

SWAMPS

SWAMPS are wetlands that are predominated by shrubs or trees. Swamps can have hardwood trees growing with “wet feet”, or, as in cedar swamps, with the water just below ground level.

Wooded swamps provide important habitat for many types of plants and animals. White-tailed deer use dense coniferous swamps for winter cover. An abundant supply of winter food is critical for white-tail survival, and swamp vegetation such as red maple, dogwood, and cedar forms an important part of the deer diet.

Other animals that use swamps for food or cover include hawks and owls, rabbits and

hares, raccoons, coyotes and wolves, black bears and a variety of songbirds. Wood ducks often nest in hollow trees in open swamps.

Carrs are swamps predominated by shrub thicket, usually willow, dogwood, or alder. Woodcock often live in alder thickets where they probe the moist earth for earthworms, their main food. Many songbirds nest in carrs and feed on the berries and seeds that are abundant in the fall.

Swamps are important water storage areas. They help prevent flooding in spring by acting as natural reservoirs. Swamps can also help prevent drought conditions by slowly releasing water during dry summer months.



MARSHES

MARSHES are the most productive of all our wetland types. They usually have open water in them up to 6 1/2 feet deep, and are predominated by lush vegetation growing in or out of the water. Common vegetation of the marsh includes emergent plants such as cattail and bulrush, floating-leaved plants such as water lily, and submerged plants such as coontail.

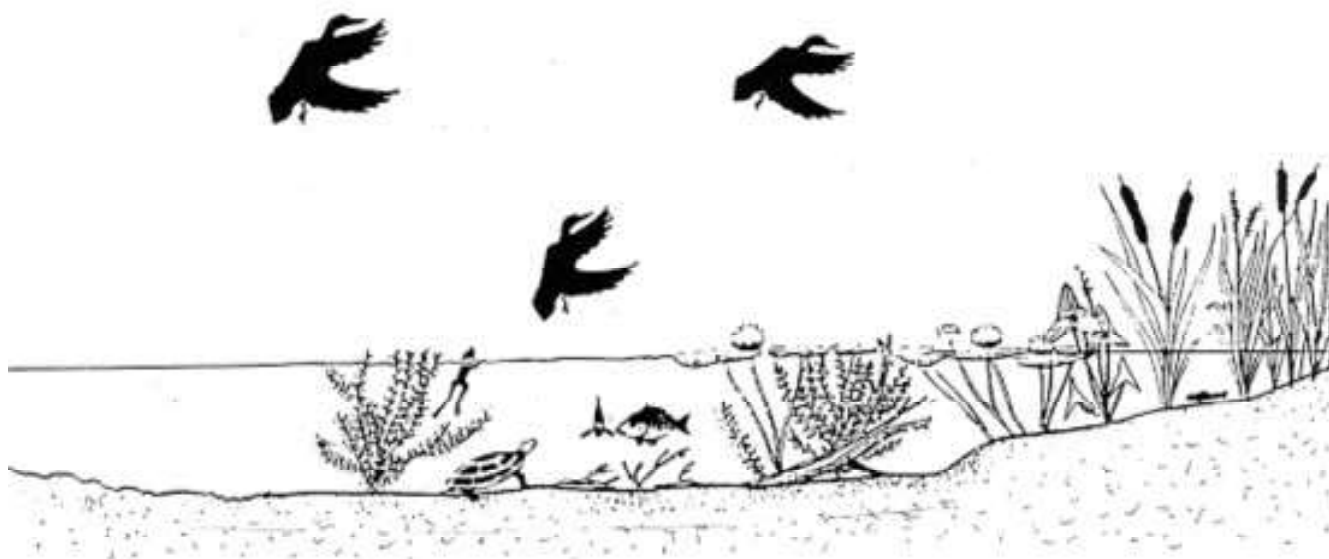
Freshwater marsh plants use sunlight to convert water and nutrients into living matter (biomass) more efficiently than most other ecosystems, including forests and farmlands. Because of this high productivity, marshes provide food for a remarkable variety and abundance of fish and wildlife.

In all ecosystems, plant life forms the base of the food chain. In marshes this base is exceptionally large, so more food is available for more insects, amphibians and reptiles, fish, birds, and mammals.

Marshes are important to our freshwater fisheries as they provide feeding and spawning grounds for many species. The warm shallow waters of marshes provide spawning grounds for minnows, sunfish, bass, pike, and muskellunge. Marshes are also important to the health of lakes as they filter silt and pollution from the water.

A diverse community of wildlife depends on marshland. Loons nest among the emergent vegetation beside open water. Osprey and kingfishers dive in the shallow waters for fish. Muskrat build lodges and channels among cattails, and create openings for ducks, rails and bitterns. Mink prey on the abundant frogs, young birds, and small mammals in the marsh.

In the autumn, marshes provide important feeding and gathering areas for migrating ducks and geese. Puddle ducks, such as mallards and blue-winged teal, feed on wild rice and shallow aquatic plants. Diving ducks, such as ringnecks and goldeneyes, feed on small aquatic animals and plants in deeper water.



BOGS

BOGS are more common in northern regions and are relatively rare in the south. Where they occur, bogs are fascinating wetlands.

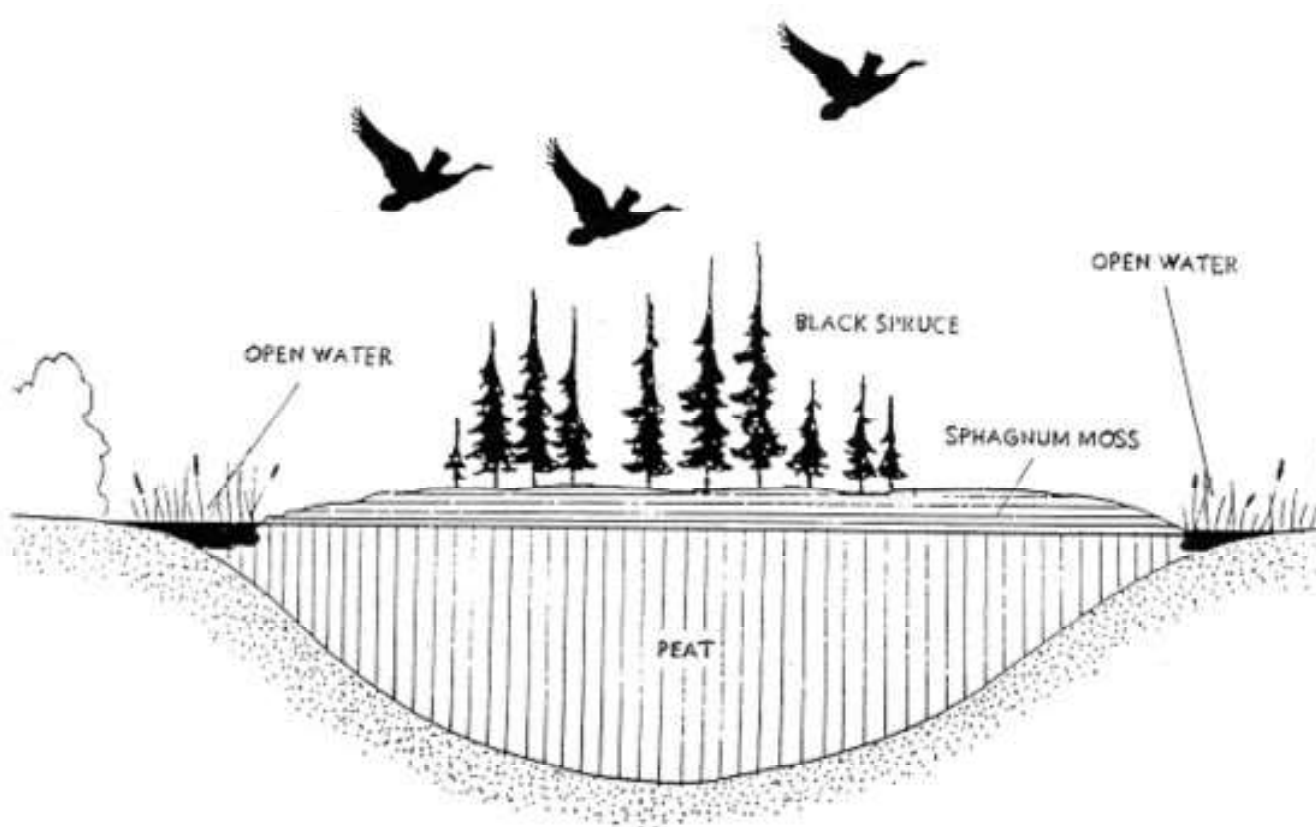
Bogs are “old” wetlands, occurring where drainage and water circulation is poor. Most of the nutrients that enter a bog come from rainwater, and not from adjoining lakes, creeks, or rivers. Bogs are “nutrient poor” ecosystems which are not as productive as marshes or swamps. The low productivity of bogs is reflected by the smaller number of animals that live in them.

Plants that live in bogs are unique because they have adapted to the acidic, nutrient-poor soils. Carnivorous plants, such as the pitcher plant and sundews, get the nutrients they need from

insects they trap in their leaves. Bogs provide the only habitat for a number of uncommon wildflowers, orchids, and insects.

Sphagnum moss forms the vegetative mat in most bogs (commercial dew worms are often packed in sphagnum moss). Sometimes this mat floats over water, as in quaking bogs. Trees, if present, are usually black spruce or tamarack. They grow slowly in bogs, and seldom reach a large size.

Bogs provide habitat for weasels, foxes, owls and a variety of small mammals. Many songbirds, including the white-throated sparrow and Wilson’s warbler, inhabit bogs. Moose often feed along the edges of bogs.



FENS

FENS, like bogs, are more common in northern regions. Fens are wetlands predominated by sedges—a group of grass-like plants with triangular stems. Fens occur in slightly acidic or alkaline water. Many rare wildflowers and orchids require the unique chemistry of fens to grow. Like bogs, fens are not very productive wetlands, but they are important for the unique life forms found within them.

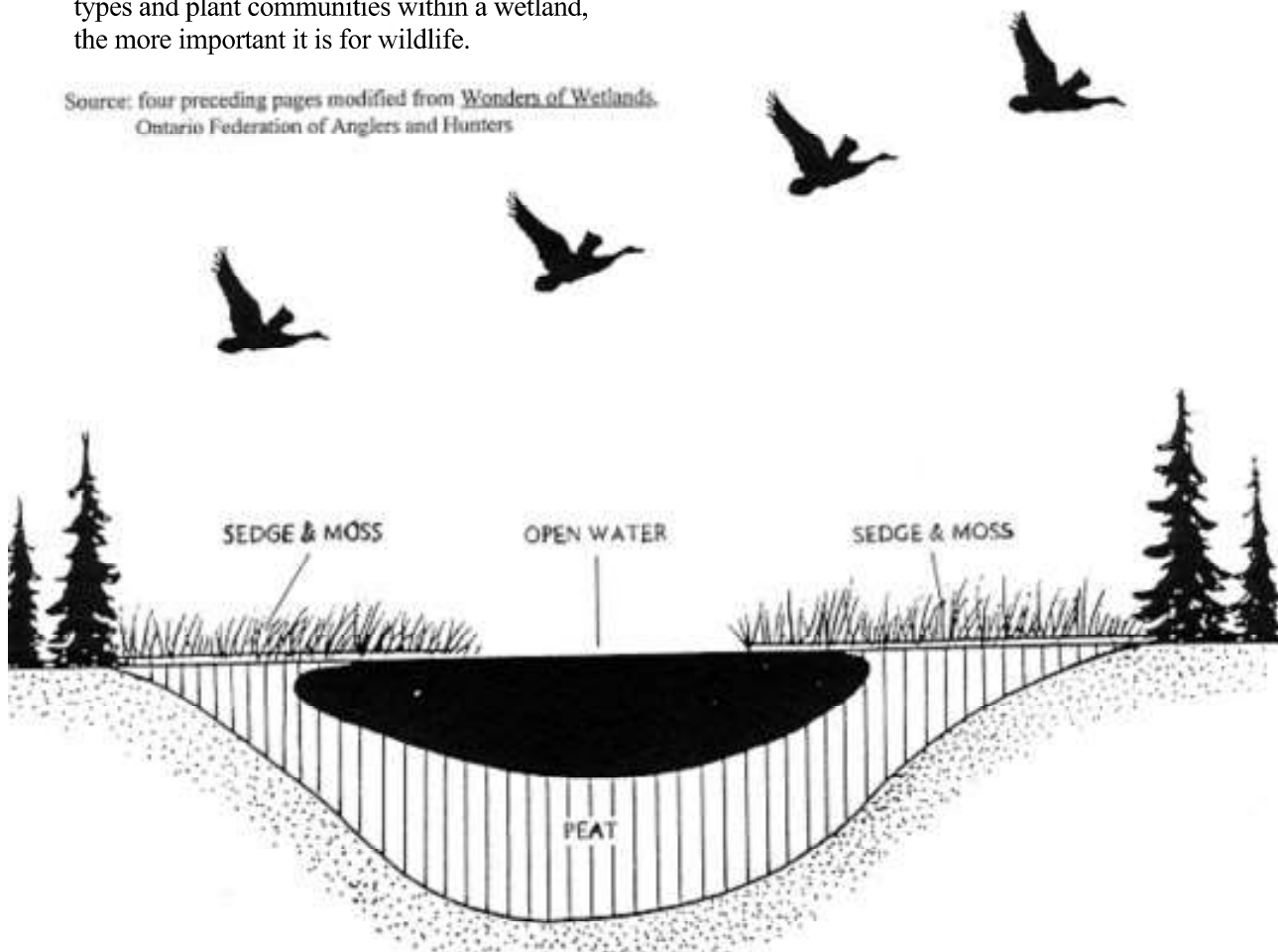
Trees, if present in fens, are usually cedar or tamarack.

Marshes, swamps, bogs and fens are the types of wetlands found in Canada. Any single wetland can be made up of any combination of these four wetland types. The more variety of types and plant communities within a wetland, the more important it is for wildlife.

Succession

Wetlands are not static systems -- they constantly change through the process of natural or human influenced succession. Ecologically, marshes are the youngest wetlands -- a fact which enables marshes to be created in a relatively short time. Marshes sometimes succeed into swamps, and in some cases to a fen or bog over many years. Fens gradually become bogs as peat accumulates and acidity increases in the wetland. Because of their ecological age, fens and bogs are more sensitive to disturbances.

Source: four preceding pages modified from *Wonders of Wetlands*,
Ontario Federation of Anglers and Hunters



IX) THREATS TO WETLANDS

In a balanced ecosystem, nutrients are recycled between the producers, consumers and decomposers. Oxygen and carbon dioxide are recycled between the plants and animals, and water is cycled through the water cycle. Although many elements in a balanced ecosystem are recycled, there is the constant need for energy input from the sun. Additional nutrients may come from precipitation, run-off and sediments washed into the ecosystem.

When something happens to upset the balance, the effects may range from a slight disturbance to a catastrophe. Nature has some built-in mechanisms that help to keep the balance in check. Unlike humans, wildlife cannot simply grow more food when the supply runs out. The population size must change to match the availability of food.

Although nature can compensate for some of the natural upsets in an ecosystem, there is a limit to the amount of stress that can be placed on an ecosystem before it collapses. In many areas, wetlands are being pushed past their tolerance limit and are being destroyed. Natural catastrophes such as excessive flooding and drought can cause temporary setbacks, but these natural events are actually critical to the long-term survival of some wetlands. In fact, people are the single biggest cause of the destruction of wetlands. In some regions of Canada as much as 90% of the original wetlands are gone!

What do students think are the main threats to wetlands? Draining, filling, dredging, polluting and the introduction of exotic, or non-native species are all major threats. Discuss each of the threats with the class and what people can do about stopping or reversing them. How will such changes affect people?

1. Draining

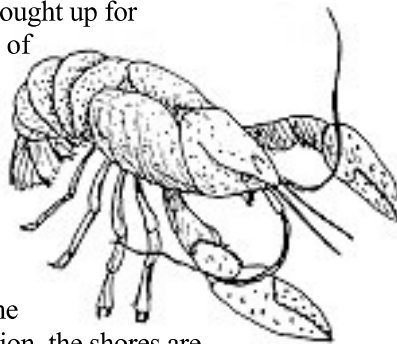
Drainage of wetlands for farmland, or urban development is one of the major threats. Many drainage projects have not been subject to environmental assessments, or cost-benefit analysis. Experts who have studied the draining of wetlands have expressed concern that the benefits that have been gained have not always equalled or surpassed the long term costs involved in the project. While our society requires economic development, it must be done in a sustainable way to ensure both the long term health of our economy and environment.

2. Filling

Wetlands are often filled in for housing projects, highways, factories, airports and other developments. Wetlands have traditionally been areas of cheap land that are bought up for development and filled in. The short-term and long-term costs of the wetland loss have usually not been measured.

3. Dredging

Shoreline wetlands have been dredged for the construction of marinas and harbours. In addition, cottagers and waterfront owners have cleared shoreline vegetation for docks and "clean-up" purposes. The destruction of the vegetation results in habitat loss, particularly for nesting waterfowl, and the loss of shelter for the young of many species. Without vegetation, the shores are more vulnerable to erosion due to wave action and run-off.

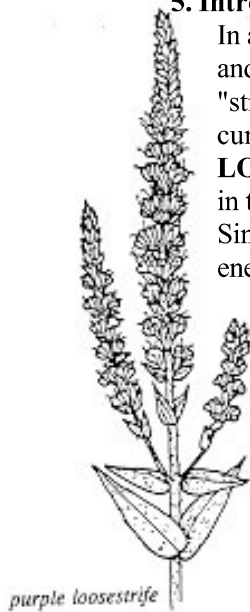


4. Polluting

Air and water pollution contribute to the disruption and potential destruction of balanced wetland ecosystems. The addition of pesticides, industrial and municipal wastes, acid rain and other pollutants can result in the death of plants and wildlife.

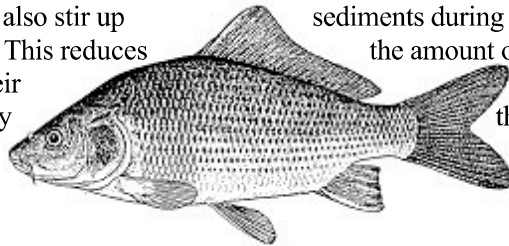
5. Introduction of Exotic Species

In a balanced ecosystem, the creatures are adapted to living in the particular habitat and are adapted to co-existing with other members of the habitat. When a "stranger" appears, it can cause many changes. North American wetlands are currently suffering from the invasion of an exotic plant called **PURPLE LOOSESTRIFE**. It was accidentally introduced to North America from Europe in the 1800's. It has now spread at an alarming rate into every Canadian province. Since purple loosestrife does not naturally grow in this country, it has no natural enemies and there is nothing to stop it from spreading.



It is outcompeting indigenous plants such as sedges, bulrushes and grasses so that they can not grow in invaded wetlands. It is filling in open, shallow water so that floating and submerged aquatic vegetation is being choked out. The loss of the open habitat means many species of birds, mammals, amphibians and reptiles that require it will suffer and some may die. Without the indigenous vegetation, many indigenous animals have also lost their shelter and food supply. There is no known wildlife that depends on any part of purple loosestrife for survival. The plant is considered to be a serious threat to wetland.

The invasion of exotic fish species is also a serious problem in marshes. Carp are indigenous to Asia and since their introduction into North America, their populations have exploded. Carp eat most kinds of soft aquatic plants. They also stir up sediments during spawning and feeding, creating very cloudy water. This reduces the amount of light reaching underwater plants and cuts down on their ability to photosynthesize. Carp can completely destroy the submerged plant life in a marsh.



Mute swans are another exotic species that are creating problems in some marshes. They are on the verge of a population boom in parts of southern Ontario and are outcompeting indigenous waterfowl populations for the available resources.

Have the students discuss how they would imagine the world without wetlands and the plant and animal life associated with them. Ask students to make a picture, write a poem or choose another form of expression to explain their thoughts.

Source: Modified from [Why Wetlands?](#), Federation of Ontario Naturalists