Drilling as a Technique for Controlling Eucalyptus, Palms & Other Exotic Trees

Mike Kelly, Friends of Los Pe–asquitos Canyon Preserve
POB 26523 / San Diego CA 92196 /
mkellysd@aol.com / 858.566.6489.

The Friends of Los Pe–asquitos Canyon Preserve, a San Diego conservation group, have included drilling as one of their techniques for eradicating invasive trees, especially Eucalyptus. The technique has also been successfully used on Fan palms (Washingtonia robustus), Canary Island Date Palms (Phoenix canariensis), and Brazilian peppers (Schinus terebinthifolius). Drilling appears on some herbicide labels such as RoundUp under injection. Injection is a technique common to silvaculture control of unwanted tree species in managed tree plantations.

Using drilling to kill Eucalyptus spp. such as the Red Gum (E. camaldulensis), the most commonly found invasive Eucalyptus in southern California was suggested to this author by Judith Railings of Bushmasters, an Australian habitat restoration company at a California Exotic Pest Plant Council Symposium.

The technique involves drilling holes every 6 cm (2.4inches) or closer around the entire circumference of the tree with a portable drill and a 5/16" (or larger) drill bit at a downward angle through the bark and into the cambium layer. Each hole is filled with a concentrated (undiluted from the 41% concentrate) dose of glyphosate (RoundUp Pro) and refilled on the bigger trees. Spacing of the holes should vary with the season. In July and August, hot weather drilling produced a kill on Eucalyptus spp. in 2-3 weeks. Colder weather applications (February Ð March) took longer and from experience, applicators learned to space holes as close as 3 cm (about 1 inch). Trees as large as 60 Ð 90 cm (2 Ð 3') diameter were successful killed. A caveat, however. Coastal San Diego, where these treatments occurred, rarely suffers from deep, killing frosts common to inland areas or other parts of the state Ñ hence many non-deciduous tree species in San Diego actively grow during winter months. Drilling is likely not to work in areas where trees go dormant. Brazilian peppers were similarly treated with successful results. On some trees, due to the contortions of the trunk or the splitting into multiple trunks some part of the tree may not be killed, evidenced by the healthy looking green leaves. Trace the green branches down the trunk and rebill this section of the tree for a complete kill.

Drilling palm trees requires a variation on the technique used with Eucalyptus spp. It is necessary to purchase specialty drill bits of 18 Ð 48 inches in length. The diameter can remain the same and they will chuck up in the same portable drill and are surprisingly stable when drilling. Longer drill bits can be found in specialty tool stores. The longer drill bit is necessary to reach the vascular transport system within palms. Unlike Eucalyptus spp. where this transport system is in the cambium layer just under the bark at the outer circumference of the trunk, in palms it is to be found in the center of the trunk where the heartwood or palm heart is to be found. The Friends typically drill three holes at different heights, but usually from waist to chest height on the palm. Each hole is drilled at a slight downward angle into the heart of the trunk in order to promote gravity transport of the herbicide into the center. The number of holes is arbitrary. The applicators have not tried 1 or 2 holes, which would make for a good experiment in the future.

Delivering the herbicide, the same concentrated dosage of RoundUp used on Eucalyptus spp. is tricky. The Friends have chosen to use plastic laboratory bottles with the extra long, curved necks to squeeze the herbicide into the holes. (As with any herbicide container, label the bottle with the contents, EPEE #, warning word and applicator information to prevent accidents.) However, with this method, some herbicide is wasted in space between the layers of palm frond husks built up around the trunk when the lab bottle neck is not long enough to penetrate past these layers. Another applicator designed a long metal nozzle for the Friends, about 18" long, to fit over the original nozzle of an herbicide spray gun to help deliver the herbicide deeper into the plant. In this case itÕs necessary to drill the hole with a bigger bit or use the existing 5-16" bit to widen the hole to permit entry of the specialty nozzle. A stiff plastic tube would probably work for delivering herbicide into the heartwood.

Actively growing Fan palms will often show die-off within 2Ð3 weeks. Death is obvious with Fan palms, since they the fronds turn brown. With the Canary island date palms, however, the fronds remain green for as long as 2 years! The only way the Friends found to be sure they had died was to cut a ÒladderÓ to the terminal bundle of fronds, the growth point. When you find it, pull on it. If the palm is dying, it easily pulls out as a separate, decaying bundle. It appears that the herbicide is acting on the active growth part of the palm, but not killing the entire root zone, which continues to support green fronds. No resprouting has been observed with either of these species. Any reader of this paper that knows more about palm physiology and what may be happening internally in these palms is encouraged to share this information with the author.

Caution: The Canary island palms have extremely long spines and are quite dangerous to work around.

When drill?

When to use drilling as opposed to the traditional cut stump method depends on the restoration goals and other limiting factors. In many situations in which the Friends find themselves it is desirable to leave standing dead trees or palms. They provide raptor perches and in the case of the palms, nesting opportunities among the fronds. If they occur next to roads or trails or open streams where their falling could possibly injure a person or block a stream, these Òwidow-makersÓ eventually have to be taken down. Dead trees weigh a lot less than live ones and will do less damage in falling if cut down after dessication. Drilling takes a lot less time than cutting down a big tree and bucking it up. Drilling is also a quiet method, useful when the noise of a chainsaw might startle passing equestrians, a common occurrence in Pe–asquitos Canyon Preserve, or disturb the nature experience many hikers are there to enjoy. Just as construction activity is prohibited before 7 a.m. in San Diego so as to avoid waking residents from their sleep, drilling can be used when a chainsaw might wake canyon rim dwellers. A thick grove of dead trees of any kind may also inhibit recruitment of natives to the area, possibly another reason for taking down some or all of the trees. Most of the FriendsÕ drilling has been on scattered trees where this is not an issue.