

# Effect of habitat restoration on grassland birds in the southern part of the Northern Tallgrass Prairie Ecoregion

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## Goals and Objectives:

1. Map current land use and estimate changes in vegetation as a result of wetland restoration activity in the Eagle Lake Wetland Complex in northern Iowa.
  2. Estimate the breeding population of mallards in the Eagle Lake Wetland Complex.
  3. Estimate components of mallard productivity in the Eagle Lake Wetland Complex.
  4. Evaluate the mallard model by comparing recruitment estimates with estimates generated by the model using parameters derived from this study's data in northern Iowa
  5. Determine habitat selection and use by female mallards to test the hypothesis that mallard nesting success, and thus parental fitness, is dependent on habitat type and size, and edge effects.
  6. Relate abundance of non-game birds to habitat and landscape variables.
  7. Estimate the past abundance of non-game birds in the Eagle Lake Wetland Complex prior to restoration and compare past abundance with current abundance.
  8. Estimate seasonal productivity of non-game birds on wetlands and uplands that have been restored in the Complex.
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## Progress:

The Eagle Lake Wetland Complex is a NAWCA project area located in the eastern half of the Iowa PPR in Hancock and Winnebago counties. The study area is 124 square km and contains a complex of state Wildlife Management Areas (WMA's), federal Waterfowl Production Areas, and Conservation Reserve Program and agricultural fields (primarily corn and soybeans). Using aerial photographs and a Geographic Information System, we quantified land cover in this highly agricultural (80% rowcrops) area. We estimated that a couple hundred mallards breed in the area. By radio-tracking about 200 hens, we examined nesting habitat and reproductive success. Comparison of habitat use relative to availability indicated that hens in this landscape tended to select linear habitats such as grassy roadsides. Hen success was close to what population models have indicated is needed to maintain population levels through time without immigration. It may be unreasonable to expect much higher average nest success with increased habitat restoration in northern Iowa as long as linear habitats remain a dominant feature in the landscape.

We also conducted surveys of songbirds in various habitats. Using maps from the early 1980's and late 1990's, we quantified changes in amount of each habitat in the restored areas. The coverage of wetlands and grass has increased, and cropland has decreased. By estimating densities of songbirds, we estimated that over 1,000 more songbirds are breeding in these areas as a result of habitat restoration. Bobolinks and blackbirds are two of the species that are much more numerous as a result of habitat restoration. Examination of nest success and other population parameters indicates that bobolink reproduction in the area is close to what is needed to maintain the population over time without immigration. Reproduction in dickcissels was low, however, indicating that immigrants must enter the population if it is to remain stable.

## Conclusions and Recommendations:

Habitat restoration in the Eagle Lake Wetland Complex appears to have achieved what managers set out to achieve. The migratory bird species we monitored were attracted to the area to breed in substantial numbers. Area-sensitive species such as bobolink, grasshopper sparrow, and savannah sparrow use the Complex. Enlargement of the WMA's may enhance nest success. The precise relationship between WMA size and nest success in this region is unknown and may depend on a variety of factors, including the nature of adjoining land cover. Marginal nest success places a premium on management that improves nest success. Mowing should be used judiciously, as some nests were active through the month of July. Our data on mallard nest success indicated that providing grassland cover in blocks could improve average nest success in landscapes that have an abundance of linear cover.