

DRAFT WRITTEN FINDINGS OF THE WASHINGTON STATE NOXIOUS WEED CONTROL BOARD

SCIENTIFIC NAME: *Acer platanoides*

SYNONYMS: *Acer dieckii*, *Acer fallax*, *Acer laciniatum*, *Acer lacetescens*, *Acer laetum* var. *cordifolium*, *Acer lobergii*, *Acer palmatifidum*, *Acer platanifolium*, *Acer reitenbachii*, *Acer rotundum*, *Acer schwedleri*, *Acer vitifolium*, *Euacer acutifolium*, *Euacer platanoides* (Paniagua-Zambrana et al., 2025)

CULTIVARS: “Cleveland”, “Columnare”, “Conquest”, “Conquest”, “Crimson King”, “Crimson Sentry”, “Deborah”, “Drummondii”, “Emerald Lustre”, “Emerald Queen”, “Fairview”, “Globosum”, “Parkway” (“Columnarbrood”), “Princeton Gold”, “Royal Red”, “Schwedleri”, “Summershade”, “Superform” (Oregon State University).

COMMON NAMES: Norway maple, harlequin maple (when variegated)

FAMILY: Soapberry family, Sapindaceae

LEGAL STATUS: Considered for Class C. Currently on Washington’s monitor list.

DESCRIPTION AND VARIATION

OVERALL HABIT:

Acer platanoides is a medium to large sized, shade-tolerant deciduous tree, typically having a straight trunk and a widely spreading, symmetrical, and rounded crown (Simkovic, 2020). It is known for its rapid growth, forming a symmetrically round crown (Nowak & Rowntree, 1990). Mature trees in forested settings average 22 meters in height but can reach a maximum of 30 meters, with a trunk diameter of up to 190 cm (Simkovic, 2020).



Ornamental planting. Oregon State University.

STEMS:

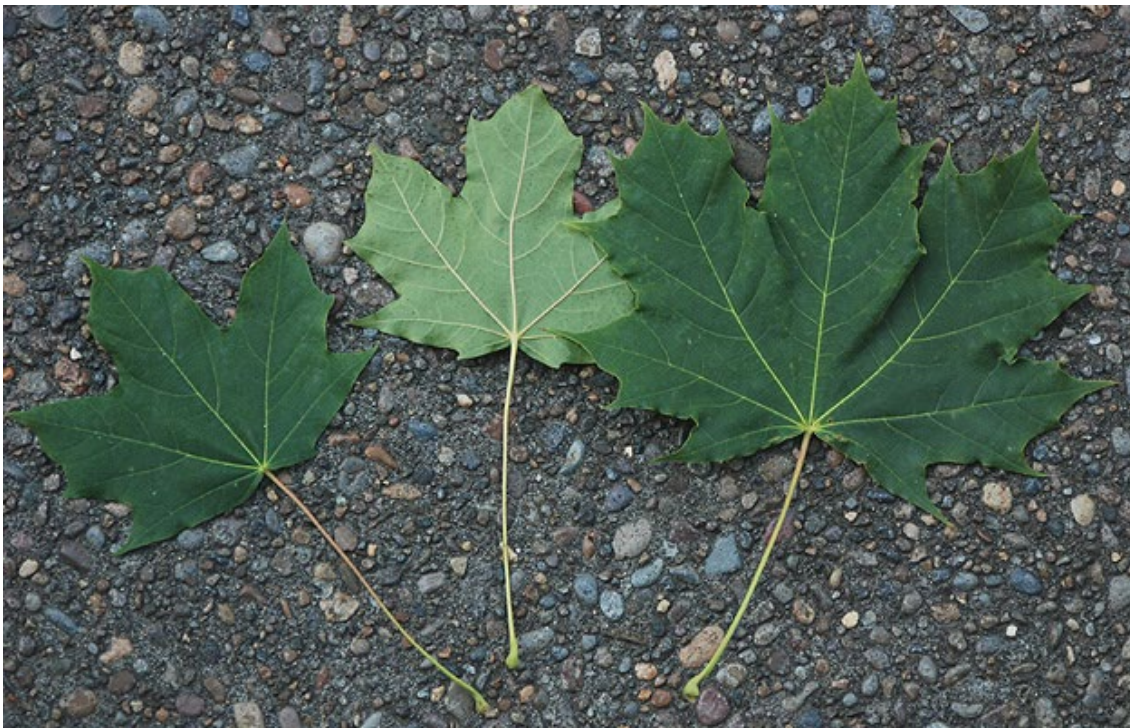
The twigs of *Acer platanoides* are stout, smooth, and hairless. Branch tips are often forked, and terminal buds are purplish-green or reddish-purple, plump, and blunt with three to four pairs of fleshy scales. Young bark is initially grey and smooth, developing regular shallow intersecting ridges as the tree matures, becoming dark grey and not scaly in older trees (Simkovic, 2020).



Tree trunk bark. Oregon State University.

LEAVES:

Leaves are simple, oppositely arranged, and have five to seven sharply pointed palmate lobes and teeth. The upper surface is dark green, while the underside is lustrous green and smooth, with occasional tufts of hairs in vein angles. Leaves are slightly wider (10-18 cm) than long (8-16 cm) and possess a long leaf stalk (petiole). When broken, the leaf petiole, bud scales, and twigs exude a milky white sap, a distinctive feature not typically found in other maple species (Simkovic, 2020). *Acer platanoides* leaves expand earlier in spring and persist later into autumn than many trees, providing a longer growing season (Webb *et al.*, 2000; Simkovic, 2020). The leaves themselves are dark green on the upper surface and a lustrous, lighter green below. The fall coloration is typically yellow, although some cultivars display red or orange hues (Simkovic, 2020).



Leaves. Oregon State University.

FLOWERS:

Acer platanoides flowers are yellow-green and appear in erect terminal clusters, often before or simultaneously with the leaves in early spring (Mid-April to May) (Simkovic, 2020). They possess a faint sweet fragrance and are approximately 10 mm across, with five petals and five sepals (Simkovic, 2020; Weryszko-Chmielewska & Sulborska, 2011). The flowers are primarily insect-pollinated (Simkovic, 2020; Haragsim, 1977) and are self-incompatible (can't self-pollinate) (Simkovic, 2020). Individual trees typically bear either male or female flowers (dioecious), though some may bear both (monoecious) (Simkovic, 2020). The flowers contain nectaries (glands that produce nectar), located on the receptacle (the part of the flower stalk to which the floral organs are attached) between the petals and the pistil (Haragsim, 1977; Weryszko-Chmielewska & Sulborska, 2011). These disk-shaped glands have an outer diameter of about 5 mm. Nectar is released through numerous, evenly distributed pores on the nectary surface (Weryszko-Chmielewska & Sulborska, 2011).



Flowers. Oregon State University.

FRUITS/SEEDS:

The fruit of *Acer platanoides* is a double-winged samara (a dry, winged fruit containing a single seed, also called a "key"), which enables it to spin like a helicopter as it falls. Each samara is typically green to brown, measures 3.5–5.5 cm long, and has wings that spread widely at almost a 180° angle (Simkovic, 2020; Meiners, 2005). Both halves of the samara usually contain fertile seeds (Simkovic, 2020). Seeds ripen in the fall



Leaves and seed pairs. Oregon State University.

(September and October) and are primarily dispersed by wind, though water can also contribute (Simkovic, 2020). Wildlife such as squirrels and meadow voles may also cache the seeds (Simkovic, 2020). Most seeds fall within 50 meters of the parent tree (Matlack, 1987; Wangen *et al.*, 2006). Seeds of *A. platanoides* are 65% larger than those of native sugar maple (*Acer saccharum*) (Meiners, 2005) and can be tolerant to desiccation at moisture contents of approximately 7% (Dickie *et al.*, 1991). Seeds achieve maturity about 150-160 days after peak flowering, when embryo desiccation tolerance is fully developed (Dickie *et al.*, 1991). Seeds produced in warmer conditions are significantly lighter and have

lower nitrogen concentrations compared to those from colder environments (Carón *et al.*, 2014; Simkovic, 2020).

ROOTS:

Acer platanoides possesses a fibrous and shallow root system. This characteristic can lead to exposed surface roots, which, along with girdling roots can become problematic, as they encircle the tree base which can constrict and eventually damage or kill the tree (Simkovic, 2020).

SIMILAR SPECIES:

Bigleaf maple (*Acer macrophyllum*) is the only native maple that looks similar to *A. platanoides*. Bigleaf maple leaves get much larger than Norway maple leaves (Burke Herbarium). Even when bigleaf maple leaves are a similar size to Norway maple leaves, our native maple leaves have much deeper lobes, while Norway maple leaf tips come to much sharper points. Bigleaf maple flowers are drooping bundles of green and white-green not-showy flowers, while Norway maple flowers are upright, yellow or yellow green, and twice the size of big leaf maple flowers. Bigleaf maple samaras (winged seeds) are very fuzzy with stiff, sharp hairs on the not-winged parts, while Norway maple have entirely smooth samaras. Bigleaf maple bark is typically more reddish and frequently covered in moss and lichen, while Norway maple bark is more gray (BackyardHabitats.org).

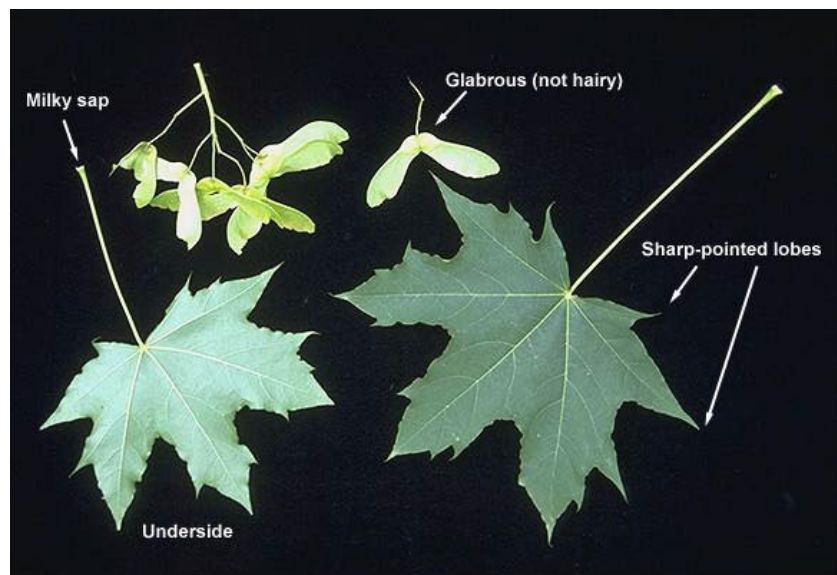


Above: Bigleaf maple (*Acer macrophyllum*) leaf. Josh S. Jackson.

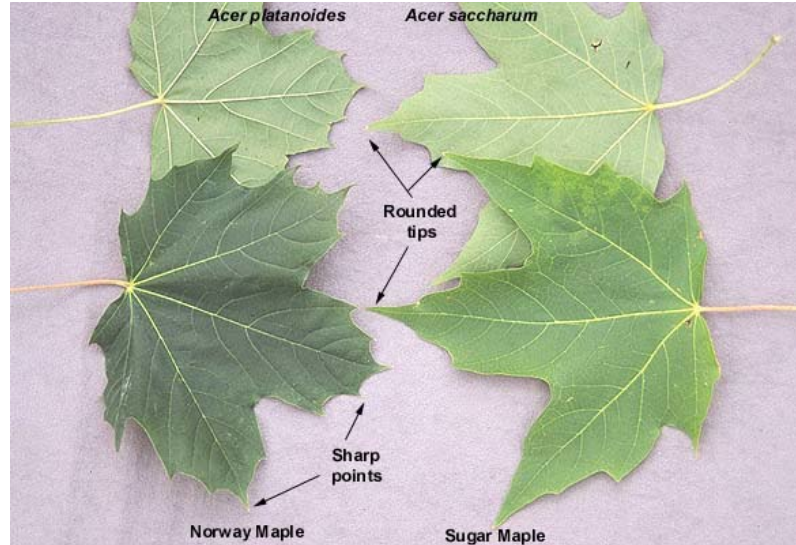
Below: Norway maple (*Acer platanoides*) leaves and seeds. Oregon State University

Sycamore maple (*Acer pseudoplatanus*) and Sugar maple (*Acer saccharinum*) are two non-native species of maple that look similar to Norway maple. Both are planted in urban areas, but neither escape frequently into Pacific Northwest forests and gardens (Burke Herbarium).

Sycamore maple have less deeply lobed leaves, and the tips can be much more rounded than Norway maple. Sycamore maple bark has less vertical ridges and looks flakier than Norway maple (BackyardHabitats.org).



Sugar maple leaves are slightly rounded at the tips of each lobe, while Norway maple have pointed tips. Sugar maple samaras grow in much more of a horseshoe shape than Norway maple samaras. Sugar maple leaf buds are sharp and narrow, while Norway maple leaf buds are rounded and bulbous. Norway maple will release a milky sap when broken, but sugar maple's sap is not milky in appearance (LandscapePlants.OregonState.edu).



Above: Norway maple (*Acer platanoides*) vs Sugar maple (*Acer saccharum*) leaves. Oregon State University.
Below: Norway maple (*Acer platanoides*) leaf buds in winter. Oregon State University

HABITAT:

Acer platanoides is highly adaptable to a wide range of environmental conditions (Simkovic, 2020), and the habitats it can grow differ in their invasive and native ranges. It exhibits high shade tolerance and can establish in diverse soil types, thriving in urban settings and both disturbed and relatively undisturbed, intact closed-canopy forests (Simkovic, 2020; Webb *et al.*, 2000; Bertin *et al.*,



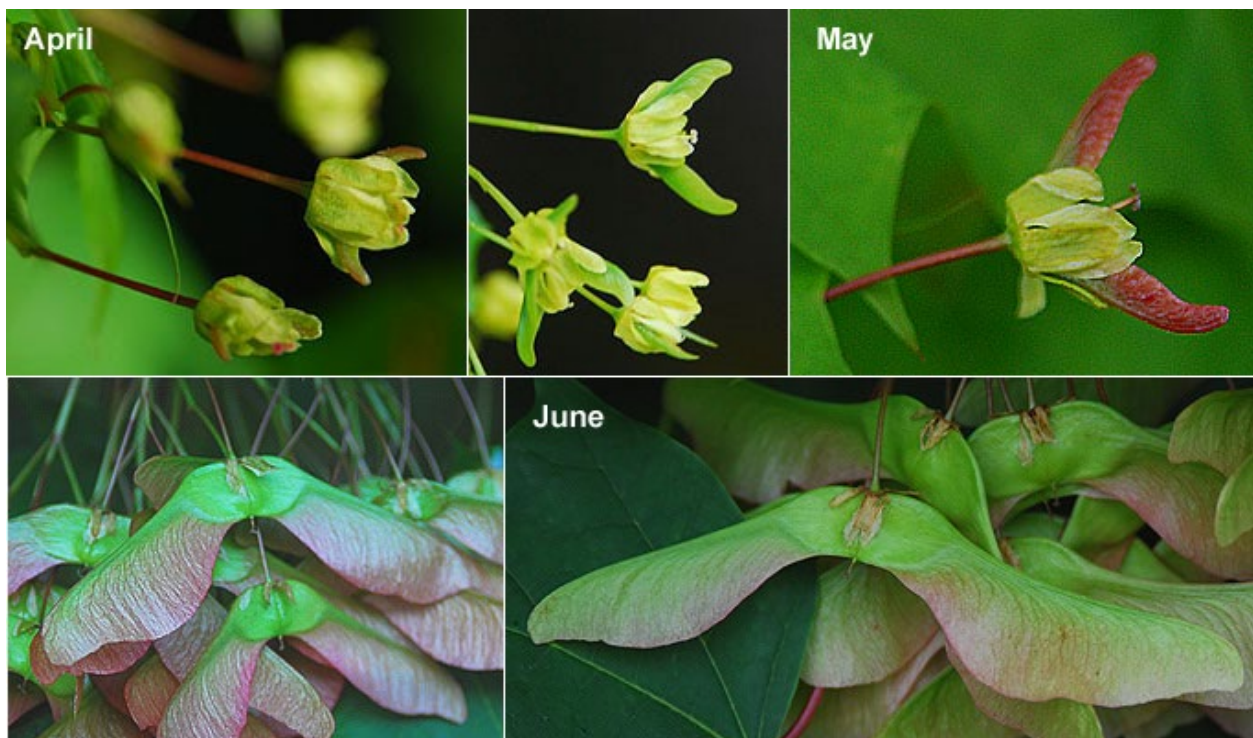
2005). The species generally prefers areas with moderate moisture, deep, fertile, well-drained loamy soils. While it tolerates moderate pollution, it does not thrive in highly polluted, too wet, too dry, or highly acidic areas, and may develop iron deficiency in alkaline soils (Simkovic, 2020). It has proven capable of invading relatively undisturbed, intact, closed-canopy forests, making it a serious threat to native woodlands (Webb *et al.*, 2000; Martin & Marks, 2006), though most research is based in Eastern U.S. forests. It performs less successfully in very dry, very wet, or highly acidic soils (Bertin *et al.*, 2005; Simkovic, 2020). Shallow root systems can curb growth in urban soils that are very compacted (Simkovic, 2020). *A. platanoides* grow in areas where trees receive above ground and below ground water, the bases of hills, in lowlands, river valleys, and in low mountainous habitats (Simkovic, 2020; Bertin *et al.*, 2005).

BIOLOGY

GROWTH AND DEVELOPMENT:

Acer platanoides saplings exhibit rapid growth, with stem diameter at breast height increasing by up to 3 cm per year for the first 100 years (Simkovic, 2020). It reaches reproductive maturity at 25-30 years of age in open, sun-exposed areas, and at 30-40 years in forested habitats, and can live for 100-150 years in ideal forest conditions, though its lifespan is often shorter (around 80 years) in harsh urban settings (Simkovic, 2020).

A key aspect of its life cycle is the formation of a dense "seedling bank" (Webb *et al.*, 2001). The seeds germinate in spring, creating a carpet of seedlings on the forest floor (Martin & Marks, 2006). These seedlings are highly shade-tolerant and can persist in the low-light conditions of the understory for decades, growing very slowly until a gap in the forest canopy opens, at which point they can grow rapidly to fill the space (Webb *et al.*, 2001; Martin & Marks, 2006). Once established in Eastern U.S. forests, *A. platanoides* forms dense stands that significantly reduce light reaching the forest floor, suppressing native tree regeneration (Simkovic, 2020; Webb *et al.*, 2001; Wyckoff & Webb, 1996). Its root-to-shoot ratio is also higher than in North American maples, contributing to efficient light, water, and nutrient uptake, especially under low light conditions (Simkovic, 2020; Kloeppel & Abrams, 1995). The leaves are retained about two weeks longer than North American maples in the fall, turning yellow, red, or orange (Simkovic, 2020). Studies, in the Eastern U.S., show *Acer platanoides* is capable of rapidly capturing canopy gaps and outcompeting native shade-tolerant species (Webster *et al.*, 2005).



Development of flowers and seed throughout a season. Oregon State University.

REPRODUCTION:

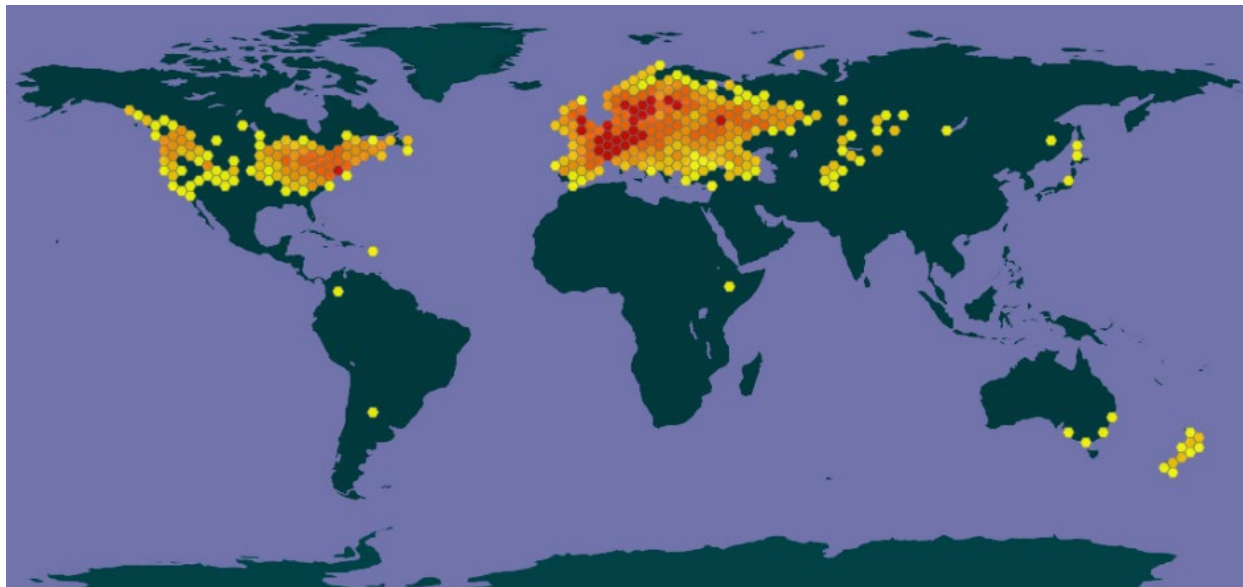
Acer platanoides reproduces exclusively by seed, although it can produce multiple stems or basal shoots when cut, but these typically do not survive to produce new plants or spread clonally (Simkovic, 2020). Its spread is primarily by wind-dispersed seeds, but human-related disturbances like roads act as vectors, facilitating longer-distance dispersal (Simkovic, 2020; Wangen *et al.*, 2006). Seed germination is promoted by soil disturbance (Webb *et al.*, 2001). Seedlings can persist in the understory for many years, though the seeds themselves are thought to be viable in the soil for only about one year (Simkovic, 2020). *A. platanoides* produces abundant viable seeds annually (Simkovic, 2020). In the Eastern U.S., its larger seed size, lower rates of seed predation (Meiners, 2005), and faster seedling growth give it a competitive advantage over native maples at early life stages (Meiners, 2005; Simkovic, 2020).

Seed viability, germination percentage, and seedling biomass are strongly linked to seed mass and nutrient concentration (Carón *et al.*, 2014). For optimal germination, moist-chilled seeds should be exposed to temperatures below 10°C, with the highest germination rates occurring between 22-28°C (Jensen, 2001). Extreme temperatures (above 10-15°C) inhibit germination and reduce seed survival (Jensen, 2001; Simkovic, 2020).

GEOGRAPHIC DISTRIBUTION

NATIVE DISTRIBUTION

Acer platanoides is native to Europe and western Asia. Its native range extends from Scandinavia in the north, west to Spain, south to the Mediterranean, and east to Russia and the Caucasus Mountains (Simkovic, 2020; Santamour & McArdle, 1982).



Heatmap of *Acer platanoides* records. Global Biodiversity Information Facility.

NON-NATIVE DISTRIBUTION

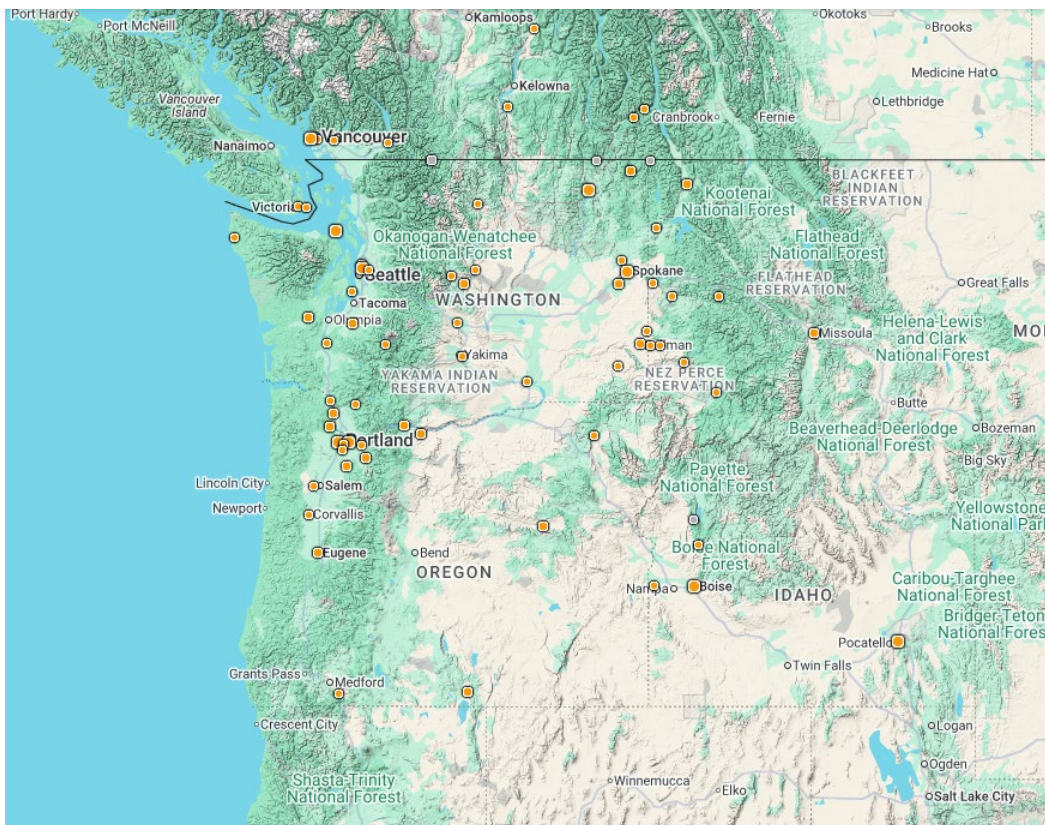
Acer platanoides is widely established and naturalized throughout the eastern United States and southeastern Canada. It is found from the Maritime provinces south to Tennessee and the Carolinas, and west into the Great Lakes region (Bertin *et al.*, 2005; Simkovic, 2020). In Ontario, it is found in many municipalities throughout Ontario, primarily as a result of its extensive use as a street and park tree (Simkovic, 2020).

HISTORY:

First introduced to the United States in 1756, *Acer platanoides* became a widely planted ornamental and street tree in the eastern and north-central U.S., especially after World War II, due to its rapid growth and tolerance to urban conditions (Nowak & Rowntree, 1990). After World War II it also frequently replaced American elms (*Ulmus americana*) killed due to Dutch elm disease (Simkovic, 2020; Santamour & McArdle, 1982).

WASHINGTON:

Acer platanoides is known to be throughout all of Washington, except for the East-Central counties of Lincoln, Grant, and Adams. It is found growing near urban and suburban areas (where it is frequently planted as a street tree,) as well as in undisturbed forested habitats (Burke Herbarium; iNaturalist; Consortium of Pacific Northwest Herbaria).



Records in Washington, Oregon, British Columbia, and Idaho. Consortium of Pacific Northwest Herbaria.

NEARBY TO WASHINGTON:

OREGON:

There are records of *Acer platanoides* throughout Western Oregon, and a few known populations in Eastern Oregon (iNaturalist; Consortium of Pacific Northwest Herbaria).

IDAHO:

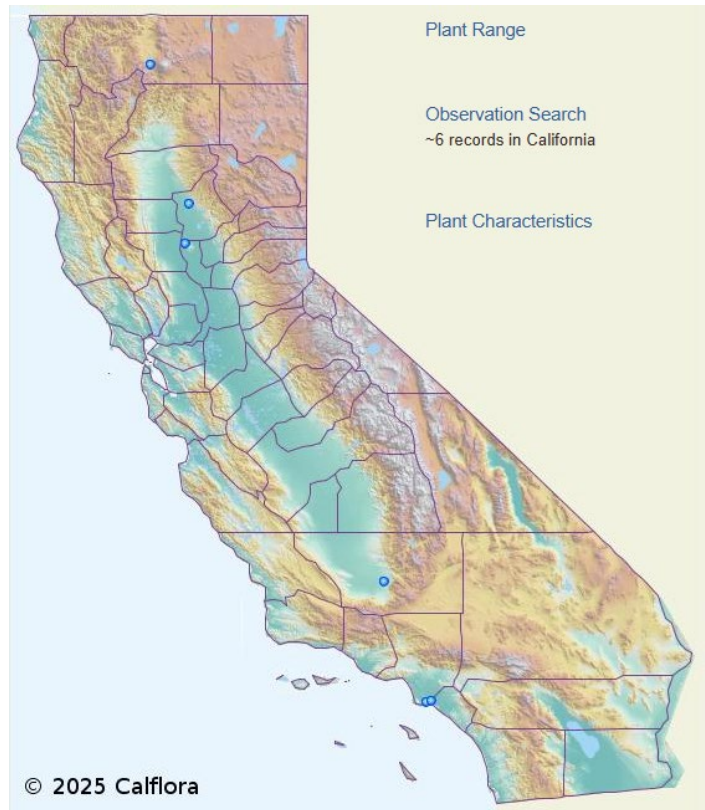
Acer platanoides occurs in the forested and urban areas of North and East Idaho (iNaturalist; Consortium of Pacific Northwest Herbaria).

BRITISH COLUMBIA:

iNaturalist and the Consortium of Pacific Northwest Herbaria have records of *Acer platanoides* across Southern British Columbia.

CALIFORNIA

Acer platanoides is found scattered across forested areas in the Northern Half of California, and urban areas of Southern California (iNaturalist; Calflora).



Records in California. Calflora

LISTINGS:

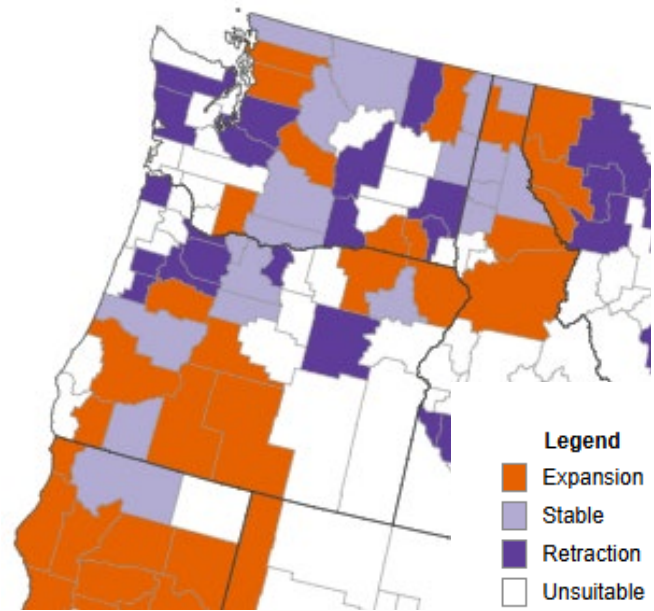
Acer platanoides is listed as invasive in most Northeast U.S. states as well as Oregon, as well as the province of Ontario, Canada (EDDMapS). Seattle Department of Transportation's Approved Street Tree list has *A. platanoides* listed, though notes not to plant it within 1000 feet of greenbelts, due to its potential to become invasive.

ECONOMIC AND ECOLOGICAL IMPORTANCE

DETRIMENTAL:

The shallow, aggressive root system of *Acer platanoides* frequently damages urban infrastructure such as sidewalks, pavement, and curbs, leading to costly repairs. Furthermore, its propensity for developing structural defects like girdling roots can make it a hazard tree in urban environments, requiring maintenance or removal (Simkovic, 2020). Many trees are also aesthetically affected by a fungal disease called tar spot, which, while not fatal, creates large black spots on the leaves in late summer (Simkovic, 2020).

A. platanoides is highly invasive, posing a significant threat to native forested habitats, especially in ravines, parks, and natural areas where it forms dense, nearly pure stands (Simkovic, 2020; Webb *et al.*, 2000; Reinhart *et al.*, 2005). Its dense shade reduces understory species richness and suppresses native tree regeneration, outcompeting native tree species (Simkovic, 2020; Webb *et al.*, 2001; Wyckoff & Webb, 1996). This impact extends to food sources for decomposers, insect diversity, and nesting birds, leading to reduced larval food (Simkovic, 2020). Dense stands also increase soil erosion by leaving bare ground exposed (Simkovic, 2020). It alters soil nitrogen dynamics, with higher nitrification rates but lower mineralization rates compared to North American maples, potentially leading to faster nitrogen leaching and lower N availability for other plants (Fang & Wang, 2020). Its leaf litter can also protect its own seedlings from herbivory more effectively than native litter (Fang & Wang, 2020). *A. platanoides* is a preferred host for the invasive Starry Sky Beetle (*Anoplophora glabripennis*, also known as the Asian Long Horned Beetle), which causes harm to native maples and other hardwood tree species (Simkovic, 2020). In its native range, it is also a host for sooty-bark disease (*Cryptostroma corticale*) (Forest Pathology).



Future range change under most conservative modelling. EDDMapS

BENEFICIAL:

Acer platanoides has been one of the most popular and commercially successful ornamental trees in North America for decades due to its rapid growth, tolerance of difficult urban conditions, and attractive appearance, particularly cultivars like 'Crimson King' with its persistent maroon foliage (Simkovic, 2020). Due to its fast growth speed, and shade cover, it is a common street tree, and is on the Seattle Department of Transportation's Approved Street Tree list, though they note to not plant it near greenbelts, as it can be invasive. It has historically been a low-cost, reliable replacement for native trees like the American Elm that were lost to disease. Its wood is sometimes used for furniture and musical instruments, but it is of low commercial value in North America. The wood is used for musical instruments, furniture, and turned objects, though its commercial value in North America is low. *A. platanoides* sap can be tapped for syrup, though it has a slightly lower sugar content and less flavor than sugar maple (*Acer saccharum*) syrup (Simkovic, 2020). Ethnobotanically, *A. platanoides* has many medicinal, food, and crafting uses (Paniagua-Zambrana *et al.*, 2025).

Its flowers provide an early and abundant source of nectar and pollen for bees and other pollinators in urban and degraded landscapes where native floral resources may be scarce (Haragsim, 1977). After being killed for control purposes, standing dead *A. platanoides* trees can serve as valuable habitat for cavity-nesting birds, insects, and fungi, and fallen logs contribute to soil organic matter. Fallen logs from dead trees contribute important nutrients back into the ecosystem as they decompose (Simkovic, 2020).



Street tree plantings of *Acer platanoides*. Oregon State University.

CONTROL

MECHANICAL:

Mechanical control is highly effective for young trees, small infestations, and at the homeowner's level. However, they are not recommended at the landscape level as they can cause significant soil disturbance, which promotes the germination of *Acer platanoides* seedlings and other invasive herbaceous or shrub species (Simkovic, 2020).

Seedlings can be hand-pulled from moist soil. Larger saplings can be dug up using a weed wrench or shovel. This method is effective for trees under 2.5 cm DBH. Pulled trees should be overturned or roots left exposed to dry on-site to prevent re-rooting. Minimizing soil disturbance is important as it can lead to re-invasion. This method can be time-consuming for large seedling populations (Simkovic, 2020).

Girdling is a safe and effective method for killing larger trees, particularly where felling is hazardous or costly. This technique involves cutting two parallel rings around the entire circumference of the tree trunk, approximately 30 cm from the ground, ensuring the cut severs the sapwood (the outermost layers of wood). If the sapwood is completely severed, the tree will die within 1-2 days. The removed strip of cambium (the tissue layer in trees responsible for growth in girth) should be 5-7.5 cm wide to prevent regrowth. Girdling can be performed at any time of year using a chainsaw or a girdling knife. For older trees, suckering and coppice are less likely to survive and may not require follow-up chemical treatment. Girdled trees can be left standing in natural areas as wildlife habitat, or removed if they pose a hazard (Simkovic, 2020).

For young trees, cutting should be followed by herbicide treatment to prevent suckering or coppicing. If herbicides are not available, repeat cutting of new growth will deplete the stump's stored nutrients and

eventually kill the tree. For older trees (over 30 cm DBH), herbicide treatment may not be necessary as suckering and coppicing outgrowths may not survive. When cutting, protective gear (clothing, gloves, safety glasses) is essential. The cut should be horizontal, above the root flare (the base of the trunk where roots begin to branch), and expose live wood (Simkovic, 2020).

CULTURAL:

Covering juvenile cut stumps to prevent light access is an effective method to kill roots. Materials such as heavy black plastic sheets or tarps, tied tightly, can be used. This method is suitable for small to medium-scale projects, particularly on steep slopes where leaving stumps in place can prevent soil disturbance and erosion. Regular monitoring is necessary (Simkovic, 2020).

After removal of *Acer platanoides*, it is crucial to add plant species to the disturbed site to prevent erosion and reduce reinvasion threats (Simkovic, 2020).



Natural history illustration. Zelimir Borzan, University of Zagreb.

BIOLOGICAL:

There are currently no approved biological control agents for *Acer platanoides* (Adams *et al.*, 2009). Known pests, like the tar spot fungus (*Rhytisma acerinum*), do infect *A. platanoides* but have only a marginal effect on the overall health of mature trees (Simkovic, 2020).

CHEMICAL:

For dense infestations of seedlings and small saplings, a foliar spray of a dilute herbicide solution onto the leaves. Care must be taken to avoid spray drift onto non-target native plants. A 3-5% glyphosate solution can be used (Simkovic, 2020).

Immediately after a tree is felled, a concentrated herbicide (commonly glyphosate- or triclopyr-based) is applied to the cut surface, particularly the outer ring (cambium layer), to kill the root system and prevent re-sprouting (Simkovic, 2020; The Nature Conservancy).

Herbicides applied to stumps or girdled areas prevent coppice growth. For younger trees, apply to the entire cut stump surface without runoff. For larger trees, apply to the cambium layer. Triclopyr-based herbicides (e.g., Garlon XRT, Garlon RTU) can be diluted to a 20-30% solution with bark, mineral, or

vegetable oil (such as canola oil). They are advantageous because they can be applied to cuts that are not fresh, allowing for flexibility, and can be used in freezing conditions above -10°C (Simkovic, 2020). A 100% concentration of glyphosate (e.g., Round Up) should be applied immediately (within 5 minutes) to fresh cuts or girdled areas, before the plant seals the wound. Glyphosate should not be applied below 10°C (Simkovic, 2020).

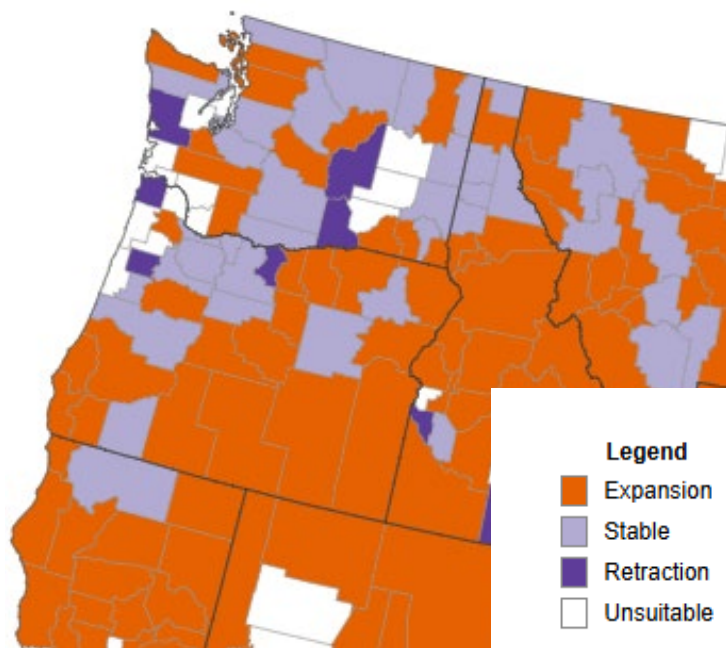
Basal bark treatment is most effective on young, actively growing stems with a DBH of 5-15 cm, and best results are seen on stems under 8 cm DBH. A low-pressure, low-volume backpack sprayer can be used. A 5 cm wide band of herbicide (e.g., triclopyr diluted to 20-30% in oil, or a premixed solution) should be sprayed completely around the stem(s) 30-50 cm above ground level. For stems 8-15 cm DBH, apply to two sides. The bark should be thoroughly wetted but not to the point of runoff. This is most effective in late summer and early fall when sap is flowing toward the roots. One treatment is often sufficient (Simkovic, 2020).

Always make sure to follow local, state, and federal laws on herbicide use, follow label directions, and wear proper personal protective equipment.

RATIONALE FOR LISTING

There is extensive research on the invasiveness of *Acer platanoides*, due its shade tolerance, on its ecological impacts to forests, and on the potential to be a vector for other pest species. Herbarium and citizen scientist reports show that it is reproducing in natural areas of the Pacific Northwest. Even under the most conservative future climate and population growth modeling, *A. platanoides* is predicted to be stable or expand through over half the counties in Washington, with a retraction in Eastern-Central counties, where it already has a low infestation level, and some coastal locations (EDDMapS). *A. platanoides* is commonly planted in

urban areas, which has given it a wide range to start new infestations across Washington, due to its prolific seed creation and seedlings that are highly adaptable to grow in forested areas. There is a lag time before population expansion, which can lead to slow response to the trees as an invasive threat (Wangen & Webster, 2006). A Class C listing would not require municipalities and individuals to remove already planted trees, nor stop future planting where desired.



Future range change under most liberal modelling. EDDMapS

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Image description. Oregon State University.