

THE JUMPING CHOLLA



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Yuccas in the Huntington Desert Garden Milieu

by Gary Lyons, Curator of the Desert Garden



The spiky-leaved yuccas are among the oldest plants in the Huntington landscape. Plantings dating back to 1908 and still thriving give the garden much of its character. Their bright festive panicles of white blossoms add a cheery background and accent to the symphony of spring color in the lower Desert Garden. According to the latest authorities there are 45 yucca species and 14 varieties and they are placed in the agave family. Most of the species are found in the Southwest, northern and central Mexico and Baja California. But the genus is more widespread with species found along the Atlantic seaboard, the Great Plains, into Canada, and south as

far as Guatemala. Yucca blossoms, with the exception of at least one species (the rose-tinged

Yucca endlichiana) are mostly creamy white. Many species have edible flower petals. Yuccas can be difficult to distinguish from similar appearing-genera, such as Agave, Hesperaloe, Dasylirion, and Nolina. Today the Huntington has about 40 species and varieties growing in the garden. Yuccas are among the Desert Garden's most heat and cold tolerant plants, with many species used in landscaping in the Midwest and northeast U. S. and even, of all places, central Europe.

Yuccas lack many characteristics of succulents and some botanists regard them as fibrous plants. Their inclusion in the most recent revision of the IOS *Succulent Plant Lexicon* is the first time the genus has been included and suggests cactus lovers are paying more attention to them.. Their value as an important source of fiber for cordage and for weaving is much studied and documented by economic botanists. I like to call yuccas semi-succulents---the heart of the plant is juicy, not as fibrous and dry in texture as a palm.

What makes a yucca a yucca? There's an easy answer and there is a taxonomist's answer. You may prefer the taxonomist version because the easy answer is in the kind of painful wound caused by getting jabbed in the leg by the very sharp and very stiff end spine on the leaf. Yuccas are frequently confused with agaves. But most yucca leaves have a very stiff and very sharp end spine, more dangerous than many agaves. Also the leaves are much less succulent (even not at all succulent), often channeled, with thornless margins, but sometimes with sharp razor-like edges that can slice a finger to the bone. Another feature common, but not restricted to yucca (*vide* agave), is the presence of curled threads or fibers along the leaf margins. In contrast with agave, yucca blossoms do not terminate the growth of the plant except in *Yucca whipplei*. Some authorities place *Y. whipplei* in its own genus, *Hesperoyucca*--which lives 7-13 years, and dies upon flowering. Speaking of flowers, the six-parted flower presents us with one of the classic examples of biological mutualism, namely yucca's dependence upon the pronuba moth for fertilization and the moth larvae's dependence upon the yucca's immature ovules for food. It is likely that flowering times and pronuba reproduction occur simultaneously. In recent years, we have seen examples of seed set in our flowering yuccas and that tells us the pronuba is finally taking up residence in the Desert Garden. The fruits in some species remain green at maturity and edible in some species, such as the Banana Yucca, *Y. baccata*, a native to our local deserts and also growing in the Heritage Walk section of the Desert Garden.



Yucca filifera

The white blossoms seen on plants in the lower garden are from species of yucca mostly found in the Sonoran and Chihuahuan deserts, most notably, *Yucca filifera*, *Y. rigida*, *Y. elata*, *Y. grandiflora* and *Y. valida*. The cascading floral showers of stars pouring from the tall branches of *Y. filifera* is truly a rare visual treat. An upright densely flowered inflorescence characterizes *Y. valida*, and one grouping is seen just opposite the entrance to Heritage Walk. The spectacular *Y. grandiflora* blooms early with an inflorescence that emerges at right angles from the stem. Among the other species are two found in both the Mohave and Sonoran deserts, *Y. baccata* and *Y. schidigera*. Also we have specimens of the renowned Joshua Tree, *Y. brevifolia*, and the Lord's Candle, *Y.(Hesperoyucca) whipplei*. These two species do not thrive in the Desert Garden even though the latter is common to the nearby San Gabriel foothills and undisturbed areas in the county. I remember back in the 1960's when *Y. whipplei* was totally naturalized in the lower garden, putting on massive floral displays in May and June. A couple of the beds were nearly consumed by dense stands of the yucca. In the 1980's most of these died out or were removed, but hopefully we can bring back some nice displays of one of California's iconic drought-tolerant plants. But *Y. brevifolia* (the Joshua Tree) is another story. It is endemic to the Mohave and northwest Sonoran Desert and seems adapted only to harsh desert conditions. They do not thrive well in the Huntington's low light, heavy soil and high winter rainfall. If grown in alluvial soils in the San Gabriel drainage (as they are at Rancho Santa Ana Botanical Garden in Claremont) they can thrive. Ours become spindly and eventually rot.



The Joshua Tree has an interesting history, one so fascinating that I would rather see it as the dominant tree yucca (instead of *Y. filifera*) in the Desert Garden. Col. John C. Fremont, during his 1844 journey to California was not pleased with Mohave Desert tree yuccas: "...their stiff and ungraceful form makes them to the



traveler the most repulsive tree in the vegetable kingdom.” I certainly take that as a declaration of war between Fremont and myself. I find the tree’s shape to be delightful, especially the dwarf northeastern form *Y. brevifolia* ssp. *jaegeriana* that one encounters in the Clark Mountains and in southern Nevada.

The Joshua Tree was first named and described in 1856 by John Torrey. He described many of the plant collections made on the Whipple railroad expedition surveying potential railroad routes through the Southwest to California. It is interesting to note that the Joshua is a relic of a former coniferous vegetation complex

that dominated what is now the Mohave Desert. Excavations at Gypsum Cave near Las Vegas, Nevada, uncovered remains of the Giant Ground Sloth *Nothrotherium* and in the mummified stomach remains were found macerated Joshua Tree leaves. Eighty percent of the stomach contents consisted of yucca fiber. One would also suspect the sloth fed on the inflorescences, which Indians once harvested and ate as a vegetable. The sloth remains were dated at 10,000 B.C, a time when there was a wetter and milder climate that may have had little resemblance to the modern Mohave Desert. In this regard it is of interest to note that analysis of packrat middens has determined that *Y. baccata* was a component of Juniper-pinyon woodland 10,400 to 22,000 years ago.

Due to development of desert lands in southern California, much Joshua Tree Woodland (as it is called) has been cleared. Near Victorville and Lancaster grew some of the largest specimens. One was nine feet in circumference, densely branched and 30 feet tall. It was one the largest then known until someone set fire to it.

About 1871, the London Daily Telegraph built a paper pulp mill on the Colorado River and began harvesting Joshua trees, the goal being to manufacture cheap newsprint from the stems and leaves. If the scheme had worked it might have wiped out the Joshua Tree in California. As luck would have it, the expense of harvesting, processing and shipping was too great and the enterprise was abandoned by the early 1880’s. The paper did have limited use in New York and San Francisco and a few issues of the Telegraph were put out printed on paper made from *Y. brevifolia*. It would be great if some researcher could locate an issue of the Telegraph printed on paper made from the Joshua Tree so it could be displayed.



Yuccas are some of our most valuable fiber and food plants. A number of native American tribes survived with the aid of yuccas that provided food and fiber for weaving baskets, mats, sandals, etc.; for shelter; soap for washing (roots of some species contain saponifying agents). Even the roots of *Y. brevifolia* yielded a red dye used in basket-making.

In the Desert Garden, look for flowering to begin in late March and proceed into June and July.

The Weird and Wonderful Boojum Tree, *Fouquieria columnaris*, and its Relatives

by Joanne Gram, Huntington Docent and Volunteer



If you drive the main highway through Baja California, about 230 miles below the border the desert flora changes and you begin to notice the enormous cardon *Pachycereus pringlei*, related to the saguaro, *Carnegiea gigantea*. Then you notice the exotic, very tall, unique *Fouquieria columnaris* with its tapered trunk also called the “boojum tree” after a fictitious item (“...beware of the day, if your snark be a boojum!”) in Lewis Carroll’s long poem, *Hunting of the Snark*, (see Baja desert photos). In Mexico this succulent “tree” is called “el cirio,” which means a tall taper



candle. Some people think it resembles an upside down carrot. It was formerly known as *Idria columnaris*.

The *Cactus and Succulent Journal* of Jan-Feb 2003 has five articles about the boojum tree including one describing a record-breaker in Montevideo Canyon, Baja California, more than eighty feet tall! In 2002, Mark Dimmitt and colleagues verified that this

one is still there and they saw others in the sixty-foot range. The classic book on the boojum is R. R. Humphrey's *The Boojum and Its Home*, published in 1974. Humphreys believed the tall one to be more than 700 years old!

Quite a few special boojums are in the Huntington Desert Garden, including one at 25 feet in the Golden Barrel Display midway down the main path (see photo). Up until about 1960, we had a specimen across from the mammillaria rockery that grew to nearly forty feet. It collapsed and many of the pieces were rooted and now grow in the Baja Bed. A dozen boojums are in the Baja Bed, in the 10-20-foot range. The Boojum at the very bottom of the Baja Bed is an unusual form collected years ago its trunk densely covered with whorls of large leaves, much larger than those on the twiggy side branches (see photo). The rest of the specimens in the



Baja Bed are of the densely twiggy type. In Baja many have fewer or shorter twiggy side branches. So distinctive is the trunk, with its even distribution of branchlets or branchlet scars, that experts would have no trouble recognizing a one-foot piece of the species. These incredible specimen plants have blooms of pale flowers at the very top of the trunk, and quite a few trunks have divided into two or more trunks. They are found in Baja and in a small coastal zone in Sonora on mainland Mexico. In their habitats, some rain falls in both winter and summer.



Fouquieria duguetii

Boojum relatives, ocotillos (*Fouquieria splendens*) are found in California's Joshua Tree National Park and in Anza Borrego Desert State Park as well as the Sonoran Desert. Ocotillos, ocotillo-like shrubs and the boojums are from very hot, dry deserts. They form a unique family of plants of about twelve different species, the *Fouquieriaceae*, and ten are established here in the Huntington's raised beds. Our Huntington Desert Garden is enriched by these special plants, including *Fouquieria fasciculata*, at the beginning of the Mammillaria Bed rockery which has a wondrous basketball-like caudex and nice shiny, dark green leaves. Brightly accenting the desert tapestries with red panicles of small tubular flowers is a large *F. macdougalii* to be found above a sprawling *Stenocereus* (Rathbunia) cactus at the south end of

the rockery. Behind the latter is *F. formosa*, several plants. *F. diguetii* appears in the Golden Barrel Display. Strolling further down the Central or Main Path the second path to the right leads to a large spectacular specimen of *F. diguetii*. In the southwest part of the Baja Bed we find *F. burragei* beside the big white dudleyas and the creeping devil. On top of the small circle bed just below the Baja Bed is another *F. diguetii*. A fine specimen of *F. splendens* (ocotillo) is at the corner of the California bed. Ocotillos are basally branched, and only the branch tips produce bright red flowers. All have sharp thorns scattered along their branches. These thorns are not like rose prickles. Instead they arise in the same way that branches do. They cannot be easily stripped off like rose prickles. Quite a few splendid examples of *Fouquieriaceae* in full bloom are showing off for visitors in June and July.

Curator's Comments

by Gary Lyons, Curator of the Desert Garden

It's been a tough year for routine maintenance in the Desert Garden. The heavy rains nearly

drowned the garden in weeds. I have noted that in the past few years a particularly noxious grass has taken hold in the garden and its impact has been devastating to ground covers and shrubby plants. It flowers when quite young and grows to a lanky grass with blades about two feet long at which time the lax panicles are up to 2 or 3 feet long. It does not send out rhizomes or runners. It doesn't need to. It is one of the few grass weeds we have that prefers to germinate in damp shaded places. It so happens that those sites are right at the base, between the basal branches of plantings of aloe, agave, cacti and deep inside practically all groundcovers. Much time and toil has gone into removing ground covers just to pull the weeds and many specimens have been replanted. It's all done by hand as weed killers could kill the succulents. Because of its destructive habit I think this is the worst weed pest in the Desert Garden since *nothoscordum*, nutgrass and *oxalis* (these are controlled but not eliminated).

Member's Day was a busy one for us. We got lots of nice compliments on the look of the garden (they said no weeds!) and that the care of the garden is better than ever. Kelly Kimball and I set up the Plant Uses display in the Patio. Joanne Gram and Laura Brannon helped answer questions and direct visitors to some of the more interesting plants and displays in the garden. The rains washed most of the cochineal from the opuntias but we did manage to find a couple for the display. One aloe's cut green leaves produced a red dye for visitors to see. We also set a Self-Guided Tour for economically important succulents. Members used the leaflet to find the plants and learn about their uses. I would like to see a more detailed and permanent self guided tour. The *Albizia* tree growing in the Patio finished flowering the week before Member's Day and we had the unpleasant experience of having it snow dead smelly flowers. They continually covered the tables, and it is likely that next year we will be setting up on the small patch of lawn on Palm Garden Road beneath the better mannered chorisias.



April, May and June saw one of the best years ever for flowering yuccas. Like the earlier puyas, the rains must have been a big help. Yuccas should continue to flower through July.

- **Don't forget:** July 1-3 Cactus and Succulent Society of America Show and Plant Sale. Show open to the public July 2-3.
- **Don't forget:** *Agave mapisaga* var. *lisa* is in full bloom at the southwest corner of the Desert Garden. It has been growing for about 30 years and is an offset of one of the originals obtained from a nurseryman in Querétaro, Mexico. A fine mist of nectar is now falling on the leaves. And the leaves are withering rapidly owing to so much energy going into flowering.
- **Special flowering:** In bed 39E *Nolina bigelovii* is flowering with a 10 to 12 foot tall feather-like plume.

New Additions to the Huntington's Website and a Little Desert Collections History

by John N. Trager, Curator of Desert Collections

If you haven't taken a look at the Huntington's website recently you may want to visit two new pages pertaining to the Desert Collections. The first is the 2005 offering of the International Succulent Introductions, or ISI for short. This is essentially the same article that appears in the March–April, 2005, issue of the Cactus and Succulent Journal. However, it has been modified slightly for the web and supplemented with additional photographic images.

The ISI has been the plant introduction program of the Huntington, specifically its Desert Collections, since 1989. However, the program traces its history back to 1956 when the Cactus and Succulent Society of America made its first plant distribution under the auspices of its Research Board. The program was designed to distribute new and little known succulents to



society members and was made possible by the supply of surplus materials from the UC Berkeley Botanical Garden. Many of these were propagated by our own Myron Kimnach (Director Emeritus of the Huntington Botanical Gardens) who was employed at the UC garden at the time.



In 1958, the program spun off as the independent non-profit International Succulent Institute with Myron serving as one of the Directors. It was privately run until the Huntington adopted the program in 1989, changing the name slightly but retaining the acronym.

Myron accepted the curatorship of the Huntington Botanical Gardens in 1962. This was an exciting time for the Huntington's Desert Collections and the world of succulents. Building on Henry Huntington's legacy, Myron made numerous expeditions to conduct fieldwork in Mexico. This resulted in many new species being discovered and described to science. Especially important were Myron's contributions among the epiphytic cacti and the *Crassulaceae*, including *Echeveria*, *Graptopetalum*, *Pachyphytum*, etc.

Myron supervised the propagation of many of these new succulents from Huntington expeditions for introduction through the ISI. In return, the ISI shared some of all of its other introductions, thereby augmenting the Huntington's collections development with documented plants i.e. those with known collection data.

Today the ISI continues to pursue its mission of propagating and introducing new and unusual succulents to collectors, nurseries and researchers around the world. We have a wealth of resources upon which to draw for introductions, including recently discovered and described species as well as tried and true selections that have endured the test of time in the Huntington Desert Garden. Sometimes "new" simply means taking another look at that which has been overlooked or taken for granted.

THE SCHICK CATALOG ON LINE



Another new page on the Huntington website is the Schick *Echinopsis* Hybrids Catalog. The Schick *Echinopsis* hybrids were created during the last 30 years through Bob Schick's meticulous breeding and selection. These are hybrids whose lineage can be traced to crosses between *Echinopsis* species with white, nocturnal flowers and their relatives in the *Lobivia* group with colored diurnal flowers. The results are a series of repeat-blooming plants with magnificently-colored flowers. It is hard to do them justice in words, which is why the new on-line catalog is profusely illustrated with pictures of the flowers of each named cultivar.

The Schick hybrids were introduced by the ISI from 1996 through 2004 with more to come in future years. We continue to make them available to assure that accurately identified plants become more widely established in cultivation.

With these two websites the Desert Collections help to further the Huntington's mission of promoting education "through the display and interpretation of its extraordinary resources to the public." By distributing propagations of Huntington collections through the ISI, these resources are made available to an even wider audience.

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