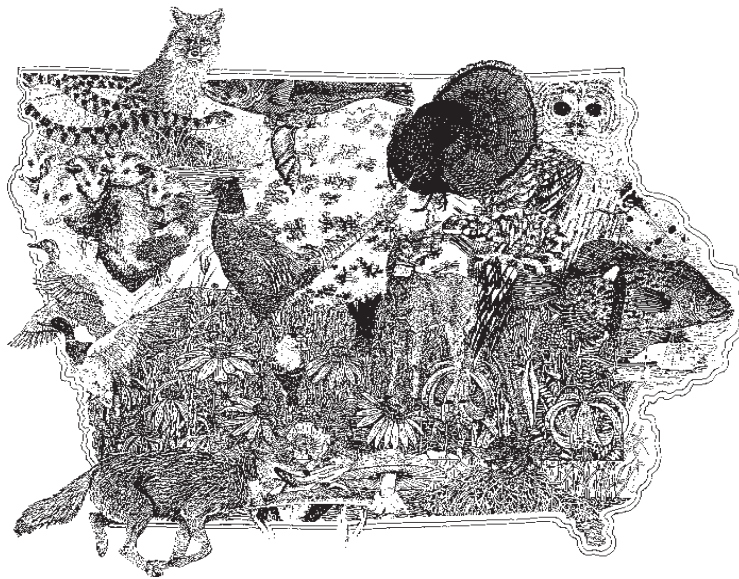


Iowa Habitat Loss and Disappearance

Iowa Association of Naturalists



Iowa Environmental Issues Series

Iowa Habitat Loss and Disappearing Wildlife

Habitat and wildlife

Iowa habitat

Iowa was once a land dominated by prairie and scattered prairie wetlands. Thick woodlands and forested wetlands bordered its rivers and streams and covered the rugged landscape of northeast Iowa. The numerous interior streams meandered their way to the great border rivers - the Mississippi and the Missouri. Since Euro-American settlement, however, the historic Iowa landscape has been drastically changed, replaced by farms, towns, and highways. The once dominant Iowa prairie has been reduced to Iowa's most rare and endangered habitat.



Habitat refers to the features of an area that allow a wildlife species to live there. Although some types of wildlife may have many specific habitat needs, all wildlife have four basic **habitat requirements**:

- adequate supplies of the right types of **food**;
- available structure and materials that provide **shelter** to serve as safe places to live and raise young;
- accessible and adequate supplies of **water**; and
- enough **space** to find these necessary resources and to exercise natural behavior.

When a wildlife species can no longer find enough food, water, shelter, or space, its habitat has been lost. Wildlife habitat is lost when land is cleared, polluted, or otherwise altered.

Habitat is often described in terms of biological communities or **habitat types**. In addition to prairies, other habitat types include woodlands, wetlands, and waterways such as rivers and streams. Like prairies, these habitat types also have been lost or altered.

Disappearing wildlife

Habitat loss is by far the most serious problem facing wildlife today. Wildlife biologists study habitat and wildlife populations. They classify the status of wildlife species based on population sizes, available habitat, and the degree to which the habitat is threatened. Species then may be designated as extinct, extirpated, endangered, or threatened. When a species no longer exists on Earth, it is said to be **extinct**. An **extirpated** species is one which no longer has a wild population living in a given area. Often the area is a state or region, and Iowa species listed as extirpated are those that no longer live in the state. If a wildlife species has few or very small populations or if its habitat is greatly threatened, the species may be classified as **endangered**. Threats to endangered wildlife sometimes cause a species to become extinct or extirpated. A species may be listed as endangered at the state or federal level. State endangered species are in danger of being extirpated; federally endangered species are often in danger of extinction. Federally endangered species are automatically assigned “state endangered” protected status.

Some species are not considered to be endangered, but they have populations which are very vulnerable or are showing signs of unnatural decline. Scientists may list these species as **threatened**. If a species is rare but not yet well-understood, it may be listed as **of special concern**.

Many Iowa species have been extirpated or are currently listed as endangered or threatened. The following charts show the number of species on the 1996 Iowa endangered species list.

State endangered species in Iowa

Animals 52
 Mammals 4
 Birds 9
 Reptiles and amphibians 13
 Fish 8
 Insects 2
 Snails 7
 Freshwater mussels 9
Plants 64

Federally endangered and threatened species in Iowa

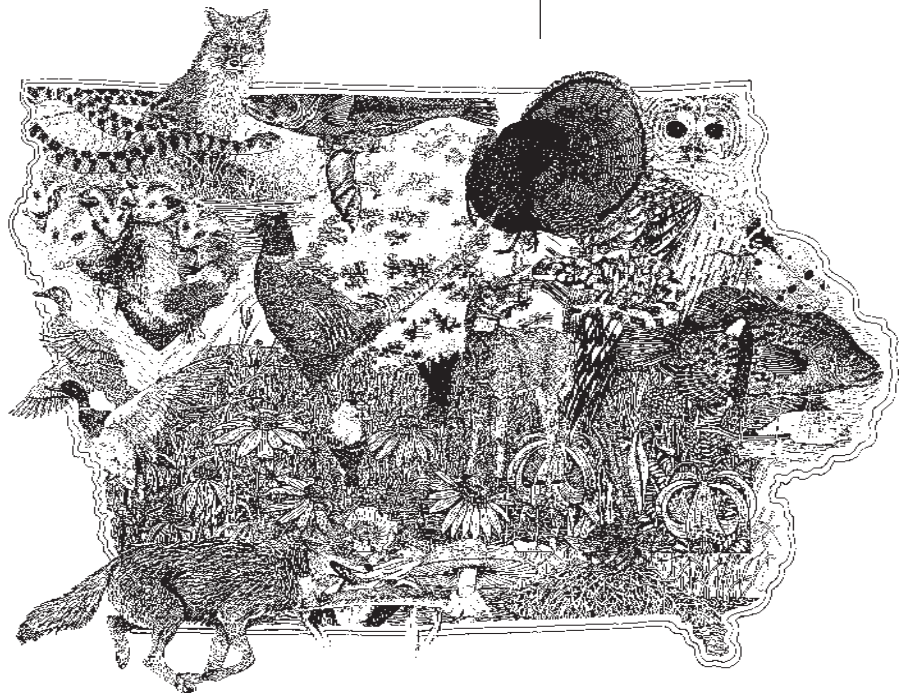
- Peregrine falcon (*Falco peregrines*)
- Bald eagle (*Haliaeetus leucocephalus*)
- Interior least tern (*Sterna antillarum*)
- Piping plover (*Charadrius melodus*)
- Indiana bat (*Myotis sodalis*)
- Pallid sturgeon (*Scaphirhynchus albus*)
- Iowa Pleistocene snail (*Discus macclintocki*)
- Higgins' eye pearly mussel (*Lampsilis higginsii*)
- Western prairie fringed orchid (*Platanthera praeclara*)
- Eastern prairie fringed orchid (*Platanthera leucophaea*)
- Mead's milkweed (*Asclepias meadii*)
- Prairie bush clover (*Lespedeza leptostachya*)
- Northern wild monkshood (*Aconitum noveboracense*)

Habitat and biodiversity

The vast variety of plants and animals that constitute the nature of our planet is often referred to as **biodiversity**.

Diversity is a basic element of nature and is characteristic of most natural areas. Scientists agree that Earth is a planet of great biodiversity. Estimates of the number of species that currently inhabit our planet range from three million to 30 million. Iowa is not an exception to the rule of diversity in nature. Even today, the woodlands, prairies, wetlands, and waters of Iowa are teeming with a diversity of life. Nearly 1,800

species of flowering plants and more than 750 species of vertebrate animals are known to exist in Iowa. There are also many thousands of species of invertebrates and many types of non-flowering plants such as mosses, fungi, lichens, and algae.



Because diverse habitats have more resources to attract wildlife, there is a self-perpetuating increase in diversity in healthy communities. A variety of plants attracts a variety of wildlife. These new wildlife residents are likely to attract other wildlife that have a specific use for them. The more diverse an area is, the more species it will attract. The more species the area attracts, the more diverse it will become.

Similarly, loss of biodiversity creates more loss of biodiversity. Because species depend on one another for their existence, the loss of one or more species may lead to a chain reaction of species loss. When we lose habitat, we are actually losing the diversity of species that once contributed to the existence of a variety of other plants and animals.

Woodland habitat

Iowa's woodlands were historically found in areas sheltered from direct sunshine and strong winds where more moisture was available.

In these areas, trees could establish themselves and out-compete grasses which covered most of the state. Iowa rivers and streams were often bordered by a thick corridor of woodland trees. The eastern, southern, and especially the northeastern parts of Iowa were more heavily forested than the rest of the state. Today's woodlands are fewer, but they still favor the same climate and maintain the same general distribution.



Home in the trees

A large variety of trees, shrubs, vines, and flowers may be found growing in Iowa woodlands. Upland woodland habitat usually contains large nut-producing oaks and hickories adapted to sunlight and drier conditions. Bottomland woodland habitat is usually found along rivers or on the damper north and east sides of slopes. It is often characterized by cottonwood, silver maple, basswood, and willows. The transition from upland to bottomland habitat is not always clear and may overlap.

Woodland animals depend on the variety of habitat found in the layers of an Iowa woodland. Hawks use the high treetops for nesting and perching, and they hunt as they soar above the woodland edges. Owls perch and nest in the canopy as they listen quietly in the still night for the movements of their prey. The understory below the canopy may appear to be a circus trapeze act of flying songbirds, leaping squirrels, and climbing woodpeckers.

For much of the summer, woodland shrubs are the grocery store of an Iowa woodland. A variety of small birds dart in and out of the shrubs, eating berries and insects and taking advantage of thick shrub cover. Deer browse on leaves in the shrub layer, well-protected among thickets. Among the blossoms of shrubs and wildflowers, bees, butterflies, and hummingbirds search for nectar and pollen.

Chipmunks and mice scurry among the leaves and logs of the woodland floor in search of fallen nuts, seeds, and berries. Toads stay in the moist woodland floor and eat crickets and other crawling or low-flying insects. Snakes and foxes hunt for the smaller animals that hide among the low-growing plants. Other animals find a home underground. Obscure invertebrates such as centipedes, isopods, slugs, and ants make their houses under rocks and logs and in the woodland soil. Tunnels crisscross under the ground and reveal the movements of moles.

Woodlands lost

Today, woodlands comprise the greatest area of Iowa's remaining habitat. Approximately 28 percent of Iowa's original forest cover remains. Although woodland habitat is still fairly common in Iowa, today's forests are often fragmented, split by roads, farms, and towns. And Iowa forests are usually affected by human activity. Although some types of wildlife thrive in this type of environment, others do not. Iowa woodlands are not suitable for large predators that need large areas for hunting and isolation. Wolves, cougars, and black bears which were once native to Iowa will probably never again live in our state.

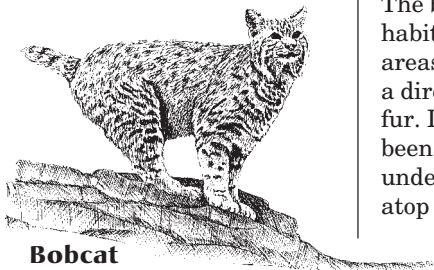
Iowa woodlands are part of a transition, from the northern forests of Minnesota and Wisconsin to the warmer woodlands of Missouri, and from the eastern deciduous forests to the Midwest prairies. Iowa woodlands are often the range boundaries of plants and animals. These species have historically been rare in Iowa and may become extirpated from the state if their remaining habitat is lost.



Bearberry



Showy lady's-slipper



Bobcat

Glimpses of Iowa's endangered woodland plants and animals

Bearberry (*Arctostaphylos uva-ursi*)

Bearberry is a ground-trailing shrub found in sandy or rocky areas on woodland bluffs — a very rare habitat in Iowa. Species which can only live in a few special places are very vulnerable to habitat destruction.

Showy lady's-slipper (*Cypripedium reginae*)

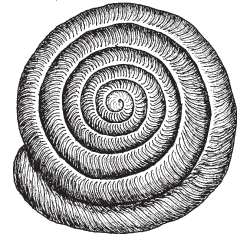
The showy lady's-slipper, tallest and among the most beautiful of all northern orchids, was once found throughout most of Iowa. This species has suffered from habitat destruction and over-collecting by gardeners and botanists. Only a few places in Iowa are known to contain this rare orchid. Most of these areas are along the algific (cold air) slopes of northeast Iowa.

Bobcat (*Felis rufus*)

The bobcat, also called the wildcat, needs lots of space for its life-style and hunting habits. When roads, towns, and farm fields fractured our woodlands into small areas, few vast areas of woodlands were left for the bobcat. People have also posed a direct threat to bobcats which were hunted as varmints and trapped for their fur. In recent years, bobcats seem to be increasing in population. Bobcats have been officially sighted in 20 Iowa counties since 1980. Perhaps with a little more understanding and some reforestation, bobcats will again take their rightful place atop the woodland food chain.

Iowa Pleistocene snail (*Discus macclintocki*)

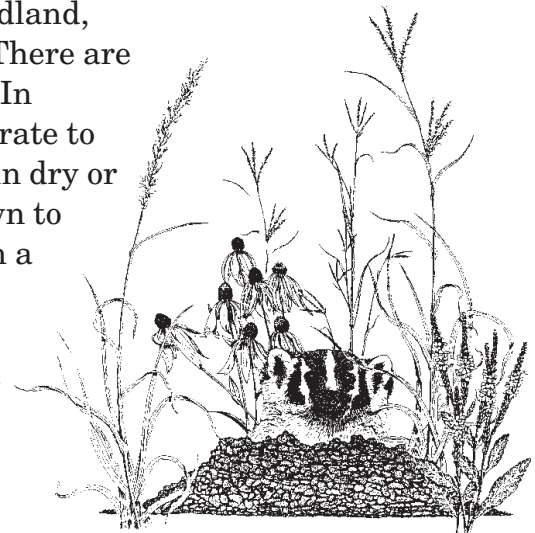
The word Pleistocene refers to the Ice Age of 10,000 – 15,000 years ago. Pleistocene snails are holdovers from the Ice Age. They require unusually cold environments which are found among the rocky slopes of northeast Iowa. These algal talus slopes are the only places where these snails can live, making them very vulnerable to habitat changes.



Iowa Pleistocene snail

Prairie habitat

Whereas trees dominate and define a woodland, grasses dominate and define a prairie. There are many different types of prairie habitat. In general, tall grasses and sedges are found in moderate to damp soils and shorter grasses are more common in dry or sandy soils. At least 72 species of grasses are known to grow in Iowa's prairies. But prairies are more than a sea of grasses. A parade of prairie wildflowers begins in April and marches through October. Prairie wildflowers have adapted to life in an open environment, exposed to sun and wind. Although certain plants may be better adapted to drier or wetter conditions, prairie wildflowers may be found growing in all types of prairies.



Making a home on the prairie

Animals depend on prairie plants and other prairie animals for their habitat and often may be found using specific types of prairies. Numerous insects are very important to prairie habitat. Not only do they pollinate flowers, but they are also important links in many prairie food chains. Prairie mammals, birds, reptiles, and amphibians all feed on the abundance of insects. Countless multitudes of ants aerate and mix the rich prairie soil. Insects are at the center of life on the prairie.

Historically, Iowa prairies provided habitat for a large variety of wildlife specially adapted to life in the open

grasslands. Buffalo, elk, and wolves once lived in Iowa. It is unlikely that prairie dogs or black-footed ferrets ever lived in Iowa, but they were common in the western prairies of Nebraska and the Dakotas. Tall grasses and loamy soils still provide homes for smaller mammals such as pocket gophers, ground squirrels, grasshopper mice, and badgers.

In winter, prairie plants provide a durable one to three-foot cover to ward off snow and cold winds. In spring, the bunchy growing pattern of the grasses provide areas of concealment, as well as bare areas where birds can dust themselves and move about more freely in search of food. Meadowlarks, bobolinks, nighthawks, and grasshopper sparrows feed on insects and keep insect populations in check. The open view provided by a near-treeless landscape provides larger birds such as the red-tailed hawk, northern harrier, and American kestrel with places to hunt for smaller animals.

Prairie lost

Prairies once dominated the Iowa landscape, covering approximately 85 percent of the state. Today, less than one-tenth of one percent of this original prairie remains.

Iowa's remaining prairie wildlife are confined to a scattering of small prairie remnants often found in road ditches and railroad rights-of-way. Plants and animals that require rare or very specific prairie conditions are often missing from these prairie pieces, while wildlife species with very general needs have adapted to life in road ditches, farm pastures, and other areas of human development. The number of prairie species which were forced out of Iowa is unknown because of incomplete records of early prairie plants and animals. Many butterflies and other invertebrates which were adapted for feeding on specific flowers likely vanished as the flowers were plowed under.

A few prairie remnants and reconstructed prairie areas may still be found in Iowa. The largest Iowa prairie remnant is only 240 acres. With the exception of the Loess Hills in western Iowa, prairie remnants are small and often the last refuges for some of the state's most endangered plants and animals.

Glimpses of Iowa's endangered prairie plants and animals

Woolly milkweed and Mead's milkweed

Iowa prairie contained a variety of milkweeds. Some species of milkweed adapted well to human disturbance; others did not. Woolly milkweed (*Asclepias lanuginosa*) is found in only a few widely-scattered sites in northern Iowa. This milkweed needs dry prairie and can live in moderately grazed prairie pastures. But very few prairie areas remain, and prairie pastures are sometimes overgrazed. Woolly milkweed will probably remain very rare in Iowa.

Mead's milkweed (*Asclepias meadii*), found in the southern half of Iowa, is one of our rarest plants. Like woolly milkweed, it has suffered from the destruction of our native prairie. Mead's milkweed is known to grow in only four sites in Iowa and is represented by only 18 plants. Mead's milkweed may spread vegetatively, but it is not known to produce seeds.

Prairie bush clover (*Lespedeza leptostachya*)

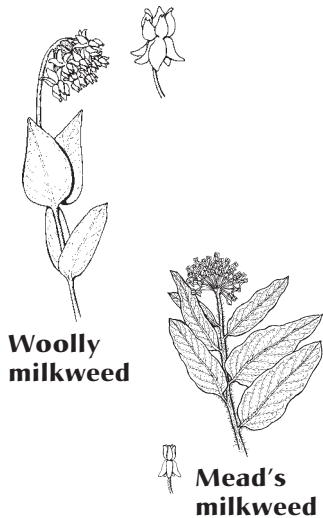
This small member of the pea family has been on the federal threatened species list since 1987. Only a few dozen sites located in Iowa, southern Illinois, southern Wisconsin, and southern Minnesota are known to contain this delicate clover. Agriculture practices have had a profoundly negative effect on prairie bush clover which needs prairie or grassland pastures.

Northern harrier (marsh hawk) (*Circus cyaneus*)

Predators which require large areas for hunting are very vulnerable to habitat loss. The northern harrier, also known as the marsh hawk, is a predatory bird that needs large areas of open grasslands and prairie wetlands. Changes in the federal Conservation Reserve Program (CRP) may leave the northern harriers with an uncertain future in Iowa.

Dakota skipper (butterfly) (*Hesperia dactotae*)

The Dakota skipper was probably once very common in Iowa. But the small butterfly is very vulnerable to habitat destruction, including overgrazing, haying, and woodland encroachments. Because it is so vulnerable, the Dakota skipper must develop several populations in a large, stable area of prairie in order to survive as a species. Unfortunately, the Dakota skipper is known to live in only one place in Iowa.

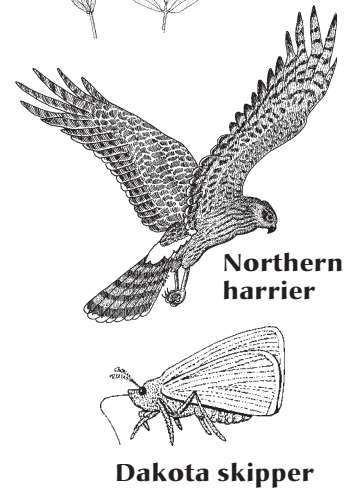


Woolly milkweed

Mead's milkweed



Prairie bush clover

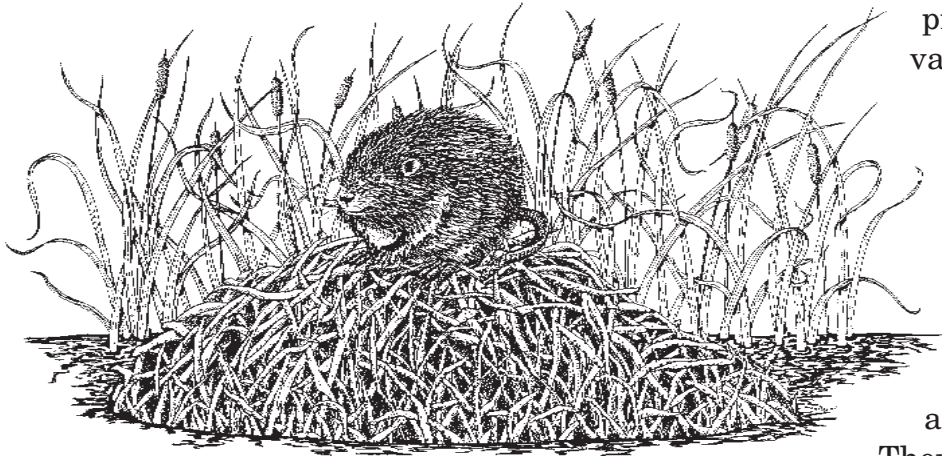


Northern harrier

Dakota skipper

Wetland and stream habitat

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



Musk rats are important members of wetland-marsh communities.

provides habitat for a variety of wildlife that make their homes in wetlands or still waters.

In a river or stream community, animals and plants make their homes among moving water.

There is both an abundance and diversity of waterways in

Iowa - the great Mississippi and Missouri border rivers, the flat, meandering streams found throughout most of the state, and the cold, clear, quick waters of northeast Iowa. Wherever you travel in Iowa, you rarely will be more than 30 minutes from a stream.

Home in the water

Warm, shallow waters, often low in oxygen and high in plant life, are typical of wetlands and most river backwaters. Some fish are well-adapted to Iowa's broad, shallow waters, as long as they are not too warm or polluted. Water that is warm and very shallow usually does not contain fish.

Even in very shallow wetlands, many animals — from tiny water “fleas” to great blue herons — make their homes. Water plays a critical role in the life cycle of Iowa wildlife, providing areas for breeding, raising young, gathering food, and migratory rest stops. For many birds, insects, and amphibians, wetlands and waterways are necessary during their life cycles.

Iowa's pothole wetlands are part of the huge prairie pothole region which stretches into Minnesota, the Dakotas, and parts of Canada. This vast area of prairies and marshes historically has been the most important nesting ground of ducks and geese in North America. In addition to spring nesting areas, Iowa wetlands are situated along the Central

Flyway and provide rest stops for migrating waterfowl. The Mississippi and Missouri Rivers are the most important interior flyways for migrating waterfowl in North America.

Beaver and muskrat are two aquatic mammals that often greatly change wetland habitat. Beaver dams create backwaters and shallow ponds along otherwise fast-moving streams, and muskrats clear tremendous amounts of wetland plants while feeding and making their lodges. The population of muskrats often determines the amount of open water in a wetland.

In winter, our national symbol may be seen perched along Iowa rivers. Bald eagles are somewhat common along the larger rivers where they snatch fish with their large talons. They require open water, usually found below dams, and large trees in which to perch and survey the water for fish. Bald eagles also need areas of isolation and cover, usually found in forested ravines or valleys.

Wetlands lost

During a 100-year period from 1850 to 1950, approximately 95 percent of Iowa's wetlands were destroyed. Wetlands were drained to make farm land more productive and to make room for roads, towns, and other land development. Rivers and streams were altered to meet the demands of agriculture, industry, and transportation. As streams were straightened and floodplains were cleared, more wetlands were lost. Additionally, channelization and stream-straightening took the curves out of rivers and reduced river miles and habitat so that less than half of our original miles of inland waterways remain.

Rivers are channelized and deepened by dredging the river bottom and stabilizing the banks. In the process, river habitat is drastically changed. Adjacent wetlands are lost as rivers are straightened, causing a greater potential for erosion and flooding. Dams along rivers create habitat for lake wildlife, but they also may act as barriers to migrating fish. Siltation is a constant problem in reservoirs above dams.

Approximately four to six million acres of wetlands once existed in Iowa. Some were seasonal wetlands or may have been totally dry in some years, making an exact estimate of wetland acres very difficult. The majority of Iowa's wetlands were pothole marshes and overflow wetlands that provided the most diverse types of wildlife habitat. By 1981, these valuable wetlands had been greatly reduced, leaving only approximately 26,000 acres of marshland in Iowa.

Fortunately wetlands have been added to the state through restoration and wetland construction efforts since 1985.

Glimpses of Iowa's endangered wetland plants and animals



Sundew

Sundew (*Drosera rotundifolia*)

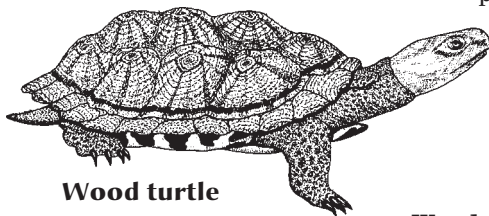
Sundew is Iowa's only insect-eating plant. In Iowa, it grows in a rare type of wetland, called a fen, where groundwater and minerals percolate up to the surface. In other states, sundew can be found growing in bogs. Like a bog, fens are usually wet and spongy. But instead of being acidic like a bog, fens are alkaline and home to some very specialized plants. Because of the rarity of Iowa fens, sundew was probably never common in our state. Only one population of sundews is known to exist in Iowa.



Yellow-eyed grass

Yellow-eyed grass (*Xyris torta*)

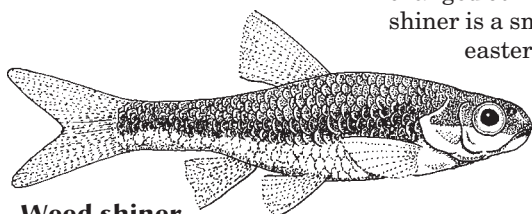
Yellow-eyed grass grows in sandy wetlands which are very rare in Iowa. It is the rarity of its habitat which places this plant on the Iowa endangered species list. Protection of rare habitat is often the best way to protect an endangered species.



Wood turtle

Wood turtle (*Clemmys insculpta*)

Wood turtles were once found throughout eastern Iowa in woodlands containing permanent ponds. Woodland grazing and logging and wetland draining have destroyed much of the wood turtle's natural habitat. Only one population of these small turtles still survives in Iowa along the Cedar River in northeastern Iowa. They also are considered endangered in several other states. Further population decreases occur when people illegally collect turtles for pets.



Weed shiner

Weed shiner (*Notropis texanus*)

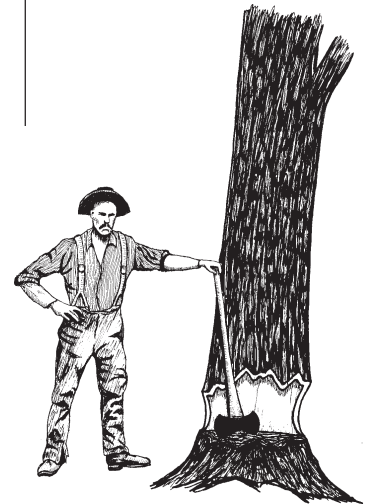
Iowa is a land of many streams and rivers. A dangerous pollutant, however, has changed our waterways. The pollutant is silt — a result of soil erosion. The weed shiner is a small fish which once lived in the clean, sandy river bottoms of eastern Iowa. Soil erosion and the associated siltation of our rivers has changed our river bottoms and has left the weed shiner homeless. No population of weed shiners has been recorded in Iowa's interior streams since 1975.

Periods of rampant habitat and wildlife losses

Many factors contributed to the destruction of much of Iowa's native habitat. However, a few special events in Iowa's past led to periods of rampant habitat loss and loss of wildlife.

European settlement

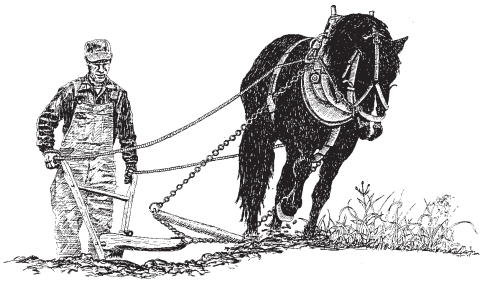
Iowa's forests were the first type of habitat to be cleared by Euro-American settlers. These pioneers relied on trees for wood to build homes and fences and for firewood to heat their homes. Forests also were quickly cleared for farm land. Most settlers had their roots in the wooded eastern states and chose the forests for their first settlements. There was also a bias against prairie soils. The pioneers believed that "soil too poor to grow trees" would not be fit for raising crops. Had they known that world's most fertile soils lay beneath the open grasslands, it would have made little difference. Most early Iowa pioneers did not have the ability to plow through the thick prairie sod. The period of Euro-American settlement had a severe impact on Iowa's forests. Between 1832 and 1875, Iowa's forest habitat decreased from more than 6.6 million acres to fewer than 2.6 million acres.



The steel plow

Once the value of prairie soils was recognized, the main obstacle to farming these areas was the thick prairie sod. Prairie plants have very dense, deep roots that protect the plants from drought and fire. The thick network of roots acted as a barrier to the wooden plows of the early 1800s.

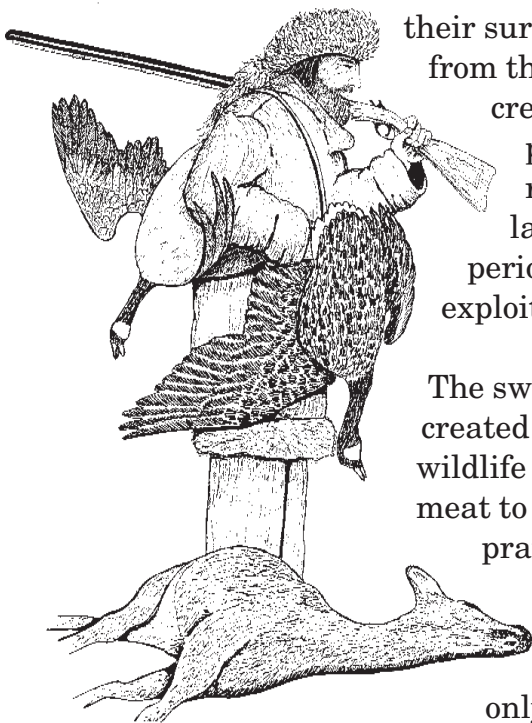
But John Deere invented the steel moldboard plow in 1837. By the 1850s, the moldboard plow was available to Iowa farmers, and in the 1860s the plow was further perfected. The new technology exposed the most productive farm land in the world. It also marked the end of the vast prairie habitat in



Iowa. By the turn of the century, the Iowa prairie was essentially gone. Thirty million acres of prairie were quickly converted to farm land. All that was left were a few small pieces of the habitat that once dominated the Iowa landscape.

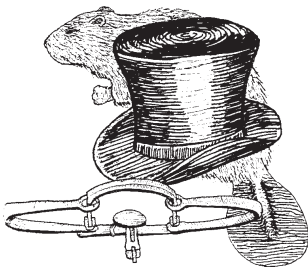
Exploitation and extirpation

Pioneer hunters relied heavily on wild plants and animals for their survival. As frontier settlers rushed to gather resources from the land, markets for natural products were being created on the East coast and in Europe. In addition to pioneer hunting for survival, there was a monetary reward for exploiting resources. There were no game laws, protected species, licenses, or penalties. The period beginning in the mid-1800s was an era of exploitation of wildlife in America .



The switch from subsistence hunting to market hunting created more demands on wildlife and more waste in wildlife use. In Iowa, there was a ready market in supplying meat to railroad workers. Buffalo hunters roamed the prairies, leaving behind rotting carcasses of flesh stripped for the value of their hides and the East Coast delicacy of buffalo tongue. The already flourishing fur trade would be brought to a halt only as beaver, otters, and mink dwindled from their vast native ranges.

In addition to market hunting, wildlife were exploited for other reasons. A campaign of Manifest Destiny was waged to replace American Indian cultures with the spreading population of Euro-Americans. Because buffalo were key to the existence of the plains Indians, a campaign to exterminate the buffalo and indirectly eradicate the American Indian culture was waged. At the same time, programs were underway to exterminate predators that were seen as a threat to people and livestock. By the late 1800s, habitat loss, market hunting, predator control, and the war



against the American Indians had taken a drastic toll on wildlife. Wildlife species vanished from entire states or regions. Buffalo, deer, beaver, turkey, otters, wolves, cougars, bears, and other wildlife were extirpated in Iowa. It would take many decades before some of these species would again live in the state.

Draining wetlands and controlling the rivers

Prairie marshes were the last type of native habitat to be converted to farm land. The wet, mosquito-infested areas seemed inhospitable and worthless to early farmers. The Federal Swamplands Acts of 1849, 1850, and 1860 placed wetlands in the hands of county commissioners. Some of this land was given to railroad companies which were becoming important to Iowa's growing agricultural economy.

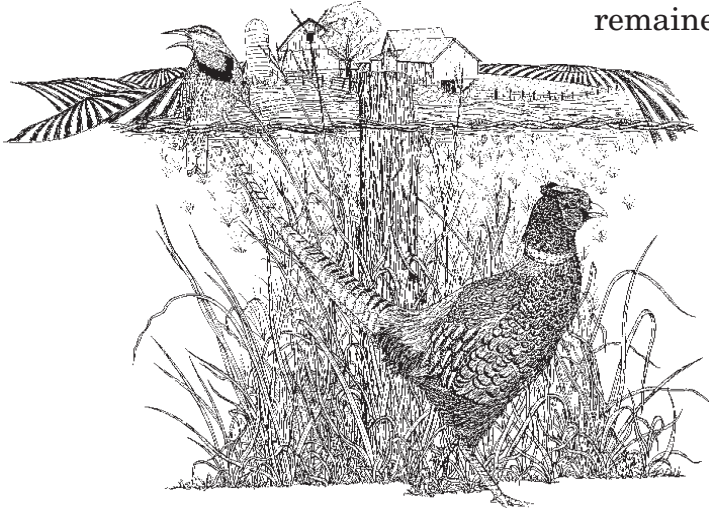
The development of tiling and the establishment of drainage districts eliminated most of Iowa's marshes beginning in the early 1900s. Tiling took the water out of the wetlands and revealed the fertile crop land underneath. Drainage districts allowed the alteration of rivers and streams. Channelization took the curves out of naturally-meandering streams and bordering wetlands disappeared.

The Mississippi and Missouri Rivers were highly regarded as routes for moving materials in and out of Iowa. Efforts to create a navigation lane in the Mississippi River began in 1820, but real "improvements" were not made until 1878 when a 4.5-foot channel was created from Minneapolis to St. Louis. The channel was later deepened to nine feet. During the 1930s, the river underwent more channelization, and the lock and dam system was installed to provide better navigation.

The Missouri River was once a wide, sprawling river studded with islands and snags. Alterations to the river began in earnest in the 1930s. People tried unsuccessfully to change the Missouri as they had changed the Mississippi. The diverse habitat that once existed along the Missouri was exchanged for a straight channel that is minimally used for barge traffic.

Feeding the world

Changes in farm practices and machinery during the past 50 years destroyed much of the native habitat that still remained in Iowa after World War II. Larger



farm equipment allowed farmers to plant and harvest vast areas of row crops. Iowa crops were in great demand. During and after World War II, Iowa farmers were urged to use as much land to produce as many crops as possible. The opening of world markets in the 1970s made the American Midwest the breadbasket of the world and increased the value of farm land. It became economically feasible to spend more money on farm

chemicals and to convert the few remaining wetlands and woodlands to farm land. Much of the Iowa landscape slowly changed from a quilt-work of small fields surrounded by brushy fence rows and grassland pastures to a vast blanket of nearly uninterrupted crop land.

Today's battles over habitat

Today, many people are working hard to protect and restore Iowa's remaining prairies, woodlands, wetlands, and waterways. Still, the threat of habitat loss continues. Remaining Iowa prairies are so few and so small that many species of prairie wildlife are endangered. Small prairie wildlife populations easily may be wiped out by habitat destruction or degradation. The battle for prairie habitat centers around protecting each piece of prairie through acquisition, restoring prairies that have been neglected, and reconstructing new prairies through seeding and management.

Today, woodlands are the most common type of native habitat in the state. Iowa woodlands, however, are small and fragmented. Woodland habitat is split by roads, towns, and farms. Approximately 92 percent of Iowa's remaining

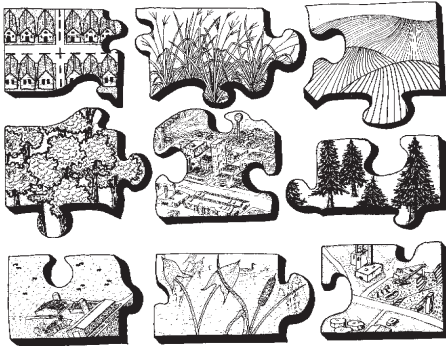
woodland habitat lies in the hands of private landowners. Some natural areas have remained in the hands of private ownership for hundreds of years, maintained through generations of enlightened people who have a strong appreciation for the land. Since so little of Iowa's land is in public ownership, the decisions of private landowners are critical to maintain wildlife habitat.

Iowa wetlands and waterways are threatened both by land development and pollution. Changing government policies for wetland protection makes the future of wetlands, especially the drier but more diverse wet meadows, uncertain. Modern agriculture relies heavily on high production and use of chemical fertilizers and pesticides. Silt from eroding lands and runoff containing pesticides and fertilizers may harm Iowa's remaining wetlands. At the same time, wetlands help clean water. Some communities are constructing wetlands as filters that slow siltation and reduce nutrient runoff and pollution.

Land use that allows erosion has caused many Iowa streams to fill with silt and degrade the quality of the stream habitat. Runoff from both agricultural and urban areas contains more than just soil pollution. Farm and lawn chemicals, toxic chemicals from industry, and substances that leak from storage tanks and landfills find their way to wetlands, rivers, and streams. Some types of wetland wildlife cannot tolerate even small amounts of chemical pollution in their habitat. In all, approximately 20 percent of the nation's endangered species are in trouble due to pesticide use. The U.S. Environmental Protection Agency estimates that the use of the pesticide carbofuran alone accounts for one to two million bird deaths each year.

Managing the pieces

Remaining biological communities are special and need to be carefully managed in ways consistent with their natural features. Modern prairie management



Iowa's remaining habitat is often in the form of small pieces which must be carefully managed.

techniques imitate the natural role of fire and grazing buffalo in maintaining the prairie environment. Forest management greatly varies depending on the goals of the land manager but often focuses on selective thinning or clear cuts, replanting, and care and protection of trees. Wetlands are managed through water control structures and wetland protection. Watershed protection and erosion control are key to managing wetlands, rivers, and streams.

Habitat for wildlife and people

Some of Iowa's protected wildlife habitat is managed by public agencies such as the Iowa Department of Natural Resources (DNR) and county conservation boards or private organizations such as The Nature Conservancy and National Audubon Society. Iowa's public lands add up to approximately two percent of the state's total land area. Whereas these areas are valuable for wildlife, they also may be managed to provide recreational opportunities for people. Public natural areas are often classified as preserves, refuges or sanctuaries, wildlife areas, or parks and recreation areas.

Preserves are places where nature proceeds with as little human interference as possible. They are often managed to protect rare or endangered wildlife. People who visit preserves enjoy the natural features of these areas. Activities that could interfere with these features generally are not permitted.

A wildlife **refuge or sanctuary** is land set aside as a safe place for wildlife. These areas are especially valuable among areas that receive a lot of hunting pressure. Although hunting is not allowed in state refuges, hunting is permitted in and around some federal refuges. People hike, pick berries and mushrooms, watch birds, and fish in a refuge. Activities that may place wildlife in danger such as use of off-road vehicles usually are not permitted in a wildlife refuge or sanctuary. Some areas, called inviolate refuges, are off-limits to people.

Wildlife areas are places that are managed to provide good wildlife habitat and public hunting, although some parts of a wildlife area may be set aside as a refuge. Many of these areas are purchased with funds received from hunters' fees and are managed for game wildlife, although they also provide habitat for nongame wildlife. Hunters are heavy users of wildlife areas, especially during fall and winter.

Parks and recreation areas are natural areas that have been developed to varying degrees to accommodate people. Parks may contain campgrounds, picnic areas, displays, nature centers, shelter houses, or other facilities. Recreation areas usually allow a wide variety of activities, including hunting, dog training, and other forms of recreation.

Restoring Iowa's habitat

Habitat management and restoration programs have been successful in recent years. During a 16-year period from 1974 to 1990, Iowa woodlands have grown from approximately 1.5 million acres to approximately two million acres. Ongoing management and assistance programs are helping to further increase woodland acres in Iowa. Since 1990, state foresters have helped Iowa landowners plant approximately 40,000 acres of new forest areas in the state, and they have assisted more than 8,000 private landowners who manage more than 150,000 acres of forest. Foresters help landowners find economic benefits by selecting trees to be sold while maintaining or improving the habitat value of the forest. Habitat also has been increased around towns and schools through programs managed by the state and Trees Forever.

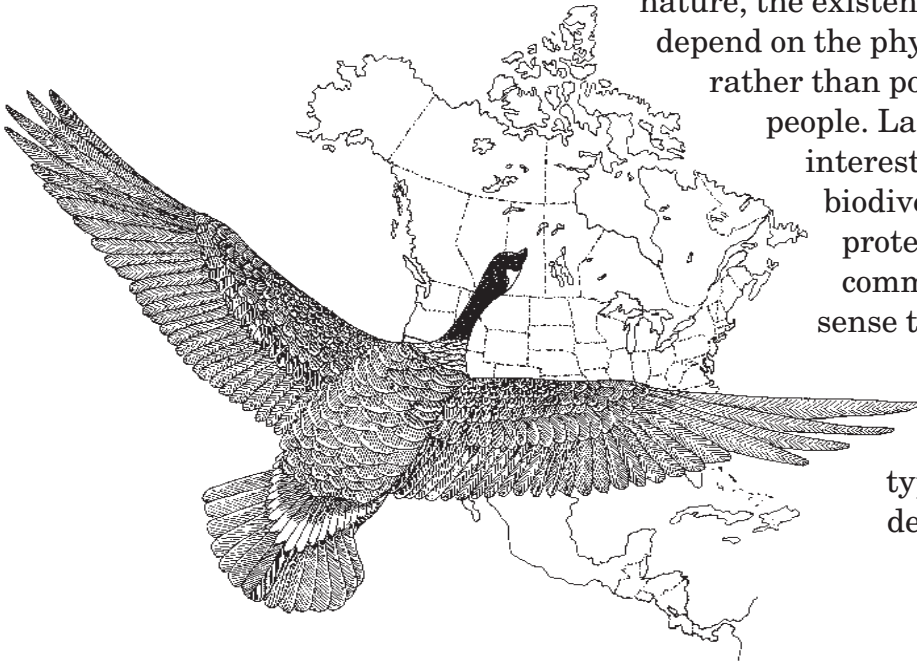
The Iowa Prairie Pothole Joint Venture (PPJV) is a cooperative effort of conservation organizations and private citizens working together to plan and fund the restoration and protection of Iowa wetlands. From 1987 to 1995, the PPJV helped private landowners restore nearly 2,500 wetland acres and helped secure more than 23,000 acres of wetlands and associated upland habitat for public ownership.

Wildlife and prairie enthusiasts are working to increase Iowa's prairie habitat by reconstructing and restoring prairie habitat. Corridors of prairie habitat are being protected and restored in roadside rights-of-way and along abandoned railroad tracks. An exciting public prairie restoration project is underway at the Walnut Creek National Wildlife Refuge near Prairie City, Iowa. Eventually, more than 8,000 acres of land will be restored to prairie habitat and may someday be home to prairie wildlife that have not existed in Iowa for more than 100 years. Private individuals also are making a difference in protecting Iowa habitat. The Broken Kettle Grasslands Preserve located in the prairie-dominated Loess Hills of western Iowa, now occupies 2,200 acres. The Iowa Nature Conservancy was able to add 500 acres to the preserve in 1996 due to generous private donations.

These are only a few of the myriad of examples of how habitat restoration and management are working in Iowa.

The bigger picture

The political and geographic borders created by people usually are not the same as those that would be chosen by wildlife species living in an ecosystem. In nature, the existence and placement of species depend on the physical features of the land rather than political lines drawn by people. Land managers who are interested in managing for biodiversity therefore try to protect entire natural communities. It does not make sense to protect half an ecosystem and allow the other half, an integral part of the habitat for many types of wildlife, to be destroyed.



Laws that protect habitat and wildlife

Creating laws to protect wildlife and habitat date back to federal efforts in the early 1900s. Laws such as the Migratory Bird Treaty Act (1918), Pittman-Robertson Act (1937), Wilderness Act (1964), and National Environmental Policy Act (1970) target the protection of wildlife and habitat. Strengthening federal laws and state legislative initiatives further protects wildlife and their habitat. During the past 25 years, four legislative acts have been very important to the future of Iowa wildlife.

The Endangered Species Act

In 1973, a piece of landmark legislation was passed that would change the way we treat rare species. The federal

endangered species and their habitat. At the state level, Iowa enacted laws to protect state-endangered species. In a world



dominated by those who speak for the short-term interests of certain groups of people, the Endangered Species Act speaks for the long-term interests of all forms of life. Many people have tried to make changes to the act to make it less rigid and more accommodating to other interests. But to do so, in the words of a Supreme Court ruling, would “ignore the ordinary meaning of plain language” found in the act.

The Farm Bill

Federal farm legislation has a large impact on Iowa habitat and wildlife. The most important provision of the 1985, 1990, and 1996 Farm Bills affecting wildlife is the Conservation Reserve Program (CRP). CRP provides farmers with a financial incentive to replace row crops planted on erodible land with grassland vegetation and to leave existing native habitat out of row crop production. Perhaps no other legislative provision has been more important to Iowa’s upland wildlife. CRP and other Farm Bill provisions have replaced more than two million acres of marginal Iowa crop land with areas of habitat and have greatly reduced erosion and sedimentation on many more millions of acres. Other important Farm Bill legislation includes the Swampbuster Provision and Wetland Reserve Program which discourage the draining of wetlands, and the Sodbuster Provision which prevents the conversion of highly-erodible land to crop land. The Forest Reserve Law provides a tax incentive not to develop forested areas.

In 1995, many changes were made to agricultural conservation provisions. Although CRP was continued, its scope was narrowed. The wetlands definition used to protect wetlands from development was narrowed to exclude drier wetlands that typically provide important wildlife habitat for migrating birds. These changes will undoubtedly impact Iowa wildlife populations negatively.



REAP

Perhaps the most far-reaching piece of environmental legislation ever created in Iowa was the **Resource**

Enhancement And Protection (REAP) Act passed in 1989. REAP provides broad-based funding for a variety of natural and cultural resource programs. The act originally called for \$300 million to be allocated over a ten-year period to enhance and protect Iowa's natural and cultural resources. Although never fully funded in any given year, REAP has had a tremendous impact on Iowa's natural habitats. Nearly 25,000 acres of habitat have been acquired and

protected through REAP's open spaces program and county conservation boards grants program. Many more acres of Iowa habitat have been protected using REAP funds that go directly to counties and other agencies. REAP has also been put to good use helping to educate Iowans about the value of habitat protection and management. REAP even helped fund the development of this booklet series!

Self-imposed Fees

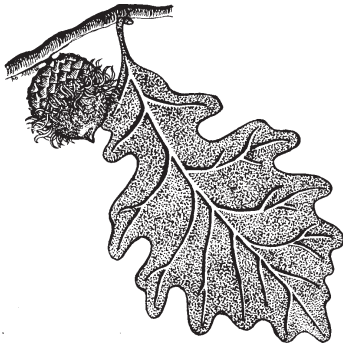
In 1937, President Franklin Roosevelt signed the Federal Aid in Wildlife Restoration Act, also known as the Pittman-Robertson Act. Requested by hunters and firearms manufacturers, it earmarked revenues from a tax on ammunition and firearms to be distributed to states for use in wildlife restocking programs, research, and habitat management. A similar fee on fishing equipment, the Sportfish Restoration Act, was enacted in 1950. Funds from habitat stamps purchased by hunters are used to acquire wildlife habitat to help ensure the future of sport hunting. Money from fishing and hunting licenses funds the enforcement of hunting regulations and fishing laws, as well as fish stocking programs. Hunters and anglers voluntarily asked for these taxes and fees so that they could help perpetuate their sports by providing quality wildlife habitat, management, and research.

Other wildlife enthusiasts are now working to duplicate the successes of hunters and anglers. Nongame wildlife enthusiasts are seeking the same types of financial support provided for game wildlife. The DNR's Wildlife Diversity Program (WDP) surveys and researches the habitat needs of nongame wildlife. WDP nongame biologists implement restocking and habitat protection initiatives and develop educational materials about nongame wildlife. Presently, however, there is no stable source of funding for these nongame wildlife programs. Chickadee Checkoff donations from state income tax returns are the primary, though limited, source of funding.

A federal and state initiative, known as Teaming With Wildlife, hopes to provide more stable funding for nongame wildlife in a manner similar to the successful hunting and fishing surcharges. The Teaming With Wildlife initiative would place a fee on bird feed, binoculars, field guides, and other equipment used by nongame wildlife enthusiasts. The fee would be added at the manufacturers' level and passed on to consumers. It is hoped that Teaming With Wildlife would provide enough money to fund wildlife diversity programs in all states, including Iowa.

Useful resources

- Agricultural Pesticides and Wildlife: A Balancing Act**; Iowa State University Extension, Ames, IA; 1990.
- An American Crusade For Wildlife**; James B. Trefethen; Winchester Press and the Boone and Crockett Club, New York, NY; 1975.
- Earth In The Balance: Ecology and the Human Spirit**; Al Gore; Houghton Mifflin Company, Boston, MA; 1992.
- Extinction: The Causes And Consequences of the Disappearance of Species**; Paul and Anne Ehrlich; Random House, New York, NY; 1981.
- “The Forest Resources In Iowa In 1980”**; Proceedings of the Iowa Academy of Science (88(1):2-6); 1981.
- Forest Statistics For Iowa, 1990**; Gary J. Brand and John T. Walkowiak; United States Department of Agriculture, St. Paul, MN; 1991.
- “Iowa Natural Heritage Preservation...”**; Proceedings of the Iowa Academy of Science (88(1):43-47); 1981.
- “Iowa’s Forest Area in 1832”**; Proceedings of the Iowa Academy of Science (94(4):116-120); 1987.
- “Iowa’s Natural Heritage”**; Iowa Academy of Science and Iowa Natural Heritage Foundation; 1982.
- “Iowa’s Wetlands”**; Richard Bishop; Proceedings of the Iowa Academy of Science (88(1):11-16); 1981.
- Living On The Edge: Endangered Species In Iowa**; Daryll Howell and Mark Leoschke; Iowa Department of Natural Resources, Des Moines, IA; 1992.
- Natural Resource Conservation: An Ecological Approach**; Oliver S. Owen; Macmillan Publishing Co., New York, NY; 1980.
- Our Nation’s Wetlands: An Interagency Task Force Report**; Council on Environmental Quality; 1978.
- Prairies, Forests, and Wetlands: The Restoration of Natural Landscape Communities In Iowa**; Janette R. Thompson; University of Iowa Press, Iowa City, IA; 1992.
- The Shaping of Environmentalism In America**; Victor B. Scheffer; University of Washington Press, Seattle, WA; 1991.
- Silent Spring**; Rachel Carson; Houghton Mifflin Company, New York, NY; 1962.
- State of the World**; Lester Brown; Worldwatch Institute, W.W. Norton & Company, New York, NY; published annually.
- Wetlands Overview: Federal and State Policies, Legislation, and Programs**; U.S. General Accounting Office; 1991.
- Where The Sky Began**; John Madson; Houghton Mifflin Company, Boston, MA; 1982.
- Why Preserve Natural Variety?**; Bryan G. Norton; Princeton University Press, Princeton, NJ; 1987.
- Wildflowers of Iowa Woodlands**; Sylvan Runkel and Alvin Bull; Iowa State University Press, Ames, IA; 1979.



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 Environmental Issues Series

In order to make wise decisions, people need a basic understanding of the factors involved in current environmental issues. They need to understand how their lifestyle is tied to these issues and how changes in lifestyle can impact the environment. The Iowa Association of Naturalists has created this series of booklets to offer a basic understandable overview of Iowa environmental issues. These booklets will assist educators in teaching students about topics that affect the Iowa environment. The seven booklets in this series are:

- 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)



The *Iowa Environmental Issues Series* is published by IAN with major funding from the REAP Conservation Education Board (September 1998).

Review Committee

- Cele Burnett, Consultant, E Resources Group, Inc.
- Dan Cohen, Naturalist, Buchanan County Conservation Board
- Detra Dettmann-Easler, Camp and Program Director, Louisa County Conservation Board
- Jean Eells, Consultant, E Resources Group, Inc.
- Judy Levings, State 4-H Youth Development Specialist, Iowa State University
- Jim Pease, Extension Wildlife Specialist, Iowa State University
- Diane Pixler, Naturalist, Marshall County Conservation Board
- A. Jay Winter, Training Officer, Iowa Department of Natural Resources

Editorial Board

- Text: Dan Cohen
- Illustrations: Mark Müller
- Design and Layout: Ames Best Communications
- Published by: Iowa Association of Naturalists

Iowa Habitat Loss and Disappearing Wildlife is one in a series of seven booklets that are part of the *Iowa Environmental Issues Series*. The booklets in the series include:

Iowa Environmental Issues

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People, Communities, and Their Iowa Environment	(IAN-105)
Energy In Iowa	(IAN-106)
Iowa Waste Management	(IAN-107)

The Iowa Association of Naturalists also has produced five 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.

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)

Iowa's Natural Resource Heritage

Changing Land Use and Values	(IAN 501)
Famous Iowa Conservationists	(IAN 502)
Iowa's Environmental Laws	(IAN 503)

Iowa Wildlife and People

Iowa Wildlife Management	(IAN-401)
Keeping Iowa Wildlife Wild	(IAN-402)
Misconceptions About Iowa Wildlife	(IAN-403)
State Symbols of Iowa	(IAN-404)
Iowa Food Webs and Other Interrelationships	(IAN-405)
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's Biological Communities

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

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