Salvaging Plants for Propagation and Revegetation

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Abstract

Salvaging native plants is the act of rescuing plants from a construction or disturbance site before they are destroyed. We have not found salvage to be a cost effective method for obtaining most of the plants we sell in our nursery or use in our own projects. However, we do sometimes salvage plants, either to obtain plants that are difficult to propagate, to increase the genetic diversity of plants in our nursery, because they are unusual species that we don't have access to otherwise, or to preserve plant genetics on a disturbance site for future replanting. Factors important to consider in salvaging plants include species, size, site access and soil type, whether to use hand or mechanical techniques, time of year, available crew, etc.

Keywords

native plants, environmental restoration, salvage, horticulture

In our nursery in Olympia, WA, where we grow native plants for the restoration and mitigation market, as opposed to the native ornamental landscaping market, salvaging has proven to be cost effective in limited situations. For most plant species that are not difficult to propagate by seed or cutting, salvaging plants has not proven to be competitive. However, salvaging does provide some of our stock. We sometimes salvage plants when we find an ideal situation; easy access, the plants are just the right size, the soil is good, and we need the particular species. More often, we salvage to obtain a species that we can't propagate, to procure an unusual species that we can't find elsewhere, or to expand the genetic diversity of the stock in our nursery. We also occasionally salvage from development sites before construction starts in order to replant those same plants back on site after construction is completed.

Salvaging is the act of rescuing native plants out of the path of destruction. Examples are taking plants from construction sites before the bulldozer arrives, from roadside ditches before they are mowed, from dirt roads before they

are graded, from landscapes before herbicides are applied, or shade loving plants from logging sites before they are clearcut. Taking native plants out of situations where they would otherwise survive is called harvesting and will not be addressed in this paper.

Salvaged plants from the wild do not have the same kind of root system as nursery grown bareroot or balled and burlapped plants. In a nursery, such plants are root pruned to encourage a dense mass of fine, fibrous roots close to the plant; which can take up water and nutrients. A salvaged plant usually has roots that are more spread out (never having been root pruned); most of the fine roots will be lost during the digging process. Rocks and other obstructions in native soil also disrupt and disperse the roots. So a salvaged plant undergoes more stress from transplanting than a nursery grown plant does. Mortality will be higher and many plants need a year just to recover from the stress of salvaging, before they start to grow.

Table 1 lists Pacific Northwest coastal plants that are easier or harder to salvage. The list is not exhaustive, just species that we, or people we know, have had experience with.

Sometimes it is possible to salvage salal (*Gaultheria shallon*) and huckleberry (*Vaccinium ovatum* and *V. parvifolium*) off old stumps or rotting logs by taking a piece of wood with the plant, although these species are tricky to salvage and require delicate handling. In general, Ericaceae has a reputation for being difficult to salvage.

Salvaging can be done by hand or machine. Hand salvaging is more common and is simple. The ideal hand salvage situation is:

- the plant is from 6 inches to 3 feet tall, healthy, and not crowded by other plants;
- the plant is dormant and fully hydrated;
- the weather is cool, cloudy, and wet;
- the soil is not too heavy to dig nor too loose to hold a rootball together;
- the tools used in digging are clean and very sharp;
- the salvager is experienced and uses a flat bladed shovel to get as large a root ball as possible, roots are cut when necessary with a sharp tool but never hacked at or torn;
- the plant is transported in a wet burlap bag, with wet leaves or grass packed around the rootball;
- the plant is moved immediately to its installation site or to a nursery where it will get care;
- the plants are irrigated, if needed, during their first dry season.

The above list of conditions describes the ideal situation, but all these rules can be broken to some degree or other. However, they can't all be broken at the same time. For example, we have salvaged on hot sunny days in midsummer, from sandy soil where the plants came up bareroot, but then the plants went straight to the nursery, where they were potted up into good soil, thoroughly watered, kept in the shade and babied for a while.

Be careful when salvaging plants that you are not taking non-native pest species with you. These pest species can be invasive weeds, insects, or diseases. Inspect the plant and the surroundings to insure that the material is healthy and pest free. If necessary, take the plant as a bareroot and even rinse the roots off to be sure that you are not taking unwanted species along with you. And don't bother to salvage an unhealthy plant, they rarely survive the shock of transplanting.

A useful tool for carrying salvaged plants is the "ferny gurney", so named because it was first used to carry sword ferns out of the woods on a road-widening project in the Olympic mountains. A ferny gurney is a stretcher made from burlap bags and poles, that two people can carry relatively easily through terrain too rough for a wheelbarrow. Burlap bags can be obtained free or cheaply from feed stores and coffee roasters.

Storing plants in capillary beds is an easy way to keep salvaged plants onsite until replanting. Developed by Marianne Edain and Steve Erickson at Frosty Hollow Ecological Restoration from an old 1800's nursery design, capillary beds serve as a reservoir of water that allows plants to wick up the moisture they need. Dig a pit or construct a rectangle of boards and line it with heavy plastic. Fill the bed with six to eight inches of sandy soil, tamp and level, and fill the bed with water. A hole in one corner of the plastic

Table 1. Pacific Northwest coastal native plants that are easier or harder to salvage

Trees and Shrubs (easier to salvage)			
Acer circinatum	Vine maple	*Prunus emarginata*	Bitter cherry
Acer macrophyllum	Big-leaf maple	*Pseudotsuga menziesii*	Douglas-fir
Alnus rubra	Red alder	*Pyrus fusca*	Crabapple
Amelanchier alnifolia	Serviceberry	*Rhamnus purshiana*	Cascara
Cornus sericea	Red-osier dogwood	*Rhododendron macrophyllum*	Pacific rhododendron
Corylus cornuta	Hazelnut	*Ribes sanguineum*	Red-flowering currant
Crataegus douglasii	Black hawthorn	*Ribes divaricatum*	Straggly gooseberry
Fraxinus latifolia	Oregon ash	*Rosa gymnocarpa*	Bald-hip rose
Holodiscus discolor	Oceanspray	*Rosa nutkana*	Nootka rose
Lonicera involucrata	Black twinberry	*Rosa pisocarpa*	Swamp rose
Oemleria cerasiformis	Indian plum	*Rubus parviflorus*	Thimbleberry
Philadelphus lewisii	Mock orange	*Rubus spectabilis*	Salmonberry
Physocarpus capitatus	Ninebark	*Symphoricarpos albus*	Snowberry
Picea sitchensis	Sitka spruce	*Thuja plicata*	Western red cedar
Polystichum munitum	Sword fern	*Tsuga heterophylla*	Hemlock
Groundcovers (easier to salvage)			
Achlys triphylla	Vanilla leaf	*Maianthemum dilatatum*	False lily-of-the-valley
Asarum caudatum	Wild ginger	*Oxalis oregona*	Wood sorrel
Aruncus sylvester	Goatsbeard	*Tiarella trifoliata*	Foamflower
Athyrium filix-femina	Lady fern	*Tolmeia menziesii*	Piggy-back plant
Dicentra formosa	Bleeding-heart	*Trientalis latifolia*	Starflower
Fragaria chiloensis	Coastal strawberry	*Trillium ovatum*	Western trillium
Fragaria vesca	Wild strawberry	*Vancouveria hexandra*	Inside-out flower
Fragaria virginiana	Woods strawberry	*Viola langsdorfii*	Alaska violet
Linnaea borealis	Twinflower	*Viola sempervirens*	Yellow violet
Emergents (easier to salvage)			
Carex spp.	Sedges	*Oenanthe sarmentosa*	Water parsley
Eleocharis spp.	Spikerushes	*Scirpus* spp.	Bulrushes
Juncus spp.	Rushes		
Pacific Northwest coastal plants that are harder to salvage			
Arbutus menziesii	Madrone	*Gaultheria shallon*	Salal
Berberis aquifolium	Tall Oregon grape	*Quercus garryana*	Garry oak
Berberis nervosa	Low Oregon grape	*Vaccinium parvifolium*	Red huckleberry

(placed level with the top of the soil bed) will allow extra water to drain. Pack the plants, in pots, plugs, or bareroot, into the bed tightly together and fill in the spaces with more soil, then water again. A capillary bed may only have to be watered one to three times in a summer, greatly simplifying care in more remote situations.

When salvaging plants out of trail corridors in sub-alpine meadows, we had the best survival rate by taking pieces of sod and plants that were a minimum of one foot in diameter, and then replanting the entire piece. The plants on the outside edge of the piece died, but the plants in the center, insulated as they were by the plants and soil around them, survived, and then eventually spread outward from the center.

We have used that lesson to successfully salvage large pieces of native soil and plants using construction equipment. On one project, we used a small backhoe (Case 580) to dig up pieces of soil with small wetland shrubs and emergents. The pieces were placed onto pallets covered with plastic. When the pallet was full, the plants were watered and then the plastic was wrapped up and around the outside of the pieces. A forklift on the backhoe lifted the pallets into the shade of nearby trees. A week later, when the wetland construction was completed, the backhoe placed the pallets near the planting areas. The backhoe dug planting holes and people placed the salvaged pieces in the holes, completed the planting, and watered the plants. The survival rate was excellent. Salvaging with heavy equipment requires a careful equipment operator with a thorough understanding of the salvage procedures and purpose. With a good operator, heavy equipment can perform very effective salvage, because the bucket of a hoe or excavator can remove much larger rootballs than a shovel can.

The best time of year to salvage is when the plants are dormant, the more dormant the better. In western Washington where I live, that would be late November through March, when we also usually have ideal salvaging weather, cool, cloudy, and wet. In drier climates, the dormant season might be the middle of summer, when you would have to guard against the damaging effects of the sun on the exposed roots of the plants. For plants that die back each year, you may need to mark the plant locations during the growing season so you can find them to salvage when dormant. It is also possible to salvage when the plants are not dormant, but you have to be more careful and you will probably have higher mortality. If you salvage at the dry time of year, water the plants thoroughly ahead of time, so they are fully hydrated before they are dug

You can salvage anywhere construction is taking place and native plants are in the path of destruction. It's important to get permission from the landowner, and coordinate with the construction company when necessary. Your city or county planning departments are the best places to get information on where construction will be taking place in your area. Flat ground with good vehicle access makes the work easier. The ideal soil is a sandy clay loam with few rocks, not hard to dig, and with enough clay for the rootball to stay together. Heavy clay soil is hard to dig and tears roots easily. Very sandy or very rocky soil tends to give you a bareroot plant instead of a rootball, although many bareroot plants can survive the salvaging process quite well if care is taken.

Do not salvage on unstable slopes. It's hard to get a good rootball on a steep slope anyway, and the activity of salvaging combined with the loss of plants can cause erosion, or worse. Again, taking native plants from undisturbed sites is harvesting, not salvaging, and has ethical considerations that are not being addressed here.

Another critical piece of salvage success is post-salvage care. Salvaging is very stressful to plants, even under ideal conditions, and good follow-up care is critical to plant survival. If plants are cared for in a nursery following salvaging, they can be potted into containers, planted in the field, or heeled into a bed for storage. Plants can also be moved directly from the salvage site to the recipient site and planted into their final location. In general, plants will benefit from water, shade, pest control, and low doses of a balanced fertilizer. Some practitioners have found solutions of vitamin B1 to be helpful to plants recovering from transplant shock.

Most of the salvaging I know about happens in volunteer groups, who use it as a pathway for environmental education, as well as a source of low-cost plants for community restoration and landscaping

projects. The King County, WA native plant salvage project uses volunteers to salvage about 4000 plants per year and finds it cost-effective. Landscape contractors sometimes salvage plants as part of environmental restoration projects, where plants are salvaged from one part of the site and replanted in another location. I don't know of many nurseries that do much salvage, and none that I know of get the bulk of their plant materials in this fashion.

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Resources

For more information on capillary beds, contact Frosty Hollow Ecological Restoration at (360) 579-2332 or wean@whidbey.net

A publication called *Grow Your Own Native Landscape: A Guide to Identifying, Propagating, and Landscaping with Western Washington Native Plants*, published by the Washington State University Cooperative Extension, Thurston County, has more detailed information on salvaging plants. The publication comes from the Native Plant Salvage Project, a grant funded cooperative project that uses plant salvage and replanting as a vehicle for environmental education. The project may be reached at (360) 704-7777.