The Palmateer

Volume 23, Number 2 *Central Florida Palm & Cycad Society* *June, 2003*

June Meeting in Lake Placid

Our June 14th quarterly meeting takes us to an inland area of the state where we've seldom gone—away from urban clutter—to the semi-rural town of Lake Placid. Our hosts are Walt and Cathy Darnall, with a young collection in a fairly chilly place. The palm bug has truly bit, as can be seen in the list of palms being grown by Walt. The account of their property begins on page 3. For those with a particular interest in native palms, it's the opportunity to see *Sabal etonia* in habitat.

The Board will meet at 9 a.m. at the Darnalls'. Anyone wishing to see this august group at work is invited

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The safari is in the heart of urban St. Petersburg: attendees at the March meeting follow the guided tour of Sunken Gardens given by Phil Stager. That's quite a large spindle palm in the shadows at the right. *(Photo by Chuck Grieneisen)*

Ed Carlson (far left) gives winter visitors The Tour of his collection in Vero Beach. The Bismarckia *grows on his front lawn.*

March Meet in St. Pete

By John Kennedy

Sunken Gardens in St. Petersburg was the first of two stops in the March 28th meeting. It's an old tourist attraction of the kind that awed winter visitors in the 1930s and 1940s but which has since been replaced by the recondite pleasures of Disney World, Sea World, and others. The City of St. Petersburg owns and operates the 100-year-old attraction now. And it **is** attractive, heavily planted with tropicals on winding paths on multiple levels; at the bottom or center is the original sinkhole around which the first plantings were established. Only 6½ acres, Sunken Gardens seems much larger entirely because of those winding paths, limited visibility, and changes in level. The gardens are well maintained, but not rigidly manicured.

About 40 members turned out, enjoying the group

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June 14th Meeting

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to come a little earlier than the regular starting time of 10 a.m. At 11:15 begins the sale/auction, so all our small-vendors may bring their wares. At noon, a barbecue lunch is available ($6.00 per person).

Afterwards, a tour of Lake Placid, a place where few of us have been, is on the schedule. At 2:00 p.m., the group will arrive at member Larry Lueschen's Two Sisters Nursery outside the town. There, in addition to the usual palm offerings, are *Phoenix theophrastii*, *P. rupicola,* and *P. sylvestris*—in small sizes.

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Contributors. . .

Your experiences with palms and cycads may be of interest (and education) to other CFPACS members. Write about what you've learned—maybe by trial and error.

Contributions should be sent as Word document attachments to an e-mail message to the Editor (jkennedy@ircc.edu). Pictures, preferably jpeg, may also be sent as attachments.

Articles in *The Palmateer* are in 10-point Garamond; genus and species names go into italics.

June 14: Lake Placid Itinerary

9:00 a.m. Board meeting, Darnalls'. All CFPACS members are welcome to attend.
10:00 a.m. Tour of Walt Darnall's gardem
11:15 a.m. Sale/auction
1:00 p.m. Tour of Lake Placid
2:00 p.m. Visit to Larry Luepschen's Two Sisters Nursery in Lake Placid.

Lunch is beef and chicken barbeque with potato salad and the other picnic fixings. Vegetarian options also available. Price: $6.00 per person. Walt and Cathy Darnall will provide beverages and fruit salad.

ARTISTS!

Volunteer artists urgently needed to submit designs suitable for (1) CFPACS tee shirts and (2) for a CFPACS logo. (That may be two separate designs.)

Artwork need not be to scale.

For details and more information, contact Charlene Palm (beachpalms@cfl.rr.com) or send designs to her at 220 Ocean Spray Avenue, Satellite Beach, FL 32937.

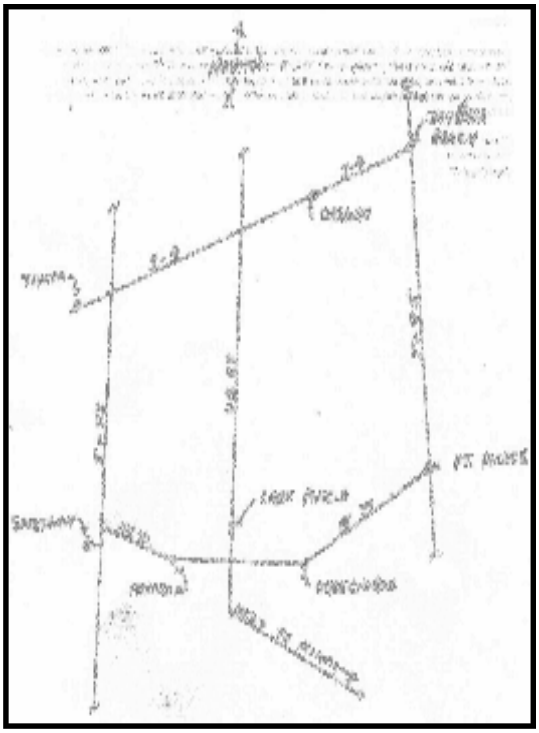
DIRECTIONS TO LAKE PLACID

From Tampa: east on I-4 to US 27. South on US 27 to Lake Placid.
From Bradenton: from I-75, go east on Rt. 64 to Zolfo Springs; south for one mile on Rt. 17; east on Rt. 66 to US 27; south (10 miles) to Lake Placid.
From Sarasota: from I-75, o east on Rt. 70 (through Arcadia) and continue east to US 27. North (7 miles) to Lake Placid.
From Ft. Pierce: from I-95, go west on Rt. 70 (through Okeechobee) and continue west to US 27. North on US 27 (7 miles) to Lake Placid.
From Orlando/Daytona Beach: from I-95 at Daytona Beach, go west on I-4 to US 27; south on US 27 to Lake Placid.

Directions to Walt's and Cathy's residence from Lake Placid proper:
If coming from the north on US 27, go to the 2nd traffic light (after coming into Lake Placid) and make a left (east) on Rt. 621 (also called Interlake Blvd.). Go less than one mile and make a left onto Lake Clay Drive. Go less than one mile and make a right onto Oak Ave. Go less than one mile to first stop sign (at Oak and Mulberry Avenues). Go one more block and make a right onto Elm Avenue. After turning onto Elm Ave, driveway is second on right **[1551 Elm Avenue; (863) 464-6615]**.
If coming from the south on US 27, make a right at first traffic light (Rt. 621/Interlake Blvd.) At this point, follow local directions in above paragraph.

Parking note: Parking (free) will not be a problem. To the right (east side) of our driveway there is a 75' by 150' cleared lot (our property) that can be used for off-street parking. Parking is also permissible along wide grassed shoulder of Elm Avenue along my property. If additional parking is needed, please park in field area on main property, inside gate. A CFPACS sign will be posted to help identify the parking areas. Hope to see you all there!

BYOS:
Bring your own seat
(a lawn chair).



About the Darnalls' Place

General location: Highlands County, Florida
Town: Lake Placid
Meeting/auction site: Residence of Walt and Cathy Darnall
General information about Walt and Cathy and their property: Walt Darnall and Cathy Darnall reside on a 5.60 acre parcel of land located in the Sylvan Shores subdivision at Lake Placid, Florida. Their residence backs up to state property and consists of various species of scrub oak, live oak, slash pine, dahoon holly, sweet bay magnolia, *Sabal palmetto*, *Sabal etonia,* and approximately 75 species of cold hardy and tropical palms. The property ranges from lightly wooded to semi-open areas, with some pathways.
Walt and Cathy purchased their property and had a new home built on it in 1998. Their interest in palms began shortly after their new home was completed, feeling that they needed to incorporate more palms into their landscape. This interest accelerated after joining CFPACS!
At the present time, there are eight large *Sabal palmettos*, 100s of *Serenoa repens* and *Sabal etonia* palms that were original to the property. During the last several

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St. Pete March Meet

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rate for admission ($5), though some folks—unnamed—managed a further "senior citizen" discount and paid only $4. Entrance is through the gift shop which contains every nostalgic form of Olde Florida Kitsch that anyone's heart could desire: china thimbles, china bells, shells, etc.—all stamped "Sunken Gardens."

Phil Stager, the Sage of St. Pete, led the group on a tour of the property. Yes, there are macaws and, yes, there are flamingoes, but the alligators and monkeys of the past seem to have departed. Relatively few species of palms are present from the old days, principally large royals and 40-foot *Archontophoenix cunninghamiana*. Other palms on the property include *Carpentaria*s, some Triangle Palms, big Spindles, *Chamaedorea cataractarum*, *Dypsis cabadae, D. lucubensis, Dypsis lastelliana*, and *Phoenix dactylifera*. In other words, nothing really unusual, but a reasonable variety. Truly immense are specimens of Ponytail "Palm," *Beaucarnea recurvata* and of Traveler's "Palm," *Ravenala madagascariensis*. A sight that amazed the visitors were numerous *Strelitzia nicolai*—the large relative of bird-of-paradise plant—as high as the piccabeen palms and with trunks as large. The site is in a favorable microclimate, for there were no signs of cold damage.

An unscheduled stop was made to Tropical Exotics nursery in St. Pete. This recently opened business scarcely needs a sign, for specimen palms (*Bismarckia* and others) have been planted at the corners of the busy street on which it is located. Landscape size palms for sale included *Kentiopsis oliviformis*. The palms were all in good condition and in an assortment of species. Several members were surprised to spot in a large container a 10-foot Japanese Maple, more commonly seen north of Gainesville. Particularly striking was the variety, size, and colors of ceramic and stone containers on sale for patio and atrium plantings.

The second scheduled stop, after lunch, was The Florida Botanical Gardens in Largo, a northern suburb of St. Pete. Only a few stragglers, maybe 20 or so, managed to arrive at this difficult to find, out-of-the-way location. The route required about 10 miles of driving on Ulmerton Road, the kind of urban horror that can be duplicated in any American metropolitan area: six lanes of bumper-to-bumper traffic, red light at every corner, the road lined with numberless pizza parlors, gas stations, fast-food franchises, and strip malls. The garden itself is new, huge and spread-out, 150 acres, as yet thinly planted. Owned and operated by Pinellas County, there are handsome separate walled gardens. The Palm Garden is located in an open area and many young palms in it showed heavy cold damage: *Elaeis guineensis*, *Arenga pinnata*, *Latania loddigesii*, *Hyophorbe lagenicaulis*, *Ptychosperma elegans*. Among the palms that showed no sign of damage were *Pseudophoenix sargentii, Coccothrinax argentata*, and *Livistona muelleri*. The Tropical Garden also has palms.

Another view of the big Hyophorbe verschafeltii *at Sunken Gardens in St. Pete. (Photo by Chuck Grieneisen)*

Intriguing to the visitors was the Wedding Garden, about an acre in size, walled, with discreet pools on each side containing bubblers, a well-maintained lawn in the center, a white wrought-iron cage (?) for the happy couple to stand in or in front of for the ceremony. At the time of our poking about, caterers were setting up tables, white folding chairs already faced the cage. Some of us had no idea that brides so hankered for humidity, heat—mid-80s--sun (maybe rain?) for their weddings; another wedding was being set up earlier at Sunken Gardens.

A plant sale, in our favorite locale (a parking lot), after the self-tour ended the meeting. At least one visitor made a beeline for Haslam's, the famous old St. Pete used-book store and landmark on Central Avenue. A member, living less than 50 miles away, who asked what Haslam's was, shall remain nameless.

Below, some of the world's tallest Serenoa repens*, ordinarily a clumper, about 50 trunks, 25 feet high. This is one of the natural sights at Lake June, in the town of Lake Placid, and can be visited on June 14. That's Norm Cook giving scale to the palms.*

(Photo by Walt Darnall)

Above, an unknown Copernicia*, a freebie with a couple of little leaves handed out at a meeting in Rockledge Gardens about 10-12 years ago, growing here in the famed Palm'n'Weed Garden in Vero Beach. The leaves have a silvery cast, same color both sides, tips stiff. No trunk, small black spines. Can anyone identify this palm? Possibly a hybrid. Original tag only had a number on it.*

Palm Fest 2003

Unfortunately, the dates of Palm Fest (May 23-26) came too late for a report on this annual event to be included in the June issue of The Palmateer. *A full account of the festivities and photos will appear in the September issue. The person assigned to write the story will, thus, have ample time to do justice to the occasion.* *—Editor*

PLANT LABELS MADE EASY

By Jerold Crawford

One of the things that I have always admired when I visit any botanical garden is the way that the specimen plants are labeled. I have looked at a number of ways of doing this and had to rule them out as prohibitively expensive.

I have about 50 species in my yard. Many of them are along the street or in other areas that visitors could see. Frequently, I will get walk-bys that want to know the various species and their common names. I am happy to speak to them, but I am not always there. I want to do my bit to educate the palm ignorant about what is in my yard and the different climate zones of the palms.

I like the engraved plastic labels, but it would have cost a small fortune. Plus the hassle of making a change or having to replace them was a real problem. Paper signs fell apart at the first rain. Writing on plastic labels looked tacky. There is metal tape, but it requires a special machine to imprint them. If you want to put a lot of information on metal tape, you wind up with 2 feet of metal tape. There has to be a better way.

I discovered that I could make really nice labels for

Figure 1: the label, front and back.

my plants that are durable, easy to make, and nice looking—on my home PC. You need to have following items either at home or at your disposal: a laminator (most people have one at work), name tag-sized laminating cards from Office Depot or Staples—do not use the business card-sized laminating cards, as they are too small—a PC with word-processing program and a printer, Avery 5390 business cards (they come 10 cards to an 8½ by 11 sheet), some silicone glue or sealer, and some metal plant labels from Home Depot or K-Mart.

I gathered all the information on my plants and put it

Figure 2: label in the ground.

into a database program that I could merge into Word or Word Perfect. The information that I wanted to have was the botanical name, any common names, date planted, and the USDA zone they are rated for. I also included a small graphic of a palm that I want to appear on my labels. It is not necessary to do this, but I have 50 some species in my yard, and have spread into several of the neighbors' yards, so I did want to merge/print the information into a form, rather than print each one separately. You can set up your word processor with the proper form and directly type the information in. I chose to use a large font for the botanical name, a smaller different font for the common name, and a different font yet for the year planted and the USDA zone rating. Make sure you save your work so you will only need to add any new additions if you need to reprint the cards later.

After the cards are printed, you break them down into individual cards and laminate them. I usually run them through the laminator twice to make sure they are well sealed. You then take the metal plant label and apply silicone glue or sealer to the flat surface that you nor-

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Above, a needle palm's leaf. The interesting spines are out of sight. See other picture, below (right).

PLANT LABELS MADE EASY

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mally write on and then glue the card to the label. Do not use hot glue to do this. (I initially did this and in the hot Florida sun, they lasted only a couple of weeks before the laminated cards detached themselves and fell off.) Set them aside overnight to cure.

My experience with the laminated cards is that they will last up to three years in our climate. The print from my HP LaserJet 4 has not faded in the sun. The metal plant stakes are durable, yet flexible enough that they can be bent back into place if you trip on them (which I do all the time). When the time comes that the laminated cards decompose, they can be peeled off the labels easily and reused again. This is the reason that I put them into a merge file so I can easily reprint them, add changes or additions, or correct mistakes (they said it was an *Archontophoenix alexandrae* at the nursery, but the flowers are pink, like an *A. cunninghamiana*).

Figure 1 shows a completed sign—front and back—and Figure 2 shows one in place in my garden.

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University of Central Florida's Needle Palm Rescue Service

By Chuck Grieneisen

Do you know of any needle palms (*Rhapidophyllum hystrix)* that are about to be bulldozed? The University of Central Florida will take them. The needle palm, a Florida native that has never been very abundant, is becoming increasingly rare due to habitat destruction and collection. Its very slow growth rate and apparent low reproduction doesn't help it in that regard. But it is a tough and durable plant. It can withstand occasional flooding and temperatures in the single digits (Fahrenheit). I was able to collect the seeds from the 100+ plants they have at U.C.F.(the seed source of the recent needle palm seeds) I only found 8 or 12 plants at the most with seeds on them. There are male and female plants and some of them didn't seem large enough to produce seeds (maybe 10 or 20 didn't seem large enough). That may explain part of the low seed rate. It also seemed to be a bad year for seed production. I saw at least 2-3 times as many plants that had seeds from last year.

The needles on Rhapidophyllum hystrix *are formidable, 6 inches long, but don't protect the palm from the bulldozer.*

The rescue service is run by Hank and Barbra Whittier. Hank is a botany professor there who also spends many weekends tending the many acres of the set aside arboretum acreage. He is retiring in June, 2003, but will continue on in the rescue service and to be the one to call. I asked him how they moved all the needle palms, thinking of the spines, up to a foot long. He said that they wrapped a chain around them and yanked them up with a truck. He said they only lost 2 or 3. (Remember, tough and durable!) The best areas for finding needle palms are in woodland areas at the

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Mauritia flexuosa *(left), the mature palm and (below) the same species in fruit. These palms are growing in Pointe-a-Pierre Wildfowl Trust—a nature preserve—in Trinidad.*
(Photos by Robert Wilson)

Needle Palm Rescue Service

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edges of swampy areas . I'm not sure how far they will travel to get the needle palms. They are in the Oviedo (Orlando) area. They also rely on volunteer help for removal of the plants and planting them. (hint! hint!) They also like to have location collection data. They have that on all of their needle palms. So if you see a new highway or a development going in where needle palms will be destroyed or would like to volunteer to help call Hank or Barbra at 407-365-3140.

A Profile of the Queensland Rainforest Cycad

Bowenia spectabilis

By Gary W. Wilson
School of Tropical Biology
James Cook University, Cairns
and Queensland Herbarium, Mareeba

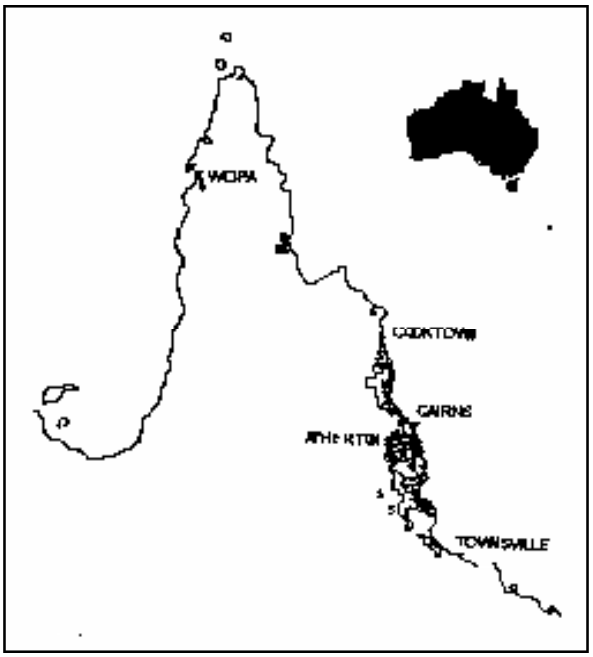
[This article appeared in the January, 2003, issue of Wodyetia*, the publication of the Far North Queensland Palm and Cycad Assn., and is reprinted here with the permission of the editor, Bill Beattie, and of the author. An earlier version appeared in the journal* Encephalartos *70: 10-15 (January, 2002). –Editor]*

Alan Cunningham collected material of what was to be named *B. spectabilis* in north Queensland in 1819 or 1820 whilst working as collector for Kew Botanic Gardens. Joseph Dalton Hooker described the genus an species in 1863 from material growing at Kew and collected from Rockingham Bay in North Queensland by Walter Hill. Hooker was botanical giant of his time and confidant of Darwin and Cayley; travelled widely, including to Antarctica with the *Erebrus* and *Terror*, and botanised in Tasmania and New Zealand. However, in Australia, he did not venture north of Sydney and did not see *Bowenia* in its natural habitat.

Hooker named the genus after Queensland's first governor, Sir George Ferguson Bowen (1821-1899) on the request of Walter Hill (I have a photograph of the type specimen and Hill's request in neat handwriting can be seen on a note glued to the sheet). Bowen was governor of the colony between 1859 and 1868 and had a distinguished public service career; he was later governor of New Zealand (1869-73), Victoria (1873-9), Mauritius (1879-82)and Hong Kong (1882-5). A range of features, including a town (Bowen), a prominent mountain (Mount Bowen on Hinchinbrook Island), and an important geological formation (the Bowen Basin) are also named after him. The epithet *spectabilis* refers to the 'spectacular' or 'showy' nature of the leaves.

The type of *B. spectabilis* has leaflets with entire margins and Hooker referred to this in his description. This condition contrasts with the serrate leaflet margins in *B. serrulata* from Central Queensland. Some confusion has existed about the distribution of *B. serrulata* and the systematics of *B. spectabilis* as plants with leaflets with serrate margins also occur in north Queensland. The latter plants have, on occasion, e.g. Keto and Scott 1986, been referred to *B. serrulata*, and Peter Gummow advises me that populations at Tinaroo and Kuranda on the Atherton Tableland, have been known in the nursery industry as *B. Tinaroo* and *B. Kuranda* respectively. In the Queensland Herbarium, collections from these locations and nearby Mt Haig were labeled as 'Mt Haig L. W. Jessup 910', but due to recent work by Kokubugata et al. (2000, 2001), they have been relabeled as *B. spectabilis*.

Although it is inappropriate, as Byfield is located some 1000 kilometres to the south, the common name 'Byfield Fern' is also sometimes applied. *Bowenia spectabilis* appears on the logo of the Wet Tropics Management Authority (WTMA), the body responsible for the management of the West Tropics of Queensland World Heritage Area.



Above, shaded areas show the habitat of Bowenia spectabilis *in Queensland, Australia..*

Distribution and Habitat

Bowenia spectabilis occurs in the Wet Tropics from Cardwell to Cooktown and on isolated wet uplands at McIlwraith Range and Starke on Cape York Peninsula. The McIlwraith Range population has been known of since 1948 but the Starke population was only discovered in 1996 by local botanist Bruce Wannan. Palaeoclimatic data indicate that the low-lying, wider temperature range and less-humid (megathermal) Normanby Gap has separated the McIlwraith and Starke populations since the Pleistocene, but the Starke and

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Bowenia spectabilis

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Wet Tropics populations have been in contact more recently. The Wet Tropics population occurs from sea level to the western margins of the Atherton Tableland and has been fragmented and substantially reduced by land clearing over the past 100 years.

Bowenia spectabilis grows in rainforest and adjoining tall wet eucalypt forest ecotones. Plants with pinnules with entire margins occur in Mesophyll and Complex Notophyll Vine Forest types. Plants in less complex rainforest types and in ecotones have pinnules with serrate margins. The area of distribution of *B. spectabilis* has a distinct Wet-Dry Seasaon climate. The annual rainfall is 1500>4000mm, the mean annual temperature (MAT) between 24.1 and 25.7°C, and the mean temperature range around MAT between 14.1 and 18.0°C. The lowest monthly minimum mean temperature in the range of *B. spectabilis* is 10°C, and occurs on the west of the Atherton Tableland. The distribution of the species is limited by mean minimum temperatures rather than other climatic or environmental parameters and it does not generally occur above 800m. The core areas of habitat are not subject to wildfires, although past dry periods when fires were more frequent restricted the species to mesic refugia that were shared with other endemic and ancient plant taxa for which the area is now so well known.

Above, a closeup of the pinnules or leaflets of the Bowenia spectabilis. A rainforest cycad, it appears to be dripping wet.

Description

The stem is subterranean and described as carrot-shaped, to 100 mm in diameter, and sparsely branched with a tuberous taproot (Jones 1993). However, recent work by local botanists Garry Sankowsky and Peter Radke and the author has revealed plants with larger and much-branched stems, as in *B. serrulata*, also occur. 'Coralloid' apoeotropic roots containing nitrogen-fixing symbiotic organisms often extend to the soil surface, particularly on plants growing on nutrient-poor substrates. The leaves and cones are borne on separate short branches.

The leaves are erect and vary in number from 1-3 per branch and 1-6 (usually 2-3) per plant. The leaves are bipinnate with 5-11 (13) pinnae (1st Order leaflets) and 7-30 opposite and non-articulate pinnules (2nd Order leaflets) on each. In mature leaves, the petiole is bulbous at the base, wooly on the lower portion and thereafter glabrous and up to 1500 mm in length—the length is variable, both among and within plants and I found one at Mossman Gorge that was 2 m high. The rachis of the pinnae, the pinnules rachilla and the pinnules are hairy when juvenile but glabrous when mature.

Extensive sampling reveals that length, width and length/width ratio of pinnules varies between and within plants and that populations cannot reliably be distinguished using these metrics. Pinnule shape is also variable, ranging from lanceolate through falcate to ovate, often on the same leaf or plant. The pinnules apex is usually acute and forms a 'drip tip'—a common feature that facilitates the draining of water on leaves of plants growing in areas with high rainfall. The stomata are superficial, unprotected, and scattered on the upper face, and in bands between the veins on the lower face, of pinnules. The thin epidermis and presence of stomata on both sides of pinnules reflects the low-stress environment of the plants. Cataphylls are present around emerging cones but are reduced and irregularly present about leaf bases, and are often not obvious when present.

Reproductive Structures

I do not like the use of the term 'cone' for the reproductive structures of cycads and fern allies; strobilus (*pl.* strobili) is my preferred and the technically correct term, this is because their ontogeny is not the same as that of cones of conifers. However, I am showing my age and as I will not win this argument, I will use

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Bowenia spectabilis

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'cone' in this discussion.

Bowenia spectabilis is dioecious with male and female cones on separate plants; this is the case with all cycads and the enigmatic *Ginkgo* , of which *G. biloba* is the only extant representative, but is not necessarily the case with conifers. Mature male cones are ovoid in shape; green-brown in colour, and c. 80mm in height but extend further when dehiscing pollen. The microsporophylls are about 20 x 12mm in size and wedge-shaped. The cone peduncle is generally short and not visible below cones, but in plants growing in boulder fields, they extend to 200mm. Female cones are variable in shape and size but are generally barrel-shaped and to 150 (200) mm in height The megasporophylls are 50 x 20mm in size. The outer faces of both micro- and megasporophylls in cones have fine, short hairs. Mature male and female cones are thermogenic with temperatures being raised 4-6°C above ambient with a maximum between 1200 and 1400 hours each day (Wilson 2002a, b) by the burning of stored carbohydrates. The cones emit a 'musty' bouquet during this period and it is hypothesized that this attracts the pollinating weevils but a chemical analysis of these volatiles has not yet been conducted.

Cone growth commences in the Dry Season, with male cones first obvious in August or September and about one month before female cones. Cones are produced earlier, and males dehisce pollen earlier, in populations in wetter locations, e.g. at Tarzali (av. 3988mm p.a.), than those in drier locations, e.g. at Tinaroo (av. 1749mm p.a.).

Male cones are produced more frequently on plants and in populations than female cones; indeed, a common comment made by rainforest researchers is how rarely they see a female cone. Male cones commence dehiscing pollen before the first female cones are receptive and continue until after the last female cone is receptive. The microsporophylls change from pale green to light yellow in colour and relax as the cones mature. The pollen in the sori on the abaxial surface of the microsporophylls is released over a period of four or five days in the month prior to the onset of the Wet Seasonal. Torrential rain has an immediate effect on male cone phenology, causing all mature cones in a population to immediately dehisce and to quickly disintegrate and decompose, and this happened at Tarzali in 1998.

In receptive female cones, the lower megasporophylls relax several millimeters for a period of 24-36 hours to allow the entry of pollen and/or pollination vectors. Female cones are often partially submerged in the soil or leaf litter at the time of pollination; a cone of *B. spectacbilis* at Tinaroo was found almost buried in the coarse granitic gravel but a later analysis revealed 18 of 23 (78%) ovules had been fertilised. The female cones remain intact until the following Dry Season, 6-7 months after pollination, and grow to 250mm and 100g during that period. The fertilised ovules (seeds) become visible between the megasporophylls, and the sarcotesta, the fleshy covering, changes in colour to pale pink/lilac/blue, as they mature. Few intact mature cones are found, as they are broken apart by foraging animals once the seeds mature.

Bowenia spectabilis *is an attractive cycad. Could it grow in Florida? Or is it too tropical in its requirements?*

Five hundred (500) plants were surveyed at Tarzali and Tinaroo in September and November of 1994, 98 and 99 to ascertain the level of production and ratio of male and female cones. Production of both male and female cones in each population varied widely but no more than 5% of the plants in any population produced a female cone in any year. The data are, however, insufficient to show long-term rates of production of or sex ratios of plants in populations.

Seed found in hollow logs and plants growing on tree stumps indicate that animals distribute the seed of *B. spectabilis*, but few data are available on what species are involved. Most seeds found have the fleshy sarcotesta

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Bowenia spectabilis

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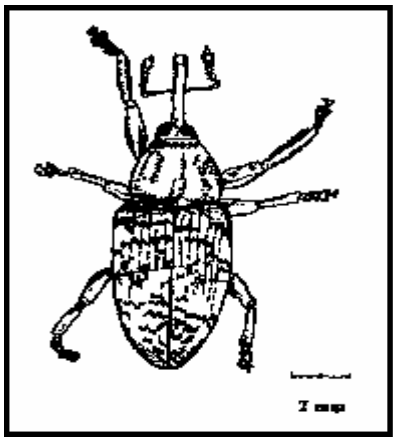
removed and teeth marks on the sclerotesta indicate that an animal has removed it, however few seeds are found where the sclerotesta has been broached. Anecdotal data (J.Winter, pers. comm..1998; A. Dennis, pers. comm.. 1999) indicate that macropods, particularly the Musky Rat-kangaroo *Hypsipyrmnodon moschatus*, disperse the seeds. Despite systematic searching, there is no indication that the Southern Cassowary, otherwise an important rainforest seed dispersal vector, distributes the seed of *B. spectabilis*.

Pollination Biology

Studies (Wilson 1995, 2002b) show that pollination in *B. spectabilis* is entomophilic. The pollination vector is the weevil *Miltotranes prosternalis* (Lea).

Miltotranes prosternalis is one of two species in the genus; the other is *M. subopaca* (Lea), the pollination vector of *B. serrulata*. *Bowenia spectabilis* employs a 'brood site reward' pollination system, the weevil is provided with food and a brood site in the male cone in return for transferring the pollen to the female cone. The weevil aestivates as a final larval instar in the leaf litter and soil between the reproductive events—the need for a continuously moist habitat is obvious, an extensive wildfire or a change in fire regime could destroy the next generation of the pollination vector.



Miltotranes prosternalis*, above, is the pollinator of* Bowenia spectabilis.

Miltotranes prosternalis does not use the female cone as a food source or a brood site, but visits them, perhaps because it can't distinguish female from male cones, but presumably attracted by their elevated termperature and the production of aromatic volatiles . At the female cone, the weevil feeds on the sugar- and amino acid-rich (at levels similar to those in nectar of flowering plants and higher than in wind-pollinated conifers), pollination drop of the ovules and transfers pollen to them.

Affinities, Phylogeny and Classification

The closest related species is *B. serrulata*, found 1000 km to the south in coastal central Queensland. The two species are separated by the Burdekin Gap and probably have been since climatic change and drying in the mid-Miocene 12-15 mya. Fossil material, including two named species, is known from the Eocene and Miocene of east and southeast Australia—all of the fossil material has leaflets with serrate margins, as in *B. serrulata*.

The relation of *Bowenia* to other cycads has proven difficult to resolve—although the fossil record of *Bowenia* extends 54 million years it may be much older and more closely related to intermediate forms now extinct than to any living genera. *Bowenia* was initially place in Zamiaceae, a family with a Gondwanan distribution, i.e., *Lepidozamia*, and *Macrozamia* in Australia, *Encephalartos* in Africa and all the American genera. More recently, Johnson (1959) placed *Bowenia* with the African *Stangeria*, in the subfamilies Bowenioideae and Stangeioideae respectively, in Stangeriaceae. Dennis Stevenson of the New York Botanical Garden retained this classification in his 1992 "A Formal Classification of the Extant Cycadales." If this classification is correct a common ancestor of *Bowenia* and *Stangeria* would have existed prior to the rifting of Africa and Antarctica, >90 mya. A contender is *Antarcticycas*, from the Beardmore Glacier and c. 220 million years old, but while there are morphological similarities, no phylogenetic inference has been made. The greatest chance of revealing the phylogeny of *Bowenia* lies in the use of molecular analysis techniques. Initial results of molecular studies separate the two species of *Bowenia* and chomosome analysis by Kokubugata et al. (2000, 2001) confirms that the two north Queensland forms constitute one species, *B. spectabilis*, but the results of work now in progress is required to clarify the relation of this and the other cycad genera.

Horticultural Use and Potential

Bowenia spectabilis is an attractive species and will grow well and cone in large pots, but is not as robust or frost tolerant as *B. serrulata*. It is not as common in private collections as one might expect and is more frequently found in botanic gardens in tropical and subtropical areas and in green houses in other areas around the world—we should not forget that it was described from a specimen growing at Kew on a small misty island in the north Atlantic. In north Australia, fine displays of this species are found in the Flecker Botanic Gardens and on the James Cook University campus in Cairns, and elsewhere it is easily seen in the

(Continued on page 13)

Bowenia spectabilis

(Continued from page 12)

wild and from interpretative boardwalks in several areas. Some tour operators, particularly those in the Daintree National Park, discuss this and other cycad species in their presentations.

Use by Australian Aboriginal People

The local rainforest people called *B. spectabilis* jayur, julbin, gunyoo or chiroo. The roots and seeds were roasted, crushed and soaked in water for 24 hours and cooked again before consumption. The local people also harvested, processed and ate the seeds of *Lepidozamia hopei* and *Cycas media* but *Bowenia* is much more toxic and requires more careful processing. In addition, *Bowenia spectabilis* produces fewer cones and seeds than *L. hopei* and *C. media*, and it is likely that it was consumed in lesser quantities.

Conservation Status

In common with all cycads in Queensland, *Bowenia spectabilis* is protected under Nature Conservation legislation, where it is listed as COMMON. The species is currently included in CITES Appendix II. *Bowenia spectabilis* is generally well represented in national parks and the Wet Tropics WHA but the McIlwraith Range population is not currently included in a conservation area.

Acknowledgments

The information presented in this paper was drawn from the literature cited below, from my own fieldwork and from that of fellow botanists and cycad *aficionados*. I thank Paul Forster of the Queensland Herbarium, Goro Kokubugata of the Tsukuba Botanic Gardens, and Bruce Wannan, Lou Randall and Roy Osborne for their contributions to my studies of this species.

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Hyphaene thebaica *at Florida Tech in Melbourne. That's Chuck Grieneisen providing scale.*
(Photo by Dave Witt)

A Belated Book Review

Ornamental Palm Horticulture

Broschat & Meerow:

Ornamental Palm Horticulture

Gainesville: University Press of Florida, 2000

By John Kennedy

This is not the kind of palm book that I ordinarily would look for. I like pretty pictures of palms, with some accompanying cultural/habitat information; the new Craft & Riffle, *Encyclopedia of Cultivated Palms*, exactly fits the bill. Broschat & Meerow's book came out three years ago and Mike Dahme then offered me his copy to read. I looked at the color pictures: oh, boy, 110 pictures of palms with every nutritional deficiency conceivable, every disease, every pest. A good, if not conclusive, case for **not** growing palms. I said, No thanks. I was too busy, etc., to read the text. The pictures were more than enough.

However, the owner of the book pointed out that it had never been reviewed in *The Palmateer* and that it ought to be. I agreed, reluctantly, and—flying up to Philadelphia and back in March—took *Ornamental Palm Horticulture* with me. I have difficulty reading novels in the noise of airports and airplanes, but a factually oriented book is OK under these distractions.

I was wrong not to have read Broschat & Meerow before this, wrong not to have reviewed it. While aimed particularly at nurserymen and palm wholesalers, there is much useful information for the hobbyist.

The first of the 11 chapters, "Palm Biology in Relation to Horticulture," deals very completely with every part of palm botany and goes into the classification of palms, their evolution, and length of life. For the beginner—and for those more "advanced"—the 39-page chapter contains in simplified form and with little scientific gobbledygook all that everyone should know, with black-and-white pictures and line drawings. At the end of this chapter, as with all other chapters, there is a bibliography that points the reader toward more complex and specialized scientific articles should he/she wish to go more deeply into any of the topics.

The 20-page second chapter, "Propagation of Palms," is a must for all who get seeds from our seed bank or elsewhere. Not only are the types of germination explained, but also (along with many other facets) planting depth of seedlings, light intensity and temperatures for germination. The pictures show huge flats of seedlings, clearly commercial, but not much beyond the efforts of some of our more ambitious members.

Those who keep records of freezes will find much to consider in the 18-page third chapter, "Environmental Effects on Palms." But the chapter goes beyond cold hardiness and freeze problems to questions of light, water, wind, air pollution, and electromagnetic fields (power lines).

"Mineral Nutrition of Ornamental Palms" is the title of the 28-page fourth chapter. I found it daunting, but clearly necessary reading. All of the nutritional disorders are laid out, together with the remedial treatments. One part of the chapter explains the causes of these disorders, while another tells how to diagnose problems. The section on fertilization requirements of sizeable landscape palms is pretty much commonplace knowledge to the oldtimers but may be useful as reference to newcomers.

Chapter 5 I went through faster than it deserves. "Arthropod Pests of Ornamental Palms" lists more bugs than I dreamed of in its 21½ pages. Offsetting my squeamishness were suggestions of control measures for each class of pest.

I did read, in fascinated horror, "Diseases of Ornamental Palms" (Chapter 6, 20 pages). It's a wonder, I realized, that my palms are mostly in good shape. The chapter is useful, I will admit, in the diagnosis of particular problems of particular genera or species. Once again, forms of treatment are outlined. Chapter 7, "Container Production of Ornamental Palms," is obviously intended for the nurseryman. The 15-page chapter does provide useful tips on growing palms in containers and re-potting that might be helpful to many of our members who only look as if they have backyard nurseries.

With "Field Production of Ornamental Palms" (Chapter 8, 16½ pages), we're once again in the commercial area, though the information about cold protection would be helpful to the hobbyist grower.

In Chapter 9, "Transplanting Palms," all the safeguards for moving and planting large palms are presented clearly, together with such interconnected topics as root regeneration, root pruning, removal of leaves, planting depth, and supports. Although aimed at nurs-

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A year ago a picture in The Palmateer *showed Jason Baker digging up a Triangle Palm at a noted tourist spot in Brevard County. The photo arrived with the cryptic notation, "trash pickup at Borassic Park," inspiring one member to protest palm snobbery, and solemn reflections on this by the Editor. The picture at right shows how happy the palm is in its new, appreciated home. Standing proudly beside his possession is Jason Baker, once more appearing in these august pages.*

Ornamental Palm Horticulture

(Continued from page 14)

erymen, just about everything in the chapter is applicable to us amateur growers (We **are** non-professionals, aren't we?).

Chapter 10, "Landscape Use and Maintenance of Palms," (11½ pages, about half of which are pictures), is fairly perfunctory and mostly consists of stating general principles of landscape design. Chapter 11, "Interiorscape Use and Maintenance of Palms," (11 pages) is more interesting. It's all about palms for atriums of buildings and for malls, rather than for homes, but has a long list of the light requirements of different species that could be useful to condo owners and northerners for whom palms are essentially houseplants. The list contains some species that some of us might hesitate to suggest for the rigors of growing indoors that we know are already finicky to grow outdoors. But the footcandle numbers are intriguing. I would have liked to know more than is briefly provided about the kind of materials in which the palms are planted at the mall, the size of the containers and how the palms are watered and fertilized. .

Immediately following this list come all the pictures of dead and dying palms. Come on, fellas, I mean Tim and Alan, how about ending on the upbeat? My final judgment on the book: it contains much very useful information for those wishing to learn more about cultural practices. I finished the book shortly after seeing *Ravenea rivularis* growing in large ceramic containers on glassed-in platforms in monorail stations at Newark (N.J.) airport. Lots of light when the sun was out, but what about winter when it's gray, heated and dry inside? How long did they last? They certainly looked healthy. Broschat & Meerow made me aware of the problems involved in placing palms in such a difficult environment.

Crown of a 50-ft Gaussia attenuata*, or Mogote Palm,picture taken from top of the mogote in Puerto*

In other news from Borassic Park, more digging as John Martin liberates a formerly shaded Elaeis guineensis *for a new home "elsewhere."*

Peerless palms

As friends of fronds know, the family includes an array of unusual, and even cold-hardy, members that can add elegance and variety to any yard.

By Tom MacCubbin

[This article—reprinted here by permission of the author and of the newspaper--appeared on the front page of the Home & Garden section of the Orlando Sentinel *on Saturday, May 3, 2003. The top half of the page has quartered four striking pictures of different palm leaves. The article is continued inside the section with a photo of a familiar leprechaun (Ed Hall) peering out from under a frond, and another of a* Bismarckia nobilis *on Dave Witt's front lawn. –Editor]*

Tall, stately and topped with a cluster of fan-shaped leaves, the cabbage palm is probably one off the first palms you learned to identify.

Known as Florida's state tree, this palm sports a large, sturdy trunk and grows to more than 40 feet tall. But don't let this palm's stature fool you. It's really not a tree at all. It has less-pretentious relatives that include the grasses, bromeliads, lilies, orchids and gingers.

Perhaps, like many gardeners, you think of palms only as the robust specimens massed in prominent clusters or lining walkways. But this is a diverse family with many unusual members.

Maybe you also have seen the clump-forming palms, with numerous shoots growing to varying heights and widths, that form impermeable barriers.

The palms that are the most overlooked are the reedy, thin-stemmed types. Depending on the species, they may produce one trunk or grow multiple stems forming attractive clusters. Palms can have smooth, almost white trunks while others are brown, red or yellow. Some are encased in thorns and others, a burlaplike material. Most Florida palms grow in the sun, but some are just as happy with some shade.

Palms are different, and that is what entices gardeners such as Ed Hall, a Maitland resident for more than 30 years, to begin a collection. Arriving from New York via Michigan, he immediately noted the new plant families Florida had to offer including the palms. Their unique growth habits and tropical look captivated this previously northern gardener.

"Palms give a presence that's difficult to achieve with other landscape materials," says Hall. "They are the elegant part of the landscape."

A cluster of three 20-foot-tall sabal palm hybrids, relatives of the cabbage palm, with more than 18-inch-diameter trunks and large fan-shaped leaves, towers over visitors approaching the Hall home. Hall says you couldn't achieve the same look with trees. In all he has about 50 palms. Many grow in the landscape, but some

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Palm of the Quarter

Bismarckia nobilis

My Favorite Palm (One of Them, Anyway)

By Jerold Crawford

A seriously underutilized palm here in central Florida is the Bismarck Palm or *Bismarckia nobilis*. This beautiful fan (costapalmate, actually) palm is a striking landscape specimen and draws attention to itself wherever it is planted. They also led themselves to group planting if not planted too close together.

Bismarck Palms hail from the drier savannahs of the island of Madagascar. This is a seasonally wet/dry climate that is to central Florida, but without occasional freezes that we get. Nonetheless, certain cultivars will take mild to moderate freezes in stride. They are a monotypic genus of palm with only one species, but several cultivars within the species. They are dioecious - that is they are separate male and female plants. The leaves can spread out 10 feet on a mature species. The petioles can be up to 8 feet long and are very slightly toothed on the edges. Old leaf bases can persist for years before coming off the trunk, especially when young.

Figure 1: A silver Bismarckia nobilis *in 1997, three years after planting from a 5-gallon pot.*

My experience with Bismarck Palms goes back to 1994 when I purchased one in a 5 gallon pot from Aloha Palms in Ruskin. It was a silver variety although the color looks somewhat blue- green to me. I was fascinated by the unusual color of the leaves and the fact that the owners said that their beautiful specimen survived a 22-degree freeze albeit with severe damage.

I brought it home and placed it in my front yard. In the fall of 1996, Tropical Storm Josephine blew through western Florida. With the flooding rains and the tropical storm force winds, the palm was blown over on its side. It was in a "wind tunnel" area between some arbovitaes and a fence. It appeared to have broken the roots on the windward side causing it to fall over. I was concerned that it may have been a fatal injury since Bismarck Palms are notoriously touchy about having their roots disturbed. I went ahead and propped it back up and staked it upright. It did not miss a beat in terms of its growth. See figure 1 for a picture of what it looked like 3 years after plant-

Figure 2: The same palm, 9 years after planting (2003).

(Continued on page 20)

A New Palm Book

By Mike Merritt

It was suggested that I prepare a written review of a significant new book, *An Encyclopedia of Cultivated Palms*, by Robert Lee Riffle and Paul Craft. To quote the Preface, "This book is intended primarily for gardeners and horticulturalists. Although it includes the latest taxonomic thinking about the family and the delineation of the species, it is not a systematic treatment of palms. Rather, it is scientific only to the extent that it needs to be for an adequate understanding of the plant descriptions." Some limited scientific jargon is used, but a glossary of terms is provided that should make the text perfectly transparent to all readers.

The principal author's most previous book effort was on tropical landscaping, and the aesthetic aspect of landscaping with palms is one of the principal elements of this volume. Botanical science is used in this book to support an aesthetic purpose. This gives the book added usefulness for the palm gardener.

The authors choose to open the main part of the book with a gallery of palm pictures rather than text, a call that I won't argue with. The picture gallery (929 plates in full color) is remarkable. While some photographs of seedlings are included, an impressive percentage of the photographs are of mature palms, and a large percentage of those are of specimens in habitat. For many species of special significance, several photographs are included, documenting items such as the species' trunk, crownshaft, inflorescence and fruits, and leaf details. In some cases, multiple whole palm images are included where multiple excellent photographs are available. The authors have drawn on their own vast collections of photographs, and have benefited from the photographic libraries of Chuck Hubbuch, Rolf Kyburz, Martin Gibbons and Tobias Spanner, and numerous others.

The gallery of photographs is followed by 236 pages of palm descriptions, arranged by palm genera in alphabetical order. Not having the time to read the entire text for this review, I read descriptions only of genera beginning with the letters A-D and L-M, which includes quite a few well-known and well-populated genera. The authors adhere to a standard format of treatment for the genera and individual species. The treatment of a species is often truncated when it is little known or rarely grown.

Information presented for each genus includes the geographic range, the number of species, descriptive plant detail common to all or most species, and (an unusual boon to the reader) the origin and derivation of the name of the genus. For each species described, the information presented includes the geographical distribution, the height, a description of the trunk, crownshaft or leaf bases, petioles, rachis and leaflets (if pinnate), blade and leaflets (if palmate or costapalmate), the inflorescences, and the fruits. After reading species descriptions of *Aiphanes*, *Arenga*, and *Licuala*, I found myself scurrying around my yard and greenhouse making detailed comparisons with the textual descriptions.

The species descriptions include (another boon to the reader) a description of the origin and derivation of the specific epithet, its conservation status if threatened or endangered, and usually includes a discussion of the best use of the species in a landscape design. Also included is cultural information, particularly the USDA climate zones for which the species is suitable. Other factors that may be included in the discussion of cultural requirements are the species needs related to water, soil type, light, humidity, drainage, as well as their wind and salt tolerance and rate of growth.

The coverage of species is not exhaustive; in the Preface, the authors note the "limited amount of space in this work and the inevitability of having to sometimes choose what to include and what to eschew". The photographic coverage is usually even more limited. In the case of *Aiphanes*, the authors recognize 22 species, of which they include descriptions of 11, some of which are truncated. Photographic coverage is of three of the species, including the ones most commonly grown, *A. aculeata* and *A. minima*. They recognize 17 species of *Arenga*, and describe all 17. The photographic coverage is of 14 of these species. Multiple photos are included for several. Under Licuala, "more than 100" species are recognized, of which 31 are described in the text and 20 are illustrated. In the case of *Licuala*, the treatment and choice of species and illustrations appears designed to highlight the differences among these often similar and confusing species, and to stress the significance of the same for the gardener.

The *Caryota* section is a little confusing, but I don't think anyone else understands the genus very well, either. Twelve species are acknowledged, and ten are described. The authors note that "many of the species names are tentative and the listings that follow are bound to change in the future."

A distressing number of species are described as being only "suitable for zones 10b and 11", which brutally reinforces the realization (especially to us dreamers in central Florida) of the fact that the vast majority of palm species, including many of the most dramatic and pleasing in the landscape or garden, are tropical and cannot be grown in most parts

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DEADLINE FOR SEPTEMBER ISSUE: AUGUST 4

New Palm Book

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of the U. S. A. In fact, the significance of most of this book will be greatest for English speaking readers in the Miami area, the Florida Keys, extreme southern coastal California, northern and eastern coastal Australia, and, possibly, parts of coastal south Africa. The non-English speaking audience, of course, will include the remainder of the tropical world.

The remainder of the book includes seed germination notes, arranged by genus. I found this section to be rather terse, and more detail and personal observation might have been appropriate. Also included in the remainder of the book are lists of palms arranged according to landscape uses, a list of photo locations, and a guide to the pronunciation of scientific names (another unexpected boon for readers, though I think that a similar list exists on the PACSOF website). However, more than one individual is up in arms about one recommended pronunciation. We are stunned to learn that the genus name *Thrinax*, and other genera that use 'thrinax' as a part of the name, is to be pronounced "TRI-nax".

A section incorrectly titled "Index" is actually a very useful index of synonyms. Here, I learned that my *Calyptrocalyx stenoschistus* seedlings are really *C. forbesii*, and that my *Livistona kimberleyana* plants are really *L. lorophylla*.

This excellent book has already become my primary general palm reference. I still refer, as a cross check, to the fairly recent Ellison book, though many of its photographs are of seedlings, and the descriptions are not as detailed. The older book by David Jones is still an excellent reference, but lacks the range of species coverage of the new book. The new book represents a tremendous effort and includes a great deal of information to satisfy the curious hobbyist/gardener. I recommend it highly.

[Co-author Robert Lee Riffle is a member of CFPACS. He lives in White City, just below Fort Pierce. —Editor]

Below, a few more of the innumerable 42-second spots for palm-beginners taped for broadcast two years ago by John-the-Editor and heard over public radio station WQCS, Fort Pierce (Indian River Community College). Enjoy.

Palm Points #16
Fertilization, Part One

The University of Florida has issued new guidelines for fertilization. Palms should be fertilized more frequently than previously recommended, but in smaller amounts.

This is because potassium—which is vital to palms—is quickly leached out of sandy soils. At the same time nitrogen in the fertilizer encourages growth.

Palms were pushed to grow, then starved of a nutrient necessary to growth.

Instead of applying fertilizer three or four times a year, this might be applied every 4 to 6 weeks, with a little bit for smallish palms, more for big palms.

It's better to under-fertilize than to over-fertilize. Don't burn the palm's roots.

Palm Points #17
Fertilization, Part Two

Some palm growers stop fertilizing after summer, fearing to encourage growth at the trickiest time of the year. Others believe that fertilization just before winter starts enables palms to survive the cold.

An ordinary complete fertilizer, such as 6-6-6 or 8-8-8, has equal parts of nitrogen, phosphate, and potassium. This kind of fertilizer does <u>not</u> meet the nutritional needs of palms.

Specially-formulated palm fertilizers supply mineral trace elements, called micronutrients.

A good ratio of ingredients in a palm fertilizer is 2 parts nitrogen, 1 part phosphate, 3 parts potassium, and 1 part magnesium. The micronutrients include manganese, boron, iron, and other trace minerals.

Other Palm Points may be found on pages 27 & 28.

Bismarckia nobilis

(Continued from page 17)

ing in 1997.

I accidentally purchased a second Bismarck Palm and placed in in the back yard.. This palm was purchased at Home Depot and was mismarked as a *Sabal palmetto*. I brought it home thinking that it was a Red Latan Palm. It was a lighter pale green that the one in the front yard. I finally got it identified correctly thanks to other Central Florida Palm Society members.

From the beginning, I noticed some differences between the two palms - most notably in freeze tolerance. While the silver Bismarck Palm could take at a 25 degree freeze with only moderate cosmetic damage, the green Bismarck Palm would completely defoliate at 32 degrees. After suffering 4 consecutive defoliations, the green Bismarck Palm regressed and died in 2000. The silver Bismarck Palm prospered with no setbacks from the same freezes that hurt the green Bismark Palm The green Bismarck Palm also had a smaller, more compact crown of leaves and grew at a slower rate.

As I alluded to, Bismarck Palms dislike having their roots disturbed. They resent being dug up a and transplanted . Complete loss of leaves down to the spear leaf may occur and there is a fairly high mortality rate for transplants. They are even a bit fussy being transplanted from a container.

They do need some supplemental watering when they are initially planted. University Mall planted a number of them along Fowler Avenue in north Tampa. This was during the drought in the late 1990's. About half of them succumbed to lack of watering and coupled with the annual freezes. The remainder went though a great deal of shock and are just now putting out a good canopy of leaves.

The Bismarck Palm in my front yard now has a couple of feet of clear trunk on it. It is putting out 4 spear leaves at a time. In hindsight, the location was probably not the best for it You can not see it from the street (although it is rapidly climbing above the arbovitaes after 9 years). I also planted it a bit close to the orange tree. I was not aware of the giant (20 foot) spread of a Bismarck Palm. They are out of place in a small area and do make a small building look even smaller. Figure 2 is a picture of the same Bismarck Palm taken in late April, 2003 - 9 years after planting.

Some other facts: Bismarck Palms have a high drought tolerance once they are established and appreciates a well drained location. It has moderate nutritional needs in terms of fertilization. They are adaptable to moderate or high levels of light and can take direct sunlight even when young. Bismarck Palms are not tolerant of salt and do not do well as seaside plantings where they are exposed to windblown salt.

Last year, on the Florida Tech campus in Melbourne: CFPACSsecretary Chuck Grieneisen stands next to an elderly Coccothrinax crinita *that has donated to our seed bank in the past, but doesn't look as good as when younger and smaller (like all of us?)*
(Photo by Dave Witt)

Mature species of silver Bismarck Palms can be seen in Pasco County, north of Tampa as well as up to Cape Canaveral on the east coast, and in the Orlando area. This is definitely a palm more worthy of being planted in Central Florida. It is fast growing enough that it grows out of any freeze damage in a single season. The green cultivar of the Bismarck Palm should be reserved for warmer areas that will not go below 32 degrees.

Jerold Crawford
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Tampa, FL USA
USDA Zone 9B

Two Seed Bank Reports, **Two** (Count 'Em)

Seed Bank Report Nov. - Jan.

Three seed offers were sent out for the months of November thru January. The seed bank is one of your member benefits, members receive seed offers first via e-mail notification, any remaining unsold seeds are then posted on the chatlines and non-members may then order them. If you are not on the seed bank list and would like to receive the offers or if you have changed your e-mail address (still getting some returned mail) then contact me at: beachpalms@cfl.rr.com

The following is a list of members who donated along with their contributions.

Scott Ward for *Pritchardia thurstonii*, *Archontophoenix alexandrae*, *Ptychosperma solomonense* and *Chamaedorea microspadix*.

John Kennedy for *Arenga engleri* and *Allagoptera arenaria*.

Mike Dahme with the usual Puerto Rican ware: *Roystonea borinqueña*, *Sabal causiarum*, *Aiphanes minima*, and *Prestoea acuminata*, plus a couple of new (never before offered) surprises, *Euterpe oleracea*, and *Cryosophila warscewiczii*. In addition Mike donated seeds of *Arenga caudata*, *Hyphaene coriacea*, *H. dicotoma*, and *Livistona saribus*, these from his place in Grant.

Ed Carlson for *Veitchia arecina*, *V. joannis*, *Gaussia maya*, *Zamia loddegesii X Z. furfuracea, Pseudophoenix sargentii*, and *Wodyetia bifurcata*.

Chuck Grieneisen for *Rhapidophyllum hystrix*.

Jerry Hooper for *Arenga caudata* and *Chamaedorea microspadix*.

Charlene Palm for *Hyophorbe verschafeltii*.

Shri Dhar for more *Phoenix sylvestris* "blue form" and "silver form" collected in India.

Richard Lundstedt for collecting *Attalea speciosa* and *Bismarkia nobilis* from Joe Michael's in Vero Beach.

Hersh Womble for *Zamia floridana* and *Zamia "*Palatka Giant*"*.

Neil Yorio for *Zamia floridana* and collecting *Roystonea regia* from Jim Wasil's.

Total sales (once all payments are received) for the quarter came to just over $1000.00

Thanks to everyone who donated or bought seeds.

Did you know? That if you donate seeds to the seedbank and sales from your seeds total $100 or more for the year, you get next year's membership in the society free!! Here's a list of members who are eligible for free membership for 2003. Ed Carlson, Scott Ward, John Kennedy, Neil Yorio, Richard Lundstedt, Ed Brown, Mike Dahme, Charlene Palm, Bob Grice, Shri Dhar, Mark & Diana Grabowski, Willie Tang, and Sam Sweet.

Seed Bank Report, Feb.-Apr.

The Seed Bank had a very good quarter. A total of 4 offers were posted, the first two offers (February.) were distributed by Mike Dahme, I distributed the later two (March & April) What follows will be combined summary of the entire quarter(not in order of posting date).

New Member and first time donor, William Tang of Taiwan, sent some very cold hardy and never before offered species. *Guihaia argyrata*, *Rhapis multifida, Trachycarpus nanus* and *Licuala grandis* (not so hardy), needless to say they were a sell-out. Sales for William's seeds came to about $224.00. Ed Carlson's yearly donation of *Pseudophoenix sargentii* brought in $230. for the Chapter; Ed also donated *Wodyetia bifurcata,* and was able to fill some back orders of *Veitchia arecina* and *Gaussia maya* from a previous offer.

You may have noticed some "pre-packaged" seeds on the last couple of offers. These seeds were courtesy of Darin Yeatman and included this huge variety of seeds:

Encephlartos gratus and E. *ferox, Dioon spinulosum, Chamaedorea glaucifolia*, *C.cataractarum*, several V*eitchia* species including *V. spiralis*, several clumping *Ptychosperma sp., Syagrus cearensis*, *S.botryophora, S.costae (S.coronata X S. oleracea), Attalea speciosa, Rhapidophyllum hystrix, Dictyosperma album, Hyophorbe indica, Hyphaene compressa, Elaeis guineensis, Raphia farinifera, Synecanthus fibrosus, and Dypsis decaryii, Coccothrinax barbadensis.*

A special thanks goes out to Montgomery Botanical Center and especially Judy Kay (MBC's Seed Bank coordinator, for packaging and mailing everything to me). Their large cycad seed donations of *Encephlartos gratus*, *E. ferox, E. hildebrandtii* and African palm species, *Raphia farinifera*, brought in close to $1000. Most of that amount came from requests by our own members, very few of these seeds made it to the chatlines.

Other noteworthy donations include: Scott Ward for over $200. in *Livistona drudei* seeds, Shri Dhar of India for *Phoenix acaulis*, Lou Thomas (Teakettle Enterprises, Ltd.) for *Reinhartdia latisecta*, *Chamaedorea ernesti-augustii* and *Cryosophila stauracantha*. Mike Dahme for *Livistona decipiens*, and *Phoenix roebelenii*, Charlene Palm for *Copernicia alba* and Joe Michael for *Attalea speciosa, Bismarkia nobilis*, and *Hyphaene coriacea*. Hopefully, I haven't left anyone out.

Total sales for the quarter came to about $2300.00

Thanks to everyone who donated or requested seeds.

(Continued on page 22)

Cold Damage to Palms at H. P. Leu Gardens

By Eric Schmidt

The coldest temperature of Winter 2002-2003 at H. P. Leu Gardens in Orlando,FL. (USDA Zone 9b) was recorded on Jan. 24,2003. The temperature dropped to 27 deg. F. The high that day only reached 45 deg. F. December 2002 was mild to warm until Christmas. After Christmas we had a cool spell through most of January, 2003. In that time we measured 17 nights at or below 40 deg. F. Many days saw highs in the upper 50s to low 60s. The only night below freezing was the night of Jan. 24th in which the 27 deg.F. was recorded. **February turned** out to be mild with near average temperatures. The one night of freezing weather was accompanied by gusty winds. No frost formed but the cold winds damaged plants in usually protected micro-climates. No palms seem to be fatally damaged. All the plants with severe damage should recover with no problems. The damage seems to be just cosmetic. Here is how the palms fared at Leu Gardens:

Acanthophoenix rubra (2')- no damage
Acoelorrhaphe wrightii (3 clumps, 6-15')- no damage
Acrocomia aculeata (30', 35')-no damage
A. totai (12')- no damage
Aiphanes acanthophylla (5')-severe damage
A. caryotifolia (5',6')-severe damage
A. lindeniana (3')-severe damage
A. sp. (*acanthophylla x caryotifolia*?) (6')- severe damage
Allagoptera arenaria (3', 4')- no damage
Archontophoenix alexandrae (6'), *cunninghamiana* (15'), *cunninghamiana* (Illawarra form) (15'), *maxima* (10'), *myolensis* (4'), *purpurea* (3'), *tucker*i (6'), *sp.* (15')- no damage

Areca catechu (6')- moderate damage
A. latiloba (2')- minor damage
A. triandra (7')- no damage
Arenga australasica (6'), *caudata* (4'), *engleri* (3',12'), *hookeriana* (2'), *micrantha* (3'), *obtusifolia* (3'), *pinnata* (3',8'), *porphyrocarpa* (2'), *tremula* (6'), *westerhoutii* (2')- no damage to any of these
A. microcarpa (2')- slight damage
A. pinnata (7')- moderate damage
A. undulatifolia (3')- moderate damage
Astrocaryum mexicanum (6')- moderate damage
Attalea bejinhoensis (3',4')-no damage
A. butyracea (4')-moderate damage
A. cohune (6')- moderate damage
A. dubia (2')- moderate damage
A. macrocarpa (3')- severe damage
A. rostrata (15')- moderate damage
A. sp. (8')- moderate damage
Bactris gasipaes (6')-moderate damage
B. mexicana (5')- no damage
B. setosa (2')- no damage
Beccariophoenix madagasacriensis (4')-no damage, (6')-moderate damage
B. sp. (2')-no damage
Bismarckia nobilis (blue-silver form) (25')- no damage
B. nobilis (green form) (3')- severe damage
Borassodendron machodonis (3')- no damage
Borassus aethiopum (3')- moderate damage
Brahea armata (4'), *bella* (1'), *brandegeei* (4'), *clara* (2'), *dulcis* (2'), *elegans* (4'), *moorei* (1')- no damage to any
Burretiokentia hapala (5')- moderate damage
Butia bonnetii (4'), *capitata* (4'-15'), *capitata* var. *nehrlingiana* (10'), *eriospatha* (3'), *yatay* (5')- no damage to any of these
Calamus caryotoides (4')- no damage
C. erectus (4',5')- no damage
C. inermis (5')- no damage
C. usitatatus (7')- slight damage
Carpentaria acuminata (10')- moderate damage
Caryota cumingii (10')- minor damage
C. gigas (15')- minor damage
C. maxima (8')- moderate damage
C mitis (10-20')-moderate to severe damage
C. no (12')- moderate damage
C. obtusa (15')- slight damage
C. ochlandra (30')- minor damage
C.philippinensis (9')- minor damage
C. rumphiana (6')- severe damage
C. urens (3')-no damage, (12')- severe damage

(Continued on page 23)

Seed Bank Report, Feb.-Apr.

(Continued from page 21)

The following members have earned a free membership in the CFPACS for their generosity (seed sales totaling $100. or more): William Tang, Ed Carlson, Montgomery Botanical Center Darin Yeatman, and Scott Ward.

—Charlene Palm

[It should be noted that the November, 2002 to January, 2003 Seed Bank Report did reach the Editor in time for inclusion in the March issue, but fell through a sieve in his poor old memory and—thus—was not included. Apologies to Charlene.]

Cold Damage at Leu

(Continued from page 22)

C. urens (clustering form) (10')- severe damage
C. mitis x rumphiana (15')- moderate damage
C. mitis x urens (7')- moderate damage
C. sp. "Elvis" (7')- moderate damage
C. sp. "Himalayan" (15')- very minor damage
C. sp. "Laos" (3')- no damage
C. sp. "Mystery"- no damage
Chamaedorea adscendens, alternans, arenbergiana, benziei, brachypoda, cataractarum, concolor, deckeriana, elatior, elegans, ernesti-augustii, fragrans, glaucifolia, hooperiana, klotzschiana, metallica, metallica (split-leaf form), *microspadix, nationsiana, neurochlamys, oblongata, pinnatifrons, plumosa, pochutlensis, radicalis, satorii, schiedeana, stolonifera, tenella, warscewiczii, whitelockiana, pochutlensis x hooperiana*- no damage to any of these
Chamaerops humilis (several clumps 3'-10')- no damage
C. humilis var. *cerifera* (1')- no damage
Chambeyronia hookeri (5')- severe damage
C. macrocarpa (5')- severe damage
Chelyocarpus chuco (2')- no damage
Chuniophoenix hainanensis (3', 4')- no damage
C. nana (1', 1',1')- no damage
Coccothrinax alta (6')- no damage
C. argentata (3', 5')- no damage
C. barbadensis (3')-slight damage, (7')- moderate damage
C. crinita (2',2',3')- no damage
C. miraguama (6')- no damage
C. miraguama var. *havensis* (3')-slight damage
C. readii (3')- slight damage
C. spissa (3')- no damage
C. crinita x *C. sp.* (6')- no damage
C. sp. (6')- no damage
Cocos nucifera "Green Malayan" (6',10')- moderate damage
Colpothrinax cookii (2')- minor damage
Copernicia alba (5',10')- no damage
C. baileyana (7')- moderate damage
C. curbeloi (3')- minor damage
C. fallaense (4')- minor damage
C. gigas (1')- no damage
C. glabrescens var. *glabrescens* (6')- no damage
C. hospita (blue form) (5')-no damage
C. macroglossa (2')- no damage
C. prunifera (7')- no damage
C. x sueroana (3')- no damage
C. x vespertilianum (4')- no damage
Corypha umbraculifera (1')- slight damage
C. utan (4')- severe damage
Cryosophila albida (3')- slight damage
C. argentea (4')- slight damage
C. warscewiczii (7')- severe damage
Cyphophoenix elegans (4')- no damage
C. nucele (4')- minor damage
Daemonorops jenkinsiana (2')- no damage
Desmoncus orthacanthos (4')- minor damage
Dictyosperma album (6')- moderate damage
D. album var. *conjugatum* (3')- moderate damage
D album var. *rubrum* (4')- severe damage
Dypsis ambositrae (6'), *ankaizenensis* (2'), *baronii* (6'), *cabadae* (6'), *decaryi* (white form, 6'), *decipiens* (2'), *lutescens* 'Rotundum' (2'), *madagascariensis* (5'), *psammophila* (3')- no damage to any of these
D. basilongus (5')-minor damage
D. decaryi (6')-moderate damage
D. lastelliana (4')-severe damage
D. leptocheilos (15')-severe damage
D. lutescens (4'-10')-minor to severe damage
D. madagascariensis (12')- moderate damage
D. madagascariensis "Mahajanga" (10')-slight damage
D. onilahensis (4')-slight damage
D. perrieri (2')- slight damage
D. tsaratanensis (2')- minor damage
Elaeis guineensis (12')-slight damage
E. oleifera (5')- slight damage
Euterpe sp. (possibly *edulis*) (4')- minor damage
Gastrococos crispa (4')-no damage
Gaussia maya (3')-slight damage, (8',15')- severe damage
Geonoma brevispatha (3',3',3')-no damage
G. schottiana (2',3')-no damage
Guihaia argyrata (3')- no damage
G. grossefibrosa (1')- no damage
Howea belmoreana (2')- no damage
H. forsteriana (3',4',6')-no to moderate damage
Hyophorbe indica (3')- severe damage
H. lagenicaulis (4', 5')- slight to moderate damage
H. verschaffeltii (6')- moderate damage
Hyphaene dichotoma (2')- no damage
H. schatan (5')- minor damage
H. turbinate (5')- minor damage
Jubaea chilensis (1',10')- no damage
Jubaeopsis caffra (1')- no damage
Kentiopsis oliviformis (3')- minor damage
Kerriodoxa elegans (1')- minor damage, (3')- no damage
Laccospadix australasica (3',3',3')- moderate damage
Latania loddigesii (4')- moderate damage
L. lontaroides (3')- moderate damage
L. verschaffeltii (5')- no damage
Licuala grandis (3')- moderate damage
L. lauterbachii (2')- no damage
L. lauterbachii var. *bougainvillensis* (2')- no damage
L. peltata var. *peltata* (3')- moderate damage
L. peltata var. *sumawongii* (3')- moderate damage
L. platydactyla (3')- severe damage

(Continued on page 24)

Cold Damage at Leu

(Continued from page 23)

L. ramsayi (3')- moderate damage
L. rumphii (2')- moderate damage
L. spinosa (3',5')- minor damage
Linospadix monostachya (3')- no damage
Livistona australis (4'), *chinensis* (3' to 50'), *chinensis* var. *subglobosa* (2'), *decipiens* (3'-30'), *drudei* (10'), *fulva* (4'), *hasseltii* (2', 7'), *jenkinsiana (3'), loriphylla (1'), mariae* (6'), *muelleri* (3'), *nitida* (3'), *rigida* (6'), *saribus* (6'), *speciosa* (3'), *australis* x *chinensis* (12')- no damage to any of these
L. benthamii (3')- minor damage
L. carinensis (3', 3')- moderate damage
L. endauensis (2')- minor damage
L. lanuginosa (3')- slight damage
L. occidentalis (2')- minor damage
L. robinsoniana (4')- minor damage
L. rotundifolia (7')- moderate damage
L. victoriae (2')- severe damage
Lytocaryum weddellianum (4',4',4')- no damage
Nannorhops ritchiana (silver form) (2')- no damage
Normanbya normanbyi (14')-no damage, (10')-severe damage
Oraniopsis appendiculata (3')- no damage
Phoenix canariensis (pure form) (4'), *canariensis* (unknown parentage,10-20'), *dactylifera* 'medjool '(30'), *farinifera* (4'), *hanceana* (3'), *loureiri* (3'), *reclinata* (unknown parentage, 20'), *roebelenii* (5'), *roebelenii* (clustering form, 3'), *rupicola* (4', 8'),*sylvestris* (5',35'), *sylvestris* var. *robusta* (4'), *taiwniana* (3'), *theophrastii* (3'), *sp.* 'Tunis' (5'), *reclinata x dactylifera* (15'), *roebelenii x reclinata* (4',6'), *rupicola x roebelenii* (6')- no damage to any of these
P. acaulis (2',3')- slight damage
P. pusilla (5')- moderate damage
P. reclinata (pure form, 6')- minor damage
Pinanga copelandii (6')- severe damage
P. coronata (4')-severe damage
P. kuhlii (3')- severe damage
P. speciosa (3')- no damage
Plectocomia elongata (3')- slight damage
P. himalayana (5')- no damage
Plectocomiopsis sp. (Thailand) (3')-no damage
Polyandrococos caudescens (3',5')-no damage
Pritchardia beccariana (4')- minor damage
P. hillebrandii (green form) (4')- moderate damage
P. schattaurei (3')- slight damage
Pseudophoenix sargentii ssp. *sargentii* (5')- no damage
Ptychosperma macarthurii (3')- moderate damage
Raphia australis (3')- slight damage
Ravenea glauca (5'), *madagascariensis* (9'), *robustior* (5'), *sambiranensis* (1'), *xerophylla* (2,4')- no damage to any of these
R. rivularis (7',25')- slight damage
Reinhardtia gracilis var. *gracilis* (3')- minor damage
R. simplex (1')- no damage
Rhapidophyllum hystrix (3'-6')- no damage
Rhapis excelsa (4-6'), *humilis* (6-10'), *laoensis* (2'), multifida (6'), *siamensis* (1'), *subtilis* (4')- no damage to any
Rhopalostylis baueri (1')-minor damage
R. cheesemanii (3')- minor damage
R. sapida (1')- no damage
Roystonea borinquena (15', 20')- severe damage
R. elata (15')- slight damage

Below, Elaeis guineensis, *the African Oil Palm, on the campus of Florida Tech, Melbourne. John Martin—see page 16—had better have a large space available for that presently small palm.* *(Photo by Dave Witt)*

R. oleracea (3')-no damage
R. regia (17')- moderate damage
R. violacea (3')- no damage
Sabal bermudana (6'), b*lackburniana* (6'), *causiarum* (10', 40'), *domingensis* (15'), *etonia* (3'), *guatemalensis* (10'), *maritima* (5'), *mauritiiformis* (7',12'), *minor* (3'), *minor* var. *Lou-*

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Cold Damage at Leu

(Continued from page 24)

isiana (2'), *palmetto* (2'-40'), *parviflora (6'), princeps (2'), rosei (3'), uresana* (8'), *yapa* (5'), *sp.* 'Nuevo Leon,Mexico (2'), sp. 'Riverside' (4'), *sp.* 'Tamaulipus, Mexico' (2'), *sp. Texensis* (2')- no damage to any
Salacca wallichiana (4')- no damage
Schippia concolor (3',4')- no damage
Serenoa repens (blue & green forms) (3'-6')- no damage
Syagrus amara (5'), *botryophora* (6'), *cearanensis* (4'), c*oronata* (15'), *glaucescens (3'), pseudococos (3',4'), quinquefaria* (5'), *romanzoffiana* (5'-30'), *romanzoffiana* 'Santa Catarina' (20'), *wedermannii* (3'), x *montgomeriana* (5'), *sp.* (5')-no damage to any of these
S. coronata (8')-severe damage
S. oleracea (5')-minor damage
S. orinocensis (5')-minor damage
S. picrophylla (10')-slight damage
S. sancona (8')- slight damage
S. schizophylla (5')-minor damage, (7')-moderate damage
S. stenopetalata (4')-minor damage
S. x costae (12')-minor damage
X Butiagrus nabonnandii (8'-20')-no damage
X Jubutiagrus everettii (3')-no damage
Synechanthus fibrosus (4')- moderate damage
Thrinax excelsa (4')- slight damage
T. morrisii (4', 5')- no damage
T. parviflora ssp. *parviflora* (1')- minor damage
T. radiata (4', 7')- slight damage
Trachycarpus fortunei (3', 5', 6'), *latisectus* (3'), *martianus* (2', 3'), *oreophilus* (2'), *takil* (2',5'), *wagnerianus* (3'), *sp.* 'Takaghii' (5')- no damage to any
Trithrinax acanthocoma (6'), *brasiliensis* (5'), *campestris* (2')- no damage to any
Veitchia arecina (6')- moderate damage
Wallichia caryotoides (5', 5'), *densiflora* (4'), *disticha* (5', 15')- no damage to any
Washingtonia filifera (3', l0'), *robusta* (5'-30') *filifera x robusta* (3')-no damage to any
Wodyetia bifurcata (6'-15')- no to minor damage
Zombia antillarum (4')- minor damage
Z. antillarum X Coccothrinax sp. (3')- no damage

In addition to this data is some results following an accidental icing of some palms. These palms were found in an area of the Tropical Stream Garden. On the night of the freeze, an irrigation zone came on inadvertently around 3 a.m. and ran for a couple of hours. The water came on after temperatures were below 32 deg. F. and went back off before the temperature could reach above the freezing mark. This was detrimental to some palms that were not hurt elsewhere in the Garden. Here is the damage that occurred to palms that endured the accidental icing:

Acrocomia aculeata (4')-severely damaged
Archontophoenix cunninghamiana (multiple specimens 3'-7')- severely damaged or killed
Archontophoenix tuckeri (5')-killed
Arenga engleri (5'-10')-no damage
Arenga micrantha (3')-severe damage, no recovery yet
Arenga tremula (4')-no damage
Bismarckia nobilis (6')- minor damage
Caryota sp. "Himalayana" (2'-3')-killed
Chamaedorea ernesti-augustii (4')-killed
Chamaedorea hooperiana (5')-killed
Chamaedorea metallica (3')-killed
Chuniophoenix hainanensis (2')-no damage
Dypsis decipiens (2')- no damage
Dypsis leptocheilos (3')-killed
Geonoma schottiana (2')-minor damage
Guihaia argyrata (1')-no damage
Howea forsteriana (3',5')-killed
Hyophorbe lagenicaulis (4')-severely damaged, recovering
Livistona australis (4')-no damage
Livistona chinensis (3'-6')-no damage
Livistona decipiens (7')-no damage
Livistona jenkinsiana (3')-no damage
Livistona hasseltii (7')- no damage
Livistona rigida (5')-no damage
Livistona saribus (3')-no damage
Phoenix roebelenii (6')-severely damaged, recovering
Phoenix roebelenii (clustering form, 3')-severely damaged, recovering
Pinanga coronata (6')-killed
Roystonea regia (6')-severe damage, recovering
Sabal mauritiiformis (3')-minor damage
Syagrus pseudococos (4')-killed
Syagrus sancona (5')-killed
Wallichia densiflora (4')-severely damaged, recovering

[This assessment of damage was received in early May, before the onset of a healing, hot summer. —Editor]

Two species of Caryota *planted at Universal Studios, Orlando. At left is* C. obtusa *(syn.:* gigas, *"Thai Mountain Giant") which is approaching 30' overall, maybe 20' wide. At right is* C. maxima *(syn.:* ochlandra, *"Himalayana"), nearing 40 '. Many individuals of both species have been planted there;* C. maxima *is beginning to flower. There was some damage at 25°F, but grove heaters provided protection.*

(Info and photo by Dave Witt)

From the Editor's Desk

The Palmateer—the June issue that you're looking at now—has been printed on our new printer, a Xerox 6200 that was recently purchased by the Board to facilitate production of the newsletter. The new printer, according to the literature, is capable of more than we presently know, can make cole slaw and mix a martini, if necessary. Seriously, though, we're learning how to use the printer, which is housed in Diana Grabowski's office in Cocoa Beach. We are also looking for volunteers to assist with the printing. An account of our first use of the new printer will appear in the September issue, when (hopefully) we will have recovered from our first experience/encounter with it.

* * * * *

Mark Van Antwerp, who printed the newsletter for the last two years, is owed a vote of thanks from all of us. When he was working in Tampa and living in Land O Lakes, he printed *The Palmateer* at his place of employment. When he moved to Melbourne to start his moving business, Two Men and a Truck, he continued to print the newsletter—on a printer he leased from Xerox for CFPACS. And, Mark saw the possibility of the whole issue (rather than a few pages) could be printed in color, if only the price could be reduced. He investigated and found how to bring color routinely to *The Palmateer.* Color has made the newsletter 100% more attractive, in a way hardly conceivable in the old, drab, black-and-white days. Mark's business has continued to grow and, not surprisingly, consumes much more of his time than anyone could have imagined. He printed the newsletter when he had the time to do so but it had become more uncertain when the issue might actually appear. We are indebted to him for so much.

Have you visited our new website? It is www.cfpacs.org and has recently been completely renovated by new webmaster Steve Wasula. It's clean and uncluttered, easy to navigate. Steve has created several new features, as well as retaining the chatline. He is hoping that members will contribute their local knowledge of particular palm or cycad species to the website, and has provided a form there to be filled in. The website lists membership information and also gives the e-mail addresses of all the Board members. Do check it out.

* * * * *

An unexpected new sight on my daily drive from Vero to Fort Pierce. . . . I'm accustomed to seeing 10 acres or so of Washingtonias and another 10 acres of Queen Palms being grown for the trade. But this time, it's *Phoenix roebelenii*—5 acres of them—mostly triples, rather small, out of 5-gallon pots, by the look of them. I don't know quite what to think: this is good, it's a delightful small palm and, perhaps, not as often planted as it should be. Then, there's the palm-elitist reaction: so common is the pygmy date palm that it's about to take on the same relentless ordinariness of Washingtonias and queens. (Behind the 5 acres of feathery little wisps is another 5acres of Queen Palms [insurance?]).

* * * * *

I <u>can</u> join the crew and complain of winter damage, but very small scale. Spots on new leaves of *Burretiokentia viellardii.* Or is the palm spelled *B. vieillardii* (as in the new Riffle & Craft book)? I had been worried after the cold snap that my glorious *Latania lontaroides* in the backyard would take some damage, but—

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A grove, no less, of Neoveitchia storckii *at the Río Piedras garden of the University of Puerto Rico. This palm won't be on the list at Leu in Orlando.*

Palm Points #18
Fertilization, Part Three

When fertilizing a palm, read the directions on the package carefully.

Remember, never put more fertilizer on than the bag or box says. It's a good idea to broadcast less around the palm than the package indicates.

Package directions also may reflect the old recommendation of using quite a lot of fertilizer, three or four times a year. Now, a small amount of fertilizer should be applied more often.

Fertilizer may be scattered around the palm's base—with mulch or grass pulled back—and watered in. Never apply fertilizer to dry soil. The fertilizer should not touch the palm's trunk.

[Last two Palm Points—for this issue—on next page.]

[This list of palm species below at the Río Piedras garden of the University of Puerto Rico and at the USDA in Mayagüez was accidentally omitted from Mike Dahme's article in the March issue of The Palmateer. *The Editor regrets.]*

Acoelorraphe wrightii *	*Acrocomia aculeata* *	*Adonidia merrillii* *
Aiphanes minima *	*Archontophoenix sp* *	*Areca catechu* *
Areca vestiaria [orange]	*Arenga sp.* [engleri] *	*Attalea sp.* *
Calyptronoma rivalis *	*Caryota mitis* *	*Cocos nucifera* *
Corypha umbraculifera	*Cryosophila warscewiczii* *	*Cyrtostachys renda* *
Dictyosperma sp *	*Dypsis cabadae* *	*Dypsis decaryi*
Dypsis lutescens *	*Dypsis madagascariensis* *	*Elaeis guineensis*
Elaeis oleifera	*Euterpe oleracea* *	*Hyophorbe verschaffeltii* *
Latania sp *	*Licuala grandis* *	*Licuala sp* [ramsayi] *
Licuala sp * [1]	*Licuala spinosa* *	*Livistona benthamii* *
Livistona chinensis *	*Livistona muelleri* *	*Livistona rotundifolia* *
Livistona saribus * 2	*Livistona sp* [nitida ?]	*Neoveitchia storckii* *
Phoenix reclinata *	*Phoenix roebelenii* *	*Pinanga coronata* *
Pritchardia pacifica *	*Ptychosperma macarthurii* *	*Ptychosperma sp* * 3
Rhapis excelsa	*Roystonea borinquena* *	*Sabal causiarum* *
Sabal mauritiiformis *	*Sabal minor*	*Salacca sp* [staminate] *
Syagrus romanzoffiana *	*Syagrus sp.* * 4	*Thrinax radiata* *
Washingtonia robusta * 5		

*= known mature. Note 1 – single stem, 1 to 2 feet of slender trunk. 2 – Mislabeled as *L. muelleri* 3 – Mislabeled as *P. macarthurii*, fruits are black. 4 – Single stem, mislabeled as *S. flexuosa* 5 – Mislabeled as *Livistona australis*.

Species at USDA Mayagüez

Areca catechu *	*Arenga engleri* *	*Arenga pinnata* *
Borassus flabellifer *	*Corypha umbraculifera*	*Elaeis guineensis* *
Livistona saribus *	*Metroxylon sp* [*salomonense*]*	*Phoenix canariensis* *
Roystonea borinquena *	*Salacca edulis*	*Syagrus coronata* *

Palm Points #19
Nutritional Deficiencies, Part One

A lack of nitrogen is shown by an overall light color of the fronds and a decrease in growth. The leaves aren't as dark as they should be, and there are fewer of them.
Potassium deficiency is the most widespread disorder of palms in the sandy soils of southern Florida. Signs are yellow or orange flecking, mottled or discolored leaflets. Leaflet tips or margins may be dead. Symptoms appear first on the oldest leaves. The new crown of leaves is OK.
Magnesium deficiency—this is a minor element—occurs because palms are heavy users of magnesium. The oldest leaves are affected; a broad yellow band appears around the margin of an otherwise green leaf.

Palm Points #20
Nutritional Deficiencies, Part Two

Manganese deficiency—another minor element—reveals itself in the newest leaves first. These are yellowed and small in size. Dead streaking is evident and, later, a scorched, frizzled look as is frequently seen in queen palms.
Iron deficiency—yet another minor element—shows in yellowing between veins, dead tips, and stunted new leaves. These symptoms can also be the result of planting too deeply or from poor aeration, both of which can be remedied. In attempting to correct any nutritional deficiency, the best approach is to apply a good palm fertilizer. In most cases, simply applying a balanced fertilizer will correct the problem on new, emerging leaves. Affected leaves do not recover.

Bowenia serrulata*, the other* Bowenia*, has serrated leaves that are just visible in this shot from the PACSOA website.*

Peerless palms

(Continued from page 16)

need the protection of warmer locations during the winter months.
One favorite that could be damaged by temperatures below 50 degrees is the multistemmed red sealing wax palm with eye-catching reddish trunks. Another cold-sensitive specimen is the teddy bear palm that has a brown trunk with the feel of a furry stuffed toy. Both are grown in containers and used to accent an enclosed pool area, where temperatures remain higher during the cooler weather.
Until recently, only about a dozen palms were on the list of hardy selections recommended for home landscapes in Central Florida. But experiments by horticulturists such as Eric Schmidt, have pushed the number closer to 20.
Schmidt, manager for the palm and cycad collection at Harry P. Leu Gardens in Orlando, has been growing palms for more than 20 years. One of his local projects has been planting palms that have potential hardiness in the botanical gardens.
"I researched records of previous palm society members to find palms that have survived the Florida freezes," says Schmidt.
Some hardy surprises included the more than 6-foot-tall clustering sugar palm with flowers, hidden among the foliage, that perfume the air with a peachy-mango fragrance. Others found to be cold tolerant locally included the hardy bamboo palm with orange-red fruits, the tall single-trunk taraw palm with fan-shaped leaves and the caranday palm, a carnauba wax palm relative.
An unexpected find was the silver-leaved Bismarck palm, one of the most eye-catching accent plants.
"Nothing else looks like this palm," says Schmidt. But he warns if you want a Bismarck palm, don't get the green-leaf form; it's not hardy.
More than 11 years ago, Dave Witt, past president of the Central Florida Palm and Cycad Society, moved to Orlando and was equally captivated by the palm's tropical foliage. After making a sizable investment in palms his first year, a freeze hit and he lost many of his plantings.
"Since then I have been trying to find out what will grow here in Central Florida. I am looking for palms that survive for a long time and if damaged will come back from a freeze. I have spent lots of money and lost some palms, but I am able to pass the information on to others."
With the expanded selection, gardeners now have a greater opportunity to substitute palms for roles nor-

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Peerless palms

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mally filled by traditional trees, shrubs and ground covers in home landscapes.

One of the best uses for palms in the landscape is as accents that attract attention. It's hard to pass by a butia palm with its large feather-shaped, slightly twisted, silvery green leaves growing on a trunk more than 10 feet tall. This one also produces an edible orange fruit that gives way to another common name—the jelly palm. Another favorite of many gardeners is the European fan palm with multiple trunks growing to 8 feet tall and sporting numerous medium-size blue-green leaves.

Witt says there are many uses for palms, including creating focal points, lining driveways and planting shade-producing clusters. One use often overlooked is as understory plantings in the shade of other palms, tree and large shrubs.

The hardy fan-leaf lady palm, for example, grows well in the shade, sprouting numerous shoots from the ground to produce almost a thicket. Others that are equally hardy but seldom used are the feather-leaf members of the genus *Chamaedorea*, including the hardy bamboo and radicalis palms.

Palms also can serve as screens and space dividers. Gardeners can even find a spot for the saw palmetto. This often-shunned but extremely durable native grows well in sun to light shade to block views and enclose landscapes.

Palms are tolerant of growing conditions, says Witt. He finds palms that can grow in hot, dry locations as well as wet, shady sites.

"Some you can put in the ground and just about walk away—but if you care for them they do a lot better."

A few that adapt to varying soil types include the cabbage, saw palmetto, butia, queen and clustering sugar palms.

Some palms grow too big for home landscapes, but people buy them because they're a good price for their size. One is the Washington palm that can grow a few feet a year up to 80 feet tall. Witt says it's really too big for the home landscape, but it looks good in commercial designs.

The bismarck palm also falls into this category. This beauty can grow 20 feet wide and more than 30 feet tall, but "it's hard to resist." Witt has three of the bismarck species in the landscape, which are part of his collection of more than 100 different palms.

You may not want quite this many palms, but it's easy to catch Witt's enthusiasm.

"Palms are an obvious symbol of the tropics. They give the landscape a different look. There is no other plant like a palm."

Syagrus amara*, here not a peerless palm in Orange County, but in Indian River County. More precisely, it flourishes at the Vero Aerodrome property of Ed and Joyce Carlson.*

MORE ABOUT PALMS

Central Florida Palm and Cycad Society, cfpacs.com

University of Florida Extension Publications, edis.ifas.ufl.edu

[On the following page MacCubbin covers the basics in an article entitled "Palms need special care to thrive in urban landscapes." Tom MacCubbin is Extension Agent IV in Orange County and author of several books on gardening in Florida.]

RECYCLING GRAY WATER ONTO HOME GARDENS

[More than 14 million people live in Florida and many more residents are likely to arrive in the years ahead. Available water, now mostly used to irrigate lawns, will probably be tightly restricted at some time in the future; drought can also be expected. How, then, can our gardens—our collections—be preserved under such conditions? The use of gray water, or recycled water, may become a serious possibility. At present, there is very little available information on its home use. Golf courses routinely recycled water but the smaller-scale home landscape does not appear to be a current focus of horticultural attention at present in Florida. What's below is taken from the University of Massachusetts Extension Service website. Gardeners in the Northeast have endured severe drought conditions for several years, which have ended only in the past severe winter which dropped 284 inches of snow in suburban Boston. Anyone who can supply further information about home use of gray water should contact me.—Editor]

Sometimes plants in a vegetable garden or flowerbed will need more water than is provided through normal rainfall. Usually at those times a gardener just turns on an outside faucet and waters the garden, drawing on community water supplies, or from a private well.

But-below normal rainfall and predictions that the Northeast may be going through a drought cycle are causing people to find other ways to provide gardens with the moisture they need without using what may become scarce supplies of fresh water.

One method is to use the wastewater, usually referred to as gray water, produced in the home. The following are answers to some basic questions about how to safely use gray water in the home garden.

First, what is gray water?

Gray water is all the non-toilet wastewater produced in the average household including the water from bathtubs, showers, sinks, washing machines, and dishwashers. Although gray water does not need extensive chemical or biological treatment before it can be used in the garden as irrigation water, it still must be used carefully because it usually contains grease, hair, detergent, cosmetics, dead skin, food particles and small amounts of fecal matter.

How much gray water can be used in the home garden?

First, collect only as much wastewater as you will need to meet the water requirements of your garden. The rest should go into your sewer or septic system.

A good rule-of-thumb for deciding how much gray water to use on your garden is that a square foot of well-drained, loamy soil can handle about a half gallon of gray water per week. In other words, if your garden area is 500 square feet, then you can put up to 250 gallons of gray water on your garden each week.

If you can be choosy about the gray water you recycle on your garden, then use shower and bathtub water first, followed in decreasing order of desirability by water from the bathroom sink, utility sink, washing machine, kitchen sink and dishwasher. Water from the kitchen sink and dishwasher is not desirable because of the larger proportion of grease, food particles and other materials it will contain. If there is no way you can avoid using water from the kitchen sink and dishwasher, try to limit the amount of grease and solid food particles that go down the drain. Do not recycle water from a washing machine that has been used to wash baby diapers because it may contain fecal matter.

What about soaps and detergents? Are they harmful to the soil and plants?

Soaps and detergents are biodegradable, but they can present problems when gray water is used over an extended period. The main problem with most cleaning agents is that they contain sodium salts which, if present in excessive amounts, can damage the soil structure, can create an alkaline condition, and can also

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GRAY WATER

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damage plants.

Avoid detergents that advertise "softening power," because they will have a large proportion of sodium-based compounds. The phosphates in detergents can be good for plant growth, but unfortunately, the detergents highest in phosphates usually contain the greatest amount of sodium. If you re-use washing machine water, cut down or eliminate the amount of bleach you use and do not use detergents or additives that contain boron, which is especially toxic to plants.

When doing your household cleaning, use ammonia, or products that contain ammonia, instead of chlorine as the cleaning agent.

What precautions can I take to protect the soil from damage when I use gray water over a long period of time?

As mentioned earlier, a great danger in using gray water is the build-up of sodium in the soil. You can discover if the sodium levels are high by having the pH of your soil tested. A pH of 7.5 or above indicates that your soil has become loaded with sodium. You can correct or avoid this problem by spreading gypsum (calcium sulfate) over the soil at a rate of two pounds per 100 square feet about once a month. Rainfall, or rotating gray water applications with fresh water, will help leach the soil of sodium and excess salts.

Is there any danger of spreading disease by using gray water in the garden?

Recycled water from the bath, shower, or washing machine could contain organisms causing diseases in humans. However, when gray water is poured onto soil that has an abundance of organic matter, the potentially harmful bacteria and viruses die quickly. If any should survive, it is unlikely that they would be taken up by the roots of garden plants and transferred to the edible portion of food plants. Nevertheless, for safety, you could use gray water to irrigate lawns and ornamental plants only.

How should I apply gray water to the soil?

Whether you carry your gray water to the garden by hand in buckets or modify your household plumbing for direct delivery of water to the area where it is needed, a number of guidelines should be followed in applying the water. They include:

- If possible, use gray water for your ornamental plants and shrubs and use what fresh water is available for your vegetable garden. If you need to use gray water for irrigating food plants, restrict its application to the soil around plants such as corn, tomatoes, broccoli, or other vegetables of which only the above ground part is eaten. Do not apply gray water to leafy vegetables or root crops.

- Apply the gray water directly to the soil surface. Do not use an overhead sprinkler, or allow the recycled water to splash off the soil and contact the above-ground portion of the plants. If you have a drip irrigation system, do not use gray water in it since any solid matter it might contain could clog the emitters in the pipe.

- Pour the gray water on flat garden areas; avoid steep slopes where runoff could be a problem.

- Apply the wastewater over a broad area; avoid concentrating it on one particular site.

- When possible, rotate applications of gray water with fresh water. The fresh water will help leach out any soil contaminants that might be building up.

- Apply thick compost mulches to areas where you use gray water. They will speed the natural decomposition of waste residues.

- Use gray water on well-established plants only. Seedlings can not withstand the impurities of the waste water.

- Do not use gray water, which is alkaline, on acid-loving plants such as rhododendrons and azaleas. Be sure to rotate your use of gray water with fresh water on lawns and fruit trees.

How can I get gray water from the house to the garden?

Gray water can be transported to the garden in a number of ways, the most basic being to bucket the water

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From the Editor's Desk

(Continued from page 26)

fortunately—this did not happen

* * * * *

Well, *The Palmateer* is now available to the world—except for the current issue. If you've looked at our website, there they all are, from March, 1999, through December, 2002, placed in the firmament by our webmaster, Steve Wasula. My feelings are mixed. Of course, I am pleased that the newsletter is available to anyone who cares to look. Yet. . . I've always thought of *The Palmateer* as a private communication, the result of my own cottage industry, quirky, sometimes sly and ironic, but solely for our members, who got to know me and I them. Something similar, perhaps, to those 19th-century novels (like *Jane Eyre*) that have a cozy relationship with the reader, to the point of addressing him/her directly. It's no longer so private and, maybe, that familiar tone is no longer so appropriate. However, lest you feel sad or alarmed or hopeful, the tone mentioned is the only one I have.

* * * * *

A pleasant plug for CFPACS in an article on palms in the *Orlando Sentinel*, which is reprinted in this issue. Our secretary, Chuck Grieneisen, told me of it, then sent it on to me. The quotes in the story are from none other than our own Dave Witt, the estimable Ed Hall, and our host at Leu, Eric Schmidt. And our website was listed. I think all newspapers in Florida run a palm feature some time in the spring when people emerge to plant energetically for a month or so before retiring inside, once more, into the air conditioning. I usually find myself chafing at the use of common names for palms (another form of palm-elitist-snobbery?) rather than their Latin names, though I recognize that the general public prefers it this way.

* * * * *

The new palm book by Bob Riffle and Paul Craft is reviewed in this issue. I rather like it, good basic information, and lots of pictures. If I had a quibble, it would be that (once more) palms said to grow only in Zones 10a--and warmer—can be seen out the windows of my house in Zone 9b and north into Brevard County (at least). I offered the opportunity to review the book both to our treasurer and to My Sharp-eyed Critic who, to my surprise, declined. This is certainly the only palm book in recent history about which he has not had pungent, if not actionable, opinions. That he has combed it for small errors of omission and commission, I know full well. But maybe, like Scrooge, turning 60 releases all sorts of kindly impulses.

GRAY WATER

Continued from page 31)

from the sinks and bathtub into pails and hand carry it to the garden. More sophisticated systems involve siphoning or pumping water from the bathtub or other deep basins (sumps) to the yard through a garden hose, or removing the trap from the bathroom sink drain pipe and putting a five-gallon, or larger, bucket beneath the sink. If you decide to adapt your plumbing system to allow you to get the gray water to the garden, be sure to have your local board of health inspect your work to insure that no sanitary codes are violated.

Prepared by: Allen V. Barker, Professor; Jean E. English, Graduate Student, Department of Plant and Soil Sciences, University of Massachusetts, Amherst.

Additional information specific to the Landscape, Nursery and Urban Forestry industry can be found at the UMass Extension UMassGreenInfo.org web site.

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My pious hope, expressed in the March issue of this publication, was that the next—forthcoming--Board meeting would be indoors. If you will recall, the chilly January Board meeting at Leu took place on the edge of a distant parking lot, the Board members seated on the grass, the decrepit Editor awarded the only chair. The expectation of being indoors didn't quite happen in St. Pete, but we did progress (at least) to benches in an outdoor setting at Sunken Gardens reminiscent of a Boy Scout camp. After politely asking a maintenance worker to take her blower elsewhere so that we could not only hear, but speak and think, President Ray Hernández conducted the meeting with no further difficulty.

* * * * *

Had a nice visit with Susan Frostrom, co-owner of Palm City Palms and Tropicals nursery in Palm City, just north of Stuart. Their bread-and-butter, Susan says, are the common palm species that the general public loves and collectors look down on. All the palms sold are grown from seed on the 15-acre premises. Nothing really unusual, but not that many retail nurseries offer *Chambeyronia macrocarpa* or *Licuala spinosa*, among others. Susan's home is right behind the nursery, with the most beautiful Majesty Palms (well-cared for) I've ever seen. Not only did she renew a lapsed membership—for three years—but also donated 18 *Sabal domingensis* seedlings for our June 14th auction/sale.

John Kennedy

DARNALLS' PLACE

(Continued from page 3)

years Walt and Cathy have planted many more non native palms to include: *Arenga engleri, Euterpe edulis*, *Dypsis decaryi*, *Dypsis leptocheilos*, *Wodyetia bifurcata*, majesty, paurotis, *Archontophoenix cunninghamiana, Caryota* species, *Syagrus romanzoffiana*, *Syagrus schizophylla*, *Butia capitata*, *Butiagrus* hybrid, *Sabal mexicana*, *Adonidia*s; *Livistona chinensis*, *decipiens*, *australis*, *muelleri*, *saribus*; *Phoenix canariensis*, *roebelenii*, *humilis*, *rupicola*, *sylvestris*, *dactylifera*, *reclinata*; silver *Bismarckia.* They also have many other species of container grown palms, letting them grow until they are of sufficient size to plant in the garden.

One showpiece of their property is an original clump of 10 to 12 *Serenoa repens*, many with semi-vertical trunks up to 13 feet in overall height.

In addition to palms, Walt and Cathy also grow numerous trees, shrubs, and plants, etc. Some of these include traveler's palm, giant bird of paradise, Australian tree fern, ferns, screw pine, king and queen sago palms, *Philodendron selloums*, monstera vines, pothos vines, mandevilla vines, royal ponciana tree, yellow poinciana tree, *Tabebuia* tree, gumbo limbo tree, many species of ficus trees, ixora shrubs, hibiscus, walking iris, canna lily, bananas, elephant ears, brugmansia, crinum lilies, shell ginger, costus, *Dracaena*, and numerous flowers, etc.

Side trip: Plan to take a 5 minute drive from Walt's and Cathy's home to visit and photograph the world's tallest *Serenoa repens* (approximately 50 palms in clump). The tallest *S. repens* measures 25 feet in overall height, with many more surpassing 24 feet in height. *[Picture on page 4]*

Additionally, we will view four 75 year old banyan (*Ficus benghalensis*) trees and 20 or so old royal palms that survived the Christmas freeze of '89.

—Walt Darnall

Second Quarter Board Meeting Minutes, March 23/03

The second quarter board meeting was called to order at Sunken Gardens. Buying a color printer to produce *The Palmateer* was discussed. Features and prices on the printer were the main topic of discussion. Also, who would house the printer were talked about.The next meeting was also discussed. It should be June 14th at Lake Placid . It was also agreed that the seedbank and webmaster positions were appointed board positions. Membership payments were also discussed. It was agreed to keep it as is. The treasurer's report as done by Mike Merritt is our balance is currently around $25,500.

—Chuck Grieneisen, Secretary

The Central Florida Palm & Cycad Society service area includes the following counties: **Alachua, Brevard, Citrus, DeSoto, Flagler, Hardee, Hernando, Highlands, Hillsborough, Indian River, Lake, Levy, Manatee, Marion, Okeechobee, Orange, Osceola, Pasco, Pinellas, Polk, Putnam, Sarasota, Seminole, St. Lucie, Sumter, Suwannee, and Volusia.**

Please notify the Membership Chair (see directory on opposite page) of any changes in street address, phone number, area code, or e-mail address. The newsletter is sent to the address of record.

Right, Florida as it appears in TV commercials aimed at snowbirds? The quiet, empty, placid place that we would all like to visit?

Wanted! Elegant persons invited to join select group appreciative of elegant palms & cycads. For the discriminating, those who see beyond impatiens, ixora, crotons, plumbago, and the common ruck of the "usual" at Wal-Mart, Home Depot, and other emporia of that ilk. Join The Central Florida Palm & Cycad Society , breathe the pure empyrean with us! Just fill out the application below and send to the address given.

Yes, that's Bob—Geoff Stein's famed palmidiot—who can't take a coconut palm back with him to his chilly California home and has chosen, instead, to eat coconut ice cream as tribute to his true good intentions.

Please print

Name_____
Street_____
City_____
State,
Zip_____
Email_____
Phone (area)_____

Wish to be added to Seedbank E-mail list? (Circle one) YES NO

Willing to be listed publicly in roster? (Circle one) YES NO

Mail check made out to CFPACS (domestic: $10 one year; $25 three years; foreign: US$15 one year) to:

Membership Chair
5942 Ehren Cutoff
Land O Lakes, FL 34639

Membership also available at website:
www.cfpacs.org

The International Palm Society (IPS)
Anyone interested in joining the IPS and receiving the quarterly, illustrated journal, *Palms*, should send a check for $35 (regular membership) or $45 (family membership) to:

International Palm Society
P. O. Box 368
Lawrence, KS 66044

Dues may also be paid online at the IPS website, www.palms.org

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"Joey" altifrons, *solo (front), chorus (back)* Cyrtostachys renda*, at Pauleen Sullivan's Hawaiian palmetum.. No wonder the nickname for* Johannesteijsmannia altifrons.

(Photo by Geoff Stein)

Well, we can identify the three figures in this undated photo: Nancy Hall , longtime secretary of the chapter (center), Diana Grabowski, East Coast vp (right), and—towering behind them—a magnificent Copernicia macroglossa. *The question: when and where are they? At which meeting? Clearly Central Florida, not Hawaii..*