



CENTRAL PLATTE RIVER AND RAINWATER BASIN AREA: Integrated USGS Research

**Northern Prairie Wildlife Research Center
Jamestown, North Dakota**

NPWRC research on the Platte River provides the biological component of the broader USGS Platte River Place-Based Studies Program. Integration of studies under this program contribute information about natural resources to water users, managers, and various parties in assessing resource management issues of the Central Platte River.

The Central Platte River Valley (CPRV) and adjacent Rainwater Basin Area of Nebraska are major stopover areas for migratory sandhill and whooping cranes, waterfowl, and shorebirds during late winter and spring. Habitat along the Platte River also serves as an important corridor for migrant passerines and shorebirds and provides valuable habitat for breeding birds. Wet meadows and shallow wetland basins provide important invertebrate food resources for migrants. Intensive use of land and water has transformed both areas. Changes in river hydrology and structure of riparian habitats along the Platte and extensive loss of wetland habitat in the Rainwater Basin have brought into question the sustainability of migratory and resident birds and other biota. Developing successful strategies to sustain or rehabilitate the riparian ecosystem of the central Platte River requires an understanding of the linkages between hydrology, river morphology, biological communities, and ecosystem processes. NPWRC provides the biological component of USGS research in the Central Platte River and Rainwater Basin. This fact sheet summarizes current research and describes how it integrates with the broader USGS Platte River Program. Emphases now given priority are explicitly listed, as are the intended outcomes and usefulness of specific products. A complete list of publications that has emanated from the Center since 1965 has been developed.

CURRENT RESEARCH

STAGING ECOLOGY OF SANDHILL CRANES — Nearly the entire midcontinent population of sandhill cranes, about 500,000 birds, stages along the CPRV each spring. This project examines: 1) whether the role of the Platte Valley in meeting crane nutrient needs for migration and reproduction has changed over the past 20 years, and if so, factors responsible for change; 2) habitat requirements of the sandhill cranes during their spring stay in the CPRV; and 3) temporal distribution of subspecies and subpopulations of midcontinent sandhill cranes through-out the annual cycle. The first part of this study showed that cranes rely heavily on waste corn, which has declined by 50% in the area over the past 20 years; lipid storage by cranes has declined accordingly. In response to the need for managers to develop management strategies to deal with declining food and other factors, Center biologists are developing a mathematical model to estimate number of crane-use days that can be supported under various land use management strategies. Biologists also are collecting detailed information on factors affecting roost-site distribution of staging cranes. Satellite telemetry is being used to identify breeding areas, wintering grounds, and migration routes of the midcontinent population of sandhill cranes and identify genetic relationships within the population. Breeding ranges of subspecies and sub-populations are being determined based on morphology and genetic relationships. Knowledge of wintering and breeding ranges of the midcontinent population have been expanded with the aid of satellite telemetry and key spring and fall staging areas of various subpopulations have been identified. Satellite-telemetry work will continue through 2003. Information about crane movements can be viewed at <http://www.npwrc.usgs.gov/perm/cranemov/cranemov.htm>. Contact: gary_krapu@usgs.gov

PLATTE RIVER WET MEADOW ECOLOGY — The rich riverine, wet meadow, and grassland habitats of the Platte River flood plain in Nebraska provide critical resources for a variety of migratory birds. Management of the river and riparian zone are hampered by lack of quantitative data relating hydrology to the riparian communities. Two companion studies were conducted during 1999-2000. The first describes the riparian plant communities relative to hydrology and soils at 12 natural riparian sites along the central Platte River. The second study examines soil macroinvertebrate community relative to plant community, hydrology, and soils at those same sites. Hydrological patterns were measured at permanent wells established at each site. Results from this study will provide important baseline information on the species and diversity of plant and macroinvertebrate community in natural wet meadows. It will also provide the first data relating plant and invertebrate communities to water level fluctuations in

this habitat. The studies are conducted in cooperation with the Platte River Whooping Crane Maintenance Trust. *Contact: jane_austin@usgs.gov*

BREEDING BIRD COMMUNITIES — Three topics involving breeding bird populations in the Platte River Valley of Nebraska are being addressed. The first topic is how clearing of woody vegetation along the river affects breeding bird populations. Such clearing is done to improve habitat conditions for migrating sandhill cranes and whooping cranes. Fieldwork for that study was recently completed. A comparison of breeding bird populations during 1979-80 versus the present began in 2001. About 200 sites were surveyed for birds in that early period. Those sites were revisited to determine how bird communities may have changed during the intervening period. Also completed in 2001 was an evaluation of bird use of restored wet meadows in the Platte River Valley. Many conservation agencies are involved in such restorations, and their value to breeding birds needs to be determined. These studies are being conducted in cooperation with the Platte River Whooping Crane Maintenance Trust and others. *Contact: douglas_h_johnson@usgs.gov*

HABITAT USE, MOVEMENTS, AND SURVIVAL OF FEMALE NORTHERN PINTAILS — Loss and degradation of wetland habitat, increasing numbers of lesser snow geese, and disease (avian cholera) are problems facing waterfowl managers in Nebraska's Rainwater Basin Area. Managers of wetlands and migratory birds in this region are presented with a tremendous challenge to protect, restore, and manage an appropriate quantity, distribution, and diversity of wetlands to meet the physiological and behavioral needs of all migratory birds dependent upon the region. Evaluation of management activities is essential for proactive, adaptive management. This study is designed to estimate habitat use, movements, and survival rates of female northern pintails in Nebraska during spring migration. Ultimately, results from this study will be related to wetland management histories to guide wetland acquisition and management in the future. *Contact: robert_cox@usgs.gov*

SPRING STAGING ECOLOGY OF GEESE AND DUCKS — Increasing numbers of lesser snow geese using the Rainwater Basin and central Platte River Valley during the spring staging period may have increased competition for food resources among other waterfowl. This study examines diets, nutrient reserves, and time-activity budgets of lesser snow geese, greater white-fronted geese, and northern pintails during spring migration in Nebraska. Large increases in numbers of mid-continent lesser snow geese in Nebraska during spring may be negatively influencing the ability of white-fronted geese to store fat through depletion of food resources (primarily corn) or through competitive exclusion. *Contact: robert_cox@usgs.gov*

RELATED INFORMATION

DISSEMINATION OF INFORMATION — NPWRC serves an array of information about the Platte River on its home page, <http://www.npwrc.usgs.gov>. Information from earlier research includes various publications as well as "Breeding birds of the Platte River Valley of Nebraska" and "Platte River ecosystem resources and management", the report from research conducted in the 1970s. Findings from the on-going satellite-tracking study of sandhill cranes are updated periodically.

CONSULTATIONS — Scientists at NPWRC serve as consultants to the U.S. Fish and Wildlife Service, Central Flyway, and other government agencies and private organizations on migratory bird issues, primarily on issues relating to population and habitat issues for sandhill cranes, snow geese, and ducks. Scientists also have served as expert witnesses in several court cases and hearings involving the Platte River.

COLLABORATION & NETWORKING — Scientists at NPWRC work closely with the Platte River Whooping Crane Maintenance Trust, Nebraska Game and Parks Commission, and the U.S. Fish and Wildlife Service on research activities and issues relating to the Platte River. NPWRC also partners with USGS scientists in the Water Resources and Mapping Divisions of the Platte River Program and also collaborates with other federal, state, and private organizations.

FOR FURTHER INFORMATION:

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