



A common moorhen chick, resplendent in the early morning light, about to leave its nest. *Photo by Charles Paine.*

within-wetland habitat conditions such as interspersions of water and vegetation and to a lesser degree by plant diversity. Human development immediately adjacent to a wetland did not preclude use by birds, but development appeared to degrade within wetland habitat quality over time. Larger scale landscape conditions such as the degree of urbanization and wetland density likely influence bird diversity within a wetland, but further analyses are needed to assess their importance relative to smaller scale habitat conditions.

Over the two years of the study we searched for nests on 32 marshes. Over 975 nests representing 14 species were located and monitored, including 40 black tern, 39 common moorhen, 48 least bittern, 53 yellow-headed blackbird, 21 pied-billed grebe, 98 marsh wren, 32 sora, 6 Virginia rail, 8 American coot, and 604 red-winged blackbird nests. Nest and patch-level habitat variables were measured at all nests. The proportion of nests from which at least one young departed was estimated to be 28% for black terns, 43% for common moorhens, 42% for least bitterns, 24% for yellow-headed blackbirds, 59% for pied-billed grebes, 34% for marsh wrens, 24% for sora, and 22% for red-winged blackbirds using the Mayfield method. Results from the two years of this study plus additional nest success data going back to 1995 show substantial variation in nest success between years. However, nest success has generally been high within good quality marshes, suggesting that broad scale productivity problems, such as those observed in forest birds inhabiting fragmented landscapes, are unlikely to be the primary cause of population declines in northeastern Illinois wetland birds.

Funding for this project was provided by the Max McGraw Wildlife Foundation, the U.S. Fish and Wildlife Service Chicago Field Office, Chicago Wilderness, the Illinois Department of Natural Resources, the Webless Migratory Game Bird Research Program (U.S. Fish & Wildlife Service), and the Ohio State University.

## Sandhill Cranes

### Spring Stopover Food Resources and Land Use Patterns of Rocky Mountain Population Sandhill Cranes in the San Luis Valley, Colorado

MURRAY K. LAUBHAN, Midcontinent Ecological Science Center, U.S. Geological Survey, 4512 McMurry Ave., Fort Collins, CO 80525

JAMES H. GAMMONLEY, Colorado Division of Wildlife, 317 West Prospect Road, Fort Collins, CO 80526

Expected completion: July 2002

Virtually the entire Rocky Mountain population (RMP) of greater sandhill cranes uses the San Luis Valley (SLV) of Colorado as a spring stopover area. RMP

cranes in the SLV utilize unharvested grain provided on Monte Vista National Wildlife Refuge and waste grain in privately owned fields. In recent years, however,

changes in farming practices have resulted in an unmeasured reduction in waste grain availability for RMP cranes during spring and have prompted concern over whether current or projected foods are adequate to meet spring demands of the target population size of 18,000-20,000 RMP cranes. Changes have also occurred in the availability, distribution, and quality of wetland habitats in the SLV. The objectives of this study are to 1) develop and test a methodology to estimate the amount and spatial distribution of waste grain present in the SLV immediately before the arrival of RMP cranes for their spring stopover, and 2) compare patterns of land use by cranes with the spatial distribution of grain fields, roosting and loafing wetlands, and other habitats in the SLV.

In 1998, a geographic information system (GIS) was developed to annually map the distribution of grain fields and major wetland areas in the SLV. We used Natural Resources Conservation Service aerial photographs to classify crop type (grain or other) in over 2,000 center-pivot agricultural fields during 1997, 1998, 1999, and 2000. Between 1997 and 1999 the amount of cropland within 13 km of primary roost sites ranged from 32,896 to 34,174 ha. Of this land, between 11,767 and 13,261 ha was planted to cereal grain (wheat or barley) annually. The majority (>95%) of remaining center-pivot fields was planted to potatoes.

A mail survey of grain producers ( $n = 415$ ; response rate = 47%) was conducted in 1998 to assess agricultural producers' perceptions of sandhill cranes and determine post-harvest practices and soil characteristics on grain fields. Viewing sandhill cranes was considered important by 78.6% of respondents, but only 62.1% of respondents indicated viewing sandhill cranes was important on their own land. In addition, farmers' attitudes toward viewing sandhill cranes on their own property were related to perceived conflicts with crop production. Overall, our results suggest partnerships between farmers and natural resource agencies represent a viable alternative (Laubhan and Gammonley 2001). However, the role of farmers must be examined carefully because there may be an upper limit of crane use on private land that farmers will tolerate.

Preliminary analysis of cropping practices indicates that post-harvest land treatments vary from moldboard plowing to chopping stubble.

In 1998 and 1999, we sampled waste grain (barley and wheat) abundance in fields that received the full range of post-harvest practices on private land. The estimated mean biomass of waste grain was 5 kg/ha (95% confidence interval = 1.7-9.1 kg/ha, range for individual fields = 0.1-57 kg/ha). We also sampled fields damaged by hail that were not harvested using normal practices. Estimates of waste grain biomass available on the soil surface of these fields averaged 252 and 332 kg/ha. A road survey route also was established to monitor crane numbers and distribution. Based on weekly count totals (18,000 - 21,000 birds), the survey route accounted for the majority (>95%) of the RMP cranes present during the stopover period between 1998 and 2000. Time-activity budget data was also collected on cranes in fields, pastures, and wetlands throughout the stopover period each year. Preliminary analysis indicates that cranes spend 70->90% of time foraging in fields and pastures. We also collected sandhill cranes in 1999 ( $n = 40$ ), 2000 ( $n = 18$ ), and 2001 ( $n = 40$ ) to determine body condition and assess food habits. Cranes were collected in grain fields, potato fields, and wetlands/irrigated pastures. Preliminary analyses of esophageal contents indicate waste grain is a dominant food item, but cranes also consumed several taxa of invertebrates (beetles, spiders, and snails) as well as stems, leaves, and roots of goosefoot and various grasses. In addition, cranes appear to readily forage on small potatoes that remain following harvest. Given that more than 24,000 ha of potatoes have been planted in the SLV during recent years, potatoes could represent an important and previously unrecognized food source for migrant cranes. These are the results from 4 years of study funded by the 1998 Webless Migratory Game Bird Research Program, the Colorado Division of Wildlife, U.S. Geological Survey-Biological Resources Division, and the U.S. Fish and Wildlife Service (Region 6).

Reference: Laubhan, M. K., and J. H. Gammonley. 2001. *Agricultural producers' perceptions of sandhill cranes in the San Luis Valley of Colorado*. *Wildlife Society Bulletin* 29:639-645.

QL  
C946-55  
.W4  
2001

# Webless Migratory Game Bird Research Program

---

## Project Abstracts – 2001

---

compiled by David D. Dolton  
Project Officer

---

U.S. Fish and Wildlife Service  
Division of Migratory Bird Management  
PO Box 25486 DFC  
Denver, CO 80225-0486

LIBRARY  
US GEOLOGICAL SURVEY  
FORT COLLINS SCIENCE CENTER  
2150 CENTRE AVENUE BLDG C  
FORT COLLINS CO 80526-8118

February 2002