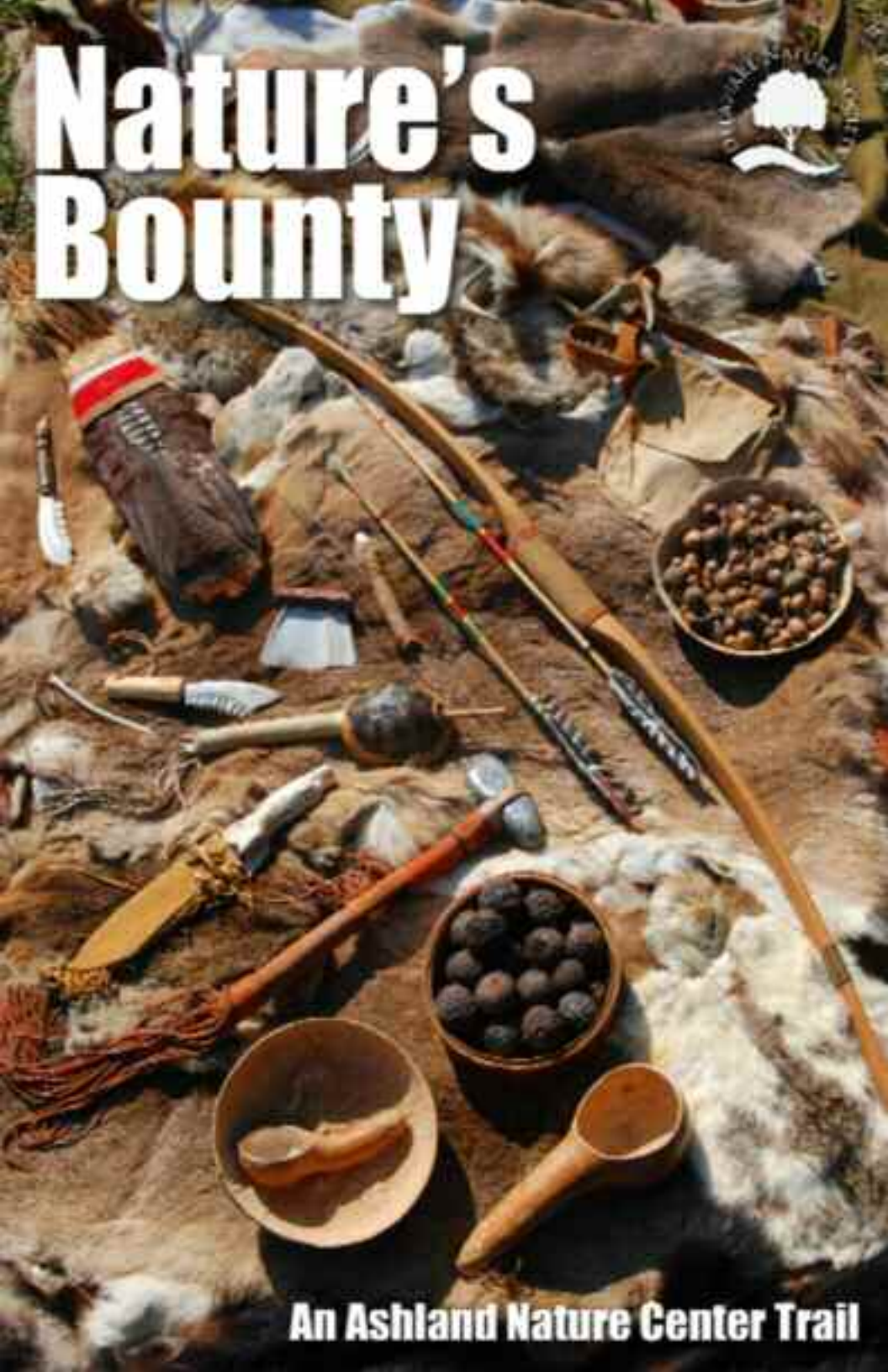


Nature's Bounty



An Ashland Nature Center Trail

About the Trail

*This trail has been designed to teach about some of the fascinating ways that Native Americans (Indians), European settlers, and modern man have used the common plants and animals in this area for medicines, food, tools, and various other uses. The trail begins on the flood plain below the Visitor Center building and leads across Barley Mill Road, up into a hillside forest, and back through a freshwater marsh. You will encounter **27 yellow numbered markers** denoting points of interest along the way.*

Please note that the beginning and end of the Nature's Bounty Trail coincide with the Treetop Trail so you will need to follow the yellow markers carefully. Enjoy your walk!

NATURE'S BOUNTY TRAIL

Trail Length - .75 miles

Difficulty: Moderate

Approx. Walking Time (w/booklet) - 40 minutes

1

To the right of the trail is a grove of **sassafras** trees, a species which has proved very useful to people for hundreds of years. Sassafras was a major export during early colonial times due to the popularity of sassafras tea made from the tender bark of the roots. The tea was taken as a blood-purifying tonic for a variety of ailments including stomachaches, arthritis, rheumatism, colds, and fever. Oil from the bark and roots was used to flavor toothpaste, chewing gum, and root beer until the 1960's, when research showed that a chemical in the oil can cause cancer when consumed in high doses. The wood of sassafras is still very useful, however, because it is very durable in contact with soil and water. The wood is used for fence posts and rails, and in the construction of barrels, buckets, and small boats.



2

You are now on the **floodplain** of the Red Clay Creek. Severe floods in 2003 and 2004 brought several hundred times the average flow of water through this valley – the water level on the floodplain where you are standing actually rose to more than 8 feet above ground level! Luckily, the Visitor Center itself was unharmed because it was built high above the floodplain, on the site of an old barn. A **stone wall** from the old barn, built in the mid 1800's, can be seen on this side of the building. The silo (reconstructed in 1942) at the main entrance to the Visitor Center is the only other remnant of the former barn.

3

Have you noticed part of an **old wire fence** hidden in the brush to the left of the trail? Decades ago, when there was an active farm here, pigs and other farm animals were kept on this floodplain within a fenced area. Since the farm was abandoned, floods have carried away or buried much of the fencing.



4

A walk out the boardwalk takes you into the heart of the **freshwater wetland** known as “Ashland Marsh”. Wetland areas like this are well-used by wildlife and they also play an important role in filtering pollutants out of surface water. Native Americans hunted wetlands like this one for geese, ducks, herons, turtles and various frogs, including American Bullfrogs. They also collected wetland plants for food, medicines, and other uses. For example, the bark from **black willow** trees (abundant near the end of the boardwalk) was brewed to make a fever-reducing tea.

Unfortunately, people often treat wetlands as waste areas and dumping grounds. During the past two centuries, wetlands were frequently drained or filled in to make the land more “useful” to people (e.g., for farming or development).



Black Willow, leaves and bark

5

Don't touch! The “hairy” vine climbing up the tree to the left of the path is **poison ivy**. The three-part, notched leaves are often red and shiny when they emerge in the spring, becoming green and somewhat duller before summer. All parts of the plant contain skin-irritating oil that can cause an itchy rash upon contact.

During the late spring and summer, **jewelweed** can also be found growing near here on the floodplain. Its hollow, tube-like stems contain a watery sap which can be used to relieve the itch of poison ivy or the sting of nettle (see stop #24). Jewelweed has yellow or orange flowers that bloom in late summer. The plant is also called “touch-me-not” because its ripe, green seed pods “explode” when touched in late summer or early fall, releasing and dispersing the seeds.



Jewelweed

6

The **Red Clay Creek** has been used by people for thousands of years. The Lenni Lenape (also called Delaware Indians) who used to live in this area had a deep respect for the creek and were dependent upon it for many needs. It was an important source of food and drinking water, a means of transportation, and a place to bathe, swim, and wash clothing. Early settlers also used the creek for drinking water, fishing, recreation, transportation of goods, and to turn the wheels of their flour and saw mills.

Today, people do not think about the Red Clay Creek in the same way as the Native Americans and early settlers did. Modern roads and railroads have replaced the creek as a means of transportation, and pollution has greatly reduced its usefulness for fishing, swimming, bathing, and direct drinking. With the advent of the industrial age, streams like the Red Clay Creek became dumping grounds; a place to throw trash and pour industrial wastes. Thankfully, the Red Clay Creek is now on the road to recovery, due to the development and strengthening of environmental regulations in recent decades, and the efforts of the Delaware Nature Society, working with other organizations, businesses, and state agencies, to reduce sources of pollution in the creek. Your membership in the Delaware Nature Society helps support these recovery efforts.

Did you know that many people in New Castle County still depend on the Red Clay Creek for drinking water? United Water Delaware withdraws water from the Red Clay and White Clay Creeks in Stanton, purifies it at a sophisticated treatment facility, and then pipes the purified water to homes, schools, businesses, and industries for multiple uses, including drinking.

7

Prior to the Civil War, the need for links between rural areas and urban centers led to extensive bridge construction. Many bridges were covered to protect the deck wood from rotting. The **Ashland Bridge**, listed on the National Register of Historic Places, is one of the few

wooden covered bridges remaining in Delaware. It was built between 1850 and 1865 and restored in 1983 and 2008. As part of the 2008 restoration, the deck was completely rebuilt using African Bongossi timber, a super-strong, fire-resistant wood.



8

You have no doubt noticed numerous **plastic tubes** sticking up on the floodplain here! In 2006, thousands of tree seedlings were planted on the floodplain to help establish a forested buffer, or “riparian buffer”, along the Red Clay Creek. The plastic tubes allow sunlight to penetrate, while protecting the young trees from being browsed by White-tailed Deer, Eastern Cottontails, and other animals.

Towering high above the young saplings are many tall, mature **green ash** trees – a tree suited to rich, moist floodplain soil. Notice the straight trunks and lack of lower branches. The Lenni Lenape made bows from the heavy, strong wood of the ash and colonial settlers used it in the construction of split rail fences. Today, the green ash is still used to make railroad ties, furniture, and boxes.



Green Ash

9

Looking toward the Red Clay Creek, you can see a large, multi-trunked **silver maple** with gray, scaly bark and long, arching branches near the creek edge. Silver maples were formerly planted in great numbers as shade trees for the yard and along city streets.



Sycamore Seedpod

This species is no longer planted much as an ornamental tree because its very large size, shallow spreading roots, and relatively brittle branches make it poorly suited for yard and sidewalk.

Also along the Red Clay Creek on this floodplain are several **sycamore** trees, distinguished by the mottled, peeling, brown and white bark. The sycamore is considered to be the most massive tree native to the eastern United States, and it attained great size in virgin forests of the past. The hard coarse-grained wood provided dugout canoes for the Native Americans. Today, sycamores are used in the construction of butcher blocks, cabinets, and furniture.

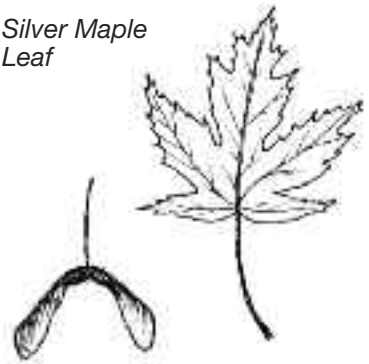
10

You have now entered the **upland forest**. The dominant trees in this part of the forest are oaks and beeches. To the left of the path is an **American beech**, with its distinctive smooth, light-gray bark and elliptical, coarse-toothed leaves. Beech wood is of moderate quality and is used for inexpensive furniture, tool handles, and fuel. Unfortunately, some people also find beech bark handy as a carving surface for their initials, perhaps not realizing that cutting into the bark makes the tree more susceptible to insects and disease, not to mention unsightly.

About 10 feet further up the trail (also on the left) is a **red oak**. Note the dark grayish bark with lighter vertical stripes. Red oak wood is used for furniture, railroad ties, general construction, and fuel.

To the right of the trail is a larger **black oak**, which has pointy-lobed leaves similar to the red oak, although they are usually thicker and glossier. The

Silver Maple Leaf



American Beech Leaf & Nuts

Red Oak Leaf & Acorn



inner bark of black oak was formerly used as a source of a yellow dye known as quercitron. The wood has similar uses as red oak wood.

Nuts of the beech and oak trees were an important source of food for Native Americans and early settlers, and are eaten by many forest birds and mammals.



Black Oak Leaf & Acorn

11

The narrow pond on the far side of the Red Clay Creek (difficult to see in the summer) is the remnant of a

tailrace from an old flour mill. A tailrace is that portion of a millrace that is located “downstream” of a mill. The Ashland flour mill, which operated from 1715 to 1943, was located by the stone house near the big, red barn across the field. A dam on the Red Clay Creek near Sharpless Road provided a reservoir of water for the millrace, which in turn supplied water for the waterwheel that operated the flour mill.

(Note: Just ahead, Nature’s Bounty Trail turns to the right).

12

The tall, evergreen shrub with thick waxy leaves growing near the trail is a **mountain laurel**. The leaves are highly toxic, although historically herbalists used minute doses to treat fever, jaundice, and various other ailments. The wood of the mountain laurel has been used since colonial times in the manufacture of tobacco pipes.



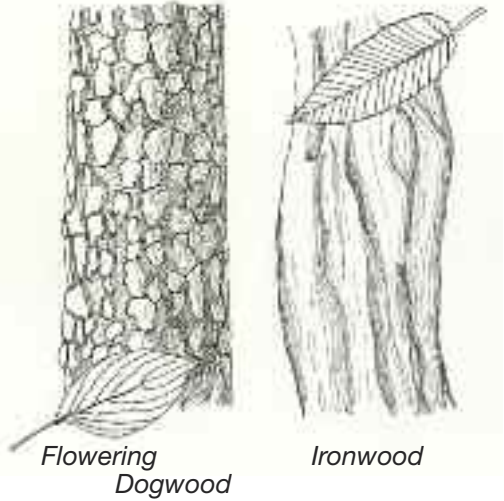
Mountain Laurel

13

Two common understory trees, flowering dogwood and ironwood, can be compared here. The **flowering dogwood** is recognized by its scaly bark and the snowy white, flower-like bracts which appear in late April or May. Native Americans used the root bark to make both a scarlet dye and a tea to combat fever. Dogwood twigs were once used as “chewing sticks” to clean teeth, prior to the development of modern toothbrushes. The very hard, strong, tough wood has been used since colonial times for a variety of uses including wheel hubs, rake teeth, loom shuttles, tool handles, and even the construction of golf clubs. Unfortunately,

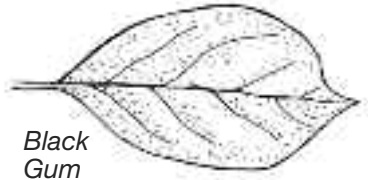
many flowering dogwoods in our forests are dying due to a fungal disease called Dogwood Anthracnose. Can you see any dying or dead dogwoods in these woods?

Ironwood, or American hornbeam, is recognized by the rippled, sinewy appearance of its muscle-like, smooth, gray bark. Tiny nuts of the ironwood are a source of food for birds and squirrels. The dense, tough wood makes an efficient, slow-burning fuel. Charcoal made from ironwood was used in the manufacture of gunpowder in colonial times.



14

Black gum, or sourgum, has dark, blocky bark; branches that tend to grow perpendicular to the trunk; and bright red or burgundy leaves in the fall. The wood is extremely tough and cross-grained, making it resistant to splitting but also difficult to work with. The wood has been used for wheel hubs, tool handles, and wooden shoes.



15

Can you find an example of **southern arrowwood viburnum**? This shrub has toothed, elliptical to somewhat heart-shaped leaves in opposite arrangement on the twigs. The straight basal shoots of the southern arrowwood were once used by Native Americans as shafts for their arrows. In addition, the twigs are a source of food for white-tailed deer and the dark blue, autumn berries are eaten by birds.



16

The shaggy, light-gray bark of the **shagbark hickory** peels off in rough strips or plates, making it easily distinguishable from the other species of hickories you may see along the trail. Shagbark wood is very hard and shock resistant; colonists used the wood for gun ramrods (a rod for ramming the powder into a muzzle-loading firearm) and wagon wheel spokes and also in the preparation of hickory-smoked meats. In recent times the wood has been used for lumber, tool handles, skis, and hunting bows. The thickly husked nuts are edible and are still used today in cakes and candies.



Shagbark Hickory

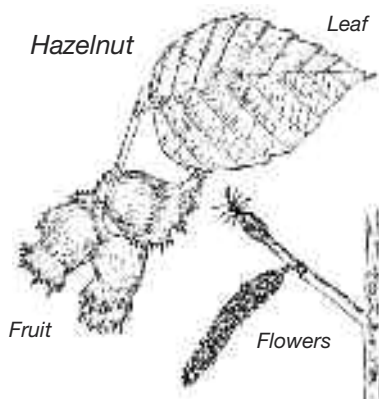
17

The rocks in this area are **metamorphic rocks** called gneisses (pronounced nIses). Notice the swirling lines and folds that are indicative of metamorphic rocks formed under high heat and pressure deep within the earth. These gneisses formed in the core of an ancient mountain range that stood here more than 400 million years ago. Those mountains were as high then as the Rockies are today. Over hundreds of millions of years, the tall mountains have gradually eroded away, exposing these gneisses that were once buried miles beneath the mountain peaks.

Looking closely at the rocks, you may see small crystals of several different minerals, including: shiny black mica; glassy, gray or white quartz; dull, whitish feldspar; and dark, reddish-brown garnet. Patches of grayish-green lichen growing on the rocks aid in breaking down the boulders into smaller rocks.

18

Growing near the marker post to the right of the trail is a stand of **American hazelnut** (also called American filbert). This native shrub is most noticeable in the spring before the leaves open out, when slender, drooping, yellow-brown catkins of the male flowers and bright-red pistils of the small, petal-less female flowers appear. In the fall the



shrub produces edible nuts encased in leafy, ragged-edged husks.

A large **white oak** tree can also be seen from this location, approximately 20 feet off the trail, behind the American hazelnuts. The white oak has scaly, light-gray bark and rounded lobed leaves. The white oak is highly valued for its timber and its many uses include ship building, barrels, wood floors, and fine furniture.



*White Oak
Leaf & Acorn*

Nuts of both the American hazelnut and the white oak were doubtless gathered and eaten by Native Americans and early settlers. Today, hazelnuts and hazelnut meal are widely available for use in baked goods; whereas white oak acorns, although not bitter like the acorns of red oaks, are seldom harvested by humans.

19

What kinds of **animals** live in the forest? Eastern Gray Squirrel, Raccoon, Red Fox, and White-tailed Deer are

among the largest wild animals here now, although 400 years ago Bobcat, Mountain Lion, Gray Wolf, Black Bear, and Elk were also present. Wild

Turkeys, now making a come-back in Delaware, have also been seen in nearby areas and their feathers are found occasionally at Ashland. All of these animals were hunted by the Lenni Lenape who used the

meat for food, the fur and hides for clothing, the sinews for sewing, the feathers for decorations, and the bones and antlers for fishhooks, needles, and other tools.



Deer Antler



Box Turtle

Smaller animals, like songbirds, turtles, toads, salamanders, and nonpoisonous snakes live here too, along with thousands of species of insects and other invertebrates. Some of these smaller animals were also used by the Lenni Lenapes. For example, bowls and rattles were made from the shells of Eastern Box Turtles.

(Note: The Nature's Bounty Trail now merges with the Treetop Trail. Please follow the yellow markers carefully).

20

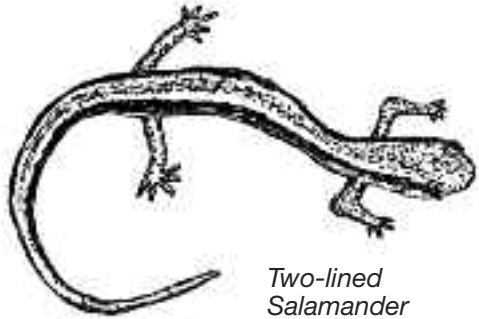
Witch-hazel is a shrub or small tree with wavy-toothed leaves that are uneven at the base. It is unusual because its straggly yellow flowers appear in late fall and its seeds are ejected from the seed capsules, sometimes landing as much as 25 feet away. The bendable branches of the witch-hazel were once a favorite among dowsers, who would use a forked branch as a divining rod to locate underground water. Native Americans used the bark and leaves in the treatment of many skin afflictions. The plant contains chemicals that counteract pain and improve circulation and is still used externally for treatment of abrasions, minor bleeding, varicose veins, and hemorrhoid discomfort.



Witch Hazel

21

Salamander Run is the name given to this rocky, spring-fed creek. Several species of salamanders live in this creek, including Northern Dusky, Northern Two-lined, and Northern

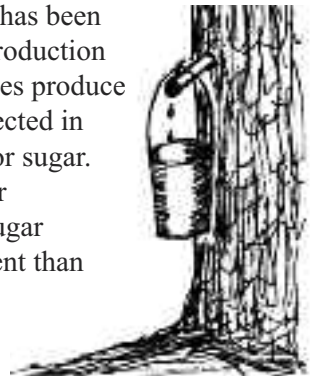


Two-lined Salamander

Red Salamanders. The creek has its source in a groundwater spring located on the hillside about 500 feet upstream from here, and other small springs feed into it along its length. Small spring-fed creeks like Salamander Run were doubtless used by Native Americans and early settlers as sources of cool, clean drinking water.

22

The large **red maple** growing here has been used to demonstrate maple syrup production as done in New England. Maple trees produce a thin, watery, colorless sap that can be collected in late winter and boiled down to make syrup or sugar. In New England, maple sugaring is a regular commercial enterprise using the abundant sugar maple, which has a much higher sugar content than our red maple.



Long before European settlers arrived, the Cree Indians in New England had discovered the principles of maple sugar making. They used maple syrup to season their meat and mixed maple sugar with their corn bread.

To tap a tree, a one-half inch diameter hole is drilled into the trunk of a mature maple and a spout (traditionally made of elderberry) is used to conduct the sap from the tree into a container. When daytime temperatures reach 35 to 45°F and nighttime temperatures remain below freezing, the sap will begin to flow. In February and March, demonstrations of maple sugaring can be observed first hand at the Ashland Nature Center.

23

Spicebush is the common shrub growing along both sides of the trail in this moist floodplain area. The highly aromatic leaves, berries, bark, and twigs of spicebush have been used through the ages to make medicinal teas popular for colds, fevers, coughs, rheumatism, and other ailments. Settlers also used dried spicebush berries as a substitute for allspice.

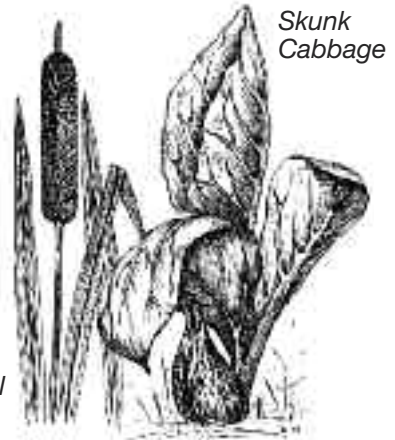


Spice Bush

24

This **freshwater marsh** supports several species of herbaceous (non-woody) plants, including skunk cabbage, sweet flag, and cattail, that were formerly used for medicinal purposes. Dried roots of the skunk cabbage (named for the heavy, unpleasant odor of its large leaves) were used by Native Americans and early settlers as a treatment for convulsions, and mashed leaves were applied to wounds to reduce swelling.

Sweet flag roots were nibbled by Native Americans to ease stomach ailments and to serve as a stimulant on long journeys. Roots, shoots,



Cattail

and flowers of cattail have all served as human food and the roots were also pounded by the Native Americans and used as a topical treatment for wounds, burns, and sores.

Stinging nettle is another herbaceous plant that grows in this part of the floodplain – one that it is best to learn to avoid. The leaves and stems of this alien, herbaceous plant are covered with needle-like hairs that produce an unpleasant stinging sensation when touched. On the positive side, the plant has wonderful medicinal properties. Tea made from the dried leaves has been used traditionally as a “blood purifier” and to treat a wide variety of ailments. Research indicates that the plant contains natural antihistamines and anti-inflammatories which help ease arthritis pain and treat asthma, bronchitis, and nasal allergies.



*Stinging
Nettle*

25

The **black cherry** is a common tree along the forest edge. The hard, close-grained, reddish wood makes beautiful furniture. The small, dark fruit that ripens through the summer is edible to humans, but has a bitter taste. The inner bark has medicinal properties and has been used for hundreds of years for the treatment of coughs and congestion.

THE TRAIL SOON CROSSES BARLEY MILL ROAD. PLEASE CROSS CAREFULLY TO THE BOARDWALK.

It's time to **test your memory!** Can you match each natural resource with its Native American use?

- | | |
|-------------------------------|----------------------------------|
| Black willow & dogwood (bark) | a) to make hunting bows |
| Green ash (wood) | b) to make needles and fishhooks |
| Arrowwood viburnum (shoots) | c) to make fever-reducing tea |
| Sycamore (wood) | d) to make bowls and rattles |
| Animal bones | e) to make arrow shafts |
| Eastern Box Turtle (shell) | f) to make dugout canoes |

Now see if you can match the following plants with their Native American, colonial, and/or modern uses:

Sassafras (root bark)	g) to relieve itching and stinging
Beech, oak and hickory (nuts)	h) for medicinal tea
Mountain laurel (wood)	i) for treatment of coughs and congestion
Ironwood (wood)	j) to prepare smoked meats
Jewelweed (stems)	k) as a colonial substitute for allspice
Shagbark hickory (wood)	l) to make charcoal for colonial gun powder
Spicebush (leaves and bark)	m) to detect groundwater
Spicebush (berries)	n) for food
Witch-hazel (branches)	o) to make tobacco pipes
Black cherry (bark)	p) for tea and to flavor toothpaste & rootbeer

Answers: 1-c; 2-a; 3-e; 4-f; 5-b; 6-d; 7-p; 8-n; 9-o; 10-l; 11-g; 12-j; 13-h; 14-k; 15-m; 16-i

You have now reached the end of the Nature's Bounty Trail. Along the way, you have been introduced to many of the plants and animals that live and grow in northern Delaware. You have seen how Native Americans, early settlers, and modern man found numerous uses for the plants and animals, as well as the waterways and land, in this area.

These natural resources also play an important ecological role. All living things need food, water, and a place to live and grow. Since our natural resources are limited, it is our responsibility to use them wisely.

We hope you have enjoyed this trail and will come back again to visit the Ashland Nature Center. Please deposit \$1.00 in the box if you would like to keep this booklet; otherwise, return the booklet to its box.

SCIENTIFIC NAMES OF SPECIES MENTIONED IN TEXT

(Common names for plants are not standardized and are therefore not capitalized.)

TREES:

Red maple (*Acer rubrum*)
Silver maple (*Acer saccharinum*)
Sugar maple (*Acer saccharum*)
Ironwood (*Carpinus caroliniana*)
Flowering dogwood (*Cornus florida*)
American beech (*Fagus grandifolia*)
White oak (*Quercus alba*)
Red oak (*Quercus rubra*)
Black oak (*Quercus velutina*)
Shagbark hickory (*Carya ovata*)
Sassafras (*Sassafras albidum*)
Black gum (*Nyssa sylvatica*)
Green ash (*Fraxinus pennsylvanica*)
Sycamore (*Platanus occidentalis*)
Black cherry (*Prunus serotina*)
Black willow (*Salix nigra*)

SHRUBS and VINES:

Poison ivy (*Toxicodendron radicans*)
American hazelnut (*Corylus americana*)
Southern arrowwood viburnum (*Viburnum dentatum*)
Mountain laurel (*Kalmia latifolia*)
Witch-hazel (*Hamamelis virginiana*)
Spicebush (*Lindera benzoin*)

HERBACEOUS PLANTS:

Sweet flag (*Acorus calamus*)
Skunk cabbage (*Symplocarpus foetidus*)
Jewelweed (*Impatiens* spp.)
Cattail (*Typha latifolia*)
Stinging nettle (*Urtica dioica*)

AMPHIBIANS AND REPTILES

Northern Dusky Salamander (*Desmognathus fuscus*)
Northern Two-lined Salamander (*Eurycea bislineata*)
Northern Red Salamander (*Pseudotriton r. ruber*)
American Bullfrog (*Rana catesbeiana*)
Eastern Box Turtle (*Terrapene c. carolina*)

BIRDS:

Wild Turkey (*Meleagris gallopavo*)

MAMMALS:

Eastern Gray Squirrel (*Sciurus carolinensis*)

Red Fox (*Vulpes fulva*)

Gray Wolf (*Canis lupus*)

Black Bear (*Ursus americanus*)

Bobcat (*Lynx rufus*)

Mountain Lion (*Felis concolor*)

Raccoon (*Procyon lotor*)

White-tailed Deer (*Odocoileus virginiana*)

Elk (*Cervus canadensis*)

ABOUT THE DELAWARE NATURE SOCIETY

People of all ages learn about nature and the environment through the Delaware Nature Society's programs at Ashland & Abbott's Mill Nature Centers, Coverdale Farm, Cooch-Dayett Mills and the new DuPont Environmental Education Center at the Wilmington riverfront. DNS has helped preserve thousands of acres of land and advocates for conservation of our natural resources. We own or manage more than 1000 acres of wildlife habitat for education and biodiversity and DNS is the Delaware affiliate of the National Wildlife Federation.

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