

A declining Great Plains specialty: Exploring regional movements, stopover duration, and migration of Harris's Sparrow

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The Harris's Sparrow (*Zonotrichia querula*) is a large and distinct migratory songbird found primarily in the center of North America throughout its annual cycle. Their breeding range is exclusively in northern Canada, occupying the boreal forest-tundra transition zone from Manitoba west across the Northwest Territories. The wintering range of this species is almost entirely within the southern Great Plains, with the highest densities between central and eastern Nebraska south through Kansas, Oklahoma and Texas. Habitat on migration and over winter includes brushy and weedy edges near streams, fallow agricultural fields, and overgrown pasture.

There have been substantial population declines of Harris's Sparrow over the past 50 years and they are considered "Near Threatened" by the IUCN. Given their remote and somewhat limited breeding range in extreme northern Canada, all population estimates and trends derive from data gathered on the wintering grounds in the Great Plains in the form of Christmas Bird Count (CBC) data. The main drivers of this apparent population loss remain unclear, but winter habitat degradation including the elimination of weedy edges near fields and expanding agricultural footprints may be contributing to declines.

Initial work in 2023 by Nebraska Game and Parks

Commission and Audubon Great Plains set out to establish a proof-of-concept utilizing the Motus network for tracking this migratory sparrow. The [Motus Network](#) is a collaborative international research network that uses



Nanotag next to a dime for size reference. Photo by Stephen Brenner

coordinated automated radio telemetry towers to help researchers across the continent track broad-scale animal movements and migrations. While Motus tower coverage is somewhat limited in the Great Plains, initial results suggest that this technology can provide accurate and novel movement data related to stopover dynamics for Harris's Sparrow in the state. The Wildlife Conservation Fund (WCF) funding in 2024 provided additional resources to acquire more tags to study this species more intensively across Nebraska. The primary objective of this work will be assessing the stopover habitat quality in the state. Taken with body condition and demographic data at capture, we will be able to determine stopover length and subsequent departure decisions as it relates to habitat, weather or endogenous factors. With luck, some of our tagged birds may even fly-by other Motus towers within the network along their migratory journeys. This work will provide a foundation for management decisions and conservation actions for this species in North America and should help us identify quality elements of both migratory and wintering habitat along with regional connectivity for this species.



Harris's Sparrow outfitted with a nanotag. This individual was later detected leaving its capture location in central Nebraska and along its migration in central Kansas. All banding, marking, and sampling is conducted under a federally authorized permit issued by the USGS. Photo by Stephen Brenner

