Moose Management Report and Plan, Game Management Unit 11:

Report Period 1 July 2010–30 June 2015, and

Plan Period 1 July 2015–30 June 2020

Heidi L. Hatcher

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Alaska Department of Fish and Game Division of Wildlife Conservation

Moose Management Report and Plan, Game Management Unit 11:

Report Period 1 July 2010–30 June 2015, and

Plan Period 1 July 2015–30 June 2020

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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 area, 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 Todd A. Rinaldi, Management Coordinator for the Division of Wildlife Conservation, Anchorage.

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

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Cover photo: Cow moose in fall foliage. ©2013 Heidi L. Hatcher.

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Purpose of this Report

This report provides a record of survey and inventory management activities for moose in Unit 11 for the previous 5 regulatory years and plans for survey and inventory management activities in the 5 years following the end of that period. 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 analysis to help guide and record their efforts, but is also provided to the public to inform them of wildlife management activities. In 2016 the Alaska Department of Fish and Game's (ADF&G) Division of Wildlife Conservation (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. This report replaces the moose management reports of survey and inventory activities that were previously produced every 2 years.

I. RY10–RY14 Management Report

Management Area

Unit 11 (12,784 mi^2) consists of that area draining into the headwaters of the Copper River south of Suslota Creek and the area drained by all tributaries into the east bank of the Copper River between the confluence of Suslota Creek with the Slana River and Miles Glacier (Fig. 1). Most of Unit 11 is included in the Wrangell-Saint Elias National Park and Preserve. The estimated moose habitat in Unit 11 is that area below 4,500 ft, which covers approximately 6,809 mi^2.

Unit 11 includes portions of 3 of Alaska's 32 ecoregions: the Wrangell Mountains, the Chugach and St. Elias mountains, and the Copper River Basin. Maps for Unit 11 boundaries and special management areas can be found at: http://www.adfg.alaska.gov/index.cfm?adfg=maps.main.

Summary of Status, Trend, Management Activities, and History of Moose in Unit 11

In December 1978 the establishment of the Wrangell-Saint Elias National Monument encompassed most of Unit 11. In 1980, monument status was changed to park and preserve with passage of the Alaska National Interest Lands Conservation Act. State hunting regulations apply on private and preserve lands within Unit 11. The National Park Service (NPS) closely manages hunting on park lands by issuing hunting permits based on hunter residency.

Moose are recognized as an integral part of the ecosystem throughout lower elevations of Unit 11 and are managed to provide for a wide variety of human uses and values including hunting and trapping (for personal or commercial use of hides), photography, viewing, listening, and scientific research (ADF&G 2002). Due to the extent of NPS land included within Unit 11, moose management in Unit 11 is reflective of NPS policy, which largely strives to allow for natural ecosystem processes without human interference and thereby allow the moose population to fluctuate as influenced by available habitat and predation rates. Therefore, because of land status and limited access, the state has adopted a more passive approach to moose management. The moose population has been considered low density across Unit 11 for many years, but

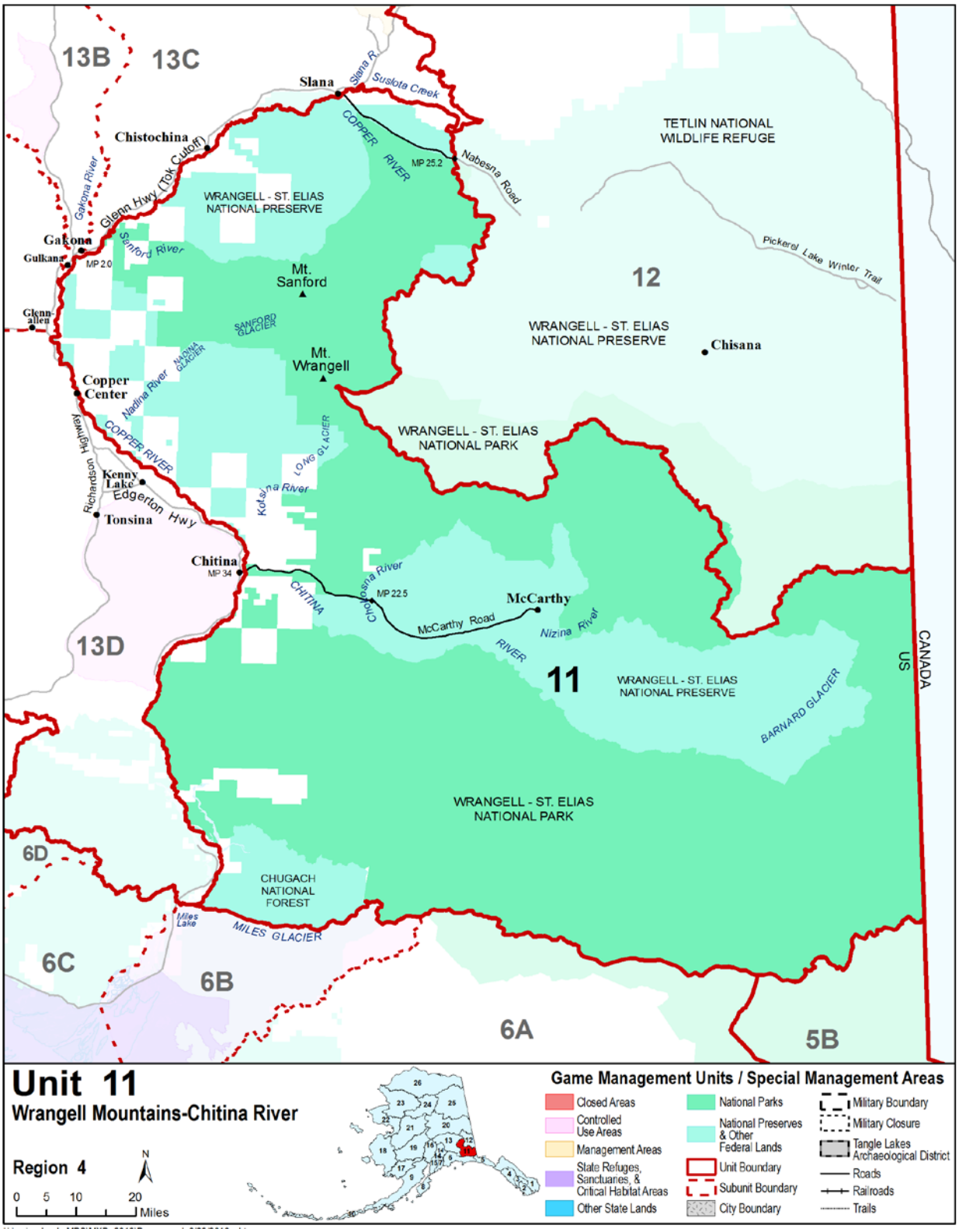

Figure 1. Unit 11 boundaries, Southcentral Alaska.

counts during aerial surveys tend to cycle between very low periods (0.1 moose/mi^2 in 1979 and 1992) and considerably higher periods (1.0 moose/mi^2 in 1969 and 2012; 0.7 moose/mi^2 from 1987 to 1990).

Management Direction

EXISTING WILDLIFE MANAGEMENT PLANS

Direction in the northern Chitina and southern Chitina moose management plans (ADF&G 1976) has been modified through public comments, staff recommendations, and Alaska Board of Game (BOG) regulatory actions over the years. A record of these changes can be found in the division's management report series. The plan portion of this report contains the current management plan for moose in Unit 11.

GOALS

- Protect and maintain the moose population and its habitat in concert with other components of the ecosystem.
- Provide sustained-yield opportunity to participate in moose hunting.
- Provide an opportunity for nonconsumptive uses such as viewing and photographing.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Harvest

- The Unit 11 moose population has a positive customary and traditional use determination finding. The unitwide amount reasonably necessary for subsistence is 30–40 moose.

Intensive Management

BOG has determined that the moose population does not provide high levels of human consumptive use (negative finding) in Unit 11.

MANAGEMENT OBJECTIVES

- Maintain a population with a posthunt (fall) minimum of 30 bulls:100 cows.

MANAGEMENT ACTIVITIES

Assessing population status and trends, and monitoring harvest and mortality are integral components of management programs in Unit 11. Survey and inventory management activities used to monitor moose populations in Unit 11 are described below.

1. Population Status and Trend

ACTIVITY 1.1. Conduct aerial inventory and sex and age composition surveys in the unit to determine population composition, productivity, and trends.

Data Needs

Moose abundance and composition data are necessary to determine population status in relation to management objectives. It is the basis from which sustainable harvest may be estimated and provides a density context for interpreting nutritional condition relative to habitat.

Methods

An aerial survey using a fixed-wing aircraft is usually conducted every other year in a 287 mi^2 trend count area (CA11) along the western slopes of Mount Drum during the late fall-early winter to determine moose population trends and sex and age composition (Fig. 2; Appendix A). An experienced pilot with observer flies transects systematically, following geographic contours when necessary, at 70–80 mph and 300–800 ft above ground level searching for moose and recording data. Each moose that is observed during the survey is circled to determine sex and age classification and a waypoint is recorded for each observation. In some years, surveys are not possible due to poor survey conditions (e.g., insufficient snow cover) or limited funding.

Results and Discussion

The moose trend CA11 was surveyed in fall 2011, 2012, and 2013. For this reporting period, moose densities were relatively high, with an average of 0.9 moose/mi^2 observed (Table 1). Bull:cow ratios averaged 81 bulls:100 cows, compared to the long-term average of 98 bulls:100 cows (1990–2008). Bull:cow ratios were still well above the current management goal of no less than 30 total bulls:100 cows. Calf:cow ratios averaged 20 calves:100 cows, which was above the long-term average of 18 calves:100 cows (1990–2008).

Recommendations for Activity 1.1.

Modify.

- Collaborate with NPS to monitor moose population and utilize NPS survey data when available. Conduct Unit 11 trend counts every other year, or not at all when NPS surveys are conducted.

2. Mortality-Harvest Monitoring and Regulations

ACTIVITY 2.1. Monitor and evaluate moose mortality through hunter harvest reports.

Data Needs

Monitoring harvest during the hunting season is critical for sustained yield management and essential to successfully administer the community subsistence harvest (CSH) hunt. Monitoring and analyzing harvest data annually is important to understand hunter effort and success in Unit 11 to establish quotas and to inform regulatory decisions.

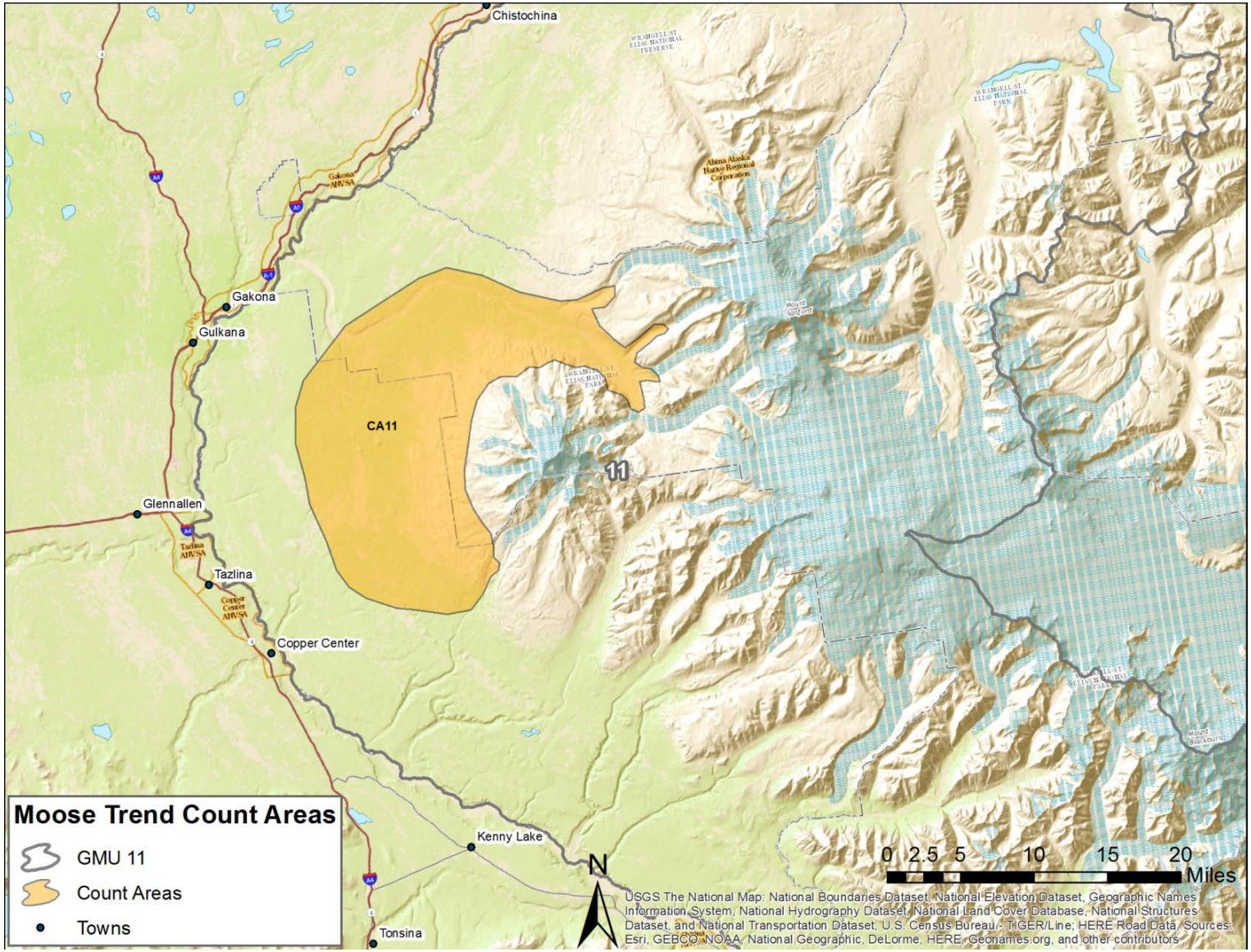

Figure 2. Survey count areas (CA) for moose in Unit 11, Southcentral Alaska.

Table 1. Count area 11 (western slopes of Mt. Drum) fall aerial moose composition counts, Southcentral Alaska, regulatory years[a] 2010–2014.

Regulatory year	Bulls:100 cows	Yearling bulls:100 cows	Calves:100 cows	Calf %	Total moose	Moose/mi^2
2010[b]						
2011	71.0	3.6	21.0	10.9	265	0.9
2012	83.9	11.2	13.3	6.7	282	1.0
2013	88.3	8.7	26.2	12.2	221	0.8
2014[b]						

[a] Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.
[b] No composition counts conducted.

Methods

Individuals who obtain a moose permit from ADF&G (harvest ticket, registration, or CSH) are required to report on their permit after successful harvest, or after the end of the season. Failure to report results in 2 reminders and eventual penalty. Hunt reports are recorded in ADF&G's Wildlife Information Network (WinfoNet), and include information regarding hunter residency, success, effort, hunt location, date of kill, transportation, and antler size. Harvest information is summarized daily for the CSH hunt, and annually for all other hunts. Federal hunters report to NPS. Federal harvest information is retrieved from NPS annually, once the information becomes available.

Results and Discussion

Harvest by Hunters

During this reporting period, the annual number of hunters in Unit 11 ranged from 232 to 276 (Table 2). The combined harvest in Unit 11 from all hunts during this reporting period ranged from 38 to 65 bulls (Table 3). Hunters participating in the general state moose hunt (the only moose hunting opportunity for nonresidents) typically shows higher success rates than those participating in the federal, registration, or community hunts.

Hunter Residency and Success

Nonresidents demonstrate higher success in Unit 11 than do resident general season moose hunters (Table 4). Due to the remote nature of the unit, nonresidents that hunt during the general moose season typically hire a guide and/or transporter, which contributes to the high success rate compared to residents, who are less likely to hire commercial services.

Harvest Chronology

Chronology data for the state general hunt indicate most moose are taken late in the season in Unit 11 (Table 5). Bull moose generally increase their movements at the onset of rut in mid-September, during which time they also respond better to hunter calls. This timing coincides with leaf fall. This combination of factors results in bull moose being more vulnerable toward the end of the hunting season, and many hunters time their efforts accordingly.

Transport Methods

Unit 11 moose hunters typically use aircraft, all-terrain vehicles, horses, or highway vehicles to access hunting areas (Table 6). Except for federally qualified subsistence hunters, all off-road vehicle use on federal lands in Unit 11 is restricted to existing trails by permit only. Aircraft can be used for hunter transportation in Wrangell-St. Elias National Preserve, but not in the park.

Table 2. Unit 11 moose hunters by permit type, Southcentral Alaska, regulatory years[a] 2010–2014.

Regulatory year	General state harvest ticket	RM291[b]	CM300	Federal permit	Total hunters
2010	111			143	254
2011	91		9	132	232
2012	88	107	6	75	276
2013	78	79	4	78	239
2014	66	96	3	74	239

[a] Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.
[b] Started in 2012.

Table 3. Unit 11 moose harvest by permit type, Southcentral Alaska, regulatory years[a] 2010–2014.

	General state harvest ticket		RM291[b]		CM300		Federal permit		
Regulatory year	Harvest	% Success rate	Harvest	% Success rate	Harvest	% Success rate	Harvest	% Success rate	Total harvest
2010	19	17					19	13	38
2011	35	38			3	33	27	20	65
2012	23	26	16	15	1	17	9	12	49
2013	29	37	10	13	0	0	12	15	51
2014	18	27	11	11	1	33	10	14	40

[a] Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.
[b] Started in 2012.

Table 4. Unit 11 moose harvest by residency for general state harvest tickets, Southcentral Alaska, regulatory years[a] 2010–2014.

Regulatory year	Successful hunters				Unsuccessful hunters				Total hunters
	Resident (%)	Nonresident (%)	Unspecified (%)	Total	Resident (%)	Nonresident (%)	Unspecified (%)	Total	
2010	7 (37)	12 (63)	0 (0)	19	84 (91)	8 (9)	0 (0)	92	111
2011	15 (44)	16 (47)	3 (9)	34	46 (82)	8 (14)	2 (4)	56	90
2012	7 (30)	15 (65)	1 (4)	23	56 (86)	9 (14)	0 (0)	65	88
2013	10 (34)	19 (66)	0 (0)	29	48 (98)	0 (0)	1 (2)	49	78
2014	4 (22)	14 (78)	0 (0)	18	40 (83)	8 (17)	0 (0)	48	66

[a] Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.

Table 5. Unit 11 moose harvest (%) chronology for general state harvest tickets, Southcentral Alaska, regulatory years[a] 2010–2014.

Regulatory year	Season dates	Percent of total harvest by week of season				
		1st	2nd	3rd	4th	5th
2010	20 Aug–20 Sep	11	5	16	47	21
2011	20 Aug–20 Sep	13	9	34	19	25
2012	20 Aug–20 Sep	9	14	14	45	18
2013	20 Aug–20 Sep	10	7	17	41	24
2014	20 Aug–20 Sep	6	28	11	28	28

[a] Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.

Table 6. Unit 11 successful moose hunter transport methods for general state harvest ticket hunt, Southcentral Alaska, regulatory years[a] 2010–2014.

Regulatory year	Method of transport (%)							
	Airplane	Horse	Boat	ATV[b]	Snowmachine	ORV[b]	Highway vehicle	*n*[c]
2010	67	11	6	11	0	0	6	18
2011	49	23	0	14	0	3	11	35
2012	52	22	0	13	0	4	9	23
2013	59	17	3	10	0	0	10	29
2014	61	17	6	11	0	0	6	18

[a] Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2010 = 1 July 2010–30 June 2011.
[b] ATV = all-terrain vehicle; ORV = off-road vehicle.
[c] Some harvest reports did not include method of transportation.

Seasons and Bag Limits

State hunt and bag limit	Resident open seasons	Nonresident open seasons
Unit 11		
CM300: 1 bull.	10 Aug–20 Sep	
RM291: 1 bull with spike-fork antlers or 50-inch antlers or antlers with 3 or more brow tines on at least one side.	20 Aug–17 Sep	20 Aug–17 Sep
Harvest ticket: 1 bull with spike-fork antlers or 50-inch antlers or 3 or more brow tines on at least one side.	20 Aug–20 Sep	20 Aug–20 Sep

Federal hunts and bag limits	Qualifying hunters	Open seasons
Unit 11		
FM1106: 1 antlered bull.	Residents of Units 11, 13A, 13B, 13C, 13D, and Chickaloon	20 Aug–20 Sep
FM1107: 1 bull.	Residents of Units 11, 13A, 13B, 13C, 13D, and Chickaloon	20 Nov–20 Dec

Additional information is available on ADF&G's website:

http://www.adfg.alaska.gov/index.cfm?adfg=wildliferegulations.hunting

Other Mortality

Currently there are no information sources to understand natural mortality rates or primary causes of mortality.

Alaska Board of Game Actions and Emergency Orders

During the March 2009 meeting, BOG opened state and private lands of Unit 11 to a CSH hunt for moose by the 8 Ahtna communities: Chitina, Kluti Kaah, Tazlina, Gakona, Gulkana, Chistochina, Mentasta, and Cantwell. Other Alaska residents were eligible to participate if they had ties to one of the 8 Ahtna communities. Community hunters were permitted to hunt in Unit 11, Unit 13, and a small portion of Unit 12 near Mentasta. They were provided up to 15 "any" bulls, and an unlimited number of bulls meeting the state general hunt antler restrictions.

For purposes of the CSH hunt, an "any" bull was a bull that did not meet the state general hunt antler restrictions. Due to a court ruling, BOG eliminated the CSH hunt for the RY10 season.

The CSH hunt was reinstated in RY11 with a huntwide quota of 70 "any" bulls. Since then, it has been open to any group of Alaska residents with 25 or more individuals registered to participate in the hunt. The extensive hunt conditions can be found online at http://www.adfg.alaska.gov/index.cfm?adfg=huntlicense.cultural.

For RY13, BOG changed the annual CSH quota of "any" bulls from 70 to 100. For RY14, "any" bull permits for the CSH hunt were allocated to 1 permit for every 3 households in a community hunt group and a winter season (1 Dec–31 Dec) was added for the CSH hunt. The winter hunt was eliminated after RY14.

In March 2012, BOG replaced the general season hunt for that portion in Unit 11 east of the east bank of the Copper River upstream from and including the Slana River drainage and Unit 12, that portion within the Nabesna River drainage west of the east bank of the Nabesna River upstream from the southern boundary of the Tetlin National Wildlife Refuge, with a registration hunt (RM291) for both residents and nonresidents.

Recommendations for Activity 2.1.

Continue.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

- State moose harvest data are stored on the WinfoNet server (http://winfonet.alaska.gov/index.cfm). Federal moose harvest data must be obtained from NPS, and are stored electronically on the Area Biologist's hard drive in the Glennallen office.
- Moose trend count survey data forms (Appendix A) are stored in the "Moose" filing cabinet located in the Assistant Area Biologist's office in Glennallen.
- Data are entered and stored electronically with survey waypoints, survey tracks, and pdf files of the scanned data sheets on the Area Biologist's hard drive in the Glennallen office (D:\BGDIF\Moose\Moosecomp\Count Areas).
- All electronic files are backed-up on a portable hard drive located in the Area Biologist's office in Glennallen.
- A report on survey results including cost, conditions, dates flown, and count information is written and transmitted to appropriate staff and supervisors.

Agreements

A data sharing agreement is in place to provide moose (and other species) harvest data to Wrangell-St. Elias National Park and Preserve for RY90 through RY20 (Appendix B).

Conclusions and Management Recommendations

Recent winters have been mild and snow depths have been average to below average. Given the low hunting pressure, limited access, and relatively stable levels of predation in Unit 11, the moose population is expected to remain at a stable density. Aerial survey results from this reporting period indicate that composition of the moose population within the survey area has remained fairly stable. Annual fluctuations may occur with changing winter severity. Collaboration with NPS will be the most effective and efficient way to monitor the moose populations in Unit 11.

Moose hunting patterns have not changed considerably in Unit 11 during this reporting period. Few CSH participants utilize Unit 11 for moose, presumably because ease of access and moose densities are greater in neighboring Unit 13.

II. Project Review and RY15–RY19 Plan

Review of Management Direction

MANAGEMENT DIRECTION

The existing management direction and goals for Unit 11 remain appropriate within the context of statewide goals (ADF&G 2002), as well as within the frameworks of sustained yield and species conservation. There is no evidence that the long-term sustainability of moose in Unit 11 will be compromised by the current management direction or goals.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Harvest

- The Unit 11 moose population has a positive customary and traditional use determination finding. The unitwide amount reasonably necessary for subsistence is 30–40 moose.

MANAGEMENT OBJECTIVES

- Maintain a population with a posthunt (fall) minimum of 30 bulls:100 cows.

Maintain this management objective, which is supported in the literature as a ratio sufficient to allow for optimal reproduction in low-density moose populations (Schwartz 1998).

REVIEW OF MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Monitor moose abundance and population composition.

Data Needs

No change from report.

Methods

Collaborate with NPS to utilize annual NPS survey data. When NPS is unable to execute annual moose surveys, ensure that moose survey data are available for every other year by conducting traditional trend count surveys as needed. When necessary, utilize trend count survey methods previously described.

2. Mortality-Harvest Monitoring

ACTIVITY 2.1. Monitor and evaluate mortality and harvest data annually.

Data Needs

No change from prior reporting period. Monitoring harvest during the hunting season is essential to successfully administer the CSH hunt. Monitoring and analyzing harvest data annually is important to understand harvest pressure, hunter effort, and hunter success in Unit 11.

Methods

No change from prior reporting period.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

No issues have been identified.

Data Recording and Archiving

No change from prior reporting period.

Agreements

No change from prior reporting period.

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Appendix A. Moose trend count survey data sheet.

MOOSE SURVEY FORM

Page____of____

GMU/Subunit _____ Count Area_____ Survey Type *(circle one)*

Date _____ Pilot/observer_____ Trend Count or GSPE

Survey conditions (circle): Excellent Good Fair Poor (turn around and go home)

Weather: clouds _____ precipitation_____

winds/turbulence _____ temperature_____

depart time: _____ break time: _____ return time: _____ total flight time: _____

survey start time: _____ break time: _____ survey stop time: _____ total survey time: _____

Light		Snow age and cover		Search Type
Type	Intensity	Fresh	Complete	Standard (~ 6.5 - 8 min/mi^2, ~ 45min)
Bright	High	≤ week	Some low vegetation showing	
Flat	Med	> week	Bare ground showing	Intensive (~ 10 - 12 min/mi^2, + 20min)
	Low			

Waypoint No.	Bulls			Cows			Lone calf	Unk sex/ age	Total Moose	Remarks
	Ylg	Med <50"	Lge ≥50"	w/o calf	w/1 calf	w/2 calf				
Totals										

Appendix B. Data sharing agreement for wildlife data with National Park Service, Wrangell-St. Elias National Park and Preserve.

AGREEMENT FOR USE OF WILDLIFE DATA
BETWEEN
ALASKA DEPARTMENT OF FISH & GAME (ADF&G)
AND
WRANGELL-ST. ELIAS NATIONAL PARK AND PRESERVE

This agreement covers the following two files to be transferred to Wrangell-St. Elias National Park and Preserve: 1) harvest data files for bison, black bear, brown bear, caribou, moose, mountain goat, sheep, and wolves in Game Management Units 11 and 12 by UCU, including location of kill by major and minor subdivisions, method of take, date of kill, horn, skull, or antler morphometric data, and sex for the regulatory years 1990–1991 through 2014–2015; and 2) a .shp file delineating UCU boundaries. ADF&G will provide harvest data for species listed for regulatory years 2015–2016 through 2020–2021 upon request by Wrangell St Elias National Park.

This information is released to, and may be used by, Wrangell-St. Elias National Park and Preserve under the following conditions:

1. The information will be used to monitor harvest of bison, black bear, brown bear, caribou, moose, mountain goat, sheep, and wolf populations within the Park boundaries.
2. Harvest information will not be published, publically disseminated, or presented by the NPS or its contractors at the spatial resolution of latitude and longitude of a kill site or by watershed defined as a Uniform Coding Unit (UCU) in ADF&G data.
3. The information will not be released to others except to persons in a contractual relationship with Wrangell-St. Elias National Park and Preserve who will be performing work for or on behalf of Wrangell-St. Elias National Park and Preserve, on a need-to-know basis, in which case Wrangell-St. Elias National Park and Preserve will require the contractors to agree to and abide by the conditions in this document.
4. The NPS agrees that the harvest location data is protected from disclosure under state law and will make every effort to keep it confidential under federal law, and will notify ADF&G if there is a Freedom of Information Act request for the data.

Under the above conditions, ADF&G agrees to release the attached information, and Wrangell-St. Elias National Park and Preserve agrees to receive and use it.

SOF

_____ Date _____April 4, 2016_____
Maria Gladziszewski, Deputy Director, Division of Wildlife Conservation, ADF&G

SOF April 7, 2016

_____ Date _____
Eric Veach, Acting Superintendent, Wrangell-St. Elias National Park and Preserve


ALASKA
DEPARTMENT OF FISH AND GAME