

## Native Plants—Good for Your Yard, Good for Our Forests

### Urban forests are in trouble.

Alarming acreages of habitat in Northwest urban forests are being lost to development and invasive plants—plants like English ivy, English holly, European hawthorn, and Himalayan blackberry.

### As part of the urban forest, your landscape can make a difference.

You can contribute to the health and well-being of our city by removing the invasives in your yard and planting native plants. Here are some of the reasons for creating a native landscape:

- Like a native forest, your native yard can be beautiful.
- Native plant diversity supports native birds, butterflies, and beneficial pollinators.
- Invasive plants that contribute invasive “seed rain” (seeds spread by birds and wind) to nearby forests and other neighboring landscapes can be replaced by native plants that contribute beneficial “seed rain.”
- Rare native plants that are being crowded out by invasives in urban forests need the care of active stewards in backyard habitats.
- *Evergreen* plants and healthy soil better hold and filter stormwater, reducing winter flooding and the toxic runoff that overwhelms combined stormwater/sewage treatment facilities during heavy rain events, often overflowing directly into Puget Sound. Evergreen plants better filter air pollution and absorb CO<sub>2</sub> – whether native or exotic – any evergreen vegetation is likely better than turf installed over soil compacted during development.
- Non-native landscapes may require excessive watering, fertilizing, “mowing and blowing.” Not only does mowing take up precious weekend time, but equipment can be expensive and a noise nuisance to neighbors. Moreover, it is an unnecessary source of pollution ingested by the operator (5% of our nation’s air pollution is from mowing: <http://www.peoplepoweredmachines.com/faq-environment.htm>). Leaf blowers also stir up dust that is tainted with deposits of air pollution, a major component of toxic runoff. Operators should use respirators while using gas-powered mowers, string trimmers, and blowers.

### Help is available for restoring your yard.

To learn which plants are native and which are invasive, consult the Washington Native Plant Society (link: [wnps.org](http://wnps.org)), or King County Noxious Weeds (web address:

<https://www.kingcounty.gov/services/environment/animals-and-plants/noxious-weeds.aspx>)

Native Landscaping plans can be found at: <https://green2.kingcounty.gov/gonative/index.aspx>

Consider hiring a restoration professional for the following:

- To identify plants and develop a removal, planting, and maintenance strategy
- To identify high-risk invasives (knotweed, yellow archangel, giant hogweed, poison hemlock) that may require herbicide or special measures to safely control
- To restore native vegetation on steep slopes, if considered to be a cost-effective alternative to geotechnical engineering.

To find restoration professionals, google “(your location) native plant restoration landscaping invasive removal.” Or, ask your county conservation district. You can also find licensed herbicide professionals at <http://agr.wa.gov/pestfert/licensing/search/>

- If working in steep or treacherous terrain, review City of Seattle landslide information, <http://www.seattle.gov/dpd/aboutus/whoweare/emergencymanagement/default.htm> or, contact a professional geotechnical firm <http://www.seattlegeotech.org/firms.html>
- Check “ECA” Environmentally Critical Area permit requirements for steep slope work in your municipality. For Seattle properties: <http://www.seattle.gov/dpd/toolsresources/default.htm> Proceed with caution, preserving vegetative cover or using geotextile fabrics to prevent slides. Remove invasives only at the rate that native plants become established, or carefully consider trade-offs of faster restoration techniques. Note: With qualified soil analysis within permit parameters (notifying surrounding property owners) there are risk trade-offs between careful invasive removal and judicious herbicide applications to more cost-efficiently kickstart native plant establishment.

### Short summary of basic restoration steps to a native landscape

1. Preserve most intact natural areas first with detail weeding, then control invasive seed sources.
2. In areas to be planted, thoroughly eradicate all invasives to reduce maintenance later (grass, H. blackberry, bindweed), either by herbicide application – faster, cheaper, more effective – and perhaps not as polluting as driving to transport cardboard for sheet mulching (1 -2 year process).
3. Add woody debris/arborist woodchips as mulch on soil; dig woody matter *into* soil where practical (at least when planting) to build soil structure (Call before you dig: 811; or 800-424-5555; or <http://call811.com/>).
4. Plant mostly evergreens at tree, shrub, and groundcover levels to intercept stormwater and reduce weed re-invasions.
5. Manage “sunlight cones” around new plantings, clearing weeds in late April, June and fall.
6. Invest in deer fencing/protection for new plantings in wildlife areas, and consider planting large caliper trees in addition to restoration-size seedlings.
7. To maximize aesthetics and visual simplicity in small yards, plant three or four different native species in swaths as an evergreen background behind pockets of color/flowers in the foreground. To improve wildlife benefits and resiliency in a landscape, plant 15 or more different native species. Choose species naturally present in your locality.

### Detailed steps to a native landscape.

To remove invasives and plant native species, follow steps one to six below:

**Step 1:** Slow the spread of invasive “seed rain” and prolong the life of mature trees.

- **Remove invasive vines from trees**—before they fruit, to prevent the spread of seeds.

\* Cut invasive vines (ivy, wild clematis) in a ring around the tree, at chest height.

Note: Chainsaws can damage trees. Use loppers, a handsaw, or at most a Sawzall-type saw.

\* Leave the vines above the cut to wither (pulling these vines can injure the tree—and also you, from falling debris.) For tree hygiene, remove vines below the first cut to the base of the tree, taking care not to damage the sensitive base of the tree, and aim to remove ivy in at least a three-foot radius around the tree.

\* Removing ivy roots intertwined with tree roots is problematic, requiring prolonged maintenance. For expediency on a larger site, have a licensed professional treat arm-size vines with an appropriate herbicide (cut-stump/cut & dab glyphosate treatment Aug – Oct), plus spray ground ivy (this is the environmental “best practice” for larger “ivy-desert” monocultures, minimizing soil disturbance/erosion that helps retain the topsoil sponge and filter for stormwater).

\* If manually removing ivy, air-dry any viable vines out of contact with the soil (on brush piles or snags) to avoid re-rooting, and be sure to mulch any bare, disturbed soil with arborist woodchips, if available.

- **Eradicate invasive trees**—English holly, English laurel, European hawthorn, European mountain ash, bird cherry, domestic plums, etc.. Retain invasive tree roots if they’re holding soil in critical slopes (such

invasive may be topped or girdled to reduce seed rain, but kept alive for soil-binding attributes until the roots of native plants can supplant the roots of invasives). For more information about invasive identification, consult King County Noxious Weeds:

<http://www.kingcounty.gov/sites/environment/animalsAndPlants/noxious-weeds.aspx/>

\* Hand pull small (less than pencil-size) saplings, if you're certain roots can be removed fully intact. If any roots break off, be prepared to maintain root suckers.

\* For larger trees, use one of these methods:

*Organic method:* Girdle the tree by peeling a foot of bark, at chest height, from around the circumference. Do this in the spring, when the bark is "slipping" (sap is flowing). Organic methods may not work for certain species prone to root suckering (holly, black locust), but this may work for small sites easily monitored and maintained.

*Herbicide\* method:* If the tree is less than three inches in diameter, saw the tree to a stump ("cut-stump"). If it is larger than three inches, "frill" it: chop into the cambium or saw-frill a quarter-inch cut around the circumference. Either way, apply herbicide (per product label) to the *fresh* cut. Summer to late fall is usually the best time to do this. If the cut is exuding juices, the treatment is too early and won't translocate herbicide to the roots.

\* Hire a licensed herbicide professional—to be sure the herbicide is handled properly, and is correctly\* applied to the cambium layer inside the bark. A common mistake when frilling with an ax is that the herbicide gets applied to the cut's "cup" in the sapwood, missing the critical vascular cambium layer just inside the bark. Note: Cut-stump or frill application methods often require (per legal label) undiluted application of a product that has 40-50% active ingredient (Note: many retail ready-to-spray products have only 2% active ingredient). If using an aquatic wetland-safe herbicide (formulated without surfactants), an approximate 1/10<sup>th</sup> of 1% (.1%) – a few drops – addition of surfactant (cooking oil) to the product will help absorption into the fresh cut. Licensed applicators have access to wetland-safe surfactants vetted by the Dept. of Ecology deemed safe for fish and amphibians.

\*Herbicide-licensed professionals are trained for safe handling (nitrile gloves, safety glasses, respirator, long sleeves/pants, rubber boots) and careful application (low pressure pump sprayer that avoids fine mist) to avoid herbicide "drift" that can damage adjacent plants. Most applicators put food coloring in the herbicide product to track applications and highlight inadvertent skin exposure, which is immediately washed off.

\*Note: Many restoration practitioners, health conscious and environmentally concerned, choose to accept the risks of applying herbicides, citing studies that agricultural workers applying glyphosate live longer than average (likely due to exercise), whereas living in certain air-polluted cities can reduce life spans five years. Aware practitioners are consequently careful with small engine exhaust, and wear respirators accordingly. Professional practitioners consider the health threat of ivy monocultures spreading region-wide, with its associated rodent habitat and known disease vectors, compared to the toxic stormwater runoff exacerbated by "organically" uprooting invasives which often leaves root fragments that only grow back. Most practitioners choose to herbicide-treat invasives, leaving roots in the ground to improve the soil's sponge and filter for stormwater.

If possible, keep all organic matter on-site unless diseased or an egregious invasive seed source. Some species readily re-root when cuttings have ground contact. Keep girdled or treated trees (particularly holly) upright until they die, leaving them as snags for wildlife habitat (unless they're a hazard) or, cutting dead plants down for "habitat piles" (logs on bottom, criss-crossed, with branches on top) to

give small birds safe places to nest/forage. If you are in wooded areas where fire is a possibility, don't leave fuel-piles in the safe zones near a home, and consult/cooperate with forestry experts for fuel reduction efforts.

\* You can also speed soil building by cutting dead branches to shorter lengths for more ground contact, spreading them as sheet-mulch. Mulchcut-blackberry typically does not re-root. On slopes, spread woody debris cross-slope to retain autumn leaf drop across the slope for further soil building and to improve water retention.

\* Don't *pile* organic matter on slopes, concentrating weight that could cause slides. Spread out the organic matter. Be careful not to introduce weed seeds into adjacent natural areas.

**Step 2:** Remove or reduce lawn, ivy, and blackberry patches, at least enough to proceed with planting (Step 4).

• **Two ways to remove a lawn:**

1. After your lawn/weed patch starts growing in the spring, mow or string trim it, add 1" of compost or fertilizer (optional), water if needed (avoiding runoff), then "sheet mulch" the lawn: cover it with cardboard overlapped one foot, or newspaper (six-plus pages thick); then pile on four to six inches of wood chips (up to a foot, if enough are available).

Avoid using landscaping fabric or bark as mulch. Bark repels water and suppresses the fungal food web that transports water and nutrients to help establishing plants survive. To get free wood chips, listen for tree services working in your neighborhood – the chipper is quite loud. Approach the foreman, ask if they're looking for a close drop, or offer to pay for delivery – or a sixpack marking the drop spot works wonders (no overhead lines above, plenty of room for a safe drop). There's never a guarantee, unless you order commercially (locally Sawdust Supply or Cedar Grove), subject to supply. There is a new service, <https://getchiptrop.com/login/> that connects arborists and gardeners, and queues requests according to supply and demand, with those willing to pay receiving faster deliveries than those willing to wait for possible free deliveries.

2. Spray the grass with the proper herbicide (per product label)—available over the counter at hardware stores. Apply during active growth and not during rainy periods or summer dormancy. On windy days, wipe the grass with an herbicide-soaked cloth or mop. Wear nitrile gloves.

• **To remove ivy patches**, different methods offer choices to avoid herbicide use, gasoline combustion, and topsoil loss (which reduces stormwater interception and filtration):

1. Hand-pull\* the ivy. Then cover exposed soil with wood chips, four to six inches deep.

\*Safety note: Ivy-pulling stirs up irritating dust. Woodchip piles also emit spores, usually causing mild congestion, on rare occasions causing breathing difficulties and hospitalization.

2. Knock back the ivy with a string trimmer (Weedwacker) and cover remaining roots with wood chips, one foot deep, to smother new sprouts (or, sheet mulch with cardboard plus four to six inches of wood chips. Applying cardboard during winter rains may make sheetmulching ineffective – apply during growing season, March – Sept 15).

3. Spray\* ivy deserts (greater than 80% ivy cover; less than 20% native cover) with an herbicide. Leave treated ivy on the ground as sheetmulch, avoiding topsoil loss. If herbicide gets on the leaf of a native plant, cut the leaf from the plant. Depending on dry weather, the spray window is approx July – Oct 1. Late sprays may not show die-off until the following spring. If you are worried about herbicide drift damaging native plants (groundcovers like ferns, fringedcup, etc.), temporarily transplant them into pots,

staging them in shady areas and watering appropriately. Transplant back into the landscape in late fall to winter planting season, after the herbicide has adequately eliminated the ivy.

4. “Whip and drip” – string trim the ivy, immediately followed by a spray\* to get herbicide into scored stems.

\*Hire an experienced restoration professional to avoid herbicide damage to native plants, and to minimize herbicide over-applications. Restoration practitioners should have current pesticide licenses (<https://agr.wa.gov/services/licenses-permits-and-certificates/pesticide-license-and-recertification/pesticide-and-spi-licensing/license-search>) and experience with herbicide products and application methods that are safe and effective during the proper season. If attempting a do-it-yourself home applications, FOLLOW THE LABEL of over-the-counter products, and particularly avoid applications when rain is forecast.

• **Follow these steps to remove Himalayan blackberry:**

*Organic* method: 1) At flowering stage (when the plant has spent reserves, cut the blackberry to a six-inch height, leaving the stem-cuttings (in approximately one-foot lengths) as mulch. Keep cutting back (three times per year for 3 – 5 years minimum: approx. May, late June, Oct.) until evergreen plants help shade out regrowth. If you grub out roots, be sure to mulch the disturbed soil with wood chips. Any pulled roots or rooting tips of stems (white roots) need to be air-dried (on a “drying rack,” similar to a habitat pile).

*Chemical* method: Have a licensed professional herbicide-spray accessible, actively-growing patches (after full leaf expansion, not during spring growth or drought dormancy). Dense, inaccessible patches may need mowing or brushcutting first (best timing at flowering stage), leaving cut stems (less than 1 foot lengths) on the ground as sheetmulch. Then spray regrowth after full leaf expansion, at least before October 15 (in Seattle climate).

Smaller blackberry infestations intermixed with valuable native plants may be treated with a “cut & dab” hand method, applying concentrated herbicide across the entire cut, not missing the vascular tissues outside of the pith. Again, cut & dab needs to wait until after the spring flush (June) and before Oct 15. Benefits of spraying vs. “cut & dab” are that: 1) less product may be used in a dilute spray vs. concentrated cut & dab, 2) spraying is also effective against bindweed (the nemesis of new plant establishment), giving a headstart on eventually shading out this troublesome weed, and 3) the efficiency of spraying allows more budget to be dedicated to plant purchases. An experienced restoration professional can avoid nesting birds, avoid spraying beneficial plants, and avoid blooming plants that attract beneficial pollinators, choosing to “surgically” cut & dab invasive plants or brushcut and spray in proper seasons.

**Step 3:** Mulch any bare or disturbed soil, and any perennial garden beds, with variable depths of arborists’ wood chips, one to six inches deep. Avoid using landscaping bark which repels water infiltration and does not provide much nutrition for soil and plants. Woodchip mulch will improve soil and conserve moisture, while shallow depths (less than 2”) assist the germination of native seed banks and allow soil access to ground-nesting pollinators. Deeper woodchip applications (4-12”) may be needed in drier soils for soil building, and to assist rhizome-spreading plants like salal and snowberry.

\* Note: Mulch on slopes helps survival of new plant installments, but too much may weigh the slope and cause slides. Avoid slope work during winter rains, normally from Nov 1 - Apr 1. Hire an experienced professional for steep slope revegetation, with a recommendation from a qualified geotechnical engineer to plant during winter months, and possibly spot mulch around new plants with woodchip-filled burlap bag, more effectively establishing beneficial fungi if applied before April. New plantings benefit from wooden stakes/sticks pounded into the ground (not around utilities – call 811 for utility

checks), replacing the beneficial fungal foundation removed during logging, but check with your geotech for soil fracturing risks. Professionals should employ erosion control fabrics and woody debris (logs, wattles) staked cross-slope to minimize soil disturbance from rain erosion and foot traffic.

**Step 4:** Plant evergreens for weed suppression and stormwater interception. Also, plant diverse deciduous varieties for wildlife/habitat diversity. Consult web address: (<https://green2.kingcounty.gov/gonative/index.aspx>) for species suggestions suitable to your sun/shade/wet/dry conditions.

- Short list of native evergreen groundcovers:

- \* Salal (can spread – slowly in most sites), Sword fern, Deer fern, Low Oregon Grape, Kinnikinnik, trailing blackberry (in natural areas): plant 3-5 ft apart. Other herbaceous favorites: False Lily-of-the-Valley, Wild ginger, native strawberries, Twinflower and Bunchberry (the latter two need well-rotted wood in the soil).

- Short list of native evergreen shrubs:

- \* Evergreen huckleberry, Tall Oregon Grape, Pacific Rhododendron, Manzanita, California Myrtle, California Lilac: plant approx. 7 ft apart for shading effects

- If your yard is big enough for tall trees, plant the following native trees:

- \* Douglas fir, grand fir, shore pine, and Sitka spruce—in sunny clearings

- \* Western red cedar, Western hemlock, and Pacific yew—in areas of partial shade

- \* Madrone (by seed is best)—in well-drained places

- In a smaller yard, consider:

- \* Mountain hemlock, Shore pine, Pacific yew. Or deciduous Cascara and Vine maple.

- Plant trees seven to twelve feet apart to establish shade (not all will survive. Thin later as needed for appropriate spacing 12-20 feet apart).

- \* Avoid sewer lines, gas lines, and electrical wires. (Call before you dig: 811; or 800-424-5555; or <http://call811.com/>)

- \* Plant October to March, the earlier the better.

For best results, the following planting instructions are optimal, not always practical in remote sites.

- **Planting instructions for trees:**

- \* Smaller bareroot trees, 1-3 feet tall (available from wholesale nurseries or County conservation districts) are cheaper and grow at a faster rate than larger potted trees. For best survival, choose bareroot “1+1” or “P1” for optimal size and root-to-crown ratio. Consider field-grown “2-0” conifers with easier to spread primary roots (better long-term structural strength), with perhaps lower survival rates. Take care to keep bare roots moist (we use a hard jet of hose-water to ensure wet-sawdust contact on roots, in a bucket with drainage holes, and kept in a shady spot with ice, particularly during warm spells. Dry-cold spells may require wrapping plant stems in wet burlap, or “healing in” the entire plant into wet mulch piles. Plant bareroots as soon as possible.

- \* Dig 2 or 3 holes such that an untouched mound of soil in the center (volcano) will prevent the root crown from sinking too deep into the hole. Make the holes wide and deep enough for the roots to spread out and go down. Put the soil you removed on a tarp and/or in a bucket.

- \* Set the crown of the plant on the mound in the hole (make sure the root crown is at ground level) and spread the roots down and out, the point being that primary roots need spreading for long-term structural stability (potted plants or trees started as “plugs” can be root bound and “floppy”). Avoid “J-roots” that double back, pruning long roots as needed.

- \* Fill the bottom of the hole with a 25% layer of rotting woody debris or wood chips and “mud in” with a 75%soil/25% woodchip mix, diluting with water for a consistency of wet cement, tapping the mud to get rid of air pockets around the wood chips (liquefaction like cement work). Wood in the soil help build soil

structure via mycelium (the fungal body) that supports plant growth, assisting tree survival during summer.

- \* “Mud in” only if the soil has high enough sand content to avoid drowning the roots with clay muck.
- \* Consider adding mycorrhizal root inoculants for better results, and/or fertilizer in late spring (timed to avoid winter nutrient runoff), to compensate for the temporary nitrogen loss caused by wood additions. Compost additions do help, but nutrients may leach over winter. The effectiveness of biochar as an amendment is promising, but the availability and carbon footprint of transport is uncertain.
- \* Add mulch on top of the soil in a “donut” around the tree with at least two five-gallon buckets of wood chips or rotting woody debris, keeping the mulch from contacting the stem of the tree, with an approximate 4” separation.
- \* Well-amended planting holes may only need one or two August waterings the first summer, however, monitor and water weekly to monthly, as needed from mid-May to mid-September depending on weather —saturating to a depth of one foot.
- \* “Terra-forming” (to slow surface runoff) to assist winter rain infiltration may delay soil dehydration and “hydro-phobic” soils in summer. Terra forming may be as simple as a “dish” or berm around new plantings, or more elaborate soil-scaping, rain gardens, or terracing. Avoid terra-forming on slide-prone slopes without qualified advice.
- \* Plastic jugs filled with water and poked with a thumbtack can drip-irrigate deeply while allowing time for the chlorine in tapwater to dissipate, helping preserve beneficial fungi that has its own nutrient/watering capabilities in symbiosis with plant roots.
- \* An emergency summer watering for drought-dormant plants in hydrophobic soil may benefit from a one-time addition of a few drops (per gallon jug) of biodegradable dish soap as a surfactant to help water penetrate, inoculating the root zone of a planting (1-2 cups) so subsequent waterings (broadcast or drip lines) will effectively train roots downward. Dishwater can also be useful to penetrate dry soils.

#### **Step 5: Maintain, monitor and adjust**

- Maintain “sunlight cones.”
  - \* Remove competing plants around each tree to allow light to penetrate, pruning competing vegetation (even natives like salmonberry that will grow back easily) in a two-foot radius up to a height of eight feet above each tree.
  - \* Keep the weeded area around the tree mulched with leaves, wood chips, or woody debris, leaving a four-inch radius around the tree stem mulch-free.
- Replant bare areas from plant mortality to avoid repopulation with weeds, and troubleshoot to see if the area needs more mulch on or *in* soil. Weed re-infestations often stem from a lack of shade conditions, so again, prioritize native *evergreen* trees, shrubs, and groundcovers.

#### **Misc. Notes:**

- Ask your local nursery to stock native plants, or order inexpensive bareroot plants from your local conservation district ([kingcd.org](http://kingcd.org)). These are often available in winter, so consider potting them and watering/nursing over summer for added growth, and planting them in Oct/Nov to take advantage of fall root establishment. Potting your own bareroot plants ensures better root-spread, rather than root-bound nursery plants that are ineffective at holding slopes or staying upright in high winds.
- Boot hygiene: be aware that you and restoration professionals could spread invasive seeds stuck in boot or tire treads. Boot picks, or a screwdrivers and brush should be used upon entry and exit of sites, even between infestations to avoid “connecting the dots.”
- Plant cuttings\*: “Live-stakes” are an excellent source of diverse native shrubs for wildlife: Willows, snowberry, elderberry, Red Osier Dogwood, ninebark, salmonberry, and Indian plum.

- \* Cut 2-4 ft stems (thick ones have more energy reserves) when the shrub is dormant (late Jan/early Feb cuttings avoid drying in winter freezes). Keep moist with ice on wet burlap and plant out asap.
- \* Poke the stems, at an angle, 12+ inches into the soil to maximize stem contact with the rooting zone of the soil, or pound straight down in sandy soil. Stomp soil to seal the soil/cutting interface so developing roots don't dry out.
- For evergreen groundcovers, sword ferns may be divided (look for ferns with separate fiddlehead clusters). Salal or Low Oregon grape have less transplant success.
- Continue to spread woody debris—logs, branches, wood chips —to improve the soil's "fungal food-web," that will nurture new plantings and improve the forest "sponge."
- Plant "detail species" (diverse native herbaceous species) after evergreen "workhorses" establish shade conditions, and after mulch improves soil conducive to more diversity.

**Thank you (!) for making our city more healthy and livable.**