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

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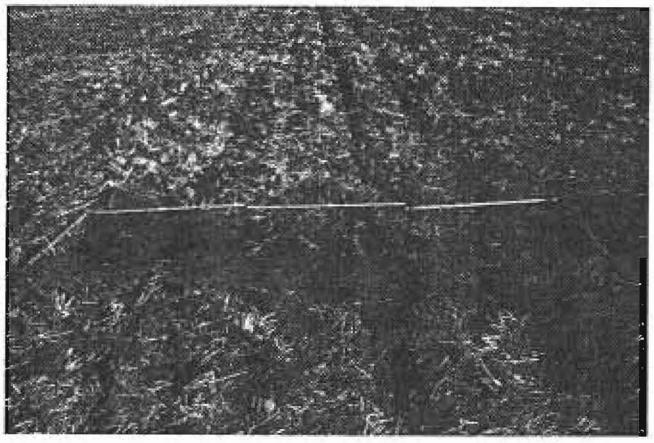
Virtually the entire Rocky Mountain population (RMP) of greater sandhill cranes uses the San Luis Valley (SLV) of Colorado as a spring stopover area. RMP cranes in the SLV depend on unharvested grain provided on Monte Vista National Wildlife Refuge, and on waste grain in privately owned fields. In recent years, however, fall tillage and irrigation of grain fields has become increasingly widespread in the SLV. These 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 grain fields and major wetland areas. We used Natural Resources Conservation Service aerial photographs to classify crop type (grain or other) in center-pivot agricultural fields during 1997, 1998, and 1999. In 1997, 944 of the 2,068 center-pivot fields in the SLV were planted to grain. Data on the number and distribution of grain fields during 1998 and 1999 currently is being classified and digitized into the GIS. In addition, a mail survey of grain producers (response rate = 47%) was conducted in 1998 to determine post-harvest practices and soil characteristics on grain fields. Preliminary analysis indicates untilled fields were rare; however, only about 50% of respondents indicated fields were irrigated after harvest in 1997. To date, we have estimated waste grain (barley and wheat) abundance in 37 fields (19 in 1998 and 18 in 1999). We intentionally



Left: Greater sandhill cranes and one whooping crane foraging in an unharvested grain field on Monte Vista NWR, San Luis Valley, CO. Unharvested grain fields provide preferred locations for large numbers of foraging cranes, particularly if located near the refuge or within 4 miles of the Rio Grande River. Right: Sampling frame (3-m^2) used to estimate waste grain abundance in a harvested grain field on private land in the San Luis Valley, Colorado. Although harvest and tillage reduce grain abundanee, fields such as these often provide between 0.5 and 3.0 kg/ha of grain that is readily available to cranes. *Photos by Murray Laubhan.*

sampled fields that represented the full range of post-harvest practices on private land. Two fields were damaged by hail and 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. In remaining fields ($n = 35$), 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). Based on survey responses and estimates of waste grain in individual fields, post-harvest treatment/soil combinations will be categorized into high, medium, and low categories of waste grain reduction, with corresponding estimates of waste grain abundance assigned to each category. This will enable mapping the abundance and distribution of waste grain across the entire SLV. 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 of the RMP cranes present during the stopover period during both 1998 and 1999. Time-activity budget data was also collected on cranes in fields, pastures, and wetlands throughout the 1998 stopover period. Preliminary analysis indicates that cranes spend 70->90% of time foraging in fields and pastures. In 1999, we collected 40 sandhill cranes between 23 February-25 March. Cranes were collected in grain fields ($n = 15$), potato fields ($n = 5$), and wetlands/irrigated pastures ($n = 20$). Preliminary analyses of esophogeal contents of 27 birds indicate that 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 2 years of a 3-year 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).

American Woodcock

American Woodcock Habitat Study in West Virginia

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Woodcock populations are declining range-wide, including West Virginia. This decline is thought to be due, in part, to a decrease in the amount of suitable habitat available. In West Virginia, woodcock habitat was surveyed statewide during the early 1970's. This provided us the opportunity to re-examine some of these sites for current suitability as woodcock habitat. However, statewide habitat surveys are time intensive and a means of inventorying habitat statewide at a landscape-level is necessary. West Virginia also has large areas of reclaimed strip-mined lands that may be suitable as woodcock habitat. Finally, other early successional wildlife species also are declining in West Virginia and in the Eastern U.S. Habitat management for woodcock could potentially benefit these species. Thus, we initiated the West Virginia woodcock habitat study which consisted of 3 parts, each under investigation by a graduate student at West Virginia University. Parts 2 and 3 have been completed (see previous WMGBR Program abstracts). The woodcock project began in January 1995 and has been funded by various sources. These include: 1995 Webless Migratory Game Bird Research Program of the US Fish and Wildlife Service, West Virginia Division of Natural Resources, National Fish and Wildlife Foundation, Wildlife Forever, Consolidation Coal Company, and the West Virginia Mining and Reclamation Association.

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