Coastal Plant Care

The Truth About Roots

Nearly every day I get asked the same questions.

“Will these roots damage my foundation?”

“Can I shave these roots down? My lawnmower keeps hitting them?”

“My tree roots are damaging my driveway and patio. Should I cut the tree down?”

“That tree’s roots are on the surface, will it fall over?”

“The roots are getting into my septic and plumbing. What can I do?”

Well, as with most things related to trees the answer is, “it depends”. For us to fully understand what our options are in every situation we must first establish the truth about roots. Let’s examine some common assumptions about roots:

1) *As tree roots grow, they will crack my foundation*. **FALSE**. A tree’s roots begin as delicate thin fibers. As they elongate, they take the path of least resistance in the soil, finding pore space to occupy where water and nutrients are readily available. If you can imagine trying to crack your home’s foundation with a few strands of your hair, you can imagine the difficulty a tree’s root has performing the same task. As the root encounters an impervious surface such as a foundation, it will take a left or right, often running along the length of a foundation or redirecting in the opposite direction. With this said, if your foundation has existing cracks or abnormalities, a root can occupy that space and exasperate any pre-existing defects. The answer to “will these roots damage my foundation?” is always followed with “how is your foundation?”.

2) *Roots are supposed to grow deep and the shallower the root system, the more likely it is to uproot.* **FALSE.** The depth of a tree’s root depends on two factors, soil type and species of tree. The depth of roots is most associated with the type of soil it grows in. Clay soils, which consists of finer soil particles, are more dense than sandy soils. Subsequently, oxygen availability below 12-24” in clay soils is severely reduced. Roots need oxygen to function properly and is why you often see a tree’s roots close to the soil’s surface. Some species’ roots are more sensitive to this need for oxygen than others. For example, Maples tends to maintain large amounts of surface roots. Homeowners who cover these roots with topsoil to grow turf often find the roots reappear a few years after the soil addition. This is no accident, its simply the tree’s need for oxygen which is more readily available closer to the soil surface. A tree’s stability has more to do with overall root spread than root depth. Mature tree’s roots can often be 2-3 times the height of the tree. Therefore, a 50’ tall tree can often have roots extending from the base of the tree 100-150’ in all directions.

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Please keep in mind the sensitivity of your tree's root system. Soil addition or loss of 2-3" can be enough to kill a tree. Soil compaction from construction activity is almost always deadly 1-5 years after the compaction if not mitigated. Overwatering, most commonly associated with automatic irrigation systems, creates an anaerobic environment and this lack of oxygen can be just as deadly as a drought, severe root loss, or a root bound disease.

3) *My tree's roots are lifting and cracking my driveway and patio.* **TRUE.** Surface laid structures such as patios, driveways, sidewalks, roadways, and hardscape features are prone to injury from roots. Small roots will grow beneath these structures and as the root diameter grows over time, they will push the soil and any surface laid structure upward. This process usually takes many years although this varies between species. This is particularly problematic in communities with large amounts of shade trees near sidewalks or driveways as the repair costs can be prohibitive. There are many solutions to this problem, the first of which is proper planning. Installing vertical root barriers to limit root growth beneath these structures is a prudent first step. In many cases, you can perform root pruning along the length of a driveway or sidewalk prior to injury occurring. The general rule of thumb for root pruning is as follows:

   Never prune roots within 3-5 times the diameter of the trunk. For instance, if we have a 12" diameter tree (about the size of telephone pole), you must never prune any roots within 3-5' of the trunk of the tree.

   When you prune roots within this radius, you are risking tree failure as the stability of the tree will be greatly compromised. In addition, any time you prune roots, you are eliminating a tool used for water and nutrient uptake and risk tree decline from lack of water or nutrients accordingly. Ideally, you would only sever roots outside of the dripline of the tree. This is particularly true for older trees as much like humans, older specimens are not very tolerant of change.

4) *Tree roots are going to grow into my plumbing.* **MAYBE.** As with foundations, the first thing to establish is the health of your plumbing system. Roots do not have the ability to magically enter a healthy PVC pipe. They will however, be able to enter and further compromise a pipe with a pre-existing defect. This is particularly true in septic drain fields where pipes are designed with openings. Tree roots can enter these openings, continue to grow in these nutrient rich environments, and eventually inhibit these plumbing systems to function properly. It is critical to identify the boundaries of your system in advance of planting any trees or shrubs and avoid installing landscaping in adjacent areas. As with surface laid structures, you can prune roots along this boundary or install vertically laid root barriers to further prevent root intrusion should trees already exist nearby.

A tree's root system is critical to tree stability and health. Despite their critical role for the tree, they often pose a perceived nuisance in our gardens and around our homes. I can tell you from experience there are exceptions to every rule when discussing roots. However, these basic principles are accurate in most every landscape. Keep your tree's roots happy with

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plenty of quality organic matter, slow release nutrients, eliminate any risk of soil compaction, and always do your best to limit any disturbance to the root system. Happy gardening!

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