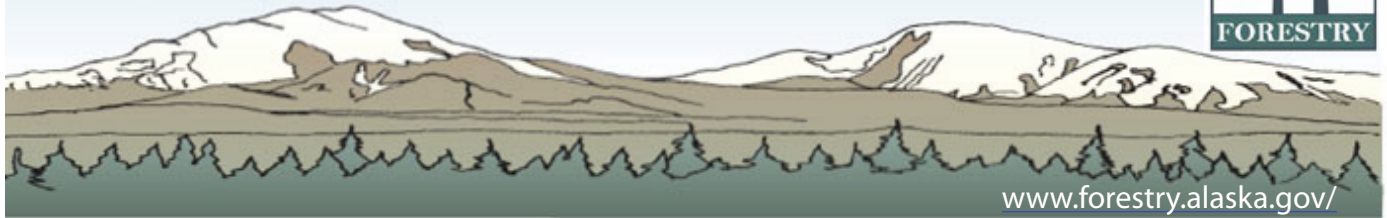
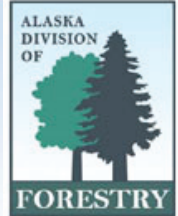


# TRANSPLANTING TREES



**Whether moving a tree from one place in your yard to another or planting native trees and shrubs into a new landscape, its survival and ability to thrive will depend on how you dig and replant it.**

## GET PERMISSION FIRST

Always get permission from the landowner before removing a tree. If you plan to harvest trees or other plants from state land, contact the Department of Natural Resources Public Information Center to learn where you can harvest and if there are any restrictions or procedures to follow. In Anchorage, call 907-269-8400, in Fairbanks, 907-451-2705, and in Juneau 907-465-3400. You can also visit [www.dnr.state.ak.us/pic/](http://www.dnr.state.ak.us/pic/). If you plan to harvest trees from federal land in south central and south east Alaska, contact the Bureau of Land Management at 907-271-5690, in the interior and northern regions, call 907-474-2200.

## CHOOSE THE RIGHT TREE

When it comes to planting a tree, there are a few things to keep in mind, the most important being the mature size of the tree. Will there be enough room for the tree to grow without encroaching on overhead or underground utilities, making contact with buildings, or interfering with pedestrian and vehicular traffic?

Selecting the right tree to transplant is the next important decision. It is best to find a tree that is growing in the open. Avoid harvesting trees growing in a dense forest because you may damage the roots of other trees in the vicinity and young trees growing in these conditions are often tall, spindly, have no trunk taper (which gives the trunk strength), and most of their foliage is concentrated at the top of the tree. When transplanted into a landscape, these trees are unattractive, often bend over, and are much more prone to breaking under the weight of snow or wind than stronger, open-grown trees.

Pick a tree that has one main trunk from the ground all the way to the top of the tree and has branches evenly

distributed throughout the crown. Look for trees that have branches attached to the trunk with angles between 45 and 90 degrees from vertical. Narrow angles between a branch and trunk may result in splitting, cracks, or trunk damage as the tree grows. Don't choose trees with wounds on the trunk or branches or that have signs of insects or disease.

## HARVEST THE TREE

It is imperative that you get as much of the root system as you can possibly move and keep intact. Trees depend on their roots for support, nutrient and water uptake, and energy storage. Most of a tree's root system grows in the top 18 inches of soil, where almost all of the oxygen, water, and nutrients are, so you will be digging a hole that is much wider than it is deep.

If you are working with hand tools, you should not consider moving a tree that is larger than 1 ½ to 1 ¾ inches in caliper (the diameter of the trunk six inches above ground). To help you determine the size of a root ball to dig, a good rule of thumb is to start digging outside of the drip line of the tree (an imaginary circle on the ground encompassing the tree starting at the outermost tips of the branches), or at least 10 inches from the trunk for each inch of diameter, whichever is greater. For example, a 1 ½-inch tree should have a root ball at least 30 inches in diameter.

The process of digging and transplanting puts a lot of stress on the tree, commonly called transplant shock. Trees can be transplanted anytime of the year, but to minimize the stress of transplanting, it is best to dig the tree in the dormant season after the tree has lost its leaves or in the early spring before bud break. By transplanting in the dormant period, you are giving the tree ample time to start regaining a portion of its

lost root system. Even though the above-ground portion of the tree appears dormant, root activity can occur as long as the ground is not frozen. For fall transplants, the sooner that you can transplant the tree after it has lost its leaves, the more time it will have to start replacing lost roots and taking up water before the ground freezes.

A nursery spade (preferred tool) or digging shovel is the best choice, but whatever tool you use, make sure that it is sharp. Start digging as far outside of the drip line as possible or the appropriate distance as described previously. Be careful not to break or damage any of the roots that will be part of the transplanted root ball. Make vertical cuts completely around the tree to cleanly cut the roots before beginning to lift the root ball.

Dig a trench about a foot outside of the first circle, removing the soil. This will allow room to dig beneath the tree. Carefully excavate underneath the tree with a shovel or spade. The goal is to cut the roots so that a solid ball of soil and roots can be lifted. Gently rock the tree to see if all the roots are severed, being careful to not break roots from the trunk. Once the tree is free, slide a tarp or piece of plywood underneath the tree to aid in transporting it to the planting site.

## TRANSPORT THE TREE TO ITS NEW HOME

It is extremely important to keep the root system from drying out. If the fine absorbing roots become dry, they will die and cause the tree to die as well. Wrap the root ball in the tarp or plastic bag, or heel the tree into woodchips or organic mulch if it is to remain above ground longer than an hour.

If you will be transporting the tree a long distance from where you dug it, use a covered trailer or pickup to prevent the foliage and roots from drying out in the wind. This is especially important if you will be traveling at highway speeds. If this is not possible, wrap the tree in burlap or a tarp, making sure that all the foliage and roots are protected from the wind.

## REPLANT

Before digging the hole, measure the depth of the root ball so that the planting hole will be no deeper than the harvested tree's root system. It will likely be quite shallow. You can use a shovel handle to measure

## Plant Your Tree Properly

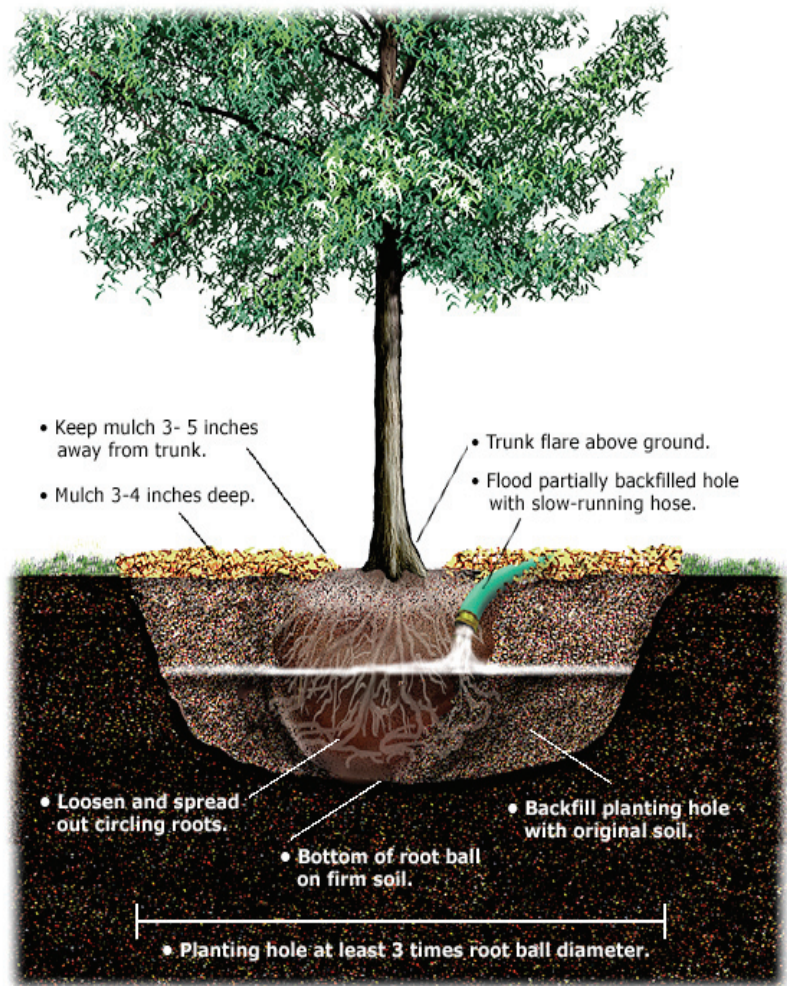


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the depth of the root ball and planting hole. Prepare the site by digging a shallow, saucer shaped hole that is three to five times the diameter of the root ball you harvested. Place the soil on a tarp to aid in the cleanup and backfilling process. Digging a wide hole loosens the soil and makes it easier for the roots to spread into the surrounding soil. The bottom of the hole should be firm so that the root ball does not settle.

NOTE: If you are planting in native, undisturbed forest soil, dig the smallest hole needed to install the root-ball, to minimize damage to existing root systems. The new roots will be able to penetrate the forest soil much easier since these soils are not as compacted as soils typically found in lawns.

Before placing the tree into its new home, use a sharp pair of hand pruners to make clean cuts on any large exposed roots. This will aid in the re-growth of new fine roots. Gently slide the tree off the tarp or plywood and into the hole. Check again to make sure that the soil on the root system matches the finished grade of the new planting site and make any adjustments necessary.

The trunk flare should be clearly above grade with no additional soil added to the top of the root ball above the level it was before digging. Step back from the tree to see if it is straight and oriented the way you want it to be.

Backfill the hole using the soil removed. After about a quarter to a third of the soil is added, flood the planting hole with water and add more soil. Alternate between soil and water until the hole is completely filled with a thick slurry of water and soil. As you fill the hole, use a blunt ended object such as a shovel handle to agitate the slurry to remove any air pockets that may have formed when backfilling.

When you finish backfilling, add a three- to four-inch thick ring of organic mulch as wide as possible around the tree. Keep it at least six inches away from the trunk to keep moisture away from it. Organic mulch can ease transplant shock by maintaining moisture levels and moderating temperature fluctuations in the soil. It also keeps string trimmers and mowers away from the trunk of the tree. If the tree is planted in a forested area in undisturbed soil, cover the bare soil with the forest litter found in the surrounding area.

In windy locations, or with larger trees, it may be necessary to stake the tree to help it remain upright while it establishes its new root system. If staking is necessary, use three 2x2s or similar material for the stakes and a wide material such as Arbor Tape or webbing. Rope, twine, and wire can create pressure points and damage the trunk even if covered by a rubber hose, so it is best not to use them.

When tying the knot around the trunk, make sure that it is loose and will not constrict the trunk as it grows. A loose bowline works well as it will not cinch up as the tree moves. When tying to the stake, leave a small amount of slack. The roots must remain immobile, while the trunk is able to sway in the wind. This movement will stimulate root growth and increase trunk taper. It is important to remove the stakes and ties after one year so they don't girdle the stem and potentially kill the tree.

## **CARE FOR YOUR TREE AFTER PLANTING**

The most important thing that you can do to improve the chances your tree will survive is to water it. It generally takes a tree one year per inch diameter to establish itself and regain the portion of its root system lost during transplanting. Give the tree a thorough, deep

watering once a week, more often in drier periods, until the ground freezes.

Make sure that you are giving the tree enough water by checking the soil about a foot down. The soil should be moist but not saturated. Adjust your watering regime accordingly. To be effective, water should be applied directly to the area where the roots are located. A soaker hose works well to target this area but remember to adjust its position outward each year to compensate for new root growth. Watering the surrounding mulched area may encourage weeds to grow and compete with the tree for water and nutrients.

Fertilizer is generally not needed and should not be applied at planting. If you covered the root system with an organic mulch, it will break down, adding organic matter and nutrients to the soil, and encouraging helpful microbial activity in the soil.

If you are transplanting an evergreen or deciduous tree in leaf, consider applying an anti-desiccant such as Wilt Pruf, which coats the plant and prevents water loss. Since evergreens do not lose their needles and continue to transpire water throughout the winter, they may suffer needle loss and damage during very cold and windy winters. This is especially true for less hardy species. Wrapping the tree in burlap or creating a burlap barrier around the trees can also help protect it from winter damage.

## **TRANSPLANTING SEEDLINGS**

Seedlings are a cost effective solution if your goal is to plant a lot of trees on your property. They are easy to plant and if properly cared for, they grow rapidly. Contact your local Division of Forestry, USDA Forest Service, or UAF Cooperative Extension Service office for assistance locating a source of seedlings. For tips on planting and caring for seedlings, contact your local Division of Forestry office and request a copy of the fact sheet "Planting and Caring for a Tree Seedling."

Another way to obtain seedlings is to dig them from the wild. Remember to always get permission before harvesting any plant from property other than your own. Good places to look for seedlings are in the open areas along the edge of a forest such as in utility rights-of-way where large trees are unwanted, or along roadside shoulders and ditches. Be extremely careful when working along roadsides and wear highly visible and reflective attire.

When digging seedlings from the wild, the techniques for digging, transporting, and replanting are the same as those described previously for larger trees, except

on a smaller scale. Get as much of the root system as possible and don't let the soil and roots dry out.

Follow the same procedures for planting by digging a hole that is wide and shallow. Spread the roots out away from the trunk and be sure that all of the trunk remains above grade, with only the roots under soil. Water them well after planting and then weekly until the ground freezes. If you are unable to water regularly after planting, it is better to plant late in the summer when there is more rainfall. To help keep grasses and weeds down and retain soil moisture, add a three to four inch thick layer of organic mulch around each seedling, keeping it two to three inches from the trunk.

If the seedlings are shorter than one foot tall, you may want to temporarily plant them in large pots for a year before transplanting them onto your property. This will allow them to grow taller and establish a better root system before they are planted into the landscape. It is best to leave them outside in a spot where they will be covered by snow over the winter and to plant within the next year so that they won't develop circling roots and become pot bound.

Since seedlings are small, it may help to use stakes or fencing to protect them from people, lawn mowers, string trimmers, and animals. As with larger trees, fertilizer is generally not needed and should never be applied at planting. The best thing that you can do to increase seedling survival is to water them regularly and to keep the surrounding grass and weeds down to reduce competition for light and nutrients.

## SOME FINAL THOUGHTS

It was once thought that when transplanting trees you should reduce the crown size and number of leaves to compensate for the root loss by pruning. Research now shows that this is not a good practice and causes more harm than good, therefore, for the first year or two after planting, limit pruning to removing broken and dead branches. The leaves help the tree regain its lost roots, so it is best to retain as much foliage as possible.

Remember to water your trees once a week, and after the first year or two, train them to grow into a strong and safe tree by pruning as needed. There is a wealth of information available on training young trees for good structure and form. Visit your local Division of Forestry or Cooperative Extension Service office or website. If you are unsure how to properly prune your trees, it is best to hire a certified arborist.

For more information on tree care, transplanting trees, and pruning, visit the Alaska Community Forestry Program's website at [www.forestry.alaska.gov/community/](http://www.forestry.alaska.gov/community/) or [www.treesaregood.com](http://www.treesaregood.com).

For information on developing a plan to manage private forest land, contact the division's Forest Stewardship Program at 907-761-6309 or [www.forestry.alaska.gov/stewardship/](http://www.forestry.alaska.gov/stewardship/).

*The use of trade names in this publication does not imply endorsement by the Alaska Division of Forestry.*

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