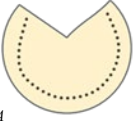
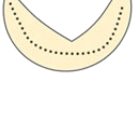


MaMA Guide to Ash (*Fraxinus*) of New York and New England



Black ash, also called brown ash <i>(Fraxinus nigra)</i>	Green and red ash are considered one species: green ash (<i>Fraxinus pennsylvanica</i>)	White ash <i>(Fraxinus americana)</i>
Light brown to gray bark, appears almost whitish, with corky texture. Bark scales are easily rubbed off and reveal a pale orange/tan underside.  © Vince K. Kanoti, Maine Forest Service	Gray to brown bark gets darker when wet. Very slightly corky texture. Loose diamond pattern.  Young tree bark	Grey bark with strong diamond pattern. Bark feels hard.  K. Kanoti, Maine Forest Service Young tree bark
- Compound leaves with 7-11 leaflets - Leaflets attached directly to stem and are always serrated - Leaves turn yellow in the fall  © 2012 Amy Chan	- Compound leaves with 5-9 leaflets - Leaflets attached by short petiolules (0-0.5cm). - Underside is pale green - Leaves turn yellow in the fall  https://eabguelph.wordpress.com/2013/06/28/ash-tree-leaves/	- Compound leaves with 5-9 leaflets (usually 7) - Leaflets attached by longer petiolules (0.5-2 cm). - Underside whitish - Leaves turn reddish/purple in the fall  https://eabguelph.wordpress.com/2013/06/28/ash-tree-leaves/
Samaras (fruit) canoe-shaped. Very subtle transition between wing and seed. 	Samaras are teardrop/pin shaped. Clear margin between the wing and the seed.  USDA	Samaras are funnel shaped. Clear margin between the wing and the seed.  USDA
Dark brown terminal winter bud (Hershey's kiss-like) separated from uppermost lateral buds. Shallowly notched leaf scar with a nearly full circle bundle sheath.  © Morton Arboretum  photo: P.M. Dziuk  Drawing by Tyler Everett, APCAW	Light brown, cone-shaped, terminal winter bud often with red hair. Twigs often hairy as well. V-shaped notch on leaf scar; bundle sheaths "U"-shaped.   photo: P. Dziuk   USDA Drawing by Tyler Everett, APCAW	Brown terminal winter buds blunt. Leaf scars deeply notched, with crescent-shaped bundle sheath.  photo: P. Dziuk   © Morton Arboretum Green and white ash hybridize; characteristics can be in between the two species. Drawing by Tyler Everett, APCAW
Tufts of tan to reddish hairs at the base of each leaflet.   USDA underside	Toothed leaflets gradually narrow at base forming a winged petiolule.  © Derek  USDA	Leaflets entire or with very shallow teeth. Leaflets  don't gradually narrow at base.

Additional ash species rarely found in the region

Pumpkin ash (*F. profunda*) has been found rarely, primarily in Western New York and the New York City area. It occurs in wet habitats and is noted for its very long samaras. Like green ash (see below), it has no papillae on the underside of the leaves.

Biltmore ash (*F. biltmoreana*) has been reported extremely rarely. It has papillae on the underside of the leaves like white ash (see below).

For more information on both species, see <https://fsus.ncbg.unc.edu/>

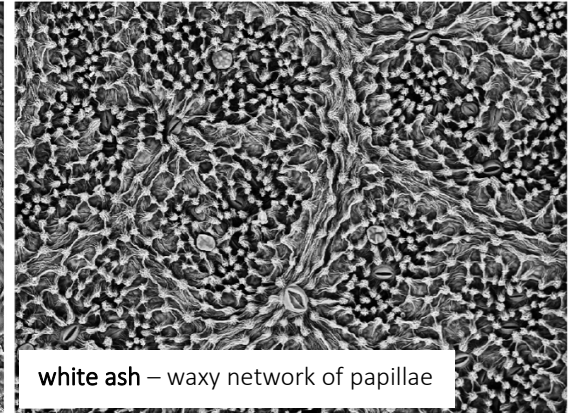
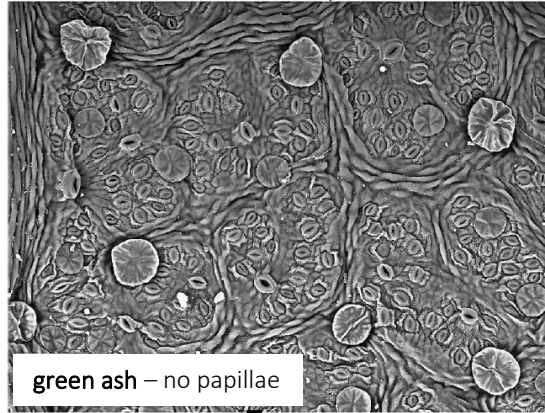


Photos: left - M. Spearing, right - E. Danielson.

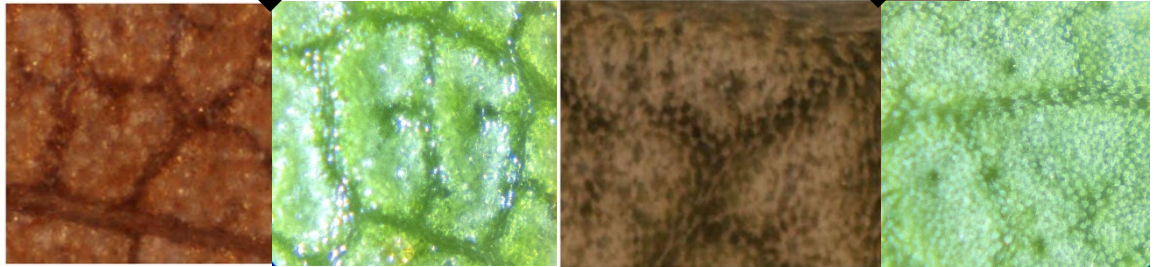
Using a hand microscope to distinguish between green and white ash

Photos: Lower leaf surfaces at 400X (from Williams & Nesom, 2010)

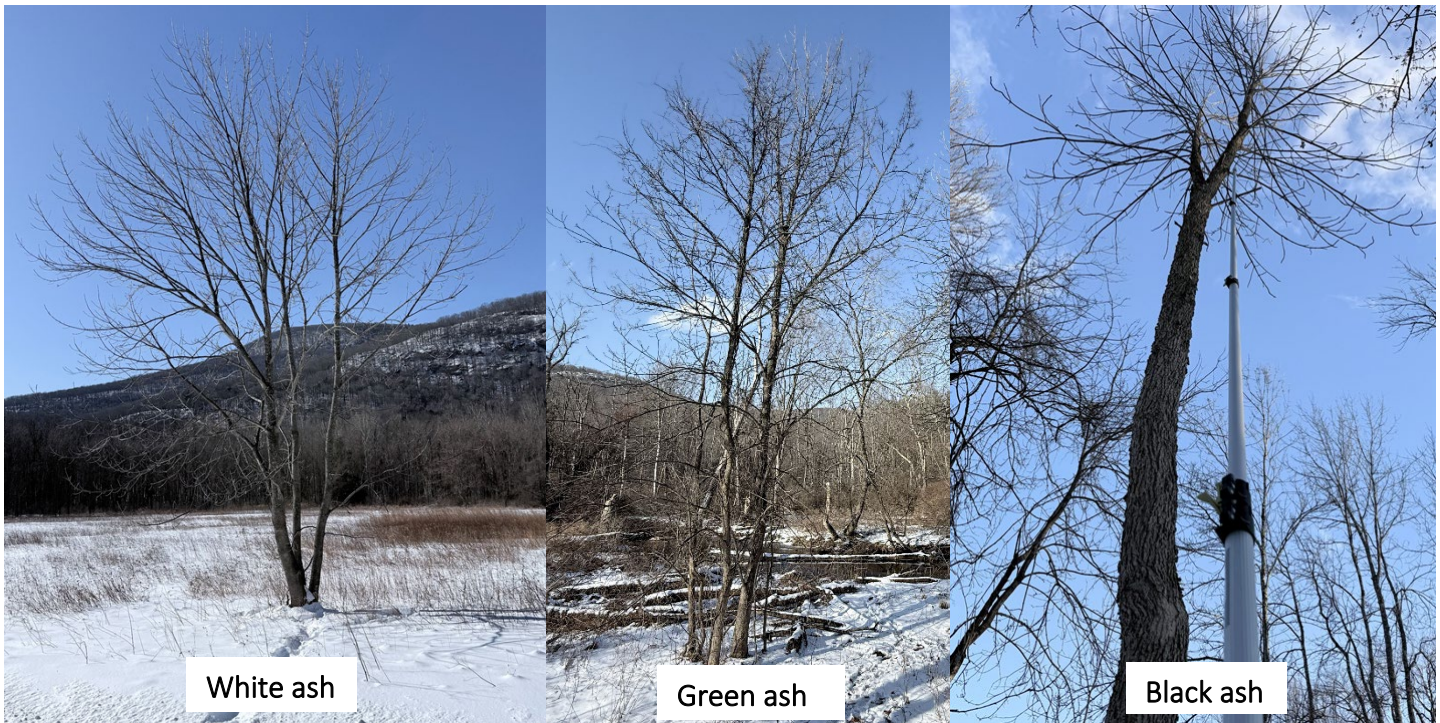
Genomic analysis (Smith *et al.*, U. of Tennessee) has confirmed that the most reliable physical trait to distinguish white ash from green ash is the presence of a network of microscopic papillae (bumps) on the underside of mature leaves of white ash, as noted previously by botanists (Wright, 1945; Hardin *et al.*, 1982). This network can be observed in the field using an inexpensive LED-lit hand microscope (e.g., 60x-120x LED Lighted Pocket Microscope, [Amazon](https://www.amazon.com/dp/B07K9K9K9K)).



These images show lower-magnification views of the leaf underside, similar to view through a hand microscope. Photos from herbarium specimens (brown) by J. Campbell and from fresh specimens (green) by Z. Smith.



Growth habits of white, green and black ash



The habit of white ash is highly organized; opposite twigs form acute angles and bend in a consistent pattern, giving the twigs at branch ends a trident-like appearance.

The tree's habit is messier than white ash's, with opposite twigs forming variable angles and with varied bending.

Branches and especially twigs are stout even on small trees; opposite twigs typically form wide angles.