FEDERAL AID ANNUAL RESEARCH PERFORMANCE REPORT

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

PROJECT TITLE: Kenai Peninsula brown bear population demographics

PRINCIPAL INVESTIGATOR: Sean Farley

FEDERAL AID GRANT PROGRAM: Wildlife Restoration

GRANT AND SEGMENT NO. W-33-12

PROJECT NO. 4.38

STATE: Alaska

PROJECT DURATION:

PERIOD: July 1, 2013 – June 30, 2014

I. PROGRESS ON PROJECT OBJECTIVES SINCE PROJECT INCEPTION

OBJECTIVE 1: Determine the finite rate of change (lambda) for the Kenai brown bear population.
Job/activity: collect demographic data
Data will be collected by collaring a subset of peninsula bears with vhf radio collars and following them for several years to collect data cub production, litter size, cub survival, adult survival, age of weaning, estimated age of first reproduction (where possible), inter birth interval, and annual natural mortality rate.

OBJECTIVE 2: Complete data analysis on differential reproductive fitness of Kenai brown bears.
Job/activity: data analysis
Collaborate with Dr. Sandy Talbot of the USGS Molecular Ecology laboratory in Anchorage, Alaska to look for individual maternal lineages of Kenai Peninsula brown bears. The data to be used will include recent genotypes determined for Jackson et al. (in press) as well as any additional bears handled. Where possible, perform a genealogical reconstruction of maternal lineages for the past 10 years. Relate that information with reproductive success from past radio-collared work.

OBJECTIVE 3: Develop a model predicting demographic vigor of Kenai Peninsula brown bears.
Job/activity: model development
Explore analysis of data from jobs 1 and 2 to construct predictive model(s) combining biological covariates (genetic relatedness, differential reproductive fitness, demographic data) of Kenai brown bears.

Objective 4: Attend conferences and training, write and present papers.

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

OBJECTIVE 1:

JOB/ACTIVITY __1: There are 34 collars being monitored, of which 1 is a potential drop, leaving 33 bears known alive. Two additional bears are missing. It appears that some

VHF collars are prone to serious frequency drift, rendering radio tracking difficult. Figure 1 indicates spring 2014 locations for all bear collars under review.

JOB/ACTIVITY _2_: Animal Captures… Fall 2013 captures were not conducted. During spring of 2014 we captured 15 bears (14 adult females; 1 Subadult male). Figure 1 shows most recent geographic distribution of bears. The subadult male was not collared.

JOB/ACTIVITY _3_: Data Analysis….Demographic data are being updated and the 2014 calculations will be updated later in the fall. The information current through Fall 2013 is listed below.

1) Mean female survivorship from 1995-2013 was 0.94 (s.d.=0.056), however hunting regulations changed in 2012. In 2012 female survivorship was 0.89 and in 2013 it was 0.79. The mean female survivorship from 2012-2013 was 0.84. Unreported mortality from 1995-2013 was 4.09 (s.d.=0.77) with a range of 3.03 – 4.76. Unreported mortality can not be calculated for every year. Data exist for years 1996, 1998, 2002, 2008, 2010, and 2013.

2) Mean age of reproduction through 2010 has been calculated to be 11yr (sd 4) with a range of 3-23 years

3) Annual cub survival and litter size has been calculated for the duration of the project (see Tables 1 & 2).

4) No additional work has been reported on this activity.

OBJECTIVE 2:

JOB/ACTIVITY_1: No additional work has been reported on this activity.

OBJECTIVE 3:

JOB/ACTIVITY: No additional work has been reported on this activity

Objective 4:

JOB/ACTIVITY: The following manuscripts were completed, submitted, or accepted this year under this grant.

Coltrane, J.A., S. Farley, D. Saafeld, D. Battle, and T. Carnahan. (submitted) Evaluation of Dexmedetomidine, Tiletamine, and Zolazepam for the immobilization of black bears. Wild. Soc. Bull.

Farley, S. D., S. L. Talbot, G. K. Sage, R. Sinnott, and J. Coltrane. 2013. Use of DNA from bite marks to determine species and individual animals that attack humans. Wildl. Soc. Bull. DOI: 10.1002/wsb.391

Farley, S. D., S. Talbot, and J. Jackson. (in prep). Differential reproductive success in a small brown bear population: comparison of genetics and telemetry data.

Harris, G., S. Farley, G. J. Russel, M. J. Butler, and J. Selinger. (2013) Sampling designs matching species biology produce accurate and affordable abundance indices. PeerJ 1:e227; DOI 10.7717/peerj.227

Talbot, S.L. G. K. Sage, S. D. Farley. (in prep) Brown bears of the Kenai Peninsula are genetically isolated from mainland south central and southwestern Alaskan populations.

S. L. Talbot, S. A. Sonsthagen, G.K. Sage, S. D. Farley, N. G. Dawson, R. E. Wilson, and J. A. Cook (accepted). Are Island Brown Bears Isolated? Insularity and Gene Flow among Coastal Populations in Southeast Alaska. J. Mammalogy.

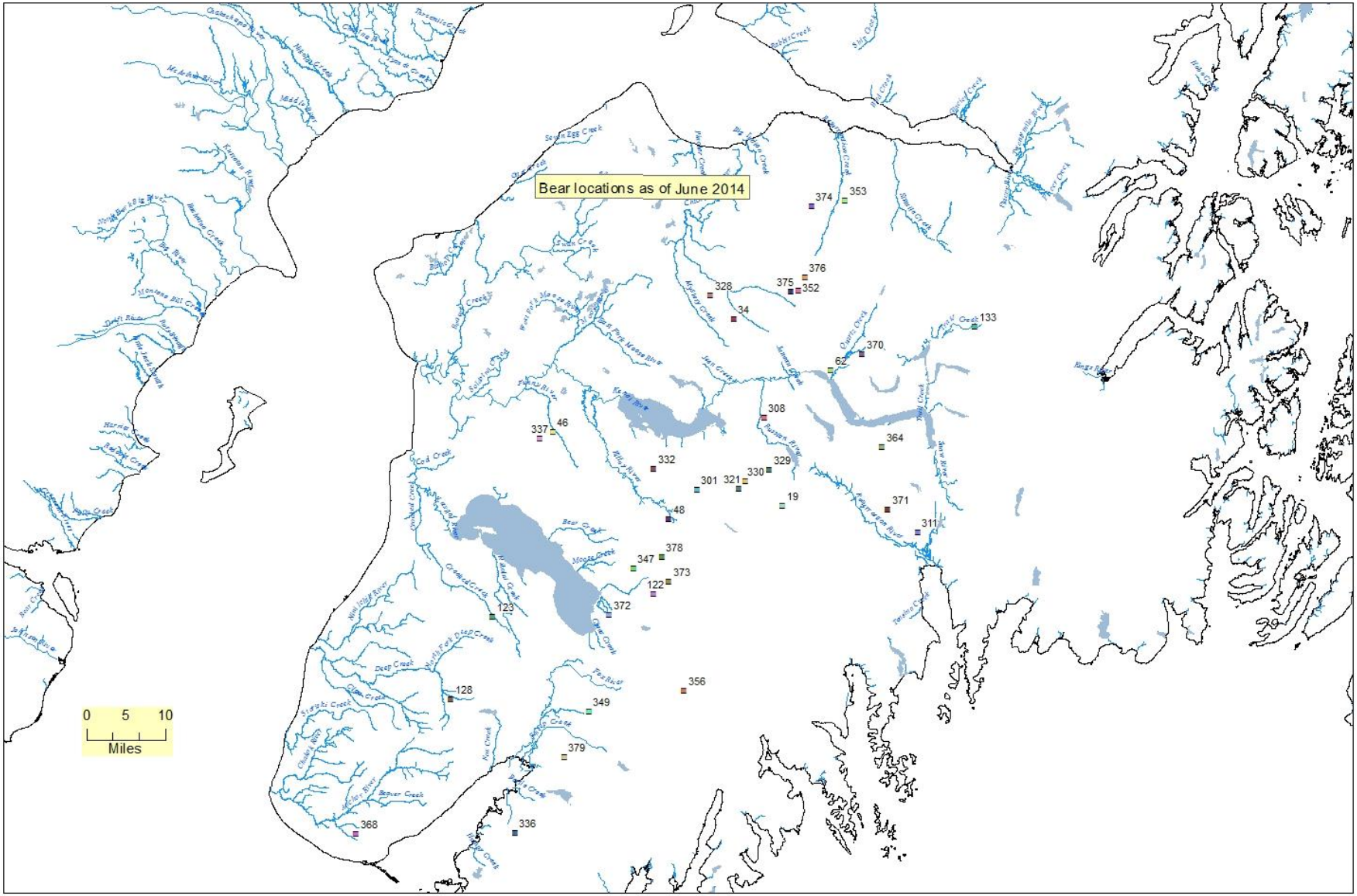
J. E. Teisberg, S. D. Farley, O. L. Nelson, G. V. Hilderbrand, M. J. Madel. P. A. Owen, C. T. Robbins 2014. Immobilization of Grizzly Bears with Dexmedetomidine, Tiletamine, and Zolazepam. J. Wild. Diseases. 50(1):74-83.

III. PUBLICATIONS

SEE OBJECTIVE 4

I. APPENDIX.

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



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

Tables 1 & 2: Cub survivorship and litter size for Kenai Peninsula brown bears.

Number of Cubs by Fate and Age to 2013

	Age of Cubs					
	0	1	2	3	Grand Total	
Sum of Survived	218	153	151	19	541	
Sum of Lost	128	86	0	0	214	
Sum of Censor	31	19	5	0	55	
Total	377	258	156	19	810	
Maximum Survival	0.63	0.64	1.00	1.00	To Weaning	0.40
Minimum Survival	0.58	0.59	0.97	1.00		0.34

Assumes Lost Cubs Died

Assumes Lost and Unknown Cubs Died

Number of litters by Litter Size and Cub Age to 2013

	Age of Cubs				
Litter Size	0	1	2	3	Grand Total
1	35	31	21	2	89
2	81	61	36	4	182
3	56	35	21	3	115
4	3	0	0	0	3
Grand Total	175	127	78	9	389