

the economic, social and environmental Value of Wetlands

What are Wetlands?

Quite simply, wetlands are lands that are wet. They are low lying areas where enough water collects to support water-loving plants. Wetlands include the area covered by water and the adjacent area of lush water-loving plants - the **riparian area**. Wetlands are generally shallower than lakes, but both include the riparian area that separates them from the surrounding drier uplands. Wetlands are often called sloughs, ponds or potholes, but also include bogs and muskeg areas. Wetlands have at least one of the following attributes:

- ◆ The area supports water-loving plants.
- ◆ The area is saturated with water or covered by shallow water at least some time during the growing season of most years, creating perpetually wet soils.

Wetlands vary in shape, size and permanence. In most cases wetlands are defined by how long the water lasts:

- ◆ **Temporary wetlands** are very shallow and are often only flooded for a short time after snowmelt or heavy rainfall.
- ◆ **Semi-permanent wetlands** are deeper and hold water through most years, but may dry out after several years of drought.
- ◆ **Permanent wetlands** are the largest, the deepest and are usually filled with water year round.

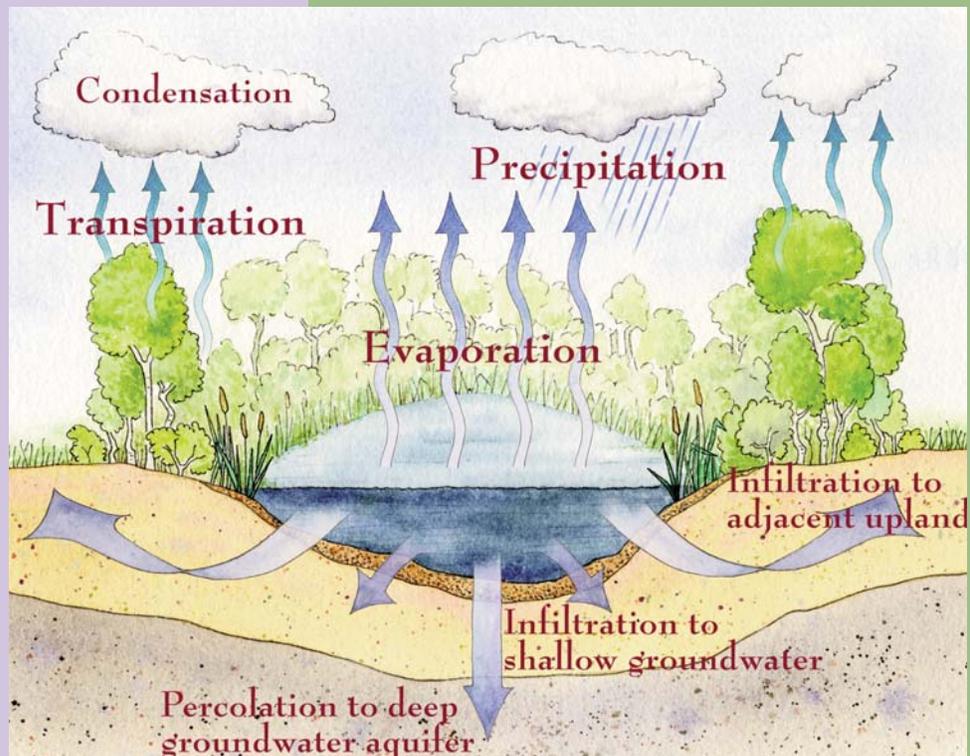


W e t l a n d

L i n k s

Wetlands are not wastelands. They are the connection in the watershed (drainage basin) we often can't see, linking groundwater, surface water in other wetlands, lakes and streams, soil moisture and weather patterns. Wetlands are so closely linked with other parts of the water cycle that drainage can have significant local effects such as lowering the water table, reducing local precipitation and creating greater temperature extremes.

There are many benefits to leaving wetlands and their surrounding riparian areas intact. Some are subtle, such as increased local soil moisture, reduced flooding, more stable stream flow, improved crop production and better water quality. Other benefits are more obvious such as supplying shelter, forage and water for livestock and providing wildlife habitat.



What do Wetlands Do for YOU?

Wetlands . . . Filter Nutrients and Improve Water Quality

Wetlands . . .

Create a Natural Irrigation System

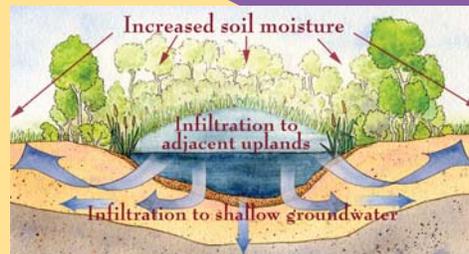


Water moves horizontally between a wetland and adjacent upland soils. This increases the amount of soil moisture available for crop and forage production. Undrained watersheds have significantly more moisture in the top 1.5 m of the surrounding soil compared to drained watersheds.

The result? Higher crop yields and increased forage production!



The lush riparian vegetation around a wetland traps and holds sediment. Nutrients such as phosphorus and nitrogen, as well as heavy metals and pesticides, become attached to sediment. Studies have shown that a 90 m wide riparian area and adjacent buffer strip can reduce the amount of sediment in the rivers, streams and lakes of a watershed by 52%! **So, wetlands improve the quality of both surface and ground water!**



Wetlands . . . Provide High Natural Biological Diversity



Wetlands and the surrounding riparian vegetation are hotbeds of plant and animal life. Wetlands are one of the most productive ecosystems in the world. Fish, mammals, birds, amphibians and many invertebrates rely on wetlands as a place to feed, hide and raise young. Healthy, functioning and stable ecosystems have high levels of natural biodiversity.

High natural biodiversity is an indicator of healthy, resilient landscapes that sustain our livelihoods, lifestyles and recreation.



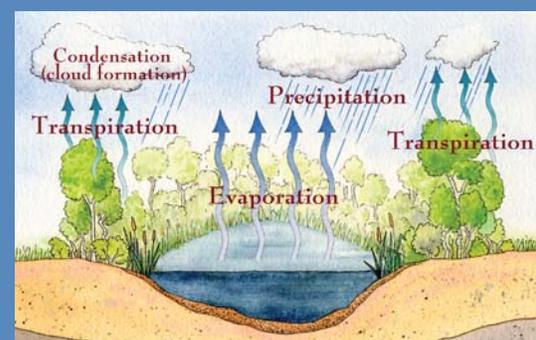
Wetlands . . . Influence Local Weather



Wetlands pump water into the atmosphere through evaporation from the water's surface and as a result of transpiration from riparian plants. This moisture condenses in the atmosphere, creating clouds that can result in local and regional precipitation. This can be an important source of moisture for prairie farmland.

Wetlands are slow to heat up and cool down. This has a moderating effect on local temperatures, maintaining cooler temperatures in summer and warmer temperatures in winter. In one area drained of wetlands, the winter temperature was as much as 5°C colder than an adjacent area where wetlands had been maintained.

Wetlands can provide more local precipitation and reduce temperature extremes.



What do Wetlands Do for YOU?

Wetlands... Help with Salinity Control

When a wetland is drained, it may act as a source of minerals and salts that accumulate in the pond interior, making it unsuitable for crop production. Leaving a wetland intact reduces the spread of surface salts.

This means reduced salts on the surface and improved conditions for agriculture.



Wetlands... Offer Agricultural Opportunities & Benefits

Wetlands are a water source for livestock, are useful for both grazing and hay and provide shelter. The vegetation around wetlands can be four to five times as productive as the surrounding uplands. The sedges and grasses at wetland margins and meadows are productive, palatable and produce abundant high quality hay.



Wetlands can also provide a source of water for irrigation of crops. As wetlands help to maintain a high water table, this results in other agricultural benefits, such as fuller dugouts and better soil moisture and increased production in adjacent crops.

Overall, healthy wetlands create a more stable, sustainable and diverse agricultural economy.

Wetlands... Recharge Groundwater

Wetlands store and release water, some to the ground water table. Small, seasonal wetlands are especially important for up to 85% of ponded water ends up as shallow groundwater. A smaller amount percolates deeper where it may find its way to your well.

This has direct benefits for us as wetlands help to maintain groundwater supplies that we use for domestic and agricultural purposes.



Wetlands... Stabilize Flows & Reduce Flooding

Wetlands are natural sponges, capturing and storing water after rainfalls and snowmelt. This water then helps to maintain stream flows and recharge shallow ground water during dry periods. When wetlands are removed, increased flooding and erosion results. Studies have shown that when less than 10% of a drainage basin or watershed is made up of wetlands, significant peak flows can occur, washing large amounts of sediment and contaminants into waterways. Wetland drainage has been implicated as the cause of a doubling of flood frequencies in some prairie rivers in the last 50 years. **Wetlands result in a more reliable water supply throughout the year, decreased erosion and fewer dramatic flood events.**

Wetlands... Provide Recreational Opportunities

Wetlands attract people for hunting, fishing, wildlife watching and other recreational pursuits. Research in Alberta and Saskatchewan found that the recreational value of intact



wetlands was \$1,490/ha compared with only \$37/ha for wetlands drained and used for cultivation.

As a part of a larger package of values, wetlands are best left intact.



What Can WE do for Wetlands?

Wet or Dry?

In droughts some wetlands completely dry up, sometimes for several years in a row. However, even a dry wetland provides many of the benefits described on the previous pages. Seeding a seasonal wetland while it is dry is a risky venture. There is increased danger of frost in the low area and a very high likelihood of flooding once wetter conditions return. Wetland substrates are usually quite impervious, and may be saline, which results in low crop productivity. Several studies have shown that the costs of draining and cropping wetlands are often higher than the crop returns.



Wetland Management - What you can do?

- ◆ Avoid draining wetlands, they are not wastelands.
- ◆ Maintain the full, natural extent of the riparian area around a wetland in a healthy condition and add an additional buffer where possible.
- ◆ The wider the buffer and the healthier the riparian area around a wetland, the more benefits that wetland provides. Wider buffers are required to effectively filter out sediment and greatly reduce the amount of pollution in the watershed. A wide buffer also traps more snow, increasing the amount of water captured in the local area.
- ◆ Match fertilizer application with crop needs and avoid pesticide drift into wetlands to avoid contamination of surface water.
- ◆ Maintain trees and shrubs growing around a wetland. These trees trap snow, hold runoff and create an upward movement of groundwater, making it available to adjacent plants and crops. They are also very important for livestock shelter and wildlife habitat.
- ◆ It is important to manage grazing to prevent overuse and trampling by livestock, and to avoid manure build-up. A healthy wetland should have good plant cover to reduce erosion.
- ◆ Discuss wetland management with conservation groups and agencies. They are good sources of technical advice and may have funding to help you.



The Cows and Fish program helps producers and communities to assess their wetlands and other riparian areas as well as develop management strategies to help conserve these valuable resources. For more information on wetlands, contact our partners listed below. Ducks Unlimited Canada is also a good source of information about wetlands (1-866-479-3825).

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Funding Associates include

Alberta Environmentally Sustainable Agriculture

