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A Review of Modern Bald Eagle (*Haliaeetus leucocephalus*)
Nesting Records and Breeding Status in Nebraska

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The recovery of the Bald Eagle (*Haliaeetus leucocephalus*) in North America during the 20th century is a conservation success story. Once threatened with extinction, the species now is common throughout much of its range (Buehler 2000). Federal and state laws such as the Endangered Species Act (ESA; 16 U.S.C. 1531-1544) that were used to protect Bald Eagles and important habitats used by eagles are considered key actions that fostered the species' recovery. In 2007, the Bald Eagle was formally removed from the federal list of threatened and endangered species (50 CFR Part 17). The following year, the Bald Eagle was removed from the Nebraska state list of threatened and endangered species.

Bald Eagles have been a species of high conservation concern, and therefore a substantial amount of attention and resources has been directed toward monitoring Bald Eagle numbers over the past 50 years. Of particular interest were initial breeding records and subsequent increases in states where the species bred historically, but was extirpated. Nebraska is one such state in which Bald Eagle breeding records have increased since protection.

Prior to 1900, the Bald Eagle was a regular, albeit low-density, breeding species in Nebraska (Ducey 1988). Breeding records from this period occurred in present-day Dixon, Gage, Cherry, and Garden Counties and near the Douglas-Washington County line (Rapp et al. 1958, Ducey 1988, 2000). John James Audubon also observed a nest in southeast Nebraska along the Missouri River in 1843 (Ducey 2000). By the late 1800s, Bald Eagles had become scarce. In the Omaha vicinity, White (1893) commented, "Of late years [Bald Eagles] have become very rare". Bruner et al. (1904) concluded that Bald Eagles "probably formerly bred" in Nebraska and "it is likely that a few still do so." As there were no additional breeding records after this time (Rapp et al. 1958, Ducey 1988, Sharpe et al. 2001), it appears that the Bald Eagle had been extirpated as a breeding species by around 1900. Unregulated shooting of Bald Eagles was likely a primary source of early declines (Buehler 2000). Bald Eagles were rare to uncommon migrants and winter visitors in Nebraska throughout most of the 1900s (Rapp et al. 1958, Johnsgard 1980).

By the end of the 20th century, Bald Eagles were again breeding in Nebraska. Relevant state agencies, such as the Nebraska Game and Parks Commission (Commission), and federal agencies, such as the U.S. Fish and Wildlife Service

(USFWS) and National Park Service (NPS), collected nesting and breeding activity data. The Commission's Nongame Bird Program coordinated statewide surveys and compiled and maintained a database of all known nesting and breeding observations. Breeding records from the early and mid-1990s were previously summarized by Lackey (1997). In this note, we use all collected information to 1) summarize modern nesting and breeding records during the period 1950-2009, 2) summarize the pattern of increase observed in Nebraska, and 3) provide information about nest site use and distribution in Nebraska.

METHODS

Bald Eagle breeding information was compiled from formal surveys conducted by the Commission, NPS, USFWS, U.S. Army Corps of Engineers, Nebraska Public Power District, and trained volunteers. This information was supplemented with information from 1) reports from public forums (e.g., NEBirds internet discussion group), 2) incidental reports, and 3) a literature review. Data from all sources were entered into an electronic Microsoft Access database and were then summarized according to nest activity level and associated variables.

For formal surveys, nest sites were generally visited at least twice during the breeding season. The first visit usually occurred in March or April to determine if a nest was active. Active was defined as a nesting pair engaged in breeding activity (i.e., incubation of eggs, tending of young). The definition of active used here does not include pairs constructing dummy or practice nests. Active nests were then determined to be productive (fledging of young) or unproductive (no fledged young produced). Personnel approached nests by vehicle, on foot or by boat, and observed nests with binoculars or spotting scopes from a distance that would not disturb nesting birds. Observers recorded date, time, nest status, number of adults, number of young and relevant comments during each visit. When possible, nest locations were recorded with a GPS unit during initial visits. Surveys were generally concluded by the end of June, corresponding with the period in which young eagles leave the nest.

RESULTS

The first modern report of Bald Eagle breeding activity in Nebraska was in 1973, when a pair built a nest in Cedar County (Lock and Schuckman 1973). The pair was observed copulating but eventually deserted the nest (Lock and Schuckman 1973). Similar situations occurred along the North Platte River near Lewellen, Garden County, from 1987-1993 (see also Rosche 1994) and along the Platte River near Maxwell, Lincoln County, in 1989. Eagle pairs were observed either building or in proximity to previously constructed nests, but nests were deserted each year with no evidence that eggs were ever laid. Additional nests near Woodcliff, Saunders County, and Paxton, Lincoln County, were located after they were constructed and deserted; no eagles were observed at these nests.

The first active modern nest was near Valley, Douglas County, in 1991 (Farrar 1991). This was the first successful nesting attempt in the state; an eaglet nearly fledged or did fledge, but was later found dead. The following year the number of

active nests increased to 5. One of these nests, located along the Middle Loup River in Sherman County, fledged two young capable of sustained flight (Lackey 1997). The number of active nests slowly increased in subsequent years (Figure 1), reaching 10 in 1996, 20 in 2000, and 55 in 2007. The number of active nests dropped to 48 in 2009.

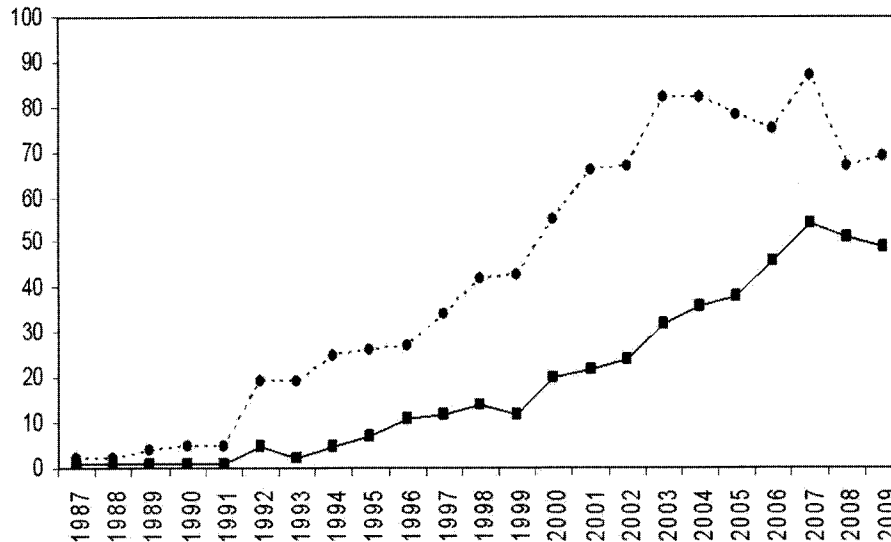


Figure 1. Number of Bald Eagle nests surveyed (dashed line) and number of active nests (solid line) in Nebraska 1987-2009.

Bald Eagle nests have been recorded statewide (Figure 2). Nests were recorded in 62 of 93 counties. Most nests have been located in the north and east. More than 80% of active nests in 2009 ($n=49$) were found along or north of the Platte River and east of Lincoln and Cherry Counties. Only a single nest, located at Medicine Creek Reservoir, Frontier County, has been found south of the Platte River and west of Harlan County. Bald Eagles were recorded at this nest from 2001-2005, but the nest was never observed to be active. Most Bald Eagle nest sites in Nebraska have been associated with riparian corridors. Of 221 nests observed during the years 1973-2009, 85% occurred along rivers. Of these nests, large numbers were observed along the Platte ($n=42$), Missouri ($n=37$), and Elkhorn ($n=15$) Rivers. Approximately 11% of nests have occurred beside lakes or reservoirs.

Active Bald Eagle nests in Nebraska have been very productive; 649 young have fledged from 440 active nests with known outcomes (1.48 fledges/active nest) from 1991-2009. A primary cause of nest failure is nests being blown down during storms or periods of strong winds. A minimum of twenty-four active nests have blown down.

DISCUSSION

Within the past two decades, increases in the number of Bald Eagle breeding pairs in Nebraska have been remarkable. Nebraska, as part of the Northern States Recovery Plan (USFWS 1983), originally had a recovery goal of ten active breeding pairs. This goal was met in 1996 and surpassed in years thereafter. In addition, the 1.48 fledges per nest recorded in Nebraska is greater than the 1.0 fledgling/nest objective outlined in the Northern States Recovery Plan (USFWS 1983). There are annual instances of Bald Eagle mortality caused by gunshot wounds, lead poisoning, electrocution, and power line strikes (Jorgensen 2008). These sources of mortality and other threats do not appear to be inhibiting increases in breeding Bald Eagle numbers.

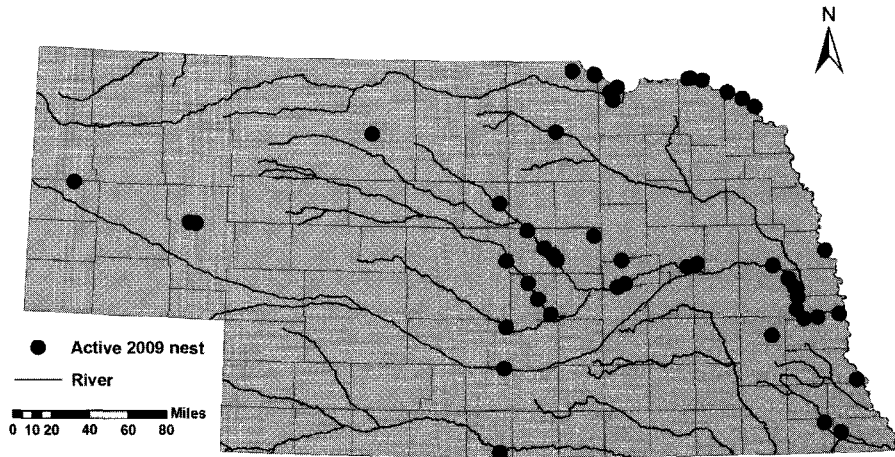


Figure 2. Spatial distribution of active Bald Eagle nests (eagle icon) in Nebraska in 2009.

The number of Bald Eagle breeding pairs is expected to continue to increase in Nebraska in the foreseeable future. The decline in the number of active nests in the last two years of the study period is attributed to decreases in survey effort rather than an actual decline in nesting pairs. Therefore, an obvious question is how many breeding pairs may ultimately exist within the state. While it is difficult to know what may be the proximate limiting factor(s) on Nebraska's breeding population, it does not appear that general habitat requirements is one of them. Most Bald Eagles in Nebraska nest along rivers, and large portions of Nebraska's extensive network of rivers remain uncolonized by Bald Eagles. It seems possible that Nebraska may ultimately have a few hundred Bald Eagle nesting pairs.

As recently as 2001, the Bald Eagle was described as a "locally rare regular breeder (resident?) statewide" and a "Rare casual summer visitor statewide" (Sharpe et al. 2001). Based on the information provided here, we recommend that the species status be revised to "uncommon breeder and summer visitor statewide".

Past declines and low numbers raise concerns about the long-term security of Bald Eagle populations. However, the persistence of an overall increase in nesting numbers as observed in recent records will make comprehensive annual nest monitoring more challenging due to resource limitations. Some level of monitoring of breeding numbers remains important in order to determine whether increases over the past two decades will be sustained. At this time, it appears that the Bald Eagle will be a fixture of Nebraska's avian breeding community.

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