



Wrongs Done to Trees

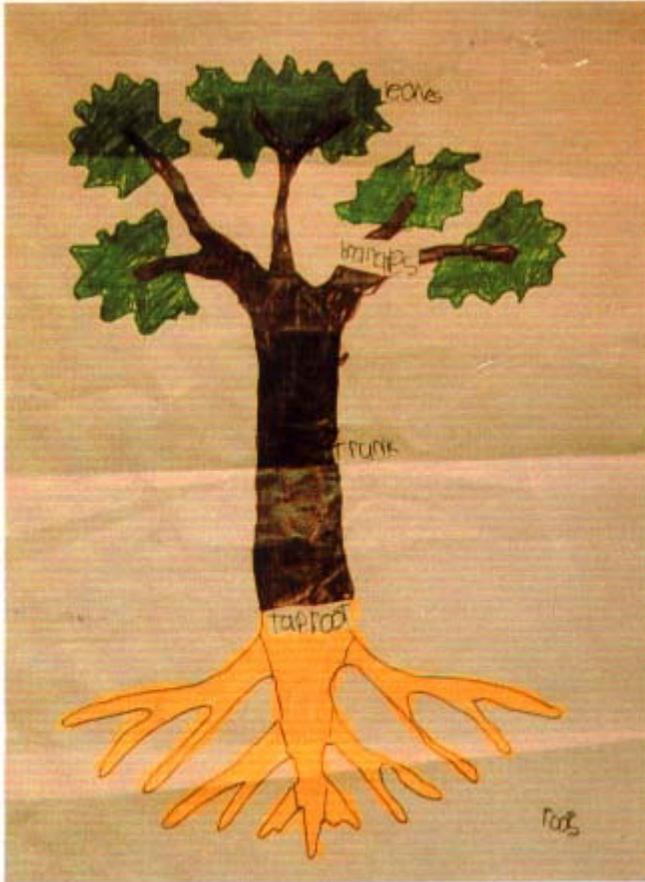
by Cass Turnbull
(from Pacific Horticulture magazine)

The wrongs done to trees, wrongs of every sort, are done in the darkest of ignorance and unbelief, for when the light comes, the heart of the people is always right. - John Muir

In 1984 the Tree People of Los Angeles preformed the minor miracle of inspiring their city to plant over a million trees in honor of the Olympic Games that year. Not long after, growing concern over the effects of global warming helped to touch off a renaissance of environmental awareness and, with it, a deepening respect and appreciation for the benefits of trees both in their native habitats and in the "heat islands" of our cities. The American Forestry Association (AFA) has sponsored Global Releaf, a project that expects to plant 100 million trees by 1992. The U.S. Congress and the president recently inaugurated an America the Beautiful campaign, which includes \$175 million to promote reforestation of the nation's cities. Tree planting has become the thing to do.

But the fate of these millions of newly planted trees is less promising. According to the AFA, a tree with an average lifespan in the wild of 150 years can be expected to live about thirty years in the suburbs and an appallingly brief seven years in the heart of a populous urban area. Three city street trees are now being removed for every one planted. Less than a quarter of our cities have an arborist on their payroll, and most devote less than one half of one percent of their budgets to tree maintenance.

It is sobering to realize that the high mortality rate of urban trees is not due primarily to insects or disease. The number one pest problem is *Homo sapiens*. Pollution, vandalism, and careless motorists take their toll, but most of the damage done to trees is a result of widespread misunderstanding of their basic needs and lack of attention to their selection and care. The most common ways in which trees are killed or seriously harmed include damage or stress in the root zone, mechanical injury to the trunk, improper siting, too much or too little watering, and careless or incorrect pruning.



Child's drawing represents the impression that a tree's roots are a compact mass mirroring its branches in extent. In fact, the roots of trees are often found well beyond the area of the canopy. Author's photograph.

Root Damage

Trees are commonly pictured as having the shape of a barbell, with a deep, carrot-like tap root and an overall root zone that is a mirror image of the crown. In reality, trees are shaped more like a goblet sitting on a plate. Most of the roots, both anchoring and absorbing, generally are in the top eighteen inches of soil, and they extend far beyond the dripline, often to a distance three times the height of the tree above ground.

Insensitivity to the location and functions of tree roots accounts for the most common killer of urban trees: construction damage. Roots are cut off when underground utilities are laid or they are smothered with fill dirt (as little as two or three inches depth can kill) or by soil compaction from heavy equipment and materials stored in the root zone. Raising or lowering the water table also

can result in the inadvertent death of trees, as can the use of soil sterilants or herbicides whose labels warn only against use "within the dripline."

City workers in Portland, Oregon, made headlines a couple of years ago when they severed the roots of six towering elms while repairing curbs. Although work was stopped when the damage was discovered by the city arborist, five of the trees, over eighty years old and a hundred feet tall, had to be cut down to prevent them from blowing over. The city workers undoubtedly believed that most of the trees' roots were somewhere else, deep beneath the surface.

Trunk Injury

Of the harm done to trees, mechanical injury to the trunk is certainly one of the top causes of premature death. The most vulnerable part of a tree is like a thin sheath just beneath the bark, and it is easily damaged. Unlike animals, which react unmistakably, trees often show no obvious immediate reaction to injury. But they do respond, first by trying to seal off the damaged areas and then by attempting to "outgrow" them. People mistakenly interpret this survival response as an indication that no real damage has been done. But

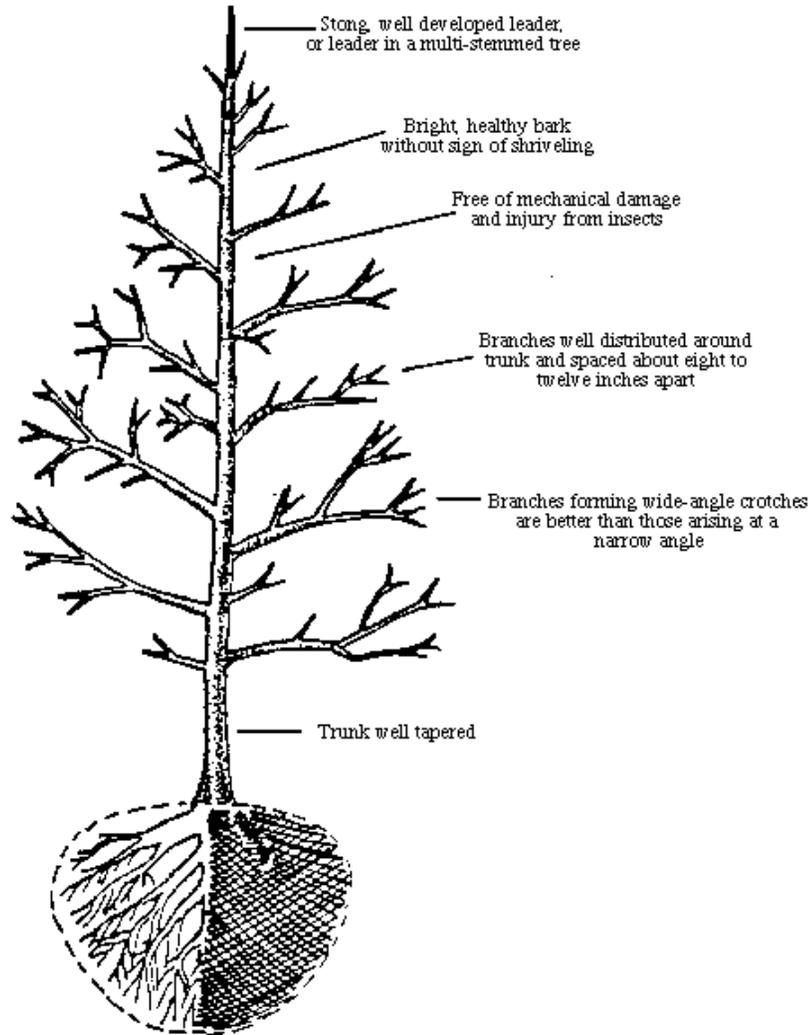
trees die in slow motion, usually from a series of assaults. By the time a damaged tree is in obvious decline, it often has contracted secondary diseases such as root rots. When such trees blow over, the root rot, the storm, or the size of the tree gets the blame; the real source of the problem has long since been forgotten.

Common practices that result in trunk injury include the careless use of string-line trimmers and lawn mowers; leaving tree stakes to become embedded in expanding trunks; ties that girdle; attaching signs to trees; tree service workers using "gaffs" on their boots; and failure to protect tree hunks from car bumpers and oversized trucks.

On a recent visit to a city park in Ashland, Oregon, with several professional arborists, I was gratified to see several large specimen trees and quite a few uncommon ones. Unfortunately, several years earlier someone had attached outdoor lighting to some of the oldest, grandest trees. The lights no longer worked, but the power lines were still stapled to the trunks. We marveled at one enormous ash whose trunk had almost entirely engulfed a cable. At the entrance wound was the telltale mycelial fan (a white sheet), indicating the presence of the fatal fungus *armillaria*. The tree must now be considered a hazard.

Wrong Tree, Wrong Place

A great many trees are doomed by improper siting from the day they are planted. Most people choose a tree for its aesthetic appeal, with little thought given to its intended location or its cultural requirements. Street trees and trees in high traffic areas such as parking lots need especially careful selection because of the narrow strips in which they are often planted, the proximity of sidewalks, streets, and power lines, and the human activity associated with the presence of cars and pedestrians. Street tree lists, which are prepared by many cities, attempt to exclude trees with reputations for dropping large limbs, bearing messy fruits or pods, heaving asphalt or concrete paving, or growing so large as to interfere with visibility or with overhead wires or structures.

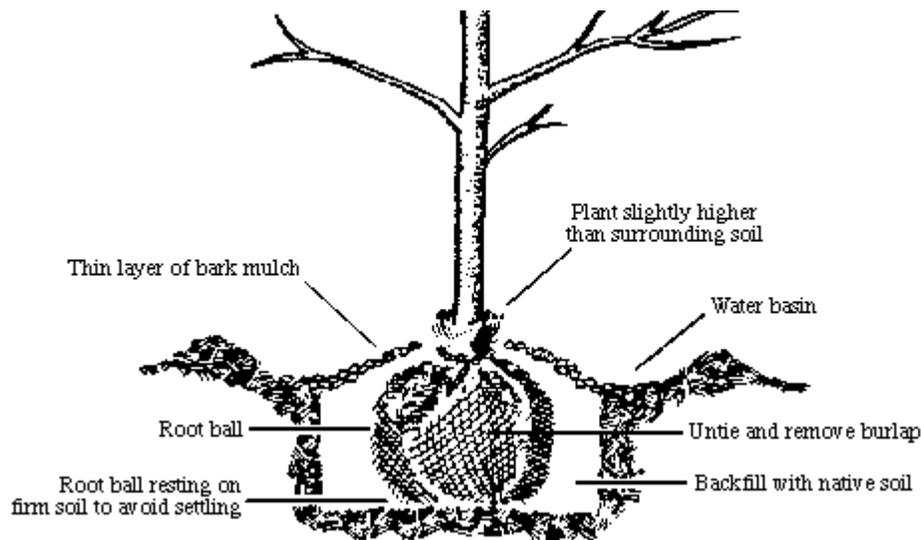


Buying a tree: Balled and burlapped trees should have a firm soil ball, with burlap securely tied at the trunk. Carry balled and burlapped trees by the soil ball, not by the trunk, stem, or branches.

Trees inappropriately planted along streets or in high traffic areas are routinely mutilated in a futile attempt to mediate the conflict with adjacent human uses. Roots are cut as sidewalks are repaired, and limbs are topped or drop-crotched to ward off interference with power lines. But these are only stop-gap measures, and they inflict damage to the tree that is often fatal. A much better approach is to avoid the conflict in the first place by undergrounding of utilities, offset or alternate siting of large trees, or the planting of lower-growing trees. I have heard people rationalize these problems, saying that by the time a tree gets too big they will be long gone, but we should all take care not to build future problems into the landscape. We owe this much to posterity as well as to the tree.

Improper Watering

Trees need a lot more water than is generally believed, especially in the first year or two after planting. Fifteen minutes with a sprinkler is not enough; a long, slow trickle with a hose moved periodically over several hours is needed to soak the root zone. With new trees in dry weather, a good soaking every third day to every other week is a general range. Deep watering encourages the formation of deeper, more drought-resistant roots.



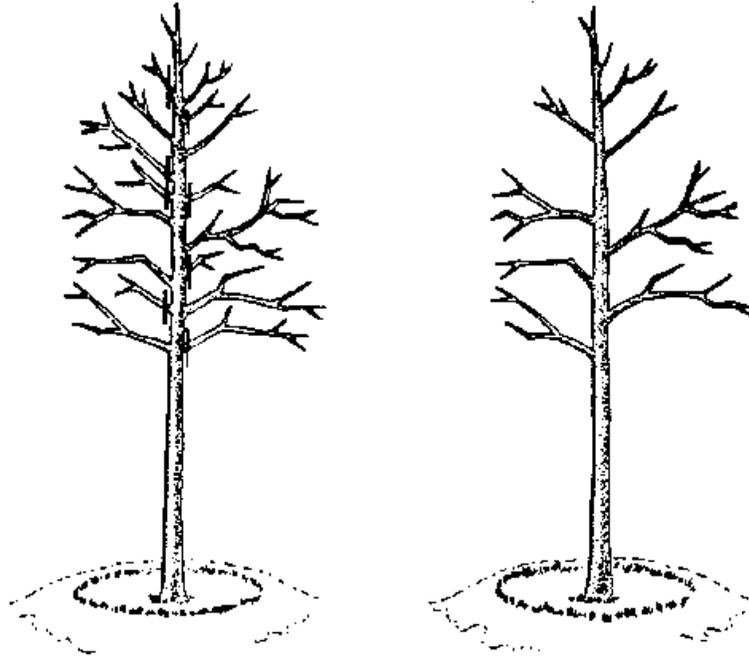
Prepare a planting hole at least twice the diameter of the root ball and just deep enough for the root ball to rest on firm soil with the crown an inch higher than surrounding soil level. Backfill with native soil. Form a basin around the tree to contain water, and cover entire root zone of tree with an inch or so of bark mulch or other coarse organic material.

Trees also cannot survive for long without good drainage. If it takes more than overnight for a one-foot-deep hole to drain water (one inch per hour), the soil is unsuited for most trees. Adding rocks to the bottom of the hole or amendments to the backfill will not solve the problem. Occasionally water can be drawn away from the tree by installing drain pipes, but choosing a different site, or a water-loving tree, is often the most realistic solution.

Improper Pruning

This cause of premature tree death is in some ways the hardest to understand. Tree topping and other forms of improper pruning not only shorten the life of the tree but can reliably be expected to backfire in one of several ways. Proper pruning enhances the health, beauty, safety, and value of a tree. Such work is cost-effective because it requires less pruning to be done in successive years. Conversely, improper pruning may devalue a tree, create hazards by rotting, and stimulate rapid regrowth of ugly, unruly watersprouts. Ironically, many trees are topped because people think it will

be cheaper, but once a tree is headed back this way the costly maintenance has only just begun. Some cities regularly pay crews to top all street trees, not just those under power lines, surely an appalling waste of taxpayer dollars.



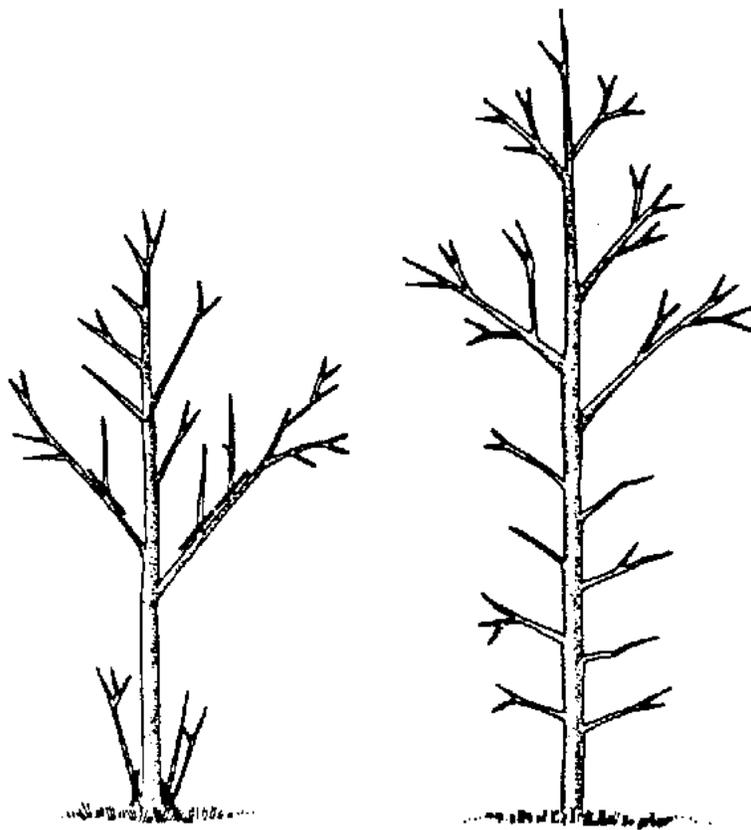
Most trees benefit from removing limbs that compete for space and light. If this is done to allow evenly spaced lateral branches about eight to twelve inches apart on a young tree, a handsome, healthy tree is more likely at maturity.

Other common examples of improper pruning are overthinning and wholesale heading, or the shearing of trees into awkward little balls. Trees vary in the degree to which they can be thinned without ill effects. Some pines can be layered extensively, but an overthinned cherry tree (and it doesn't take much) will respond the following spring with a host of watersprouts or suckers. These fast-growing, upright branches are a tree's response to wounding. If the tree is genetically unable to "sucker back," as are several conifers and needled evergreen it may succumb totally later, usually when subjected to additional stress such as drought or freezing.

Wholesale heading (cutting the ends off all branches) is done when people try to force their trees into tidy globes, a practice that generally is destined for failure. The resulting regrowth is untidy indeed, and it gets worse every year. Repeated heading can be a drain on the tree's health, as many small wounds and dense growth provide ideal conditions for disease and insect infestations.

Some extreme forms of formal pruning, such as pollarding, pleaching, and topiary, break the general rules and require a high level of skill and attention to succeed. The tree selected for such treatment must be able to withstand the particular kind of pruning without ill effects; the pruning must begin when the tree is a small sapling; and the caretaker must be knowledgeable and dedicated to ongoing care for the life of the tree.

Proper pruning can enhance the health and beauty of any tree and mitigate the effects of improper siting. A good arborist can often alleviate the sense that a tree is too big, but will do so by thinning the tree and removing some lower limbs. Working within the limits set by the genetic character of the tree and the requirements of the site is the art and science of arboriculture.

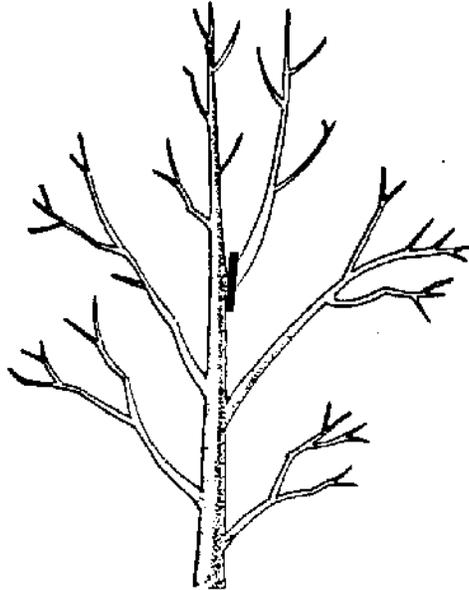


Suckers are weak, rapidly growing uprights from the base of a tree; water sprouts are similar growths from branches. Remove them as soon as they are recognized

Branches below the lowest permanent branch protect young bark and help add taper and strength to the trunk. Shorten or remove overly vigorous temporary branches at once. Remove the remainder after three or four years' growth.

Responsible Tree Care

Taking the time to learn about trees in general and the particular needs of certain kinds, is the first step in



Protect the leader by removing competing branches

ensuring that trees are appropriately sited and cared for. Several organizations are available for help. The cooperative extension service in just about every county can give free or low-cost information or assistance. The National Arbor Day Foundation puts out several inexpensive bulletins. The Tree People of Los Angeles recently published *The Simple Act of Planting a Tree*, which presents good

information on the basics of tree selection and planting. PlantAmnesty, another organization dedicated to public education about proper pruning, also helps people to locate information about tree and shrub care.

It is also important, when hiring others to provide tree care, to select a qualified arborist. Such professionals often belong to the International Society of Arboriculture (ISA) or the National Association of Arborists (NAA) which ensure that members have accurate information and use current techniques. An arborist certified by the ISA will have passed a test of tree knowledge. Large businesses and cities should call upon the services of members of the American Society of Consulting Arborists. Simply having been in the tree care business for many years is no indication that a person has access to accurate and up-to-date information.

The rest is a matter of taking responsibility for what we plant and planting with thought for the future. Gardeners already know that getting what we want from nature is only half of the bargain. Most of the personal satisfaction in gardening comes from the act of husbandry itself. The pleasure is not only in seeing the flower, but in working with the plant to help create it. Ensuring a long and happy life for the millions of trees that exist or are soon to be planted can give us all that-deeper satisfaction. I am reminded of the inscription on a plaque commemorating the planting of a grove of trees in Auckland, New Zealand:

When we plant here, let us think that we plant forever. Let it not be for present delight or present use alone. Let it be such work as our descendants will thank us for. And let us think that a time is to come when these trees will be held sacred because our hands have planted them, and men will say as they look upon the wonder and the substance of them, 'See this our fathers did for us.'

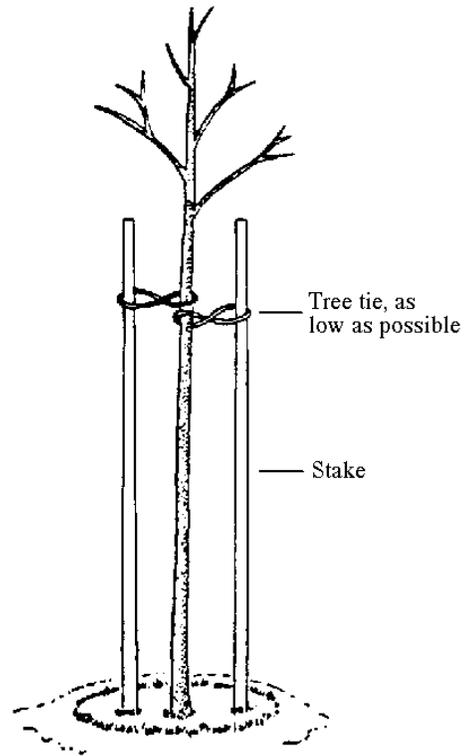
Resources

American Forestry Association
P.O. Box 2000
Washington, D.C. 20013
(202-667-3300)

National Arbor Day Foundation
100 Arbor Avenue
Nebraska City, NE 68410
(402-474-5655)

PlantAmnesty
906 NW 87th Street
Seattle, WA 98117
(206-783-9813)

Tree People
12601 Mulholland Drive
Beverly Hills, CA 90210
(818-769-2663)



Give temporary support with two stakes driven into the soil outside the root ball. Tie loosely with rubber tree ties or other non-binding material, allowing tree trunk some room for movement