ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 115526
Juneau, AK 99811-5526

Alaska Department of Fish and Game
Wildlife Restoration Grant

GRANT NUMBER: W-33-8

PROJECT NUMBER: 1.69

PROJECT TITLE: Movements and sightability of moose in Game Management Unit 21E

PROJECT DURATION: 1 July 2009–30 June 2014

REPORT PERIOD: 1 July 2009–30 June 2010

REPORT DUE TO HQ: 1 September 2010

PRINCIPAL INVESTIGATORS: Thomas F. Paragi and Kalin A. Kellie

WORK LOCATION: Interior Alaska, Game Management Unit 21E

COOPERATORS: Geoffrey Beyersdorf (Bureau of Land Management) and Steven Kovach (U.S. Fish and Wildlife Service)

I. PROBLEM OR NEED THAT PROMPTED THIS RESEARCH

Intensive management of moose populations to produce a high yield for consumptive use was defined and mandated in a 1994 Alaska Statute (AS 16.05.255(e)). An adaptive plan for intensive management of moose in Game Management Unit 21E was drafted in March 2009. The plan noted that better definition of the moose population and its seasonal range would improve understanding of the feasibility and effects of autumn and winter hunts. Knowledge of movement timing and seasonal distribution of moose would improve the ability of managers to conduct surveys of age-sex composition in early winter, population density and browse use in late winter, and twinning in spring. The plan also noted that sightability bias in aerial surveys has not been measured for moose in Unit 21E. Survey estimates should be corrected for sightability bias before evaluating population size relative to population and harvest objectives.

II. REVIEW OF PRIOR RESEARCH AND STUDIES IN PROGRESS ON THE PROBLEM OR NEED

A radiotelemetry study of moose by ADF&G and U.S. Fish and Wildlife Service (USFWS) during 1986–1989 provided some insight into range use patterns in Unit 21E. Plots of relocations demonstrated that 11 moose were resident near the lowland riparian corridors, whereas 17 moose migrated between riparian lowlands in winter and higher terrain in summer, with some seasonal movements of 100 km. The limited number of VHF relocations (approximately once per month) prevented a detailed analysis of movements.

III. APPROACHES USED AND FINDINGS RELATED TO THE OBJECTIVES AND TO PROBLEM OR NEED

Fieldwork was initiated in March 2010 (see Section V).

IV. MANAGEMENT IMPLICATIONS

Fieldwork was initiated in March 2010 (see Section V).

V. SUMMARY OF WORK COMPLETED ON JOBS FOR LAST SEGMENT PERIOD ONLY

JOB/ACTIVITY 1a: Capture and radiomark moose in spring 2010
Accomplishments: We deployed 44 GPS collars (24 male and 20 female) and 10 VHF collars (female) during 14–18 March.

JOB/ACTIVITY 1b: Obtain GPS and VHF relocations
Accomplishments: In cooperation with USFWS we tested functioning and GPS accuracy prior to deployment and began weekly downloads of GPS data after deployment. USFWS found 9 of 10 VHF collars in early April (federal funding), and ADF&G staff visually located 17 collared cows (VHF and GPS combined) during twinning surveys in late May.

JOB/ACTIVITY 3: Archive GPS information in spatial database
Accomplishments: We worked with a Division of Wildlife Conservation colleague in Anchorage to modify her GPS data program to automate integration of ARGOS data downloads into a geodatabase that will reside on a computer server in Anchorage. We also created links in the database for attributes of capture and relocation for improved tracking of all data associated with study animals.

JOB/ACTIVITY 4: Produce annual reports
Accomplishments: We produced a memorandum on capture activities and distributed it to federal cooperators (Bureau of Land Management and USFWS). We also drafted a memorandum of understanding to clarify duties of cooperators for the duration of the project.

VI. PUBLICATIONS

None.

VII. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

We submitted blood samples to labs for pregnancy determination (all 30 females), trace mineral content (molybdenum, manganese, copper, iron, zinc; $n = 25$ between sexes), selenium content ($n = 48$), and serology ($n = 53$).

VIII. RECOMMENDATIONS FOR THIS PROJECT

We will recapture 5 males in October 2010 to verify performance of a new expandable collar design that accommodates neck swelling during the rut (appended as Job 1e in May 2010).

Although radiomarked moose are useful for estimating sightability, long-term application of a fixed correction based on a 3-year average may not be flexible enough for the range of habitat and survey conditions encountered in the western Interior. We will evaluate

whether to modify sightability trials in Objective 2 to 1) focus on a survey-specific technique that intensively searches for moose in a portion of sample units (intensive sightability correction factor [SCF]) as an alternative means to estimate an SCF for each survey, 2) use existing radio marks to compare the intensive SCF technique with the radio collar SCF technique originally proposed in Objective 2 that has been used elsewhere in the Interior, and 3) use existing radio marks to estimate the proportion of moose that are not seen by the intensive SCF.

Research staff will provide assistance to McGrath area staff if necessary during the twinning surveys in spring 2011 in an attempt to increase the proportion of radiomarked moose visually observed.

Prepared by: Thomas F. Paragi

Date: 2 August 2010