

**FEDERAL AID
ANNUAL PERFORMANCE REPORT**

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 25526
Juneau, AK 99802-5526

**MOOSE
ANNUAL SURVEY AND INVENTORY
PERFORMANCE REPORT**

STATE: Alaska

GRANT AND SEGMENT NR.: W-33-1

PROJECT NR.: 1.0

WORK LOCATION: Statewide

PROJECT LOCATIONS: Game Management Regions 1, 2, 3, and 5

PERIOD: 1 July 2002–30 June 2003

PROJECT TITLE: The Status of Alaska Moose and Factors Influencing Their Populations

REPORT DESCRIPTION: This statewide performance report includes the four regions involved in moose survey and inventory activities. Statewide and regional activities are listed before specific activities by herd and game management unit.

**The Status of Alaska Moose and
Factors Influencing Their Populations in Region I**

Regionwide Activities

Activity 1: Draft a moose management report.

The 2-year moose management report was completed in spring 2003 and submitted to headquarters.

Activity 2: Write an annual survey and inventory performance report.

This draft satisfies the activity as described.

Activity 3: Provide information on moose to the Board of Game.

During the report period, staff testified before the Board of Game regarding 6 regulatory proposals specific to Region I moose.

Activity 4: Monitor harvest by use of registration, Tier II, and drawing permits (including the collection of incisors for aging and photos of antlers).

This activity was done regionwide as appropriate.

Activity 5: Collect anecdotal information about Region I moose populations through contacts with hunters.

This was done throughout the region, primarily during checking moose during the hunting seasons.

Activity 6: Finalize redraft of Region I moose management plan.

Data was collection as part of the development of the plan. The plan was not completed during this performance period and work will continue next year.

Unit 1A

Activity 2: Conduct no more than one aerial sex and age composition survey in the Unuk and Chickamin drainages.

The Ketchikan Area Biologist flew one aerial survey of the Unuk River during April 2002 with good snow cover. We counted 24 moose from the mouth to the first canyon. No survey was done on the Chickamin River drainage.

Unit 1B

Activity 1: Fly a minimum of one aerial sex and age composition survey each of the Stikine River and Thomas Bay populations.

The Petersburg Area Biologist flew one winter helicopter survey of the Stikine River, and 76 moose were counted. Information on sex composition was unavailable because the aerial survey occurred after antler-drop. No aerial sex and age composition surveys were conducted at Thomas Bay due to habitat related sightability issues.

Activity 2: Monitor habitat conditions in the Thomas Bay area by ground surveys of willow browse, using standard counts of number of leaders, amount of annual production and level of moose browsing.

No formal browse surveys were conducted in the Thomas Bay area during the regulatory year. The Area Biologist did, however, accompany research staff to Thomas Bay to conduct an informal evaluate browse condition and utilization. Staff also assessed slash decomposition and vegetative release at two of three second growth stands thinned in fall 1998 to enhance habitat for moose at Thomas Bay. Research and management staff also conducted a similar informal evaluation of browse condition and utilization on the Stikine River.

Activity 3: Do at least one calf production survey of the Stikine River moose population.

The Petersburg Area Biologist we flew one spring aerial cow/calf composition survey on the Stikine River, and 29 moose were counted and identified to sex and age.

Unit 1C

Activity 1: Do at least one sex and age composition survey each of the Berners Bay, Taku River, Endicott River/St. James Bay, and Gustavus Forelands populations.

Area staff flew two aerial surveys in Berners Bay and Gustavus forelands. A total of 58 moose

wee counted in the Berners Bay population and 312 in the Gustavus herd. No surveys were flown for the Endicott River/St. James Bay or the Taku populations.

Activity 2: Monitor habitat conditions on the Gustavus Forelands by ground surveys of willow browse, using standard counts of number of leaders, amount of annual production, and level of browsing by moose.

Browse surveys on the Gustavus Forelands were carried out in April of 2003. Results of the surveys were analyzed and presented to moose hunters in Gustavus, and previous year's data was presented to the Board of Game during fall 2002 to support a proposal to increase cow moose permits.

Unit 1D

Activity 1: Do at least one sex and age composition survey of the Chilkat Valley population.

Snow and other weather conditions did not permit any moose surveys to be done in this area.

Activity 2: Monitor habitat conditions in the Chilkat Valley by ground surveys of willow browse, using standard counts of number of leaders, amount of annual production, and level of browsing by moose.

There were no browse surveys conducted in the Chilkat Valley during the regulatory year.

Unit 2

The public has reported occasional sightings of moose in this unit. We have established no population objectives for Unit 2.

Unit 3

Activity 1: Collect anecdotal information about moose populations on Mitkof, Wrangell, Kupreanof and adjacent islands.

Staff in the Petersburg area office discussed the moose herd with hunters from Petersburg, Kake, Wrangell, and other locations.

Unit 5

Activity 1: Fly at least one sex and age composition survey each for the Yakutat Forelands, Nunatak Bench, and Malaspina Forelands populations.

Douglas area staff did not conduct aerial surveys during this report period due to lack of snowfall.

Total Regional Segment Period Project Costs (in thousands): \$41.6

Submitted by: Dale Rabe, Management Coordinator

The Status of Alaska Moose and Factors Influencing Their Populations in Region II

Regionwide Activities

Activity 1: Draft a moose management report.

Final moose management reports were submitted during fall 2002.

Activity 2: Write an annual survey and inventory performance report.

Activity 3: Provide information on moose to the Board of Game.

Region 2 moose regulations were addressed during the spring 2003 Board of game meeting

Activity 4: Conduct aerial sex and age population composition surveys in all units to determine status, trend, productivity, and mortality of moose.

Surveys were conducted in all areas where conditions allowed.

Activity 5: Monitor the moose harvest through field observations, hunter harvest reports, and contact with hunters.

Activities by Unit

Unit 6

Activity 1: Conduct aerial sex and age population composition surveys in all units to determine status, trend, productivity, and mortality of moose.

Lack of snow during FY 2002–03 precluded surveys.

Activity 2: Monitor the moose harvest through field observations, hunter harvest reports, and contact with hunters.

The preliminary Unit 6 2002–03 harvest was:

Males 47	Females 4	Total 51
----------	-----------	----------

Units 7 and 15

Activity 1: Conduct aerial sex and age population composition surveys in all units to determine status, trend, productivity, and mortality of moose.

No surveys were conducted in 2002–03 because of poor survey conditions

Activity 2: Provide information on moose to the Board of Game.

The Board of Game met during March, 2003 to review proposals including the reauthorization of antlerless moose hunts on the Kenai Peninsula. All hunts were reauthorized. No other regulatory changes were made to the Kenai moose management system.

Activity 3: Monitor the moose harvest through field observations, hunter harvest reports, and contact with hunters.

The preliminary Units 7 & 15 2002–03 general season harvest was:

Unit	Males	Females	Unspecified	Total
7	50	0	1	51
15A	139	1	0	140
15B	40	1	0	41
15C	256	3	2	261
15Z	0	0	0	0
Total	485	5	3	493

The preliminary harvest for all permit hunts held on the Kenai Peninsula is summarized in Table 1.

Table 1. Kenai Peninsula moose drawing permit hunt summary, 2002–03

Hunt area	Permits issued	Number		Percent success	Harvest			Total
		of hunters			Male	Female	Unknown	
Gov. permit	1	1		0	0	0	0	
DM522	25	18		0	0	0	0	
DM530	14	9		0	0	0	0	
DM531	14	10	10	1	0	0	1	
DM532	6	3	0	0	0	0	0	
DM533	6	5	20	1	0	0	1	
DM534	12	7	43	3	0	0	3	
DM535	12	6	50	3	0	0	3	
DM536	8	1	0	0	0	0	0	
DM537	8	6	0	0	0	0	0	
DM538	10	5	0	0	0	0	0	
DM539	10	6	50	3	0	0	3	
Totals	126	77	29	11	0	0	11	

Unit 9

Activity 1: Conduct aerial sex and age population composition surveys in all units to determine status, trend, productivity, and mortality of moose.

Poor snow conditions throughout the survey period curtailed survey efforts. One surveys was conducted in the southern portion of Unit 9E on the Pacific side around Ivan Bay (Anchor-Ivan); 97 total moose were classified and ratios were 56 bulls and 23 calves per 100 cows

Activity 2: Monitor the moose harvest through field observations, hunter harvest reports, and contact with hunters.

The preliminary Unit 2002–03 harvest was:

Males 168 Females 3 Unknown 2 Total 173

Units 11 and 13

Activity 1: Conduct aerial sex and age population composition surveys in all units to determine status, trend, productivity, and mortality of moose.

Composition surveys were flown during November in seven distinct count units

Unit 13 Bulls 445 Cows 1653 Calves 397 Total Moose 2485

Unit 11 Not Surveyed

Activity 2: Monitor the moose harvest through field observations, hunter harvest reports, and contact with hunters.

Unit 13 General Season Hunters 2705

Unit 13 Tier II TM300 Hunters 128

Unit 11 General Season Hunters 121

The preliminary Unit 2002–03 harvest was:

Unit 13 Males 517 Females 0 Unk 3 Total Harvest 520

Unit 11 Males 33 Females 0 Unk 0 Total Harvest 33

Unit 14 A and B

Activity 1: Conduct a fall moose census (modified Gasaway) and super-stratification surveys in select areas.

No surveys were completed during this period because of low snowfall and poor survey conditions.

Activity 2: Monitor the moose harvest through field observations, hunter harvest reports, and contact with hunters.

The preliminary Unit 2002–03 general season harvest was:

14A Males 312 Females 3 Unknown 1 Total 316

14B Males 67 Females 0 Unknown 0 Total 67

The preliminary Unit 2002–03 harvest by drawing permits was:

Males 9 Females 212 Unknown 0 Total 221

Unit 14 C

Activity 1: Conduct a fall moose census (modified Gasaway) on Fort Richardson and Elmendorf Air Force Base in cooperation with the military.

No census flown due to lack of snow.

Activity 2: Conduct fall aerial sex and age composition counts.

No surveys flown because of poor survey conditions.

Activity 3: Monitor the moose harvest through field observations, hunter harvest reports, and contact with hunters.

The preliminary Unit 2002–03 harvest was:

Bulls 61 Cows 32 Total 93

Activity 4: Provide information on moose to the Board of Game.

Board of Game met March 2003 and discussed 4 moose hunting proposals specific to Unit 14C. All proposals passed.

Unit 16

Activity 1: Conduct aerial sex and age population composition surveys in all units to determine status, trend, productivity, and mortality of moose.

No winter surveys were flown during this period due to poor snow conditions. One calf production survey was flown with limited results. Only 14 cows were observed: 7 with no calf, one with 1 calf, and 6 with twins for a total of 93 calves per 100 cows.

Activity 2: Monitor the moose harvest through field observations, hunter harvest reports, and contact with hunters.

The preliminary Unit 2002–03 general harvest was:

16A Males 152 Females 0 Unknown 1 Total 153

The preliminary Unit 2002–03 harvest by Tier II permit was:

16B Males 68 Females 0 Unknown 0 Total 68

The preliminary Unit 2002–03 harvest by registration permits was:

Males 21 Females 16 Unknown 1 Total 38

Unit 17

Activity 1: Conduct a spring moose census (modified Gasaway) in Unit 17A and C.

Surveys not conducted spring 2003 because of insufficient snow cover.

Activity 2: Monitor the moose harvest through field observations, hunter harvest reports, and contact with hunters.

The preliminary Unit 2002–03 reported harvest was:

Males 404

Females 0

Total 404

Other activities funded by Federal Aid on this project: None

Total Regional Segment Period Project Costs (in thousands): \$197.8

Extremely poor conditions preclude most surveys.

Submitted by: Michael G. McDonald, Assistant Management Coordinator

The Status of Alaska Moose and Factors Influencing Their Populations in Region III

Regionwide Activities

Activity 1: Prepare a draft or finalize a moose management report.

Drafted moose management reports for all units.

Activity 2: Write an annual survey and inventory performance report.

Wrote an annual survey and inventory report for all units.

Activity 3: Provide information to the Board of Game, advisory committees and the general public on moose management.

Made presentations to the Board of Game and advisory committees as needed.

Activities by Unit

Unit 12

Activity 1: Monitor harvest and analyze harvest data.

Monitored harvest and hunter distribution by aerial survey, in field hunter contacts, and review of harvest reports, and analyzed harvest data. Preliminary data indicate 523 hunters harvested 123 bull moose (23.5% success).

Activity 2: Monitor natural mortality and analyze mortality data.

Assessed mortality factors by analyzing harvest data and noting other sources of mortality.

Activity 3: Assess effects of liberal grizzly bear hunting regulations on area specific bear harvest in relation to moose calf survival.

Analyzed effects of liberal grizzly bear hunting regulations on area specific bear harvest in relation to moose calf survival. Preliminary data indicate no relationship.

Activity 4: Cooperate with Alaska Division of Forestry in developing an Upper Tanana Valley Logging/Wildlife Habitat Project. Assist state forestry in designing and implementing scarification techniques that will promote willow and aspen regeneration following logging.

Continued to work with the Division of Forestry to implement the Upper Tanana Valley Logging/Wildlife Habitat Plan.

Units 19, 21A and 21E

Activity 1: Monitor harvest and analyze harvest data.

Monitored harvest and analyzed harvest data (preliminary harvests: 19A=67, 19B=80, 19C=84, 19D=116, 21A=81 and 21E=139).

Activity 2: Monitor natural mortality and analyze mortality data.

Monitored natural mortality and analyzed mortality data. Natural mortality was low due to a mild winter.

Activity 3: Conduct trend area and moose population estimation surveys.

Conducted trend area and moose population estimation surveys. No fall trend area surveys were conducted due to poor conditions, however we did complete late winter surveys in GMU 19A, where we found short-yearling survival to be low (8.9% -7.6%).

Activity 4: Conduct spring calf surveys.

Conducted spring calf twinning surveys. Calving survey were conducted in GMU 19A in 2 locations and in GMU 21E. Small sample sizes for cows with calves hampered any percent twins calculation for GMU 19A, but in GMU 21E twinning was near 30%.

Unit 20A

Activity 1: Monitor harvest and analyze harvest data.

Monitored harvest and analyzed harvest report information (preliminary general harvest = 356 bulls; permit hunts harvest = 94 cows; calf hunts harvest = 33)

Activity 2: Monitor natural mortality and analyze mortality data.

Estimated natural mortality (≥ 36 -months-old varied from 7 to 21% annually and averaged 12.5% from 1996–1997 through 2001-2002) from radiocollared adults. Estimated unreported, illegal, road (trooper logs), and train (Alaska Railroad logs) mortality (preliminary estimate = 150).

Activity 3: Conduct trend area surveys.

Did not conduct trend area surveys due to lack of snow.

Activity 4: Conduct geostatistical population estimation surveys.

Did not conduct geostatistical population estimation surveys due to lack of snow.

Activity 5: Conduct spring calf twinning surveys.

Conducted a moose twinning rate (9%, $n = 58$) survey in May.

Unit 20B

Activity 1: Monitor harvest and analyze harvest data.

Monitored harvest and analyzed harvest report information (preliminary general hunt harvest = 636 bulls; DM788 = 37 cows; TM785 = 30 bulls and 22 cows; YM301 = 51 bulls).

Activity 2: Monitor natural mortality and analyze mortality data.

Natural mortality estimates based on population estimation surveys were not completed because surveys were not conducted due to poor snow conditions.

Estimated unreported, illegal, road (trooper logs), and train (Alaska Railroad logs) mortality (preliminary RY02 estimate = 250 moose).

Activity 3: Conduct trend area surveys.

Did not conduct trend area surveys due to lack of snow.

Activity 4: Conduct spring calf twinning surveys.

Conducted moose twinning rate (20%, $n= 50$) surveys.

Units 20C 20F and 25C

Activity 1: Monitor harvest and analyze harvest data.

Monitored harvest and analyzed general hunt harvest report information (preliminary reported harvest = 130 bulls in Unit 20C; 38 in 20F, and 73 in 25C).

Activity 2: Monitor natural mortality and analyze mortality data.

Natural mortality estimates based on population estimation surveys were not completed because surveys were not conducted due to poor snow conditions.

Estimated unreported, illegal, road (trooper logs), and train (Alaska Railroad logs) mortality (preliminary RY02 estimate = 43 moose).

Unit 20D

Activity 1: Monitor harvest and analyze harvest data.

Monitored preliminary harvest of 200 moose in Unit 20D and analyzed harvest data.

Activity 2: Monitor natural mortality and analyze mortality data.

Assessed mortality factors by analyzing harvest data and noting other sources of mortality.

Activity 3: Conduct a geostatistical population estimate in northern Unit 20D.

Did not conduct a geostatistical population estimate in northern Unit 20D due to poor survey conditions.

Activity 4: Conduct moose browse surveys to assess habitat quality and condition.

Did not conduct moose browse surveys to assess habitat quality and condition due to higher priority tasks at the time.

Unit 20E

Activity 1: Monitor harvest and analyze harvest data.

Monitored harvest and hunter distribution by aerial survey, in field hunter contacts, and review of harvest reports. Unit-wide, 713 hunters harvested 135 bull moose during the general hunt.

Administered drawing permit hunt DM794 (3 permits, 3 hunters; 1 bulls harvested) and DM796 (7 permits, 6 hunters, 3 bulls harvested).

Analyzed harvest data.

Activity 2: Monitor natural mortality and analyze mortality data.

Assessed mortality factors by analyzing harvest data and noting other sources of mortality.

Activity 3: Conduct moose population estimation surveys in the eastern, central and western portions of the unit.

Completed a population estimate survey in a portion of the Tok West Survey Area (poor snow conditions precluded surveying the western portion). Population estimate was 1,166 moose with 25 calves and 58 bulls:100 cows.

Completed the Tok Central Survey Area population estimate. Estimates were 1,707 moose and 20 calves and 71 bulls:100 cows.

Activity 4: Assess effects of liberal grizzly bear hunting regulations on area specific bear harvest in relation to moose calf survival

Analyzed effects of liberal grizzly bear hunting regulations on area specific bear harvest in relation to moose calf survival. Preliminary data indicate no relationship.

Activity 5: Evaluate vegetative response in the Ketchumstuk Creek prescribed burn.

No progress made on evaluating Ketchumstuk burn due to other higher priorities.

Units 21B

Activity 1: Monitor harvest and analyze harvest data.

Monitored harvest of 60 moose and analyzed harvest data.

Activity 2: Monitor natural mortality and analyze mortality data.

Monitored natural mortality and analyzed mortality data.

Activity 3: Conduct a geostatistical population estimate.

Did not conduct a geostatistical population estimate due to poor survey conditions.

Activity 4: Conduct trend area surveys.

Did not conduct trend area surveys due to poor survey conditions.

Activity 5: Assist US Fish and Wildlife Service in the operation of a hunter check station on the Nowitna River.

Coordinated with US Fish and Wildlife Service for operation of hunter checkstation on the Nowitna River.

Unit 21C

Activity 1: Monitor harvest and analyze harvest data.

Monitored harvest of 29 moose by 54 hunters and analyzed harvest data.

Activity 2: Monitor natural mortality and analyze mortality data.

Monitored natural mortality and analyzed mortality data.

Activity 3: Conduct a hunter checkstation on the Koyukuk River.

In combination with Unit 21D and Unit 24, registered 394 hunters at checkstation on the Koyukuk River and checked 218 moose.

Unit 21D

Activity 1: Monitor harvest and analyze harvest data.

Monitored harvest of 324 moose and analyzed harvest data.

Activity 2: Monitor natural mortality and analyze mortality data.

Monitored natural mortality and analyzed mortality data.

Activity 3: Conduct fall trend area surveys.

Did not conduct trend area surveys due to poor survey conditions.

Activity 4: Conduct spring twinning surveys.

Counted 18 cows w/ one calf and 14 cows w/ twin calves during spring twinning surveys.

Activity 5: Operate a hunter check station on the Koyukuk River.

In combination with Unit 21C and 24, registered 394 hunters at checkstation on the Koyukuk River and checked 218 moose.

Activity 6: Continue the Koyukuk User Issues planning process to minimize user-group conflicts.

Continued implementation of the Koyukuk River plan by applying plan agreements to issues as they arose.

Unit 24

Activity 1: Monitor harvest and analyze harvest data.

Monitored harvest of 194 moose and analyzed harvest data.

Activity 2: Monitor natural mortality and analyze mortality data.

Monitored natural mortality and analyzed mortality data.

Activity 3: Conduct fall trend area surveys.

Did not conduct trend area surveys due to poor survey conditions.

Activity 4: Operate a hunter check station on the Koyukuk River.

In combination with Units 21C and 21D, registered 394 hunters at checkstation on the Koyukuk River and checked 218 moose.

Units 25A, 25B, and 25D

Activity 1: Monitor harvest and analyze harvest data.

Monitored harvest and analyzed harvest. A total of 100 moose were reported taken in Units 25A, B, and D, with an additional 171 hunters reporting being unsuccessful.

Activity 2: Monitor natural mortality and analyze mortality data.

Monitored natural mortality and analyzed mortality data.

Activity 3: Conduct a geostatistical population estimate in eastern Unit 25D.

No moose surveys were completed in Unit 25 because of a lack of snow.

Activity 4: Conduct fall trend area surveys.

No moose surveys were completed in Unit 25 because of a lack of snow.

Activity 5: Conduct moose management planning.

Continued discussions with local communities and others to follow up on the Yukon Flats Cooperative Moose Management Plan.

Units 26B and 26C

Activity 1: Monitor harvest and analyze harvest data.

No open season and no harvest data to analyze.

Activity 2: Monitor natural mortality and analyze mortality data.

Monitored natural mortality and analyzed mortality data.

Activity 3: Conduct riparian zone minimum direct count surveys.

Completed minimum direct count surveys in Unit 26B and part of 26C. A total of 395 moose were counted, including 311 adults and 82 calves and 2 of unknown age.

Other activities funded by Federal Aid on this project:

Completed a population estimate survey in western and northern Unit 12. Population estimate was 1,967 moose with 15 calves and 42 bulls:100 cows.

Completed White Mountains trend and composition surveys in 25C. Trend survey results showed a Bull:cow ratio of 71:100 and the calf:cow ratio of 9:100. Composition survey results showed a bull:cow ratio of 59:100 and the calf:cow ratio of 19:100.

Conducted aerial twinning surveys in southwest Unit 20D to assess relationship between moose density and habitat quality (19.6% twins).

Conducted spring aerial twinning surveys in Unit 24. Counted 53 cows w/ one calf and 22 cows w/ twin calves.

Total Regional Segment Period Project Costs (in thousands): \$349.1

Submitted by: Roy A. Nowlin, Management Coordinator

The Status of Alaska Moose and Factors Influencing Their Populations in Region V

Regionwide Activities

Activity 1: Write an annual survey and inventory performance report.

Performance report for Units 18, 22, 23, and 26A were prepared August 2003 and submitted to HQ early September 2003.

Activity 2: Provide information on moose to the Board of Game.

Unit 18. During August 2002, the Board received a petition for an extended moose season for the lower sections of the Yukon River. The department presented population and harvest information to the Board via teleconference and the Board adopted an emergency regulation to extend the season. Additionally, information regarding department proposals to change the moose seasons, and hunt areas in Unit 18 was developed with and presented to the local advisory committees. These changes will be considered by the Board of Game in November 2003.

Units 22, 23, 26A. The Board did not consider wildlife proposals during this reporting period.

Activities by Unit

Unit 18

Activity 1: Conduct fall aerial sex and age composition surveys and calf production surveys in selected portions of Unit 18.

We conducted a late winter moose recruitment survey along the Yukon River riparian corridor and found the following results:

Area	Total	Adults	Calves	Calves:100 Adults
Paimiut	133	104	29	28:100
Lowest	29	16	13	81:100
Overall	167	124	43	35:100

Activity 2: Conduct spring aerial surveys (trend area surveys, distribution surveys, or calf production surveys) in selected portions of Unit 18 to assess population trend and recruitment.

We attempted spring calving surveys in the Paimiut count area but did not obtain usable data due to early leaf emergence and unusual moose distribution probably caused by unusually low snow.

We conducted spring calving surveys along the Yukon River in the Lowest Yukon count area (below Mt. Village). 88 moose were classified including 12 bulls, 13 cows > 2 years old, 15 2-year old cows, 24 yearlings, 2 single calves and 11 sets of twins.

Activity 3: Conduct geostatistical population estimation surveys, (regular) population estimation surveys, riparian zone minimum direct count surveys, or other appropriate census technique, to estimate the size of the moose populations in selected portions of Unit 18.

Poor weather prevented us from completing moose population estimates during this reporting period.

Activity 4: Conduct fall and/or midwinter trend area surveys or distribution surveys of the Kuskokwim River and its major drainages to assess the status and estimated size of the Kuskokwim River population.

Poor weather prevented us from completing moose population trend surveys during this reporting period.

Activity 5: Monitor moose numbers, distribution, and utilization of the smaller drainages in Unit 18 through trend area surveys, distribution surveys, public contacts, and field observations.

We collected informal hunter reports of moose in the minor drainages throughout Unit 18 and received reports from the Togiak National Wildlife Refuge staff about small numbers of radiocollared moose entering Unit 18 from adjacent Unit 17.

Activity 6: Monitor overall hunting activity through hunter checkstations, harvest reporting, hunter contacts, and field observations.

We contacted hunters and monitored their distribution using aerial and boat supported checkstations.

Harvest information is derived from harvest reports and is not yet finalized for this reporting period but results from 2001-2002 indicate a minimum of 223 moose taken in Unit 18.

Activity 7: Monitor other mortality factors through public contacts and field observations.

Hunters and others reported several moose killed by wolves. Most of these came from Yukon River communities.

Activity 8: Assess habitat quality through browse surveys and field observations.

We conducted browse surveys along the Yukon and Kuskokwim Rivers during July 2002 and found abundant, high quality, largely unutilized browse.

Activity 9: Work with the Association of Village Council Presidents (AVCP), Kuskokwim Native Association (KNA), The Kuskokwim Corporation (TKC), U.S. Fish and Wildlife Service (FWS), Unit 19 and 21A, E area biologist, affected Advisory Committees, local moose hunters, and other users to resolve conflicts between upriver and downriver uses.

We participated in introductory meetings coordinated by Region 3 to address these issues.

Activity 10: Continue educational efforts toward increasing moose populations in the smaller drainages in Unit 18.

Educational efforts toward this goal include newspaper articles, radio spots, and PSA's that address moose management in general.

Activity 11: Use incentive programs and/or public education to improve understanding of hunting regulations and the value of conserving moose populations, and to obtain better harvest data through increased harvest reporting.

To improve compliance with the reporting requirement, we conducted an incentive program involving a prize drawing. Preliminary results are encouraging.

Activity 12: Develop an ongoing cooperative moose management strategy for the Kuskokwim River moose population with the Lower Kuskokwim Advisory Committee (LKAC), the Yukon Delta National Wildlife Refuge (YDNWR), and interested local groups and communities.

The LKAC, many affected villages, YDNWR, other interested users, and the Department agreed upon a strategy to improve moose numbers in the portion of the Kuskokwim drainage in Unit 18 centered around a 5-year moratorium on moose hunting. The proposal to implement this regulation will be address by the Board of Game during their November 2003 meeting.

Activity 13: Develop an ongoing cooperative moose management strategy for the moose population within the Togiak Refuge portion of Unit 18 with local village leaders, members of the Central Bering Sea Advisory Committee, the Regional Advisory Council, the Togiak National Wildlife Refuge (TNWR), and interested local groups and communities.

We began a planning process to improve moose numbers in the southern Unit 18 drainages in cooperation with local villages and the Togiak National Wildlife Refuge (TNWR). Several drafts of an acceptable plan have been considered but a final version is still pending.

Unit 22

Activity 1: Conduct a geostatistical estimation survey (census) or a riparian zone minimum direct count survey (census) in a portion of Unit 22 to monitor trends in population size, sex/age composition, and recruitment.

The Unit 22 moose census schedule was changed during the reporting period. In past years, moose censuses were completed on a 5 year rotation between subunits. Beginning in 2002, we will schedule 2 censuses per year, and attempt to census all subunits once every 3 years.

In March 2003 Department staff completed a moose census in the Unalakleet drainage (approximately 2000 mi²) in Unit 22A using the spatial census technique. The census yielded an estimate of 75 moose with a 90% C.I. of 46 to 103 ($\pm 38.6\%$). The calf:adult ratio was 15 calves:100 adults ($\pm 75\%$ at 90% C.I.).

Although we do not have previous estimates of moose numbers in the entire Unalakleet River drainage for comparison, data from a portion of the census area in 1989 suggests a significant decline in the moose population. In 1989, a reduced-size census of 1,124 mi² estimated 325 moose and the percentage of calves was 16%.

In March 2003 a moose census of Unit 22E was completed using the spatial census technique which yielded an estimate of 504 with a 90% C.I. of 456 to 551 ($\pm 10.0\%$). The census estimated 23 calves per 100 adults and a recruitment rate of 19%, which is a significant increase from the 2000 population estimate of 152 moose and recruitment estimate of 8%. The 2003 census was the first stratified census completed in Unit 22E and cannot be directly compared to previous population estimates. Previous estimates were minimum direct counts during surveys of riparian

habitat. The 2003 census estimated more than twice as many moose as the previous high estimate in 1991 when 226 moose were counted. We believe more moose wintered in Unit 22E in 2002-2003 than usual due to sparse, shallow snow cover. Many moose were found in coastal areas where they have not been seen previously during winter surveys. Snow depth was likely insufficient to drive some moose to their typical wintering areas in the river bottoms in Unit 22E and to the American and Agiapuk River drainages in Unit 22D.

Activity 2: Complete trend area surveys, sex and age composition surveys, or other aerial surveys (where appropriate in Unit 22) during late fall and early spring to provide an index of moose population status and trends, sex and age composition, and yearling recruitment.

In November 2002 Nome staff completed fall composition surveys in the Snake and Stewart River drainages in Unit 22C. In the Snake River drainage we observed 95 moose and obtained a bull: cow ratio of 18 bulls: 100 cows. We observed 51 calves: 100 cows which is consistent with the high recruitment rates observed in Unit 22C in recent years.

Staff observed and classified 30 moose in the Stewart River drainage; 42 bulls: 100 cows and 16 calves: 100 adults. Moose were more widely dispersed in the Stewart drainage and were found at all elevations. Because of the close proximity of the two rivers it makes sense there is seasonal movement of moose between the Snake and Stewart River drainages. A total of 125 moose were classified in both drainages, yielding rates of 24 bulls: 100 cows, 43 calves: 100 cows, and 26% calves.

During March of 2003 Nome staff completed moose composition surveys in portions of Units 22B and 22D, including the Niukluk River drainage, Kuzitrin River Drainage, and Igiapuk and American River drainages. In western Unit 22B, Department staff observed 65 moose. These observations yielded 10 yearlings: 100 adults and a 9% recruitment rate in the Niukluk River drainage.

In Unit 22D, 644 moose were seen in the Kuzitrin River drainage including 543 adults and 101 short yearlings. These observations yielded 19 yearlings: 100 adults, and a recruitment rate of 16%. A total of 320 moose were seen during a survey of the American and Igiapuk Rivers and their major tributaries of which 246 were adults and 74 were short yearlings, yielding 30 yearlings: 100 adults, and a recruitment rate of 23%.

Following the March 2003 Unit 22A moose census, recruitment surveys were flown in the Golsovia River drainage and on the main stems of the Unalakleet, Shaktoolik and Ungalik river drainages. In 2003, 19 moose were observed in the main stem of the Unalakleet River, yielding 16% short yearlings. This compares to the 84 moose and 8% yearlings found in 2000. In 2003, 29 moose were observed in the Golsovia Drainage, yielding 21% short yearlings. In 2000, 15 moose and 27% short yearlings were observed in the Golsovia Drainage. In 2003, 13 moose were observed in the main stem of the Shaktoolik River, yielding 15% short yearlings. This compares to 45 moose and 11% calves observed in 2000 in the Shaktoolik River. In the main stem of the Ungalik River only 1 adult moose was observed in 2003, compared to 29 moose observed in 2000.

In April of 2003 Department staff completed a recruitment survey in the Pikmiktalik drainage located in Unit 22A. Staff observed 17 moose and a recruitment rate of 35%. The Kogok River was also surveyed and 3 moose were observed.

Activity 3: Monitor human and natural mortality factors affecting the population.

Human harvest was monitored through the harvest ticket reporting system and village harvest surveys. No surveys were attempted to determine natural mortality rates of Seward Peninsula moose. In much of Unit 22 winter conditions during 2002–2003 appeared to have been relatively easy for moose and they generally came through the winter in good condition. Anecdotal evidence indicates that bear predation on moose calves is depressing moose populations in much of the unit.

Activity 4: Evaluate hunting mortality by analyzing all moose harvest data.

In 2001 the Board of Game established 4 registration moose hunts in Unit 22. Registration hunt, RM846, was established in western Unit 22B from 10 Aug–23 Sept and had a harvest quota of 42 moose. There were 399 registrants for the fall hunt, 203 hunted and 38 hunters were successful, yielding a success rate of 19%.

Western Unit 22B also had a winter registration hunt, RM848, from 1 Jan–31 Jan with a harvest quota of 6 moose plus the 4 moose from the unfilled fall harvest quota, for a winter quota of 10 moose. Fifteen hunters registered to hunt in RM848 9 hunted and 3 moose were harvested, yielding a success rate of 33%.

The Unit 22D registration hunt, RM856, took place 20 Aug–14 Sept and had a harvest quota of 33 moose. There were 416 registrants for the fall hunt, 209 hunted and 31 hunters were successful, yielding a success rate of 15%. There was a winter registration hunt, RM858, in the Unit 22D southwest portion of the Unit 22D registration hunt area 1 Jan–31 Jan with a harvest quota of 3 moose. Three hunters registered for the hunt, but no moose were harvested.

The two fall registration hunts held in Unit 22, RM846 and RM856, had a 1 antlered bull bag limit, a 3 day reporting period for successful hunters, a 15 day reporting period after the closure of the season for all other registrants, and a requirement to return the front half of the lower jaw of harvested moose to ADF&G. The two winter registration hunts, RM848 and RM858, had a 1 bull bag limit in addition to the hunt conditions listed above.

The total reported harvest from Unit 22 was 172 moose (160 males and 12 females). The reported harvest for each portion of the unit was: Unit 22A –25; Unit 22B –49; Unit 22C –41; Unit 22D –50; and Unit 22E –7. This includes 11 cows taken by registration permit in Unit 22C, 1 cow taken in Unit 22D, and 1 cow harvested illegally in western Unit 22B. Of the 566 individuals who reported hunting in Unit 22, 532 (94 %) were residents of Alaska, 467 (83 %) were residents of Unit 22, 34 (6 %) were nonresidents and 1 (<1%) were of unknown residency. Hunter success rate was 30%.

Activity 5: Improve harvest reporting through public education and improved communication and by conducting Community-based Harvest Assessments in selected villages.

The importance of harvest reporting was emphasized at village meetings. However village surveys remain a far more effective method of obtaining harvest data. In 2002–2003 big game

harvest surveys were conducted in Stebbins and Unalakeet. During the surveys, 20 people reported harvesting moose in Stebbins, and 29 people reported harvesting moose in Unalakleet.

Registration hunts have improved harvest reporting in Unit 22. The four registration moose hunts had a combined report rate of 97%. The 3 day reporting requirement for successful hunters and 15 day reporting requirement for unsuccessful hunters associated with the moose registration hunts has reinforced the importance of harvest reporting. Since 2002 was the first year many Unit 22 residents were introduced to registration hunts, additional effort was made by Department and Fish and Wildlife Protection staff to encourage harvest reporting by hunters.

Activity 6. Evaluate hunting regulations and recommend changes, if necessary, for conservation purposes.

The Unit 22A moose census and recruitment surveys completed in March indicate the population has declined and more restrictive hunting seasons are recommended. The department prepared news articles to inform the public, held public meetings in all Unit 22A villages to discuss the situation and began working with the Southern Norton Sound Advisory Committee to develop a moose proposal for the November 2003 Board meeting.

Activity 7. Use incentive programs and/or public education to improve understanding of hunting regulations and the value of conserving moose populations, and to obtain better harvest data through increased harvest reporting.

We used a variety of media and methods to inform the public about the new registration hunts in Unit 22 and to emphasize the importance of timely harvest reporting in these hunts. Only one person failed to report harvest and reporting by unsuccessful hunters and non-hunters was higher than we have seen in Unit 22 general season hunts. Moose management was discussed with advisory committees, at public meetings in the villages and individually with hunters in the unit.

Unit 23

Activity 1: Conduct geostatistical population estimation surveys, sex and age composition surveys, and calf survival counts where appropriate in the unit to monitor trends in population density, sex and age composition, and recruitment.

A census was conducted in the upper Kobuk portion of Unit 23 (above and including the Shungnak River drainage) during March 2003. Density was 0.20 moose/mi² and the calf:adult ratio was 12:100.

Activity 2: Monitor hunting activity and harvests through the statewide harvest ticket system, Community-based Harvest Assessments, public contacts and field observations.

The statewide harvest ticket system indicated 355 hunters harvested 147 moose (41% success rate). Trends of increasing nonlocal hunters and declining success continued in Unit 23.

Activity 3: Use incentive programs and/or public education to improve understanding of hunting regulations and the value of conserving moose populations, and to obtain better harvest data through increased harvest reporting.

Moose management was discussed with advisory committees and individuals who live or hunt in Unit 23.

Unit 26A

Activity 1: Survey unitwide riparian zones and other suitable areas of willow habitat, using trend area surveys, riparian zone minimum direct count surveys, or other appropriate census techniques to estimate the moose population trend in Unit 26A.

We conducted a riparian zone trend count along the Colville, Chandler and Anaktuvuk Rivers on 2 – 4 April, 2003. We counted a total of 515 moose within the trend count area. There were 413 adults and 102 short yearlings that had survived the winter (20%), including 19 pairs of twins.

Activity 2: Conduct a fall aerial sex and age composition survey of the Colville River population.

We conducted a fall sex and age composition survey from 21 – 24 October 2002. We observed 343 moose, including 91 bulls (54 bulls per 100 cows), 170 cows, and 82 calves (48 calves per 100 cows). There were 12 sets of twins. Antler spreads were estimated and 15% were less than 30 inches, 11% were 30-39 inches, 17% were 40-49 inches, 25% were 50-59 inches, and 32% were more than 60 inches.

Activity 3: Conduct spring, summer, and fall radio telemetry surveys to examine calf production and survival and adult distribution and mortality rates.

We conducted fall radiotracking surveys on 23-25 October 2002 and observed 23 cows with 19 calves that had survived the summer (83 calves per 100 cows) and 3 sets of twins. We conducted spring radiotracking surveys on 2 April 2002 and observed 26 cows with 18 short yearlings that had survived the winter (69 calves per 100 cows) and 4 sets of twins. We flew calving surveys on 3 and 10 June, 2003 and observed 25 collared cows which had a total of 23 calves (92 calves per 100 cows). There were 7 sets of twins observed during calving surveys. We also retrieved 5 collars from instrumented moose that have died since 1997.

Activity 4: Monitor predator populations by logging bear and wolf observations during moose surveys and other mortality factors through field observations and public contacts.

We spotted 4 wolves, 2 bears and 1 wolverine during the fall surveys, and 1 bear during the calving surveys.

Activity 5: Examine dead moose to look for causes of death, disease, mineral deficiencies, and contaminants.

One collared moose died during calving surveys and was examined for cause of death. We determined that the moose was killed, likely by a bear. No samples were taken for further analyses.

Activity 6. Develop updated population objectives in cooperation with the public and other agencies.

Moose management was discussed with advisory committees and individuals who live or hunt in Unit 26A.

Total Regional Segment Period Project Costs (in thousands): \$157.6

Submitted by: Peter Bente, Management Coordinator

Statewide Project Costs (in thousands):

State Share = \$186.53 Federal Share = \$559.58 Total Costs = \$ 746.1