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: AKW-7

PROJECT NUMBER: 3.0

PROJECT TITLE: Statewide Intensive Management for Deer Populations Identified as Important for Providing High Levels of Harvest for Human Consumptive Use and Predators Influencing Deer Population Status.

PERIOD OF PERFORMANCE: April 1, 2015 – June 30, 2018

PERFORMANCE YEAR: April 1, 2017 – March 31, 2018; year 2 of a revised 2-year grant

REPORT DUE DATE: Sept 1, 2018

PRINCIPAL INVESTIGATOR: Tom Schumacher

WORK LOCATION: Game Management Unit 1A

Authorities: 2 CFR 200.328
2 CFR 200.301
50 CFR 80.90

I. PROGRESS ON PROJECT OBJECTIVES DURING PERFORMANCE YEAR

OBJECTIVE 1: Conduct more frequent and more robust surveys to estimate the population size and fall composition (bucks, does and fawns) of deer to evaluate if Intensive Management (IM) treatments are successful.

ACCOMPLISHMENTS: Traditional pellet group surveys were used to evaluate deer population trends in GMU 1A. While not a direct indication of the abundance or demographics of deer on the landscape, pellet group counts are thought to correspond to long-term population trend and changes in abundance of greater than 30 percent. No IM treatments have been implemented, so changes in deer abundance detected under this objective reflect natural changes in abundance during the project period.

During the reporting period we completed three pellet group surveys in two US Forest Service Value Comparison Units (VCU) on Gravina Island. Two surveys were at sites surveyed in 2017. Pellet group counts at both sites were lower than in 2017, but the decline was not significant. The third survey area was newly established in 2018, so we have no previous data for comparison.

We interpret these findings to mean that from spring 2017 to spring 2018 the Gravina Island deer population was stable.

Over the duration of this project pellet group counts in the Intensive Management (IM) Treatment Area on Gravina Island roughly quadrupled suggesting a significant increase in deer abundance. Pellet group counts in the IM Control Area on the Cleveland Peninsula suggest only a modest increase in deer abundance over the course of this project (Table 1). In general, pellet group count data are insensitive to smaller changes in abundance and may be confounded by variation in winter severity, so they should be interpreted with caution and in the context of other indicators. Since 2013, winters have been relatively mild with the winter of 2015-16 being exceptionally mild. During winters with little snow deer likely remain spread out across the landscape, rather than concentrating in favorable wintering habitat. We believe overwinter survival in both areas has been high for 5 consecutive years and both populations have grown, but growth has been far greater on Gravina Island.

		Unit 1A Pellet Trends	
Period	RY	Transect location (VCU)	Pellet Groups/Plot (95% CI)
Year 1	2013	VCU 765 Dall Head[a]	0.44 (0.34-0.55)
	2013	VCU 716 Helm Bay[b]	0.18 (0.12-0.23)
	2013	VCU 719 Port Stewart[b]	0.10 (0.06-0.15)
Year 2	2014	VCU 765 Dall Head[a]	0.62 (0.45-0.80)
Year 3	2015	VCU 765 Dall Head[a]	0.53 (0.41-0.65)
	2015	VCU 763 Bostwick Inlet[a]	0.53 (0.45-0.64)
	2015	VCU 716 Helm Bay[b]	0.16 (0.09-0.24)
Year 4	2016	VCU 763 Bostwick Inlet[a]	0.60 (0.48-0.72)
Year 5	2017	VCU 716 Helm Bay[b]	0.38 (0.28-0.48)
	2017	VCU 763 Bostwick Inlet[a]	1.64 (1.42-1.85)
	2017	VCU 765 Dall Head[a]	1.88 (1.65-2.11)
Year 6	2018	VCU 763 Bostwick Inlet[a]	1.20 (1.01-1.39)
	2018	VCU 763 Bostwick Road[a]	1.42 (1.20-1.64)
	2018	VCU 765 Dall Head[a]	1.63 (1.39-1.87)

[a] Gravina Island treatment area.
[b] Cleveland Peninsula control area.

Table 1. Deer pellet group densities in GMU 1A, 2013 - 2018.

In spring 2014 we initiated a DNA-based deer fecal pellet mark-recapture project on Gravina Island. The goal was to estimate the density of deer during spring 2014. Deer density estimation work is ongoing in an IM project area in Unit 3, and final results for this effort have not been fully summarized. However, an estimate of deer density based on individual deer identification, recapture events, and Sex-Effect Models, suggest approximately 5 deer per square mile on Gravina Island. Extrapolating this estimate to all deer habitat on the entire 96 square mile island would equate to a 2014 island-wide population of about 500 deer ($\hat{N} = 527 \pm 72$ deer [95% CI: 412, 699]). This remains the most current density/population estimate for deer on Gravina Island.

Objective 1 was met. Project funding allowed more frequent and robust surveys of the Gravina Island and Cleveland Peninsula deer populations including a 2014 deer density and population estimate on Gravina Island. Those enhanced pellet group surveys enabled the department to better document one indicator of deer abundance than we otherwise would have been able to. It is also important to note that the 2014 fecal DNA population estimate was the first ever island-wide deer population estimate in Region I. Although cost and staffing commitments precluded a follow-up fecal DNA population estimate later in the project period, the 2014 estimate will inform future assessments of deer populations on Gravina Island and elsewhere in the region.

OBJECTIVE 2: Estimate fawn production, survival and causes of mortality using radio-collars and or camera-collars to determine if a) fawn mortality can be reduced to meet IM population and/or harvest objectives or b) to evaluate the effects of the IM treatment.

ACCOMPLISHMENTS: We were unable to monitor fawn production and survival over the project period due to the tremendous difficulty involved with catching and collaring a valid sample of deer in forested habitat, particularly in a low-density population. Instead, we elected to gather information on deer and fawn survival using an array of trail cameras to monitor abundance of their predators, wolves and black bears. Trail cameras also captured images of deer and fawns and provided an index of abundance, reproduction, and survival.

Beginning in 2012 we established trail camera stations at key areas for wolf movement on Gravina Island. We opportunistically checked cameras from the road system and by boat. We reviewed and catalogued pictures by camera location, tabulated by date stamp, and any animals captured on camera were noted. Because this project generated many thousands of images, we developed an MS Access database to store and categorize the pictures. Pictures of wolves from all camera locations were compared to distinguish individual animals using pelt color and pattern, relative body size, and pup/adult age class. Camera data for all years are not yet summarized, but Table 2 and Figure 1 summarize data from 2012-2013 and provide an indication of relative abundance of deer, wolves, and bears in trail camera photos.

Summary of Gravina Camera Sites

Site Name	Site #	Buck	Deer [a]	Fawn	Wolf	Bear	Total deer	Total days	Days/Deer	Site type[a]
CornerMusk	1	48	47	8	5	53	103	884	8.6	1,2,3,4
Alderslide	2	24	25	10	2	2	59	259	4.4	1,3
Duckpond	3	17	36	26	0	4	79	287	3.6	1,3
DallHead	4	42	182	11	11	20	235	370	1.6	1
Bostcreek	5	3	16	2	25	39	21	491	23.4	1,4
Surveyline	6	4	1	0	0	0	5	68	13.6	1
EndRoad	7	0	15	6	1	1	21	74	3.5	2,4
LittleBost	8	26	22	2	0	23	50	423	8.5	1,4

CatRoad	9	2	11	0	0	3	13	73	5.6	1
CornerPit	10	4	4	2	0	0	10	100	10.0	1
All Cameras		170	359	67	44	145	596	3029	5.1	

[a] Doe or any deer of unknown sex.

Table 2. Picture summary for trail cameras located on Gravina Island (2012-2013).
[a] Site types included: 1=main trail, 2=trail funnel point, 3=mock rub tree, 4=hairboard site.

Despite little harvest in recent years, we believe wolf numbers on Gravina Island remained low throughout the project period. Based on trail camera photos, tracks, and sightings, we believe wolf numbers on the 96 mi^2 island ranged from zero to four wolves. Trail cameras never captured a picture of a pup, and it appears that the few wolves on the island failed to reproduce.

During the 2012-2013 season 68 camera days of operations were required per wolf photo, 20 days per bear photo, and 5 camera days per deer photo (Table 2). Many thousands of animal photos were captured during the remaining years of the project. We plan to summarize those data and look for trends, particularly among deer photos.

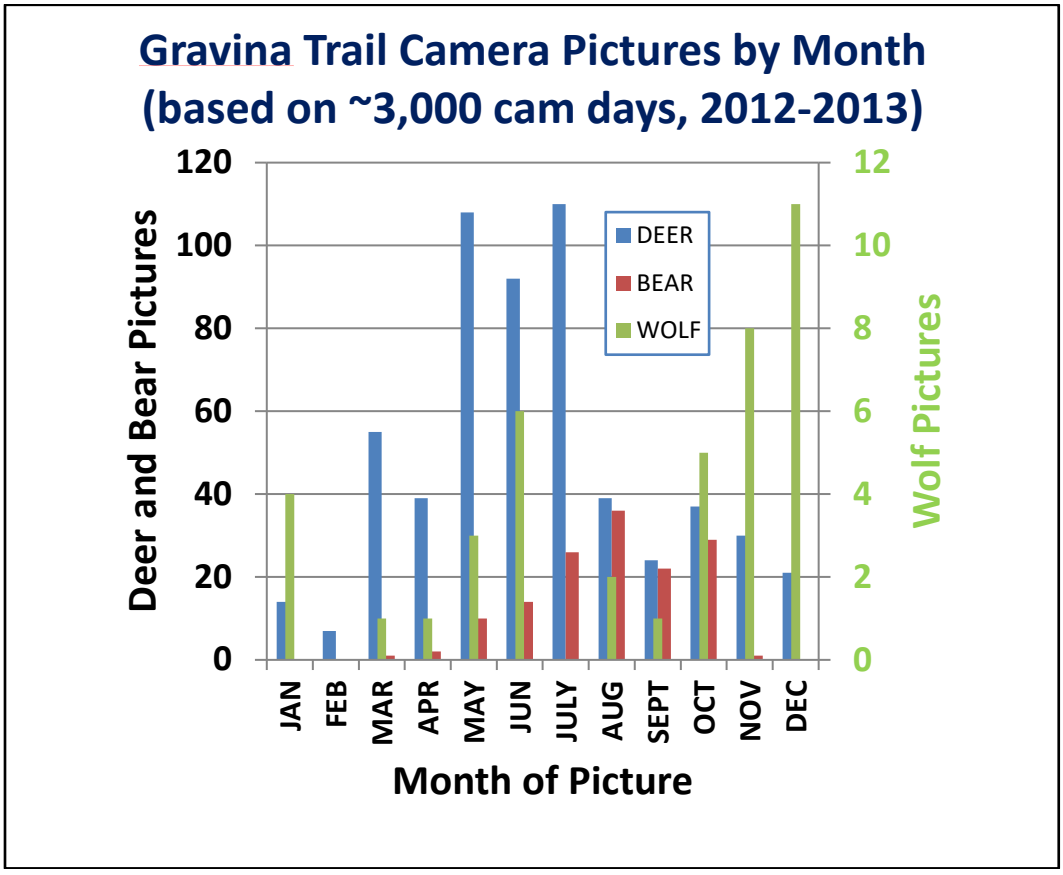

Figure 1. Gravina Island trail camera pictures by month.

OBJECTIVE 3: Estimate adult deer survival rates using radio-collars to evaluate the effects of the IM treatment.

ACCOMPLISHMENTS: This objective proved unworkable due to the difficulty involved with catching and collaring a valid sample of deer in forested habitat, particularly in a low-density population.

OBJECTIVE 4: Monitor deer nutritional status to evaluate the influence of an expanding moose population on deer and to evaluate viability of IM population objectives for deer.

ACCOMPLISHMENTS: Moose are not present in the portions of GMU 1A identified for intensive management. Deer harvest numbers and condition of harvested animals can be used as indicators of nutritional status with increasing harvest suggesting adequate range conditions. Figures 2-5 show that since 2013 harvest has dramatically increased on Gravina Island but remains low on the Cleveland Peninsula. In addition, ADF&G staff contacted hunters concerning harvested deer nutritional status (i.e., rump fat) and observed deer in the field. Hunters reported very healthy deer on Gravina Island and the Cleveland Peninsula. Staff observations support those observations suggesting habitat quality in both areas is good. That finding suggests the difference in trajectories of these two populations is more likely related to differences in predation or winter severity.

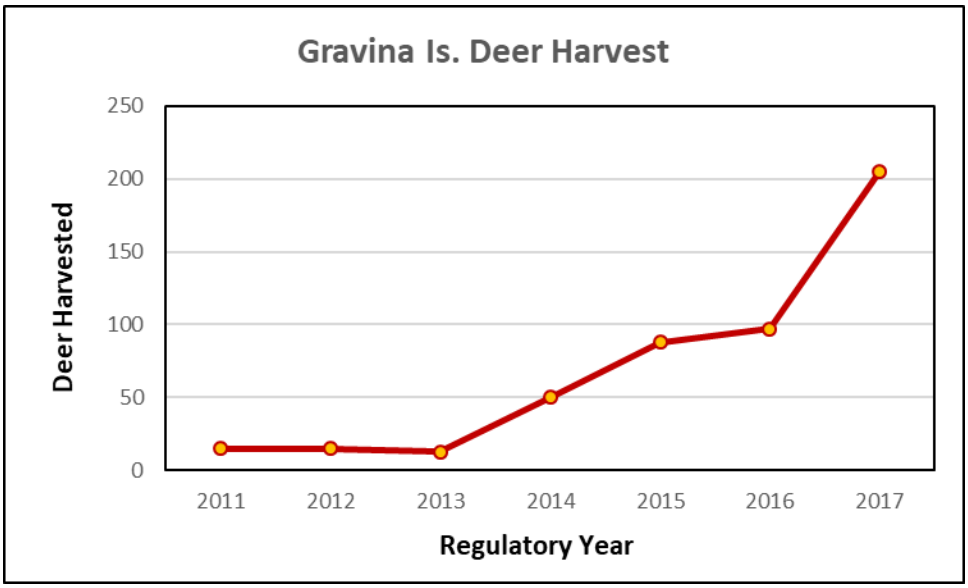

Figure 2. Deer harvest on Gravina Island, Alaska, 2011-2017.

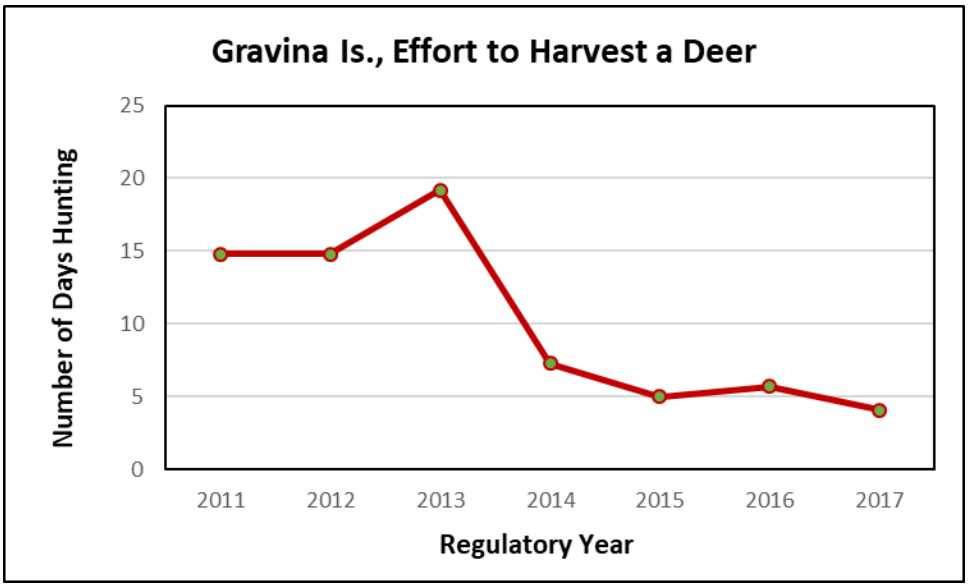

Figure 3. Deer hunter effort on Gravina Island, Alaska, 2011-2017.

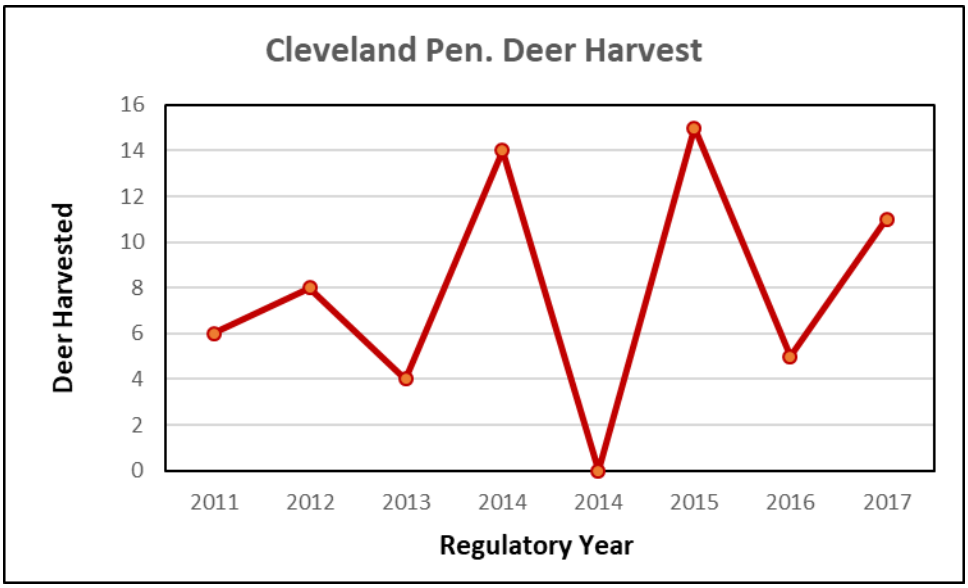

Figure 4. Deer harvest on the Cleveland Peninsula, Alaska, 2011-2017.

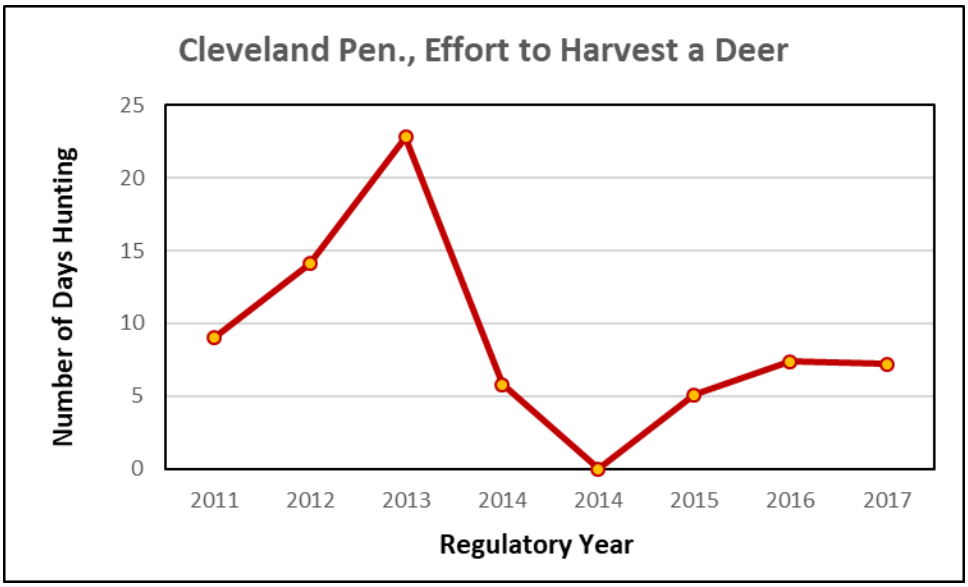

Figure 5. Deer hunter effort on the Cleveland Peninsula, Alaska, 2011-2017.

OBJECTIVE 5: Monitor forage abundance and utilization to evaluate habitat capability and to develop reasonable IM population objectives.

ACCOMPLISHMENTS: In spring 2014 staff initiated a pilot study designed to test a low cost and efficient technique for assessing the quantity and use of key deer overwinter forage plants to aid in the assessment of deer carrying capacity in portions of Unit 1A. The main question to be investigated was whether the existing overwinter range in a portion of the IM Treatment Area could support more deer. This initial effort focused on developing efficient vegetation sampling methods, but it also provided initial insights into the current condition of deer winter range on a small portion of Gravina Island. Due to work commitments of the staff involved the results of that work are not yet summarized in a report. Considering the apparent growth of the Gravina Island deer population since 2014, habitat at that time was capable of supporting higher deer numbers.

OBJECTIVE 6: Investigate and monitor wolf, black bear and brown bear abundance relative to defined IM objectives.

ACCOMPLISHMENTS: Please see work described in Objective 2.

OBJECTIVE 7: Report findings in appropriate scientific and popular publications.

ACCOMPLISHMENTS: None.

II. SUMMARY OF WORK COMPLETED ON PROJECT TO DATE.

Pellet group surveys and deer harvest and hunter efficiency measures all indicated a strong upward trend in the Gravina Island deer population during the years of this project. However,

despite similar management, no such trend could be detected in the IM reference area on the Cleveland Peninsula. We do not know the reason for the difference in population trend in these adjacent areas. Despite little trapping effort, a trail camera monitoring array on Gravina Island indicated wolf numbers remained very low during the entire life of the project, and we never detected evidence that the few wolves present reproduced. We do not know the relative abundance of wolves on the Cleveland Peninsula and cannot comment on whether predation played a role in the different trends of these deer populations. Other factors including winter severity and habitat quality may have played roles.

III. SIGNIFICANT DEVELOPMENT REPORTS AND/OR AMENDMENTS.

USFWS approved an amendment to decrease the grant duration, ending the grant on June 30, 2018. After extensive investigation by DWC and USFWS staff into performance reporting and financial accounting of the 5-year AKW-7 Intensive Management award for projects Caribou 1.0, Moose 2.0, and Deer 3.0, it was determined it is in the State's best interest to cease work on and terminate the entire AKW-7 award, first Caribou on Dec. 1, 2017, and then moose and deer projects on June 30, 2018.

IV. PUBLICATIONS

Annual Report to the Alaska Board of Game on Intensive Management for Sitka black-tailed deer with wolf Predation Control in a Portion of GMU 1A, February 2015 - 2018.

V. RECOMMENDATIONS FOR THIS PROJECT Under an existing grant, we recommend continued monitoring of deer and wolf abundance through deer pellet group transects, trail cameras, and by monitoring harvest and hunter/trapper effort for both species. However, Gravina Island deer harvest has increased by a factor of twelve and pellet group counts have tripled during the project period. Therefore, we believe the Unit 1A IM project has accomplished its goals. The degree of future population and harvest monitoring needed for the Gravina Island deer population can be accomplished under normal Survey and Inventory activities.

Prepared by: Thomas V. Schumacher

Date: September 27, 2018