Cropped Wetlands and Wildlife

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Introduction

Wetlands are areas where water covers the soil or is present at or near the surface of the soil for at least part of the year. The saturated conditions in wetlands favor the growth of specially adapted plants, called hydrophytes, and the development of anaerobic (low oxygen) soils, called hydric soils. Historically, wetlands were not widely recognized as valuable or appreciated, and they were readily drained for agriculture and other land uses. In colonial times, there were 215 million acres of functioning wetlands in the continental United States. Today, less than half (98 million acres) remain. About 87 percent of wetland losses have resulted from agricultural activities. More recently, however, the enormous importance of wetlands has been recognized. Wetlands provide many ecological, social, and economic benefits such as wildlife habitat, flood control, and hunting and fishing opportunities.

Some wetlands are wet only during parts of the year, such as the spring or fall, and may be dry during the summer. These are known as seasonal or temporary wetlands. Many temporary wetlands occur in cultivated fields and are tilled and planted when conditions allow. These cropped wetlands may be considered nuisance spots by agricultural producers, but continue to provide significant ecological and economic benefits. Ecological benefits are derived from these sites not because they are cropped, but from their ability to continue to provide important wetland functions. In most years, these wetlands are dry enough to farm. Their soils hold moisture longer than well-drained soils and are extremely productive in dry seasons. This leaflet focuses on cropped wetlands, where they are found, and the particular benefits they provide to wildlife. A few economic benefits of cropped wetlands are also discussed. Landowner assistance programs to help maintain or restore cropped wetlands are presented.

NRCS

Cropped wetlands may retain wildlife value.

Distribution

Cropped wetlands are most prevalent in four distinct regions in North America. They are the Prairie Pothole Region, Nebraska's Rainwater Basin and Sandhills, the Playa Lakes Region, and the Mississippi Alluvial Valley.

Prairie Pothole Region

The Prairie Pothole Region is about 300,000 square miles in size and covers parts of South and North Dakota, Minnesota, Montana, Iowa, Manitoba, Saskatchewan, and Alberta. The region is characterized by an abundance of small wetlands situated in shallow depressions that were created by glaciers several thousand years ago. The region supports more than 200 species of migratory birds and produces more than 50 percent of the ducks in North America, even though it accounts for only 10 percent of the entire North American duck breeding area. Many of the potholes have been drained to produce agricultural crops. The region once contained 20 million acres of wetlands, of which 5.3 million acres remain. More than 78 percent of the remaining wetlands are smaller than 1 acre in size.

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Cropped wetland in the Prairie Pothole Region

Rainwater Basin and Sandhills
The Rainwater Basin and Sandhills cover 4,200 square miles south of the Platte River in south central Nebraska and features wetlands in depressions underlain by clay. Large numbers of waterfowl use this area during spring migration to rest and prepare for the long trip northward. Some 2.5 million ducks move through this area each spring. Approximately 90 percent of the wetlands in this region have been drained and irrigated for corn production.

Playa Lakes Region
The playa lakes are shallow, circular depressions that are seasonally or semi-permanently flooded by rain water and snow melt in the Texas panhandle, western Oklahoma, eastern New Mexico, southwestern Kansas, and southeastern Colorado. The region provides extremely valuable wintering grounds for migratory birds. During winters with high precipitation, the playas are used by up to one million ducks, 500,000 geese, and more than 350,000 sandhill cranes. At least 70 percent of playas 10 acres or larger have been hydrologically altered by irrigation development.

Mississippi Alluvial Valley
The Mississippi Alluvial Valley covers portions of southern Illinois, southwestern Missouri, western Tennessee, western Kentucky, eastern Arkansas, western Mississippi, and eastern Louisiana. Here, more than 85 percent of the original 24 million acres of seasonally flooded bottomland hardwood forest have been converted to cropland for soybean, rice, corn, and cotton production. Cropped wetlands in this area provide wintering grounds to 1.5 million mallard ducks (almost 70 percent of all mallards in North America) and numerous other water birds.

Wildlife benefits

Small wetlands, many of which are cropped, play an important role in the life cycles of many waterfowl. In the northern breeding grounds, cropped wetlands are typically small basins that thaw earlier than other wetlands and hold water during the early spring, which provides migrating birds with food and breeding habitat not found on semi-permanent and permanent wetland types. Studies show that temporary and seasonal wetlands, including cropped wetlands, comprise about 35 percent of the wetland area in North Dakota, but support 57 percent of the breeding waterfowl population. The loss of these wetlands would likely translate into a 20 to 60 percent loss of production for mallard, gadwall, blue-winged teal, and pintail populations.

During their migratory journey northward, dabbling ducks stop to rest and feed at various wetlands along their route. Dabbling ducks (those that ordinarily feed in shallow water on or near the surface by submerging part of their body, leaving their tail sticking straight up) include mallards, blue-winged teal, gadwall, and northern pintail. The long migration requires large amounts of energy, and the ducks must accumulate fat and nutrient reserves for the upcoming egg-laying season. Cropped wetlands provide nutrient-rich water (snow-melt run-off, spring rain), as well as protein-rich invertebrates (fairy shrimp, midge larvae, snails, etc.), seeds, and tubers, which satisfy the high-energy demand of the ducks during this time. Invertebrates are more abundant and more easily obtained in temporary wetlands than in deeper, more permanent wetlands.

A little history

The Wetland Conservation or Swampbuster provision of the 1985 Farm Bill, as amended, requires agricultural producers to protect the wetlands on the farms they own or operate if they want to remain eligible for USDA farm program benefits. Wetlands that were drained and cropped before December 23, 1985, but no longer exhibit the characteristics of a wetland are called prior converted croplands. Wetlands that were drained and cropped before December 23, 1985, but that continue to exhibit the characteristics of a wetland are called farmed wetlands. Farmed wetlands are subject to the Swampbuster provision; prior converted croplands are not.

U.S. Fish and Wildlife Service

Small cropped wetlands provide space for mallard ducks to form pair bonds in isolation from other ducks.

Cropped wetlands also offer crucial habitat for waterfowl pair formation in the early spring. A 0.1-acre wetland will lead to the production of as many ducks as a 1-acre wetland because waterfowl form mating pairs as a direct result of territorial behavior, which is accommodated by small isolated wetlands, rather than when crowded on large wetland bodies. Thus, 100 1-acre wetlands are many times more valuable than a single 100-acre wetland. The area of wetlands in the Prairie Pothole Region that are less than a quarter acre in size totals over 167,000 acres. These small wetlands may seem unimportant to some, but collectively represent significant waterfowl courtship habitat. Studies in the Prairie Pothole Region have also shown that killdeer, marbled godwits, and savannah sparrows achieve higher breeding densities on temporary and seasonal wetlands than on any other wetland type.

Many cropped wetlands can be farmed in most years, although spring tillage and planting operations may be delayed. Plowing and disking may affect the availability of invertebrates and vegetation, but birds still benefit from their presence on the landscape. Cropped wetlands still offer more biological value than drained wetlands. During drought years, these areas are usually not used by waterfowl and other migratory birds, and may provide farmers with the only productive areas on the farm because of the retained soil moisture.

Other benefits

In addition to serving as feeding and breeding grounds for migratory birds, cropped wetlands provide benefits to farmers, including protecting and improving water quality, storing floodwaters, and allowing for ground water recharge, which contributes to base flow to surface water systems during dry periods.

Cropped wetlands protect and improve water quality by removing silt and excess nutrients from field runoff. The low-oxygen wetland soils transform excess nitrogen into a harmless gas that enters the atmosphere. Studies show that a 1-acre wetland can effectively purify the nitrate runoff from approximately 100 acres of cropland. Excess phosphorus and other pollutants are stored in the soil.

Wetlands, including those that are cropped, possess valuable flood control properties. They act like natural sponges that absorb surface water, rain, snowmelt, groundwater, and floodwaters, reducing flood frequency and peak flood levels on adjacent and down-

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Aerial view of cropland interspersed with wetlands in South Dakota

stream land. Over time, retained floodwaters are slowly released back into streams, rivers, the atmosphere, or groundwater. This process allows for ground water recharge, which helps maintain stream flows during dry periods. A study in North Dakota found that small wetlands could retain 72 percent of the runoff from a 2-year storm and 41 percent of that from a 100-year flood, thus providing substantial benefits at virtually no cost. Even a small, 1-acre wetland can hold 330,000 gallons of water that is prevented from going downstream and causing flood damage.

Restoration of cropped wetlands

While cropped wetlands retain valuable wildlife benefits, these benefits may be enhanced by restoring the wetlands to their original state. If these wetlands are left uncropped and drainage ditches or tiles are plugged when necessary, natural wetland vegetation will return. Once restored, the wetlands established will likely have greater ecological and, in some cases, economic values. A number of voluntary assistance programs (table 1) are available to landowners wishing to restore or preserve wetlands on their property.

Table 1 Technical and finanacial assistance to restore or preserve wetlands

Program	Land eligibility	Type of assistance	Contact
Wetlands Reserve Program (WRP)	Previously degraded wetland and adjacent upland buffer, with limited amount of natural wetland and existing or restorable riparian areas	75% cost-share for wetland restoration under 10-year contracts and 30-year easements, and 100% cost-share on restoration under permanent easements. Payments for purchase of 30-year or permanent conservation easements	NRCS state or local office
Conservation Reserve Program (CRP)	Highly erodible land, wetland, and certain other lands with cropping history, streamside areas in pasture land	50% cost-share for establishing permanent cover and conservation practices, and annual rental payments for land enrolled in 10- to 15-year contracts. Additional financial incentives for some practices	NRCS or FSA state or local office
Farmable Wetlands Program	Farmable wetlands and associated buffers	50% cost-share for establishing permanent cover and conservation practices, and annual rental payments for land enrolled in 10- to 15-year contracts. Additional financial incentives for some practices	NRCS or FSA state or local office
U. S. Fish and Wildlife Service Easements	Areas that enable producers to continue to crop wetland basins while preventing additional drainage	U.S. Fish and Wildlife Service purchases easements from willing landowners	U.S. Fish and Wildlife Service local office
Partners for Fish and Wildlife Program (PFW)	Most degraded fish and/or wildlife habitat	Up to 100% financial and technical assistance to restore wildlife habitat under a minimum 10-year cooperative agreement	U.S. Fish and Wildlife Service local office

References

On-line sources

Chesapeak Bay Program Office. 2003. Wetlands: General Info. *http://www.chesapeakbay.net/wetlds1.htm* [Accessed 14 June 2004].

Iowa State University College of Agriculture. n.d. IWRACP About Wetlands. *http://www.ag.iastate.edu/centers/iawetlands/About.html* [Accessed 24 November 2004].

U.S. Army Corps of Engineers Sacramento District. 2000. Wetlands and Agriculture: Section 404 of the Clean Water Act and Swampbuster in the Food Security Act. *http://www.spk.usace.army.mil/cespk-co/regulatory/SB.html* [Accessed 9 June 2004].

U.S. Environmental Protection Agency. 2003. Wetlands and People. *http://www.epa.gov/owow/wetlands/vital/people.html* [Accessed 23 November 2004].

U.S. Environmental Protection Agency. 2003. What are wetlands? *http://www.epa.gov/owow/wetlands/vital/what.html* [Accessed 23 November 2004].

U.S. Environmental Protection Agency. 2002. Functions and Values of Wetlands. *http://www.epa.gov/owow/wetlands/facts/fun_val.pdf*.

U.S. Geological Survey, Northern Prairie Wildlife Research Center. 1994. Wildlife Habitat Management on the Northern Prairie Landscape. *http://www.npwrc.usgs.gov/resource/habitat/whabmgt/whabmgt.htm* [Accessed 24 November 2004].

Printed sources

————. 1996. Oases for wildlife: small and farmed wetlands. National Audubon Society, Washington, DC.

Anderson, J.K., R.W. Spain, L.D. McKinney, and A. Sansom. 2000. Wetlands assistance guide to landowners. Texas Parks and Wildlife, Austin, TX.

Berry, C.R., Jr. and D.G. Buechler. 1993. Wetlands in the Northern Great Plains: A guide to values and management. U.S. Fish and Wildlife Service and the Agricultural Extension Service, South Dakota State University, Brookings, SD.

Kantrud, H.A., and R.E. Stewart. 1984. Ecological distribution and crude density of breeding birds on prairie wetlands. Journal of Wildlife Management 48:426-437.

Kantrud, H.A., and R.E. Stewart. 1977. Use of natural basin wetlands by breeding waterfowl in North Dakota. Journal of Wildlife Management 41:243-253.

Krapu, G.L., and G.A. Swanson. 1975. Some nutritional aspects of reproduction in prairie nesting pintails. Journal of Wildlife Management 39:156-162.

Steward, R.E., and H.A. Kantrud. 1973. Ecological distribution of breeding waterfowl population in North Dakota. Journal of Wildlife Management 37:39-50.

Steward, R.E., and H.A. Kantrud. 1974. Breeding waterfowl populations in the Prairie Pothole Region of North Dakota. Condor 76(1):70-79.

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