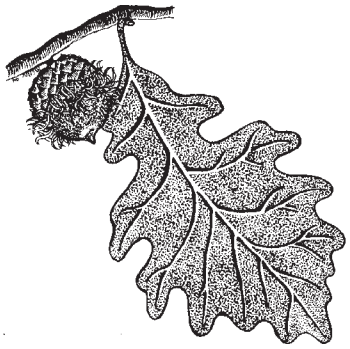
9-2001

Iowa Wetlands -- Biological Communities

Iowa Association of Naturalists

Iowa Wetlands

Iowa's Biological Communities Series



Iowa Association of Naturalists

The Iowa Association of Naturalists (IAN) is a nonprofit organization of people interested in promoting the development of skills and education within the art of interpreting the natural and cultural environment. IAN was founded in 1978 and may be contacted by writing the Conservation Education Center, 2473 160th Rd., Guthrie Center, IA 50115, 515/747-8383.

Iowa's Biological Communities Series

Iowa's natural beauty has long been a great factor in drawing people to the state. But there is more to that beauty than meets the eye. To assist Iowa educators in teaching their students about the complexities of Iowa woodlands, wetlands, waterways, and prairies, the Iowa Association of Naturalists has produced a series of booklets which offer a basic, understandable overview of Iowa biological communities. The five booklets in this series are:

Iowa's Biological Communities (IAN-201)
Iowa Woodlands (IAN-202)
Iowa Prairies (IAN-203)
Iowa Wetlands (IAN-204)
Iowa Waterways (IAN-205)

The *Iowa's Biological Communities Series* is published by IAN with major funding from the Resource Enhancement And Protection (REAP) Conservation Education Board (September, 2001).

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Iowa Wetlands is one in a series of five booklets that are part of the *Iowa's Biological Communities Series.* The booklets in the series include:

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The Iowa Association of Naturalists has produced six other booklet series that provide readers with a clear, understandable overview of topics concerning the Iowa environment and conservation. The booklets included in each of the other five series are listed below.

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Iowa Weather	(IAN-701)
Iowa Geology and Fossils	(IAN-702)
Iowa Soils	(IAN-703)

Iowa Wildlife Series

Iowa Mammals	(IAN-601)
Iowa Winter Birds	(IAN-602)
Iowa Nesting Birds	(IAN-603)
Iowa Reptiles and Amphibians	(IAN-604)
Iowa Fish	(IAN-605)
Iowa Insects and Other Invertebrates	(IAN-606)

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Natural Cycles in Iowa	(IAN-406)
Iowa Biodiversity	(IAN-407)
Adapting to Iowa	(IAN-408)

Iowa Plants

Iowa's Spring Wildflowers	(IAN-301)
Iowa's Summer and Fall Wildflowers	(IAN-302)
Benefits and Dangers of Iowa Plants	(IAN-303)
Iowa's Trees	(IAN-304)
Seeds, Nuts, and Fruits of Iowa Plants	(IAN-305)
Iowa's Mushrooms and Other Nonflowering Plants	(IAN-306)
Iowa's Shrubs and Vines	(IAN-307)

Iowa Environmental Issues

Iowa Habitat Loss and Disappearing Wildlife	(IAN-101)
Iowa Air Pollution	(IAN-102)
Iowa Water Pollution	(IAN-103)
Iowa Agricultural Practices and the Environment	(IAN-104)
People, Communities, and Their Iowa Environment	(IAN-105)
Energy in Iowa	(IAN-106)
Iowa Waste Management	(IAN-107)

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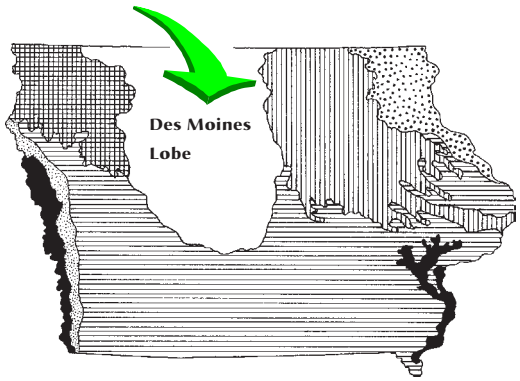
Iowa Wetlands

What are wetlands?

Wetlands are places where plants and animals live amid standing water or saturated soils. They are sometimes called swamps, sloughs, potholes, marshes, bogs, fens, seeps, oxbows, shallow ponds, or wet meadows. And each of these wetland types has unique characteristics.

Iowa was once a land covered by vast prairie grasslands and open savannahs. Thick woodlands bordered the many rivers and streams, and covered much of northeast Iowa. Wetlands dotted both the prairie and woodland landscape. A wide variety of wildlife lived in Iowa's prairies, woodlands, and wetlands. But the landscape of Iowa has undergone a lot of change in the past 150 years. Iowa's prairies, woodlands, and wetlands have all been greatly reduced, and largely replaced by farms, towns, industries, and roads. Wetlands were among the last of these communities to be impacted by settlement and development. However, in a brief period of time, nearly all of Iowa's wetlands were destroyed.

The Des Moines Lobe was once a 7.6 million acre area of vast prairies dotted with thousands of pothole wetlands.



Iowa's wetlands were most common in north and central Iowa in the area known as the Des Moines Lobe. This area, sometimes called the "thousand-lake" region by pioneers, was a 7.6 million-acre area of vast prairies dotted with thousands of pothole wetlands. Many were only seasonally wet. The region was formed as a result of the most recent glaciers that covered Iowa 10,000-14,000 years ago. The glaciers flattened and scraped the landscape and left numerous depressions that filled with water as the ice mass retreated. Left behind were thousands of wetlands as small as less than an acre, and large lakes - Storm Lake, Clear Lake, Spirit Lake, and West Okoboji. In some areas, an early pioneer may have counted 200 pothole wetlands in a square mile.

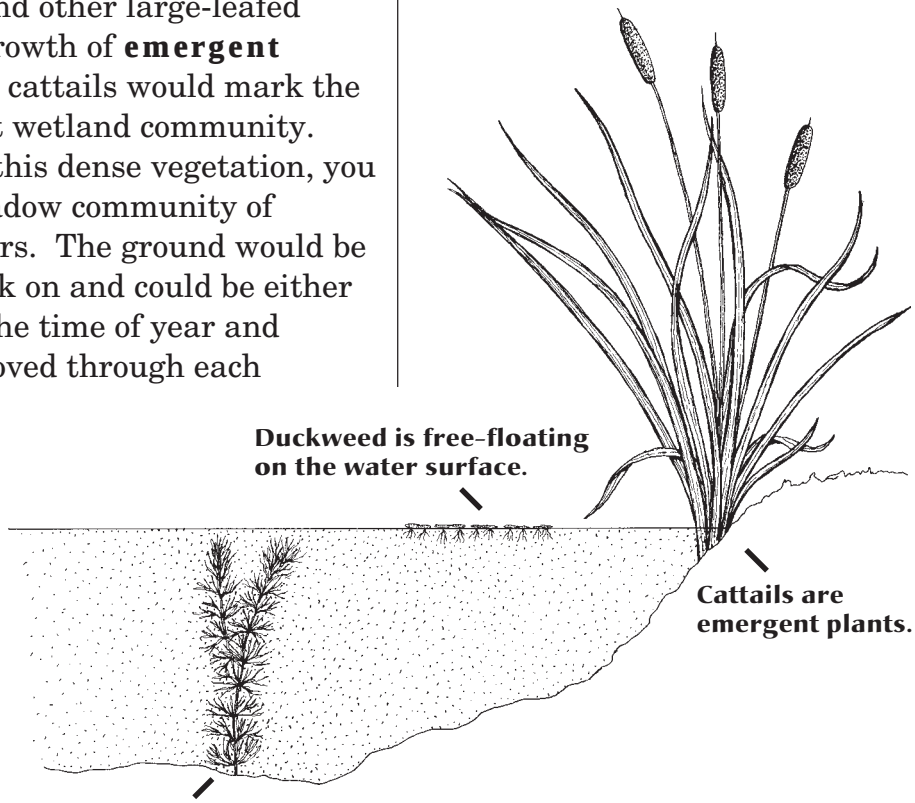
Wetlands are among the most diverse of all natural communities in Iowa. Plants and animals fill every wetland niche. Wetlands are also important regulators of the environment, filtering sediment and organic waste from runoff and lessening impacts of floods or droughts.

Different types of wetlands

The once numerous wetland marshes that were the result of glaciers are called palustrine wetlands. Other types of wetlands also exist in Iowa. Lacustrine wetlands include both open lake water and the shallow edges of lakes. All of Iowa's large lakes have associated wetlands. Backwaters of the Mississippi River and other rivers and streams sometimes have associated riverine wetlands. Wet areas where groundwater comes to the surface are called seepage wetlands. Fens are seepage wetlands where alkaline water rises to the surface. Bogs are wetlands which have acidic, peat soils.

Wetland communities

If you were to jump into the middle of a typical wetland pond you would land in open water. **Submersed plants** would tickle your legs as you walked through the pond muck toward land. Soon you would find yourself surrounded by numerous **free-floating plants**, such as tiny duckweeds. As the water became more shallow, you would need to push away the lily pads and other large-leafed floating plants. A thick growth of **emergent plants** such as reeds and cattails would mark the beginning of the emergent wetland community. When you broke through this dense vegetation, you would step into a wet-meadow community of sedges, grasses, and flowers. The ground would be lumpy and difficult to walk on and could be either wet or dry depending on the time of year and recent rainfall. As you moved through each wetland community, you would notice changes in the types of wildlife you saw. Wetland wildlife is adapted to the plant life and water levels of particular wetland communities.



Changing wetlands

There is a natural, cyclical process of succession in a wetland marsh. In the **open water stage**, when a basin is full of water, the common plants that are present are often submersed underwater. Usually within 20 years there comes a period of drought and the wetland becomes a **dry marsh**. Seeds of emergent plants sprout in the exposed soil and, when rainfall returns, the wetland is transformed into a **dense marsh** of cattails, reeds, and other emergent plants.

The next stage, called the **hemi-marsh stage**, has the most diversity of plants and animals and occurs when emergent plants become fewer. Emergent plants may be lost from a wetland by disease, insect attacks, or, most often, by ravenous muskrats which use the plants for food and nesting material. With normal rainfall and the continued decline of emergent plants, the marsh returns to the open water stage and the process continues. Floods, dams, channelization, drought, muskrat activity, and wetland draining or filling affect the natural, cyclical changes of a wetland.

Plants of Iowa wetlands

Wetland plants are specially adapted to water. Plants can only grow where the degree of soil saturation or depth of standing water allows them to receive sunlight, oxygen, and nutrients.

Common wet-meadow vegetation

Wet-meadow vegetation grows where the ground is only seasonally saturated, usually in spring. Sedges and grasses often dominate the area, giving it a meadow-like appearance.

Smartweed

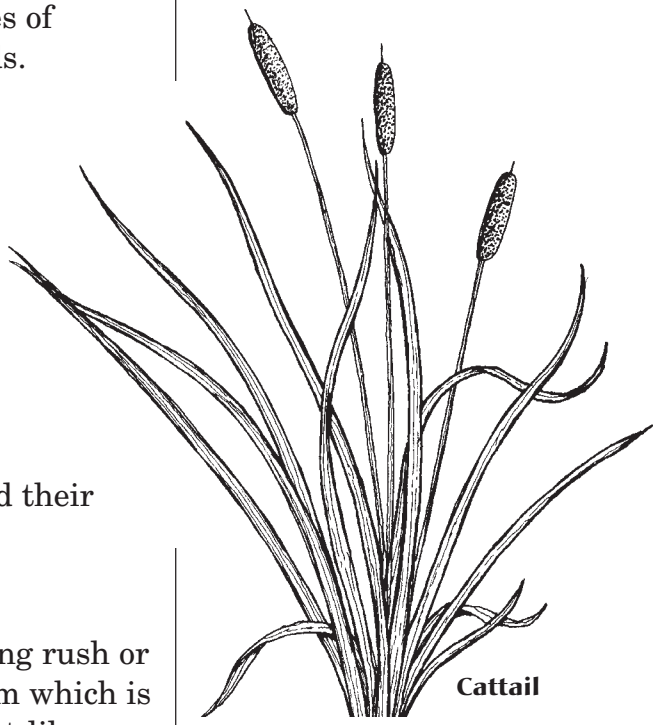
Smartweed, also called pinkweed, grows in wet-meadows in shallow wetlands. It may grow up to 6 feet in length, sometimes growing along the ground. The small, pink, or red inflorescences form small nutlets which are an important food for ducks and geese. Look for the flowers from July through September. Smartweeds are in the genus *Polygonum* and are different from other plants that are sometimes called “smartweeds.”

Sedges are usually identified by their three-sided stems. Grasses and rushes have round, hollow stems. Sedges are found in wet-meadows, and may grow as emergents in periodically flooded areas.

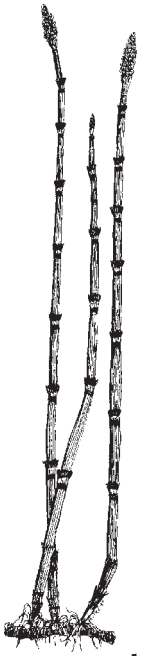
Common emergent plants

Emergent plants grow with their roots in water. The tops of the plant stand above water. Bulrushes and cattails are emergent plants which often form a dense growth along the edges of wetland ponds or within shallow wetlands.

Cattails are common emergent wetland plants that may grow to be eight feet tall. They grow in dense patches in shallow standing water, and are easily recognized by their brown spike of flowers or seeds which may be a foot long. Cattails are a favorite plant of muskrats which eat the tubers and use the stiff stalks to build their homes.

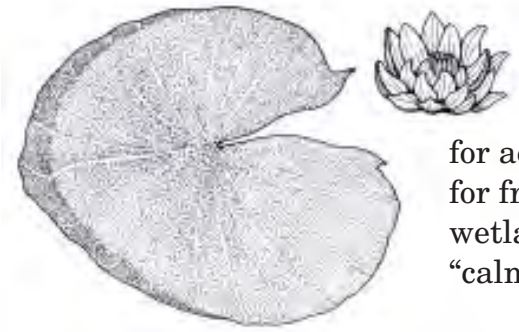


Cattail



Horsetail

Horsetail, also called scouring rush or snake grass, has a rough stem which is divided into segments by joint-like rings. The stems may be three feet tall and have a swollen tip which produces spores. Horsetails have a very high silica content which makes them very rough or scratchy and, as their name implies, can be used to scrub pans and dishes. They grow in a variety of conditions and can be found as an emergent or on dry, sandy soil near a waterway.



White water lily

Common floating-leaved plants

In shallow water, leaves of larger floating-leaved plants, such as lily pads, brush along a canoe. The large leaves may become homes for aquatic insects and snails, and resting areas for frogs and dragonflies. They can also change a wetland environment by reducing wave action and "calming" wetland waters.

American lotus has large, fragrant, yellow flowers that may be ten inches wide. The leaves usually stand above the water and may be huge, up to two feet wide. The flowers begin blooming in July.

White water lily leaves float on the water surface and are commonly called lily pads. The shiny, green leaves may be a foot in diameter. The white flowers are three to five inches wide with yellow stamens, and begin blooming in June. Because of its pleasant odor, white water lily is sometimes called fragrant water lily.

Duckweed is a tiny plant that often grows in large groups. A single plant is shown above.

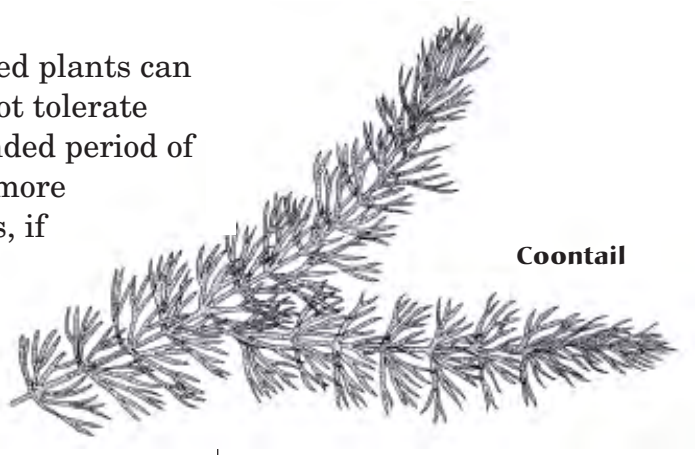
Common free-floating plants

Tiny floating plants are common in the still waters of Iowa wetlands. They are often called "duckweeds" and are a favorite food of many ducks and geese. Duckweeds are among the smallest flowering plants in the world. Their fine rootlets receive nutrients directly through the water.

Duckweeds are tiny, floating plants which may form a carpet-like cover over still wetland waters. The small round leaves are attached to one or more hair-like roots. There are several species of duckweeds, ranging in size from the 2.5 millimeter great duckweed to the one millimeter watermeals.

Common submersed plants

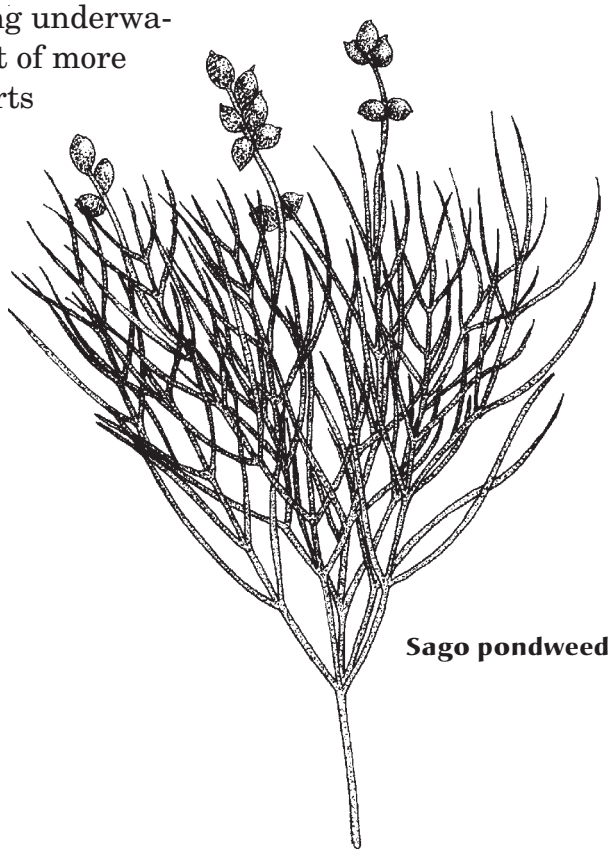
There is a limit to how deep most rooted plants can grow in water. Emergent plants cannot tolerate being submersed in water for an extended period of time. Where water depth remains at more than three feet, only submersed plants, if any, can be found in a wetland. Where the water gets too deep for sunlight to reach submersed plants, there will be no plants growing in the wetland.



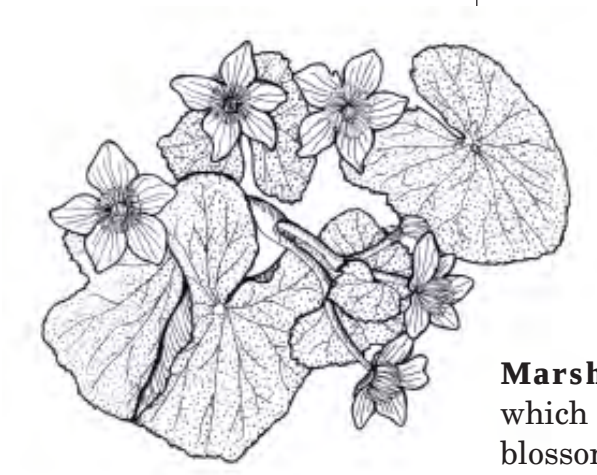
Coontail

Coontail and **northern watermilfoil** are common submersed plants. From above water, they may look alike. Both have fluffy-leaved stems that may look like furry tails. A closer look would show the branching growth of the coontail being much different than watermilfoil's single stems and whirls of fine leaves.

Sago pondweed is a branching underwater plant that grows to a height of more than three feet. The flower parts grow at the tips of the plants. Sago pondweed is a favorite food of ducks and geese that eat its tubers, stems, leaves, and seeds. It is in the genus *Potamogeton*, and is different than other plants commonly called "pondweed."



Sago pondweed



Marsh marigold

Common wildflowers of Iowa wetlands

Wetlands are often part of a bigger woodland or prairie community. Trees, grasses and wildflowers border wetlands. So do a variety of shrubs, ferns, and other plants. Watch for the beautiful flowers associated with wetlands.

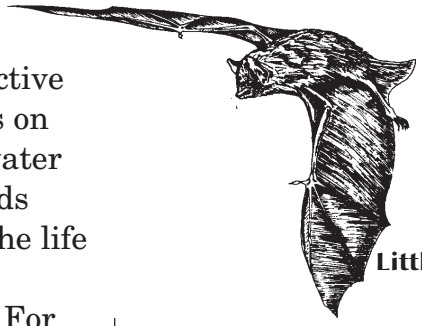
Marsh marigold are water-loving wildflowers which grow to a height of one to two feet. The blossoms are a deep yellow -orange color and are approximately one inch wide. The leaves are thick and dark green. Most flowers are found along small streams or shallow wetlands, often among trees.

Marsh milkweed is an erect plant of shallow marshes which may grow more than four feet high. Lance-shaped leaves grow opposite along the stem. Numerous, small pink or red flowers form large inflorescences at the tip of the stems from June to August. Like other milkweeds, cut stems or leaves produce a milky juice. The milkweed pod is long and narrow.

Jewelweed, also called touch-me-not, is a common wildflower of moist, shady woodlands and wetland edges. The pale-yellow to orange flowers are approximately 1.5 inches long and are sometimes spotted. The stem is translucent and contains a watery juice which may be used to relieve itching due to poison ivy, stinging nettles, and even athlete's foot. The tall leafy plant grows to a height of two to five feet.

Jewelweed

Animals of Iowa wetlands



Little brown bat

Wetlands are among the most productive and diverse biological communities on Earth. Many animals, from tiny water fleas to great blue herons, make Iowa wetlands their home. Wetlands play a critical role in the life cycle of Iowa wildlife – providing areas for breeding, raising young, and gathering food. For many insects and amphibians, periods of their life cycle require wetlands.

Common wetland mammals

Mammals may play key roles in Iowa wetlands. In some cases, wetlands have been created due to the activity of beavers. **Beavers** are typically more of a stream animal, but the dams they build create backwaters and shallow ponds.

Muskrats also are an important wetland mammal. Their domed cattail lodges dot the surface of many marshes. They use a tremendous amount of wetland plants for their food and to make their lodges. Muskrat populations often determine the amount of open water in wetlands. **Mink** are sleek, skilled predators that will dig into muskrat lodges in search of their prey. **Bats** are interesting predators that are attracted to a wetland's many flying insects.

Muskrats build domed cattail lodges.

Wetland mammals have amazing adaptations for living in water. Webbed feet, extra body fat, insulating and waterproof hair, collapsible nostrils, and the ability to swim better than walk are characteristics of some mammals that live in wetland waters.

Great blue heron

Common wetland birds

An abundance of food and nesting areas make wetlands a haven for a huge variety of birds. More than half of all North American birds depend on wetlands.

Wading birds such as the great blue heron search the shallow waters for fish and other small swimmers. Flycatchers, such as the eastern kingbird, gobble up a tremendous number of flying insects. Red-winged blackbirds, bitterns, and rails find refuge and food in the dense stands of reeds and cattails. Above the wetland waters, a northern harrier may scout for the small animals which make up its prey.

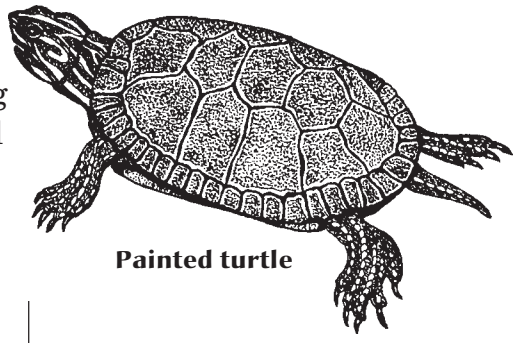
Iowa's pothole wetlands are part of the huge prairie pothole region that stretches into Minnesota, the Dakotas and Canada. This vast area of prairies and marshes historically contained the most important nesting grounds for ducks and geese in North America. In addition to spring nesting areas, Iowa wetlands are situated along the Central Flyway and provide critical rest stops for migrating waterfowl. Mallards, wood ducks, and blue-winged teal are common ducks nesting in Iowa. Common migrating ducks include pintails, ruddy ducks, green-winged teal, shovelers, lesser scaup, and redheads.

Common wetland reptiles and amphibians

Wetlands provide the most important habitat for Iowa's reptiles and amphibians. Amphibians are biologically linked to wetlands. Their life cycle and physical adaptations bind them to a damp existence in wetland waters. Many reptiles are also dependent on wetlands. Cool water and reflected sunlight allow cold-blooded animals to easily regulate their body temperature by either swimming or sun bathing. Amphibians feed on the abundant invertebrates, and reptiles prey on many wetland animals.

At first glance, leopard and pickerel frogs are difficult to distinguish. Pickerel frogs are only found in eastern Iowa and have spots in two rows down their back, while leopard frogs have spots scattered randomly over their back and are common throughout the state. Chorus frogs, bullfrogs, American toads, and tiger salamanders are also common in our wetlands.

Keep an eye open for sunbathing turtles. Snapping turtles, painted turtles, and softshell turtles are all common in Iowa wetlands. Water snakes, garter snakes, and bull snakes are also common. These snakes will all occasionally take a dip, but the water snake is the most common swimming snake. Water moccasins, also called cottonmouths, do not live in Iowa's wetlands.



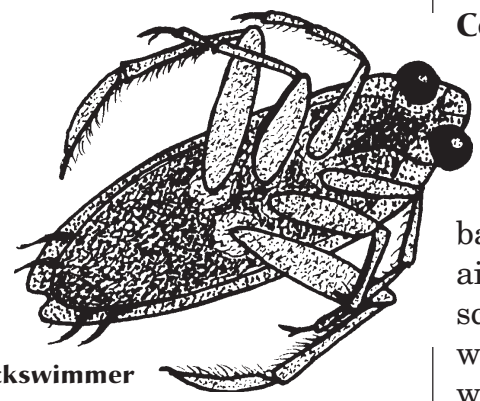
Painted turtle

Common wetland fish

Warm, shallow wetland waters are often low in oxygen and high in plant life, and many do not contain fish. Cold-stream fish such as trout and smallmouth bass could not live in these waters. But some fish have become well-adapted to the thick, murky waters.

Bluegills and crappies find cover and nesting structure in weedy wetland shorelines. Largemouth bass are larger members of the sunfish family that wait among the plants to catch an unsuspecting frog, crayfish, or small fish. Populations of bluegills, crappies, and bass are limited in wetlands by warm water and low oxygen levels. Bullheads, one of the most numerous wetland fish, live in warm, deoxygenated wetland water. These smaller relatives of catfish have long whisker-like barbels that act as antennae while the fish search the dark wetland bottoms for plants or animals – dead or alive. The barbels even contain taste buds, allowing the fish to taste their food before biting.

Carp are an Asian fish that now thrive in some wetland ponds in Iowa. Carp eat plants and can help create more open water in a pond. They are also bottom dwellers and can greatly cloud the water with sediment as they root through wetland muck. In some cases, too many carp can cause a wetland to become so muddy that many other fish cannot live or spawn in the water.



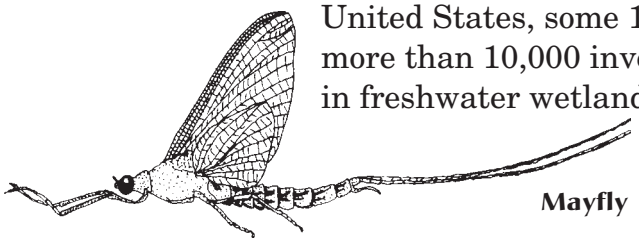
Backswimmer

Common wetland invertebrates

Invertebrates outnumber all other animals in a wetland. Small, strange-looking creatures fill every nook and cranny of a wetland. In open waters, insects such as the water boatman and backswimmer feed on plants, carrying bubbles of air with them as they make their dives. Water scorpions, predacious diving beetles, and giant water bugs are predators that search wetland waters for zooplankton, other insects, and even tadpoles and larger crustaceans. Giant water bugs will occasionally even tackle larger prey and are sometimes called "toe biters" – look out!

The surface film of wetland waters also teems with invertebrate life. Mosquito larvae dangle from the surface by their exposed breathing tubes. Water striders and whirligig beetles skitter along the water surface. Fish spiders, buoyed by their water-repellent hairs, can walk on water as they scavenge and search for their insect prey.

The air above the water is also thick with insect life. Dragonflies gobble up the swarms of gnats, flies, and mosquitos. Mayflies hatch in spring and summer and flutter over the water. Butterflies feed on the nectar of wetland flowers. In the United States, some 1,200 species of plants and more than 10,000 invertebrates make their homes in freshwater wetlands.

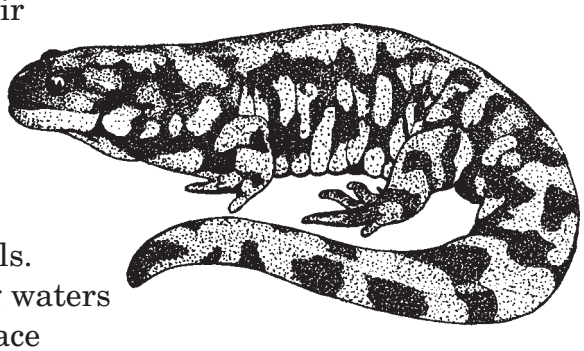


Mayfly

Wetland ecology

For plants and animals living in wetland water, getting enough oxygen requires some ingenious adaptations. Emergent plants rooted in the deoxygenated wetland muck must get all their oxygen through pores in their leaves and stems or, in the case of submersed plants, directly from oxygen dissolved in the water.

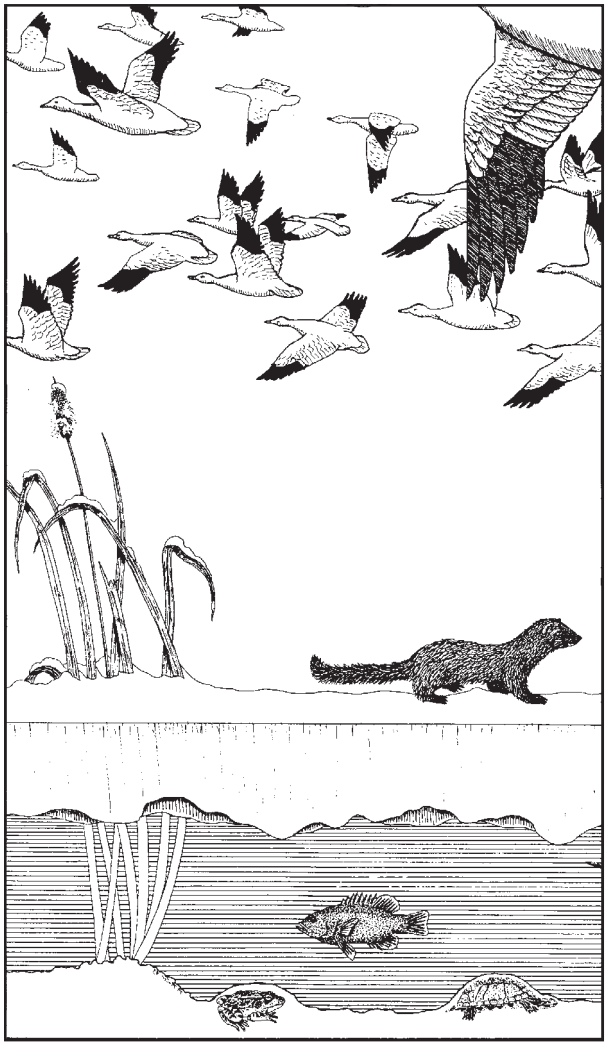
Fish and some invertebrates have gills that breathe dissolved oxygen from the water. Animals without gills use more unusual means for getting oxygen. Like miniature deep sea divers, whirligig beetles and backswimmers carry a bubble of air with them. Mosquito larvae attach themselves to the water's surface where they breathe air through a tube. Worms, leeches, and even frogs and salamanders can absorb dissolved oxygen through their skin. Turtles, and other reptiles and amphibians, are able to absorb oxygen while hibernating in the wetland muck. Mammals must breathe air and have the ability to hold their breath for very long periods of time.



Tiger salamanders can absorb oxygen through their thin, moist skin.

Hibernation and aestivation

There are times when wetlands become an inhospitable home for some wetland animals. Periods of drought can cause the life-giving waters to go dry. During winter, the wetland surface freezes and plants go dormant, making food scarce for many animals. Although some animals can escape these expected occurrences by migrating to better conditions, others cannot and must stay and adapt.



Wetland wildlife survive winter conditions by hibernating, migrating, or through special adaptations that allow them to remain active through the cold days of winter.

All reptiles and amphibians hibernate during winter. As days become shorter and colder, their metabolic rate drops and the animals go into a type of very deep sleep, called torpor. Most dig into the mud in fall and remain there until spring. Aestivation is similar to hibernation but is a response to extreme heat or drought. Some invertebrates may enter dormant stages that can last as long as 20 years. Resting eggs or cysts are resistant to drying and can "hatch" when the water returns.

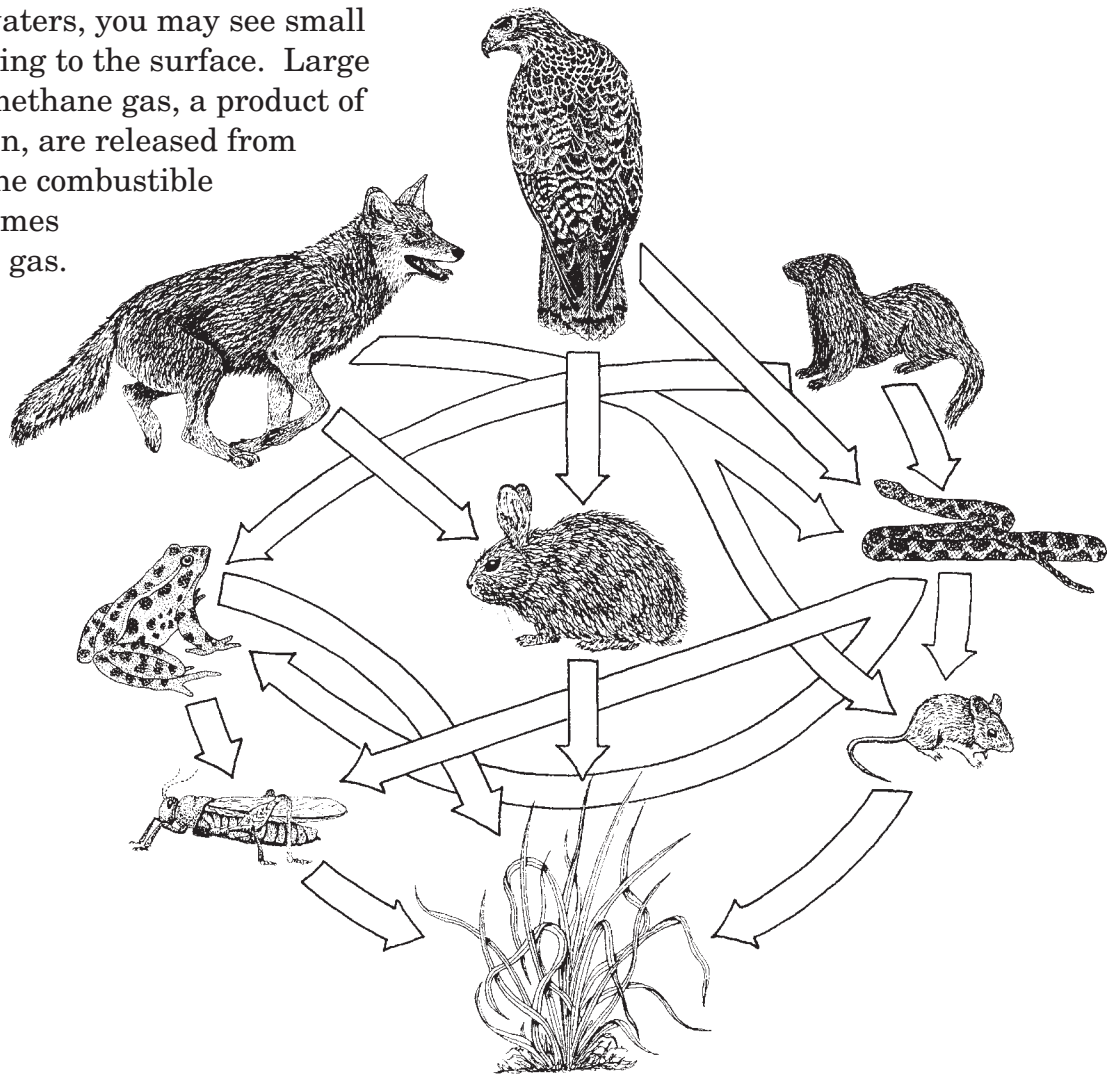
Predators, prey, and population control

If you were to take a close look at some wetland water under a microscope, you would see that even the smallest drop of water contains life. Strands of algae, other green plants, and tiny protozoans are the producers of food for wetland animals. Algae are perhaps the most important ingredient in a wetland. Nearly all wetland animals either feed directly on algae or on other animals that eat algae.

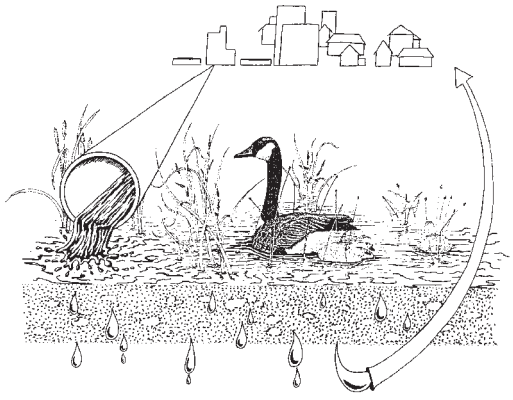
A variety of larval and adult insect plant-eaters make up the bulk of the primary consumers of algae and other plants. Other animals, such as ducks and crayfish, feed on the plants but will also feed on small invertebrates. Largemouth bass, bullheads, and turtles are secondary consumers and are the large predators of the underwater wetland world. On or near the water's surface, frogs, toads, snakes, mink, foxes, great blue herons, and raccoons feed on smaller animals. Above the water, kingfishers and northern harriers prey both on fish and surface animals.

As predators feed on their prey, food chains are formed. These food chains combine to make an intricate food web. Within the dynamic food web, wetland animals are provided with a variety of food choices, including foods to fall back on in times of emergency. The web creates health and stability within wetland communities.

Eventually all plants and animals in a wetland die, and a variety of wetland animals scavenge on the organic remains. Insects, crayfish, turtles, and bullheads find nourishment in the death of other animals. Fungi and bacteria further decompose dead plants and animals. The thick abundance of life is eventually converted to a thick abundance of decomposing sediment. If you look carefully at wetland waters, you may see small bubbles floating to the surface. Large amounts of methane gas, a product of decomposition, are released from wetlands. The combustible gas is sometimes called marsh gas.



People and wetlands



Wetlands are excellent cleansers of water.

A cleanser of the environment

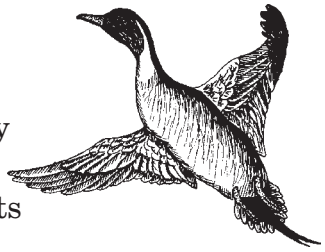
In addition to their beauty and diversity of plant and animal life, wetlands have environmental, economic, and recreational benefits for people. Wetland plants are effective at filtering soil and chemical pollutants from runoff. Historically, shallow wetlands have served as a transition zone between developed land and lakes, ponds, streams, and groundwater. Where wetlands border lakes or streams, the water is clearer and less polluted. Wetland plants also protect groundwater as they use up excess nitrogen, the most common pollutant in Iowa's drinking water.

Think of a wetland as a huge sponge that soaks up excess water and slowly releases it into lakes, streams, and underground aquifers. In periods of heavy rainfall or snow melt, wetlands lessen the chance of destructive floods and erosion. In periods of drought, many wetlands continue to slowly release their stored water supply.

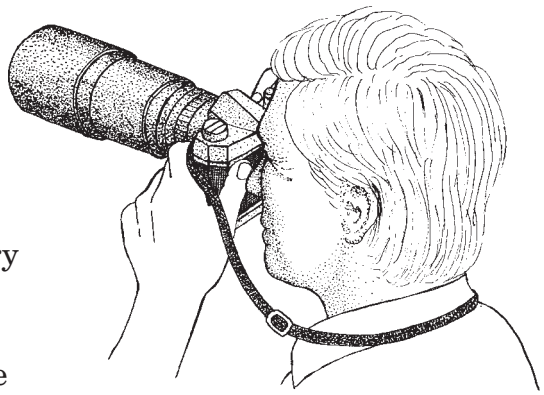
Economic considerations

Wetlands provide direct benefits to our economy. The free services of wetlands – cleansing water, reducing erosion, and maintaining fisheries – are missed when wetlands are destroyed. Where wetlands no longer exist, people bear the costs of water treatment, erosion controls, and fish stocking. One study estimated that it would cost communities throughout America as much as $75 billion if even just the driest wetlands lost their protected status and were destroyed. The high price tag takes into account that people would have to build state-of-the-art water treatment plants to fill the role of wetland plants.

Wetland recreation



The vast diversity of wetland wildlife make wetlands beautiful, fun, and scientifically important. Hunters, trappers, anglers, and wildlife enthusiasts rely on wetlands for their recreation. More than half of all Nort American ducks nest in the north-central United States and southern Canada. Loss of wetlands is the major reason for severe declines in the number of migrating waterfowl and of other wildlife. They are also breeding grounds and nesting areas of many sport fish. And more than half of all our endangered species find refuge in wetlands.



When you step into a wetland you are entering a living laboratory. In every drop of water and every scoop of pond muck, the critters that hop, buzz, slither, swim, and crawl have something to teach us. Anyone entering a wetland can experience life that is always within an arm's-length.

Wetlands lost

Early settlers thought the wet, mosquito-infested wetlands were inhospitable, and they were among the last areas to be developed. But when the wetlands went, they went quickly. Nationally, 54 percent of our wetlands have been drained or filled. In a hundred-year period, from 1850 to 1950, approximately 90 percent of Iowa's wetlands were destroyed. Palustrine wetlands were impacted the most. Only about one percent of Iowa's once abundant prairie marshes remain.

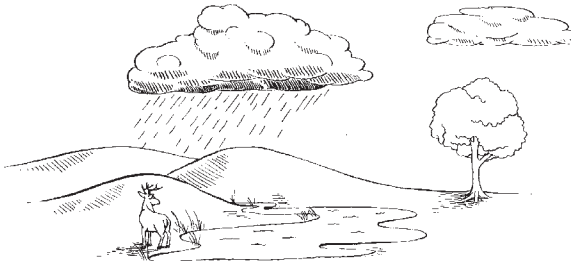
The Federal Swamplands Acts of 1850 and 1860 gave these supposedly worthless wetlands to county commissioners who were told to “drain them and make this land productive.” Some of this land was provided free-of-charge to developing railroad companies that were becoming a necessary part of life in Iowa.

Wetland protection

The early 1900s saw the establishment of drainage districts and the availability of steam shovels. More land was tiled, further eliminating wetlands from Iowa. Drainage districts allowed for the alteration of rivers and streams. Channelization took the curves out of rivers and erased bordering wetlands. Tiling took the water out of wetlands and revealed fertile cropland underneath.

Although lakes, streams, and reservoirs are all classified as wetlands, marshes and overflow wetlands are the most diverse and the most productive. In all, approximately four million acres of wetlands once existed in Iowa. Many were part of the vast complex of prairies and scattered marsh land that covered much of north central and northwestern Iowa. In a span of about one hundred years, Iowa's natural marshes were reduced to about 26,000 acres.

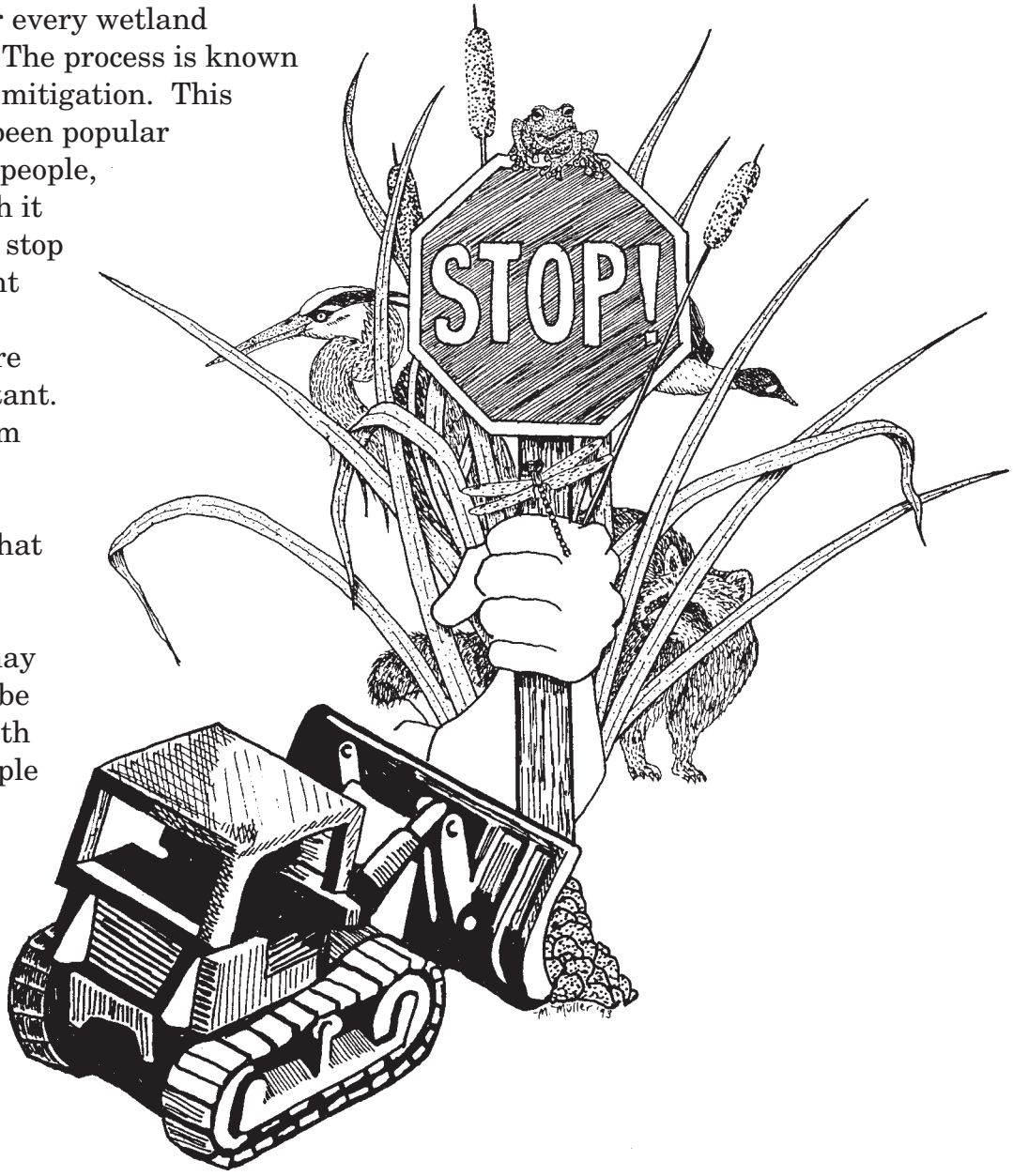
Throughout the country, people are now realizing that they have lost something special in wetland habitat. Concerned agencies, groups, and individuals have worked to stop the destruction of wetlands in Iowa. Although wetland destruction still occurs, wetlands have more protection than ever before. In Iowa, since 1985, agencies, organizations and individuals have restored more than 100,000 acres of wetlands and adjacent uplands.

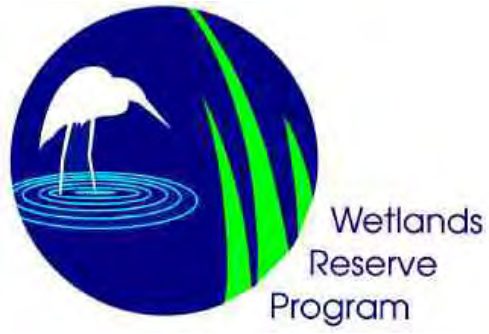


No net loss of wetlands

In an attempt to save valuable wetlands, the federal government has created a "no net loss" policy for wetlands. Key laws have been created to work toward the "no net loss" goal.

Under Section 404 of the Federal Water Pollution Control Act, permits are required to dredge or fill some types of rivers, streams, and wetlands. When permits are issued to develop a wetland, a new wetland must be created or restored for every wetland destroyed. The process is known as wetland mitigation. This policy has been popular with many people, even though it can slow or stop development projects – wetlands are that important. One problem with the mitigation process is that diverse, productive wetlands may sometimes be replaced with sterile, simple wetlands.





Other laws which are saving wetlands include the Swampbuster Provision and Conservation Reserve Program of the 1985 Federal Food Security Act. The Swampbuster Provision makes it impossible for farmers to drain wetlands and receive any farm program benefits. The Conservation Reserve Program pays farmers for not planting valuable wetland areas with row crops, thus saving wetlands but not causing farmers to forgo income from their land. Iowans are also able to set aside wetland acres through conservation easements and the federal Wetland Reserve Program. Anyone interested in preserving wetlands on their land or in their area should contact their local Soil and Water Conservation District, County Conservation Board, or the Iowa Department of Natural Resources.

Conflicting definitions

There is a lot of interest among farmers, business people, and other concerned citizens in protecting Iowa's remaining wetlands. Sometimes the main obstacle to protecting a wetland area is a matter of confusion and inconsistency. In some cases, an area has been classified a wetland, and in another instance a similar area has not.

In 1989, the Inter-Agency Task Force of Wetlands proposed revisions to the delineation criteria used to define wetlands. The agency, with cooperation from agencies of the federal executive branch, defined wetlands on the basis of the presence of wetland plants, wetland soils, water levels, and the number of days during a year when the soil was “saturated.” This definition meant that if an area had the right types of plants and soil and had water within 18 inches of the surface for seven days during the growing season, it was a wetland. Some people, not understanding the value of seasonal wetlands, took exception to the 1989 wetlands definition. Some politicians have offered

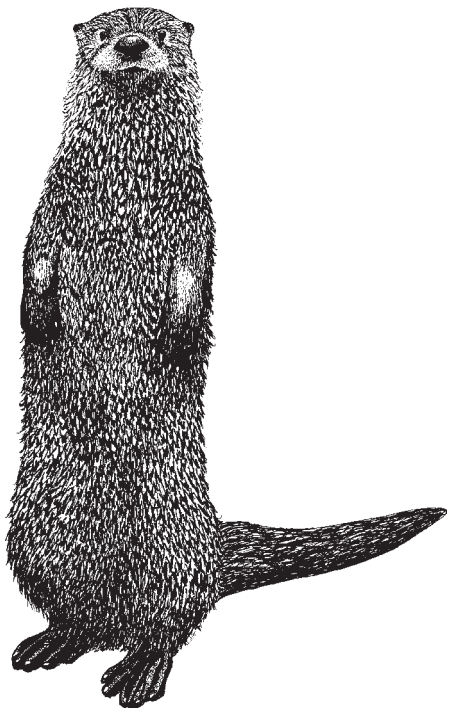
legislation that would drop these drier wetlands from the delineation process. Environmental groups and citizens throughout the nation rose up to defend the original wetlands definition, arguing that drier wetlands are among the most valuable filters of pollutants, and provide habitat for some special types of wildlife. The battle over a definition continues.

Summing it up

Wetlands are places where plants and animals live amid standing water or saturated soils. A wetland can be seen as having a series of distinct communities, making a transition from damp soils to standing water. Each of these communities is home to specially-adapted plants and animals. They are among the world's most diverse and productive biological communities. Plants and animals fill every ounce of an Iowa wetland. Invertebrates are the most numerous of wetland animals, but reptiles, amphibians, fish, birds, and mammals are also a large and important part of Iowa wetlands.

Wetland marshes go through a cyclical process of change called succession, during which water levels and plant communities change. The process can be set back or moved forward due to changes in climate, human activity, the activity of muskrats, or other factors.

In addition to being essential for wildlife, wetlands are very valuable for people. Wetlands cleanse the water, reduce erosion and flooding, and maintain populations of fish, ducks, and other wildlife. In the past 150 years, most wetlands have been destroyed. Iowa's remaining wetlands are dependent on legislation, government programs, and individual actions that offer them protection. In recent years, a debate has risen over the delineation process used to define a wetland. The debate continues amidst renewed interest in protecting wetlands.



Iowa wetlands facts

- Palustrine, or pothole, wetlands were formed in the wake of retreating glaciers 10,000-14,000 years ago.
- We have lost more than 95 percent of our original wetland habitats.
- Approximately 99 percent of Iowa's once plentiful prairie marshes have been destroyed.
- Nationally, approximately 54 percent of our wetlands have been drained or filled.
- More than 1,200 species of plants make U.S. freshwater wetlands their home.
- More than 10,000 invertebrate species are adapted to life in freshwater wetlands.
- Destruction of drier wetlands could cost communities as much as $75 billion.
- The world's tiniest flowering plants, duckweeds, are common in Iowa wetlands.
- The majority of Iowa's endangered species live in, or association with, wetlands.
- Wetlands filter pollutants from soil runoff, and help control flooding.

Useful resources

Agricultural Pesticides and Wildlife: A Balancing Act; Iowa State University Extension
The Audubon Society Nature Guides - Wetlands; 1987.
A Country So Full Of Game; James J. Dinsmore; University of Iowa Press, Iowa City, Iowa; 1994.
Extinction: The Causes And Consequences of the Disappearance of Species; Paul and Anne Ehrlich; Random House, New York, NY; 1981.
The Field Guide to Wildlife Habitats of the Eastern U.S.; Janine M. Benyus; 1989.
IAN Booklet Series; Iowa Association of Naturalists; ISU Extension Service, Ames, IA.
See list of titles and ordering information on page 25 of this booklet.
"Iowa Natural Heritage Preservation..."; Proceedings of the Iowa Academy of Science (88(1):43-47); 1981.
Iowa State University Extension publications; contact your county extension office.
"Iowa's Natural Heritage"; Iowa Academy of Science and Iowa Natural Heritage Foundation; 1982.
Iowa's Waters and Fishes: A Century and a Half of Change; Proc. Iowa Accad. Sci.; 88(1):17-23; 1981.
"Iowa's Wetland, Present and Future, with a Focus on Prairie Potholes"; Bishop, R.A., J. Joens and J. Zohrer; Iowa Academy of Science, 105(3); 1989-93.
Landforms of Iowa; Jean Prior; University of Iowa press; Iowa City, IA; 1991
Living On The Edge: Endangered Species In Iowa; Daryll Howell and Mark Leoschke; Iowa Department of Natural Resources, Des Moines, IA; 1992.
National Resources Inventory; www.nhq.nrcs.usda.gov/NR1/1997/
Natural Resource Conservation: An Ecological Approach; Oliver S. Owen; Macmillan Publishing Co., New York, NY; 1980.
Prairies, Forests, and Wetlands: The Restoration of Natural Landscape Communities In Iowa; Janette R. Thompson; University of Iowa Press, Iowa City, IA; 1992.
"Pond and Brook"; Michael J. Caduto; 1990.
"Population Trends Among Iowa's Amphibians and Reptiles," Proc. Iowa Accad. Sci. 88(1):24-27, 1981.
Saving Soil and Wildlife: The Promise of the Farm Act's Conservation Title; Ann Robinson; Izaak Walton League of America; 1987.
Status and Trends of Wetlands in the Contiguous United States, 1986-1997;T.E. Dahl; U.S. Fish and Wildlife Service; December, 2000.
Up On The River; John Madson; 1985.
Wetlands: Losses in the U.S. 1780s to 1980s; U.S. Dept. of Interior, Fish and Wildlife Service, 1990.
Wetlands Overview: Federal and State Policies, Legislation, and Programs; U.S. General Accounting Office; 1991.
"Wetland Plants and Plant Communities of Minnesota & Wisconsin"; Steve Eggers and Donald Reed, U.S. Army Corps of Engineers, 1987.
"Wetlands of the United States: Current Status and Recent Trends"; U.S. Fish & Wildlife Service, March, 1984.
"Wetlands, Wildlife, and You!,"; Iowa State Univ. Extension, 1991.
Why Preserve Natural Variety?; Bryan G. Norton; Princeton University Press, Princeton, NJ; 1987.

Notes