Non- resident	Unk.	Total	(%)	Local ^c resident	Nonlocal resident	Non- resident	Unk.	Total	(%)	
2010	21	1	0	0	22	(14)	130	9	1	0	140	(86)	162
2011	18	1	0	0	19	(12)	130	15	0	0	145	(88)	164
2012	19	1	0	0	20	(10)	173	3	2	0	178	(90)	198
2013	22	0	1	0	23	(13)	140	16	2	0	158	(87)	181
2014	36	1	0	0	37	(23)	117	8	2	0	127	(77)	164

^a A regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.

^b Includes Unit 1B south of the Stikine River.

^c Residents of Petersburg and Wrangell.

Table 7. Unit 1B, Alaska (Thomas and Farragut bays^a) moose hunter residency and success by permit hunt, regulatory years^b 2010 through 2014.

Year	Successful					Unsuccessful					Total hunters
	Local ^b Resident	Nonlocal resident	Non- resident	Total	(%)	Local ^c resident	Nonlocal resident	Non- resident	Total	(%)	
2010	6	0	0	6	(7)	66	11	0	77	(93)	83
2011	9	1	0	10	(14)	54	6	0	60	(86)	70
2012	8	2	0	10	(16)	42	9	0	51	(84)	61
2013	12	1	0	13	(17)	55	9	0	64	(83)	77
2014	6	1	1	8	(11)	56	8	3	67	(89)	75

^a Includes that portion of Unit 1B located north of LeConte Bay and Glacier.

^b A regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.

^c Residents of Petersburg and Wrangell.

Harvest Chronology

Harvest chronology for Unit 1B moose varies from year to year. In general, most bulls are killed during the first half of the season and the success rate typically declines as the season progresses (Table 8). During the report period, the largest percentages of the overall harvest from highest to lowest on the Stikine River occurred during the first, fourth, second, and third weeks of the season, respectively. The largest percentage of the harvest in the Thomas Bay Area occurred during the third, second, first, and fourth weeks of the season, respectively. Most hunters are in the field early in the season, and except for weekends, effort tends to drop off as the season progresses. Inclement weather does not appear to slow hunting effort early in the season.

Table 8. Unit 1B, Alaska moose harvest chronology, regulatory years^a 2010 through 2014.

Area	Year	15–21 Sep	22–28 Sep	29 Sep–5 Oct	6–15 Oct
Thomas and Farragut bays ^b					
	2010	3	1	0	2
	2011	1	3	4	2
	2012	2	1	5	2
	2013	2	4	5	2
	2014	2	2	4	0
Stikine ^c					
	2010	10	5	4	3
	2011	8	3	2	6
	2012	12	4	2	2
	2013	8	6	7	2
	2014	15	5	5	12

^a A regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.

^b Includes that portion of Unit 1B located north of LeConte Bay and Glacier.

^c Includes Unit 1B south of Le Conte Bay and Glacier.

Transport Methods

With the exception of 1 hunter who used an airplane to access the Stikine River, 1 hunter who reported walking to a hunting area at Thomas Bay, and 1 hunter who failed to report a method of transportation, during the report period all other successful Unit 1B hunters reported using boats to reach their hunting areas. Motorized land vehicles are prohibited for moose hunting in the Thomas Bay hunt and within the Stikine Wilderness. In the Thomas Bay area, however, motorized land vehicles may be used for other moose hunt related activities such as establishing camps, checking boats, and retrieving harvested moose, which results in this regulation being difficult to enforce and regularly abused.

Other Mortality

Predators (wolves, black bears, and brown bears) exist on the Unit 1B mainland but the extent of predation on moose is unknown. The Unit 1B moose population is indigenous but recently established. Although Unit 1B moose are not a long-standing customary and traditional food source for local Natives, we have experienced an increase in the number of requests to harvest moose out-of-season for funerary and cultural education activities. Poaching of moose undoubtedly occurs in Unit 1B; however, we don't know how prevalent it is.

Results Compared to Objectives

Stikine River Area

Table 9 summarizes which of the Unit 1B moose management objectives were, or were not, met during the report period.

With the exception of the Stikine River drainage it is not currently possible to census moose in the unit; therefore we are unable to evaluate compliance with the management objectives for post hunt numbers of moose.

The harvest objective of 30 moose annually in the Stikine River was not met in 4 of the 5 years of the reporting period; in RY14, 37 moose were taken.

The number of hunters failed to meet the management objective of 250 annually during the report period, averaging 174 annually and ranging from 162 to 198 hunters per year.

Hunter-days of effort did not meet the management objective of 1,750 days of effort, averaging 1,319 per year and ranging from 1,121 to 1,532 hunter-days of effort annually.

The overall success rate for Stikine River moose hunters was 14%, ranging from a low of 10% in RY12, to a high of 23% in RY14. The area met the management objective of 12% annual hunter success during 4 out of 5 years of the report period; in RY12 success was 10%.

Thomas Bay Area

The Thomas Bay area (including Farragut Bay) fell well short of the harvest objective of 20 moose annually during all 5 years of the reporting period.

The number of hunters averaged 73 per year, ranging from 61 to 83 hunters per year, and fell short of the management objective of 160 during all 5 years of the report period.

Hunter-days of effort averaged 561 per year, ranging from 386 to 662 hunter-days of effort annually and fell short of the management objective of 675 during all 5 years of the report period.

The overall success rate for moose hunters in the Thomas and Farragut bays area was 13%, ranging from a low of 7% in RY10, to a high of 17% in RY13. The area met the management objective of 12% annual hunter success during 3 out of 5 years of the report period; in RY10 success was 7% and in RY14 success was 11%.

Table 9. Progress towards Unit 1B, Alaska moose management objectives, regulatory years^a 2010 through 2014.

Stikine River, Alaska^b

	Plan Objective	2010	2011	2012	2013	2014	5-year average
Post hunt numbers	300	NA	NA	NA	NA	NA	NA
Annual hunter kill	30	22	19	20	23	37	24
Number of hunters	250	162	164	198	181	164	174
Hunter-days of effort	1,750	1,274	1,247	1,532	1,421	1,121	1,319
Hunter success	12%	14%	12%	10%	13%	23%	14%

Thomas and Farragut bays, Alaska^c

	Plan Objective	2010	2011	2012	2013	2014	5-year average
Post hunt numbers	200	NA	NA	NA	NA	NA	NA
Annual hunter kill	20	6	10	10	13	8	9
Number of hunters	160	83	70	61	77	75	73
Hunter-days of effort	675	588	608	386	563	662	561
Hunter success	12%	7%	14%	16%	17%	11%	13%

^a A regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.

^b Includes that portion of Unit 1B located south of LeConte Bay and Glacier.

^c Includes that portion of Unit 1B located north of LeConte Bay and Glacier.

Alaska Board of Game Actions and Emergency Orders

No Board of Game actions took place, and no emergency orders were issued regarding Unit 1B moose during the report period.

Recommendations for Activity 2.1

Hunter effort and success should continue to be monitored through a mandatory hunt report.

Activity 2.2. Monitor number, age, and antler configurations of harvested moose by requiring hunt reports and examining antlers and collecting lower jaws for aging from successful hunters during the required moose check-in process.

Data Needs

The number and distribution of harvested moose, including the number of bulls taken within the various age classes, are used to monitor the Unit 1B population. The antler restricted hunt

strategy is designed to target young and older bulls for harvest, while protecting middle-aged bulls for breeding. Antler architecture and age data collected from harvested bulls is used to evaluate whether the antler restrictions continue to protect the 2–5 year-old age class of bulls.

Methods

All successful hunters are required to present the antlers of harvested moose to ADF&G representatives to verify compliance with the RM038 antler restrictions. When presented, antlers are photographed and data are collected on the kill date, harvest location, antler spread, total number of points, and the number of brow tines on each antler (Fig. 3). Hunters are also required to submit the lower jaw of harvested moose for aging purposes. Tooth samples are submitted to a commercial laboratory (Matson's Laboratory, Manhattan, MT) for cementum aging, which allows us to correlate antler architecture with age (Fig 3). This type of information has been used in the past to refine the RM038 antler regulations.

Results and Discussion

Figure 4 shows the age structure of the Unit 1B moose harvested during the report period. Total bull harvest over the period comprised 36% yearling bulls, 50% in age cohorts 2 through 5 years old, and 14% in age cohorts 6-plus years old. Antler architecture in this area is weakly correlated with age. In contrast to antler-restricted hunts elsewhere in Alaska which protect specific age classes of bulls, usually 2-5 years old, antler restrictions in the RM038 hunt affect all age classes because bulls of any age may or may not develop antlers that meet the legal requirement. While the antler restrictions do not partition the harvest among the various age classes exactly as intended, they nonetheless do a good job of constraining the harvest to sustainable levels. The antler restrictions, combined with the fact that much of the unit is remote and difficult to access, ensure that enough bulls survive for breeding purposes.

When necessary, the level of noncompliance with antler regulations (illegal harvest) is used as a trigger for early season emergency closures to prevent overharvest. During the report period the percentage of bulls taken that failed to comply with the antler restrictions averaged 7% annually, ranging from 2% to 10% of the annual harvest (Tables 3, 4, and 5). No emergency season closures were implemented during the report period.

Recommendations for Activity 2.2 The number, distribution, age, and antler configurations of moose harvested in Unit 1B should continue to be monitored.



Name	[REDACTED]	Moose
Harvest Ticket or Permit #	0000037	4R
Date of Kill	9-23-2015	
Specific Location of Kill	T.B. Muddy River	
ADF&G Use Only	01B-X16-0502	
Sex	♂	
Spread	38"	
Points LF	6	
Points RT	6	
Brow Tines LF	2	
Brow Tines RT	2	
Use Back for Comments	7 YEARS OF AGE	

Figure 3. Example of moose antlers photographed, and the associated tooth envelope upon which the hunter's name and permit number, harvest location, antler spread and spread measurement, and moose age are recorded at the time of antler check-in.

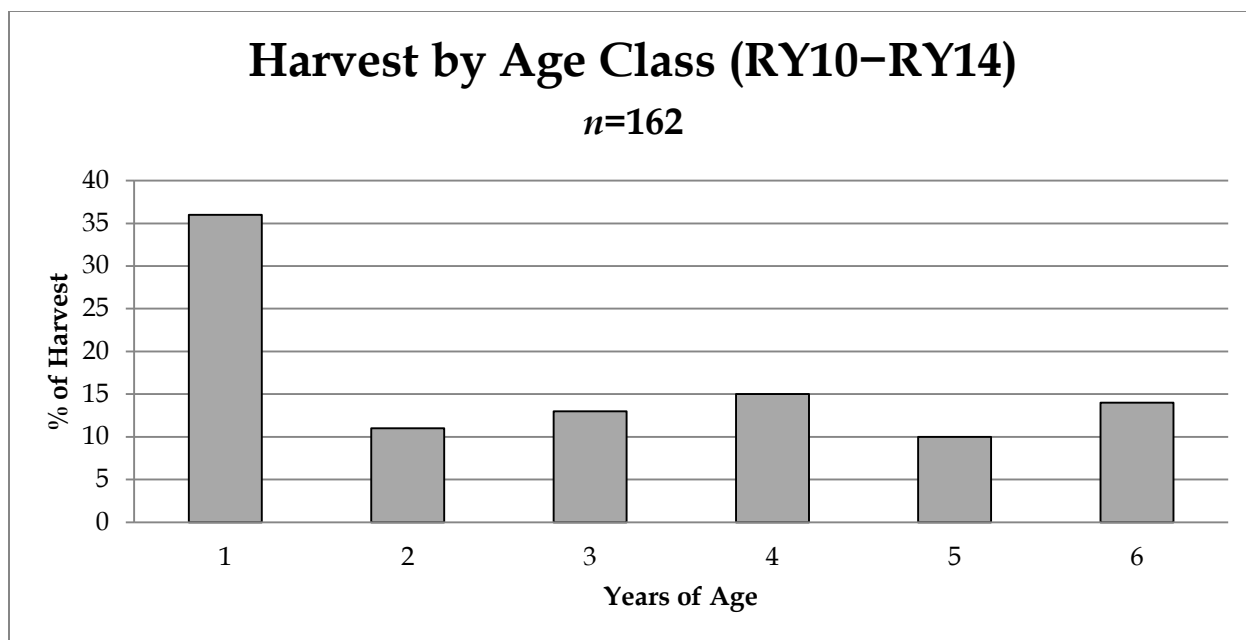


Figure 4. Unit 1B, Alaska moose harvest by age class, regulatory years^a 2010 through 2014.

^a A regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.

3. Habitat Assessment–Enhancement.

There were no habitat enhancement activities during this period, though habitat changes are important to the future of moose in the unit.

Moose habitat capability in Unit 1B is unknown and difficult to determine. With exception of the Stikine River drainage in the early 1980s (Craighead et al. 1984), no estimate has been made of the amount or quality of moose range in the unit.

In some areas of the Stikine, moose habitat is declining as a result of plant succession. Succession in some areas is transforming deciduous vegetation types (dominated by cottonwood trees, willows, etc.) into conifer stands. In other areas, climax deciduous vegetation is growing to sizes less valuable as moose browse.

At Thomas Bay, clearcut logging returned conifer stands to early successional vegetation types, which temporarily created or enhanced forage for moose within logged stands. This forage enhancement exists for only about the first 25 years of the 100 to 150 years of a timber harvest rotation. After that initial period, a closed canopy second-growth coniferous forest becomes established, shading out and eliminating forage species. The short-term advantages of clearcutting for moose may be offset by the longer period of reduced forage in the second-growth conifer forest and the loss of shelter habitat for moose during the time when the area is a clearcut. Because it results in less change in plant and ecological characteristics, cutting back mature climax deciduous vegetation and maintaining it in an early stage of succession to provide shorter browse plants which are more useable as moose forage may be a better moose range enhancement practice for declining habitats than clearcutting conifer stands. This management

practice could be applied in recently glaciated areas to delay the development of coniferous forests.

In March 1997 ADF&G the department precommercially thinned approximately 380 acres of dense young second growth stands on state land at Thomas Bay in an effort to enhance habitat for moose and deer. The project was completed in October 1998. Observations by staff and anecdotal reports from hunters over the past 17 years indicate that moose and deer have increased use of these thinned units. While these efforts have been successful, the area treated represents only a small fraction of the second growth acreage that exists on the relatively small parcel of state land at Thomas Bay.

Data Needs

Because most land in the Thomas Bay area is under federal ownership and managed primarily for timber production, precommercial and commercial thinning of second growth stands is dictated by U.S. Forest Service silviculture practices and the availability of federal funding for thinning. The habitat capability and condition of moose range in Unit 1B is unknown. Therefore, we cannot assess whether population growth for a higher harvestable surplus is feasible.

Determining the distribution of major browse communities and level of browse offtake in key moose wintering areas such as Thomas Bay would help to gauge moose nutritional condition and identify potential enhancement sites.

Methods

No projects underway at this time.

Results and Discussion

No projects underway at this time.

Recommendations for Habitat Assessment-Enhancement.

Determine whether forage assessment or other habitat evaluation is feasible for habitat communities in Unit 1B, and identify potential methods of browse enhancement.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Both the state and federal subsistence hunts for Unit 1B moose are managed under a single state registration permit (RM038). Because proxy hunting for others is not allowed in antler restricted moose hunts, state regulations prohibit hunters from harvesting moose on behalf of other individuals. However, under the designated hunter provision in federal subsistence regulations, any federally qualified hunter can harvest moose on behalf of another federally qualified beneficiary who is 10 years of age or older. Some individuals who are ineligible to obtain a state registration permit as a result of having failed to submit a mandatory hunt report during the preceding regulatory year can easily circumvent this regulation by simply acting as a federal designated hunter for another qualified subsistence user. Similarly, those who have already filled their bag limit by harvesting a legal or illegal moose can continue to hunt and harvest additional moose on behalf of a qualified beneficiary under the federal designated hunter provision. Public interest in the RM038 moose hunt is increasing, and the department now routinely issues in

excess of 1,000 permits each year for the opportunity to harvest approximately 90 antler restricted moose annually from Units 1B, 3 and southern 1C combined. The situation of individuals exploiting the federal designated hunter provision in order to harvest more than one moose has led to public dissatisfaction with federal regulations.

Data Recording and Archiving

Permit Overlays – Hardcopies are retained in the PSG Area Office, and stored electronically in the division's data system, WinfoNet.

Hunt Reports – Hardcopies are retained in the PSG Area Office, and stored electronically in WinfoNet.

Harvest Data - Entered electronically in WinfoNet; annual harvest summaries are compiled and stored on the Area Biologist and Program Technician desktop computers and are backed up on the network server.

Antler Photos – Stored electronically on Area Biologist desktop computer and backed up on the network server. Antler Data – Recorded on tooth envelopes and entered electronically in WinfoNet. Hardcopies of tooth envelopes with antler data are stored in the Area Office.

Age Data – Electronic copies received from the laboratory, specimens and hardcopies stored in Petersburg Area Office storage area, and age data entered electronically in WinfoNet

Stikine Survey Forms and Maps – Hardcopies are on file in the Petersburg Area Office, stored electronically on the Area Biologist desktop computer, and backed up on the network server.

Agreements

ADF&G and the U. S. Fish and Wildlife Service, Office of Subsistence Management have agreed to management both the state and federal subsistence hunts for Unit 1B moose under a single state registration permit (RM038) with concurrent season dates and bag limit.

Permitting

None

Conclusions and Management Recommendations

Following a long period of declining harvest culminating in an early season closure in 1995, the moose harvest from the Stikine River area has since rebounded and stabilized at levels in keeping with the 10-year average of 24 bulls annually. During the report period the Unit 1B moose harvest averaged 34 per year, ranging from a low of 28 in RY10 to a high of 45 bulls in RY14. The moose harvest from the Stikine River area averaged 24 bulls annually, ranging from 19 to 37 bulls per year. The harvest in Thomas and Farragut bays averaged 9 moose per year, ranging from 6 to 13 bulls per year.

The Thomas Bay moose harvest began to decline in 2000 and in recent years has remained stable at low levels. Hunters continue to report seeing plenty of bulls in the area; however, few of those qualify as legal under the existing antler restrictions. It now appears that post-logging habitat changes have reduced carrying capacity, possibly resulting in low recruitment and causing moose to disperse to other areas. With the relatively low level of harvest at Thomas Bay in recent years, many traditional Thomas Bay hunters appear to be seeking out other more productive moose hunting areas in Units 1B and 3 to hunt moose. The only way to prevent further decline of moose habitat will be to institute additional habitat enhancement measures.

During the report period, 0–2 winter population surveys were flown annually along the Stikine River Valley to count moose and when possible gather composition data (adults and calves). The number of moose observed during aerial surveys varied: 125 were counted in 2010, 82 in 2011, 2 separate flights yielded counts of 86 and 65 in 2012, and 153 were seen in 2014. No Stikine moose surveys were conducted in 2013.

Variation in winter severity and predation can influence both recruitment of young into the population and overwinter survival of moose. Winter-related reductions in the recruitment of young, reduced overwinter survival of moose, and the level of harvest during the preceding season can all influence the number of bulls available for harvest in a given year.

For genetic, nutritional, or environmental reasons moose in this unit do not develop antler configurations that correlate well with age. Unit 1B moose rarely achieve 50-inch antler spreads and damaged or atypical antler configurations are relatively common. The new and continuing antler regulation allowing the harvest of bulls with 2 brow tines on both antlers that took effect during the 2009 season is partially responsible for the relatively high annual harvests seen during the report period.

Unit 1B, Unit 3, and the extreme southern portion of Unit 1C should continue to be managed by a common registration permit hunt, and the season dates should remain from 15 September through 15 October with a bag limit of 1 bull with spike/fork or 50-inch antlers or 3 or more brow tines on one antler, or 2 or more brow tines on both antlers. However, several modifications to the management objectives are recommended for the Stikine River and Thomas Bay hunt areas based on average harvest levels, the number of participating hunters, and days of hunter-effort that have been reported in recent years.

II. Project Review and RY15–RY19 Plan

Review of Management Direction

MANAGEMENT DIRECTION

The antler restrictions currently in place for moose in Unit 1B are among the most liberal in the state. The liberal antler restrictions, combined with a month-long season that fully encompasses the rut, affords hunters with ample opportunity to harvest a moose. If not for several factors, including the fact that Unit 3 currently supports an eruptive moose population, that much of the unit is remote and inaccessible to hunters, and that moose sightability is hampered by dense

coniferous forests, the unit might otherwise be incapable of sustaining such liberal antler restrictions and season dates.

No changes are recommended to the management direction for moose in Unit 1B; however, because the unit cannot be surveyed using standard techniques, the management objectives should be reviewed and modified to make use of the information that is available.

GOALS

No change.

CODIFIED OBJECTIVES

No Change.

Amount Reasonably Necessary for Subsistence Uses (ANS)

No change.

Intensive Management

No change.

MANAGEMENT OBJECTIVES

The existing management objectives, established in 1990, for Unit 1B moose include specific targets for post-hunt numbers of moose, annual hunter harvest, number of hunters, hunter-days of effort, and hunter success rates at the Stikine River and Thomas Bay (Table 5). With the exception of the Stikine River drainage it is not currently possible to census or estimate numbers of moose in the unit. Even where surveys are possible, in the absence of a sample of radiocollared moose, information on the sightability of moose during aerial counts is lacking. As a result, such surveys represent minimum counts. Given the inability to evaluate compliance with the objective for post-hunt numbers of moose, this management objective should be eliminated for the Thomas Bay and Stikine River areas.

Stikine River Management Objectives

It is not currently possible to census moose in most of the unit; therefore, we are dropping the objective specifying desired “post-hunt numbers” of moose in the Stikine River area due to our inability to evaluate compliance with this objective.

The average annual harvest from the Stikine River area during the report period (RY10–RY14) was 24 bulls (range 19–37) per year. There is little opportunity to influence this population through habitat enhancement, so the objective for annual hunter kills will be reduced from 30 to 24 bull moose per year in keeping with the 5-year average.

During RY10–RY14 hunter success in the Stikine River hunt area averaged 14%, ranging from 10% to 23%. The management objective for hunter success should be increased from 12% to 14% annually in keeping with the 5-year average.

For the RY15–RY19 planning period we decided to drop the management objectives for the number of hunters and hunter-days of effort for moose in the Stikine River area and replace them with catch per unit effort (CPUE) expressed as hunter-days per harvested moose. During RY10–RY14 the CPUE for moose in the Stikine River area averaged 1 moose per 55 days of effort, ranging from 30 to 77 hunter-days per harvested moose. Therefore, for RY15–RY19 the CPUE for the Stikine River area should be set at 1 moose per 60 days of effort in keeping with the most recent 5-year average.

REVISED STIKINE RIVER MANAGEMENT OBJECTIVES

<u>Stikine River</u>	<u>Revised Plan Objectives</u>
Annual hunter kills	24
CPUE (hunter-days per harvested moose)	55
Hunter success	14%

Thomas Bay Management Objectives

It is not currently possible to census moose in most of the unit; therefore, we are dropping the objective specifying desired “post-hunt numbers” of moose in the Thomas Bay area due to our inability to evaluate compliance with this objective.

With the persistent low level of harvest in the Thomas Bay area, the management objective for annual hunter kills should be reduced to more accurately reflect levels of harvest and hunter participation in recent years. The average annual harvest in this area during the report period (RY10–RY14) was 9 bulls (range 6–13) per year. Therefore, the objective for “Annual hunter kills” in the Thomas and Farragut bays area should be reduced from 20 to 9 moose per year in keeping with the 5-year average.

During RY10–RY14 hunter success in the Thomas Bay area averaged 13%, ranging from 7% to 17%. The management objective for hunter success should be increased from 12% to 13% annually in keeping with the 5-year average.

For the RY15–RY19 planning period we decided to drop the management objectives for the number of hunters and hunter-days of effort for moose in the Thomas and Farragut bays area and replace them with CPUE expressed as hunter-days per harvested moose. During RY10–RY14 the CPUE for moose in this area averaged 1 moose per 60 days of effort, ranging from 39 to 98 hunter-days per harvested moose. Therefore, during the period RY15–RY19 the CPUE for the Thomas and Farragut bays area should be set at 1 moose per 60 days of effort in keeping with the most recent 5-year average.

REVISED THOMAS BAY MANAGEMENT OBJECTIVES

<u>Thomas Bay</u>	<u>Revised Plan Objectives</u>
Annual hunter kills	9
CPUE (hunter-days per harvested moose)	60
Hunter success	13%

In the absence of information on the number, distribution, sex and age ratios, and other population characteristics of moose throughout most of Unit 1B, annual harvest trends and other hunt statistics have been and will continue to be used to maintain sustainable populations and harvests of moose in the unit. These include the following:

- Monitoring trends in the number of bulls taken, and the spatial distribution of the harvest.
- Monitoring trends in the age structure of harvested bulls
- Monitoring trends in the antler configurations of harvested bulls.
- Using the level of noncompliance with antler regulations as a trigger for early season closures to prevent overharvest.

REVIEW OF MANAGEMENT ACTIVITIES

Management activities during RY15–RY19 will be substantially similar to those conducted RY10–RY14. New activities will include efforts to develop techniques to corroborate hunter observations with survey data and to evaluate potential habitat enhancement projects.

1. Population Status and Trend

ACTIVITY 1.1. Monitor minimum abundance and age and sex ratios in the Stikine River drainage by aerial counts one or more times per year when conditions allow.

Data Needs

Minimum abundance counts, and age and sex composition counts are needed to evaluate whether the hunt strategy is appropriate for the population.

Methods

Conduct 1 to 2 winter population surveys annually along the Stikine River Valley to count moose and when possible gather composition data (calves and adults). Fly surveys at an elevation of 500 feet above ground level using a Hughes 500 or similar helicopter with one observer along transects 400 to 500 meters apart, depending on ground cover vegetation.

ACTIVITY 1.2. Monitor abundance of moose including age and sex ratios through observations of hunters reported on required registration permit hunt reports. Corroborate hunter observations of calf:cow ratios and bull:cow ratios with results of fall and winter age and sex composition counts when possible.

Data Needs

Estimates of abundance and age-sex composition are commonly used to inform harvest strategies. Moose range throughout lower and mid elevation habitat in Unit 1B. However, due to dense coniferous forest cover across most of Unit 1B, only moose in the Stikine River drainage (<2% of Unit 1B) can be routinely seen from the air, and then only when adequate snow cover, favorable survey weather, and aircraft availability coincide. There are currently no unitwide estimates of moose numbers in Unit 1B. With the exception of the Stikine River drainage, dense forest cover and the lack of concentrated wintering areas on the mainland make aerial surveys of the unitwide moose population impractical. Hunter reported observations of moose provide an index to relative abundance and composition over time.

Methods

Since 1997 all RM038 hunters have been asked to report the number of moose (by sex and age class), wolves, and bears they observed during the hunting season. This activity will be continued into the future. Management staff will also work with research staff to evaluate the design and cost for corroborating hunter observations on moose observed per unit effort, calf:cow ratios, and bull:cow ratios in years when snow cover facilitates age and sex composition counts.

2. Mortality–Harvest Monitoring

ACTIVITY 2.1. Monitor hunter effort and success.

Data Needs

Hunter effort and success are measured to provide another way of monitoring hunter interest and the abundance of moose in the area.

Methods

No change.

ACTIVITY 2.2. Monitor age and antler configurations of harvested moose by examining antlers and collecting lower jaws for aging from successful hunters during the required moose check-in process.

Data Needs

No change.

Methods

Mandatory hunter check-in of harvested moose will be continued to obtain antler measurements and tooth samples in order to monitor the age structure of harvested bulls. The age of harvested

animals and other harvest information gathered, including annual kill, distribution of harvest, and hunter success rates, will be used as additional means of monitoring population characteristics of Unit 1B moose.

Management staff will consult with research staff or a biometrician to evaluate development of a population model for estimating harvest surplus based on historic information on bull age structure in harvest, abundance, and age-sex composition from fall aerial surveys, and hunter observations of moose age-sex classes.

3. Habitat Assessment–Enhancement

ACTIVITY 3.1. Assess available moose browse and potential for improving moose forage.

Data Needs

Determining the distribution of major browse communities and level of browse offtake in key moose wintering areas such as the Stikine River drainage and at Thomas and Farragut bays would help gauge moose abundance relative to carrying capacity and identify potential enhancement sites. However, because of its Wilderness designation, moose habitat enhancement activities are not possible within the Stikine River drainage. Deer occur in isolated pockets along the Unit 1B, and the Thomas Bay area is one such pocket. A preliminary browse surveys conducted at Thomas Bay indicates there is likely some degree of dietary overlap between moose and deer. Determining the level of browse offtake attributed to each species may be difficult.

Methods

ADF&G will cooperate with the U.S. Forest Service or the Alaska Department of Natural Resources, Division of Forestry to identify previously harvested forest stands where moose forage production could be enhanced using precommercial or commercial thinning treatments.

ADF&G will establish browse plots in the Stikine River drainage and at Thomas Bay to monitor range condition and gauge moose abundance relative to carrying capacity.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Both the state and federal subsistence hunts for Unit 3 moose are managed under a single state registration permit (RM038). Under federal subsistence hunting regulations any qualified subsistence user who is ineligible to obtain a state registration permit as a result of having failed to submit a mandatory hunt report during the preceding regulatory year can circumvent this regulation by acting as a federal designated hunter for another qualified subsistence user. Similarly those who have already harvested a legal or illegal moose, thereby filling their bag limit, can continue to harvest additional moose for any federally qualified beneficiary under the federal designated hunter provision. The situation of individuals harvesting more than one moose has led to dissatisfaction among federally qualified hunters.

Data Recording and Archiving

No changes.

Agreements

No changes.

Permitting

No changes.

References Cited

- Alaska Department of Fish and Game (ADF&G). 1990. Strategic plan for management of moose in Region I, Southeast Alaska 1990–94. Division of Wildlife Conservation, Douglas, Alaska.
- Craighead, F. L., E. L. Young, and R. D. Boertje. 1984. Stikine River moose study: Wildlife evaluation of Stikine-Iskut dams. Final Report. Alaska Department of Fish and Game, Division of Game, Juneau.
- Ericsson, G. and K. Wallin. 1999. Hunter observations as an index of moose *Alces alces* population parameters. *Wildlife Biology* 5:177–185.
- Lowell, R. E., and E. B. Crain. 1999. Moose habitat enhancement at Thomas Bay. Alaska Department of Fish and Game, Federal Aid in Wildlife Restoration, Research Performance Report, 1 July 1998—30 June 1999, Grant W-28-1, Project 1.0, Juneau.
- Solberg, E. J., and B-E. Saether. 1999. Hunter observations of moose *Alces alces* as a management tool. *Wildlife Biology* 5:107–117.

Appendix A. Moose survey form

[illegible]

