



SOUTH DAKOTA PRAIRIE WETLANDS

What Are Wetlands?

Wetlands are commonly referred to as marshes, sloughs, swamps, bogs, and potholes. They are transitional lands where the water table is usually near the surface or the land is covered by shallow water. Many wetlands are actually dry for long periods of the year. Wetlands must have one or more of the following qualities: (1) at least periodically, the land supports mostly water loving plants (hydrophytes); (2) at times the soil is so wet that it lacks oxygen; and (3) the soil is saturated with water or covered by shallow water at some time during the growing season of each year (Cowardin et al., 1979).

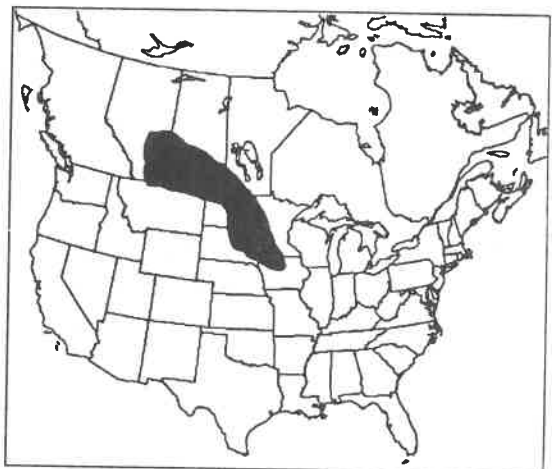
The five major non-technical groupings of wetlands based on Cowardin's system are listed below (from the National Wetlands Inventory Manual).

Deep Water Habitats = Aquatic Systems

- ↑ 1. open ocean and associated coastline
- 2. salt marshes and brackish tidal water
- 3. rivers, creeks and streams
- 4. lakes and deep ponds
- ↓ 5. shallow ponds, marshes, swamps and sloughs

Upland Habitats = Terrestrial Systems

In a broad sense, wetlands in South Dakota are stock dams, dugouts, marshes, ponds, rivers and lakes. These areas may hold water continuously or may be flooded only for short periods. The wetlands most valuable to wildlife in South Dakota are found in what is called the "Prairie Pothole Region."



Prairie Pothole Region of N. America

Where are They Found?

Most South Dakota wetlands were created by receding and melting glaciers and are located within a geographic area known as the Prairie Pothole Region (PPR) (See map). The PPR in South Dakota is located north and east of the Missouri River. Some important *wetland complexes* in South

Dakota are the Lake Thompson watershed, Sand Lake-Columbia marshes and Stratford slough. The Lake Thompson watershed is located in portions of Clark, Hamlin, Kingsbury, Miner and Lake counties. Sand Lake-Columbia marshes and Stratford slough are located along the James River in Brown and Spink counties. The Glacial Lakes, James River lowlands, and Missouri River Coteau are also important wetland resources.

Status Report - How Many Wetlands are Left?



South Dakota once contained approximately 2.7 million acres of wetlands. Because of agricultural, rural and urban development, by 1980 at least 700,000 wetland acres (35%) had been converted to other uses. Eighty percent of these converted wetlands lie east of the James River. Recent estimates of the remaining South Dakota wetlands range between 1.3 million acres (Wittmier, 1982) and 1.7 million acres (Dahl, 1990). More precise figures will be available in the future from the National Wetlands Inventory work by SDSU in Brookings and the Soil Conservation Service Inventory. Approximately 50% of these remaining wetlands are protected by various state and federal protection programs. Estimates are that 20,000 acres of unprotected wetlands are lost from the Prairie Pothole Region each year (Dahl, 1990).

Why Are They Important?

Water Balance - Prairie Pothole wetlands are important to local and regional water cycles. Prairie wetlands can drain and/or *recharge ground water* depending on the specific situation. The ground water recharged by wetlands may end up in surface waters or may replenish soil moisture. The precise effect of Prairie wetlands on the water balance of South Dakota has yet to be calculated.

Flood Control - Loss of wetlands can increase flooding. In North Dakota, wetland drainage is thought to have contributed to the doubling of the number of floods on the Red River of the North since 1970. Over the last 30 to 40 years, increased river flows have been recorded on tributaries to the Red River of the North. These increases are closely related to wetland drainage in the river basins. A study of the Devil's Lake basin in North Dakota found that small wetlands were very important for controlling runoff. Wetland drainage is not the only variable contributing to flooding, but it is one variable that people can control.

Wildlife Production - The Prairie Pothole Region contains the most critical waterfowl breeding habitat remaining in North America. The PPR accounts for only 10 percent of the waterfowl breeding habitat of the continent. However, of the 10 to 12 million waterfowl nesting in the lower 48 states, almost 70% reproduce in this region of the Midwest. South Dakota often ranks first in duck production within the lower 48 states. Prairie Pothole wetlands are the most productive wildlife habitat found in South Dakota, providing cover and nesting sites for hundreds of game and non-game wildlife species.

In North Dakota, approximately 138 species of birds are known to use Prairie Pothole wetlands. In 1967, a breeding bird survey was conducted by North Dakota biologists in Prairie wetlands. The average population density was 337 pairs of birds per square kilometer (about 247 acres).

Endangered Species Habitat - Most of the endangered species listed in the United States are dependent on wetlands for their survival. Of the ten federally-listed species in South Dakota, eight use wetlands some time during their life. The **Pallid Sturgeon, Bald Eagle, Interior Least Tern, and Piping Plover** depend on the more permanent wetlands of the Missouri River. **Bald Eagles and Peregrine Falcons** hunt the vast **Prairie Potholes** in search of waterfowl. **Whooping Cranes** use South Dakota stock dams, seasonal and semi-permanent marshes to provide food and cover during their journeys between wintering grounds in Texas and breeding territories in northwest Canada. The extremely rare **Eskimo Curlew** is highly dependent on temporary wet meadows for protein-rich invertebrates. An endangered plant, the **Western Prairie Fringed Orchid**, survives exclusively in seasonally wet, native **Prairie wetlands**.

Recreation - Increasingly, wetlands are used for hunting, fishing, trapping, boating, swimming, bird and mammal watching, photography and nature study. Wetland habitat in South Dakota, during 1982, generated about \$24 million spent by hunters, resulting in economic benefits for the business community. Records from 1980 through 1985 indicate that South Dakota trappers and hunters earned \$9.2 million from fur sales. Most furs are taken in or near prairie wetlands. During 1982 in South Dakota, the benefits received by resident hunters in excess of costs for all hunting in wetland habitats was \$34 million. This amount compares favorably to the benefits that could be gained from agricultural use of reclaimed wetlands.

Animal Forage - Wetlands provide North and South Dakota farmers and ranchers with supplemental forage that is especially valuable during times of drought. In North Dakota, wetland hay sold for an average price of \$30 per ton during 1980. An average yield of 4 to 8 tons per acre of wetland hay would gross between \$120 and \$240 per acre. South Dakota studies also show that seasonal wetlands are capable of producing good quality and

quantity of forage. This type of agricultural use is more compatible with other wetland functions than is the artificial draining of wetlands to plant annual crops.

Sediment and Nutrient Regulation Wetlands function as sediment traps and regulators of nutrient loss. Preservation of wetlands reduces sediment loss. Nutrients, primarily nitrogen and phosphorous, are absorbed and held within wetlands.

Waste water treatment - By processing nutrients, suspended matter, and other pollutants, wetlands purify water. Natural and man-made wetlands are effective low-tech waste water treatment facilities. If properly maintained and not overloaded,



the marsh ecosystem can effectively, and at relatively low cost, rehabilitate sewage water.

Conservation Measures

The importance of prairie and other wetlands has been recognized by federal, state and local governments for many years. Both public and private interests have wetland protection programs.

FEDERAL PROGRAMS:

Department of Interior Small Wetland Acquisition Program - One of the best known and most successful wetland protection programs is the Small Wetlands Program of the U. S. Fish and Wildlife Service (Service). This program uses both fee title acquisition and easement

acquisition. Fee title acquisition is funded through the annual sales of "duck stamps," which are required of all US. waterfowl hunters aged 16 years or older. Acres acquired in fee title by the Service are called Waterfowl Production Areas (WPA). WPA's include wetlands and adjoining dry lands that provide secure habitat for waterfowl. The WPA acquisitions are usually permanent or deep water wetlands. The surrounding dry lands are normally managed to provide high quality nesting cover. WPA's are usually fenced, but generally are open to the public for hunting and other compatible recreational uses. WPA's have always been purchased only from willing sellers.

Most wetlands protected under the Small Wetlands Program are under easements. Easement purchase occurs primarily in North Dakota, South Dakota, Minnesota, Iowa, Nebraska and Montana. Wetlands protected by easement remain the property of the original landowner who agrees not to drain, burn, or fill the wetlands. If the wetland dries out, the landowner may cut hay, plant crops, or undertake other normal agricultural operations within the wetland basin. The landowner also has complete control of access for hunting, trapping, or other activities. Easements purchased by the Service are permanent restrictions on the property. They are similar to power line or highway easements in this respect. Easement wetlands are often shallow and more seasonal than the WPA wetlands. Often the Service acquires easement wetlands near WPA's to form a "wetland complex" designed to increase waterfowl production.

The Service has established more than 20 Wetland Management district offices in the Prairie Pothole states. South Dakota's district offices are in Columbia, Waubay, Madison, Huron, and Lake Andes. Wetland Acquisition offices are located in Aberdeen and Huron. People in these offices can provide more details on wetland acquisition programs. For addresses see the *Outreach* section below.

Department of Agricultural Water Bank Program - The Agricultural Stabilization and Conservation Service (ASCS) and the Soil Conservation Service (SCS) manage the Federal Water Bank Program for landowners and farm operators who enter into a 10-year agreement for the protection of migratory waterfowl nesting and breeding areas. During this period, the landowner agrees not to drain, burn, or fill the enrolled wetlands or to disturb cover on adjoining protected uplands. The Water Bank Program began in 1972. Participation in the program was heaviest in the Prairie Pothole Region, with North Dakota, South Dakota, and Minnesota having the most contracts. Limited funding makes the program's future uncertain. The local ASCS or SCS office can provide more current information on the Water Bank Program.

PRIVATE EFFORTS:

Conservation organizations, such as The Nature Conservancy, National Audubon Society, Ducks Unlimited and local organizations have wetland preservation and economic incentive programs. In South Dakota, Ducks Unlimited gives grants for the acquisition of wetland habitat. The Nature Conservancy also purchases land in South Dakota. For addresses refer to the **DIRECTORY** chapter.

Regulations

Most wetlands are protected by federal, state or local laws. Modification of wetlands, whether for drainage or enhancement, may require permits. The 1985 and 1990 Farm Bills also carry pertinent "Swampbuster" regulations that apply to the preservation of wetlands. Information on ways to protect wetlands may be obtained by contacting your state Game, Fish and Parks Department, Soil Conservation Service, ASCS, or Extension Service office. If you live near a Service Wetlands Management District, Wetland Acquisition or National Wildlife Refuge, they too can supply information.

Glossary

- Brackish Wetlands** - Wetlands with some salt in the water but not as salty as the ocean.
- Emergent** - Erect, rooted, herbaceous flowering plants that may be temporarily to permanently flooded at the base but do not tolerate prolonged flooding of the entire plant (ex: bulrushes, *Scirpus spp.*).
- Ground water** - Water found underground in porous rock layers and soils.
- Hydrophyte** - Any plant growing in water or in a soil that is at least periodically deficient in oxygen as a result of excessive water content.
- Persistent Emergent** - Emergent hydrophytes that normally remain standing at least until the beginning of the next growing season (ex: cattails, *Typha spp.* or bulrushes, *Scirpus spp.*).
- Recharge** - Water that replenishes or refills the supply of ground water underground.
- Terrestrial** - Dry land as opposed to water habitats.
- Tidal Wetlands** - Any area subject to periodic flooding by ocean tides.
- Wetland Complex** - The association of various types of wetlands to form complexes that provide all the requirements for breeding waterfowl. This variety in size, water permanence and water quality provide for spring migration, essential foods, courtship sites, nesting, brood marshes, molting, staging and fall migration. The complex provides for the life requirements of all species of ducks including diving ducks (ex: redheads and canvasbacks) and puddle ducks (ex: mallards, pintails, blue-winged teal).

References

- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the U.S. U.S. Fish and Wildlife Service. FWS/OBS-79/31. 103 pp.
- Dahl, T.E.. 1990. Wetlands Losses in the U.S. 1780's to 1980's. U.S. Dept. of Interior, Fish and Wildlife Service, Washington, D.C.
- Dept. of Interior 1988. The Impact of Fed. Programs on Wetlands. Vol. I: Lower Mississippi Alluvial Plain and the Prairie Pothole Region. A Report to Congress by the Secretary of Interior. 114 pp.
- Hubbard, D. E. 1981. The Hydrology of Prairie Potholes: A Selected Annotated Bibliography. S.D. Cooperative Wildlife Research Unit, South Dakota State U., Brookings, S.D. 41 pp.
- Sather, J.H., and R.D. Smith 1984. An Overview of Major Wetland Functions and Values. U. S. Fish and Wildlife Service. FWS/OBS-84/18. 68 pp.
- South Dakota Department of Game, Fish and Parks 1987. Wetlands Addendum to the South Dakota Comprehensive Outdoor Recreation Plan. 27 pp.
- South Dakota Dept. of Game, Fish and Parks 1991. Lake Thompson Watershed Project Plan. 32 pp.
- South Dakota Wetlands Coalition 1987. Prairie Wetland Values, Incentive Programs, Fact Sheet, and Selected Readings (Loose Leaf Folder).
- The Conservation Foundation 1988. Protecting America's Wetlands: An Action Agenda. The final report of the National Wetlands Policy Forum. 67 pp.
- U.S. Prairie Pothole Joint Venture 1989. Lake Thompson Watershed Project, S. D. U.S. Prairie Pothole Joint Venture (A Component of the N. Am. Waterfowl Management Plan.) 6 pp.
- U.S. Fish and Wildlife Service 1986. North American Waterfowl Management Plan. Prepared in Cooperation with the Canadian Wildlife Service. 31 pp.
- Wetlands Inventory Manual. National Wetlands Inventory Group, 9720 Executive Center Dr., St. Petersburg, FL 33702.
- Wittmier, H. 1982. Wetlands: Status and Acquisition in S.D., S.D. Bird Notes Vol. 34(2): pp. 33-38.

Selected Wetland Resources for Teachers

See **DIRECTORY Chapter for South Dakota natural areas for field trips and addresses for federal, state and private organizations.**

Agriculture, Wetlands and Wildlife Video Series, 1990. NDSU Extension Off., Fargo ND, 58105
America's Wetlands. Video# 324-83 by U.S. Fish and Wildlife Service, 28 min., grades 6-12.
America's Endangered Wetlands, 1990. U.S. Fish and Wildlife Pamphlet #259-713.
Aquatic Wild Curriculum Guide, SD Dept. of Game, Fish and Parks, grades K-12.
Conserving America: The Wetlands., Video 1992. National Wildlife Federation # 58827.
Energy Flow in a Wetland. Board game by Siesnick for Nat. Science Teach. Assoc., 1983, grades 4-6.
Field Manual for Water Quality Monitoring by Stapp, 2050 Delaware, Ann Arbor, MI 48103, gr. 5-12.
Marshwalker Video. Ducks Unlimited, grades 6-12
Pond and Brook, A Guide to Nature by M. Caduto, Prentice Hall, Englewood Cliffs, NJ, grades 4-12.
Wading into Wetlands Activity guide, 1988 Nature Scope Series from Nat. Wildl. Fed., grades K-6.

Outreach (Resource Agency Personnel)

S. D. Dept. Game, Fish and Parks, 523 East Capitol Avenue, Pierre, S.D. Phone 773-3485
S.D.S.U., P.O. Box 2206, Wildlife and Fisheries Dept., Brookings, S.D. ,Dr. Daniel Hubbard 688-6121.
U. S. Fish and Wildlife Service, Fish and Wildlife Enhancement Division, 420 South Garfield Avenue, Suite 400, Pierre, South Dakota, Nell McPhillips 224-8693.
U. S. Fish and Wildlife Service,
Lake Andes NWR, RR#1, Box 77, Lake Andes, S.D. Phone: 487-7603.
Madison WMD, P.O. 48, Madison, S.D. Phone: 256-2974.
Sand Lake NWR, RR 1, Box 25, Columbia, S.D. Phone: 885-6320.
Waubay NWR, RR 1, Box 79, Waubay, S.D. Phone: 947-4521.
Wetland Acquisition Office, Rm. 109, Fed.Bldg., Aberdeen, S. D. Phone: 226-7587.
Wetland Acquisition Office, Rm. 113, Fed. Bldg., Huron, South Dakota.

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