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Spring-staging Ecology of Waterfowl in Nebraska – Then Versus Now

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Spring snow storms can influence migration chronology and nutrient-reserve dynamics of waterfowl in Nebraska.

For centuries, the Rainwater Basin and Platte River Valley of central Nebraska have attracted millions of migrating waterfowl during spring. While in this region, females begin to accumulate fat and protein reserves needed for egg-laying and for recruitment of young.

Over the past decade, the mid-continent population of lesser snow geese has increased dramatically and shifted its principal spring migration corridor from eastern to central Nebraska. Large numbers of snow geese now concentrate on the region's shrinking wetland base, causing increased risk of avian cholera and greater competition for food with other waterfowl and sandhill cranes.

In 1998, I initiated a 2-year study sponsored by the U.S. Geological Survey's (USGS) Platte River Ecosystem Initiative, the U.S. Fish and Wildlife Service (Service), and Nebraska Game and Parks Commission (Commission) to examine diets and nutrient-reserves of snow geese, white-fronted geese, and northern pintails and to estimate time-activity budgets of both goose species.

Corn comprised more than 98% of the diet of snow and white-fronted geese and was a major food of pintails. During 1998, body condition (body mass relative to body size) of adult white-fronted geese was constant throughout their stay—20 years ago body condition of white-fronts increased 18 to 21 grams per day. Body condition of adult snow geese initially declined early in 1998, but later increased. Body condition of female pintails generally increased, but declined markedly during a severe March snow storm.

Burgeoning snow goose populations have led to increased hunting opportunity to reduce populations. However, impacts of these activities on non-target species are unknown. This study also is measuring effects of spring snow-geese hunting on snow geese and other waterfowl by comparing energy budgets and nutrient-reserve dynamics of waterfowl between hunted and non-hunted areas, and between hunting and non-hunting time periods.

The Rainwater Basin Joint Venture Technical Committee plans to use body condition measurements (an index to fat and protein levels) to evaluate regional habitat management activities. A third facet of my study, conducted in cooperation with the USGS National Wildlife Health Center, the Commission, and the Service, evaluates how nutrition influences susceptibility of waterfowl to avian cholera. If the body condition of waterfowl dying from cholera is representative of the population, then waterfowl retrieved during cholera outbreaks can provide an inexpensive, unbiased method to monitor body condition for the Joint Venture's purposes.



"Preliminary results from 1998 indicate that the body condition of snow geese killed by avian cholera was representative of the healthy population."



Preliminary results from 1998 indicate that the body condition of snow geese killed by avian cholera was representative of the healthy population. It appears that 1) body condition is not a risk factor related to avian cholera mortality, and 2) carcasses can be used to estimate and monitor the body condition of healthy waterfowl.

The results from this study will be used to estimate the number of waterfowl use-days that the central Nebraska region can support during spring in relation to changes in snow goose abundance and land-use practices, both of which influence availability of waste corn for foraging.

For more information, call Robert R. Cox, Jr., U.S. Geological Survey, Northern Prairie Wildlife Research Center, at (701) 253-5509, or e-mail robert_cox@usgs.gov.

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