SMA ROUNDTABLE

Palms in the Urban Forest

What do urban forestry professionals like about palms, and in what ways can palms be problematic in the urban environment?

Palm trees have been used in many municipalities and are considered historic in some cities, complete with a Palm Avenue. Palm use is, of course, limited by climate. In my work in California and in discussions with friends in Nevada and Florida, we've observed that palms often are signature trees at city entry points, and they are often used in sites with limited crown canopy space.

My personal observation on palms from an urban canopy and design perspective is that palms have a limited crown effect. The fronds and canopy of fan palms are small and the appearance is generally effective when palms are between 15 to 40 feet (5 to 12 m) in height—as they exceed that, all one sees is a trunk. While the crown may be visible via craning the neck, there is no shade component, and the appearance is that of a decorative utility pole. Palms with long feathery fronds provide wider canopy; still, canopy shade decreases as the trees grow taller. Even adjacent to tall buildings, the taller palms lose their effect as the crown gets too high.

Editor's Note:

Not all "palm trees" are trees in the botanical sense, and not all plants called "palms" are true palms. We use the blanket term "palm trees" for the purposes of this Roundtable.

In the positive column, palms are easy to transplant. This is good news because we can transplant large trees to facilitate in-kind replacements; as the trees grow too tall or die, they can be replaced promptly with a similar size specimen. Another positive is that palms can be used in tight spaces such as narrow islands, sites with narrow crown space, and narrow planting strips, where they can still provide some benefits, including a vertical element where many other trees with spreading crowns just can't fit. Their root systems adapt better to narrow planting spaces than do the root systems of many angiosperms or conifers.

I find that a cycle for replacement needs to be considered for the long-term effectiveness of the palm plantings, changing out the trees when they get too tall. Many designers don't agree with my perspective, but I consider long-term maintenance in addition to canopy benefits and appearance. Most designs are static in nature and only consider the trees at planting time. I bear in mind, for instance, that some palms if allowed to mature get over 80 feet (24 m) tall, and at that height, their tops are very challenging to prune.

Palm trees are often either under-pruned—in which case, fronds can fail and create hazards—or they are over-pruned—which shrinks the crown and stresses the tree. Palms may need to be pruned on a shorter cycle than other tree species. Correct pruning provides the largest crown but removes dead fronds that may fail.

Palm diseases also create a challenge. Diseases like the fatal Fusarium wilt (*Fusarium oxysporum*) on Canary Island date palm (*Phoenix canariensis*) are highly contagious and must be carefully managed. When removing a Fusarium-infected tree, the aerial sawdust from cuts and the chainsaw itself can spread the disease. Also, the root system usually carries the disease, and the planting hole may be challenging to disinfect when attempting to protect a replacement tree from being infected. We have tried many planting-hole care strategies including soaking with bleach and other disinfectant solutions, chemical treatment, surrounding the new root ball with a root barrier to avoid contact with the original soil, and replacing with a different species not known so far to be susceptible to the disease. Fortunately, there are other diseases that often *can* be treated, and pruning can improve the appearance of diseased trees that don't have the dreaded Fusarium wilt.

The challenge with palms is similar to the challenge arborists face with other tree design elements. Designers tend to think about the appearance of trees more than the long-term growth, maintenance needs, and site limitations of trees. As arborists, we should have the opportunity to comment on the design based on site conditions; above- and below-ground growing space; long-term maintenance, growth cycle, spacing, and pruning needs; and the Useful Life Expectancy.

—Gordon Mann, President of California Tree and Landscape Consulting, Inc. (CalTLC) and Owner, Mann Made Resources

Photo by Jeff Shimonski

The Thakal palm (*Wallichia disticha*) is prized for its ornamental beauty, including its unusual leaf arrangement in which fronds grow stacked one atop the other in two opposite planes.

While this plaza in Barcelona, Spain may have been intentionally planned with palms from the beginning, it also demonstrates how plantings could be incorporated into paved areas after-the-fact. Unlike the root systems of broadleaf trees, palm tree root systems are exclusively adventitious. Palms have numerous roots but all are small in diameter, resulting in less disruption to nearby pavement.

Photo by Earl L. Paraszczynec

At some undefined time that I've not been able to establish, palm trees became fashionable and began to be planted abundantly in our Chilean cities. As a way of "tropicalizing" the urban landscape, various exotic species of palms began to appear in long rows, saturating streets and avenues with their characteristic shape and enjoying the unquestioned approval of authorities and citizens.

Unfortunately, this phenomenon has not taken into account the opinion of those who must maintain the palms. In my opinion, palm trees occupy a deserved place in the landscape as living elements that stand out precisely because of their architectural uniqueness. At the same time, if palms are used in places where large shade trees could be, this impoverishes our cities in terms of valuable ecosystem services.

Personally, I would like my colleagues to commit to popularizing our wonderful Chilean palm (*Jubaea chilensis*), the world's southernmost native palm. It need not be repeated until exhaustion, but instead can serve as a unique and striking living being, appropriately located, that invites us to see it in new ways, and that urgently needs our protection and care. Certainly, because of its slow rate of growth, its effect is not visually immediate. But I am sure it can be very effective in helping us appreciate the meaning and the gift of a more leisurely existence in the accelerated maelstrom of our cities.

—Felipe Fuentes R., Municipal Arborist, Calera de Tango, Chile

In Surrey, British Columbia we have a name for the beleaguered tall evergreen trees that have had their crowns raised excessively: the “Surrey palm” (see photo). But what if Surrey were to plant actual palms? And yes, that is Surrey, BC, *Canada*.

Three years ago I moved from the 42nd parallel in Massachusetts to the 49th parallel in British Columbia. With a seven degree difference in latitude, I did not expect it to be warmer in my new setting and to have a plant palette that even remotely overlapped with my experience living in Miami, Florida! So when asked to explore the positive sides of planting palms in Canada, I took two steps back before saying yes to the challenge. I accepted because the use of palms in this region is growing.

In Surrey we have a bylaw (known as an ordinance in the U.S.) to regulate tree removal and replacement. If a tree is removed, the lot owner is required to replace it with two trees or pay the equivalent value to the City’s Green City Fund. Without debating if this is too much or not enough, the purpose is to provide some positive contribution back to the environment.

We have prohibitions in place, such as no dwarf species or grafted weeping trees or short-stature fruit trees, as these are all seen as providing insufficient ecological benefits in return. However, we don’t have restrictions against narrow fastigiate trees or small-maturing species generally, which don’t contribute a lot of canopy. The question was posed as to whether a palm is ever an appropriate substitute for a replacement tree. While my old-school gut screamed “No!” there may actually be some appropriate applications for palms in Surrey.

While bigger is typically better when assessing environmental payoff, bigger isn’t always possible in dense urban spaces. It can be especially challenging in locations where a tree is proposed after the fact on a site that is already constructed, and where concrete and infrastructure limit the soil or canopy space. In any scenario where soil, light, and nutrients are limited, is planting a medium to large tree going to provide the environmental benefits it promises on paper? Perhaps it would be better to plant a tree that will grow to maturity and remain healthy, rather than take a chance on a tree that gets diseased or dies young due to a lack of resources.

These windmill palms (*Trachycarpus fortunei*) were planted around 25 years ago along Beach Avenue on English Bay in Vancouver, BC. These palms are planted along a short segment of a bike path that has a large variety of beautiful, healthy shade trees. People typically have very strong opinions about these palm trees having been planted here.

Photo by Owen Croy

“Surrey Palm” is what the City’s urban forestry staff calls a beleaguered evergreen with an excessively raised crown.

Photo by Alexis Wiessler

So what is an ideal location for a palm? According to the University of Florida's Environmental Horticulture Tree Fact Sheets, cabbage palms (*Sabal palmetto*) grow in narrow parking islands, sidewalk cut-outs, lining streets, and where there is air pollution, poor drainage, compacted soil, and regular drought conditions. In addition, they state that "palms generally survive hurricanes better than broadleaf trees."

With the extreme wind storms that we have witnessed recently in the Surrey/Vancouver region, wind firmness may be a characteristic we should focus on promoting into the future. But social popularity can also affect a tree's survival rate. Whatever tree gets planted, without proper buy-in from the community or property owner—a good marketing campaign—it will eventually be removed by popular demand.

Cold hardiness is still a potentially limiting factor for palms in Canada. Surrey is in Zone 8b and Vancouver is in Zone 9a in parts, particularly along the coast. Vancouver is known to have the occasional palm planted on private property, but the most well-known ones are along Beach Avenue in the West End. They are windmill palms (*Trachycarpus fortunei*) and they are some of the most cold hardy palms (to Zone 8a or even 7b, depending on reports). The ones along Beach Avenue were planted some 25 years ago, demonstrating their longevity for this region. According to Vancouver Superintendent of Urban Forestry Bill Stephen, palms in his city were historically protected in winter by packing straw around the trunks, although many have survived without this management technique.

Staff in the Department of North Vancouver (DNV) Parks Horticulture Department added Chusan windmill palm (*T. fortunei* 'Wagnerianus') and dwarf palmetto (*Sabal minor*) to the list of cold hardy palms they favor. Both are available at local nurseries, indicating demand in the region. There is further species diversity potential in the mildest parts of southwest British Columbia. The DNV folks stressed the need to protect the small and fibrous roots in the early years, and they recommended that larger transplant specimens be guy-wired.

I'm very thankful to have explored this topic because my perspective has shifted. I now see some very valuable applications for palms in this region, primarily in consideration of the more extreme weather events we will likely see in our future. The more diversity we have, the more likelihood something will survive, whatever unknowns are to come.

—Emily Hamilton, Arborist/Landscape Architectural Assistant at City of Surrey, British Columbia

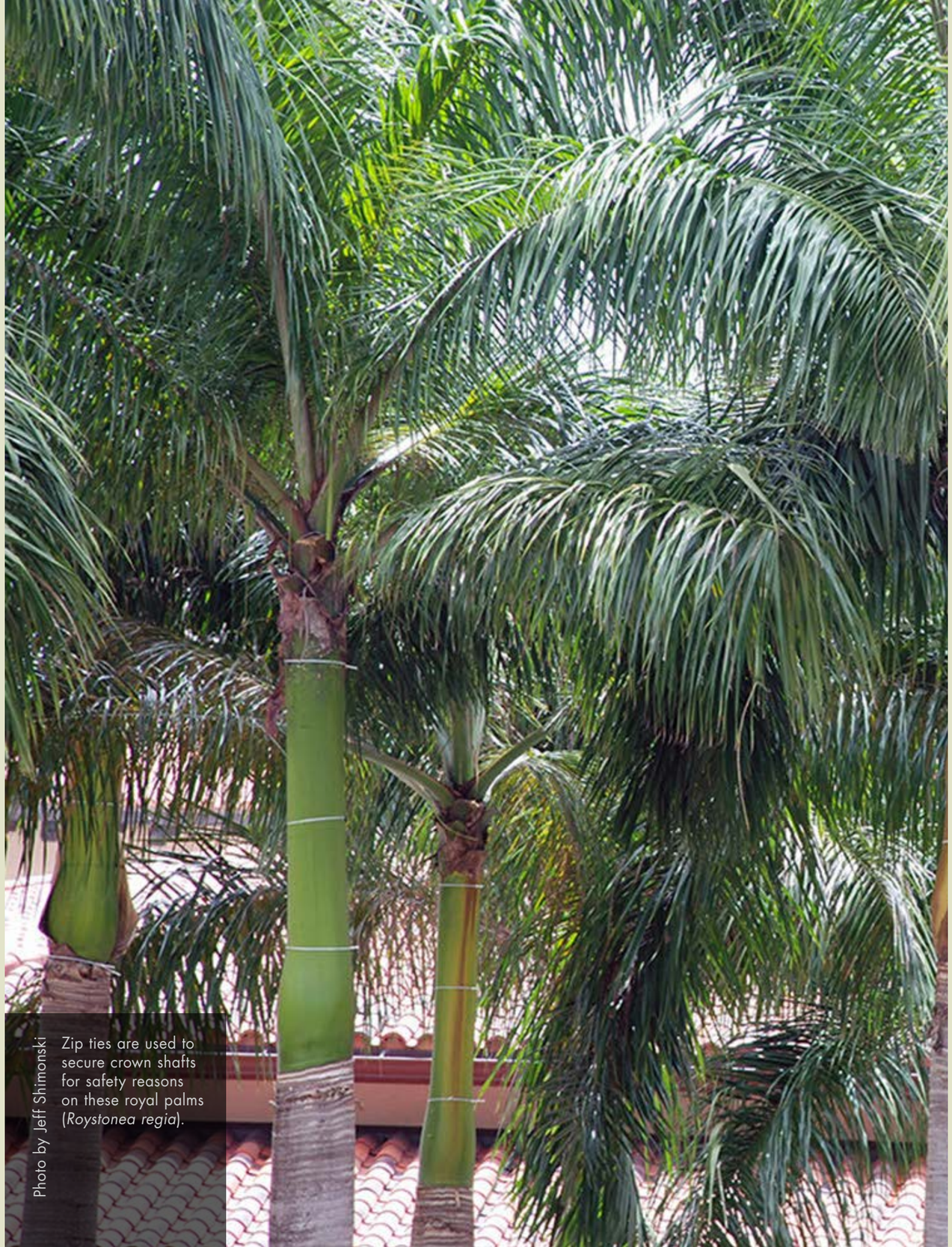

Photo by Jeff Shimonski

Zip ties are used to secure crown shafts for safety reasons on these royal palms (*Roystonea regia*).

Palms come in all shapes and sizes. Who hasn't seen photos of the classic California landscape with streets or stately mansions of the rich and famous landscaped with stately palm trees? While hundreds of species of palms might appear to be a natural occurrence in the California landscape, there is only one true native: California fan palm (*Washingtonia filifera*), a shaggy specimen naturally found around springs and arroyos in the desert Southwest.

Though not native to the State, 157 palms are known to grow in the northern part of California. Whether celebrated or hated by the public, palms have become the bane of the utility vegetation manager's existence. Inappropriately planted under or adjacent to overhead power lines, or suffering from benign neglect, palms have become a significant hazard risk to the power grid. Whether growing into direct contact with energized facilities, or having fronds break off and sail aloft in high winds, palms have become a common cause of power outages.

In order to address the risk, Sacramento Municipal Utility District (SMUD) is taking an innovative approach to identifying trees that pose a threat to power system reliability. Coupling LiDAR (Light Detection and Ranging) with Hyperspectral Imagery, trees that are within defined clearance limits will be identified for further evaluation and remediation. Depending on the tree condition, recommendations can include pruning or removal. By identifying trees which are proven to be problematic from a utility's perspective, SMUD will be able to strategically target trees through sophisticated analysis of the data. Instead of solely relying on an individual's instinct or opinion that a tree may or may not pose a risk, this technology will enable field personnel to clearly prescribe maintenance activities to address the risk.

Ultimately though, it's the responsibility of the entire community of urban forestry professionals to band together and ensure the Right Tree/Right Place mantra is heeded. By doing so, we will promote a healthy, thriving landscape that can be enjoyed by all.

—Steve Hallmark, Manager for Vegetation Management, Sacramento Municipal Utility District

Palms don't always fall into the vision of an urban forest, but palms have been a major element in Miami's landscape and have given South Florida an important facet of its identity for decades. At the same time, for a number of years, the City of Miami has developed strategic plans to increase the number of shade trees such as live oaks (*Quercus virginiana*), wild tamarinds (*Lysiloma latisiliquum*) and mahogany trees (*Swietenia*

Young coconut palm (*Cocos nucifera*) in Jamaica.

Photo by Jeff Shimonski

mahagoni) in order to help alleviate heat island effects on the city. Numerous palms in the city, including royal palms on the prominent Biscayne Bay Road, were removed because it was argued that palms do not provide the same environmental benefits as shade trees.

Planting shade trees is a great idea and contributes significantly to reducing heat island effects and to creating better pedestrian mobility within the city; however, one can also argue that eradicating palms from the South Florida landscape would be devastating for the identity of Miami. Newly planted shade trees are typically planted as young trees due to cost and slower growth rates, and that has changed the appearance of Miami dramatically in recent years.

Also, Miami has become a leader in expansion and high rise condo developments where the demands for larger attractive tropical landscapes are increasingly desired by developers and international investors.

There are over 2,500 species of palms that exist and are available for planting; therefore the question should not be to eradicate them. There are no wrong palms to plant, there are only wrong places and wrong uses for them, and the responsibility of city leaders and city designers is to identify the appropriate uses for each.

Palms should be categorized by:

- Growth rate
- Wind tolerance
- Mature canopy size
- Maintenance level
- Availability
- Rate of acclimation to warmer temperatures
- Salt tolerance
- Weight
- Root ball size
- Susceptibility to potential diseases

Design category:

- Residential
- Store front
- Bay front
- Ocean front
- Streetscape (as accents only)
- High-rise (pool decks)

Palms are an important landscape element that contribute to a distinctive sense of place and enhance the beauty and economic viability of the City of Miami.

—Elizabeth Van Dillewijn, Senior Project Architect, Enea Garden Design, Miami, Florida

I have spent most of my life in South Florida, and I grew up among vast numbers of coconut and royal palms (*Cocos nucifera* and *Roystonea regia*). To me, there is no plant that conjures up the tropics and subtropics better than a large healthy palm. In my travels throughout the world as a consulting arborist, I look forward to seeing new and unique specimen palms.

As a teenager, I witnessed the loss of hundreds of thousands of coconut palms due to lethal yellowing as this disease entered the Florida Keys and spread throughout South Florida. It was stunning to visit our public beaches and suddenly see no palms where once there had been thousands!

When I first began working at Parrot Jungle, a privately owned zoological theme park with a strong horticultural ethic, I began as the assistant horticulturist to Nat Deleon, a former president of the Palm Society who started the Society's seed bank. The Park had a large collection of rare palm species, and there was a 20-acre (8 ha) palm nursery adjacent to the property where large specimens were sold out of the field.

In my formative years as a horticulturist I quickly became aware of issues that could affect the health of palms. I remember being directed to test various chemical concoctions against lethal yellowing of coconut palm (none panned out). Now I am keenly aware of palm diseases and how quickly they can decimate a single species or population. I am also aware of fruit or palm fronds that can drop out of the palm canopy and cause damage. My work as a horticulturist and facilities manager at three theme parks for almost 40 years made me acutely aware of these issues. Not only did the park and its palms need to look good, we had to protect our patrons, staff, and animal inhabitants from potential injury.

I remember planting small royal palms in a public area knowing that once they got too tall and we could no longer physically remove the senescing fronds and crown shafts, I would eventually have to direct the removal of the palms. (Crown shafts are the overlapping, sheathing leaf bases between the palm trunk and the canopy.) As a consultant I have been involved with several cases of people being injured by falling crown shafts of royal palms. Many facilities now zip-tie the crown shafts onto the royal palms (see pic) to be removed by hand instead of allowing them to drop.

Another potential hazard is falling coconuts from the coconut palm. While I've not met someone personally who was injured, I do know of car windshields and clay roof tiles that have been smashed by falling coconuts. That arborists should wear helmets when working on any tree, but perhaps especially a coconut palm, is obvious.

My first encounter years ago with the fruit of *Caryota mitis,* the fishtail palm, was somewhat painful. The ripe fruit can be quite caustic and a single inflorescence can produce hundreds of fruit. I now know not to plant these palms near an area the public has access to or where they would pass underneath, yet I often see these palms installed near public areas. While this palm is great for screening properties and buildings, you don't want it in any area where children might pick up the fallen fruits.

An issue I am confronting with increasing frequency is the failure of an entire palm due to basal stem rot caused by *Ganoderma zonatum,* a virulent fungal pathogen that affects only palms. At some sites I visit, I find this fungus to be epidemic and occurring on many species. This fungus enters palms through wounds where trunks were removed from multi-trunked species or where trunks were damaged by equipment. Replacing dead or dying palms in places with a history of this fungus is not recommended because fungal spores remain in the soil.

Many palms diseases have been shown to be transmissible by infected pruning tools. I always inquire with property managers if they have written into their landscape maintenance contracts that pruning tools have to be sterilized before pruning is conducted on the site's palms. They often seem surprised and wonder what the extra cost will be. When I am working with architects from municipalities or the private sector, I always bring up disinfecting tools and encourage them to write this into the maintenance specifications.

Recently I was called in to inspect a newly installed landscape that included palms. All of the stakes—which had been attached with nails—had been removed from the palms. Some of the nail holes had begun to ooze a black slime—really bad news! This project had been done by a large, well-established landscape contractor. If these folks don't know not to nail holes into the trunks of palms, who does? Education, education, education!

We are growing so many more species of palms in South Florida now, especially since it is much warmer in the winter. This allows us to greatly enhance our tropical look. I still get a thrill when I see a beautiful palm specimen. I just hope that everyone involved in its care is aware of how to properly maintain it.

—Jeff Shimonski, Consulting Arborist & Municipal Specialist, Jeff@TropicalArboriculture.com

Bailey's palm (*Copernicia baileyana*) is a type of fan palm native to Cuba.

Photo by Jeff Shimonski