

**Alaska Department of Fish and Game
State Wildlife Grant**

Grant Number: W-33-8 **Segment Number: 1**

Project Number: 2.15

Project Title: Movement patterns, home range, and habitat use by Sitka black-tailed deer in Southeast Alaska

Project Duration: July 1, 2008 – June 30, 2012

Report Period: July 1, 2009 – June 30, 2010

Report Due to HQ: September 1, 2010

PRINCIPAL INVESTIGATORS: Karin McCoy, Phillip Mooney, David Person

WORK LOCATION: Southeast Alaska, primarily Chichagof Island.

I. PROBLEM OR NEED THAT PROMPTED THIS RESEARCH:

Sitka black-tailed deer (*Odocoileus hemionus sitkensis*) have long been considered an important species in southeast Alaska due to their status as the primary ungulate hunted for sport and subsistence. In addition, Sitka black-tailed deer have been a management indicator species for United States Forest Service (USFS) forest management due to their association with productive old growth forest (POG) habitat. Therefore, analyses of fine-scale daily patterns of deer movement and habitat use have not been conducted, especially in the north end of species range. The use of GPS collars to acquire multiple locations per day will increase our knowledge of fine-scale deer movement patterns in time and space as they relate to season, habitat, and landscape feature. The project will increase our understanding of deer ecology and enhance our ability to better manage deer populations.

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

While much is known about the general ecology of Sitka black-tailed deer (Klein and Olson 1960, Klein 1965, Olson 1979, Hanley 1984), our knowledge of deer movement and habitat use in southeast Alaska has stemmed primarily from a handful of telemetry studies (Schoen and Kirchhoff 1985, Schoen and Kirchhoff 1990, Yeo and Peek 1992, Chang et al. 1995, Doerr et al. 2005, Farmer et al. 2006). Only one of the studies that occurred in the northern segment of the region where winters are more severe. All of these studies relied on locations collected at course intervals of either approximately once per day or once per week, and used traditional VHF telemetry techniques to approximate animal locations. The use of GPS collar will allow us to conduct analyses of movement data at finer temporal and spatial scales. This more detailed data will allow us to better understand how deer move within and between habitat patches and elevation zones, to identify important travel and migration corridors, to detect use of habitats which are

relatively rare on the landscape, to compare seasonal and diel patterns of habitat use, to more accurately define home range size and utilization distributions, and to identify diel movement and activity patterns in different seasons and under variable snow and ambient temperature conditions. To date no other studies have been completed in Southeast Alaska to collect this type of fine-scale GPS location data. However, one other study being conducted by ADFG in conjunction with UAF commenced in 2010 and will be utilizing GPS collars on deer on Prince of Wales Island. While the focus of this study is different from the Chichagof study, conducting concurrent studies on Sitka black-tailed deer in both the northern and southern parts of their range in Southeast Alaska will allow future comparisons of latitudinal differences that may occur due to climatic and other ecological differences within the region.

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

Objective 1: Use GPS collars to collect fine-scale deer movement data that will allow us to identify important staging areas and travel routes used by deer during different seasons, as well as to detect differences in movement patterns, home range, and habitat use between different seasons and in relation to the level of forest fragmentation.

Job/activity 1a: Order collars, purchase animal capture equipment, program collars, review literature, develop a work plan, organize and mobilize personnel.

Job activity 1a is completed.

Job/activity 1b: Conduct ground and aerial based activities instrumental in the collaring of Sitka black-tailed deer and retrieve collars.

Multiple ground and boat-based capture sessions have been conducted with little success. This is partly due to equipment failures, but also because deer numbers along the road system in the study area appear to be low and there does not appear to be as many opportunities to capture deer as has been experienced in other parts of the region. However, field personnel have been learning better techniques for capturing deer on the ground in this particular field situation, and equipment issues are being resolved. Therefore the success of ground captures will likely be higher in the future. Nevertheless, the decision has been made to attempt aerial net-gunning of deer in the alpine, and with the addition of this capture technique, we are confident that we will have more success in 2010 with getting collars out on deer.

Job/activity 1c: Monitor snow depths through nearby weather stations and by ground checks of snow conditions.

While the USFS weather station in the study area that we had hoped to use has not been operational, snowfall data has been compiled from other nearby weather stations.

Job/activity 1d: Identify deer home range characteristics and investigate differences in home range size due to habitat fragmentation.

We will get data from deer radiocollared with GPS collars. We cannot address until the data retrieved.

Job/activity 1e: Identify differences in deer movement and activity patterns relative to seasonal use of habitat types and level of POG forest fragmentation.

We will get data from deer radiocollared with GPS collars. We cannot address until the data retrieved.

Job/activity 1f: Identify diel and seasonal patterns of deer habitat use.

We will get data from deer radiocollared with GPS collars. We cannot address until the data retrieved.

Objective 2: Provide information for public education and outreach.

Job/activity 2a: Write annual reports detailing activities and accomplishments to date, including results of animal captures and collar status.

Two annual reports prepared previously.

Job/activity 2b: Write final report.

Job/activity 2c: Prepare manuscript for submission.

We cannot address until the project is over.

IV. MANAGEMENT IMPLICATIONS

We cannot address this at this stage of the project.

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

JOB/ACTIVITY 1a: Deer capture and radio collaring

Aerial Surveys and Monitoring: Two aerial surveys of alpine type of northeast Chichagof Island were conducted in 2009: August 12 (77 deer seen, 17 bucks, 49 does, 11 fawns) and September 2 (158 deer seen, 9 bucks, 32 does, 16 fawns, 101 underdetermined). Weather and time restraints limited the area covered in each survey as well as the ability to evaluate sex of deer during the second survey. The alpine surveys were conducted to evaluate deer presence in the alpine at this time of year in case net gunning might be employed during this time frame in the future. An aerial flight to monitor collared deer was conducted in February 2010. Deer were at low elevations

relatively close to the shore in February 2010, so it was decided to attempt a winter capture session.

Deer Capture Activities: Given the low capture success to date, it was decided to try to get two years of data off each deer collared rather than recover and refurbish the collars after a year and then attempt to redeploy on each deer. Collars were reprogrammed with a different GPS data collection interval that would extend their battery life to approximately two years instead of one. Several distinct ground capture sessions were conducted with little success due to low deer numbers along the road system coupled with higher than expected difficulties with ground darting deer.

First ground capture session was held in July 6 – 19 2009. Many attempts were made, but ultimately no deer were captured and collared. We had many failures of drug/dart/projector mechanisms.

The second ground capture session was held in August 6 – 21, 2009. Three deer were captured and collared. Some of the drug and darting problem issues were resolved, but some problems continued. Further capture sessions were discontinued until after the doe season would end January 3, 2009.

The third ground capture and boat-based capture session were held February 21– 25 2010. No deer were captured. Efforts were hampered by low snow levels. Deer were not concentrated on the beach as they were in previous severe winters. At this time of year deer were not very responsive to the deer calls employed. Capture session aborted since little deer activity was observed and weather was marginal with ice forming on Freshwater Bay. Capture attempts made during this time frame in the future might be more productive with higher levels of snow and focusing on an ambush technique on the beach rather than trying to call the deer in.

Deer capture activities were not conducted in May and June due to concerns with capturing deer during the fawning window. Due to low success with ground and boat based capture operations in 2009 and 2010, a decision was made to attempt aerial net gunning of deer during the late summer 2010, if a specialized net gunning capture crew from Fairbanks could be contracted to do the job.

JOB/ACTIVITY 2a: Monitor snow conditions
Snowfall data was compiled from nearby weather stations.

JOB/ACTIVITY 3a: Deer habitat use
No analyses were conducted because no GPS collar data has yet been retrieved from the field.

JOB/ACTIVITY 4a: Summary report of the capture activities and project status
We prepared and submitted the annual performance report.

VI. PUBLICATIONS

None.

II. RECOMMENDATIONS FOR THIS PROJECT

None.

Prepared by: Karin McCoy

Date: 9/01/2010