

## A GUIDE TO WINTER TREES OF THE BLACKSTONE RIVER VALLEY IN MASSACHUSETTS

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### PURPOSE

We will examine the trunks and twigs of winter trees of the Blackstone River floodplain (lowlands along rivers that regularly flood) and adjacent uplands so that we can identify them. By knowing their identity, we can measure the species composition of the forests along the river and determine species density and basal area. We will examine some of the most characteristic trees present.

### DESCRIPTION

Trees are identified in winter by characteristics of their twigs and trunks. In particular, patterns exhibited by the bark of trees can be used to identify individuals. Twig characteristics are often the key to definitive identification, however.

Bark terms:

*Furrowed*- deep vertical crevices in the bark.

*Plated*- the bark is divided into plates.

*Scaly*- the bark peels in small sheets.

*Blocky*- the bark is divided into small blocks.

*Inner bark*- bark observed when the outermost bark is removed with a small knife.

Twig terms:

*Buds*- leaf and flower buds that occur on the sides and end of twigs; they are usually covered in scales.

*Opposite*- branches arise on opposite sides of the twig.

*Alternate*- branches arise on alternating sides of the twig.

*Hairy*- twigs have hair-like down covering them.

*Smooth*- twigs have no hairs covering them.

### SPECIES

#### Red Maple (*Acer rubrum*)

**Twigs**- with opposite, small, rounded, red buds; first year twigs are also red.

**Trunks**- gray and scaly with large, smooth silvery areas on the upper trunk of mature trees.

**Notes**- the most common tree of the floodplain but also common in swamps and moist to dry upland forests, where it associates with a wide variety of other species.



**Silver Maple (*Acer saccharinum*)**

**Twigs**- chestnut brown twigs with opposite, rounded brown buds.

**Trunks**- scaly and silver gray, mature trees often have multiple trunks.

**Notes**- a common floodplain tree of large rivers but rare along the Blackstone. It associates with Pin Oak and Green Ash, and can attain great size.



**Sugar Maple (*Acer saccharum*)**

**Twigs**- with red-brown twigs and pointed, brown, oppositely arranged scaly buds.

**Trunks**- gray and on mature trees tending to break into plates rather than scales.

**Notes**- characteristic of rich, moist soil, including those of the drier upland borders of floodplains. It often grows in association with beech, Yellow Poplar and Yellow Birch.



**Pin Oak (*Quercus prinus*)**

**Twigs-** with alternate branches and pointed, brown buds clustered at ends of twigs; lower branches are persistent and often hang down toward the ground.

**Trunks-** dark gray and comparatively smooth even on mature trees.

**Notes-** a common floodplain tree of large rivers but rare along the Blackstone; very tolerant of waterlogged soil, where it associates with Green Ash, Silver Maple and Slippery Elm.



**Chestnut Oak (*Quercus prinus*)**

**Twigs-** with alternate, tan branches and pointed buds that cluster at the end of twigs.

**Trunks-** deeply furrowed gray bark.

**Notes-** a common tree of dry, sandy, rocky and gravelly soil; often abundant on rocky ridges, where it associates with Scarlet Oak, Red Maple and Pitch Pine.



**Swamp White Oak (*Quercus bicolor*)**

**Twigs-** with alternate, small, rounded, brown buds clustered at the ends of the twigs, which are straw-colored; thicker branches show flaking bark.

**Trunks-** whitish and furrowed.

**Notes-** uncommon and restricted to the wettest spots of floodplains, where it may grow in standing water. It is often found associated with Red Maple and American Elm.



**White Oak (*Quercus alba*)**

**Twigs-** with alternate, small, rounded, brown buds clustered at the end of the generally grayish twigs.

**Trunks-** whitish, fine, scaly bark that shreds vertically on the trunk.

**Notes-** a common tree of moist to dry uplands, particularly in eastern Massachusetts, where it associates with other oaks and hickories as well as pines.



**Black Oak (*Quercus velutina*)**

**Twigs-** with alternate, large, pointed, hairy buds clustered at the twig tip.

**Trunks-** blocky, black bark with orange-yellow inner bark revealed by cutting away the outer layer of bark.

**Notes-** common in moist to dry uplands in particularly eastern Massachusetts, where it associates with other oaks and hickories as well as pines.



**Scarlet Oak (*Quercus coccinea*)**

**Twigs-** with alternate, large, pointed buds clustered at the twig tip; buds exhibit hairs only toward their tip.

**Trunks-** dark gray, furrowed bark with silvery smooth streaks present particularly toward upper parts of the tree; white inner bark.

**Notes-** common on dry, rocky and gravelly soils, often growing in association with Chestnut Oak, Red Maple and Pitch Pine. Hybrids between Scarlet and Black Oak are common.



**Northern Red Oak (*Quercus borealis*)**

**Twigs-** with alternate, pointed, large, red-brown, hairless buds clustered at the twig tip.

**Trunks-** furrowed dark gray bark.

**Notes-** rather common in moist to dry uplands, although it is more typical of colder western parts of the state where it can be the only oak species present. In such locations, it may associate with maples, beech, pines, hemlock and birches.



**American Beech (*Fagus grandifolia*)**

**Twigs-** thin, alternate branches with long, thin, pointed red-brown buds, hairy toward their tip, that are clustered at the twig tip.

**Trunks-** smooth silver-gray bark on even mature trees.

**Notes-** one of our longest-lived species; highly tolerant of shade, so it becomes increasingly common in old growth forests. It is usually found on moist, rich soil in association with maples and birches.



**Shagbark Hickory (*Carya ovata*)**

**Twigs-** with alternate, thick, bendable, smooth twigs and a large oval, hairy terminal buds.

**Trunks-** gray with large, vertical peeling plates.

**Notes-** grows near riverbanks and river levees, but also common in moist, rich upland forests, where it associates with Sugar Maple, American Beech, Yellow Birch and Yellow Poplar.



**Bitternut Hickory (*Carya cordiformis*)**

**Twigs-** with alternate, thick, bendable, smooth twigs and bright yellow hairy buds.

**Trunks-** tightly braided, thin furrows and pale, gray bark.

**Notes-** fairly common in wetter areas of larger floodplains but rare along the Blackstone.



**Pignut Hickory (*Carya glabra*)**

**Twigs-** with alternate, thick, bendable, smooth twigs and large, oval, hairy terminal buds.

**Trunks-** pale gray bark, tightly braided with thin furrows.

**Notes-** a fairly common tree of moist to dry, rich to poor upland forests, where it often associates with oaks and Red Maple.

A variety once considered a separate species, **Red Hickory (*Carya ovalis*)**, is also found in our area. It is distinguishable based on characteristics of the seed and, in summer, on often having seven instead of five leaflets on its leaves.



**Butternut, White Walnut (*Juglans cinerea*)**

**Twigs-** with alternate, tan twigs that have large, hairy terminal buds.

**Trunks-** gray, braided, furrowed, ash-like bark.

**Notes-** an uncommon, short-lived tree typical of moist, rich soils, where it associates with American Elm, White Ash and Red Maple. Most southern New England trees exhibit some evidence of hybridization with introduced Asian butternuts.



**Black Birch (*Betula nigra*)**

**Twigs-** with pointed buds arising alternately from slender, red-brown twigs that have a wintergreen odor when broken. Buds often appear to arise from spurs off the main branch.

**Trunks-** dark but with silvery sheen on smooth areas of bark, which breaks into plates on mature trees.

**Notes-** a common tree in moist to dry soil, where it frequently associates with oaks and Red Maple.



**Yellow Birch (*Betula lutea*)**

**Twigs-** with pointed buds alternately arranged on slender, gray-brown to red-brown twigs that often appear to have a waxy coating over portions.

**Trunks-** younger and moderate-aged trees show horizontally peeling orangey, shiny bark. Old growth trees show scaly bark.

**Notes-** a fairly common tree of moist to wet areas along streams and in swamps. It also becomes an important component in cooler upland forests, where it associates with beeches, maples and hemlocks.



**White Birch (*Betula papyrifera*)**

**Twigs-** with alternate, pointed buds on slender red-brown twigs; often shows male catkins (flower clusters) in winter.

**Trunks-** smooth, white bark peels readily from trunks in horizontal sheets.

**Notes-** a small to medium-sized tree present particularly in cooler, poorer soil locations, where it often associates with maples, beeches and hemlocks.



**Gray Birch (*Betula populifolia*)**

**Twigs-** with alternate, pointed buds on slender red-brown twigs.

**Trunks-** white, smooth bark with dark spots (lenticels) arranged horizontally around trunk; black “eyebrows” typically present just above locations where branches emerge from trunk.

**Notes-** a short-lived, small tree of early successional forests and woodland borders, often in areas of poorer soil, where it may associate with cherries and pine saplings.



**Eastern Hophornbeam (*Ostrya virginiana*)**

**Twigs**- buds alternately arranged on tan, somewhat hairy twigs; often with attached male catkins (flower clusters) in winter.

**Trunks**- pale gray bark, shredding in thin, vertical strips.

**Notes**- present as an understory tree in moist, rich soil near streams.



**American Hornbeam (*Carpinus caroliniana*)**

**Twigs**- pointed buds alternately arranged on hairless red-brown twigs.

**Trunks**- smooth, bluish-gray bark with a sinewy, muscular appearance.

**Notes**- present as an understory tree in moist, rich soil near streams, where it associates with hophornbeam, maples, oaks and birches.



**American Elm (*Ulmus americana*)**

**Twigs-** with thin, drooping, alternate branches and rounded, brown buds.

**Trunks-** gray, scaly, flaking bark that shows white and cinnamon mottling on the inner bark; mature trees often have a vase shape.

**Notes-** a common tree of better drained portions of floodplains, but also present in moist uplands, where it associates with White Ash and Red Maple.

The closely related **Slippery Elm (*Ulmus rubra*)** also occurs commonly in floodplains, including that of the Blackstone. It is distinguishable by its cinnamon inner bark.



**American Sycamore (*Plantanus occidentalis*)**

**Twigs-** with alternate, light tan branches and large conical brown buds.

**Trunks-** brown and scaly near the base of the trunk, and with white and tan patches in upper portions.

**Notes-** often found near riverbanks and river levees in moist, rich soil, where it can become a very large tree. In such locations, it may be found with ashes, cottonwoods and maples.



**Bigtooth Aspen (*Populus grandidentata*)**

**Twigs-** with thick, smooth, gray-brown alternate twigs and large, pointed terminal buds.

**Trunks-** deeply furrowed, gray bark.

**Notes-** an uncommon tree of better-drained portions of floodplains and moist to dry uplands, where it commonly associates with oaks, maples and birches.



**Eastern Cottonwood (*Populus deltoides*)**

**Twigs-** with thick, yellow-tan alternate branches and large, pointed, shiny brown buds.

**Trunks-** deeply furrowed gray bark.

**Notes-** grows near riverbanks and river levees, where it associates with maples, elms and sycamores. It can attain great size.



**Black Cherry (*Prunus serotina*)**

**Twigs**- alternate, purple-red, thin, branches with a strong, acrid odor when broken. Buds dark red, small and pointed.

**Trunks**- black with rounded flakes.

**Notes**- present in floodplain forests and also in moist to dry uplands, particularly in earlier successional situations.



**American Linden (*Tilia americana*)**

**Twigs**- with alternate, curved branches and brown, conical buds.

**Trunks**- often curved trunks with downcurving branches; bark thin, furrowed in vertical lines.

**Notes**- may be found growing near the riverbank and river levee., where it associates with sycamores, cottonwoods and maples; a rare tree of the Blackstone River.



**Sassafras (*Sassafras albidum*)**

**Twigs**- tan to greenish twigs with alternate arrangement and very large terminal buds. Twigs have a sweet odor when broken.

**Trunks**- with pale gray, braided, shaggy furrows.

**Notes**- usually a smaller tree of moist to dry uplands, where it associates with oaks, birches and hickories.

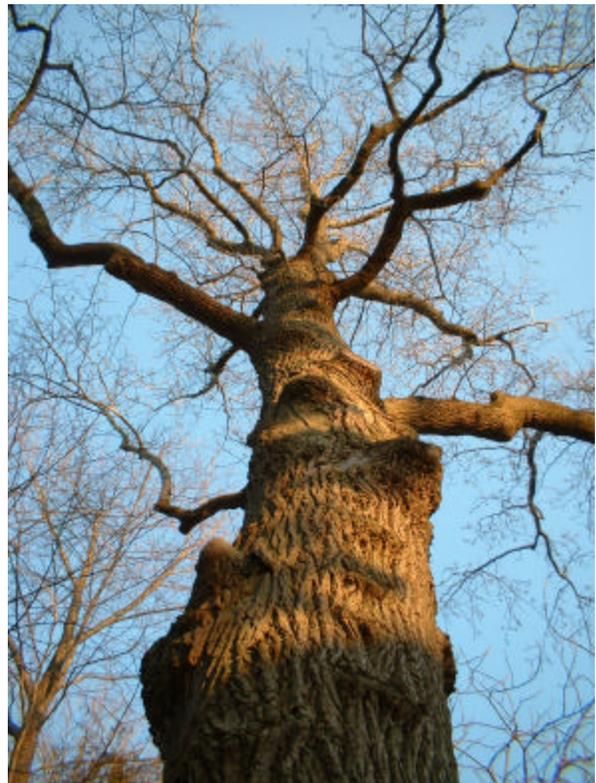


**Tulip Tree; Yellow Poplar (*Liriodendron tulipifera*)**

**Twigs**- reddish twigs with terminal buds that have only two scales; twigs alternate and with turpentine-like smell when broken. Upper branches often show upright remains of previous years' flowers.

**Trunks**- furrowed and tightly braided brown bark.

**Notes**- among our fastest growing and largest trees; found in moist, rich soil, frequently near streams, where it associates with Sugar Maple, Yellow Birch, and American Beech.



**Eastern White Pine (*Pinus strobus*)**

**Twigs-** with thin, long, evergreen needles in bundles of five.

**Trunks-** brown-black with deep vertical furrows.

**Notes-** typical of moist to dry uplands but also present in swamps and floodplains. It associates with a wide variety of other species and can attain great size.



**Pitch Pine (*Pinus rigida*)**

**Twigs-** with thick, short evergreen needles in bundles of three.

**Trunks-** bark breaks into plates in mature trees; often with clusters of needles arising directly from the trunk; often with a gnarled growth form.

**Notes-** a smaller species of dry, gravelly or rocky upland, particularly in earlier successional forests, where may occur in pure stands or grow in association with oaks and hickories. Deposits of glacial sand and gravel in especially eastern Massachusetts, eastern Connecticut and Rhode Island are often vegetated by Pitch-Pine-oak communities.



**Eastern Redcedar (*Juniperus virginiana*)**

**Twigs**- an evergreen with tiny, scale-like needles.

**Trunks**- reddish with vertically peeling, scaly bark.

**Notes**.- grows in forest openings on the floodplain and in moist to dry earlier successional uplands; typically a small tree although it can grow to be large.



**Eastern Hemlock (*Tsuga canadensis*)**

**Twigs**- an evergreen with small, flat needles arranged on opposite sides of twigs. Needles are dark green above and whitish below.

**Trunks**- brownish-black, furrowed bark.

**Notes**.- one of our longest-lived and largest species, attaining ages of over 600 years. Highly shade tolerant and often forming pure stands in moist ravines, but also occurring in swamps and even drier uplands. It most commonly associates with Sugar Maple, Yellow Birch, American Beech and Northern Red Oak.

