

#7 Deadwood

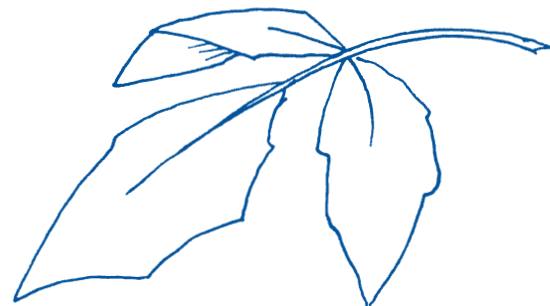


Deadwood is an important part of the forest. Fungi and bacteria decompose deadwood, gradually returning nutrients to the soil. Fallen wood also holds moisture much longer than the leaves on the forest floor. Moss and seedlings can grow on fallen wood when they can't live in the leaves. Wood also shelters many creatures, including insects and salamanders.

Standing dead trees are called **snags**. They are a favorite home for woodpeckers, which find and eat insects that burrow through snags. Woodpecker holes become homes for other birds and squirrels.

#8 Poison Ivy Vine

Many plants protect themselves from harm by making themselves unpleasant. A chemical called **urushiol** is the active ingredient in poison ivy. It can protect the vine from bugs, but birds can still eat the berries and deer can eat the leaves. About nine out of ten human beings have a bad reaction to urushiol.



Vines do not support their own weight. To reach sunlight in the forest, they climb trees. Vines can grow quickly because they do not use their energy to hold themselves up. Vines may hang on by coiling around other stems, by hanging on with tendrils, or, like poison ivy, by growing roots right into a tree's bark!

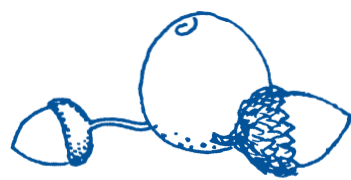
Bittersweet,
A twining vine



#9 Nuts

While plants have many types of seeds, some of the most important seeds to humans and other animals are nuts. The large nuts of hickories, oaks, and walnut trees are a high-energy source for many types of animals, especially squirrels. While it may seem that squirrels hurt the regeneration of trees by eating their nuts, the squirrels are in fact helping to plant new trees. Squirrels take nuts and bury them in the soil for winter. Fortunately for the trees, squirrels are quite forgetful and many of the seeds stay buried until they can sprout in the spring.

When oaks, hickories, and walnuts sprout, the young plant uses energy in the nut to grow a **taproot** into the soil. Seedlings with large taproots can obtain more water and nutrients from the soil. During dry springs only seedlings with the deepest taproots survive.



#10 Fire

Natural events like wind, rain, and fire all play important roles in forests. In pre-settlement times, wildfires occurred fairly frequently here and throughout Michigan.

Many people believe that fires harm forests. In truth, many types of plants depend on fire for their success and regeneration. Minor fires are crucial in the regeneration cycle of oaks. Thick-barked oaks can survive them, while competing plants with thinner bark are burned off. Severe fires that can kill adult oaks occur rarely. After lethal fires, new oaks grow quickly, giving them a head start on other trees.

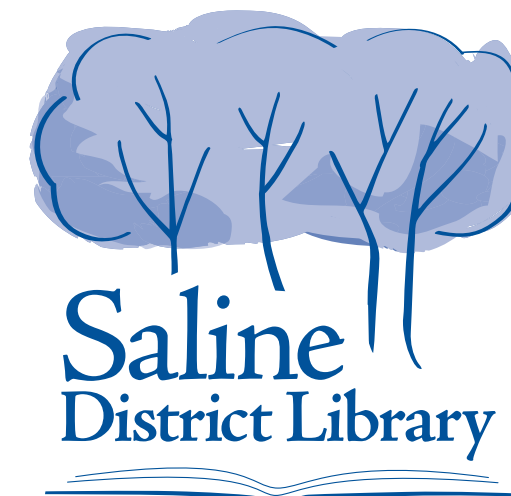
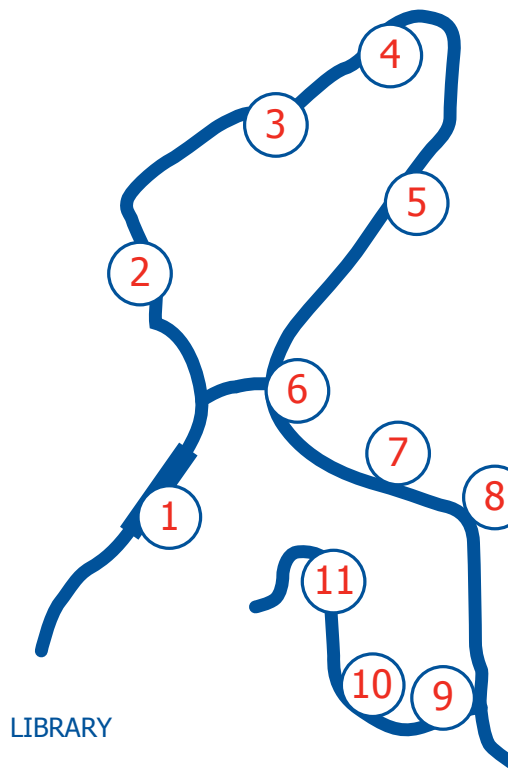
Today, wildfires are rare because people control them. Without fire, maples and ash trees will one day dominate the Saline District Library Woods.

#11 Alien Invaders

Here are two kinds of tree from thousands of miles away. Behind this marker is a common buckthorn; across the trail is a young Norway maple. They are examples of plants people brought from exotic places. They have no natural controls in Michigan, which gives them an advantage over our native woodland life. Not much eats them, and they can shade out most of what naturally grows here. Here, both aliens are growing under a white oak. Yet no new oak will ever be able to sprout under them.

Some misplaced plants like these are common in Saline. Dandelions, Queen Anne's lace, purple clover, autumn-olive, some honeysuckles, and glossy buckthorn are all from overseas. They have spread because of human activity and in some cases threaten Michigan's native plant populations.

Woodland Dynamics



555 North Maple Road
Saline Michigan 48176
(734) 429-5450
www.salinelibrary.org

#1 Wetland

The area to your left and under the boardwalk is wet year-round. This wetland area is a remnant of a larger pond now filled in by the library parking lot. Tree roots require oxygen to breathe, yet wetland soils hold much less oxygen than most soils. American elm, cottonwood, green ash, and silver maple are among the few types of trees that can survive in low-oxygen conditions, and they all can be found in this wetland. Wetland trees such as these are often planted along sidewalks and streets, where oxygen levels are also low. Wetland soils are termed **muck**. Muck is mainly old plant material (good for growing) that is very black and mushy.

Wetlands are among the most important ecosystems on Earth. In prehistoric times wetland environments produced and preserved many of the fossil fuels that provide power for our cars and homes. Today, we use wetlands to filter polluted water, slow flooding, and recharge groundwater supplies. A great diversity of plant and animal species are specifically adapted to wetlands.

#2 Wolf Tree



Ahead and to your left stands one of the oldest trees in Saline. In fact, this oak was here before Saline was Saline - it is over 200 years old! In relation, most of the other trees in the woods are under 50 years old. Its features and form give clues of what the woods once looked like.

As trees in a forest grow, leaves on the lowest branches do not receive enough sunlight. The leaves do not produce energy, and the lowest branches gradually die off. However, notice how thick and gnarly the lower branches on this oak have become. This tree needed open, well-lit conditions to grow branches like these. Old trees of this spreading appearance are called **wolf trees**.

Oak trees grow thick bark that allows them to survive wildfires that kill most other trees. This tree and other old oaks standing near the library hint that wildfires were once common near Saline.

#3 Leafdrop

Once an autumn's first frost arrives, most plant growth ceases. Trees must be able to recover the nutrition in their leaves before cold temperatures kill the leaves.

As early as August, shortening days trigger plant hormones that slow growth. As growth slows, other hormones signal the tree to drain nutrients from their leaves.

Tree leaves contain many pigments. The most common is **chlorophyll**. Chlorophyll gives leaves their green color, and it is also high in energy. As trees drain chlorophyll from their leaves, other pigments in the leaves remain - and leaves appear to "turn" red or yellow.

Leaves use light energy to make their own food in a process called **photosynthesis**. As days shorten and plant growth slows, photosynthesis in leaves slows as well. Once photosynthesis stops, a layer of cells grows between the twig and the drained leaves, essentially pushing them off!



#4 Dutch Elm Disease

Here the trail begins to pass through a section of the woods where many trees have recently died. Elm trees once filled this area of forest; now they are slowly dying of Dutch elm disease.

In the 1950s, an Asian fungus that had long ago spread through Europe found its way to the United States in a shipment of logs. The fungus invades an elm tree through the roots, or through injuries to the bark. Once established, the fungus clogs an elm's water vessels, making the tree sensitive to dry weather. American elms possessed no immunity against the fungus, which quickly spread throughout the United States. Soon elms began to die off nationwide.

Most of the elm trees in the Saline District Library Woods are infected with Dutch elm disease. Many have died. In wet years, the muck soils of the woods hold enough water for even diseased trees to survive. Yet it took only a slight drought in 1996 to doom the trees you see dying today.

#5 Fruit



It seems you are standing in a giant briar patch! Look up. Is the sun in your eyes? The shrubs and vines growing around you were once shaded out by healthy elm trees. But in a forest, nothing is forever. Once the elms died, more sunlight reached the forest floor. Roses, raspberries, elderberries, dogwood, and grapevine quickly spread.

Stand as still as you can and listen. Look around yourself. Notice what is moving in the forest: wind, animals, and you. Cottonwoods and elms grow light seeds with wings or hairs that let them use the wind to travel. Other plants produce burs that stick to animals and people and ride away. The plants you see around you hold their seeds inside fruit eaten and spread by animals.

#6 Are walnut trees mean?



All plants need some of the same things to grow: sunlight, water, and soil nutrients. Just by using those resources, plants take them away from each other. Many plants around the world make toxins which give them an advantage over other plants.

Walnut trees make a chemical, called **juglone**, which is poisonous to other plants. A walnut tree can be healthier and live longer if competing vines and trees can't grow near it. Tomatoes and alfalfa are examples of other plants that are highly sensitive to juglone.

Black Knot fungus

Unsavory-looking black lumps encircle the twigs on many young trees in the woods. They grow as a reaction to a fungus which infects plum and cherry plants. The swollen growths can be a foot long! Small twigs die from black knot fungus within a year of infection. Even large branches can die if infected long enough.

