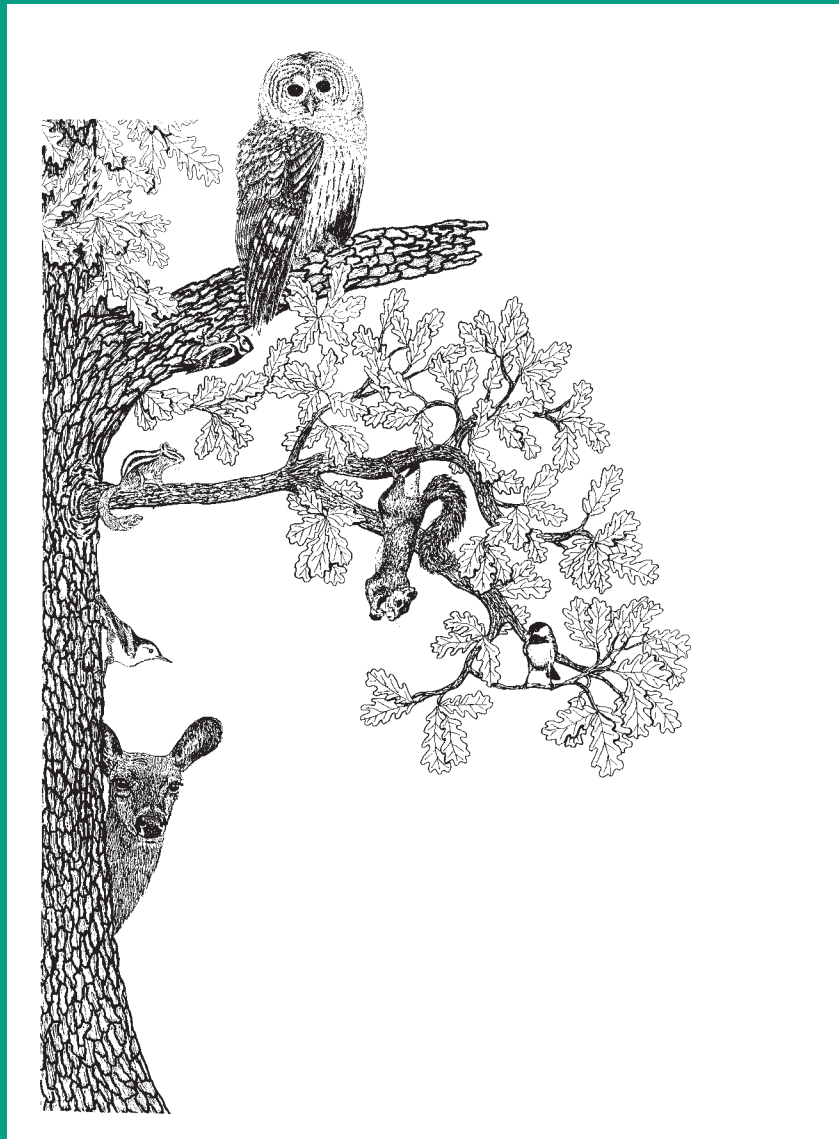
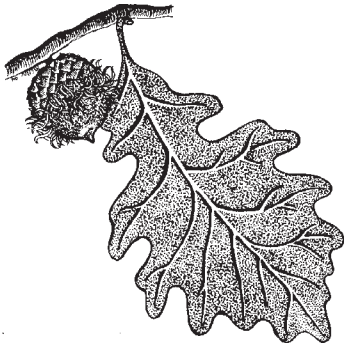


Iowa Woodlands



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

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)

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.

Iowa Physical Environment Series

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)

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 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 Woodlands

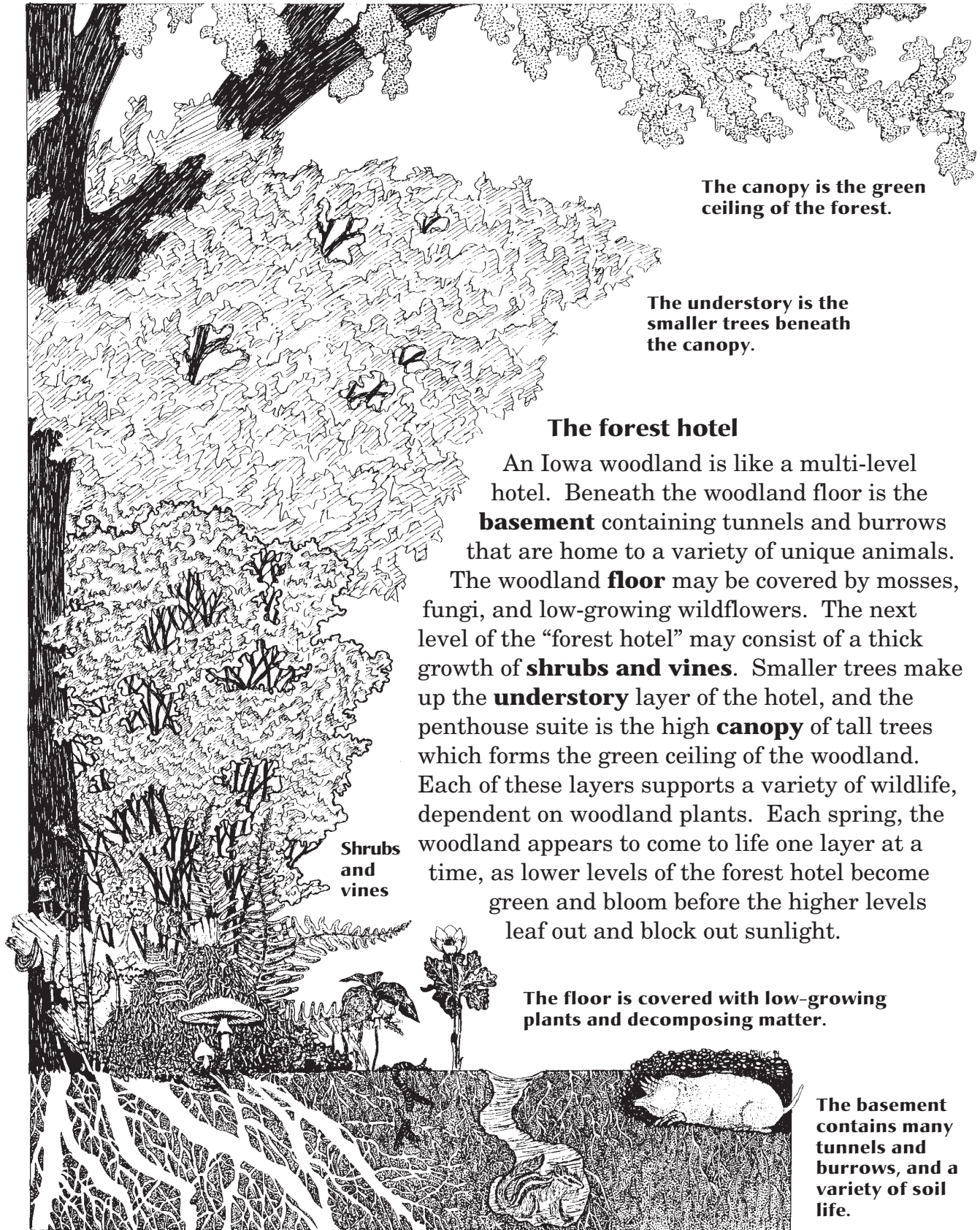
What are woodlands?

A woodland, or forest, can be defined as a biological community of plants and animals dominated by trees. In this booklet, the words “woodland” and “forest” are used interchangeably.

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, and roads. But woodlands are by far the most common of Iowa's remaining biological communities.

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 the grasses that covered most of the state. Iowa rivers and streams were bordered by a thick corridor of woodlands. 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.



The canopy is the green ceiling of the forest.

The understory is the smaller trees beneath the canopy.

The forest hotel

An Iowa woodland is like a multi-level hotel. Beneath the woodland floor is the **basement** containing tunnels and burrows that are home to a variety of unique animals. The woodland **floor** may be covered by mosses, fungi, and low-growing wildflowers. The next level of the “forest hotel” may consist of a thick growth of **shrubs and vines**. Smaller trees make up the **understory** layer of the hotel, and the penthouse suite is the high **canopy** of tall trees which forms the green ceiling of the woodland. Each of these layers supports a variety of wildlife, dependent on woodland plants. Each spring, the woodland appears to come to life one layer at a time, as lower levels of the forest hotel become green and bloom before the higher levels leaf out and block out sunlight.

Shrubs and vines

The floor is covered with low-growing plants and decomposing matter.

The basement contains many tunnels and burrows, and a variety of soil life.

The changing woodland

Woodlands are a dynamic biological community. A woodland may begin as a grassland, a pasture, or some parcel of disturbed land. A few shrubs and grassland-adapted trees begin to grow in the area. Soon the land is covered by a thick woodland growth of shrubs and fast-growing trees that is difficult to walk through. The **climax vegetation**, or old-growth, for a typical Iowa woodland has very large, leafy trees that shade out much of the woodland floor. In these climax forests, the shrub layer is less dense and open enough to walk through. The floor is covered by a thick, spongy layer of dead leaves and fallen trees.

This process of change in vegetation over time is commonly referred to as **succession**, and is somewhat predictable. Each stage of succession provides a different type of wildlife habitat. In some cases, people may manipulate a woodland to select for a stage of succession which provides the most habitat for certain types of wildlife. Succession in a woodland may be interrupted many times by disturbances such as fire, clear-cutting, wind storms, disease epidemics, or human woodland management techniques. These disturbances may set the process back to an earlier stage or start the process over again.



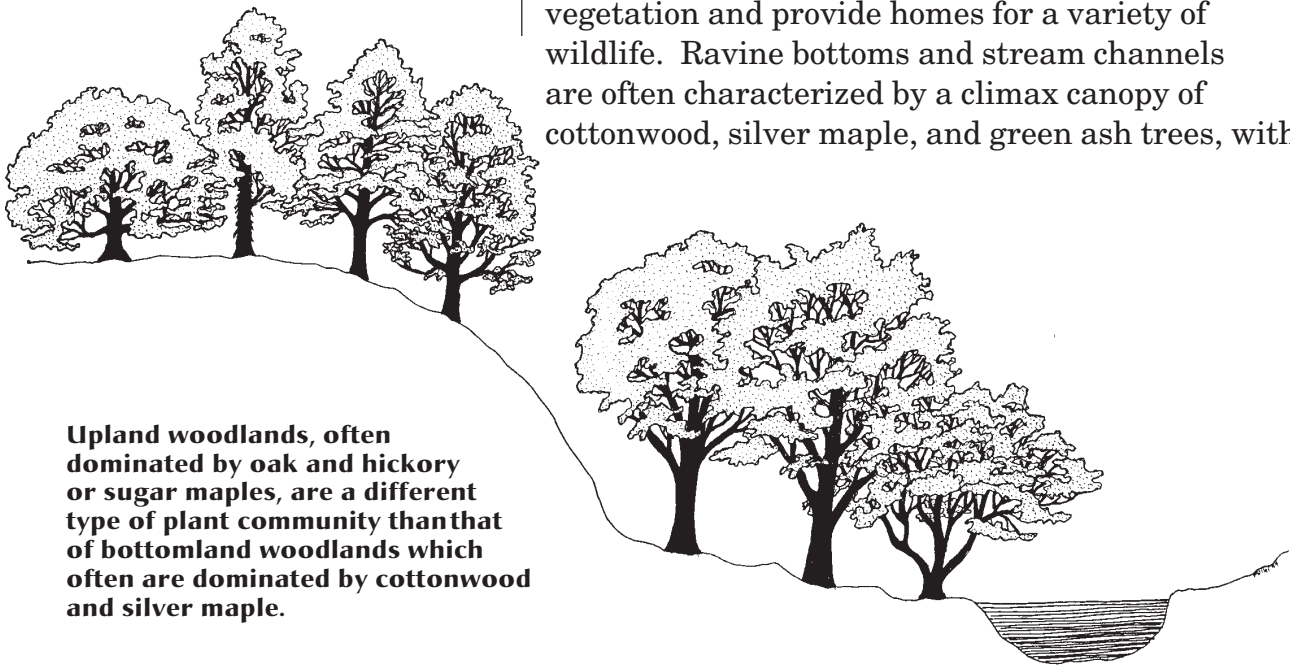
The largest tree in Iowa is an eastern cottonwood. It has a trunk circumference of more than 31 feet, is more than 92 feet tall, and has a crown spread of nearly 100 feet.

Types of forests

Individual woodland areas may have different characteristics depending on factors of climate and topography. **Upland woodlands** are found on hilltops and on drier south and west slopes. Most upland woodlands are characterized by a climax canopy of oaks and hickories – trees which are better adapted to sunnier and drier conditions.

Upland woodlands are currently Iowa's most common type of forest. This may change however. Oaks and hickories grow to be large, leafy trees that shade out much of the forest floor. Oak and hickory seedlings, which need to grow in direct sunlight, find it difficult to grow in these shaded conditions. In some areas, shade-tolerant sugar maples and basswoods take over areas previously covered by oaks and hickories.

Many of Iowa's woodlands can be found in ravine bottoms, along streams, and on the more damp north and east sides of slopes. These **bottomland woodlands** are usually thick with moist vegetation and provide homes for a variety of wildlife. Ravine bottoms and stream channels are often characterized by a climax canopy of cottonwood, silver maple, and green ash trees, with



Upland woodlands, often dominated by oak and hickory or sugar maples, are a different type of plant community than that of bottomland woodlands which often are dominated by cottonwood and silver maple.

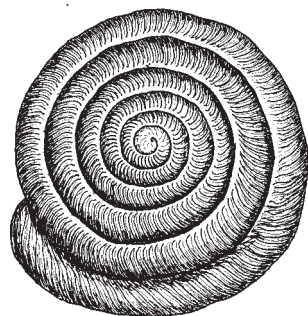
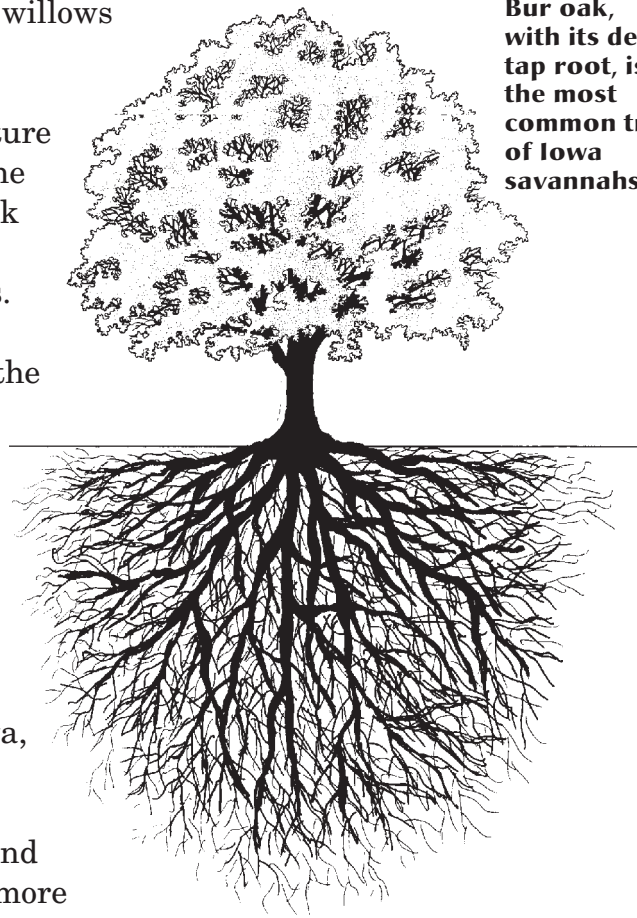
basswoods growing on hillside slopes and willows bordering the stream banks.

Savannahs are areas composed of a mixture of woodland and grassland vegetation. The most common savannah tree is the bur oak which has a deep tap root and thick bark, well-adapted to surviving hot prairie fires.

Iowa woodlands act as a transition, from the northern forests of Minnesota and Wisconsin to the warmer, wetter woodlands of Missouri. Iowa woodlands are often the southern-most or northern-most range boundaries of plants and animals that have historically been rare in Iowa.

The heavily wooded area of northeast Iowa, commonly called the **Driftless Area**, is covered with a variety of trees, including native red cedar, white pine, balsam fir, and prostrate juniper – evergreens that were more common to Minnesota and Canada, but were rarely native in the rest of Iowa. The area has deep, narrow valleys, jagged hills, and deeply-cut stream beds, untouched by recent glaciers. A very rare and unique type of habitat is found in these woodlands. Ice caves and cold air slopes are rare habitat for the Iowa Pleistocene snail and the monkshood flower.

Bur oak, with its deep tap root, is the most common tree of Iowa savannahs.



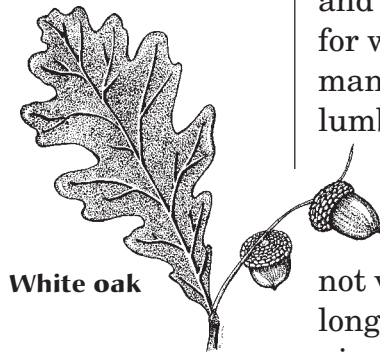
Iowa Pleistocene snail

Plants of Iowa woodlands

A large variety of trees, shrubs, vines, and flowers may be found growing in Iowa woodlands. Many of these plants may be characterized by growing in either upland or bottomland woodlands, although the transition from one to the other is not always clear and may overlap.

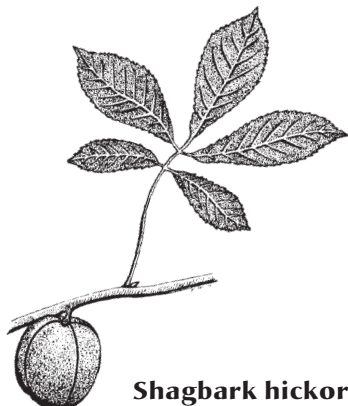
Canopy Trees

The canopy trees of Iowa's **upland woodlands** are large, leafy trees which produce an abundance of nuts. Examples are white and red oaks, hickories, and walnuts. These big trees produce a lot of food for wildlife, and are often preferred in woodland management for wildlife, as well as for harvesting lumber.



White oak

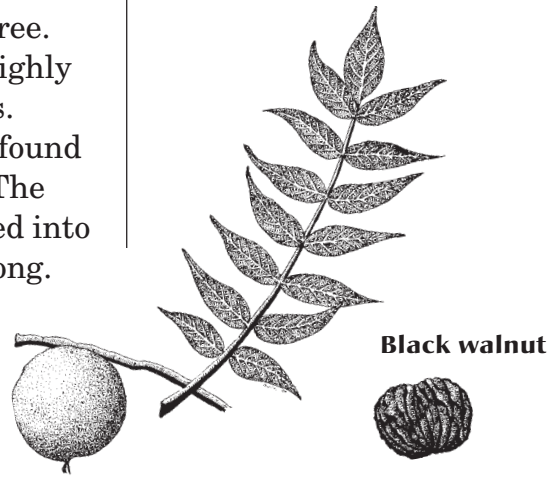
White oak is one of our largest canopy trees. It is very common, especially in areas that are not very wet. The leaves are five to nine inches long and about half as wide. They have from five to nine lobes, usually seven, and the lobes are smooth and rounded. Red oaks differ by having pointed lobes. Oaks produce an abundance of acorns and are valuable both for wildlife and as a lumber tree.



Shagbark hickory

Shagbark hickory is easily identified by its loose, shaggy bark. The leaves are 8 to 14 inches long and are divided into five to seven, usually five, leaflets. The round, edible nuts are one to two inches in diameter and have a green husk which divides into four sections at maturity. The nut shells are four-ridged and an off-white color. The trees prefer well-drained soils, but can grow in a variety of conditions. Hickory wood is valued for its strength.

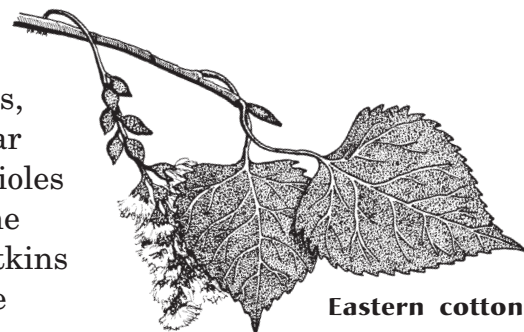
Black walnut is our most valuable timber tree. The wood is a rich, dark brown color and is highly sought as veneer by furniture manufacturers. Black walnut grows in rich soils and may be found in both upland and bottomland woodlands. The leaves are 12 to 24 inches long and are divided into numerous leaflets, each about three inches long. There is a terminal leaflet which is often missing. In summer the nut is covered by a greenish-yellow husk and is approximately two to three inches in diameter. The husk quickly rots and by fall may be black. The hard nut shell has many grooves and is approximately one to two inches in diameter.



Black walnut

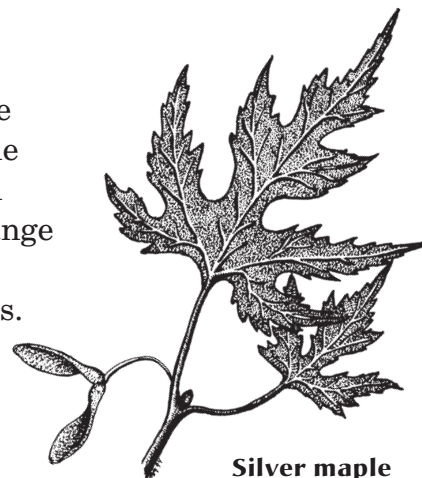
The canopy trees of Iowa's **bottomland woodlands** are also large, leafy trees. Many produce seeds which can be transported by water or wind. Examples are cottonwoods, maples, and green ash.

Cottonwood is a large tree found along rivers, lakes, and wetlands. The leaves are triangular and are three to five inches long. The leaf petioles are flattened, causing the leaf to tremble in the wind. The seed capsules are borne on long catkins and produce many tiny, cottony seeds that are transported by the wind.

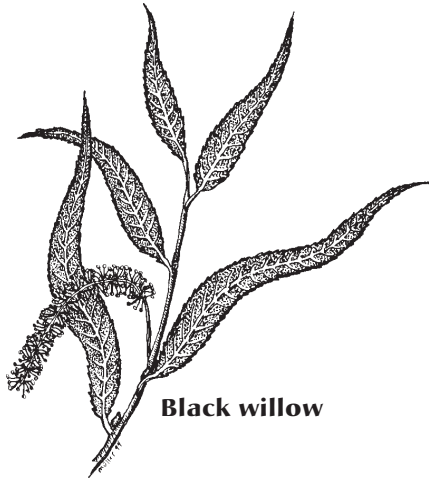


Eastern cottonwood

Silver maple is a climax canopy tree found in ravine bottoms along rivers and streams. The leaves of the silver maple have five lobes and the lobe sinuses are pointed or slightly rounded. The leaves are green above and silvery below, and in autumn become a bright yellow with tints of orange and red. The seeds are borne on wings that are longer (1.5-2.5 inches) than those of other maples. Silver maple wood is used in cabinets, flooring, railroad ties, crates, and a variety of other manufactured items. Sap from these trees can be used to make syrup, but do not have as high a sugar content as some other maples.



Silver maple



Black willow

Black willows prefer rich, moist soils along floodplains. They are the largest of the willows, sometimes growing to a height of 80 feet. Willows are easy to identify by their long narrow leaves with long tapering tips. The leaves of black willows are from three to six inches long and up to one-half inch wide. Willows have soft and weak wood, lacking durability and rarely used commercially.

Understory trees

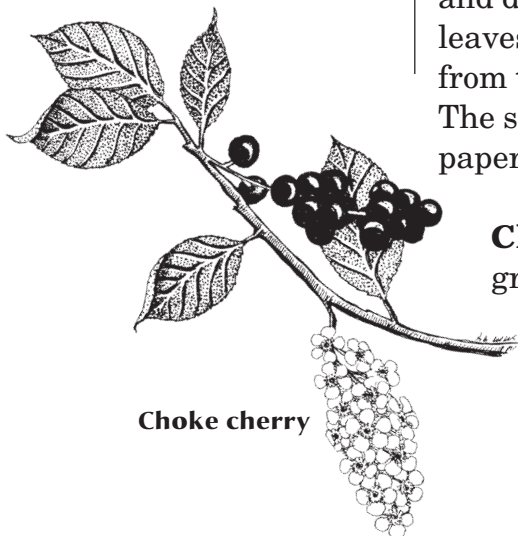
Growing beneath the canopy trees, or dominating a non-climax woodland, are a variety of smaller trees. Most understory trees are shade-tolerant and grow under the partial shade of larger trees or along the woodland edge. Examples are ironwoods, choke cherries, mulberries, and red cedars. These trees provide an abundance of berries and fruit.

Ironwood, also called American hop hornbeam, gets its name from the quality of its wood. The strong, tough, durable wood is used for making fence posts, tool handles, and other items which require strength and durability. Ironwood leaves are double-toothed and from three to five inches long.



Ironwood

The seeds are borne on drooping clusters of small papery sacks.



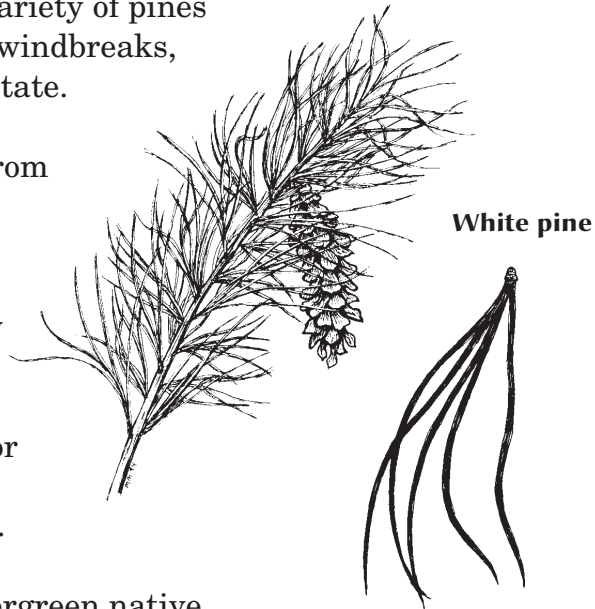
Choke cherry

Choke cherry is a small understory tree that grows to a height of 20 feet. The leaves are oval to lance-shaped, sharply toothed and hairless. They range from two to five inches in length. The bark is gray-brown and smooth. Choke cherry fruits are edible and have a bittersweet taste. The purple berries are used in pies and jellies.

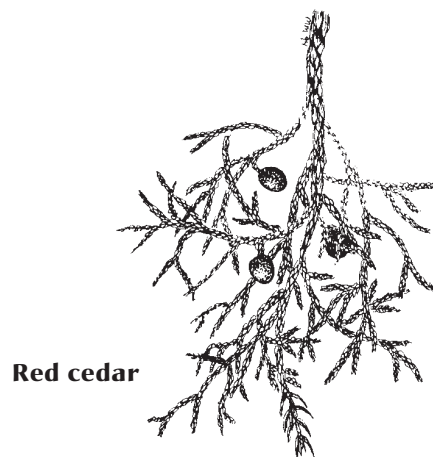
Evergreens in Iowa

Iowa's trees are mostly deciduous. The leaves change colors and fall off as autumn arrives. Few types of evergreen trees grow naturally in Iowa. Northeast Iowa contains more types of native evergreens, including white pine, red cedar, prostrate juniper and balsam fir, than other parts of the state. People have planted a variety of pines and spruces in wildlife areas, parks, windbreaks, and as ornamentals throughout the state.

White pine is easily distinguished from other pines by its long, soft, flexible needles. The green needles are often tinted with blue and are arranged in bundles of 5. The cones are narrowly cylindrical, from 4 to 8 inches, and slightly curved. The wood is popular for general construction work, interior finishes, cabinets, and other uses. White pine is Iowa's only native pine.



Red cedar is a non-cone-bearing evergreen native to Iowa. The dark bluish-green leaves of red cedar are usually scale-like and blunt tipped. Younger trees may have leaves that are awl-shaped and somewhat sharp. Although not a true berry, red cedar fruits appear as light blue berries and are edible. They grow to be a medium-sized tree and can be found in a variety of habitats, preferring open woodlands and meadows.



The oldest tree in Iowa is a red cedar growing in Palisades-Kepler State Park. It is more than 475 years old.

Shrubs and vines

Most Iowa woodlands contain a thick growth of shrubs and vines. They are a reminder that few of Iowa's forests sustain a climax vegetation. They are also a reminder that many of our woodlands were at one time pastured. Thorny bushes and other plants not eaten by cattle are common in Iowa woodlands. Examples are shrubs such as gooseberries, raspberries, honey locust, hawthorn, and prickly ash. Sumacs, which grow along the woodland edge, take on a fiery red or purple color in the fall. Many vines are found climbing on trees and shrubs and on the woodland floor. Virginia creeper and wild grape are common vines of Iowa woodlands. A woodland vine which we should all be aware of is poison ivy. It is very common, especially in our floodplain forests.



Gooseberry

Gooseberry is a thorny shrub. The one- to four-inch leaves have rounded lobes and look somewhat like a goose's foot. The berries are green, changing to purple. The green berries are sour but become less sour as they turn purple. Gooseberries provide thorny cover for wildlife such as mice, rabbits, and songbirds, and provide food for both animals and people.

Virginia creeper is a common vine that can climb 20 feet or more using numerous tendrils that end in little adhesive disks. It is sometimes called five-finger, or five-leaf, ivy because each leaf is divided into five leaflets. The leaves are green throughout the summer, but in early fall they change to a beautiful red or purple color. Occasionally a couple of leaflets may fall off, causing Virginia creeper to be confused with another common vine called poison ivy.



Virginia creeper

Poison ivy is a vine that may take the form of a bush or small tree. Leaves are divided into three leaflets and grow alternately up the stem. The plant is sometimes confused with young boxelder plants, which also have three leaflets but grow opposite along the stem. It is a plant that should be avoided but need not be feared.



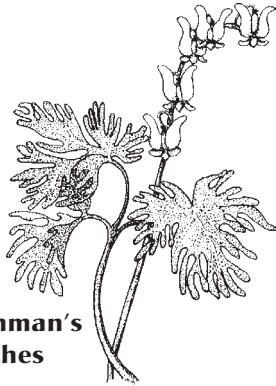
Poison ivy

Most people are allergic to the oil which is produced on the leaves and stems of poison ivy. The poison can cause rashes and blisters, and may be painful. The reaction usually does not occur until at least 12 to 24 hours after contact with the plant, and can normally be avoided by washing with warm soapy water. Poison ivy is not a danger to wildlife and is a source of food for birds that eat its berries. Poison oak is similar to poison ivy but does not grow in Iowa.

Contrary to popular belief, poison oak does not grow in Iowa. Most symptoms diagnosed as due to poison oak are actually caused by poison ivy.

Woodland wildflowers

Early in spring, Iowa woodlands come to life as small patches of color poke up through the litter of dead leaves and fallen twigs. These first flowers of early spring, called **ephemerals**, are some of the most beautiful of the woodland flowers. From this small beginning a progression of blooming wildflowers begins. In a woodland, spring wildflowers are the most numerous and most colorful. Ephemerals such as bloodroot, hepatica, and Dutchman's breeches bloom before the big trees form their thick canopy that shades the woodland floor. These flowers are followed by many others including May apple, Virginia waterleaf, and columbine. To find out more about Iowa's beautiful woodland wildflowers, check a field guide or refer to "Wildflowers of Iowa" by Sylvan Runkel and Alvin Bull. A few common woodland wildflowers are described on the following page.



Dutchman's
breeches



Virginia
waterleaf



Columbine

Bloodroot



Bloodroot is a low-growing wildflower that is easily identified by having one broad, basal leaf which wraps around the flower's stem. The flower is white with many petals. Bloodroot gets its name from a red liquid in the plant's root. When broken, the liquid oozes out and has the appearance of blood. Although poisonous if swallowed, the root has been used as facial paint and as a dye.

Dutchman's breeches is easy to identify. As its name implies, individual blossoms resemble a pair of pants or "breeches," hanging upside down from a slender flower stalk. The breeches are white and sometimes tinged with pink, and are attached to the flower stalk at the crotch by a delicate flower stem. The leaves are frilly or fern-like and grow underneath the arching flower stalk. Squirrel corn is very similar in appearance to Dutchman's breeches. Both flowers are closely related to the garden flower, bleeding heart.

Virginia waterleaf is a common wildflower of moist, shady woodlands. Clusters of purplish or white flowers make the plant very visible from late May to late June or early July. Five stamens protrude from each blossom and give the flower a "hairy" appearance. The leaves are broadly triangular and may be doubly lobed. The surface of the leaves are often marked with spots that resemble water droplet stains.

Columbine grows throughout the state and is especially common on woodland slopes. Bright red flowers are divided into 5 tubes or compartments with long stamens hanging down from the center of the flower. Only hummingbirds, moths, and butterflies are able to reach into the flower compartments to drink the nectar and pollinate the flower. The plant may resemble a small shrub growing to two feet or more with the flowers dangling from the tips of the stems.

Animals of Iowa woodlands

Although trees may identify a woodland at a glance, woodland animals are just as integral a part of a woodland. A grove of trees by itself does not make a woodland. In a woodland, plants and animals interact to make a natural community that is stable, diverse, and wondrous. Animals depend on woodland plants and can often be found using specific layers in the woodland.

Animals of the canopy

From the high canopy of an Iowa woodland, a few of Iowa's most fascinating birds may search the landscape for their food. Hawks may use the high treetops for nesting or perching, and hunt as they soar above the woodland edges. Within the woodland, owls perch or nest in the canopy as they listen quietly in the still night for the movements of their prey. The woodland canopy is not a crowded place, but it is a place to look for these large birds of prey.

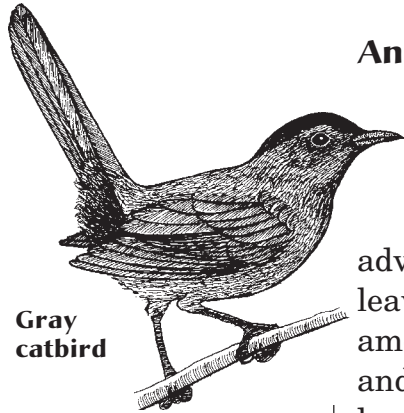


Screech owl

Animals of the understory



The understory may appear to be a circus act of flying songbirds, leaping squirrels, and climbing woodpeckers. Large leafy squirrel nests and woodpecker holes often can be found in standing dead trees. In summer and early fall, the woodland understory contains a variety of fruits and seeds which attract a variety of birds.



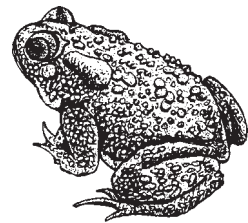
Gray catbird

Animals of shrub layer

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, while well-protected among thickets. A variety of insects, caterpillars, and other small creatures can be seen on the leaves of shrubs and vines. Among the blossoms of shrubs and wildflowers, bees, butterflies, and hummingbirds search for nectar.

Animals of the floor

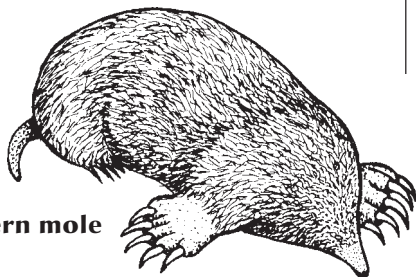
Many animals are found scouting around on the woodland floor. Chipmunks and mice scurry among the rocks and logs in search of fallen nuts, seeds, and berries. Toads stay in the moist woodland floor, searching for crickets and other crawling or low-flying insects. Snakes and gray foxes hunt for the smaller animals that seek concealment among the low-growing plants. Raccoons and skunks prowl for small mammals, invertebrates, and fallen nuts, seeds, and berries.



American toad

Animals of the basement

The strange world of the woodland basement is home to a variety of obscure invertebrates. These animals may have no eyes or many eyes, a hundred legs or no legs, antennae, hairs, slime, or any combination of characteristics. Termites, isopods, larval insects, and a host of other small invertebrates are common residents in the woodland basement. Tunnels crisscross under the ground and reveal the movements of moles.



Eastern mole

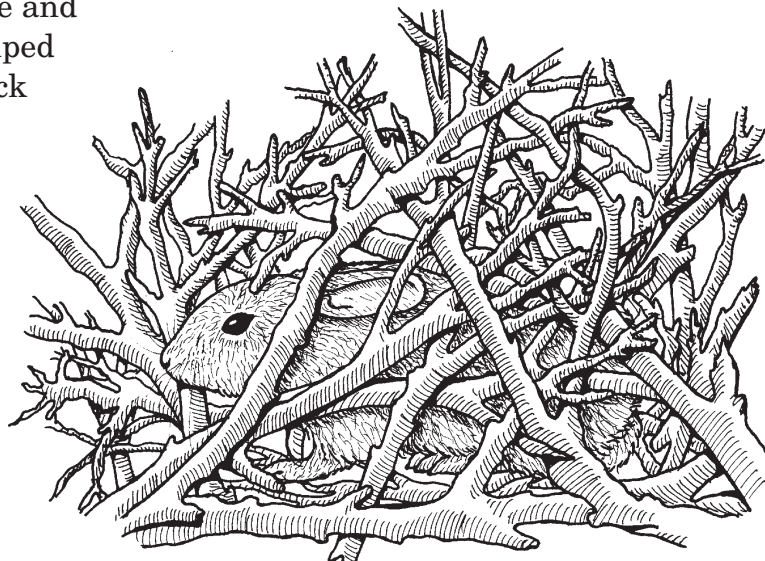
Woodland ecology

Plants and animals relate to each other in many ways to form a healthy woodland community. The variety of relationships among plants and animals makes woodlands very complicated, yet stable. People need to understand these relationships before they can understand how a woodland community works.

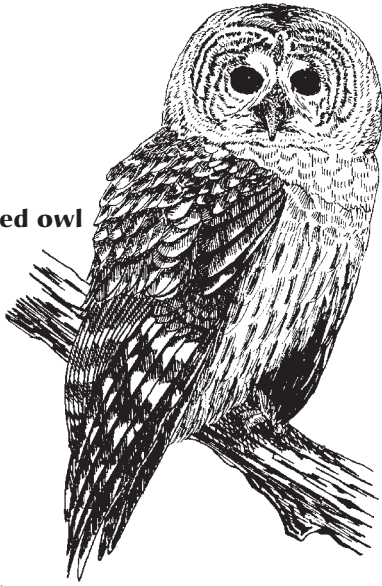
Hide and seek

The dense vegetation of an Iowa woodland makes it ideal for animals trying to conceal themselves from predators or for predators trying to sneak up on prey. The majority of woodland animals take on the colors of their surroundings and may have spots or stripes which further aid in their camouflage. Although moths and butterflies might be brightly colored, their caterpillars usually blend in with the leaves on which they feed. Most woodland animals have evolved a strategy of “freezing” when danger approaches. Deer, rabbits, chipmunks, and toads are very difficult to see when they remain still.

An exception to the “hide and seek” strategy is the striped skunk. The skunk's black and white colors form a warning coloration that is easy to see and quickly tells approaching animals to stay away.



Barred owl



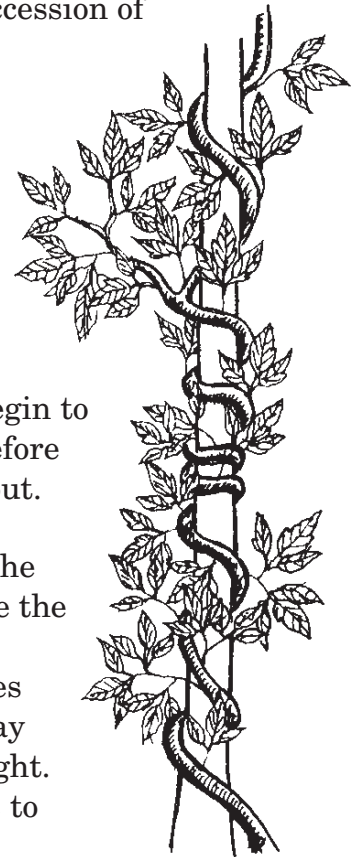
A dark, quiet woodland

Woodlands are quiet and dark places. Keen eyesight is an unnecessary tool where sight is limited to the next shrub, often less than two feet away. Woodland animals, especially mammals, have evolved acute senses of smell and hearing. Most are active at night when the woodland is especially dark and quiet. A raccoon prowls along rivers with its nose close to the ground. Gray foxes may listen near burrows for the movements of underground chipmunks or mice. Owls sit quietly and listen for the movements of their prey on the forest floor.

The search for sunlight

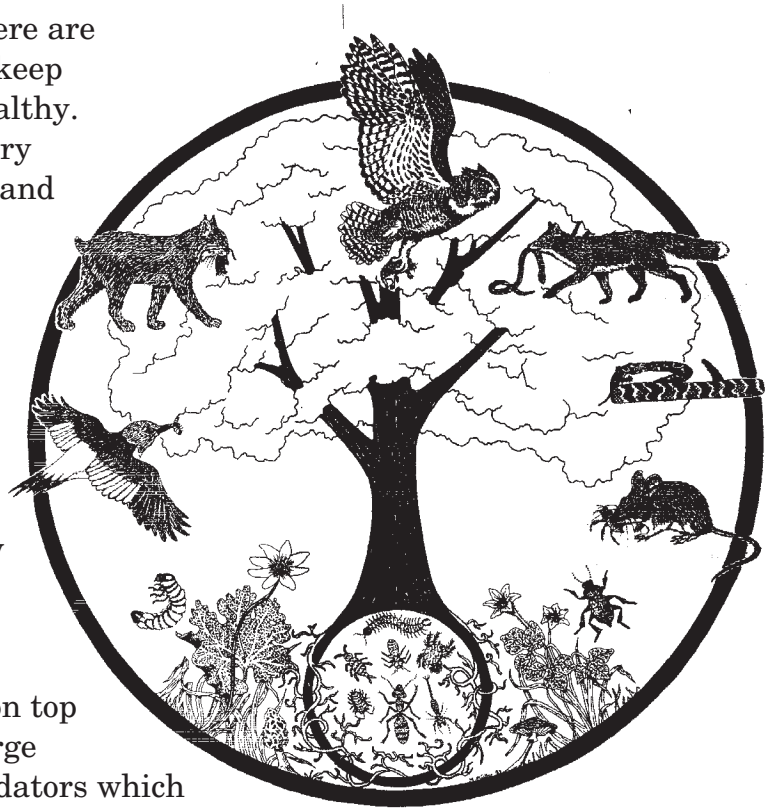
Iowa's deciduous forests are thick and shady during the summer months, but more open in early spring. Woodland plants have evolved strategies to take advantage of sunlight. Each spring, there is a succession of growth, beginning at the woodland floor and progressing to the canopy. It is a race to flower and make seeds before the leaves of higher layers shade the lower layers. In early spring mosses become bright green. Wildflowers and shrubs begin to blossom and turn green before the understory trees leaf out.

The tall canopy trees are the last to sprout leaves. Once the canopy becomes leafy, the search for sunlight becomes difficult. Smaller trees may bend and stretch for sunlight. Vines use trees as a trellis to climb toward sunlight.



Predators, prey, and population control

In a healthy woodland community there are enough predators, food, and space to keep populations of plants and animals healthy. Green woodland plants are the primary producers of the food that fuels woodland food chains. Leaves, fruits, nuts, berries, and wood provide food for a variety of animals. Mice, rabbits, chipmunks, insects, deer, and other wildlife feed on woodland vegetation and then become food (prey) for other animals. Predators such as shrews, spiders, raccoons, opossums, and snakes feed on this prey and may in turn become prey for larger predators.



Cougars, wolves, and bears once sat on top of woodland food chains, but these large predators no longer live in Iowa. Predators which remain atop the food chain include great-horned owls, red-tailed hawks, and a few bobcats.

People have assumed the role of large predators through wildlife management practices that include hunting seasons to control prey populations of animals such as white-tailed deer, raccoons, rabbits, and turkeys. Without a proper balance of predator and prey species, overpopulation and overcrowding can lead to starvation and disease epidemics.

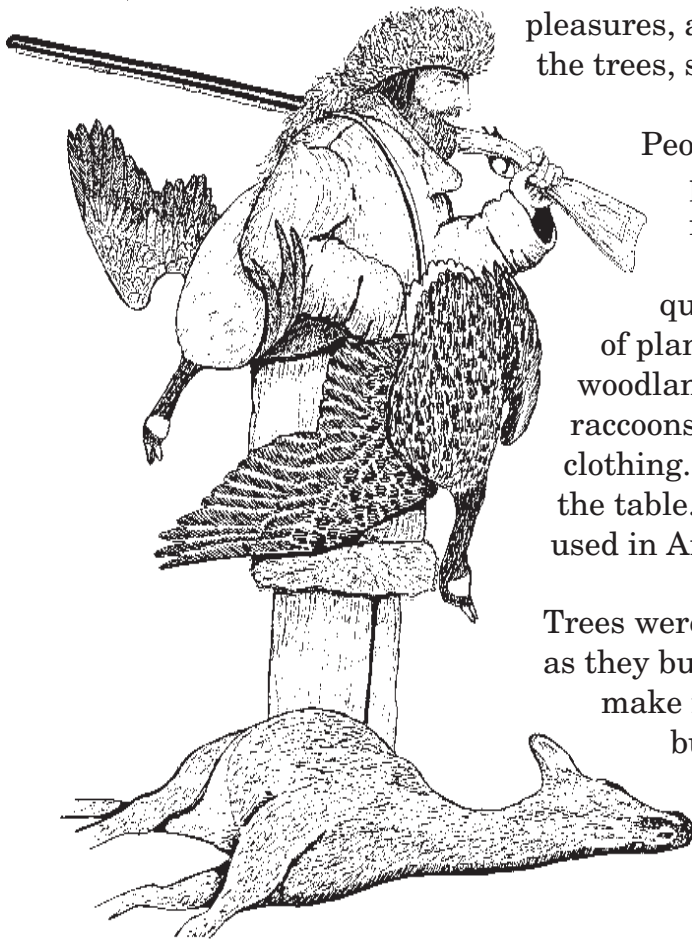
Eventually all plants and animals in a woodland die, and it is the role of various plants and animals to return these organisms to the soil and refuel the food chains. Termites, slugs, and fungi may be as important to a woodland community as deer, raccoons and owls. A variety of food chains combine to make an intricate food web. The strands of this web create health and stability within woodland communities.

People and woodlands

In addition to their intrinsic value, woodlands have cultural, economic, and recreational benefits for people.

A cultural resource

Beautiful woodlands, vast prairies, dynamic wetlands, and meandering rivers are all part of our Iowa heritage. When we lose these natural areas, we lose part of ourselves. We may forget that the land has made us what we are. When we lose woodlands, our feel for Iowa history is lost. It becomes difficult to picture life in a woodland settlement. The materials, foods, medicines, pleasures, and fears of our past are buried with the trees, shrubs, and wildlife of our woodlands.

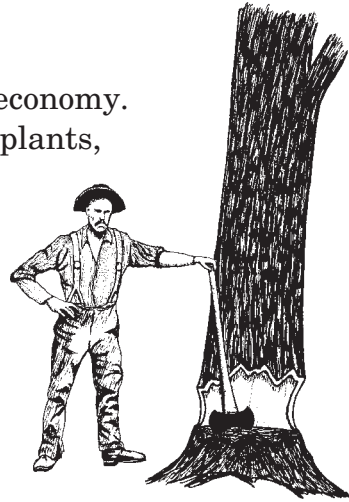


People have historically used woodland plants and animals for food, medicines, materials, and clothing. American Indians and European settlers quickly learned special uses for a variety of plant and animal species. Furs from woodland mammals such as deer, beaver, and raccoons were once very important as sources of clothing. Woodland animals provided meat for the table. Woodland fruits and vegetables were used in American Indian and pioneer medicines.

Trees were especially important to early settlers as they built cabins and farms. Wood was used to make furniture, wagons, and barrels, and burned for fuel. Some areas of the state were heavily logged to produce railroad ties.

Economic considerations

Woodlands provide direct benefits to our economy. Sawmills, veneer mills, pulp mills, pallet plants, and millwork operations provide Iowans with jobs and help feed the Iowa economy. More than 12,000 Iowans are employed in the wood industry. According to the Iowa Society of American Foresters, Iowa forests contribute more than \$800 million each year to the state's economy.

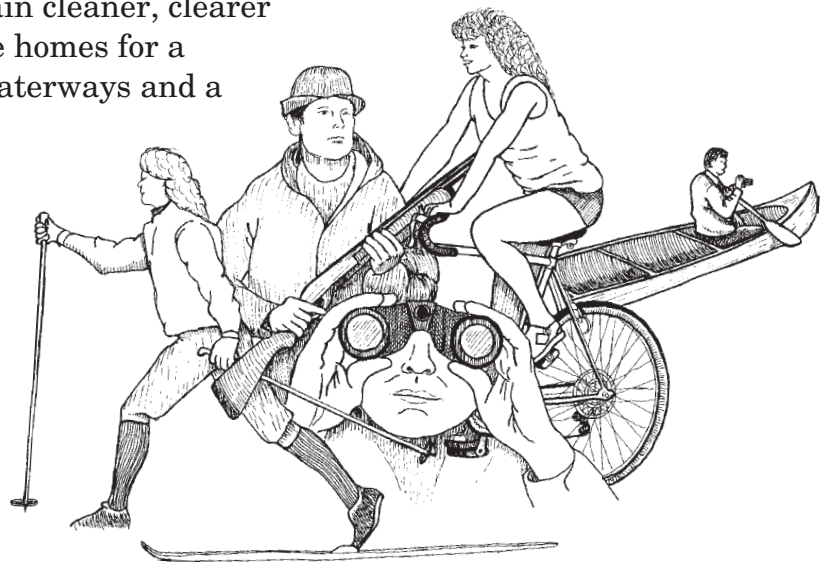


Iowa Forests contribute more than \$800 million to the state's economy annually.

Wild plants and animals continue to be sources of many medicines, foods, and materials. Researchers use wild plants as a resource to create better, more disease-resistant crops, and look to a diverse pool of plant and animal species to find cures for diseases such as cancer, heart disease, and other illnesses. Perhaps a rare woodland snail will prove to hold a cure that saves human lives. Trees and other plants can also help Iowans save money and conserve energy by sheltering homes from cold winter winds and the hot summer sun.

Woodland recreation

Woodland areas are a money-making attraction in Iowa. Forested watersheds slow the flow of water to our streams and help maintain cleaner, clearer waterways. Woodlands provide homes for a variety of wildlife. Beautiful waterways and a variety of plants and animals make Iowa's woodlands a favorite source of recreation for many people. When visitors use Iowa's beautiful wild habitats for hunting, fishing, hiking, bird watching, nature enjoyment, or other activities, they bring money into our state.

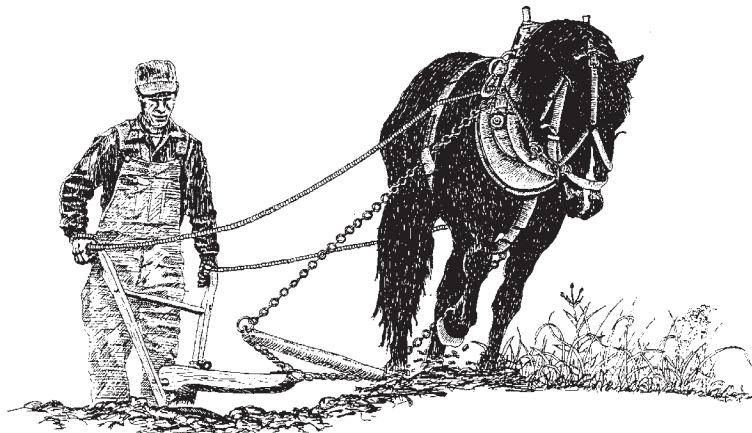


People and woodlands

When European settlers first arrived in what is now Iowa, approximately seven million acres of woodlands bordered the many rivers and streams and covered the hills of northeast Iowa. But Iowa's forests were the first type of habitat to be impacted by European settlers. Farms and towns soon spread among Iowa's woodlands and waterways, and Iowa's forests were quickly cleared for agricultural land.

Most settlers, who had their roots in the wooded eastern states or in Europe, did not feel comfortable on the open prairies. There was also a bias for woodland soils. The pioneers believed that soil “too poor to grow trees” was not fit to produce crops. Had they known that the world's most fertile soils lay under the open grasslands, it would have made little difference. There were no devices which the pioneer farmer could use to plow through the thick prairie sod.

The period of early settlement had a severe impact on Iowa's forests. During the period between 1832 and 1875, Iowa's forests decreased from approximately 7 million acres to approximately 2.1 million acres.



Approximately 28 percent of Iowa's original forest cover remains. But these forests are often fractured, split by roads, farms, and towns. And Iowa forests are usually affected by human activity. Although some types of wildlife thrive in this fragmented woodland environment, many do not.



Iowans realize that they have lost something special in woodland habitat. Concerned groups and individuals, trying to bring back these special areas, are rebuilding habitat in Iowa. Anyone can plant trees at a minimal cost. Landowners can plant trees and reap benefits in timber sales. Schools can plant trees and be rewarded with an outdoor classroom. By planting trees and creating a woodland in what was once a developed area, communities receive a place for beauty, solitude, wildlife, and recreation.

Only about 10 percent of Iowa forests lie in the public domain.

Private and public woodlands

Approximately 90 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 maintaining wild habitat.

Landowners reap benefits from a woodland. They may manage a forest for wildlife and to harvest lumber or fuel wood. They may hunt, hike, fish, pick mushrooms, and otherwise enjoy the habitat they are protecting.



Approximately 10 percent of Iowa's remaining forests lie in the public domain. Whereas these areas are valuable for wildlife, they may also be managed to provide certain types of recreation for people. Public natural areas are often classified as a preserve, refuge or sanctuary, wildlife area, or park, depending on how the land will be used by people.

Management techniques

Private landowners or public agencies manage forests using a variety of techniques, depending on the desired outcome.

Timber Stand Improvement (TSI) is a common woodland management program which uses several management practices, including woodland protection, selective tree cutting and planting, thinning of overcrowded areas, and improving the economic value of specific trees. TSI may be used to speed tree growth, improve wildlife habitat, grow firewood, and make money for the landowner.

Often, woodland managers use TSI techniques to enhance the growth of nut-producing species such as walnuts, oaks, and hickories. These species have both economic and wildlife habitat value. The growth of these trees is enhanced by opening up sections of the woodland to sunlight. Old and undesired trees are cut and seedlings or nuts are planted in the resulting open forest floor. Many tree species, including oaks and hickories, are shade intolerant and will not grow well in the shade of larger trees. Some old or dead trees are left to provide homes for wildlife.

Good woodland management must include their protection. Woodlands are protected by eliminating grazing, and controlling fire, insects, diseases, and other destructive agents.

It is important to remember that woodlands may be managed for a variety of reasons. In some cases, a landowner may do nothing more than protect a woodland and let nature take its course. Landowners should consult a professional forester regarding a management plan for their forests. In the right column is a list of district foresters employed by the Iowa Department of Natural Resources.

Iowa's state forests

Iowa's state forest system is comprised of four major and six minor forests totaling more than 40,000 acres. The larger forests are: Stephens, Yellow River, Shimek, and Loess Hills. The six smaller state forests are: Backbone, White Pine Hollow, Holst, Pilot Mound, Barkley, and Gifford. State forests are managed by professional foresters in the Iowa Department of Natural Resources' Forests and Prairies Division.

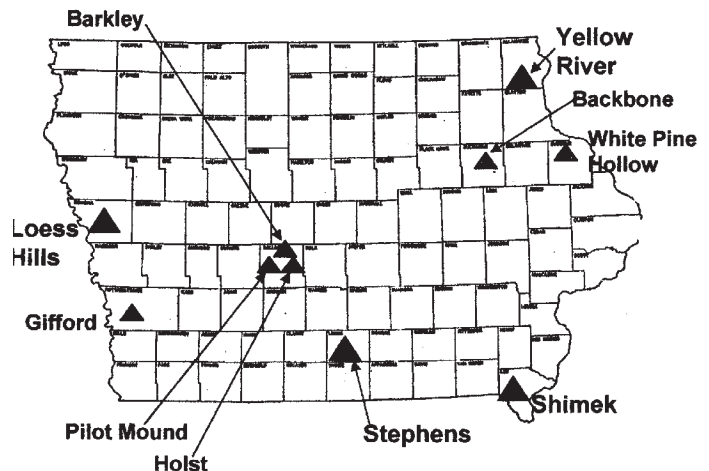
Iowa's state forests provide a variety of goods and services. State forests are managed to provide clean air and water, wildlife habitat, lumber and other forest products, and recreational opportunities. The forests also provide protection of Iowa's endangered and threatened plants and animals, and opportunities for education and research.

Best management practices (BMP) are in place on all state forest land in an effort to protect watersheds and water quality. A *Best Management Practices* manual can be obtained by writing or calling the Iowa Department of Natural Resources (see page 24).

Offices of Iowa Department of Natural Resources District Foresters

- District 1: Elkader**
319-245-1891
- District 2: Charles City**
641-228-6611
- District 3, Marshalltown**
641-752-3352
- District 4, Anamosa**
319-462-2768
- District 5, Wapello**
319-523-8319
- District 6, Fairfield**
641-472-2370
- District 7, Chariton**
641-774-8733
- District 8: Adel**
515-993-4133
- District 9: Oakland**
712-482-6245
- District 10: Lemars**
712-546-5161
- District 11: Creston**
641-782-6761
- District 12: Webster City**
515-832-3585
- District 13, Iowa City**
319-351-8886

Iowa's State Forests



Useful resources

- 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.
- “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.
- 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’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 State University Extension publications;** contact your county extension office.
- 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.
- 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.
- Saving Soil and Wildlife: The Promise of the Farm Act’s Conservation Title;** Ann Robinson; Izaak Walton League of America; 1987.
- Wildflowers of Iowa Woodlands;** Sylvan Runkel and Alvin Bull; Iowa State University Press, Ames, IA; 1979.
- Why Preserve Natural Variety?;** Bryan G. Norton; Princeton University Press, Princeton, NJ; 1987.