

2012

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Recommended Citation

Harmata, Al (2012) "Longevity Record for North American Golden Eagle," *North American Bird Bander*. Vol. 37 : Iss. 1 , Article 7.

Available at: <https://digitalcommons.usf.edu/nabb/vol37/iss1/7>

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Longevity Record for North American Golden Eagle

Between 7 Jun 1973 and 2 Jul 1979, 87 Golden Eagles (*Aquila chrysaetos*) were banded with US Fish & Wildlife (USFWS; now US Geological Survey - USGS) bands as nestlings (L) in northeastern Colorado from the Front Range of the Rocky Mountains to Sterling. Six eagles in 1973 and one in 1974 were banded with size 9 lock-on bands (599 prefix); the remainder were banded with size 9 pop-rivet bands. This note documents a recovery from that group of eagles and a likely longevity record for North America.

On 10 Mar 2006, along the Front Range of the Rocky Mountains north of Ft. Collins, CO, hikers found a dead adult Golden Eagle bearing USFWS band number 629-00727. The recovery site was in a ravine in a wide valley west of a Dakota Group (Meek and Hayden 1862) hogback, 11.8 km northeast (37°) of Livermore, Larimer Co., CO. According to the finder, Jason Hartman of Ft. Collins, CO, the carcass was intact with no obvious trauma, scavenging, or insect consumption, was partially thawed, and emanated a strong odor. Plumage was in good condition and appeared undisturbed. No measurements or photographs were obtained. The band was removed by breaking the tibio-tarsus but the carcass was left at the site in compliance with provisions of the Eagle Protection Act (50 Code of Federal Regulations Part 22) prohibiting possession of eagles without a salvage permit. The advanced stage of putrefaction indicated death within four to six weeks of discovery. However, the carcass may have frozen soon after death (>1 Nov) and if so, the eagle may have died as long as 4.3 months prior.

I had banded the eagle as a L male at the Owl Canyon Nest Site (40.77° N lat., 105.16° W long.), Larimer Co., CO, on 3 Jun 1975. At the time of banding, the eagle was approximately seven weeks old. Assuming it hatched on approximately 28 Apr 1975, it died at the minimum age of between 30 yr 6 mo and 30 yr 9 mo, a new longevity record for North America. The recovery site (40.88° N lat.,

105.13° W long.) was 12 km north-northeast (9°) of the banding site. In 1979, there were at least four occupied Golden Eagle territories within 10 km of the banding and recovery sites; thus, this recovery probably represents evidence of natal dispersal.

Lindstedt and Calder (1976) predicted longevity of a 4 kg nonpasserine bird at about 21 yr. The oldest reported recovery of a wild Golden Eagle is 32 yr in Sweden (Staav 1990). Captive birds live much longer (>40 yrs, Gordon 1955, Watson 1997, Ellis, in press). Based on the analysis of North American band encounter data, only about one in 1000 wild Golden Eagles may reach 30 yr with a maximum longevity of 33 yr, but 95% may be dead by 12 yr (Harmata 2002). The paucity of recoveries of Golden Eagles older than 12 yr suggest those estimates may be accurate and representative of actual Golden Eagle longevity and population demographics.

Overall, 6% of Golden Eagles banded as normal wild birds (without auxiliary markers or tissue sampling; BBL 300 code) in North America have been encountered to March 2012 (USGS Bird Banding Laboratory 2012), but <1% of those that potentially could have reached ≥ 12 yr have been encountered (Table 1). Lock-on bands were used on 24% of 300 code Golden Eagles, some as late as 2009, while pop-rivet bands were applied to the remaining 76%. A much greater proportion of pop-rivet bands have been encountered (8.2%) than lock-ons (0.7%). Of those that potentially could have reached 12 yr, the proportion of encounters is much greater for pop-rivet bands (Two-sample Proportion test, $z = -2.6$, $P < 0.02$). The pre-600 series of butt-end or lock-on bands were notoriously ephemeral on Golden Eagles, easily removed within days or even hours of application (M. Lockhart, pers. comm., pers. obs.). Perhaps if all bands applied to L Golden Eagles had been more permanent pop-rivet design, more birds >30 yrs old would be recovered.

Table 1. Golden Eagles of all known age classes (BBL Age Codes 2-5, 7, 8) banded and encountered in North America up to March 2012.

Band Type	Banded		Encountered	
	Total	>12 ¹ (%)	Total	>12 ² (%)
Lock-On	1582	1571	12 (0.78)	2 (0.13)
Rivet	5011	3899	409 (8.50)	26 (0.67)
Both	6593	5470	421 (6.39)	28 (0.51)

¹ Indicates number banded at least 12 yr as of March 2012.

² Indicates of those banded at least 12 yr.

ACKNOWLEDGMENTS

John W. "Jack" Stoddart belayed me while banding 629-00727. Thanks to Danny Bystrak and Matt Rogosky for providing Golden Eagle banding and encounter data from the BBL; to Marco Restani and Dale Stahlecker for reviewing the note; and foremost, to Jason Hartman for reporting the band and providing additional follow-up information.

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