

***Acer macrophyllum* Pursh.**

Halkomelem (Island): ts'áləlp

Halkomelem (Upriver): q'umun'ulhp or q'umul'ulhp

Ucwalmícwts (Lílwat): q'əml-az'

English name: Bigleaf maple

Family: Sapindaceae (Soapberries family)

Identifying Characteristics:

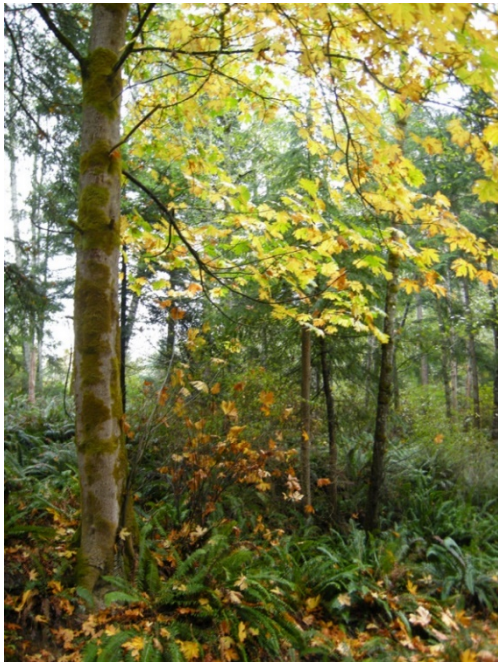


Figure 1. Bigleaf maple in autumn.

Bigleaf maple leaves (Figure 2) are large, opposite, and deeply five-lobed with a few abruptly sharp-pointed tips (Douglas et al, 1998). Leaves average 15-30 cm in width and are dark green on top and paler underneath. Fall colour is typically yellow, sometimes with reddish tinges. The leaf stalk (petiole) oozes a sticky milky liquid when cut (Douglas et al, 1998).



Figure 2. Bigleaf maple leaves.

Bigleaf maple is a deep-rooted deciduous tree that generally grows up to 30m tall, with opposite branching. According to Fryer (2011), it is considered the largest native maple (*Acer*) species growing on Turtle Island (North America). Trees live 50 to 200 years (Arno and Hammerly, 1977), but can live indefinitely if sprouting from the root crown or stumps. Sprouts can grow 2 to 4 m in the first growing season, with up to 60 sprouts occurring on a stump (Haeussler et al, 1990).

Young bigleaf maple bark is smooth and grey-green whereas older bark turns greyish-brown, and tends to become vertically furrowed and covered in lichens and mosses (Figure 1).

Open-grown trees are often multi-stemmed and can form develop broad, rounded crowns that provide shade to the understory. As an understory tree the tree is usually single-stemmed (Figure 1).



Male and female flowers are clustered on the same raceme (Figure 3). Individual flowers are numerous, greenish-yellow, tiny, and not particularly showy. Flowering occurs in mid-spring and on Logan Creek, the bigleaf maples provide important early nectar sources for native insects and honeybees.

In the late summer, pairs of hairy v-shaped “keys” or samaras form that are 3-6 cm long and yellowish-brown in colour (Douglas et al, 1998).

Figure 3. Flowers with emerging leaves.

Distribution:



Bigleaf maple is native to the west coast of Turtle Island (North America) between southern Alaska and San Diego, California. They are primarily found west of the Coast- - Cascade and Klamath-Siskiyou mountains, and the foothills of the northern Sierra Nevada in California (Fryer, 2011). A few isolated disjunct bigleaf maple populations can also be found in Idaho (Fryer, 2011).

Northern distribution is limited by cold climates and drought is the major limiting factor to the south (Fryer, 2011).

Figure 4. Natural distribution map for *A. macrophyllum*

Habitat:

Bigleaf maple prefers mesic temperate rainforest habitats, where the climate is generally mild, so they are commonly found in moist alluvial woods, forests, ravines, and upland riparian benches (Douglas et al, 1998). Preferred soils are deep, moist, and well-drained sandy loams to poorly drained clays, though the species can tolerate seasonal flooding for less than two months during the growing season. At Logan Creek, several mature specimens remaining from the colonial agriculture period are found on the highest ground near the creek, but still in the floodplain. Bigleaf maple produces copious amounts of leaf litter, and has the ability to alter soil pH to more calcareous conditions (Fryer, 2011).

Bigleaf maple is less tolerant of poor drainage or long-term flooding events as other riparian species such as *Alnus rubra* (red alder), *Populus balsamifera* ssp. *trichocarpa* (black cottonwood), or *Fraxinus latifolia* (Oregon ash). On rich to very rich moist soils in the region, *A. macrophyllum* occurs in coniferous forests dominated by *Thuja plicata* (western redcedar), *Tsuga heterophylla* (western hemlock), and *Pseudotsuga menziesii* (Douglas-fir) (Green and Klinka, 1994). In the understory, the shrub layer includes *Mahonia nervosa* (dull Oregon-grape), *Vaccinium parvifolium* (red huckleberry), *Rubus spectabilis* (salmonberry), and *Oplopanax horridus* (devil's club). The herb layer is typically dominated by *Polystichum munitum* (sword fern), and a variety of wildflowers including *Achlys triphylla* (vanilla leaf), *Galium triflorum* (sweet-scented bedstraw), and *Tiarella trifoliata* (three-leafed foamflower).

The load of mosses and lichens on bigleaf maple is considered to be the greatest for all tree species in our bioregion (Pojar and MacKinnon, 2004). Arno and Hammerly (1977) estimated that a single mature bigleaf maple tree in a Pacific Northwest rainforest can support nearly a metric tonne of moss biomass. In the rainforest, mature bigleaf maple is high in calcium (Douglas et al, 1998), and supports epiphytic moss communities on the trunk, branches, and branch crotches including *Polypodium glycyrrhiza* (licorice fern), *Antitrichia cirtipendula* (hanging moss), *Selaginella oregana* (Oregon clubmoss), *Hypnum circinale* (coiled-leaf moss), *Dendroalsia abietina* (plume moss), *Homalothecium fulgescens* (yellow moss), *Leucolepis acanthoneuron* (Menzies' tree moss), *Isothecium myosuroides* (cat-tail moss), *Neckera douglasii* (Douglas' neckera); and *Metaneckera menziesii* (Menzies' neckera), and arboreal lichens such as *Lobaria pulmonaria* (lungwort), *Cladonia* spp., and *Nephroma* spp. (kidney lichens).

Wildlife Value:

Many wildlife species use bigleaf maple for food and cover. Frequent deer browse resulting in the loss of the main leader leads to copious suckering, and a constant food supply. On Logan Creek, young saplings on the floodplain were cut down by a resident beaver in November, 2018. Seedlings and saplings are often clipped by beaver for their dam construction (Niemi et al, 1995). Trunk cavities are used for nesting by bird species such as *Strix varia* (barred owl), *Dryocopus pileatus* (pileated woodpecker) (Hartwig et al, 2004), and *Histrionicus histrionicus* harlequin duck (Arno and Hammerly, 1977). Freshly germinated seedlings are spring greens for mice and voles and well as grazing birds such as Canada goose. In spring, the flower nectar is important for many insects.

Reproduction and Cultivation:

Bigleaf maple begins to produce seed at about 10 years of age, and seed production is heavy most years (Rose et al, 1998). The large double samaras are winged to allow wind dissemination over long distances (Haeussler et al, 1990; Iddrisu and Ritland, 2004). Seeds are only viable in the wild for a year (Niemiec et al, 1995), however, the juvenile growth rate of germinated seeds is rapid. Seed should be harvested in the fall while fresh. Sow directly or stratify over winter in a cold fridge at 1-5° for 40 to 80 days (Rose et al, 1998). For guaranteed germination, look for small germinated seedlings under trees around March – April, carefully dig and pot up for transplanting about 2 years later.

Interactions and Human Interest:

As the common name implies, bigleaf maple has big leaves. The largest leaf recorded to date was found in Victoria, BC and is 60.9 cm wide and 72 cm long (Petrescu, 2014).

This is the only maple in the Pacific Northwest that can be harvested for milling into lumber. It is a highly desired species for musical instruments, flooring, cabinetry, millwork, and for peeling into veneer for plywood and furniture (Naturally:Wood, 2019).

Bigleaf maple is being tapped by the Hupačasath First Nation in the Alberni Valley on Vancouver Island to make commercial volumes of maple syrup (Kleekhoot Gold, 2019). Compared to other sugar maple species in Canada, bigleaf maple sap has a lower sugar content (Norbury, 2010) and a more butterscotch taste and intense flavour. It is not commonly used for large scale commercial production because the sap flow is not consistent. For homeowners that want to produce homemade bigleaf maple tree syrup, bigleaf maple produces sap from late December to early February. A single bigleaf maple tree can produce sap ranging from 93.5 litres to 839.4 litres in one season; approximately 60 litres of bigleaf maple sap makes 1 litre of syrup after filtering and boiling (Bruce, 2008). To tap a bigleaf maple, a hole of about 1.5-2 inches deep needs to be drilled into the tree. For specific details see Backlund and Backlund (2012) or watch a video made by WSU Extension Forestry (2014).

Ethnobotany:

To coastal First Nations, bigleaf maple has many uses that sustain Indigenous traditions and culture. The meaning of the name for this plant in many of the Indigenous languages and dialects, including Halkomelem and Ucwalmícwts, translates to “paddle tree”, which emphasizes its importance as it is one of the only durable hardwood species on the coast.

The wood is used to make many useful tools and implements including the vertical stakes on lattice fencing or salmon weirs, and netting needles for making nettle fish netting (Stewart, 1982). Bigleaf maple was and still is the preferred wood for making spindle whorls used to spin nettle (*Urtica dioica*), fireweed (*Chamerion angustifolium* ssp. *angustifolium*), and hemp dogbane (*Apocynum cannabinum*) fibre into thread that could then be turned into cordage for ropes and nets, or woven into fabric (Turner, 2007; 2014). The wood was carved into masks, clubs, tool handles, dishes, spoons, hair combs, rattles, fish lures, hooks, and snowshoe frames (Turner, 2007; 2014). Whisks for whipping soopolallie (*Shepherdia canadensis*) berries were crafted from the inner bark of bigleaf maple (Kuhnlein and Turner, 1991). The inner bark could also be spun into cordage, or strips woven into baskets (Turner, 2014).

In the Fraser Canyon, the Lower Nlaka'pamux people around Spuzzum ate young maple shoots as a spring vegetable, boiled and ate freshly sprouted seeds, and made maple syrup as a tonic and sweetener (Kuhnlein and Turner, 1991; Moerman, 2010). Because of their large size, bigleaf maple leaves, like skunk cabbage (*Lysichiton americanus*) can be used in food preparation to line cooking pits for camas or wapato, wrap food, or line containers used to cook food (Gunther, 1945).

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Figures:

Figure 1. K. Dunster. *Acer macrophyllum* – *Polystichum munitum* ecological community, Lasqueti Island, B.C.

Figure 2. Perodeau, T. (2007). *Acer macrophyllum*. Retrieved from https://en.wikipedia.org/wiki/Acer_macrophyllum#/media/File:Acer_macrophyllum_1199.jpg

Figure 3. Tuason, T. (2015). The 10–15-centimetre (4–6-inch)-long raceme of greenish-yellow flowers appear as the leaves are developing in the spring. Retrieved from https://en.wikipedia.org/wiki/Acer_macrophyllum#/media/File:Acer_macrophyllum_2.jpg

Figure 4. Little, E.L. Jr. (1971) *Atlas of United States Trees, Volume 1. Conifers and Important Hardwoods*. Misc. Publication 1146. Washington, DC: USDA Forest Service. Digital Representations of Tree Species Range Maps from "Atlas of United States Trees" by Elbert L. Little, Jr. USGS Geosciences and Environmental Change Science Center. Retrieved from https://en.wikipedia.org/wiki/Acer_macrophyllum#/media/File:Acer_macrophyllum_range_map_1.png