

Beware the Hidden Dangers of Palms

By Rich Magargal

As a 45-year veteran climber with virtually thousands of palms trimmed or removed during my career, it is my intention here to describe what can happen during the process of trimming or removing palms – including serious injury or death – and provide information on alternative practices that might save lives.

This article pertains to the two fan palm species known as Mexican fan palm and California fan palm. The two are similar in appearance; however the Mexican fan palm grows taller and is more common in southern California and Arizona, where most accidents occur. The California fan palm is generally not as tall and has a thicker trunk. The two palms mentioned cross-pollinate, so variations in size do occur.

Two cases in point

A recent *Los Angeles Times* article provides a brief history of a young man in Los Angeles County who started a landscape maintenance business. As frequently happens, he was called upon to trim palms as a routine part of his work. During the trimming of his fourth or fifth palm in his brief tree maintenance career, the young man was suffocated beneath a skirt of dead fronds.

In October 2006 in San Diego County, an unlicensed climber was approximately 50 feet from the ground working on a 70-foot Mexican fan palm. He had already completed two similar palms. Without warning and likely within five minutes, the climber was suffocated beneath approximately 10-12 feet of loose fronds. Fire department rescue attempts took about 40 minutes, requiring the use of a ladder company. Local newspaper accounts stated the deceased climber had 15 years of experience!

Statistics

Statistics gathered by John Ball, professor at South Dakota State University, show that nationally, “tree workers have a fatality rate three to four times that of police officers and firefighters.”

The following Cal/OSHA statewide statistics appeared in the *Los Angeles Times* story:

- ▶ Since 1990, there have been 394 tree-work accidents, including 67 deaths
- ▶ More than half of those accidents (214) have happened since 2000, including 42 deaths
- ▶ Fourteen of the 67 deaths occurred in palms, 11 of them since 2002

These are California statistics only. Additionally, it is assumed that due to the nature of the industry many accidents are not reported. Therefore, the true numbers of accidents and possibly even deaths could be much higher.

Palm accidents

Deaths related to the care of palms are generally the result of electrocution, falls or suffocation.

Contact with electrical conductors in palms is primarily caused by lack of attention prior to ascending. Frequently the climber does not notice the conductors overhead. Most of us think we would notice something as obvious as overhead wires, but the fact is inexperienced climbers often do not know how to recognize a hazard. Completely preventable, accident reports frequently state the climber was unaware of the conductors. Looking for and recognizing hazards before climbing is the responsibility of the estimator, the crew leader, the climber(s) and hopefully the entire crew.

Falls are another cause of accidents and death that again are completely preventable. Two common scenarios are an unclipped line or a cut line. For various reasons climbers sometimes unclip without another point of tie-in being used. Some of us may be shaking our heads, yet this remains a frequent cause of falls. Take a few moments to be tied in at all times.

Another frequent cause of falls is severing the climbing line. When using a chain saw aloft, two points of tie in are mandatory. When using a chain saw in palms, it is recommended the primary tie in be a wire-core flip line, backed up by a climbing line tied just below the flip line. I read about an unofficial test conducted with a chain saw and a wire-core line. The chain saw cut through the line in about 4 seconds. That is not much time with an out of control chain saw. Two simple actions can save the life of the climber: Keep both hands on the saw, and be very attentive to the location of your safety lanyards and climbing line.

When working in palms, it is not unusual to be pruning close to your safety lines. Be aware your line might not be at the same level all the way around the trunk. It could be hooked on an object out of your sight. To be more comfortable while working on palms, climbers often position their safety lines slightly higher on the backside of the tree. This takes pressure off the feet and allows the climber's body weight to be supported more by the saddle. The climber must remain mindful that the safety line is higher at the backside of the tree. Also keep in mind that dust and debris falling onto the safety lines can obscure them, even brightly colored ones.

Finally, and most importantly, is the alarming and growing death rate by suffocation.

The vast majority of suffocation accidents are the result of fronds sliding down, or sloughing, onto the climber. Just a few feet of fronds can instantly and completely immobilize a climber. There is absolutely nothing he or she can do to remove them because their entire body is forced down and against the palm trunk with hundreds of pounds of pressure. The force of the fronds is primarily on the head of the climber, forcing the chin into the chest. This is how suffocation occurs. Take a moment to put your hands behind your head and pull your head forward bringing your chin in contact with your chest. Notice how little pressure is required to make breathing impossible. Now, imagine several hundred additional pounds of weight on your head and picture yourself under the skirt of fronds 50 feet in the air.

Remember, when a climber is working under the skirt, the fronds hang down to around his or her knees. Also note that it is much darker and cooler underneath, so every manner of creature having two to eight legs can be present with you. Bees are a significant hazard, because escaping down 40-plus-foot palm trunk can take some time.

Hazard fronds

There is a lack of knowledge about sloughing. At any point along the trunk of a fan palm it is natural for the fronds to come loose and remain near the trunk, unattached but woven together in a skirt. When the skirt drops nothing can survive beneath it. Even experienced arborists miss the potential of sloughing. Usually, if a palm is going to slough off it may occur as low as 25 to 30 feet from the ground.

Many of the palms we enjoy in the Southwest were planted as long as 100 years ago. Many of these palms have grown to great heights and in some cases have not been maintained. With each passing year the palm becomes more of a hazard. New fronds grow each year, providing more to come down upon the unsuspecting climber.

In photo 2, the estimated height of these trees is 65 to 70 feet. (Palms fronds are not usually included in estimating overall height). Sloughing on Palm "A" (far left) is discussed in the caption. Let's take the remaining four trees one at a time.

Palm B would be classified as "full." This means fronds have not detached at any point along the trunk, except those fronds removed when all the trees were 5 to 8 years old. It appears no trimming has been done since. Close examination of Palm B shows some separation of fronds at various points along the trunk. The top 12 to 16 feet of fronds looks especially hazardous. There is no way to predict at what point sections of fronds will come loose along this trunk. How large these sections of separation will be is also unpredictable. What is sure is that this tree will slough in large amounts. This tree is extremely hazardous and the hazards are quite obvious. Under no circumstances should this tree be climbed from under the skirt.

Palm C shows evident danger at just above mid point. The loose fronds are very obvious and there is likely enough of them to trap a climber. Again, this is an unpredictable and hazardous tree. The last two trees, D and E, appear somewhat safe, but could fool the over-anxious climber. I recommend the use of an aerial device whenever possible to access and remove loose fronds before any climbing is attempted.

Recommendations

New approaches are being applied to palm trimming that can virtually eliminate injury and death. Obviously the best and safest approach to palm trimming is with aerial equipment rather than climbing.

Many of us in the industry choose tree work because of the obvious danger and the level of risk involved. Yet, taking a risk is not the same as foolhardy arrogance when one is faced with a difficult or dangerous job without training. This kind of overconfidence leads to accidents and deaths.

A trained and qualified palm climber, with a trained and qualified rescuer, could likely trim trees A, D and E without negative issues. But I stress that I do not recommend any untrained climber attempt to work on palms of this nature and face these obvious hazards. Palms B and C are absolutely, without a doubt, palms requiring aerial equipment or the use of the alternative "Throw Line Procedure," which I hope to describe in detail in another article. I cannot stress enough that this is a life and death issue.

Learn how to recognize the hidden hazards while working with palms as well as the use of proper equipment. In the meantime, if it becomes necessary for you or someone you know to trim a palm that you suspect is a dangerous tree, please think and proceed carefully. Work safely, be humble, seek advice – and live.

A technique to eliminate the dangers posed by the skirt of fronds

Whenever possible use bucket trucks or, if practical, mobile cranes. When the use of this type of equipment is not practical, economically feasible, or the location of the tree does not allow access with large equipment, I recommend the techniques described below.

Using newer equipment creatively, arborists in the San Diego and Los Angeles areas have developed a procedure that positions the climber at the top of a palm without the need of working under the skirt of fronds.

The tools and procedures needed for a safe ascent are listed below, but first be advised that all ropes, tools and any other devices you may use must be approved for use by arborists, and meet all existing safety requirements. If you have the necessary tools and skills, proceed as follows.

Your first step is to position a throw line through the top of the palm. This is best accomplished by the use of a tool known as "The Big Shot." This device will allow you to shoot the throw line through the center of the tree with enough force to get the throw line weight back to the ground with both ends of the throw line accessible.

Standard throw-line technique can also be used. Choose a half-inch line with sufficient length so both ends of the half-inch line are on the ground after being pulled through the top of the palm by use of the installed throw line. The half-inch line should be near the center (heart) of the tree for safety reasons. It may appear that the rope running through the fronds could injure the tree, yet this is not the case. Therefore, make your throw-line shot near the center of the fronds.

Attach an approved arborist's block to one end of the half-inch line installed in the tree. Into the block, install a climbing line long enough that both ends of the climbing line will reach the ground. Pull the climbing line half way through the block so when the block and climbing line are pulled to the top of the tree, you will have both ends of the climbing line accessible at the base of the tree. At this stage, after pulling the block up the tree, the block should be near the lowest green fronds.

Terminate the rope used to pull the block and climbing line up the tree. In as much as the climber will likely be using a chain saw, terminate the pull rope away from the base of the tree. A friction

hitch should be tied to the climbing line before ascending. Then the climber may make his or her ascent to the top of the tree. One or two ground workers assisting the climber will likely be appreciated.

Be sure to keep two points of tie-in at all times as the climber will be moving around the tree to gain access to all the fronds. A wire core flip line will work well as the second point of tie-in. If the tree is to be trimmed with a chain saw only, this can be accomplished quickly from the top down. If you intend to peel (skin) the tree, this can be done after the fronds have been removed. If the tree is a “full” (fronds from top to bottom), you may experience some sloughing (a skirt of dead fronds sliding) along the trunk. The possibility of sloughing is reason enough to remove the fronds from outside-rather than from under-the fronds.

Absolutely no one should attempt the techniques described here other than a trained, experienced climber.

I would like to see those of us in the tree care industry take safety more seriously. I believe our success as an industry can only be measured by the amount of respect we exhibit for the men and women who perform the work. Work safely, be humble, seek advice and live.

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