

GROWING *Copernicia baileyana* and *Copernicia fallaensis* IN PALM BEACH COUNTY

Submitted by Charlie Beck

I've been waiting to showcase these magnificent Cuban palms in our newsletter until I understood the differences between these giants. We have eleven of these palms growing in our garden, most of which are 21 years old. It wasn't until my trip to Cuba where I spoke to Raul Verdecia, the recognized expert on Cuban palms, that I started to learn the differences between these two palm species. Raul is expected to publish a scientific revision to the Genus *Copernicia* in years to come. I am told that DNA analysis must be completed prior to publishing this revision. Keep in mind that these two species were lumped together in the 1995 publication, Field Guide to the Palms of the Americas. This publication was never accepted as a scientific revision to the Genus. The authors stated that more study was required for proper classification. The latest monograph of *Copernicia* was published in October 1963 and this is still considered current nomenclature except *C. fallaense* described is now named *C. fallaensis*. This name change was due to confusion centered on the original name as described by Leon in 1931.

Aside from differences in flowering structures, Raul Verdecia stated four recognizable differences between *C. baileyana* and *C. fallaensis*:

1. The overall scale of *C. fallaensis* is larger than *C. baileyana* (larger stem girth and height, longer leaves and petioles).
2. The leaf color of *C. fallaensis* is always silver or grey whereas *C. baileyana* may be silver or green.
3. *C. fallaensis* has a noticeably longer rachis than *C. baileyana*.
4. *C. fallaensis* has more of an orbicular leaf shape where *C. baileyana* is more rounded.

The ratio of leaflet length at the apex versus the leaflet width is greater for *C. fallaensis* than that of *C. baileyana*. Keep in mind that both *C. fallaensis* and *C. baileyana* have leaves which comprise included angles of approximate 180 degrees. Do not confuse these palms with the other giant, *Copernicia gigas*, which has wedge shaped leaves of an approximate included angle of 60 degrees.

I measured leaf length to width ratios in our garden. The three *C. fallaensis* leaf length to width ratios ranged from 2.0 to 1.51. The plant with the 2.0 leaf ratio is quite silver and probably is a true *C. fallaensis*. Our 8 remaining *Copernicia baileyana* palms vary between silver and green and the leaf length to width ratios vary between 1.86 and 1.28. I visited Dale Holton's garden to compare his palms with the findings in our yard. Dale has a *C. fallaensis* in his yard grown from habitat collected seed. This plant was silver in color and had a 1.78 leaf ratio. The petioles were noticeably longer than his *C. baileyana* which had a 1.4 leaf ratio.

I noticed no appreciable difference between the rachis lengths of all eleven palms in our garden. I also compared rachis length of *C. fallaensis* as seen in Cuba with documented wild collected *C. baileyana* at the Montgomery Botanic Center. I noticed no appreciable difference in rachis length there either. I'm not convinced that rachis length is a reliable indicator of which species you have.

Petioles do appear to be longer on *C. fallaensis* than on *C. baileyana*, but if you compare the descriptions in the 1963 Revision of the Genus *Copernicia* you will find overlap in all of the physical measurements of *C. fallaensis* and *C. baileyana* (see table on page 3).

C. fallaensis is a relative newcomer to South Florida. Fairchild Tropical Botanic Garden (FTBG) planted out their *C. fallaensis* in 1987 and 1988. All of their plants are silver and have noticeably long petioles. (See photo on page 9.)

After all of this comparison I've concluded that *Copernicia* palms offered for sale in Florida, that were not grown from wild collected seed, are not guaranteed to be the true species as advertised. We all know how easily *Copernicia* species hybridize. Even seed collected in Cuba might be hybrids unless they are collected from an isolated population of the species. Many of the *C. baileyana* I saw in Cuba were

mixed with *Copernicia* hybrids. Should all of this uncertainty stop us from buying and planting these palms? Absolutely not! Both of these species are equally beautiful as well as their hybrids. Of all of the palmate palms in our garden, these palms provide me with the most visual impact. Anyone who has seen the magnificent *C. baileyana* growing at FTBG knows how these palms stand out in the landscape. FTBG's original *C. baileyana* were planted as mature plants in 1939 but you don't need 75 years of growth to produce an impressive palm. These palms grow quite fast if irrigated and fertilized. I recommend buying the largest palm you can find in the 15-25 gallon range. Even though palms this size can be quite expensive, buying and planting a palm this size makes an immediate impact to your garden.

Both *C. fallaensis* and *C. baileyana* are large palmate palms with large stems. They are monoecious palms with bisexual flowers. Stems are large, either columnar or swollen. The crown of leaves is spreading, not upright. The leaves are large with stiff leaf tips which stand out against the sky. These palms are endemic to Cuba and originally grew in savannas and woodlands but are now relegated to growing in pastures and agricultural areas. These palms are considered endangered in the wild. *C. fallaensis* flowering branchlets are 4-5cm long with solitary flowers. *C. baileyana* flowering branchlets measure 8cm long with clustered flowers of 2-3 in number. Both of these palms have inflorescences which extend beyond the leaves. Leaves are not self cleaning but the palms hold onto a limited number of dead leaves which provide habitat for wildlife, like bats. Even though these palms can grow in dry areas, they also grow in wet or periodically inundated areas.

How do these palms grow in Palm Beach County? Let me share our experience. As with many palms in this genus, growth rates may vary widely. Our oldest *C. baileyana* which is 23 years old, transplanted from our garden in Jupiter has not grown in height. It is still about a foot tall. Some palms are runts and will never grow. In 25 more years of growth it will probably still be one foot tall. I've also seen this stunted growth habit in certain *Copernicia macroglossa*. If you plant large specimen palms grown in 15-25 gallon containers you eliminate the possibility of planting a runt. Our 21 year old *C. baileyana* specimens average a height of 15' tall measured to the bottom of green petiole bases. Palm footprints measure 16-18' in diameter. Stems average 22" in diameter. Three *C. baileyana* specimens planted in 2006 now stand about 8-10' tall. These palms were planted from 25 gallon containers. Three *C. fallaensis* purchased and planted 14 years ago are 14', 8', and 1' tall. As you can see there is quite a bit of variation in growth rate. The shortest specimen is planted in the shade but it still is healthy and quite beautiful. These palms do grow best in full sun. Even though I've seen these palms growing successfully in very wet areas in Cuba, I have had more success planting these palms on mounded or raised areas. If your garden never floods, this should not be an issue for you. If you spend the money on a 15-25 gallon size plant, I wouldn't plant it in a low area just to be safe.

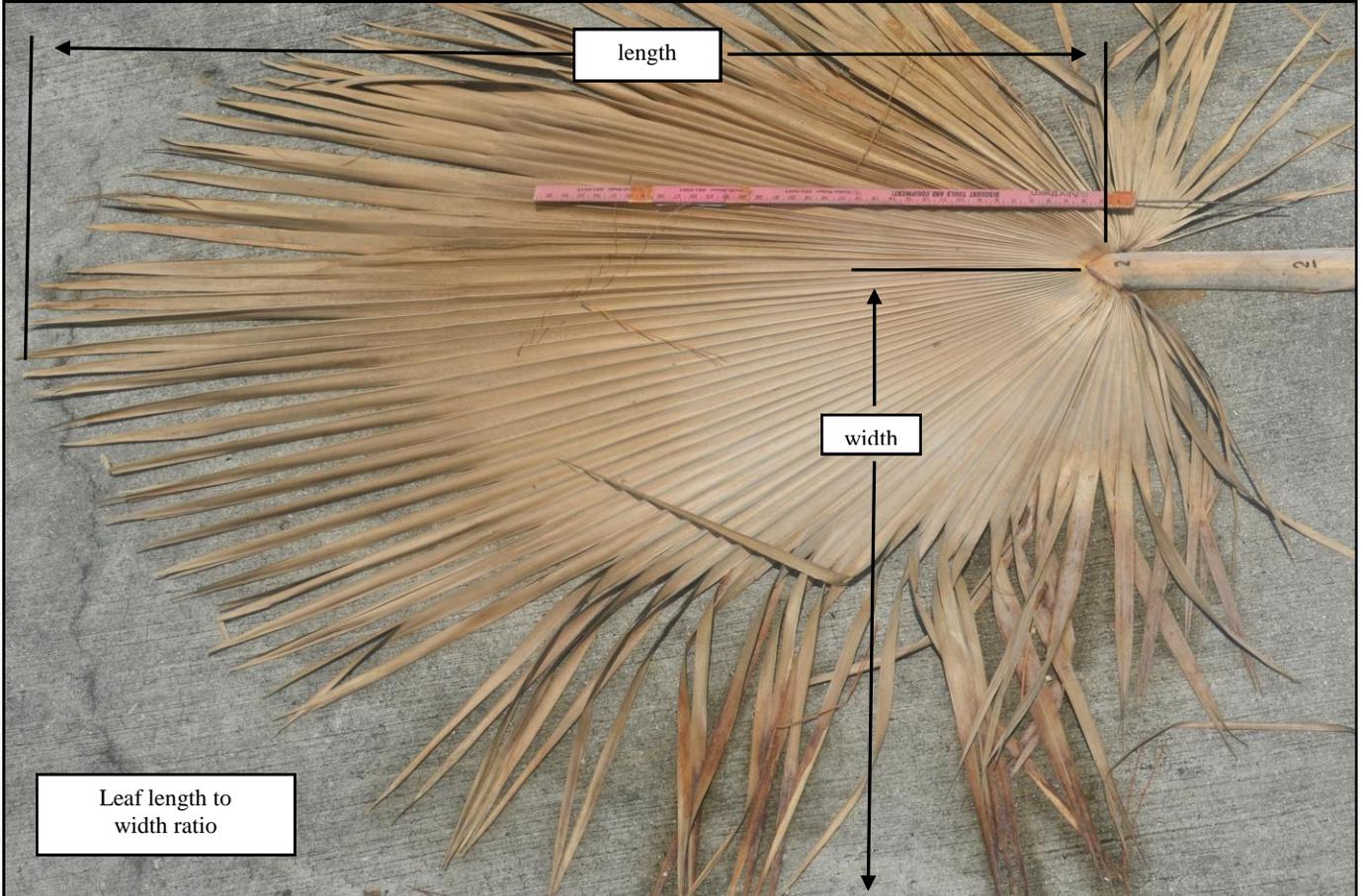
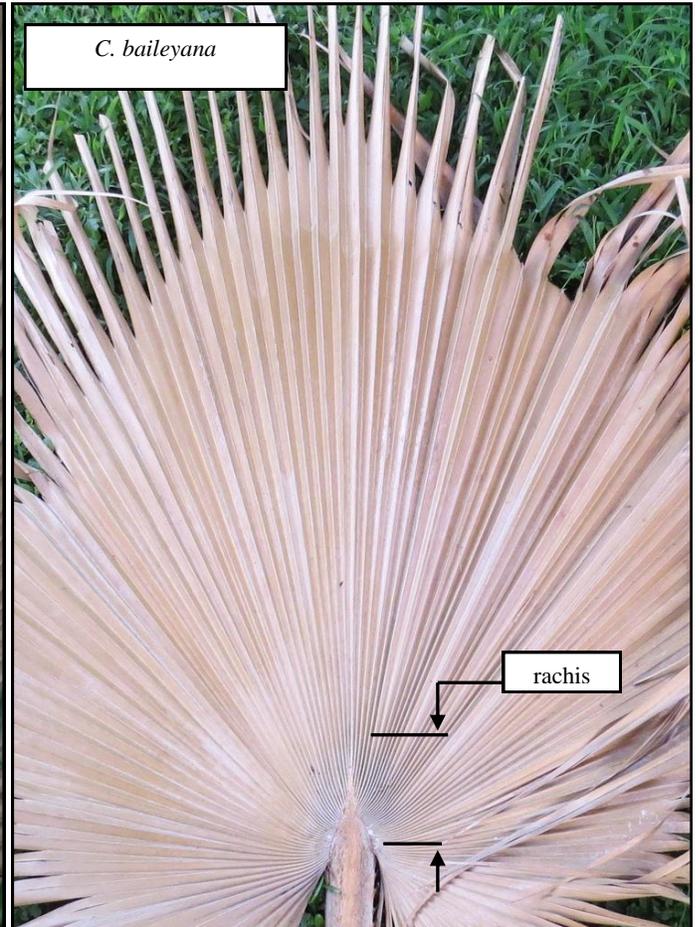
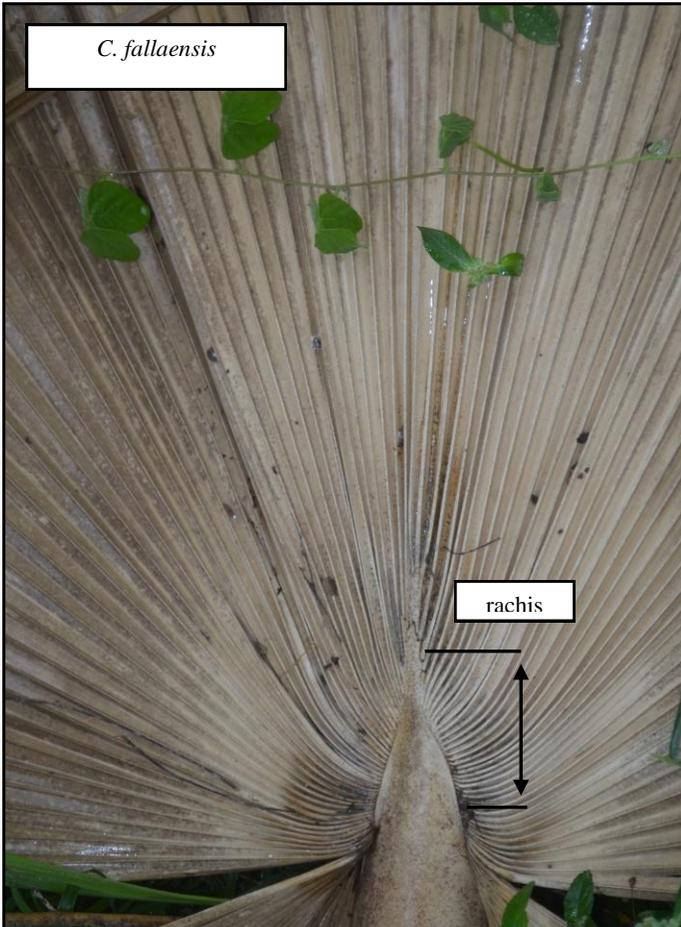
Hurricane resistance is variable. Many of the mature *C. baileyana* at FTBG toppled over in Hurricane Andrew. They were reset with cranes and most survived the shock. The *C. baileyana* at FTBG also survived the record freeze of 1989. Temperatures dipped to 27 degrees F on two nights. I observed only 25 percent leaf burn and I doubt there were any fatalities. The record cold winters of 2009 and 2010 had no evident effect on our *C. fallaensis* and *C. baileyana* planted in our garden in Palm Beach County.

If you grow these palms in our sugar sand expect minor nutritional deficiencies. There is quite a bit of variability. Some palms are happy with recommended fertilization applications but some palms require constant vigilance by the grower. Potassium deficiencies are common and are easy to fix. Extra potassium will help reduce the yellow speckles on older fronds. The same goes for magnesium deficiency- dolomite, magnesium sulfate, or Epsom salt will reduce leaf tip yellowing. Boron deficiency sneaks up on you and can kill your palm if untreated. Look for stunted emerging fronds. Even though there is a full crown of healthy fronds, look at the emergent fronds. Stunted fronds can be shielded from view by healthy fronds so be vigilant. The cure is ¼ cup of borax diluted in a bucket of water evenly spread below the canopy. If the canopy is large more might be required. Be careful- over application of Boron can be fatal. I must admit that I give these palms a double dose of fertilizer when I feed them. I circle the palms twice when applying fertilizer. These palms do respond to the extra feeding.

I hope you enjoy photos of these magnificent palms that I took in Cuba. The photos from Cuba include multiple populations of *Copernicia baileyana* but only one population of *Copernicia fallaensis*

due to inclement, rainy weather. I also included photos of some of *C. fallaensis* and *C. baileyana* growing in our garden. In my opinion, nothing rivals the charm of their stiff leaf tips quivering with the slightest breeze when contrasted with a blue sky. Give these palms a try in your Palm Beach County garden. They are about the same mature size as the more commonly planted *Bismarckia nobilis*.

	<i>Copernicia baileyana</i>	<i>Copernicia fallaensis</i>
Overall height	33-49 feet	39-66 feet
Stem diameter	up to 26 inches	up to 31 inches
Petiole length	up to 51 inches	up to 69 inches
Petiole width apex	up to 3 inches	up to 3 inches
Petiole width base	up to 7 inches	up to 14 inches
Leaf blade	orbicular	orbicular
Rachis length	1.5 - 4 inches	up to 4 inches
Leaf blade segment number	110-130	up to 120
Central blade segment length	up to 65 inches	up to 82 inches
Inflorescence length	up to 10 feet	up to 12 feet
Flowering branchlet length	up to 3 inches	up to 1.5 inches
Compiled from Revision of the Genus <i>Copernicia</i> 1963		



Copernicia fallaensis in Cuba



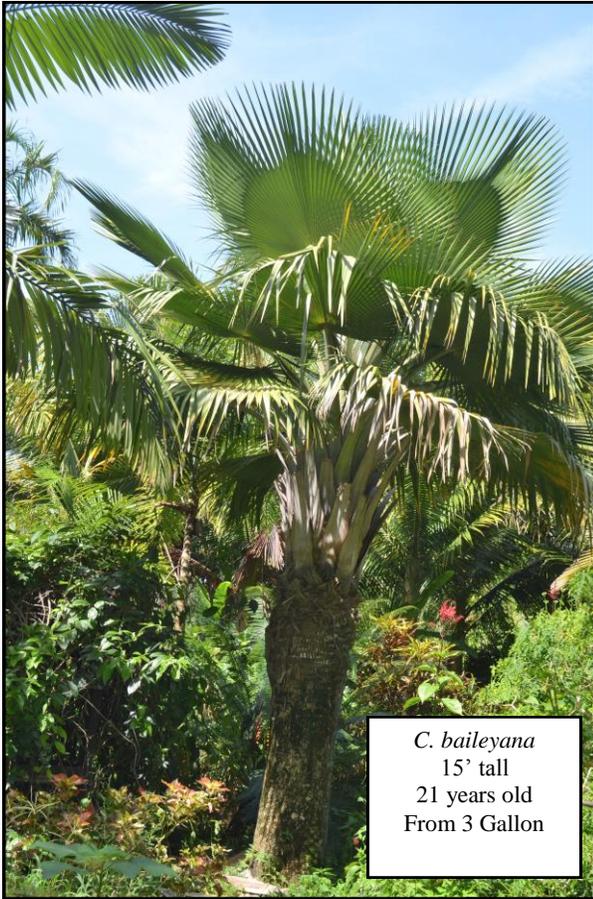
Copernicia baileyana in Cuba



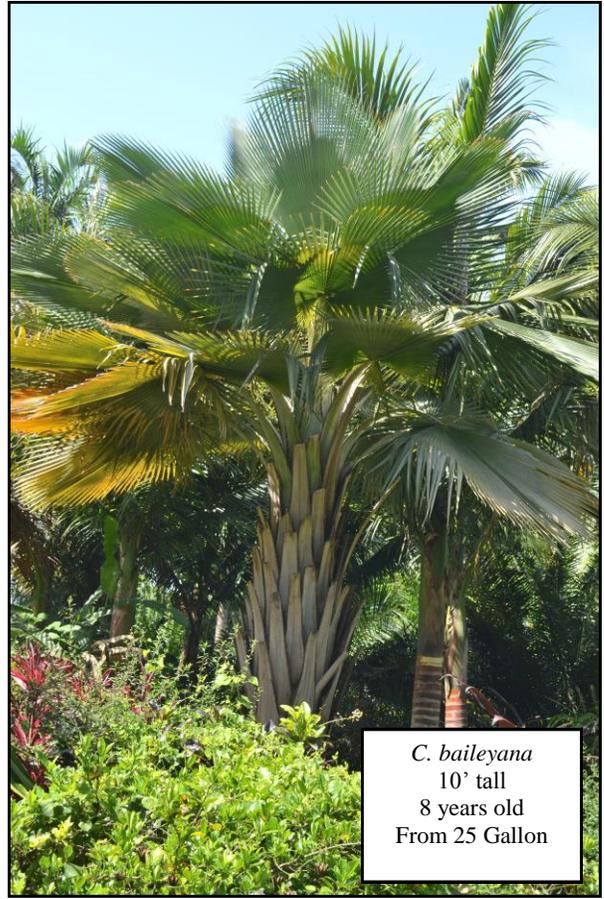
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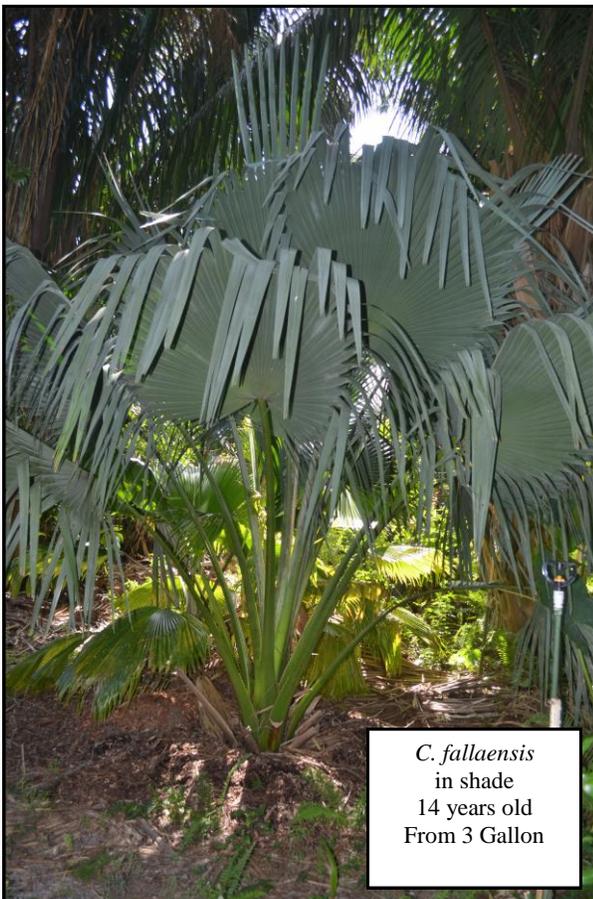
Copernicia in the Beck Garden



C. baileyana
15' tall
21 years old
From 3 Gallon



C. baileyana
10' tall
8 years old
From 25 Gallon



C. fallaensis
in shade
14 years old
From 3 Gallon



C. fallaensis
14' tall
14 years old
From 25 Gallon





Stunted leaves

C. baileyana recovering from boron deficiency



Boron deficient
disfigured
emergent frond



C. baileyana with potassium
and magnesium deficiency

UPDATE

Comparison of *Copernicia baileyana* and *Copernicia fallaensis* Rachis Length

Submitted by Charlie Beck

Our July 2014 Newsletter (see link below) addressed the differences between *C. baileyana* and *C. fallaensis* as stated by Cuban palm expert Raul Verdecia. One of the differences between these two species is rachis length. As explained to me, *C. baileyana* has little or no rachis extending into the leaf and *C. fallaensis* has a long woody rachis present.

<http://www.palmbeachpalmcycadsociety.com/palms/documents/CoperniciaBaileyanaAndCoperniciaFallaensis.pdf>

While in Cuba visiting a population of *C. fallaensis*, I couldn't closely observe the rachis length on mature specimens because it was raining quite hard and the rain masked any detail on such tall palms. Immature palms close to the ground did not display a long woody rachis. Those immature *C. fallaensis* looked just like *C. baileyana*. I believed Raul that this was a distinguishing feature, but I couldn't verify it observing leaves on immature specimens.

When I returned to Florida, I compared rachis lengths of many specimens of *C. baileyana* and *C. fallaensis*. I examined palms in our garden, Dale Holton's garden, Fairchild Tropical Botanic Garden (FTBG) and Montgomery Botanical Center. All of the *C. fallaensis* specimens were immature plants. Even the oldest *C. fallaensis* at FTBG was only 26 years old and 15' tall. At that time the difference in rachis length was subtle and didn't stand out as a distinguishing feature.

Two years later I toured Gifford Arboretum at University of Miami. Planted there was an immature, silver *Copernicia fallaensis* with a noticeably prominent rachis. Seeing this, I returned to FTBG to reexamine rachis lengths on *C. baileyana* and *C. fallaensis*. Their oldest *C. fallaensis*, now 28 years old, looked quite different. Besides being 3-4' taller the leaves now displayed a prominent long, woody rachis. When compared *C. baileyana* the difference was obvious.

Returning home I reexamined the 18' tall *C. fallaensis* in our garden. This palm is approximately the same size as the one at FTBG although it's 12 years younger. The rachis length on this young specimen shows little difference from the ones on *C. baileyana*.

I conclude that rachis length is a valid distinguishing feature as stated by Raul Verdecia but it usually becomes more apparent on mature specimens. Most immature *C. fallaensis* that I examined in Florida showed a much more subtle difference in rachis length.

The reason that I key in on rachis length is that there is a lot of overlap in the other distinguishing features:

- *C. baileyana* can have silver or grey fronds like *C. fallaensis*.
- The overall difference in size between these two species is not apparent unless you see them side by side. In Cuba I saw these two species at different locations and I can't remember a notable difference in size. Unless you see large populations of these palms and take measurements it's difficult to make this call.
- Leaf shape also has a lot of overlap. *C. baileyana* has a more rounded frond. *C. fallaensis* has a more diamond shape frond. I've seen *C. baileyana* with elongated paddle shape leaves and I have seen *C. fallaensis* with rounded leaves. Leaf shape differences become more apparent in mature palms similar to differences in rachis length.

