Yellow Birch *(Betula alleghaniensis)*

Overview

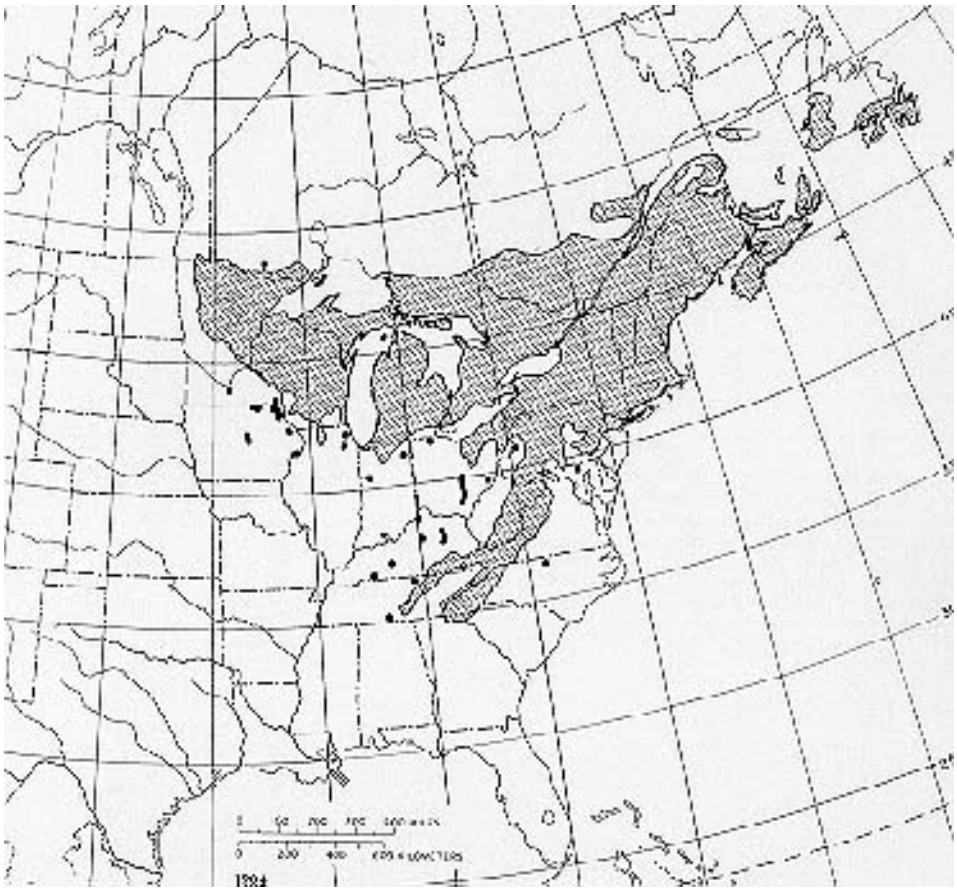
The yellow birch is best known for its beautiful fall colors. The leaves turn a lovely yellowish gold color due to the heightened amount of carotene found in the yellow birch leaves. It is one of the largest hardwood trees in the northeast, making it a valuable tree for the region. The bark is a yellow to gray color, which is especially evident when it strips and curls. As it ages, the bark will turn a reddish brown color. This is a distinctive feature and can be used to differentiate this species from other birches. The stems and inner bark of the yellow birch have a wintergreen scent. The tree is typically between 60-75 feet tall (18-22m) and has a canopy between 35-50 feet wide (10-15m). The yellow birch grows best in rich, well-drained, acidic soil under full or partial sun.

Phylogeny

The Betulaceae, or the Birch family, only consists of six genera but has about 120-150 species. The family includes birches, alders, hornbeams, and hazel trees. The genus *Betula* is the biggest in the family and contains over 60 species. Most birch family species are found in the temperate and subarctic regions of the Northern Hemisphere, some species can be found in tropical regions or as far south as the tip of Argentina. All species in the birch family have male and female catkins on the same tree, which are formed before or at the same time as the leaves. The male catkins are always longer and droop downwards whereas the female catkins are shorter and stand upright.

Habitat

The yellow birch is most densely populated in Quebec, Ontario, Maine, Michigan, New York, and New Brunswick, with about 50% of the growing stock being in Quebec. The tree ranges in areas that are cool with abundant precipitation and generally more than half of the precipitation is from snow. There are three community types that the yellow birch is frequently found in: Hemlock-Yellow Birch, Sugar Maple-Beech-Yellow Birch, and Red Spruce-Yellow Birch. The Yellow Birch is considered to be an intermediate competitor. It generally outcompetes other native birches in shade tolerance but is less competitive to other common tree species such as the Hemlock, Sugar Maple, Beech, or Red Spruce. Yellow birches are susceptible to ice and snow load damage, especially saplings. Late spring frosts can be especially damaging to young trees.



Reproduction

Yellow Birch is monoecious, forming male (staminate) and female (pistillate) catkins on the same tree.

Male catkins occur at the tips of last year's twigs in groups of 3-6. During the blooming period, they droop downward and become 2½-4" long. At this time, the male catkins are narrowly cylindrical and yellowish purple. Each male catkin consists of numerous male florets and their bracts. Male florets occur in groups of 3 behind each bract; each male floret consists of 2 stamens. Each bract is oval-orbicular in shape and ciliate along its margins.

Female catkins occur individually on short spur-twigs near the petioles of leaves; they are sessile or nearly so. The female catkins are upright, ovoid-oblongoid in shape, and greenish, ultimately becoming ¾-1¼" in length at maturity. Each female catkin consists of numerous female florets and their bracts. Female florets occur in groups of 3 behind each bract; each female floret consists of a naked ovary and a pair of styles. The bracts are ¼-½" long, 3-lobed and ciliate along their margins. The blooming period occurs during late spring for about 1 week. The florets are cross-pollinated by the wind. The female catkins turn brown as their winged seeds (samaras) ripen. Each seed body is about 1/8" (3 mm.) long, ellipsoid-ovoid in shape, and somewhat flattened. Membranous

wings extend on opposite sides of each seed; they are a little less wide than the seed body.

The woody root system is relatively shallow and widely spreading. This can cause damage to sidewalks and streets in urban areas. This tree reproduces by reseeding itself.

Yellow birches usually first produce seeds around 40 years of age, being the most productive around 70 years old. Typically, yellow birches live to around 150 years but can live for as long as 300 years.

Additional Information

Yellow birches are highly flammable and peels of bark can often be lit when wet, making it a fire starter for bonfires but also a potential fire hazard.

The bronze birch borer is a beetle that will feed on already stressed birch trees and can cause great damage. However, the beetles generally feed on nonnative birch trees over the native species.

Birch tree pollen is the cause of 15-20% of hay fever cases.

Why study this species?
Similarly to the American Beech, it is a common allergen so understanding the phenology is crucial for public health and awareness. Also, it is such an important hardwood species that is predominantly found in North America, making it pivotal to monitor the changes in phenology and potentially ranges.

References

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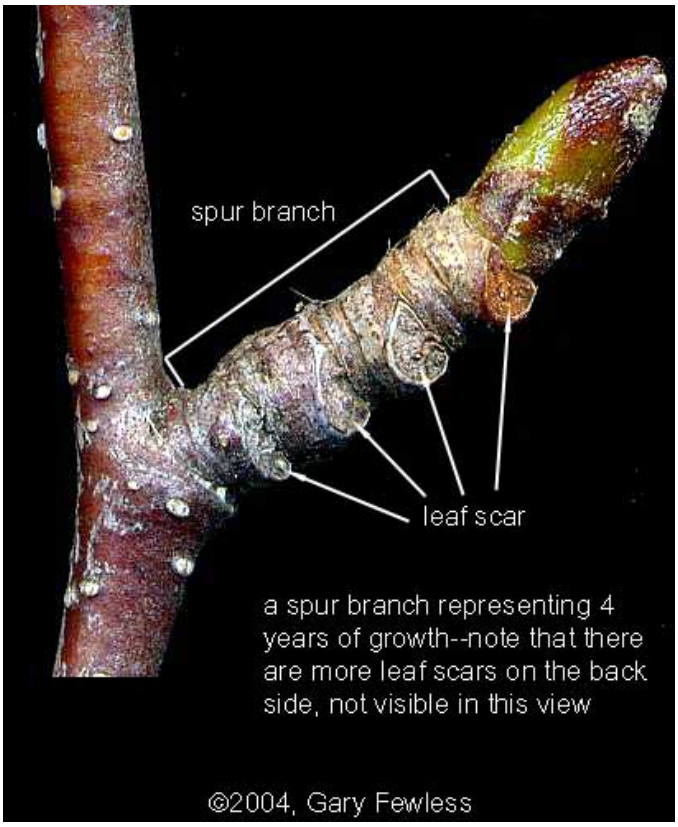
spur branch
leaf scar
a spur branch representing 4 years of growth--note that there are more leaf scars on the back side, not visible in this view
©2004, Gary Fewless


1 cm
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1 cm
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1 mm
2009 Gary Fewless


female ament
male ament
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