

Tree Clinic Quarterly

Fall 2002

Message from the President

By Jerry Pulley, Registered Consulting Arborist

About 240 million years ago, the Earth's landmasses combined into a single continent. That immense plaque of rock we refer to as Pangea sat amidst an even more immense global ocean. With steady geologic pace the rockmass fragmented and sailed throughout those immense waters to create our present continental map.

From the perspective of the human moment it seems the structure of our planet is surely one aspect of the world that humans cannot change. Evidence however suggests otherwise.

With ever increasing speed the world's economy is pushing its many ecosystems into each other. The currents of human movement are altering the ancient evolutionary function of the global surface.

Historically, the structural variety and the uneven surface of the earth have held living communities in place. The barriers surrounding an ecosystem set the terms of life within it. They tied a group of plants and animals together and tended to exclude predators, competitors and diseases that evolved elsewhere. Perhaps the most well known example is the island of Galapagos where creatures like the giant tortoise evolved into forms known nowhere else on earth. Today, the heretofore physical barriers are losing their ecological reality as more and more organisms are moved around them.

Until recently the arrival of new organisms, or "exotic species", was a rare event. Now it happens any time an airplane lands or a ship ports. Exotics are arriving thousands of times faster than the previous natural rate. These non-native species, when introduced to a new area, can out-compete native species, cause disease to, and ultimately wipe out native species. In any single ecosystem, loss of species represents decline.

Under natural conditions the planet's physical structure (oceans, deserts, mountain ranges, etc) imposes formidable barriers to cross. Now those crossings are routine. Every few months we hear of a "new" pest. One example is the Asian Longhorned Beetle that arrived in (continued next page)

Message from the President continued

shipping crates at major U.S. ports only a few years ago. It is killing thousands of maple trees in the New York and Chicago areas. It has been found in Houston. The Emerald Ash Borer, a native to Asia also arriving via shipping crates was discovered in Detroit earlier this summer after the recent large-scale rapid decline and death of ash trees. Citrus Longhorned Beetle, a relative of the Asian Longhorned Beetle was recently found in a nursery in the Pacific Northwest. It reproduces in the vegetation along river systems and has the opportunity to impact thousands of trees, miles of wetlands, wildlife, salmon habitat, fruit orchards and ancillary services throughout the Northwest. It has no known natural predator in the United States to keep its population numbers in check.

Invasive plants with no natural controls are troublesome throughout the world from Hydrilla in our own Lake Austin to Kudzu in the southern U.S. Water Hyacinth in Africa's Lake Victoria comes from South America. Melaleuca, an Australian native, is choking out native species in the Florida Everglades.

The list of invasive exotic species seems endless. Exotic agents of disease are more numerous than insect pests. Dutch Elm Disease, Chestnut Blight, Oak Wilt, Sudden Oak Death (see page 4), Hoof and Mouth Disease- all are caused by non-native invasive organisms.

The effective collapse of the world's ecological barriers is a phenomenon without precedent in the entire history of life, certainly human life. Bioinvasion, the spread of exotics, is fast becoming one of, or, perhaps the greatest threat to the Earth's biological diversity. It seems to me that we are experiencing evolution in reverse.

This is our last newsletter of 2002, and the staff of Tree Clinic says

Thank you

to our clients and customers and colleagues

We so appreciate your business and wish everyone

peace and joy this holiday season

Tree Tips for Fall and Winter

By Jim Houser and Clarence Biddy, Certified Arborists

This year, the transition from the hot and dry summer season to the cool fall season began early in September. Extremes in soil moisture can cause huge problems for our plants. The fine roots die off during a drought due to prolonged dehydration; then sudden and constant soil moisture after this predisposes the roots to Phytophthora (fungus) infection and root rot. Symptoms of these conditions in your trees include loss of plant vigor, branch die-back, or trunk lesions that are black and oozing. Timely application of fungicide is imperative in treating this problem.

Now is the time to prune trees to lessen the chance of wind and ice damage from winter storms. If we get a bad ice storm this year (and the probability is high with the jet stream bringing Pacific Ocean disturbances our way), live oaks and cedars could be hard hit. These evergreen trees that retain their leaves in winter have a greater surface area for ice to accumulate on. It's the weight of the ice that causes limbs and trees to break apart.

With leaves falling from deciduous trees such as Spanish oak, cedar elm, ash, and hackberry you can now see if your trees are infested with mistletoe. Mistletoe is a parasitic plant that thrives on nutrition it takes from its host tree. Now is a good time to remove this harmful plant from your trees. If a limb that mistletoe is growing on can be pruned, this is one easy way to get rid of it. In heavy infestations, not all of the branches can be pruned, of course, so each mistletoe sprout must be removed by hand. It may grow back, but removing it will lessen the harm to the tree now, and set back its reproductive cycle to avoid seed dispersal.

With moisture in the air, now is an excellent time to treat ball moss. Ball moss is an epiphyte (a plant that grows on the surface of another plant). It is not a parasite, and does

not harm the tree by taking nutrition from it (it takes its nutrients from the surrounding air). It does, however, shade out buds and reduce the number of leaves on a tree, especially on slow growing or declining trees. As with mistletoe removal, pruning where appropriate is a good way to remove ball moss. Another option is to have your trees treated with a compound which will cause the ball moss to die but will not affect the tree.

Give us a call now if we can help you with treatment or pruning of your trees. Also, our experienced arborists will be glad to discuss your tree issues and help you decide the best course of action to take.

Here's one final tip: take time to notice and appreciate fall leaf color and the change from fully leaved trees to bare limbs. It's a great year for color in central Texas, and it's happening right now!

Redwood and Douglas Fir Confirmed as Hosts for Sudden Oak Death

By Jim Houser, Certified Arborist

California researchers have positively identified coastal redwood and Douglas fir trees as susceptible, i.e. hosts, to *Phytophthora ramorum*, the fungus-like pathogen that causes Sudden Oak Death (SOD) in California. Since 1995 when the disease was first reported in Marin County, the number of susceptible species has grown to 17 worldwide. Sixteen of the species are found in California, including coast live oak, tanoak, madrone, bay laurel, buckeye, and rhododendron among others.

In 1995 in Mill Valley, Marin County, California, large numbers of tanoak trees were observed dying in the forest. In 2000, researchers identified the cause of these sudden deaths to be a species of *Phytophthora* that was previously unknown as a pathogen. The organism was named to species as *Phytophthora ramorum*. It is related to the organism that caused the Irish Potato Famine. It is possible that it may have entered California on nursery stock. It is a highly contagious disease that can infect and quickly kill a plant. However, researchers are discovering that host species vary in their tolerance to the pathogen. To date, sudden death of redwoods and Douglas Fir have not been observed.

Biologists are concerned that the disease will spread to other areas of California and the U.S. The central coast counties of California seem to be the focus of the disease at the present but a case was detected in Oregon and officials in Poland and England have detected it on nursery stocks of rhododendron and viburnum, respectively. Recently, Douglas fir trees were found infected with the disease along the southern Oregon coast. California and USDA personnel are charged with enforcing state and federal regulations designed to slow the spread of the disease, but the ease of spreading the disease is a cause for concern.

Phytophthora ramorum is spread by both spores and cysts. In wet weather affected plants can release spores that travel in the wet soil in soil water and through the air. People and

animals can apparently move the spores to uninfected areas. Spore-containing cysts accumulate in the organic mulch layer under diseased plants and can be spread by people and animals walking through the woods. Spores and cysts can be carried in the dead hosts of the disease, such as on leaves, twigs, mulch, and firewood. California officials are recommending that people in affected areas disinfect or at least wash off their shoes, pets' feet, and vehicle tires.

We do have Phytophthora species locally but none that are so easily spread as the SOD pathogen. The species we regularly see causing damage are ones that occur in our soils in low populations. They become a problem when soils stay wet for extended periods and populations quickly bloom to high levels causing crown and root rot. This is why it is imperative to monitor and control overwatering by sprinkler systems. We treat this problem with fungicides, but prevention is the best policy.

Mycorrhizae Help Trees "Mine" Minerals

By Jim Houser, Certified Arborist

Fungi growing on the roots of certain tree species have been found to extract minerals from sources in the soil that, previously, were not recognized as being available to trees. Trees have developed a symbiotic relationship with the ectomycorrhizal fungi that envelope their fine roots and provide benefits of nutrient and water uptake for the tree. Research previously showed that the mycorrhizae have acid-releasing hyphae or projections that dissolve minerals that are loosely bound to the surfaces of soil particles. This makes essential nutrients such as calcium, phosphorus, and potassium more readily available to trees. New research by Joel Blum of the University of Michigan at Hubbard Brook Experimental Forest near Woodstock, New Hampshire has shown that some trees can "mine" calcium with the help of mycorrhizae. Blum says "the previous view was that trees get their nutrients from the plant-available pools in the soil. What we discovered is that there's also an intermediate pool of calcium contained in apatite, a common calcium phosphate mineral, which hadn't been recognized as being available to plants." Blum showed that the trees at Hubbard Brook were using calcium that the mycorrhizae have obtained from "mining" the apatite with their hyphae or projections.

At Tree Clinic we apply mycorrhizae either singly or in combination with our slow release fertilizer to treat trees that are declining from root loss, construction damage, root rot, or insect and disease attack. We have often seen dramatic responses to these treatments and are heartened to see additional research that elucidates the benefits of mycorrhizae to trees.

Word Roots are Key to Understanding Scientific Terminology

Word roots are parts of words that are pieced together to make a specific term. They are usually Greek or Latin in origin, and it certainly helps to know a few common ones used in the biological sciences if your going to discuss trees and tree health. Here's a matching quiz to test your knowledge of some word roots used in this issue of the newsletter. Answers at the end of the newsletter.

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|-----------|--------------------------|
| 1. myco- | ___ a. root |
| 2. phyto- | ___ b. with, together |
| 3. eco- | ___ c. fungus |
| 4. -rhiza | ___ d. outside, outer |
| 5. epi- | ___ e. house |
| 6. sym- | ___ f. upon,over, beside |
| 7. ecto- | ___ g. plant |

You can find us on the web!

Yep, Tree Clinic has a complete website. Actually, our site has been up and running for about a year or so, but not quite complete in text and graphics. Finally, we have a site that is informative, functional and, well, *pretty*, thanks to the expertise of our data consultant and website designer Dustin Wells of Austin Data Works.

Visit us on the web at **www.treeclinic.com** to find:

- ✓ descriptions of all tree clinic services
- ✓ qualification and background info for our professional staff members (photos,too)
- ✓ our most current newsletter
- ✓ informative articles on pests, trees, diseases and conditions that affect trees
- ✓ links to other helpful tree websites
- ✓ information about Mauget microinjection products distributed by Tree Clinic
- ✓ e-mail (from you to our office)*
- ✓ a map to find our office

*email our arborists individually: jerry@treeclinic.com, jim@treeclinic.com,
clarence@treeclinic.com, travis@treeclinic.com

answers to word root matching: a.4,b.6,c.1,d.7,e.3,f.5,g.2