

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

Grant Number: AKW-20

Project Number: 14.30

Project Title: Wolf population estimation on Prince of Wales Island, Alaska

Project Duration: 1 July 2015–30 June 2019

Report Due Date: 1 September 2017

PRINCIPAL INVESTIGATOR: Gretchen Roffler

COOPERATORS: USFS Tongass National Forest, National Genomics Center for Wildlife and Fish Conservation, The Nature Conservancy, Hyدابurg Cooperative Association

WORK LOCATION: Prince of Wales Island and Ketchikan, Alaska

I. PROGRESS ON PROJECT OBJECTIVES DURING LAST SEGMENT

OBJECTIVE 1: DNA-based population estimates.

We used spatially-explicit capture-recapture (SECR) of individual wolves identified from non-invasively collected hair samples to estimate wolf density in the study area, and wolf abundance in GMU 2. This was the 5th annual monitoring season conducted using these methods. Estimates of wolf abundance during autumn 2015 were used to establish a harvest quota for the 2016–2017 harvest season, and estimates from data collected during the autumn 2016 monitoring period will be used to guide harvest management strategies for the 2017–2018 harvest season.

OBJECTIVE 2: Monitor wolves with trail cameras.

We established trail cameras in GMU 2 during the reporting period. Cameras were monitored in the SECR study area, at active den sites, in travel corridors, and other areas of interest.

OBJECTIVE 3: Live-capture and radio collar a sample of wolves on Prince of Wales Island (POW).

After an evaluation of population estimation methods using radiocollared wolf data and non-invasive SECR, we determined that the latter was more efficient, precise, robust, and economical. Therefore, we did not attempt to radiocollar wolves on POW during the reporting period.

OBJECTIVE 4: Assess effectiveness of methods for application to region-wide monitoring.

We continued to evaluate the effectiveness of the non-invasive SECR method for monitoring wolves in Southeast Alaska. During the reporting period, the study area was further expanded, thus we were able to collect more data to inform assessment of method effectiveness.

OBJECTIVE 5: Data synthesis and preparation of publications.

We published a survey memorandum in August, 2016 to report the autumn 2015 wolf population estimate for GMU 2. Data analysis of radiocollared wolf GPS locations and seasonal habitat selection was conducted and a draft manuscript prepared.

II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD

JOB/ACTIVITY 1A: We will collect hair samples from lured hair-snare boards and identify individuals from DNA.

Accomplishments: We established 83 hair snare stations throughout the same northcentral POW study area used in 2014–2015. One new hair snare station was added to the 82 stations used in 2015. Stations were monitored weekly during 17 October–23 December 2016 by 5 field crew staff. We collected 909 hair samples at 73 (88%) of the 83 stations. During autumn 2016, ADF&G and the US Forest Service (USFS) collaborated with the Hydaburg Cooperative Association (HCA) to establish hair snare stations for wolf monitoring on POW, effectively further expanding the study area. We worked with the HCA to establish 61 hair snare stations to the south of the original northcentral POW study area used during 2012–2015. Stations were monitored weekly by 3 HCA field crew staff during 24 October–24 December 2016. They collected 171 hair samples at 49 (80%) of the 61 stations. In addition, 5 hair snare stations were established and monitored by citizen science volunteers (POW public school teachers, students, and other community members) in an area adjacent to the northcentral POW study area, and overlapping with the HCA study area. They collected 17 hair samples at 4 (80%) of the 5 stations.

In January 2017, we sent 1,097 hair samples collected from the snares to USFS Rocky Mountain Research Station in Missoula, MT for genotyping. The objectives of sample analyses were to genetically identify unique wolves from the hair samples using 10 microsatellite loci and compare these individuals to those identified during 2012–2015. DNA extractions were performed on the hair samples using the standard protocols (targeting up to 20 good hairs with follicles for the extraction). DNA from hair samples that was of sufficient quality to successfully genotype individual wolves ($n = 296$) was collected at 37 (45%) of the 83 stations in the northcentral POW study area, 17 (28%) of the 61 HCA stations, and 2 (40%) of the citizen science stations. We identified individual wolves using the microsatellite loci panel. These loci provide an acceptable cumulative probability of individual identity ($PID = 5.35 \times 10^{-7}$, or 1 in 2,298,318 chance that two samples are identified as the same individual when they are instead from different individuals). We identified 81 individual wolves, including 42 females, 37 males, and 2 unidentified sex. There were 73 recaptures in the northcentral POW study area, 4 in the

HCA study area, and 1 wolf that had been detected in both of the major study areas was captured in the citizen science study area.

JOB/ACTIVITY 1B: Uniquely identified wolves will be used in SECR models to estimate population density for the study area.

Accomplishments: Analyses to estimate wolf density for autumn 2016 are ongoing. Preliminary estimates and model ranking has been conducted, and results were shared with ADF&G managers and leadership in August 2017. Final estimates will be available in September 2017 and published in a survey memorandum, released simultaneously with the 2017–2018 wolf harvest quota.

JOB/ACTIVITY 2A: We will deploy and monitor motion-detecting trail cameras throughout the study area.

Accomplishments: During the hair-snare monitoring period we established 53 cameras at the hair-snare stations (in the northcentral POW study area). We set up 28 of the hair-snare stations with at least 1 camera, and 12 of the stations had sufficient cameras to record wolf activity at all 5 of the hair boards at the station. Cameras were monitored weekly, photos were downloaded, and data recorded in a data management system.

JOB/ACTIVITY 2B: We will use camera results to characterize use of den sites, hair boards, and to estimate occupancy of wolves in the study area.

Accomplishments: We established cameras at 3 active den sites during May–June 2017 and recorded activity of breeding wolves and their pups.

During the hare snare monitoring period, wolves were captured on camera on 73 occasions investigating and rolling on the hair boards. Sixty-four of those events resulted in hair being deposited at a hair board.

We continued to use the improved camera card upload and data management system for archiving the photo data and for use in future analyses. During this reporting period there was a considerable effort to upload photos from 2015–2016. We are currently caught up on the backlog of photos that had not been previously uploaded and archived, and are up to date on photos collected at cameras that are currently deployed.

JOB/ACTIVITY 3A: We will use foot-hold traps to capture, chemically immobilize, and radiocollar wolves.

Accomplishments: We did not attempt to capture any wolves during this study period.

JOB/ACTIVITY 3B: We will aerially track radiocollared wolves with telemetry, observe wolves to obtain counts visually, and download location data remotely approximately every 2 weeks.

Accomplishments: During the reporting period we monitored 2 radiocollared wolves. We conducted 16 tracking and download flights and downloaded GPS locations for analyses of pack home range size and movement patterns.

JOB/ACTIVITY 4: We will continue to assess the effectiveness (in terms of cost, effort, reliability, and appropriate spatial scale) of these monitoring methods and the potential for application to a long-term monitoring program in GMU 2 and to other areas in Region I.

Accomplishments: We conducted preliminary assessments of the effects of an expanded study area during the 2015 field season, and began similar analyses for the further expanded study area (including the HCA study area, covering 5,423 km²).

JOB/ACTIVITY 5: We will synthesize data collected from the various methods, and will prepare final reports and publications.

Accomplishments: We continued to maintain data collected for this project in our updated data management system, and used these data to conduct analyses (described above).

III. SIGNIFICANT DEVIATIONS AND/OR ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

None.

IV. PUBLICATIONS

Survey memorandum (August, 2016): Autumn 2015 wolf population estimate for GMU 2.

Submitted manuscript (in review): Roffler, G.H.R., Gregovich, D.P., Larson, K.R.
Resource selection by territorial wolves reveals the seasonal importance of seral forest and suitable prey habitat.

Prepared by: Gretchen Roffler, Wildlife Biologist III

Submitted by: Susannah Woodruff, Research Coordinator

Date: 9/1/2017