2018 LANCASTER COUNTY JUNIOR ENVIROTHON
TREES AND PLANTS

TREES and SHRUBS	PLANTS
Spicebush	Common Duckweed
Red Maple	Common Reed (*Phragmites*)
Black Willow	Purple Loosestrife
Red-osier Dogwood	Skunk Cabbage
American Elderberry	Common Cattail
Speckled Alder	
Sweetgum	

References include:

http://dendro.cnre.vt.edu/dendrology/main.htm

http://www.fcps.edu/islandcreekes/ecology/

http://plants.usda.gov/

https://aquaplant.tamu.edu/plant-identification/alphabetical-index/common-reed/

https://www.fs.fed.us/wildflowers/plant-of-the-week/lemna_minor.shtml

http://www.seagrant.umn.edu/ais/purpleloosestrife_info

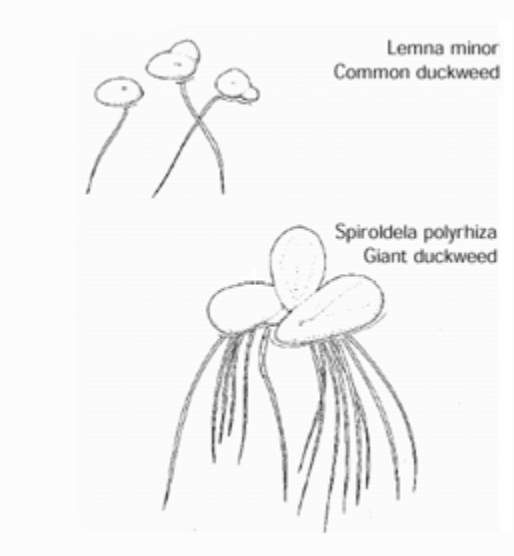
http://www.fcps.edu/islandcreekes/ecology/skunk_cabbage.htm, Fairfax County Public Schools

http://natureinstitute.org/pub/ic/ic4/skunkcabbage.htm

http://www.fcps.edu/islandcreekes/ecology/common_cattail.htm, Fairfax County Public Schools

http://www.fcps.edu/islandcreekes/ecology/common_cattail.htm, Fairfax County Public Schools

Common Duckweed



Common duckweed is a very small light green free-floating, seed bearing plant. Duckweed has 1 to 3 leaves, or fronds, of 1/16 to 1/8 inch in length. A single root (or root-hair) protrudes from each frond. Duckweeds tend to grow in dense colonies in quiet water, undisturbed by wave action. Duckweed colonies provide habitat for micro invertebrates but if duckweed completely covers the surface of a pond for an extended period it will cause oxygen depletions. These colonies will also eliminate submerged plants by blocking sunlight penetration. Many kinds of ducks consume duckweed and often transport it to other bodies of water.

The duckweeds (genus *Lemna*) and related genera of the duckweed family (Lemnaceae) are the smallest flowering plants known!

Individual plants consist of a single, flat oval leaf (technically a modified stem) no more than ¼ of an inch long that floats on the surface of still-moving ponds, lakes, and sloughs. The duckweed inflorescence, consisting of two microscopic staminate flowers and one tiny pistillate flower in a pouch-like sac, is almost never seen. Taxonomists believe the duckweed flowers are modified versions of the familiar leafy spathe and club-like spadix of the skunk cabbages, Jack-in-the-pulpit, calla lilies, and other members of the Arum family (Araceae), and indeed recent genetic studies suggest that duckweeds probably belong in an expanded version of the Arum family. Despite their diminutive size, the flowers of duckweeds can attract flies, mites, small spiders, and even bees that can spread the plant's pollen after being attracted by sticky secretions from the stigma. Duckweeds can also be "contact pollinated" through the collision of adjacent floating stems that jars pollen loose and on to the receptive stigma.

However, sexual reproduction is the exception rather than the rule in duckweeds. More often, species propagate asexually by forming chains of new stems from vegetative buds. Some duckweed can also produce specialized buds called turions that break off the parental stem and sink to the bottom of a lake or pond to over-winter. In spring, the starch-filled turions rapidly begin to metabolize, causing the structure to float back to the surface and grow into a typical duckweed stem.

Duckweeds grow quickly and produce new offshoots rapidly. Dense populations are an important food source for aquatic waterfowl and fish, but can become a nuisance to humans. Scientists have recently come to appreciate the fast growth rate of duckweeds, however, and the plants are being used for bioremediation of waterways with excessive amounts of phosphorus and nitrogen from agricultural runoff. Harvesting duckweeds as a crop can remove these pollutants and provide valuable livestock feed or fertilizer. Researchers are also developing techniques to use genetically modified duckweeds to synthesize insulin and other commercially valuable proteins (being plants, duckweeds are immune to animal viruses, making them invaluable in creating new biomedicines).

Nine duckweed species occur in North America. Common duckweed (*L. minor*) is the most widespread species, ranging across Canada and reported for all states except Hawaii and South Carolina. Identifying duckweeds to species can be tricky due to their minute size and absence of showy floral characters. Stem size and the number of roots (if any) distinguish other genera in the duckweed family.

Lemna minor range map. USDA PLANTS Database.

Common Reed

Common reed is a cane-like perennial grass that commonly grows from 12 to 16 feet tall, forming dense stands. Stems are round and hollow with flat leaves along its length. Leaves are long (up to 24 inches by 2 inches wide) and gradually taper to a point. The seed head is at the end of the stem and is multi-branched, 8 to 16 inches long. Silky hairs along the flowers axis give a silky appearance. Common reed can propagate from seeds or from its creeping rhizomes.

Background

European forms of *Phragmites* were probably introduced to North America by accident in ballast material in the late 1700s or early 1800s. Recent research using genetic markers has demonstrated that three separate lineages occur in North America – one endemic and widespread (native), one whose nativity is not certain that occurs across the southern U.S. from California to Florida and into Mexico and Central America ('Gulf Coast' type) and one from Europe (introduced invasive), which is the focus of this writing. The European *Phragmites* first established along the Atlantic coast and then spread across the continent over the course of the 20th century. The native form was historically more widespread, occurring throughout Canada and most of the U.S. except for the Southeast (Texas to Florida and north to North Carolina). It remains fairly widespread in the western U.S.

Native Americans used common reed for arrow shafts, musical instruments, ceremonial objects, cigarettes, and leaves and stems for constructing mats. Preserved remains of native *Phragmites* 40,000 years old have been found in the Southwestern United States indicating that it is a part of the native flora of that region. In coastal areas, preserved rhizome fragments dating back 3,000-4,000 years before present have also been found in salt marsh sediments indicating that it is also native to these habitats. Both native and introduced forms have been used for duckblinds.

Distribution and Habitat
Common reed occurs in disturbed to pristine wet areas including tidal and non-tidal wetlands, brackish and fresh-water marshes, river edges, shores of lakes and ponds, roadsides and ditches. It prefers full sun and can tolerate fresh to mesohaline salinities.

Ecological Threat

Common reed is a vigorous growing plant that forms dense monotypic stands that consume available growing space and push out other plants including the native subspecies. It also alters wetland hydrology, increases the potential for fire and reduces and degrades wetland wildlife habitat due in part to its very dense growth habit. There is currently no evidence for of hybridization between native and introduced forms occurring in the field.

Description and Biology

Plant: perennial grass, stems to 15 ft., somewhat rough to the touch, lack fungal spots but some mildew may be present.

Leaves: blue green and darker than the native form; elongate, typically 1-1½ in. wide at their widest point; leaf sheaths adhere tightly to stem and persist through the winter; ligule is less than 1 mm long.

Flowers, fruits and seeds: flowers in bushy panicles, usually purple or golden in color; upper glumes 4.5-7.5 mm, lower glumes 2.5-5.0 mm (most <4.0).

Spreads: by seed which is dispersed by wind and water; vegetatively through rhizomes and transport of rhizome fragments.

Look-alikes: native form of *Phragmites*; other large grasses with plume-like inflorescences.

Prevention and Control
Avoid spread of plants and plant parts to uninfested plant areas.

Spicebush

Leaf: Alternate, simple, elliptical, 3 to 5 inches long, pinnately veined, entire margin that may be somewhat ciliate, strong, spicy odor when crushed, green above and slightly paler below.
Flower: Species is dioecious; small, but due to large numbers they can be showy, yellow, appearing in axillary clusters before the leaves in early spring.
Fruit: A bright red drupe when ripe (green before ripening), 3/8 inch long with a large seed and a peppery taste and scent, maturing in fall.
Twig: Slender, olive-green to brown in color, numerous light lenticels, with distinctive, stalked globose buds covered with 2 to 3 yellow-green to brown scales; when broken, a spicy, peppery smell is obvious.
Bark: Brown to gray-brown and speckled with light colored lenticels.
Form: A large shrub with several stems, usually rounded in outline up to 15 feet tall.
Looks like: Eastern Leatherwood







Found in moist areas in the eastern U.S.

Additional Range Information: *Lindera benzoin* is native to North America. Range may be expanded by planting.

Red Maple

Leaf: Opposite, simple, 3 to 5 palmate lobes with serrated margin, sinuses relatively shallow (but highly variable), 2 to 4 inches long; green above, whitened and sometimes glaucous or hairy beneath.
Flower: Attractive but small, occur in hanging clusters, usually bright red but occasionally yellow, appear in early spring, usually before leaves.
Fruit: Clusters of 1/2 to 3/4 inch long samaras with slightly divergent wings, on long slender stems. Light brown and often reddish, ripen in late spring and early summer.
Twig: Reddish and lustrous with small lenticels, buds usually blunt, green or reddish (fall and winter) with several loose scales usually present, leaf scars V-shaped, 3 bundle scars, lateral buds slightly stalked, may be collateral buds present.
Bark: On young trees, smooth and light gray, with age becomes darker and breaks up into long, fine scaly plates.
Form: Medium sized tree up to 90 feet. In forest, trunk usually clear for some distance, in the open the trunk is shorter and the crown rounded.
Wildlife Value: Red maple is often browsed by large mammals, and is especially important to deer in late fall/ early winter in New Brunswick, Nova Scotia, Maine, and Minnesota. This tree attracts deer, elk, moose, snowshoe hare, wood ducks, pileated woodpeckers, screech owls, and flickers.
Fun Fact: Red maple is widely used as an ornamental or shade tree. The foliage turns brilliant red or yellow in the fall. Sap may be used to make syrup, although yield is lower than from sugar maple. The wood is relatively soft. In managed forests, red maple is often considered a weed species particularly when high quality oaks are desired.

Looks like: silver maple - mountain maple - mapleleaf viburnum - sugar maple

Black Willow

Leaf: Alternate, simple, pinnately veined, lanceolate in shape, 3 to 6 inches long, with a finely serrate margin. Leaves are dark and shiny above, light green below.
Flower: Species is dioecious; flowers are tiny, green, borne on catkins, 1 to 3 inches long, early summer.
Fruit: Cone-shaped capsules that contain many small, cottony seeds, borne on catkins; capsules split at maturity, midsummer.
Twig: Slender, orange-brown in color, with a bitter aspirin taste; buds are small and appressed, covered by one bud scale, the terminal bud absent; stipules/scars are obvious.
Bark: Brown to gray-black, with thick, somewhat scaly ridges and deep furrows.
Form: A small to medium sized tree that can develop a massive trunk with a spreading, irregular crown. Black willows are often affected by crown gall, and witches brooms and trunk sprouting are common.
Wildlife Value: Buds and catkins are eaten by birds. Deer eat the twigs and leaves. Rodents eat the bark and buds. This tree attracts deer, yellow-bellied sapsucker, various other birds, and rodents.
Fun Facts: For years extracts of willow bark were known to reduce fevers and alleviate pain. In 1829 the compound salicin was isolated from willow. This discovery led to the use salicylic acid as the basic ingredient in aspirin. Black willow's easy propagation, dense root system, and rapid growth are exploited for the stabilization of soils adjacent to water bodies.

Looks like: white willow - sandbar willow - weeping willow - Goodding's willow

Purple Loosestrife

The Arrival: Purple loosestrife, a beautiful but aggressive invader, arrived in eastern North America in the early 1800's. Plants were brought to North America by settlers for their flower gardens, and seeds were present in the ballast holds of European ships that used soil to weigh down the vessels for stability on the ocean. Since it was introduced, purple loosestrife has spread westward and can be found across much of Canada and the United States.

The Problem: Purple loosestrife is a very hardy perennial which can rapidly degrade wetlands, diminishing their value for wildlife habitat. Wetlands are the most biologically diverse, productive component of our ecosystem. Hundreds of species of plants, birds, mammals, reptiles, insects, fish and amphibians rely on healthy wetland habitat for their survival.

However, when purple loosestrife gets a foothold, the habitat where fish and wildlife feed, seek shelter, reproduce and rear young, quickly becomes choked under a sea of purple flowers. Areas where wild rice grows and is harvested, and where fish spawn, are degraded. An estimated 190,000 hectares of wetlands, marshes, pastures and riparian meadows are affected in North America each year, with an economic impact of millions of dollars.

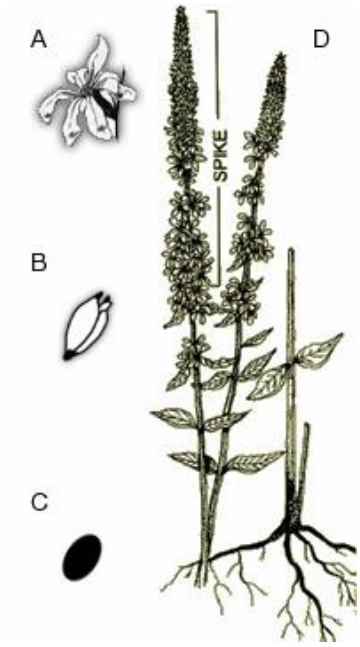
Purple loosestrife also invades drier sites. Concern is increasing as the plant becomes more common on agricultural land, encroaching on farmers' crops and pasture land.

The Challenge: Many organizations throughout North America have taken action to control the spread of purple loosestrife. Their response has been characterized by unparalleled cooperation. National wildlife services, state/provincial natural resource and environment agencies, universities, nursery trades associations, and conservation and community organizations have responded to the purple loosestrife invasion by raising awareness of the threat posed by this invasive plant, and how to prevent its spread.

How to identify Purple Loosestrife:

Leaves: Leaves are downy, with smooth edges. They are usually arranged opposite each other in pairs which alternate down the stalk at 90 degree angles, however, they may appear in groups of three.

Perennial Rootstock: On mature plants, rootstocks are extensive and can send out up to 30 to 50 shoots, creating a dense web which chokes out other plant life.

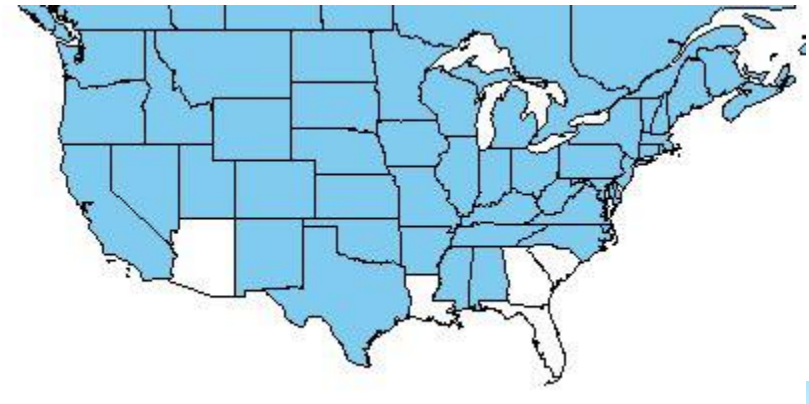


A.) Flower: Individual flowers have five or six pink-purple petals surrounding small, yellow centers. Each flower spike is made up of many individual flowers.

B.) Seed Capsule: As flowers begin to drop off, capsules containing many tiny seeds appear in their place. Depending on where you live, plants may go to seed as early as late July.

C.) Seed: Each mature plant can produce up to 2.7 million seeds annually. As tiny as grains of sand, seeds are easily spread by water, wind, wildlife and humans. Germination can occur the following season, but seeds may lay dormant for several years before sprouting.

D.) Stalks: Stalks are square, five or six-sided, woody, as tall as 2m (6+ ft.) with several stalks on mature plants



Range map for Purple Loosestrife in the continental US

In the past, the government used purple loosestrife to control roadside erosion. It should not be confused with other plants sharing the name loosestrife that are members of the family Primulaceae.

Red-osier Dogwood

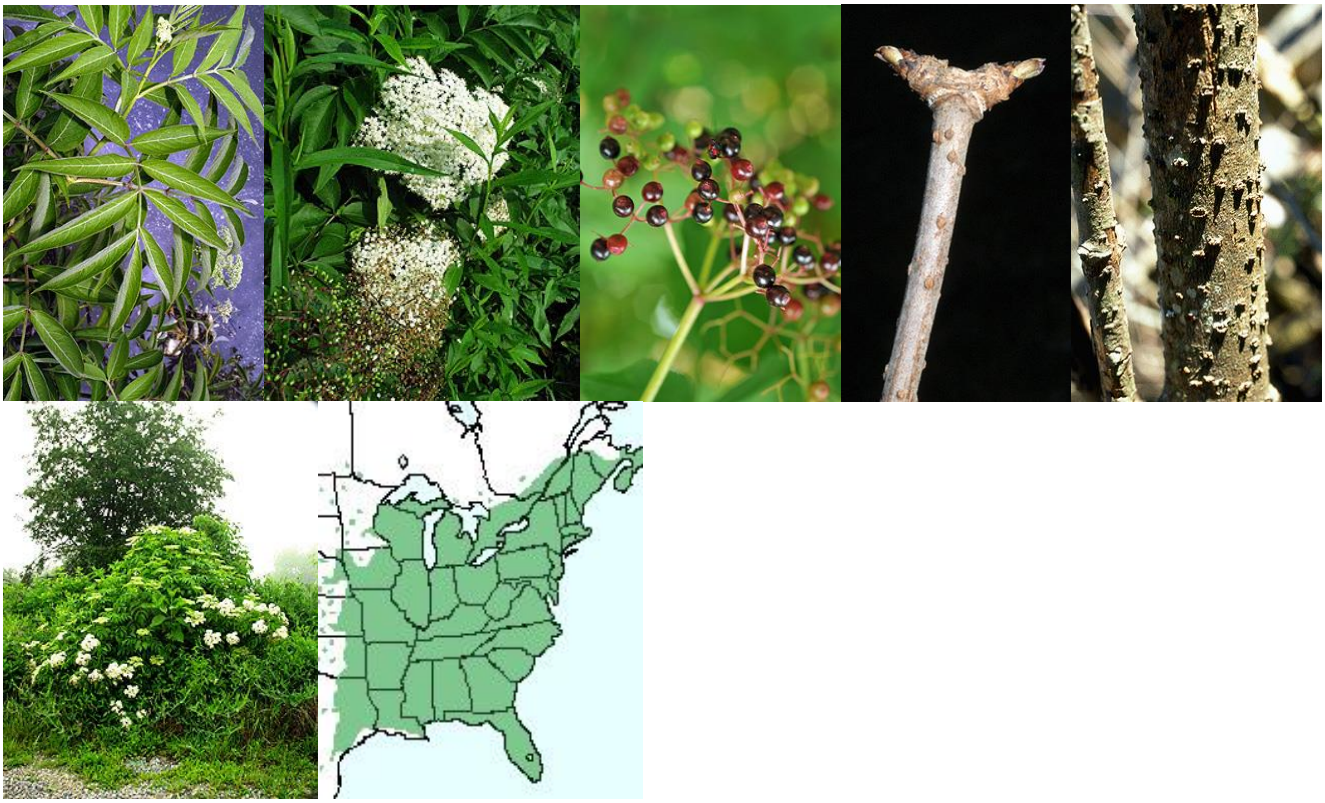
Leaf: Opposite, simple, arcuately veined, 2 to 4 inches long, somewhat narrow, entire margin, green above, pale below.
Flower: Species is monoecious; small, dull white in flat top clusters about 2 inches across appearing in late spring to early summer.
Fruit: Dull white, 1/4 to 1/3 inch in diameter in rounded clusters. Maturing in late summer to fall.
Twig: Bright red, sometimes green splotched with red, white pith, buds narrow and tapering, flower buds more swollen.
Bark: Red to green with numerous lenticels; later developing larger cracks and splits and turning light brown.
Form: Small to medium sized shrub with numerous stems forming thickets up to 15 feet tall but generally shorter.

Looks like: Tatarian dogwood - gray dogwood - roughleaf dogwood - silky dogwood

American Elderberry

Leaf: Opposite, pinnately compound, 6 to 11 inches long, with 5 to 11 elliptical, serrate leaflets, acuminate tips, bottom leaflets are often 3-lobed, dark green above and much paler below.
Flower: Species is monoecious; small, white, borne in dense, flat-topped clusters, up to 8 inches across, appearing in summer.
Fruit: Small, berrylike drupe, purple-black, and very juicy, up to 1/4 inch in diameter, borne in flat-topped clusters, maturing in late summer.
Twig: Stout, silvery- to yellow-gray with obvious, warty lenticels, large white pith; buds are very small, red-brown and pointed, terminal buds are generally lacking.
Bark: Smooth and brown with obvious warts, becoming shallowly furrowed and rough with age.
Form: A large shrub or small tree often with multiple stems that are spreading or arching reaching up to 12 feet tall. The trunk is usually short.

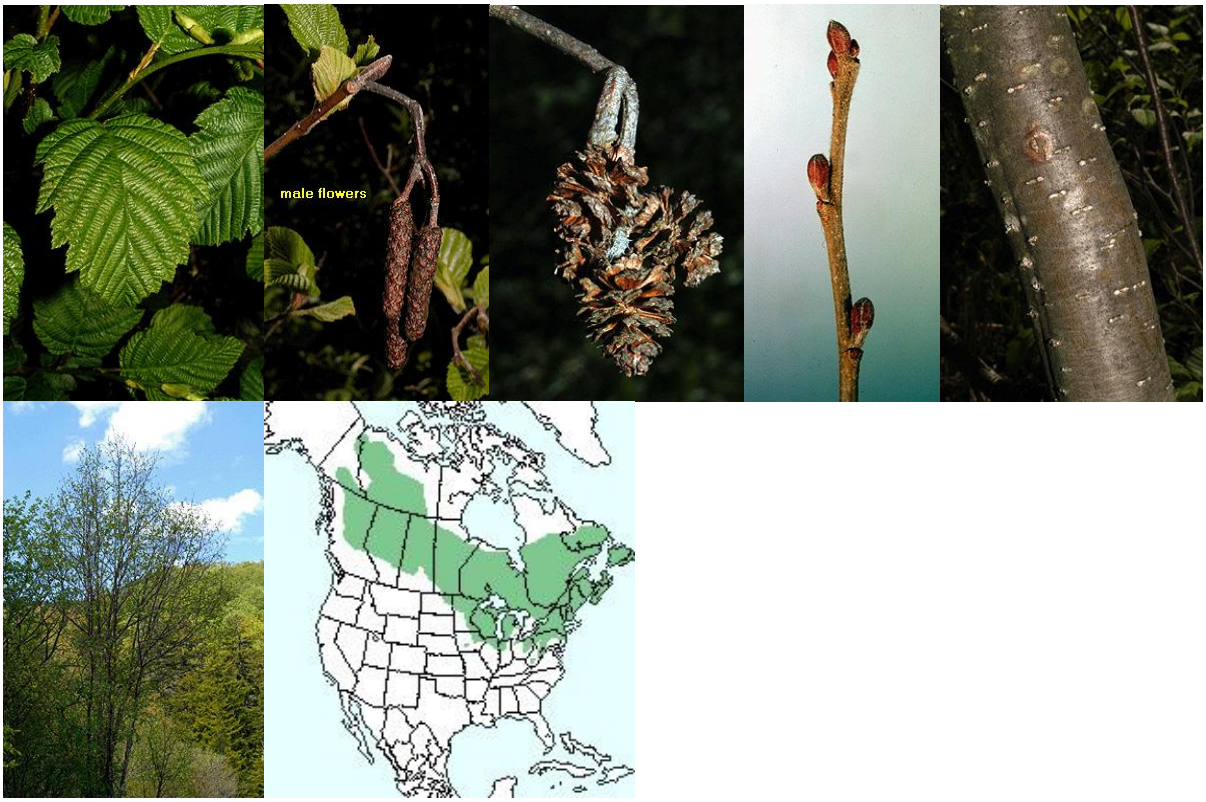
Looks like: blue elderberry - red elderberry - green ash - boxelder



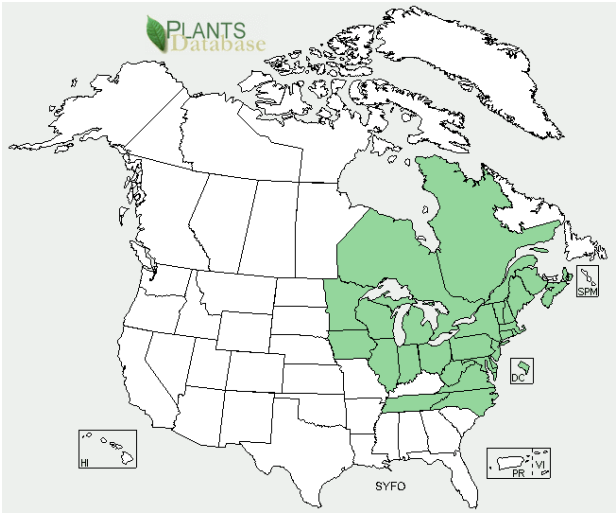
Speckled Alder

Leaf: Alternate, simple, oval, doubly serrated, 2 to 4 inches long, dull dark green above, paler and may be velvety below.
Flower: Species is monoecious; in small clusters, preformed male catkins are 1/2 to 1 inch long, slender and green; females are much smaller, reddish green, open in early spring.
Fruit: Cone-like, 1/2 inch long, brown when ripe, each scale enclosing a very small winged seed, mature in late summer, and persistent
Twig: Moderate, gray-brown to reddish brown, velvety, lighter lenticels, buds stalked, plump and reddish brown.
Bark: Smooth reddish brown with numerous conspicuous horizontal white to light orange lenticels.
Form: Small clumping shrub that reaches 25 feet in height.

Looks like: thinleaf alder - hazel alder - Sitka alder



Skunk Cabbage

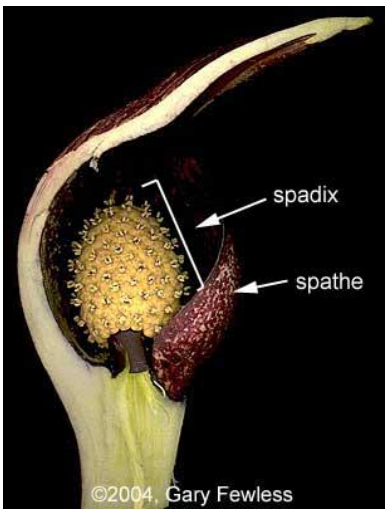


Poisonous Plants Homepage of the University of Pennsylvania
School of Veterinary Medicine
plants.usda.gov

Skunk Cabbage is a large-leafed plant that grows in wet areas, especially near streams, ponds, marshes, and wet woods. It is easy to recognize, with its huge leaves rising directly from the ground.

Skunk Cabbage is one of the first plants to bloom in the spring, and can bloom anywhere from February to May. It can actually generate its own heat and melt through a covering layer of snow or ice. The first part of the plant to appear is the spathe. The spathe is a brownish-purple, shell-like pod with green splotches. It may resemble something from a science-fiction movie.

As the spathe gets bigger, it will reveal another part inside, called a spadix. The spadix is a little knob covered with small yellow flowers.



Skunk Cabbage By late spring, the Skunk Cabbage will send up a tightly rolled leaf. When the leaf unfurls, it may be one to two feet long and a foot wide.

When leaves are bruised or crushed, the plant releases a strong odor which smells like rotten meat. This smell attracts insects.

Insects arrive and find the flowers of the Skunk Cabbage. They then help pollinate the plant by taking pollen from

one cabbage to another. Many fly species, as well as some butterflies, bees, and beetles pollinate Skunk Cabbage.

In the fall, Skunk Cabbage leaves fall over and begin to rot. Many animals, including slugs, millipedes, and isopods eat the old leaves, but Skunk Cabbage leaves are poisonous to mammals (including us).

The large fallen leaves also provide good shelter for small animals. In late winter and early spring, the new flowers give off heat. This heat is strong enough to melt snow around the plant. Flies and other insects seek their warmth.

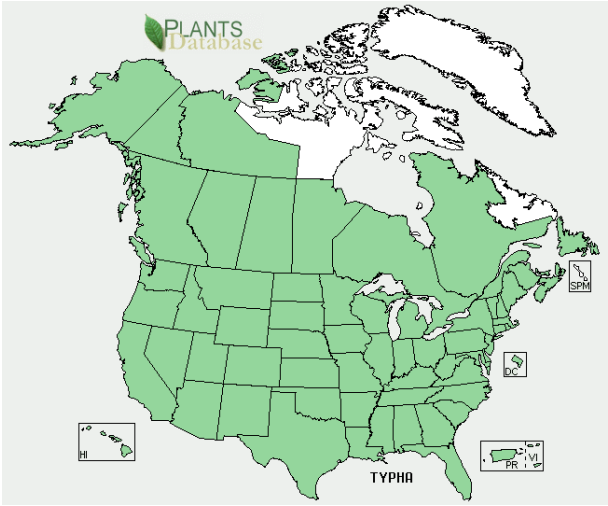
Wildlife Value:

In late spring, the Common Yellowthroat will sometimes build its nest in the hollow of large Skunk Cabbage leaves.
Wood Ducks and Northern Bobwhites eat Skunk Cabbage seeds.
Some plants that often grow alongside of Skunk Cabbage include sedges, jewelweeds, and Marsh Marigold.

Relationship to Humans:

Skunk Cabbage is **poisonous to people**, but are interesting plants and give us an early sign of spring.

Common Cattail



Common Cattails are a familiar sight along the shore of any marsh, pond, lake, or river. They can even be found in ditches.

Cattails are tall, stiff plants, growing almost ten feet tall. The leaves look like giant blades of grass, about one inch wide. The flower has two parts; a brown cylinder (the female part), and a yellow spike (the male part).

Cattails are usually found in a dense stand (many together).

Characteristics:

- adult specimens range from 1-3 meters or 3-9 feet tall
- stiff, straight stem
- brown flower head pops open in early fall, letting its fluffy seeds emerge; the seeds are carried away by wind or water

Leaves:

- erect, sharp, and stiff
- look like a thick blade of grass
- leaves are simple with a smooth, continuous edge

Flower:

- the flower has two parts: female and male
- brown sausage-shaped formation near top of stem made up of tiny, densely-packed *pistillate* (female) flowers
- thin yellow spike extending above female part is the *staminate* (male) flowers
- both male and female flowers visible May-July

Uses: The dried leaves are an excellent source of weaving material that can be used to make floats and rafts. The cottony seeds make good pillow stuffing and insulation. The fluff makes excellent tinder and can be easily spotted all year round. Dried cattails are effective insect repellents when burned. Cattail leaves are also usable for cordage for making a bow drill. The *pithy* stalks can be used to make a hand drill, useful for igniting a pile of tinder.

Common Cattails have roots that creep, called rhizomes. Rhizomes grow new shoots quickly. This creates the thick stands which are great cover for the many animals which live among them.

Red-winged Blackbirds are probably the animal most associated with cattails. The blackbirds are often seen in groups perching on them. They also build their nests on them.

Besides Red-winged Blackbirds, waterfowl, such as Mallards and Canada Geese, nest among cattails. Frogs and salamanders will lay their eggs in the water on and between them. Fish will hide or nest among them.

Muskrats eat Common Cattails and use them to build their houses. White-tailed Deer, Raccoons, Eastern Cottontails, and Turkey all use cattails as cover. Many species of insects eat and live on them.

Common Cattails flower from May to July. In early fall, the brown flower head pops open, letting its fluffy seeds emerge. These seeds are carried by wind or water to new places.

Many species of birds use the fluff to line their nests.

Relationship to Humans:

All parts of the cattail plant are edible. American Indians prepared the different parts in many ways. The leaves of Common Cattail are used to weave baskets, chair seats, and mats.

People sometimes plant cattails along the shores of water to prevent erosion.
The fluffy seeds are used as insulation for pillows and coats.
An adhesive (glue) can be made from the stems.
The pollen is sometimes used in fireworks.

Sweetgum

Leaf: Alternate, simple, palmately veined, orbicular, 4 to 6 inches across with 5 to 7 lobes (look like stars), and a finely serrate margin. Shiny green above and pubescent in the axils of the veins below, fragrant when crushed.
Flower: Species is monoecious; females borne on a slender stalk, capped with a globose head, male flowers borne on an upright raceme; both are small, bright yellow-green (tinged with red) and not showy, appear in early to mid-spring.
Fruit: Easy to identify spiny "gumballs", woody brown spherical cluster of capsules, 1 to 1 1/2 inches in diameter with openings in the surface that release 2 seeds from each capsule; maturing in fall.
Twig: Medium textured, shiny green to yellow-brown, usually with apparent corky outgrowths, particularly when fast growing. The terminal bud is large and is usually sticky, covered with green to orange-brown, shiny scales.
Bark: Gray-brown, irregular furrows and rough rounded ridges.
Form: A medium to large tree to 80 feet tall with a straight stem and a pyramidal crown, especially when young.
Wildlife Value: Mice and rabbits are known to eat immature stems. The seeds are eaten by birds, squirrels, and chipmunks.
Fun Facts: Sweetgum's name comes from the hardened clumps of sap that are exuded from the wounds. Sweetgum is an important commercial hardwood in the U.S. southeast, where it occurs naturally on bottomland sites.

Looks like: Shantung maple - blackgum








Additional Range Information: *Liquidambar styraciflua* is native to North America. Range may be expanded by planting.