DEPARTMENT OF THE AIR FORCE
HEADQUARTERS, 673D AIR BASE WING
JOINT BASE ELMENDORF-RICHARDSON, ALASKA

02 Oct 2019

MEMORANDUM FOR RECORD

FROM: 673d CES/CEIEC
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SUBJECT: 2019 AERIAL NEST SURVEY OF LARGE BODIED BIRDS OF PREY AND CORVIDS WITH AN EMPHASIS ON BALD AND GOLDEN EAGLES

1. INTRODUCTION: Large bodied soaring birds pose a serious risk to airfields on Joint Base Elmendorf-Richardson (JBER). Documenting their distribution, relative abundance, and nest success is necessary to support future airfield actions and adhere to regulatory guidance requirements (Bald and Golden Eagle Protection Act (BGEPA)), (Title 16 of the United States Code, Sections 668-668d) and Migratory Bird Treaty Act, (PL 65-186; 16 USC 703 *et seq*.). Starting in 2011, annual aerial surveys conducted with fixed-wing aircraft were initiated to identify all active nest locations of large bodied birds of prey and corvids with an emphasis on Bald Eagles (*Haliaeetus leucocephalus*) and Golden Eagles (*Aquila chrysaetos*). This emphasis was placed on eagles due to the BGEPA, which provides protective measures for nesting eagles. These protective measures can often times conflict with the military mission. By applying these scientifically-sound inventory and monitoring efforts, it will provide the JBER with mission planning support, decrease impacts to military training, avoid BGEPA violations, provide effective natural resource management for species sustainability, and foster an exchange of information with other resource management agencies.

2. OBJECTIVE: The objectives of this in-house project was to (1) identify and accurately map locations of Bald and Golden eagle nests on and adjacent to JBER, (2) monitor productivity and fledgling success of Bald and Golden eagles, and (3) identify and accurately map locations of other large bodied birds of prey and Corvids.

3. METHODS: Guidance from the U.S. Fish and Wildlife Service (USFWS) was the basis for establishing field methods and protocols. Traditionally, monitoring methods for Bald Eagle breeding/nesting populations involve annual completion of 3 temporally separate surveys to determine: (1) occupancy, (2) activity, and (3) results of breeding attempt.

Aerial Survey
Aerial survey techniques for Bald Eagles were adopted from Hodges (2004) *Survey Techniques for Bald Eagles in Alaska* and aerial survey techniques for Golden Eagles followed recommendation provided by Steve Lewis, USFWS, Juneau, AK pers. comm. (2019) and

protocols and recommendations from Pagel et al. (2010) *Interim Golden Eagle Inventory and monitoring protocols; and other Recommendations*. The 2019 aerial surveys for both Bald Eagles and Golden Eagles were led by Steve Lewis (USFWS).

A Robinson R44 II (helicopter) was used to conduct a straight line transect survey in Bald Eagle habitats within the subalpine areas of JBER below 310 m elevation for Bald Eagles and their nests. This method was used to verify the accuracy of the modified stratified survey used during typical survey years, which concentrates survey efforts within 300 meters and no farther than 600 meters from water bodies. In addition to the transect survey, a list of nest location coordinates from the previous year was used to check nest status and condition. Timing of the aerial survey took place before leaf out but was late enough to observe incubation. Observation of other raptor nests were also recorded during the survey. The Golden Eagle aerial survey was flown at slow speeds throughout suitable nesting habitats. Multiple passes at several elevation bands were necessary in order to provide complete coverage on large cliff complexes, escarpments, and headwalls. Distances from the cliff wall were flown no closer than 20 meters and areas of known Dall's sheep presence were avoided. During the surveys, aerial waypoints for all new nests encountered, including the flight paths, were recorded using a Garmin RINO 630 GPS (Tab 1).

Coordination for flight services was conducted with USFWS and Alyeska Helicopters. Additional coordination was conducted with U.S. Air Force Elmendorf Airfield and U.S. Army Range Control Office to de-conflict air space use and training area activities. The first flight occurred on April 20, 2019 which covered Bald Eagle habitat throughout JBER-North and South Post subalpine areas. The skies were partly cloudy with wind speeds of 5 – 10 mph and a temperature of 34ºF. The duration of the survey was 4 hours and 37 minutes. The second flight was conducted on April 24, 2019 and covered Golden Eagle habitat on JBER-South Post and surrounding alpine region bordering the installation. The skies were partly cloudy with wind speeds of 0-5 mph and a temperature of 30ºF. The duration of the survey was 2 hours and 39 minutes. Observers on both flights included (1) pilot - Thomas Bue, (1) USFWS biologist - Steve Lewis and (2) JBER biologists – Kristy Rouse and Cassandra Schoofs.

Ground-Truthing

Using the aerial waypoints collected, all new nest GPS locations were verified and accurate nest tree or cliff locations were recorded. Tree data collection included: identification of nest tree species and overall nest condition (excellent, good, fair, or poor). Activity status of the nests were recorded as well as presence or absence of adults and the level of disturbance (behavioral and vocal responses). Photographs of nests were also taken with a Canon 6D DSLR camera equipped with 150 and 300 mm lenses.

All locations where Golden Eagles were observed were followed up by an additional ground survey event to see if a nest could be located.

Productivity Monitoring

Active nests were monitored using ground observations. A secluded spot was chosen for observations that provided observers cover yet gave the best view of the nest. A Swarovski ATS 80 spotting scope and EL Range binoculars were used to make observations. In the event of no

chicks being seen and/or the absence of adults exhibiting rearing behavior, the cut off time at each nesting location was set at 1.5 hours. All eaglets identified were assigned an age class number using Hancock's (2007) Bald Eagle nestling age class guide. The goal of age classifying was to observe eaglets and accurately assign them to an age class so we could better assess Bald Eagle nest success. Nest visits to classify the age of chicks was done at a subset of nests in May and June. Nests that originally showed nesting activity in the April aerial survey were visited in July to monitor fledgling success.

4. RESULTS:

Aerial and Ground-Truthing Surveys

During the aerial survey, a total of 44 Bald Eagle nests were identified on or adjacent to JBER. Of the 44 nests, 17 were active and 27 were inactive. Other raptors and corvid nests identified included 4 Red-tailed Hawk (*Buteo jamaicensis*) nests (1 active, 3 inactive), and 1 Raven (*Corvus corax*) nest (active). Three (3) observations of Golden Eagles were documented but no evidence of nesting was found during the initial aerial survey. One (1) Golden Eagle nest was documented in Snowhawk Valley during subsequent ground-based surveys. One (1) Osprey (*Pandion haliaetus*) nest (active) was located in subsequent ground-truthing efforts. All nest locations can be found in Tab 2.

Productivity Monitoring

Of the 17 active Bald Eagle nests (Tab 3), 15 nests were surveyed for productivity. The remaining two nests were not accessible due to military training activities, surveyor unavailability, and flight support unavailability. Of the 15 nests surveyed, 7 (47%) were successful in fledging chicks and 8 (53%) of the nests failed. Of the 8 failed nests, 1 was positively identified as predation, and 7 failed due to unknown causes. The fledging rate per occupied nest was 0.47 and fledgling rate per successful nest was 1.86 (Tab 4). The Golden Eagle nest was also surveyed for productivity. No evidence of nesting in the form of eggs or adults exhibiting rearing behavior existed at this nest.

5. RECOMMENDATIONS:

Using the Proximity Analysis Toolbox in ArcMap 10.6.1, a multiple ring buffer analysis of the Bald Eagle nest locations from 2018 and 2019 indicated that 92 percent of nests were located within 300 meters of a waterbody. The 8 percent of nests not within 300 meters were also not 600 meters from a waterbody. Location of these nests may be due to proximity to the Anchorage Landfill, competition for desirable nesting sites, or inexperienced nesting pairs. Recommend that future surveys conduct a similar straight line transect survey, if time and resources allow, with priority flight time weighted to 300 meters from waterbodies, then near the Municipal landfill, then near the bluff habitat north of Eagle River (Training Areas 407 and 408).

Recommend additional monitoring of Bald Eagle nests 56, 29, and 39 due to their proximity to Elmendorf Airfield, Bryant Army Airfield and Malemute Drop Zone respectively and the corresponding potential BASH risk.

6. REFERENCES:

Hancock, D. 2007. Bald eagle nestling age classes. Hancock Wildlife Foundation. http://www.hancockwildlife.org/article.php/20070907222114337.

Hodges, J. I. 2004. Survey techniques for bald eagles in Alaska. Pages 367-375. In: Wright, B. A. and P. F. Schempf. Editors. Bald Eagles in Alaska. Hancock House Publishers, Blaine, WA, USA.

Pagel, J.E., D.M. Whittington, and G.T. Allen. 2010. Interim golden eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Bird Management, US Fish and Wildlife Services, Carlsbad, CA, USA.

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8. If you have any questions, please contact Ms. Cassandra Schoofs, 673 CES/CEIEC, at 384-0276 or cassandra.schoofs.1@us.af.mil.

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4 Tabs
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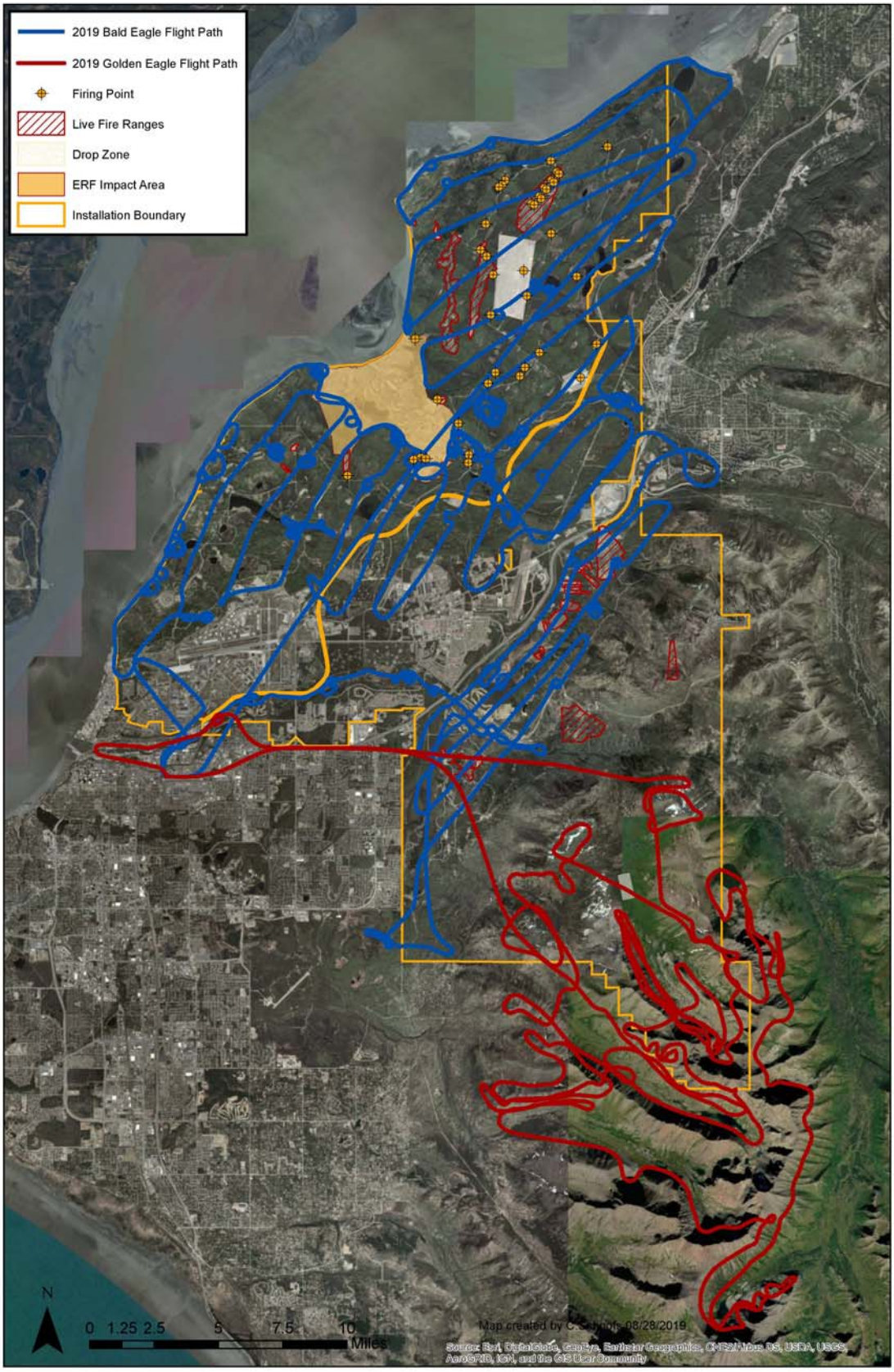
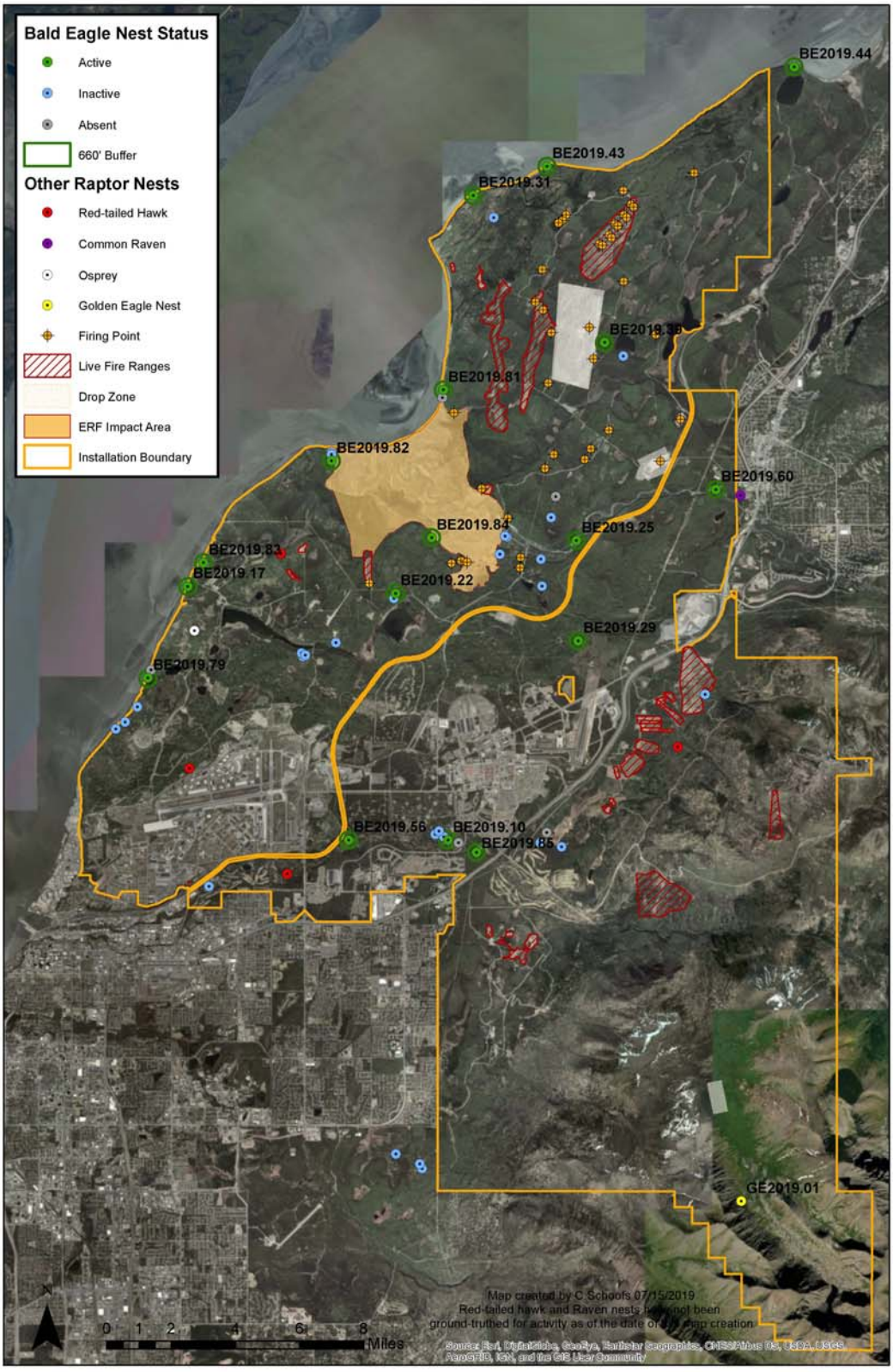
2019 JBER Raptor Nest Survey Flights



2019 JBER Raptor Nests



2019 Eagle Nest Productivity

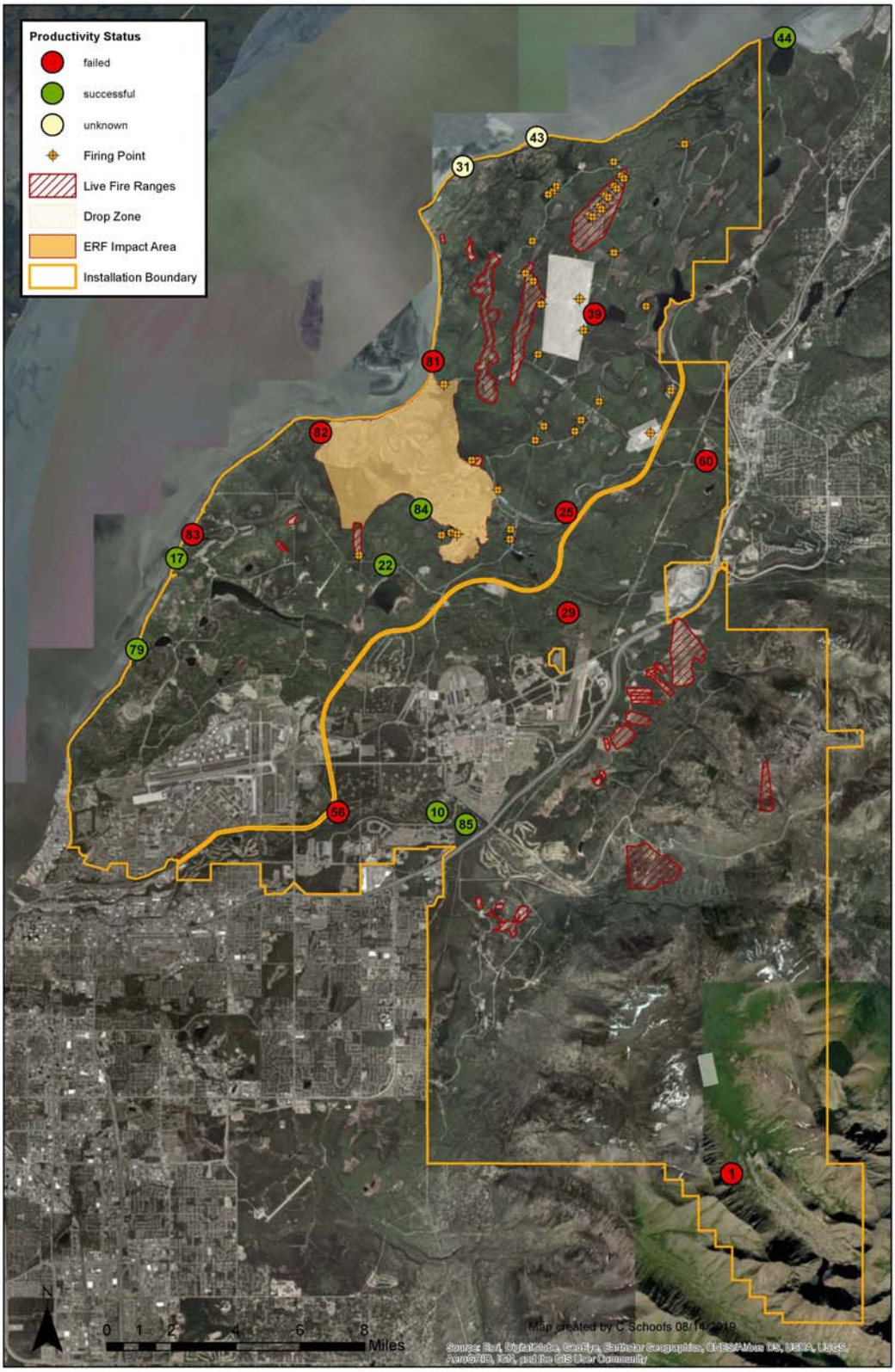


Table 1. Joint Base Elmendorf-Richardson, AK Bald Eagle Productivity Survey Results, April-July 2019.

Nest ID	Inactive/ Active	Latitude	Longitude	Aerial survey observation	Ground Truth May	No. of Adults Obs.	No. of Chicks Obs.	Observation 1 June	No. of Adults Obs.	No. of Chicks Obs.	Observation July	No. of Adults Obs.	No. of Chicks Obs.	Chick(s) Age	Productivity Status
BE2019.10	active	61.242452	-149.713974	4/20/2019	5/9/2019	2	-	6/25/2019	2	2	7/1/2019	1	2	Class 5	successful
BE2019.17	active	61.29723	-149.83099	4/20/2019	-	-	-	-	-	-	7/11/2019	1	1	Class 5	successful
BE2019.22	active	61.29573	-149.7375	4/20/2019	-	-	-	-	-	-	7/12/2019	1	2	Class5/6	successful
BE2019.25	active	61.307157	-149.656036	4/20/2019	-	-	-	-	-	-	7/17/2019	0	0	-	failed (unknown)
BE2019.29	active	61.28546	-149.65524	4/20/2019	-	-	-	-	-	-	7/18/2019	0	0	-	failed (unknown)
BE2019.31	active	61.38173	-149.70244	4/20/2019	-	-	-	-	-	-	-	-	-	-	Unknown
BE2019.39	active	61.34997	-149.64341	4/20/2019	-	-	-	-	-	-	7/17/2019	0	0	-	Failed (unknown)
BE2019.43	active	61.388151	-149.669437	4/20/2019	-	-	-	-	-	-	-	-	-	-	Unknown
BE2019.44	active	61.40945	-149.55809	4/20/2019	-	-	-	-	-	-	7/24/2019	2	2	Class 5	successful
BE2019.56	active	61.242499	-149.75861	4/20/2019	-	-	-	6/25/2019	2	-	-	0	0	-	failed (unknown)
BE2019.60	active	61.3182	-149.59331	4/20/2019	-	-	-	-	-	-	7/23/2019	0	0	-	failed (predation)
BE2019.79	active	61.2775	-149.84894	4/20/2019	-	-	-	-	-	-	7/12/2019	2	3	Class 5	successful
BE2019.81	active	61.33975	-149.71599	4/20/2019	-	-	-	-	-	-	7/17/2019	0	0	-	failed (unknown)
BE2019.82	active	61.3253	-149.76506	4/20/2019	-	-	-	-	-	-	7/11/2019	0	0	-	failed (unknown)
BE2019.83	active	61.30257	-149.8239	4/20/2019	-	-	-	-	-	-	7/11/2019	0	0	-	failed (unknown)
BE2019.84	active	61.30781	-149.72144	4/20/2019	-	-	-	-	-	-	7/23/2019	2	1	Class 4/5	successful
BE2019.85	active	61.23992	-149.70122	4/20/2019	5/9/2019	2		6/25/2019	2	2	7/10,7/12/2019	1	2	Class 4	successful
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GE2019.01	active	61.16412	-149.58183	-	-	2	-	-	2	0	7/26/2019	2	-	-	did not initiate nesting

predation	1 of 15	0.07	7%
successful	7 of 15	0.47	47%
failed (wind)	0 of 15	0.00	0%
failed (unknown)	7 of 15	0.47	47%

fledging rate per occupied nest 0.47

fledging rate per successful nest 1.86