



Interim Report to the Nuttall Ornithological Club

Assessment of Golden Eagle (*Aquila chrysaetos*) Migration and Overwinter Activity in NH

November 2015 through October 2017

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Goals and Objectives

Golden Eagles (*Aquila chrysaetos*, hereafter GOEA), state-listed endangered in both New Hampshire and Maine, are considered a species of growing conservation concern in the eastern U.S., especially in relation to siting of wind power facilities on mountain ridges. Raptor biologists and natural resource managers believe that GOEAs have been extirpated as a breeder from the eastern U.S. The last documented eastern U.S. breeding site was occupied in Maine in 1997 (Morneau et al. 2015), however there are at least 187 territorial pairs documented in eastern Canada including about 15 pairs south of the St. Lawrence River in the Gaspé Peninsula (Morneau et al. 2015).

Within the last decade, raptor biologists and resource managers affiliated with the collaborative Eastern Golden Eagle Working Group (www.egewg.org) have begun to better understand the true population size, distribution, and migratory timing of GOEAs across the eastern U.S. by using a coordinated network of nearly 200 baited wildlife cameras (hereafter camera-traps), scattered across the entire Appalachian Mountain range from western Maine to central Alabama (Jachowski et al. 2015). This initiative, coordinated by Dr. Todd Katzner now affiliated with the U.S. Geological Survey, is generating a huge photographic data set of date-stamped GOEA images that document the timing and abundance of their migratory and overwinter distribution. Results so far suggest that this species is more abundant than was previously thought. Ironically, this raises greater concern about interaction between migrating GOEAs and a growing number of wind power facilities.

Better information on seasonality and abundance patterns of GOEAs in New Hampshire could influence decisions about future wind development proposals and other natural resource management issues in the state. Previously, New Hampshire Audubon (NHA) participated to a limited degree in the camera-trap program over three recent winters (2011-12, 2012-13, and 2013-14). NHA raptor biologist Chris Martin teamed with a private landowner to operate a

camera-trap located near the Umbagog National Wildlife Refuge (NWR) on the Maine-NH border. This site was notable because it was the most northeasterly site within the entire eastern U.S. GOEA camera-trap network, but was no longer operated after April 2014.

Progress toward Objectives

We requested and received \$5,000 in support from the Blake-Nuttall Fund for work between November 2015 and October 2017. Listed below are the specific tasks we set out to accomplish, and our progress as of end of July 2016 (roughly the halfway point).

Re-activate a camera-trap site near Umbagog NWR: U.S. Fish & Wildlife Service personnel at Umbagog NWR set up and operated a new camera-trap station on refuge land in Errol, NH from 12/21/2015 to 4/29/2016, collecting 135,450 images (7.27 GB). NHA played an important role by offering technical assistance and by compiling/forwarding images to national database coordinator. Plans are in place for this site to operate again during Winter 2016-17.

Set up and supervise as many as four additional camera-trap stations in other parts of New Hampshire: We set up and operated three camera-trap sites during Winter 2015-16. Sites we operated, and those in which we collaborated, are shown below. Among those, we compiled/forwarded images from one short-duration site in located in Liberty, ME. As it turned out, this was the only site where GOEA photos were obtained in Winter 2015-16. Sample of images at end of this interim report.

Town/State	Site name	Operating period	Image quantity	Goldens/Balds documented
Orford NH	Tullar Farm	1/22/16 - 3/17/16	13,892 (19.7 GB)	0 / many
Concord NH	Silk Farm	2/11/16 - 3/7/16	2671 (4.0 GB)	0 / 2
Hartland VT	Ottaquechee River	12/18/15 - 1/22/16	407 (1.25 GB)	0 / 1
Errol NH	Umbagog NWR	12/21/15 - 4/29/16	135,450 (75.2 GB)	0 / at least 3
Liberty ME	Medomack Reserve	2/29/16 - 3/5/16	4900 (1.72 GB)	1 / at least 2

Play an active role in the Eastern Golden Eagle Working Group: NHA personnel participated in the 4th annual meeting of the Eastern Golden Eagle Working Group held in Rangeley, ME from 7/9 through 7/11/2015. NHA personnel co-led about 25 scientists and resource managers from the eastern U.S. and eastern Canada on a full-day field trip, including a visit to a local wind energy facility, and a hike to the top of an historic GOEA nest cliff in NH’s Second College Grant, a site last occupied by breeding GOEAs around 1960. This was one of several historic sites we visited in western Maine and northeastern New Hampshire, but the only one that conference participants were able to view from the top of the cliff. More info about the meeting: www.maine.gov/wordpress/insideifw/2015/08/20/golden-eagle-workshop-attracts-international-array-of-eagle-biologists-by-erynn-call/ .

Conduct photo analysis to determine the extent of GOEA presence during the winter months: This work is on-going, plus we are supplying all our collected images to national

coordinator. Images from cameras are being reviewed to distinguish individual GOEAs based on plumage characteristics.

Budget

Expenses thru 7/31/2016

Personnel Costs (include benefits and overhead)	
Principal Investigator – coordination, analysis	\$ 2,637.58
Expenses	
Game cameras and other equipment	\$ 672.98
Mileage	\$ 285.90
Total:	\$ 3,596.46

Income

Charles Blake Fund request	\$ 5,000
Other ¹	\$ 1,500
Volunteer time contributed	\$1,500
Total:	\$ 8,000

¹ New Hampshire Audubon’s Dr. Margery J. Milne and Dr. Lorus J. Milne Biological Science Research Fund and private donations.

Literature Cited

Jachowski, D.S., T. Katzner, J.L. Rodrigue, and W.M. Ford. 2015. Monitoring landscape-level distribution and migration phenology of raptors using a volunteer camera-trap network. Wildl. Soc. Bull. 39:in press.

Morneau, F., J.A. Tremblay, C. Todd, T.E. Chubbs, C. Maisonneuve, J. Lemaitre, and T. Katzner. 2015. Known breeding distribution and abundance of Golden Eagles in eastern North America. Northeast Nat. 22:236-247.

Appendix: sample images



Golden Eagle present at camera-trap in Medomack Reserve in Liberty, ME in March 2016.

Breeding pair of adult Bald Eagles at Umbagog NWR in Errol, NH in March 2016.



Two immature Bald Eagles visit camera-trap at Tullar Farm in Orford, NH on 1/18/2016.