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DUCKS UNLIMITED CANADA

LAND STEWARDSHIP

Managing Wetland Areas in an Agricultural Environment

BC INTERIOR

Overview

Wetlands result in a more reliable water supply throughout the year, decreased erosion and fewer dramatic flood events.

PHOTO: DUC

Great Blue Heron
(Ardea herodias herodias)

Up to 80% of all terrestrial wildlife species in the South Okanagan-Similkameen are either directly dependant on wetland and riparian habitats, or use them more frequently than other habitats.

Wetlands are among the most productive and diverse ecological systems in the world. They are a vital component of the natural landscape, especially in British Columbia's Southern Interior, where water is a particularly precious resource. Understanding the importance of wetlands and their physical and biological interactions is the first step to better land management and ensuring these habitats remain intact for future generations to enjoy and appreciate. This factsheet provides information on the basic elements of wetland ecology and outlines practical advice for agricultural practices that will be useful in maintaining the health of these environmental assets.

Wetlands are dynamic systems that change with the seasons and over the years. Climate, hydrology, natural disturbance and human activity influence the functioning condition of wetlands and the species of plants and wildlife they support.

A rich variety of plants grow in the aquatic and riparian zones of wetlands. The **aquatic zone** is characterized by emergent vegetation such as bulrush, cattail and sedges, which are adapted to growing in saturated soils with low oxygen levels. Healthy wetlands are surrounded by a lush fringe of flood tolerant species that constitute the **riparian zone**: a transition between the open water and drier upland environment. A typical riparian area consists of a variety of plants including rushes, sedges, grasses, forbs, shrubs and deciduous trees, although environmental conditions such as saline soils may restrict the amount of shrubs and trees.

Riparian and wetland systems work collectively to protect our water resources by:

- **purifying surface water** by breaking down, removing, using or trapping nutrients, agricultural herbicides and pesticides, organic waste and sediment carried to them in runoff water;
- **replenishing groundwater** supplies;
- **reducing the severity of floods** by retaining water and releasing it slowly during drier periods; and
- **controlling soil erosion** by slowing runoff from storms and spring thaws.

Healthy wetlands and riparian areas support a wide range of fish, birds, amphibians, mammals, reptiles and invertebrates. These natural systems provide essential water, food, breeding habitat and protective cover for a significant variety of wildlife, including many species at risk. One such species is the federally Endangered Tiger Salamander (Ambystoma tigrinum), which breeds in warm ponds and shallow lake edges. Hatchlings and larvae live in aquatic weeds, under logs or in organic sediments in shallow water. Wetlands are especially important to birds like the provincially Threatened Great Blue Heron (Ardea herodias herodias), which depends on wetlands for foraging and nesting grounds.

Ducks Unlimited Canada
CANADA'S CONSERVATION COMPANY

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Ducks Unlimited Canada conserves, restores and manages wetlands and associated habitats for North America's waterfowl. These habitats also benefit other wildlife and people.

Wetlands are defined as areas of land that are saturated with or covered by shallow water for part or all of the year creating wet soils and supporting water-loving vegetation.

HOW TO IDENTIFY WETLANDS

Wetlands are almost as diverse as the species they support. In the Okanagan-Similkameen there are many different forms, including shallow ponds, marshes, swamps, fens, and wet meadows. They are defined by their relationship with water; however, some wetlands only contain water temporarily and recognizing them can be difficult and misleading. If your land has the following characteristics you may have a wetland:

- Soft or soggy ground;
- Seeps or springs;
- Depressions that periodically fill with water;
- Depressions that have different vegetation than upland areas;
- Areas that you ditch to dry out;
- Areas where equipment gets stuck; or
- Crop stress related to excess moisture.

STATUS

PHOTO: DUC

Degraded Wetland

British Columbia is loosing wetlands at an alarming rate. The importance of wetlands is often underestimated and as a result many wetlands have been filled, drained and converted for agriculture, housing, industry, transportation and waste disposal. In the Okanagan-Similkameen, 85% of our historic wetlands have already been lost[1]. They now cover only 4% of the region, a significantly small area considering the diversity of plant and animal species that wetlands support and the important ecological and economic functions they provide. The loss of wetlands has had a significant impact on the water table, water quality and quantity, and reduced resilience of the landscape during times of drought and flooding.

Scientists estimate that 85% of wetlands in the Okanagan-Similkameen have already been lost.

Agriculture can be a serious threat to wetlands and a leading cause of their destruction. Worldwide, agriculture is the single biggest user of wetlands and is responsible for 50% of their global decline[2]. In the Okanagan-Similkameen, a significant proportion of our remaining wetlands are located on rural private lands where agriculture is a principal industry. Stewardship is key to protecting our remaining wetlands. It is imperative that agricultural producers participate in sustainable agricultural practices and wetland and water resource management.

WETLANDS AND AGRICULTURE

Wetland and riparian areas have been an important part of our agricultural industry and way of life for centuries. The abundance of water in these natural systems makes them highly productive landscapes. By acting like sponges, wetlands protect crops from flooding and drought, slowly releasing and quickly absorbing water. They also provide food, shelter and watering sites for livestock and other farm animals. Overall, healthy wetlands create a more stable, sustainable and diverse agricultural economy.

Buffer zones traps nutrients and agricultural chemicals found in run-off from fields, and reduce the risk of contamination of water sources.

However, the intricate connections and interactions that create these complex systems cannot withstand certain land management practices. Agricultural practices and their by-products, including excess nutrients, pollutants and sediments, can drastically degrade wetlands and alter the hydrology, water quality, and species composition. Review the list of impacts in the following table for practices to avoid.

[1] The Ministry of Water, Land and Air Protection: Wetlands in BC
[2] Canada's Aquatic Environment: http://www.aquatic.uoguelph.ca

PRACTICE	DIRECT IMPACT ON LANDSCAPE	END RESULT
Using hazardous chemicals, pesticides or oils in or near wetlands	Wetland becomes polluted	• Damage to and loss of plants • Death of aquatic inhabitants • Contamination of water
Allowing residual fertilizers and animal feces to enter wetlands through runoff	Wetland becomes eutrophic from increased levels of nitrogen and phosphorus	• Death of amphibians and fish (algae increases, reducing available oxygen) • Reduced biodiversity
Releasing non-indigenous animals into wetland, i.e. turtles or fish	Introduced species compete with native species for food and shelter resources	• Decline of native wildlife species • Reduced biodiversity
Invasive plants are allowed to spread	Invasive plants out-compete native vegetation and crops	• Reduced biodiversity • Destruction of wildlife habitat • Wetland dries out • Reduced opportunity for crop production due to competition
Draining, filling, diverting or dyking wetlands for cultivation or irrigation	Water source is separated from the floodplain; increased salinity	• Wetland dries out • Loss of plants and animals • Reduced opportunity for crop production due to accumulation of minerals and salts
Ploughing, tilling or heavily grazing land near wetlands	Slumping of banks; resultant erosion will increase sedimentation	• Decline of aquatic plants • Death of aquatic inhabitants • Contamination of water • Reduced crop yield due to loss of topsoil • Reduced stability of croplands • Potential safety hazard
Deposition of agricultural waste (e.g. prunings), compost or garbage within or near wetland	Wetland becomes polluted and natural vegetation is suppressed	• Damage to and loss of plants • Contamination of water • Reduced biodiversity
Cutting or removing riparian vegetation	Floodplain becomes ineffective	• Increased flooding risk • Enhanced drought risk

WHAT YOU CAN DO

The best way to protect your wetland and ensure its continual functioning is by establishing a buffer zone. A buffer zone is defined as a permanent strip of vegetation generally between wetland/riparian areas or other sensitive habitats and cropland/pasture. It may consist of grasses, forbs and shrubs, as well as trees and shrubs. The width and species composition of an adequate buffer will vary based on your agricultural practices and the benefits you wish to achieve from the buffer. However, for riparian areas to function best at filtering runoff and providing wildlife habitat, leave (or plant) a zone of grass/shrub/tree cover at least 30 feet (10 metres) wide around wetland basins. A wider buffer may be required for steep areas. A buffer will help to:

- control erosion, adding to the stability of croplands;
- trap snow, adding further moisture to your agricultural fields;
- protect croplands from flooding by acting as a surface reservoir;
- extend seasonal or long-term water levels by recharging groundwater;
- trap sediments, pollutants and excess nutrients, reducing contamination of water sources;
- create a barrier for invasive plants which could otherwise reduce crop quantity and quality;
- reduce water temperatures and improve aquatic conditions for wildlife;
- provide a sustainable food source for wildlife; and
- create a connecting corridor of wildlife habitat.

ADDITIONAL RESOURCES

The Wetland Evaluation Guide
http://wlapwww.gov.bc.ca/wld/wetlands.html

BC Environmental Farm Plan Planning Workbook
http://www.bcac.bc.ca/efp_documents.htm

BC Ministry of Water, Land and Air Protection: Riparian Areas Regulation
http://wlapwww.gov.bc.ca/habitat/ fish_protection_act/riparian/riparianareas.html

Ducks Unlimited Canada
http://www.ducks.ca

Cows and Fish Project
http://www.cowsandfish.org

FOR MORE INFORMATION

For more information on **Farm Practices in BC** refer to:
http://www.agf.gov.bc.ca/resmgmt/fppa/refguide/into.htm
or call the Ministry of Agriculture, Food and Fisheries at 1-888-823-3355.

You can find more information on the **Environmental Farm Planning Program** and local contacts by linking to:
http://www.bcac.bc.ca/efp_programs.htm
or contact the BCAC at 1-250-763-9790.

PHOTO: SUSAN WOOD (TLC)

Forbes Wetland

Wetland ownership can sometimes be confusing. The broad definition of a wetland and the fluctuation of water levels can result in shared ownership. For ownership clarification, consult the Land Titles Office (1-250-828-4455).

Good planning and management of your agricultural lands will also help to prevent and reverse wetland damage. You can increase the health of your wetland by following the practices listed below:

- Divert runoff with pollutants;
- Reduce pesticide use whenever possible, particularly in areas adjacent to the wetland;
- Rotate grazing and crops to minimize erosion;
- Avoid dumping agricultural wastes like prunings and compost near or in wetlands; and
- Follow Farm Practices in BC Reference Guide: a series of beneficial management practices sorting by farm commodity or activity.

ASSISTANCE PROGRAMS

Local stewardship programs and other community initiatives provide assistance to landowners seeking to protect or enhance natural areas and resources like wetlands. The British Columbia Agricultural Council (BCAC) provides leadership in representing, promoting, and advocating the collective interests of all agricultural producers in the province. They provide assistance through programs such as the Environmental Farm Planning Program. An environmental farm plan is a voluntary and confidential risk assessment that you do for your own farm. The goal of a farm plan is to help ensure productive, profitable and sustainable agriculture for generations to come. Landowners can also consult local land trusts, conservation organizations or naturalist clubs for additional contacts, resources and advice.

The Forbes family joined together with the Town of Oliver, the Public Conservation Assistance Fund, The Land Conservancy of BC and the South Okanagan-Similkameen Stewardship Program to help restore one of Oliver's last remaining wetlands. Indigenous shrubs and tress were planted, and bat houses and bird boxes were installed to help enhance wildlife populations. The project also involved control of invasive plants, fencing and installation of a low impact trail along one bank. Many Oliver residents and tourists are now able to enjoy a unique educational and wildlife viewing opportunity without degrading the wetland. The project helped to strengthen the public's commitment and knowledge of wetland protection builds support for private land stewardship.

WHO'S RESPONSIBLE?

Regardless of wetland ownership, you may be responsible for ensuring its continued functioning and existence. Many provincial and federal laws provide some form of wetland protection, including the Fisheries Act, Water Act, Wildlife Act, Land Act and Waste Management Act. Some municipalities and regional districts have specific bylaws pertaining to wetlands and riparian zones. For more information consult the Ministry of Water, Land and Air Protection (http://www.gov.bc.ca/wlap/ or 1-800-663-7867) or your local government office.

PROJECT PARTNERS

Ducks Unlimited Canada
CANADA'S CONSERVATION COMPANY

TLC
The Land Conservancy of British Columbia

Habitat Stewardship Program for Species at Risk

Environment Canada
Canadian Wildlife Service
Environnement Canada
Service Canadien de la faune

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