

(Many shredders cannot handle this stringy, fibrous material.)

"Although there is considerable work involved in shredding the material I have found it to be very worthwhile, to the extent that I now use about 12 to 14 truck loads a year."

FRED S. SHICK

Not only does the mulch cut down on fertilizing and weeding, but it also helps conserve moisture. As a result Mr. Shick's palms looked very beautiful, they obviously relished the mulch. There is one thing though, that should be watched—do not let the mulch pile up too heavily around palm trunks as it could be a breeding place for fungus and molds which would affect the palm trunk, especially during a season of heavy rain.

TEDDIE BUHLER

### Ceroxylons in Northern California

Coastal Northern California and the Andean mountain ranges of tropical South America have a remarkably similar climate. It is cool all year but mild, with little or no freezing in many areas. In these areas moisture is abundant; although the California climate has a long dry season, the coastal areas receive an almost daily fog at that time—the air is very humid and even the ground is watered in some areas of fog condensation. To palm enthusiasts this climate type in the Andes brings to mind the beautiful palms of the genus *Ceroxylon*. Except for a few species, the genus *Ceroxylon* is not well described. But even from the few described species—*C. alpinum*, *C. klopstockia*, *C. hexandrum*, *C. quindiuense*, and *C. utile*—one can choose from a relatively small *C. utile* to the tall giant of all palms, *C. quindiuense*. These species range in alti-

tude of habitat from a few thousand feet to well over 10,000 feet. Shouldn't some of these adapt to Northern California?

Trials over the years in Southern California have been disappointing. Successes are few and often temporary. Dry heat is a deadly enemy of *Ceroxylon*. Member Mardy Darian had in Vista one of the largest, a *C. quindiuense*, which was killed a few years ago by late summer's heat. Member Ed Moore has a beautiful *C. alpinum* shade grown in a cool area in the ocean influence near the beach area of San Diego. And Pauleen Sullivan has a *Ceroxylon* in Ventura which is growing well in a cool moist spot. It appears to me to be *C. hexandrum*. In Northern California these palms unfortunately had not been tried so far as we know until very recently. Perhaps the first was a *C. alpinum* planted by Warren Dolby at his beautiful hillside garden in Oakland. It was a few years old and thriving in 1972 when it perished following a transplant.

Northern California members finally got our first real chance to try ceroxylons after the Palm Society Colombia trip following the Biennial Meeting in 1974. A few seeds and seedlings of *C. quindiuense* were obtained and shortly thereafter seeds of *C. hexandrum* came through the seed bank. The resulting plants, although few in number, seemed to thrive in our climate. It had been suggested in the past that these palms might require a mycorrhizal fungus association with the roots. Wanting to take no chances with my plants, I contacted Mardy Darian who kindly provided soil and root fragments from his *C. quindiuense* and also suggested that any good woods soil might contain an appropriate fungus. Some of my seedlings were grown in sterilized potting mix, some in forest soil, and some in sterilized mix inoculated with Dr. Darian's soil. All of

them thrived. Our consistently cool nights in Northern California might be the secret of success with these palms. Our hot spells do not seem to bother the plants, but even when we have 105° F days, the nights between will usually be in the 50's. The days in my area normally are about 80° F in summer, and even during the warmest months the nightly average is about 54° F. Last winter was one of the coldest in years here. In the coldest area of my property it reached 26° F on January 29, and I cold tested a small *C. quindiuense* in a one-gallon container by placing it in the open on the ground in this spot. It was uninjured at 26° F even though the leaves were white with frost.

With this background experience I decided it would be interesting to test a few *C. quindiuense* plants in the wild. In 1976 I was in Colombia and visited the area where the Palm Society members collected *C. quindiuense* near the mountain village of Tenerife outside of Cali. After collecting several hundred fresh seeds and having thoroughly cleaned them, they were confiscated by an overzealous USDA agent in Miami in spite of my having a proper permit and being a USDA scientist myself. But one of our members (Dick Douglas) who was visiting in Miami at the time picked them up the next day, received an apology from another USDA agent who knew that clean seeds should enter with permit, and carried the seeds back to me in California by the third day. I had about 95% germination from this lot of seeds. I kept about a hundred and distributed the rest to other Palm Society members in Northern California. So with enough plants for some experimentation I carried several about 100 miles north of San Francisco along the coast and planted them among the redwoods in a moist valley opening to the



1. *Ceroxylon quindiuense* potted in a five-gallon can.

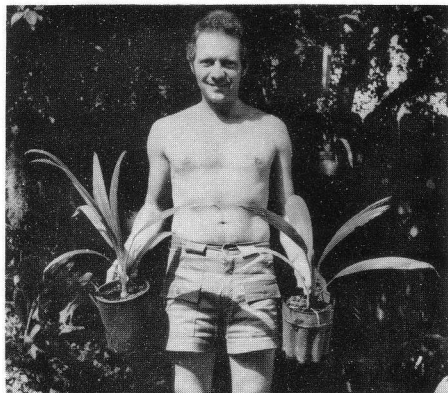
ocean. Here the soil was full of humus and still moist in late summer. Previous scouting of the area had indicated that the location was fairly mild in winter and undisturbed by the public. A major stream and several tributaries flow all year through the small valley and these seem not to flood much in times of heavy winter rains. The banks and steep hillsides support tall redwood trees and a magnificent undergrowth of ferns. Here and there near the streams are sites with spaces open to the sky surrounded by 100-foot redwood trees. In these places I planted the small *Ceroxylon* seedlings, where they have the protection of the surrounding trees but growing space overhead.

I can now report that after two years of no care except Mother Nature's, the plants have not only survived but are thriving! They passed through one of our coldest winters unscathed. They

have been through the rainless summers with no problem. When planted they were carrying only their first leaf. At least one is now getting its first divided leaf. Two are growing where the soil gets quite dry by summer's end but have not even turned brown at the leaf tips; they just slowed their growth while dry. The cool, moist ocean air seems to minimize the effect of the dry soil. One of the dry plants was undermined by a gopher and had nothing but air under it—it still showed no sign of distress except that it temporarily stopped growing.

I am convinced now that *Ceroxylon quindiuense*, at least, will grow in Northern California, even with no human care in the right location. They prefer shade when young, at least away from the immediate coast. Cool nights are a must. With cool nights heat during the day is tolerated. Moisture in the air as well as the soil is appreciated. The palm prefers an acid, well aerated soil. My young plants respond well to rhododendron-azalea fertilizer. Northern Californians have often been considered to be at a climatic disadvantage for growing palms, but it appears that there might be some species that only we can grow! Of the *Ceroxylon* species, *C. quindiuense* is beginning to prove itself here, *C. hexandrum* seedlings are doing well but seem to be somewhat slower, *C. alpinum* grows well but might not be as frost tolerant since it comes from lower altitude.

My great hope at this time is to obtain *Ceroxylon utile*. It is probably the most cold tolerant of the genus since it grows at the highest altitude—with morning snow and ice I have been told! My observations in Quito, Ecuador, indicate that it might be more heat or drought tolerant than *C. quindiuense* also. In Quito the few specimens I saw of *C. quindiuense* looked



2. The author holds two small seedlings of *Ceroxylon quindiuense*.

a bit stressed but *C. utile* looks superb and would also be in better scale to most gardens with its slender 4–6 inch trunk. Any help from our members in getting seeds of this palm would be greatly appreciated.

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## LETTERS

In the April 1979 issue of PRINCIPES, there was an article by Dennis Johnson on palms in the National Register of Big Trees. This list included a *Cocos nucifera* measured in 1968 in Hilo, Hawaii that was 94' in height and was 4'8" in circumference at 4½' and had a spread of 28'.

As I live in Hilo, my interest was aroused and I asked Donn Carlsmith, who is president of The Palm Society and also lives in Hilo, where the tree was located. He said that specific tree is now dead but he told me where it had been located. There are still trees in that area which I presume are of the same age. They are on public land and within a block of the ocean, and they have withstood tsunamis. My husband and I went down and measured several trees carefully but unscientifically. We