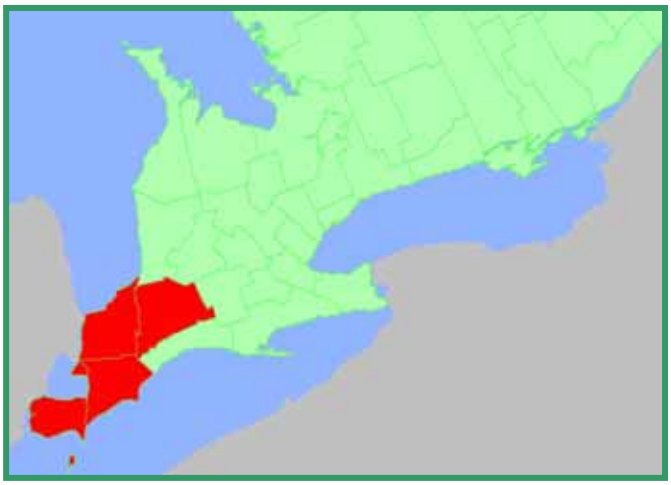
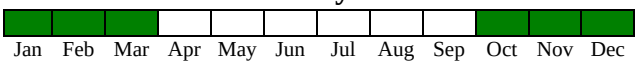
Gymnocladus dioicus (L.) Koch — Kentucky Coffee-Tree



Best Survey Period



Legal status: Threatened in Canada, Threatened in Canada. Special Concern in Michigan.

Global and provincial rank: G5/S2

Other Common names: Chicot févier

Family: Fabaceae The bean family.

Total range: Kentucky coffee-tree occurs in eastern and central North America from New York and Ontario, west to Minnesota and south to Kansas, Tennessee and Oklahoma.

Provincial distribution: In Ontario Kentucky coffee-tree is found only in southwestern Ontario in Middlesex, Lambton, Kent and Essex Counties, including the Lake Erie Islands and at Walpole Island First Nation.

Recognition: *Gymnocladus dioicus* is a moderately large canopy tree. The trunk is commonly divided a few metres above the ground. Branches are rather sparse with coarse twigs. The bark is dark grey with narrow scaly ridges that curl outwards at their edges. The winter twigs are stout and rather crooked, lacking a terminal bud. They are greenish-brown and often coated with a whitish film and have a light brown to salmon-pink pith.

The leaves are the largest of any tree in Canada, up to 100 cm long and 50-60 cm wide and double compound. Forty or more leaflets alternate along the rachis and are egg-shaped, about 5 cm long with smooth margins. There is no terminal leaflet. At the base of the leaf there may be one or two pairs of single leaflets. Kentucky coffee-tree looses its leaves early in fall and leafs out

late in the spring, so that it remains leafless for over half the year.

The flowers are greenish white in large terminal clusters that open after the leaves. Male and female flowers are on separate trees. The fruit is a broad, thick, flattened pod up to 15 cm long and 4 cm wide. It is dark reddish brown, somewhat shiny and remains on the tree over winter dropping in early spring. Seeds are dark brown, roundish, slightly flattened, hard-shelled beans embedded in a sweet greenish sticky pulp.

Habitat: In Ontario Kentucky Coffee-tree is found mainly in bottomlands, floodplain forests and along the edges of wetlands where the soil is deep and rich. On the Lake Erie Islands it grows in shallow soils over limestone bedrock. On Walpole Island it is found at the interface between prairies and woodlands.

The species is shade intolerant, so it requires disturbances of some kind to keep the canopy relatively open. Disturbances may include flooding and ice-scour, or occasional burns.

Biology: Kentucky Coffee-tree is clonal, spreading by root suckers. Stands of trees may often be single individuals forming single sex clones.

The species is at the northern limit of its range in Ontario. Locations for the tree are widely scattered with large extents of unsuitable habitat intervening. This creates a problem for pollination and very few trees in the wild in Canada ever set seed.

On Walpole Island most trees form a single male clone, but trees at two other locations regularly bear fruit. One of these trees may have been planted, but the other appears to be a natural occurrence.

Little is known about the ecological role of the species in Ontario. As with all legumes, the tree bears root nodules containing nitrogen-fixing bacteria.

Conservation/management: The main threats to Kentucky Coffee-tree are probably the scattered populations and lack of reproduction combined with loss of suitable habitat. It was probably never common in Canada. Under cultivation the species grows well and reproduces readily.

Seeds from trees on Walpole Island are collected when the pods fall in March. Germination rates are moderate (about 70%) for seeds planted immediately after collection without any treatment and grown in a greenhouse. Seedlings are being grown at the Sherwood Fox Arboretum of the University of Western Ontario. Young trees will eventually be returned to Walpole Island and used for restoration projects.

Comments: The name *Gymnocladus* means “naked branch”, and refers to the clumsy branches that have no leaves most of the year.

The wood is coarse-grained, heavy and strong. In the US it is sometimes used for railway ties, fence-posts and construction, but is of little commercial importance because the tree is never abundant. The species is grown extensively as an ornamental.

The common name of “coffee-tree” stems from the resemblance of the seeds to coffee beans. The early immigrants to Kentucky are said to have roasted and ground them as an inferior substitute for coffee. There are some reports that indigenous North American peoples used the seeds for food, but they have a bitter unpleasant taste and contain the alkaloid cystosine that causes gastrointestinal disorders that can lead to irregular pulse and coma. Cattle fatalities have been reported.

The dark, round shiny seeds also have some aesthetic appeal as beads in rustic jewelry. They

are known as “hully-gullies” and are sometimes carried by children as a good luck charm.

Research needs:
Kentucky Coffee-tree is included in the Walpole Island Ecosystem Recovery strategy. Locations of Kentucky Coffee-trees stands have been located and individual stems censused and will continue to be monitored.

Seed production and germination rates are being tracked. The best way to grow young trees for recovery projects is being investigated by the Walpole Island Heritage Centre and its partners.

Selected references:
White, D.J. and M.J. Oldham. 2000. Update COSEWIC Status report on Kentucky Coffee-tree (*Gymnocladus dioicus*) in Canada. Committee on the Status of Endangered Wildlife in Canada. 19 3 pp.

Abstract citation:
Bowles, J.M. 2004. Special plant abstract for *Gymnocladus dioicus* (Kentucky Coffee-tree). Walpole Island Heritage Centre and Michigan Natural Features Inventory, Lansing, MI. 3 pp.