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The genus Fraxinus includes about 60 species of trees and shrubs found mostly in the temperate regions of the Northern Hemisphere and also in the tropical forests of Java and Cuba.

White ash, also known as Canadian ash, is the most abundant and important of the American ashes. It is found growing on deep, moist, fertile soils from Minnesota to Texas and east to New Brunswick and Florida. It grows to 80 feet in height and reaches a diameter of 2 to 3 feet. The bole is long, straight and clear. The wood is used in the manufacture of furniture, but is known most for its usefulness in sporting equipment such as baseball bats and rockets.

White ash is probably one of the most chemicalresistant species found in North American rights-of-way. After a clearing operation, usually two or more sprouts develop from each stump. These sprouts grow very rapidly, sometimes as much as six feet in one year.

White ash is readily recognized by its opposite compound leaves about 10 inches long, with 5 to 9 leaflets. The leaflets are 3 to 5 inches long, about 1 1/2 inches broad, slightly servate on the margin, and have definite pedicels or stalks at the base. When full grown, the leaf is usually smooth and dark green above and pale below. Separating white ash from its closely related species, green ash (Fraxinus pennsylvanica), is often a problem on the right-of-way. It can be distinguished from green ash by its smooth leaves and twigs. Those of red ash are often pubescent. The leaf-scars of white ash are markedly indented across the top while those of green ash are fairly straight with at most only a slight indentation. The seeds of white ash have wings fastened only to the apex of the seed while the wings are fastened to the apex and extend down over the sides of green ash.

Both species are readily distinguished from black ash (Fraxinus nigra) by their stalked leaflets. Black

Whether a plant species is desirable or undesirable often depends on the situation in which it occurs. This is true of all the trees to be discussed in this series of articles on identification. For example, maple (Acer rubrum) is a useful ornamental in landscape plantings because of its early red flowers, pleasing growth habit, and spectacular autumn foliage coloring. It is a nuisance on the right-of-way because of its resistance to chemical treatment. Similar comments could be made about the other species to be described. They have ornamental, and economic value, but not on a utility rightof-way which must be kept clear of tall vegetation. Strong resistance to treatment makes it especially important that a few 'problem" species be clearly recognized when they are encountered in clearance work. Otherwise there may be needless disappointment, and waste of time and material through inappropriate treatment. J. H. Kirch.

ash leaflets are sessile. Also, the wings on the seed of black ash usually cover the entire seed. The buds of white ash are usually obtuse and brown, while those of black ash are acute and black.

The above species of ash are often found with blue ash (Fraxinus quadrangulata) particularly in Ohio, Indiana, Illinois, Kentucky, and Michigan, but are easily separated by the characteristic four-angled stem of blue ash.

Most ash species are controlled by dormant applications of brushkiller mixtures of 2,4-D and 2,4,5-T or 2,4,5-T alone in oil. Applications are generally made with the basal spray or dormant cane technique. Waterborne foliar applications of 2,4-D and 2,4,5-T are not as effective as dormant oil sprays. Water-borne foliage sprays of amitrole have been effective in controlling white ash, but less effective on green, blue and black ash.

Helicopter applications of most available chemicals have not controlled white ash. Recently the addition of amitrole or monosodium methane arsonate to the water phase of 2,4-D/2,4,5-T invert emulsions has offered some promise for heavy stands of white ash on the right-of-way.

Where ash and maple species are found with root suckering species such as black locust (Robinia pseudacacia) and sassafras (Sassafras albidum) on the right-of-way, a program of helicopter invert sprays of 2,4-D/2,4,5-T followed by a ground-applied dormant cane spray one year later has given nearly complete kill.