Northeast Wyoming Wetland Complex

Regional Wetlands Conservation Plan

Photo – Joe Sandrini

Wyoming Bird Habitat Conservation Partnership

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INTRODUCTION

The Northeast Wyoming Wetland Complex borders the Bear Lodge Mountains in extreme northeast Wyoming. Major drainages include the Little Missouri River, Lower Belle Fourche River and Beaver Creek. Upland cover types consist of mixed and short grass prairie, sagebrush steppe, coniferous forests, and deciduous woodlands. Numerous waterfowl nest and migrate throughout the Complex. Nongame species such as bald eagles and mountain plovers also nest in the area and rely on wetlands as resting places along migration routes. Forty-five "species of greatest conservation need" (SGCN) use the wetland resources within the Complex (WGFD 2017). This plan describes the wetland resources of the NE WY Wetland Complex, and identifies objectives and strategies for their conservation.

Fig. 1. Priority Wetland Complexes of Wyoming.

GENERAL DESCRIPTION AND LAND USE

The NE WY Wetland Complex is located entirely within Crook County, Wyoming. The exterior boundaries encompass roughly 562,000 acres or about 31% of the county. Topography varies from mountains and foothills to rolling plains. Elevations include the lowest point in Wyoming at 3100 ft, and range to 5400 ft. Average annual precipitation is 15-17 inches (Taylor 2004).

Land ownership is predominantly private, including roughly 85% (477,632 acres) in small farm and ranch ownership. Isolated sections of State-owned land are scattered throughout the region. The Bureau of Land Management and U.S. Forest Service also administer small portions of the Complex. The dominant land use is rangeland for sheep and cattle grazing. Some areas are used for hay and crop production, and approximately 30% of the Complex is under irrigation.

Ecological Cover Types

The NE WY Wetland Complex area is nearly evenly divided between the Middle Rocky Mountain and High Plains ecoregions (Chapman et al. 2004, Fig. 2). The Middle Rocky Mountain Ecoregion is mostly open canopy coniferous forest dominated by ponderosa pine (*Pinus ponderosa*). Foothills and valleys are dominated by shrubs and grasslands. Shortgrass prairie is the prevalent cover type within the High Plains Ecoregion.

Hydrology

The majority of the NE WY Wetland Complex is drained by the Belle Fourche River and a major tributary, Beaver Creek. The Little Missouri River also drains a portion of the Complex. Annual discharges in the Belle Fourche River range from 38,668 acre-feet in dry years to 119,333 acre-feet during wet years. The average annual discharge is 74,127 acre-feet. Flow data are from gauging stations where the Belle Fourche River exits Wyoming (WWDC 2002). Roughly 85% of the water used for irrigation derives from surface flow. The remaining 15% comes from groundwater wells.

Wetland Resources

The NE WY Wetland Complex contains several hundred acres of riverine wetlands and over 400 natural wetland basins totaling approximately 4,500 acres. Manmade wetlands include several small lakes collectively totaling 900 acres and several thousand small ponds developed primarily for livestock use, which cover roughly 500 acres. In total approximately 6,727 acres of wetlands cover about 1.2% of the landscape (Table 1).

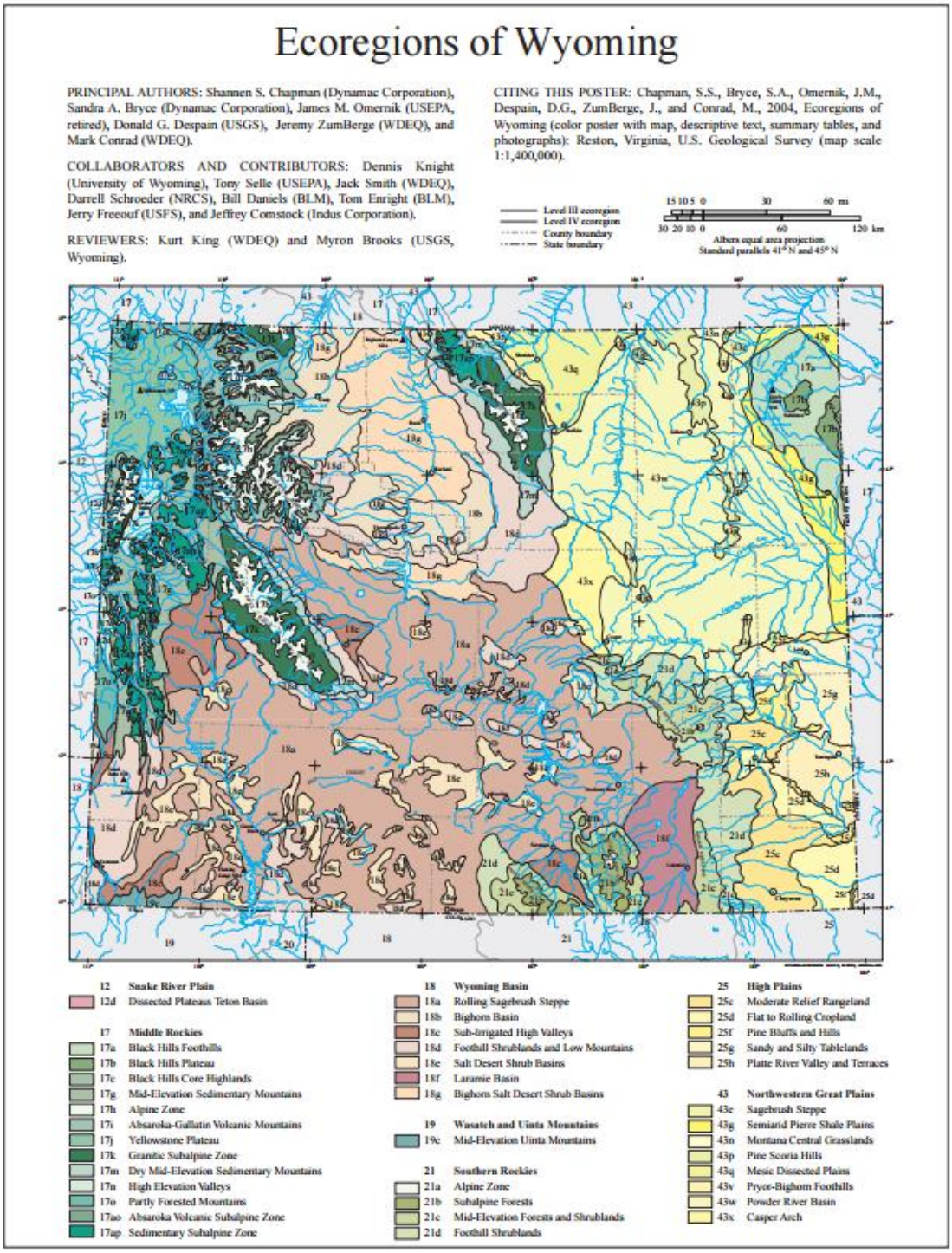

Fig. 2. Ecoregions of Wyoming – reproduced from Chapman et al. (2004).

Bentonite mining from 1947-1964 left hundreds of abandoned depressions and pits throughout the region, including many that developed wetland characteristics. During the 1980s through 1990s, the Wyoming Abandoned Mine Lands (AML) Program funded numerous projects to stabilize and reclaim pre-law bentonite workings. At the time, fill activities in isolated wetlands were regulated by the U.S. Army Corps of Engineers. In order to proceed with reclamation of hazardous and environmentally degraded sites, a pre- and post-reclamation evaluation was necessary to demonstrate no net loss of wetland values. Negative impacts were offset by retaining and enhancing a portion of the wetlands through recontouring, stabilization, and exclosure fencing. This was a collaborative effort among the AML Program administered through the WY Dept. of Environmental Quality, the WY Game & Fish Department, and the U.S. Fish & Wildlife Service. The wetland evaluation model used for pre- and post- reclamation site assessments was developed by Hayden-Wing et al. (1988). Under current interpretation of the Clean Water Act, isolated wetlands on abandoned bentonite workings would not have been considered federally jurisdictional and nearly all would have been filled and eliminated.

Many avian species depend on riverine and wetland habitats within this otherwise semi-arid region of Wyoming. The complex is comparatively isolated from major wetland areas and provides a linkage along migration paths. Protecting and enhancing these wetland resources will support migratory bird conservation and management, including local duck populations. To sustain desired waterfowl populations, conservation plans should focus on maintaining and increasing the wetland habitat base. Enhancing wetlands for waterfowl also provides habitat for many other wetland-dependent species including migratory shorebirds and waterbirds, aquatic mammals, amphibians, and fish.

Table 1. Wetland classifications (from Cowardin et al. 1979) and acreages within the Northeast Wyoming Wetland Complex.

NWI Type	Acres
Lacustrine	929
Palustrine Aquatic Bed	1,950
Palustrine Emergent	2,495
Palustrine Forested/Scrub-shrub	386
Palustrine Unconsolidated Bottom/Shore	173
Riverine	263
Manmade	531
Total	6727

Wetland Wildlife

Approximately 252 vertebrate species, including 157 bird, 56 mammal, 16 reptile and amphibian, and 23 fish species are known to breed within the exterior boundary of the NE WY Wetland Complex. The WY Game & Fish Dept. lists 20 of the breeding avian species as species of special concern. Based on historic data, the Belle Fourche breeding waterfowl count block was among the ten count blocks with highest densities of breeding ducks in Wyoming (> 10 pairs/mi^2). Fourteen species of ducks breed in the complex, the most abundant are teal species, American wigeon, gadwall, mallard and northern shoveler (Table 2).

Table 2. Average indicated breeding pairs of ducks in the Belle Fourche Count Block

Species	Average Indicated Breeding Pairs
Teal Species	2.64 Pairs
American Wigeon	1.85 Pairs
Mallard	1.52 Pairs
Northern Pintail	1.37 Pairs
Gadwall	1.35 Pairs
Northern Shoveler	1.34 Pairs
Lesser Scaup	0.54 Pairs
Redhead	0.20 Pairs
Wood Duck	0.09 Pairs
Canvasback	0.08 Pairs
Ruddy Duck	0.07 Pairs
Bufflehead	0.06 Pairs

The 2017 revision of the Statewide Wildlife Action Plan (SWAP) identified 45 species of greatest conservation need that use wetland resources within the NE WY Wetland Complex (Table 3 – WGFD 2017). The yellow-billed cuckoo, a federally-listed threatened species, is among these.

Table 3. Species of Greatest Conservation Need that use wetlands within the Northeast Wyoming Wetland Complex (WGFD 2017).

Birds	Mammals	Fish	Amphibians	Reptiles	Mollusks
American Bittern	Eastern Red Bat	Brassy Minnow	Great Plains Toad	Black Hills Red-Bellied Snake	Giant Floater
American White Pelican	Fringed Myotis	Finescale Dace	Northern Leopard Frog	Eastern Spiny Softshell	
Bald Eagle	Hayden's Shrew	Goldeye	Plains Spadefoot	Plains Gartersnake	
Black Billed Cuckoo	Least Weasel	Flathead Chub	Western Tiger Salamander	Plains Hog-nosed Snake	
Black-crowned Night Heron	Little Brown Myotis	Plains Minnow		Red-sided Gartersnake	
Black Tern	Long-eared Myotis	Western Silvery Minnow		Western Painted Turtle	
Common Loon	Long-legged Myotis				
Common Yellowthroat					
Forster's Tern					
Franklin's Gull					
Great Blue Heron					
MacGillivray's Warbler					
Mountain Plover					
Purple Martin					
Trumpeter Swan					
Virginia Rail					
Western Grebe					
White-faced Ibis					
Willow Flycatcher					
Yellow-billed Cuckoo					

THREATS TO WETLANDS

Grazing

Although wetlands and riparian habitats of the NE WY Wetland Complex are in comparatively good condition, uncontrolled grazing distribution has affected most wetlands and riparian habitats and will likely continue to be a degrading factor.

Climate Change/Drought/Water Use

Irrigation withdrawals and diversions along the Little Missouri and Belle Fourche rivers have greatly reduced riparian woodlands and wet meadows. This semi-arid region is especially vulnerable to impacts from changes in timing or quantity of precipitation. Climate change models predict annual precipitation will arrive sooner (Ojima and Lackett 2002) and this could lead to increased demand for irrigation later in the year. Potential for additional irrigation development appears limited, but could add further to riparian habitat losses.

CONSERVATION OBJECTIVES

The highest conservation priority within the NE Wyoming Wetland Complex is to maintain the existing intact habitat and improve its management. This will require extensive cooperation with the private landowner community.

The following objectives are recommended:

1) Ensure instream flows are maintained.
2) Improve management of livestock distribution and grazing practices.
3) Develop and rehabilitate small ponds associated with private livestock management operations.
4) Protect wetland and stream resources through voluntary conservation easements negotiated with willing landowners.

CONSERVATION STRATEGIES

Ensure Instream Flows are Maintained

- Work with local producers, the Wyoming Water Development Commission, and the Wyoming Game and Fish Department to acquire instream flow rights and ensure flow requirements are met and maintained. Flow requirements include not only minimum flows, but an annual flooding regime to form and maintain oxbow wetlands and to recharge the alluvial aquifer.
- Work with interested landowners to restore or create wetlands.

- Explore ways landowners can manage irrigation water creatively to sustain and increase wetland areas.
- Emphasize the importance of healthy riparian systems and their benefits to ranching/farming operations.

Improve Livestock Management

- Work with ranchers and local conservation districts to implement grazing best management practices. Provide outreach services promoting economic and ecological benefits of sustainable grazing practices.
- Provide financial and technical assistance to install fencing where needed to better manage livestock distribution within and around wetlands and riparian habitats.

Restore and Enhance Small Ponds

- Emphasize wetland types and characteristics that are important to sustain waterfowl and waterbirds on the landscape. Ideally, ponds should be no more than four feet deep, with shallow sloping sides. A deeper pond can be designed with these characteristics over large areas of the basin. The shoreline should be irregular and the depth irregular throughout.
- Develop partnerships with landowners to improve small wetlands and upland cover for nesting waterfowl.
- Seek external funding sources to support wetland conservation projects.

Protect Wetlands through Voluntary Conservation Easements

- Maintain working agricultural landscapes – keep farmers and ranchers on the land.
- Promote voluntary conservation easements, including easements funded through the NRCS's Agricultural Conservation Easement Program (ACEP), to protect wetlands while maintaining agricultural use of the land.

CONSERVATION PARTNERS

Key partners working within the region encompassing the NE WY Wetland Complex include: Northern Great Plains Joint Venture (NGPJV), USFWS Partners for Fish and Wildlife, Ducks Unlimited, American Bird Conservancy, The Nature Conservancy, Bird Conservancy of The Rockies, Audubon Rockies, World Wildlife Fund, The Bureau of Land Management, Crook County Natural Resource District, The Natural Resource Conservation Service, and The Wyoming Game and Fish Department. The majority of

the land is private, and a cooperative relationship with landowners is essential to achieve conservation objectives.

The Partners for Fish and Wildlife (PFW) program has identified focus areas in which the program's resources are directed. The Black Hills Mixed-Grass Focus Area (PFW 2017) covers most of Crook and Weston counties and includes all of the NE WY Complex. PFW projects within this focal area include rehabilitation and protection of riparian areas as well as water developments. Rehabilitation and protection of riparian areas is accomplished primarily through livestock grazing management and fencing. Water developments are primarily multi-purpose ponds that have wetland characteristics incorporated into the design.

Additional human resources will be key to successfully carry out wetland and riparian conservation projects in NE Wyoming. In addition to working with landowners, specific expertise is needed to identify project opportunities, prepare project proposals, secure funds, design and engineer projects, secure necessary permits, and administer projects. Cooperative funding and expertise sharing among agencies and NGOs will be pursued to meet these human resource needs.

Bird Conservancy of the Rockies is establishing a partner biologist position stationed in Gillette to increase capacity for private lands conservation delivery. Audubon Rockies and World Wildlife Fund are both implementing stewardship ranching programs within the region to help livestock producers succeed, while providing improved wildlife habitat.

The Northern Great Plains Joint Venture, through its Technical Committee and Conservation Delivery Network, are developing decision support tools that will tie wetland and upland habitat objectives to population objectives for waterfowl and other priority species. The NGPJV will work with the WY Bird Habitat Conservation Partnership to develop financial and technical assistance needed to implement the strategies of this NE Wyoming Wetlands Conservation Plan.

NRCS Farm Bill programs such as CRP, ACEP, EQIP, and WHIP will likely be the principal sources of funding for improvements in riparian habitat management. Ducks Unlimited, NRCS, and PFW utilize these and other sources to fund wetland protection and enhancement projects. Fee title acquisition is likely not a viable strategy. Crook County operates under a Land Use Plan adopted in 2014 (Crook County 2014), which emphasizes maintaining ranching and farming as fundamental to the economy and

culture of the area. Given much of the priority area is private land, education, outreach, and cooperative partnerships with landowners will be key strategies.

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