

Bald Eagle Conservation in Kansas: Intersections of Ecology, Culture, and Public Perception

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Introduction

Bald Eagles (*Haliaeetus leucocephalus*) are an extremely iconic and symbolic species that are found throughout large areas of the United States. While the species has recovered from near extinction since the 1940s-1960s, changes in land use, declining natural conditions, and increasing human development continue to influence where Bald Eagles can nest. Further, Bald Eagles can be directly impacted by lead-based materials that can be left behind from hunting and fishing. Lead poisoning has a widespread impact on Bald Eagles and has been reported in 34 states (Feierabend and Myers, 1984, Franson et al., 1995). Both in the past and recently, lead poisoning is often considered a significant source of mortality in Bald Eagles (Kramer and Redig, 1997, Slabe et al., 2022). Research into Bald Eagle nest site selection and public perceptions about Bald Eagle conservation, including the use of lead-based products, would provide a more holistic idea about the challenges that face Bald Eagle population persistence.

Objectives

The goal of this research is to understand how different factors, like local and landscape scale habitat features, human activity, and how human perceptions all come together to influence Bald Eagle conservation in the Manhattan, KS region.

- Investigate local and landscape scale Bald Eagle nest site characteristics
- Collect the public's perceptions of Bald Eagles and Bald Eagle conservation through their use or nonuse of lead products

Methods

We surveyed eight Bald Eagle nest sites on public land in the Manhattan, KS region, for local scale and landscape scale characteristics including:

- Diameter at breast height (DBH)
- Tree Height via hypsometer
- Distance to water
- Distance to road

We collected the same local scale measurements at two nearby trees that did not have nests, and illustrated Bald Eagle nest site selection patterns using logistic regression.

We developed a 30 question quantitative survey to gather data on public perceptions of Bald Eagles and natural areas around

Manhattan, Kansas. The survey focused on two themes:

- Place identity and connection
- Attitudes toward lead products

Our survey employed a Likert scale format, ranging from 1 (strongly disagree) to 5 (strongly agree), to measure attitudes and perceptions. We collected 17 responses of recreationist near or at access points to public land in the Manhattan, KS region. Surveys were voluntary and anonymous.

Results

Nest Site Selection

For the local scale characteristics, we found that Bald Eagles are more likely to select trees with greater tree height and DBH (Fig. 1). For our landscape results we found that Bald Eagles nested on average ~400m from roads and ~200m to water (Fig. 2).

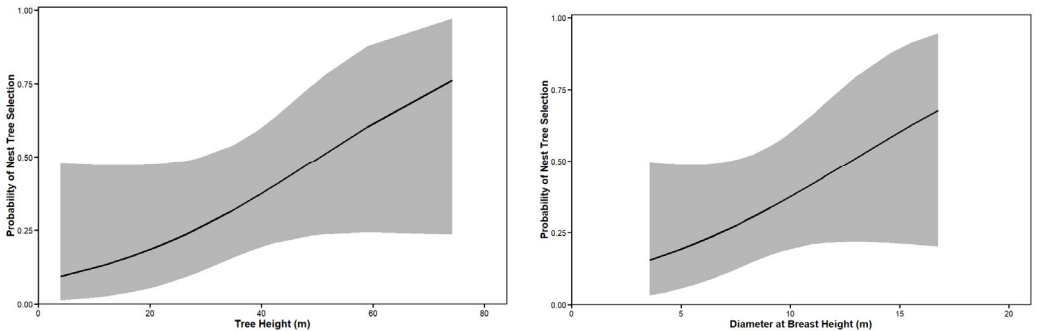


Fig 1. Bald Eagles probability of selecting a tree for nesting increases with tree height and diameter at breast height indicating that Bald Eagles prefer strong and sturdy trees.



Fig 2. Bald Eagles prefer nest trees near water and away from roads.

Social Survey

Participants were predominantly male (76.5% males, 23.5% females), with a wide range of ages represented. Respondents ages were evenly represented, with the largest proportion of our responses in the 18–24 age range (31.3%). Most respondents indicated that Bald Eagles symbolized freedom to them (Fig 3a). Furthermore, respondents agreed that they felt personal responsibility to preserve Bald Eagle habitat around Manhattan, KS (Fig. 3b). Adoption of non-lead products was variable, however most respondents indicated that using non-lead products did not require more effort than they preferred (Fig 3c).

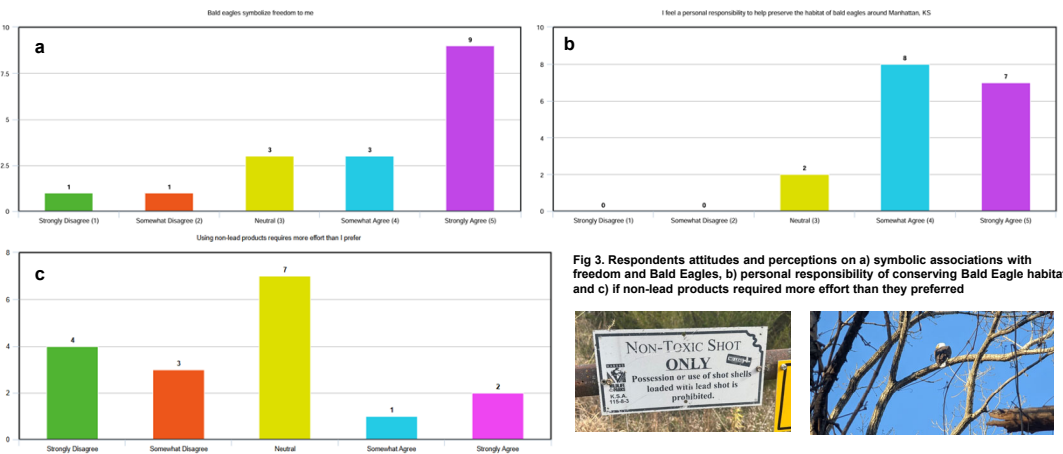


Fig 3. Respondents attitudes and perceptions on a) symbolic associations with freedom and Bald Eagles, b) personal responsibility of conserving Bald Eagle habitat, and c) if non-lead products required more effort than they preferred



Conclusions

Our findings show that Bald Eagles prefer tall, strong trees that are usually close to water for their nests. Survey results indicated that most people who spend time in these natural areas care about bald eagles and want to help protect their habitats. People we surveyed supported switching to non-lead fishing and hunting gear as well and do not perceive a cost to switching. Further, our results indicate that conservation messaging emphasizing personal connection, ethical responsibility, and social support could be effective in promoting non-lead product adoption. Highlighting symbolic value (freedom, pride in the region) and providing resources to reduce cost or effort barriers may enhance Bald Eagle conservation engagement.



Literature Cited

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Acknowledgments

Special thanks to all who made this project possible:
Federal and Non-profit agency personnel for supplying the nest location data
Kansas Cooperative Fish and Wildlife Research Unit for supplying field supplies
Dr. Sarah Jackson – Parks Management and Conservation, KSU – for survey development
Mary Ware for survey technique and design
Elisabeth Teige – Project Mentor
Dr. Shawn Hutchinson – NRES Coordinator
KSU Libraries

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