VJ Growers Apopka for Shadecloth

Palm Review

Volume 17, Issue 2 *Journal of the Central Florida Palm and Cycad Society* *March, 1997*

Hello! and welcome to the second edition of the Central Florida Palm and Cycad Society's *Palm Review*. We received wonderful comments about the new journal format which were followed by a great response to this issue's theme of Cold Hardiness. Several people submitted excellent research articles and others relayed personal experiences on the subject. Also, don't miss the rather bizarre individual submitted for the "feature foto". A wrap-up of our meeting in Miami is included along with an announcement of our next meeting venue which looks to be a really unique opportunity. Please look over this issue and keep in mind that it's your contributions that will make this journal a success. The next issue theme will be "Disease Control and Prevention". We are looking forward to receiving your articles, comments and thoughts on this subject as well as your ideas for subsequent issue themes!

Cold Hardiness Issue

The Best Place to Learn About Cold Hardiness in Palms

By Bernie Peterson

Cold hardiness is a major concern of most Central Florida Palm and Cycad Society members, and rightly so, our occaisional severe freezes and even the more frequent light freezes are the factor which limits the number of palm species that can be grown here. Unlike some other subtropical regions our summertime temperatures are warm enough to promote robust growth in many tropical palm species, likewise our average yearly rainfall is adequate for most species. Over the years that I have been growing palms professionally and otherwise I have found it interesting and useful to read about some of the early experiences of palm enthusiasts who have experimented with cold hardy species, especially here in central Florida. I have learned from personal experience to value the opinions and judgements of fellow Central Florida Palm and Cycad Society members more highly than those of growers in other climates, even though their low temperatures may be equivalent to ours.

Palms from around the world have been popular horticultural subjects for many years. At first, in keeping with their aura of royalty, palms in cooler climates were grown mostly by those wealthy enough to have access to rare plants and the means to support them in a distinctly seasonal climate. The earliest book that I have seen which is concerned with palm horticulture (not strictly botany) is *LES PALMIERS* written by the Belgian nobleman Oswald de Kerchove. Published in 1878 this book compares favorably in scope and quality, considering the advances in knowledge of the past century or so, with the most popular palm books of today. *LES PALMIERS* was written for

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PALMFEST/MIAMI

by John Kennedy

Those attending the CFPACS spring meeting in Miami on March 1-2 enjoyed a strenuous and palm-filled weekend. Stay-at-homes missed a real treat.

The schedule of visiting was organized and orchestrated, with aplomb, by Rick Leitner of the South Florida [Miami] chapter who provided a printed schedule with times and driving directions. For the benefit of those unfamiliar with Miami, Rick also supplied useful maps of the various stops.

Figure 1: Rick Leitner (far left) of the South Florida chapter and host for the weekend's activities, leads a tour through Fairchild Tropical Gardens.

Fairchild Tropical Garden was, of course, the beginning. Rick led the tour of Fairchild (Figure 1), pointing out both the losses and the recovery from Hurricane Andrew. He was assisted by Paul Drummond, former IPS president, whose garden, a stone's throw across Old Cutler Road, was the second stop.

Paul's place was a lovely introduction to the lush beauty of the private

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Letter From The Editor

We're off to a great year with our second edition of the *Palm Review*. Many thanks to all those who really came through for this issue. Notice that we even had to expand a few pages because of everyone's efforts.

Several people contributed articles on this issue's theme of cold hardiness. Special thanks to Bernie Peterson and Kyle Campbell for submitting excellent research articles and to Eric Schmidt, Bob and Marita Bobick and Dave Duren for relaying their personal experiences on this subject. John Kennedy also wrote a great review of the CFPACS meeting in Miami on very short notice and his efforts are much appreciated. I would also like to thank Mike Dahme for all his help. Whether it was taking pictures, persuading authors to contribute or writing himself, Mike is always there to lend a hand.

Bob and Marita Bobick made a great suggestion in their letter to the editor asking that we re-print older articles from *Principies* that deal specifically with raising palms in central Florida. John has obtained permission from the IPS to do this and we started with this issue (thanks to Bernie and Mike for sending these articles). If you know of other such *Principies* articles, especially if they deal with the issue theme, please submit them for reprinting here.

A quick note of thanks also to those who called or sent email messages. Everyone had great things to say about the journal and your encouragement is appreciated.

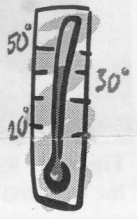
I would like to point out that we still need someone to write the "Member Profile" column (see page 6 for details) and we're always in need of entries for the "Palm Puzzeler". The next issue theme will be "Disease Control and Prevention". Any contributions (due May 1) you may have on this subject, whether it is an article, anecdote or simple comment, will be greatly appreciated by all, don't forget to include a picture! Any topic you'd like to see investigated? Submit it for a subsequent issue theme. We need a theme for the July issue!

St. Pete Nights

by Dave Duren

I live near downtown St.Pete and this year have recorded two consecutive nights at 36F and one night more recently at 34F. On this night I gambled and only protected three seedlings that were in the ground. All my palms are young as we moved into this house with approximately 1/3 acre and ZERO palms in Nov. '95. I then planted most palms in March '96. On this night I can truly say I found truth to under tree cover, various areas of your yard, open field idea, etc...

The temp and trouble can really vary in your own yard! On 1/18/97, I had heavy frost on the front yard (the night air was calm) with none in the back under oaks, a magnolia and an avocado. The following young plants all had frost on them and I left it to melt on its own (later told the early sun may have magnified through the ice, giving me sun damage): *Corypha utan* and *C. umbraculifera* (1' OH, all foliage burnt to about 3 inches of the petioles. Both had spears at the time which have since opened), *Livistona saribus* (2' OH, just barely traceable leaf damage on one leaf, the other no damage!!), *Borassus flabellifer* (3 juvenile leaves, 8" OH, all foliage burnt. The spear rotted and fell over, giving me a heart attack, **but** that spear plus a new one are coming up!!, slowly, of course), *Elaeis guineensis* (5' OH & flowering-burnt only parts with actual frost on them. The spears were burnt as well: they are slowly coming up with a brown, crinkled look to them), and *Hyphaene sp.* (4' OH, burnt foliage to about 6" of the petiole, new leaf opening beautifully with spear about 12" high. Two seedlings had minor damage).



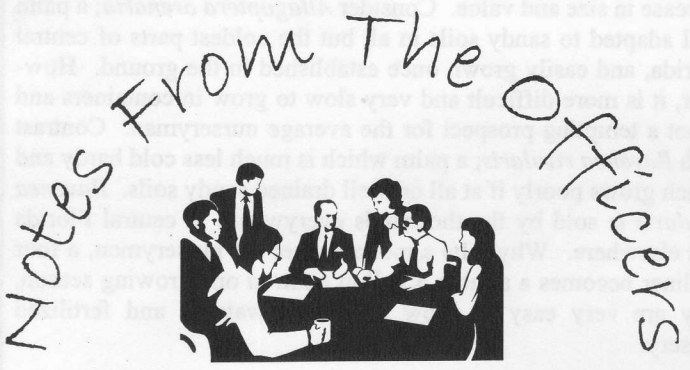
Others that did well but were out of the "frost zone": *Borassohendron machondonis*, *Syagrus sancona, Wodyetia*, *Normanbya, Livistona drudeii*, *L. Marie*, *Caryota ochlandra*, *C. gigas*.... even my *Aiphanes erosa* in a protected area did fine. Also many others. Basically I'm happy: I hear that the first winter in the ground is critical and as Maria Bobick once told me :"the first year they sleep, the second year they creep and the third year they leap!!!" As of this march, I'm ready to watch them creep.... ■

The Orlando Freeze

by Bob and Marita Bobick

The *Archontophoenix* "Illawarra" species we have planted in the garden did exceptionally well. No leaf burn, etc. We had some damage on the *Bismarckia noblis* (a couple of leaves browned out, but it's still growing), the *Caryotas* (a couple of fronds browned out but they will recover), *Syagrus pseudococcos* (a lot of frond damage, it will recover but will look like #@% for awhile), *Syagrus comosa* (a lot of frond damage, as usual, it will recover like it does every year, not recommended for this area), *Acrocomia aculeata* (leaf burn again this year, all other *Acrocomias* did well: *totai, mexicana*, and sp."Umatilla") and *Areca triandra* (leaf damage, but one large leaf is still intact and will keep growing). All other palms in the garden did well and are still growing. All cycads in the ground as well as in pots did exceptionally well with no damage.

The night of the freeze came as a surprise to us (where's Danny Trainor when you need him?). Thank God, Marita had breakfast that morning before going to work... it was 29 degrees at 4:00 A.M. and she was able to put out the alert to Bob to turn on the sprinklers. Still using hoses, Bob found when he turned on the water all the hoses had frozen inside... so after a few minutes of jumping on and crunching up the lines, he was able to crank on the water in the nursery. We estimate that before sun-up it got down to 26 degrees and some of the nursery got hit, but the damage wasn't as bad as it could have been. We left the water running until 10:00 A.M. when the temperature was approximately 40 degrees. All container material was totally iced over, which saved us from severe burn but the weight tended to bend a petiole or two... Oh well, life's a crap-shoot. ■



The Board of Directors consists of 10 members. 6 of these members are elected to their positions, 3 are appointed by the elected officers and the remaining seat is filled by the immediate past president. If you would like a copy of the new chapter bylaws which outlines election procedures and the responsibilities of the officers, send a self-addressed stamped envelope to the journal editor with that request.

President — Tom Broome

Except for one bad day, most of us had a pretty easy winter. For the people on the west side of Florida, anything is better than last year.

In January we had our first board meeting. David and Marion Besst were kind enough to let us have the meeting at their place. For an intermission we were treated to lunch and I would like to thank them for their hospitality. We got a lot of things accomplished. The main task was finishing all the final details on the new bylaws. Among other things discussed, were the articles of incorporation for the new Central Florida Palm & Cycad Society. Papers were filed in February.

I know we all would like to thank Liz and John Stryjewski for the great job they did on the new journal. I have heard good comments from people all over the country. Just the new graphics alone have made the journal one of the nicest looking around. It took a full month of hard work to finish the first issue and I hope everyone appreciates their efforts. Liz has added some new columns that will be of great interest but she needs your input to make it work, particularly with the "Member Profile" column and the "Palm Puzzeler".

We have two sales this spring. The first is the sale at Harry P. Leu Gardens April 5th & 6th. Hours are 8AM to 5PM on Saturday, and 12 noon to 5PM on Sunday. If you have any questions or want to participate in the sale call Dave Witt at (407) 352-4115. The next week is the sale at the University of South Florida Botanical Garden. The garden is located at the south-west corner of the campus. On Saturday April 12th, hours are 10AM to 4PM. Members of the garden get in early at 9:30AM. On April 13th hours are 10AM to 3PM. if you have any questions, call me, Tom Broome at (941) 984-2739.

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PalmFest/Miami ...

(Continued from page 1)

palm gardens of Miami, planted with unfamiliar tropical species that filled Central Floridians with both delight and envy. First-time visitors could detect few signs of the hurricane's great destruction here, so quickly had all the damage been filled in by new growth, new palms. As a lasting memento of Andrew, many of the taller surviving palms were bent and curved into unusual , yet attractive curves and angles.

The third Saturday stop was at the home of Michelle and Fernando Arca on SW 34th Street. A conventional suburban lot had been transformed into an oasis of palms and other tropicals. Pictures of what the front and backyard had looked like before the Arcas set hard to work made evident what they had accomplished in a few short years.

Figure 2: Impressive stand of *Copernicia baileyana* at Fairchild Tropical Gardens in Miami.

A stroll of two blocks down the street brought everyone to Rick Leitner's garden. A handsomely planted front gave way to a densely planted, secluded backyard dominated by a large swimming pool. The angles of the pool and plantings made the yard seem larger than it actually is. Among the notable palms is a tall (25-foot?) *Areca catechu* whose owner is waiting for it to flower. Visitors could hardly believe that the garden they were looking at is no more than eight years old.

On Sunday, the first of two stops was at 10 a.m. at the South Dade home of DeArmand Hull. Central Floridians realized that there was a house in there somewhere. Only three-quarters of an acre, De replied to a questioner, adding that tolerant neighbors had allowed him to push a bit beyond the property lines (an acre or so?). Not only were there private palm gems in the ground in

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Ask The Expert by Bernie Peterson

Bernie,

A master gardener recently informed me that Milorginite is the worst fertilizer to feed a palm tree. They said that Milorganite robbed the palm of manganese. I have been using Milorganite heavily once a year for several years now. I have not noticed any deficiency. Am I lucky, have I compensated correctly, or was the theory invalid?

- Jay Ostaffe, West Palm Beach

Jay,

The short answers to your questions are; Yes, Probably, and No. I agree with the master gardener, Milorganite is a risky fertilizer for palms. Aside from the fact that it is an incomplete fertilizer (no K), its high Fe content without a roughly corresponding amount of Manganese can induce a Mn deficiency in a palm. The same palm if left unfed might well be better off than when fed with a fertilizer which has Fe as its only micronutrient. Milorganite is an excellent product for non-palms. Also beware of cheap brands of 6-6-6 or similar general purpose fertilizers which contain Fe as their only micronutrient.

Bernie,

Do you have any favorite palms or cycads that are not grown as much as they could be in our region ?

-Dave Witt, Orlando

Yes! Lots of them, don't we all and I can also think of several that are planted far too frequently.

I assume that your question relates to planting and propagating by ordinary homeowners and nurseries and landscapers rather than IPS members or palm specialists.

Obviously nurserymen produce plants to make money. Queen palms, Washingtonias, Canary Island Dates and all the other very common palms are easy to produce and sell. They quickly grow to a salable size and each growing season brings an increase in size and value. Consider *Allagoptera arenaria*; a palm well adapted to sandy soils in all but the coldest parts of central Florida, and easily grown once established in the ground. However, it is more difficult and very slow to grow in containers and is not a tempting prospect for the average nurseryman. Contrast with *Ravenea rivularis*; a palm which is much less cold hardy and which grows poorly if at all on well drained sandy soils. *Ravenea rivularis is* sold by the thousands everywhere in central Florida and elsewhere. Why? Its a moneymaker for nurserymen, a four bit liner becomes a salable 3 gallon palm in one growing season, they are very easy to grow in a well watered and fertilized nursery.

The problems of introducing new species of cycads to the public seem, at least to me, almost insurmountable; lack of propagating material at reasonable prices are ensuring the scarcity of these interesting plants. In addition, my few attempts at interesting a customer in an *Encephalartos* or *Dioon* have invariably resulted in the sale of another King Sago.

Popularizing new species of palms is a great challenge for the Central Florida Palm and Cycad Society, after more than 10 years of trying on a professional basis I can say its not easy. *Livistona decipiens*, *Copernicia alba* and a few others might eventually become popular in central Florida.

Bernie,

Our county collects lawn waste, grinds it up into mulch and offers it back to the community free of charge. We often get this mulch for our palms but I'm sure that it contains the remains of many palms that probably died of disease. Is it possible that I could be spreading these diseases to my palms?

- Sarah Noah, Merritt Island

Sarah,

There is some cause for concern. The wood rotting fungus *Ganoderm zonatum* (formerly *G. suicata*) is a common cause of death for palms in central Florida, particularly so since freezes in the past 15 years have killed and damaged many palms which continue to die as Ganoderma infects damaged portions of the trunks. Once infected, palms may take years to die.

Ideally the heat generated by proper composting techniques will destroy harmful organisms, but this is not always the case. In an article published in *TropicLine* Sept-Oct, 1993, Meerow and Elliott urged that palm waste infected by Ganoderma be destroyed rather than sent to solid waste facilities, but a lot of it must surely find its way into the mulch produced there.

There is no cure or treatment for Ganoderma, or butt rot as it is some times called, so prevention is the key to protecting your palms. Never allow any kind of mulch to come in contact with the base of your trees, also keep lawn grasses, groundcovers and

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Best Place To Learn ...

(Continued from page 1)

European palm nuts and is concerned mainly with greenhouse and interior palm cultivation. Most of the many species discussed are designated as suitable for a heated greenhouse or if more hardy an unheated greenhouse. Surprisingly, a wide array of species is mentioned as being cultivated on the Mediterranean coast of France: *Phoenix dactylifera*, *P. canariensis*, *Chamaerops humilis*, various *Sabals*, *Livistonas*, *Trachycarpus*, *Washingtonias*, *Rhapis*, *Butia capitata*, *Allagoptera*, *Jubea*, *Rhopalostylis*, *Thrinax*, and *Archontophoenix*. As to the latter three genera de Kerchove laments the sight of them with "leaves broken and spotted", and even in mild years presenting an appearance very different from that which they have in their native habitat, sentiments which I'm sure we have all shared.

Exotic and rare palms were already making their appearance in central Florida by the late 19th century. Reasoner Brothers Royal Palm Nurseries located near Bradenton, was founded in 1883 and soon established a tradition of introducing and producing new species of palms and cycads as well as other plants. One page of Reasoner's beautiful, 55 page, 1930 catalogue is reproduced here, including: accurate descriptions, conservative evaluations of cold hardiness and some really good 1930's prices. On another page of the same catalog the notorious "Illawarra Palm", *Archontophoenix cunninghamiana,* is listed and evaluated as not cold hardy. It is listed under the now submerged genus *Seaforthia* as *SEAFORTHIA elegans* (*Archontophoenix cunninghamiana*) Illawarra Palm, I will return to this palm later.

..exotic palms were already in central Florida by the late 19th century...

Central Florida has been the home of some renowned horticulturists whose efforts to grow new species of palms have been recorded in books and articles. Dr. Henry Nehrling created an extensive collection of native and exotic plants, including many palms which would be considered rare today, at his home which he called Palm Cottage Garden, in Gotha just west of Orlando. Beginning in 1890 Nehrling, who was also a famous ornithologist, turned his 40 acres into a wonderland of tropical and subtropical plants. Nehrling's books; *My Garden in Florida* and *The Plant World in Florida* relate his experiences and extensive knowledge. After a particularly severe freeze in 1917 Nehrling moved his garden to Naples on the gulf coast of southwest Florida, this garden has survived as the tourist attraction known as "Jungle Larry's". Eventually some of Nehrling's best palm specimens from Gotha also moved south to become part of Col. Montgomery's collection in Miami.

More recently, in the early 1950's, a retired stockbroker named Dent Smith began collecting a wide assortment of palms at his home in Daytona Beach. Smith's enthusiasm for palms proved to be contagious when, a few years later he was instrumental in founding The Palm Society and became its first president and the first editor of *Principes*.

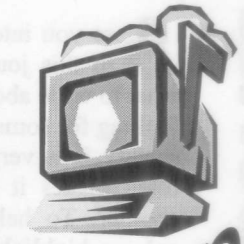
Dent Smith made valuable observations on the hardiness of the many species of palms in his collection. Severe freezes in 1957 and 1963 provided the data for several excellent articles which appeared in *Principes* Vol. 2 #4, Vol. 8 #1, (an abridged version of this article is reprinted in this journal, see page 12) and especially Vol. 30 #1. If one wants to read a list of which palms survived a freeze of a particular intensity and duration in central Florida these articles by Dent Smith are highly recommended.

The "Illawarra" palm provides what I believe is a good example of the importance of relying on local experience when trying to determine the suitability of a palm to one's climate. Many readers will remember the article about this palm which appeared in the *Central Florida Palm Bulletin* in July of 1990, reprinted from *The Palm Journal* of southern California and written by Wood and Wood. The article was well written and very appealing to central Florida palm nuts who had just suffered the worst of three very severe freezes within seven years. Some strong claims for exceptional cold hardiness for the Illawarra palm were made in the article, most of us ignored the fact that the claims were well buffered by caveats, and dreamed the dream of the cold hardy crownshaft palm, and rushed to acquire them. The moderately severe freezes of the winter of 1995-96 killed many well established Illawarra palms.

Why the disparity between the hardiness of a given variety of a palm species in central Florida and California? Is a low temperature of 23 degrees in California less harmful than one several degrees higher in central Florida? Were the authors simply overly enthusiastic? I don't know, but the folks at Reasoner Brother's nursery had it right in 1930; the Illawarra palm is not very cold hardy, at least in central Florida.

For CFPACS members, the most useful source of information is our fellow members, some of whom have been growing palms for decades and have well established gardens which are often made available for our meetings. There is always something to be learned from a visit to a palm garden both for the visitor and the host, and more participation by CFPACS members both as hosts and attendees is encouraged and appreciated. ■

The next issue theme is "Disease Control and Prevention": Deadline for submission is May 1st. The following issue theme is up to you! Send us your ideas!



Internet Spotlight

As part of the Internet services the IPS provides to its members, subscribers can electronically submit questions, etc. and receive input from fellow palm enthusiasts over the Internet. Mike Dahme will be keeping us informed of discussions which are of particular interest to central Florida palm enthusiasts through this column. Keep an eye out in the next issue for this exciting and informative addition to our journal.

MEMBER PROFILE

Are you interested in contributing articles to this journal but you're just not sure what to write about? Here's an idea: we are still looking for someone to write this column. Our society is a very spread-out group and this often makes it difficult to get to know one another. To help with this, we suggest this column highlight a CFPACS member each issue. Not only will this help us to get to know each other and remember faces, we can also get a better idea of the kinds of collections others in our climate are raising. In addition to this column introducing new members to the rest of the membership, it would allow us to meet the members who have been in the society for many years and who now have some spectacular collections. So have fun, meet other CFPACS members, take pictures and share your experiences through this column. Interested? Contact the *Palm Review* editor.

Palm Growing in Central Florida

by Hershell Womble

Reprinted from 33(1) 1989 of Principes

Palms are generally easy to grow in central Florida. Only a few specific guidelines must be considered in their propagation and cultivation. As you may have observed, there are several palms which are hardy here. First of all, don't overlook the natives, as they are excellent for several reasons.

Propagation of palms is generally from seed; however, the clustering types may sometimes be amenable to division. In order to be more assured of germination, the collected seeds must first be cleaned of pulp (fruity tissue) and then dried for a few days if the seed is wet from the pulp. Palm seeds generally are not viable for long periods so it is advisable to plant them within a week or two of collection. Seeds are readily available if you are willing to look around. They can be found in parks, along streets, in private yards, in the woods and you can purchase them. Mature seeds are usually available from July until November here in central Florida. If you spot seeds on a palm which interests you and it is on private property, just ask the owner; most people are very generous. Purchasing of palm seeds is another matter, as most seed supply houses specialize in quantity.

Once the seed is ready to plant, a well drained soil mix should be obtained. Composition of the mix isn't extremely important as long as it has the following characteristics: must be porous and well drained, should contain at least 60% organic material and be free of pests. Place the soil in a container with good drainage, gently firm the soil (do not pack) so that it is within one inch of the top of the container, scatter the seeds on top and cover with soil to a depth of about one half the seed diameter. Wet the soil thoroughly and allow to drain. Germination of palm seed requires from a few weeks to several months, depending upon the species. The seeds must be kept moist but not soggy until they germinate. When the temperature is kept at 80 to 85F degrees, they germinate much faster. That does not mean that they will germinate in a few days, but that they will germinate in a few months instead of several. One way to maintain a uniform moisture level is to place the container of soil and seed in a plastic bag and seal it. Keep it in a warm, shady place.

After germination of the seed, you may separate the seedlings and transplant them as desired in individual containers. Most landscape type palms should be transplanted singly, whereas, those used for interior purposes are generally planted as multiples to obtain a bushy appearance.

Newly transplanted seedlings should be kept in a shady area until they have become acclimated (at least a month) then moved into direct sun.

Palms are heavy feeders; however, the exact fertilizer analysis is not critical. Some palms, such as the *Phoenix* species require a substantial amount of manganese and magnesium. Any good garden supply store will carry a special fertilizer with a substantial amount of these elements. Feed your palms several times each year during the growing season, and you will be rewarded with lovely foliage and good growth.

Most palms are easily transplanted. When the specimen is being moved from a container, the roots should be separated so that they are no longer in a tight ball in the shape of a pot. Don't be afraid of breaking a few, there are plenty if the plant is healthy. When repotting or transplanting a palm the general rule of maintaining the same plant depth in the soil applies. If the soil level has left small feeder roots bare, then, a little extra soil on top may be helpful but in most cases the plant should not have any soil added on top of the existing root ball. Transplanting from one inground location to another should he preceded by a root pruning process. This is accomplished by inserting a shovel vertically about 12 inches into the soil and about 12 inches from the trunk, all around the plant. Wait about two weeks then move the palm to its new home. Here in central Florida, it is always advisable to add peat generously under and around that plant.

As your palm grows, the lower leaves may be discarded by the plant. To encourage optimum growth and improve the appearance of the plant, the lower leaves should be trimmed off as they turn yellow.

Indoor palms usually don't require much attention, however, a periodic soap and water cleaning of the foliage and regular fertilization will maintain their health. The most common problem experienced with indoor palms is spider mites which the soap and water treatment will control. Indoor palms will withstand relatively low light conditions for short periods but don't expect them to survive for months under these conditions. Consider rotation of indoor plants into good light (near a window or onto a porch) at weekly intervals to maintain their health. ■

The Effects of the Freeze of 1997 on Palms in Central and South Florida

by Kyle Campbell

The freeze of 1997 presented unique conditions throughout central and south Florida and held true to the adage from Florida old-timers that "every freeze is different". Palms that had been previously undamaged in more severe freezes were severely damaged and vice versa. In addition, some locations in interior portions of south Florida were much colder than central Florida and perhaps even Jacksonville based on reports from growers. However, don't give up on central Florida and move to Key West just yet (unless your favorite palm is Areca catechu then you might consider it). To understand the true effects of the freeze and the cause of damage to our palms one needs to examine the data. The two most important data types are the meteorological (i.e. temperature) data and the horticultural data (i.e. growing conditions, plant height, etc.). This report deals mainly with the meteorological aspect but a more in-depth look at cold tolerance is planned for a forthcoming *Principes* article.

How Cold was it?

The official minimum temperatures recorded on January 19, 1997 are illustrated in Table 1. The data is sorted from the lowest temperature recorded to the highest. One immediately notices a departure from conventional wisdom concerning cold outbreaks in Florida. Perhaps, the most glaring of these inconsistencies is that the temperatures recorded at Pensacola, Tampa, and Homestead are all 31F.

A more comprehensive look at the data is illustrated in Figure 1 with a contour map. An important consideration when reading contour maps is to

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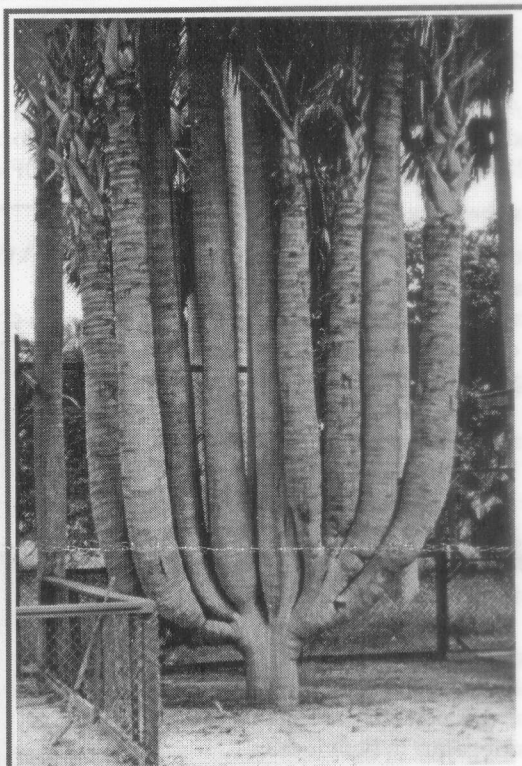
Archbold Biological Station	16	Moore Haven Lock	26
Milton	18	Mountain Lake	26
Tallahassee	18	Orlando (McCoy)	26
Gainesville	19	Belle Glade	27
Monticello	19	Sarasota	27
Perry	19	Tampa Bay (Ruskin)	27
Madison	20	Brooksville (Chinsegut Hill)	28
Gainesville	21	Lisbon	28
Tall Timbers	21	Melbourne	28
Chipley	22	St. Leo	28
Glen St. Mary Nurseries	22	Vero Beach	29
Jacksonville Airport	23	Naples	30
Usher Tower	23	Fort Myers (Airport)	31
Avon Park	24	Homestead	31
Clermont	24	Pensacola	31
Hastings	24	Tampa Airport	31
Ocala	24	Vero Beach	31
Daytona Beach AP	25	Perrine	32
Defuniak Springs	25	Hollywood	34
Lake Alfred	25	Fort Lauderdale	35
Plant City	25	West Palm Beach	35
Bradenton	26	Miami Airport	37
Immokalee	26	Miami Beach	41
Kissimmee	26	Tavernier	41
Lakeland	26	Key West	48

Table 1: Official Minimum Temperatures for January 19, 1997

Feature Foto



This remarkable photograph comes by way of Richard Barcant. Amazing but true, this is a 9-headed Sabal. Richard ran across this bizarre individual along Hull Bay on the North coast of St. Thomas in the Virgin Islands. It is difficult to say what might have prompted this individual to form 9 heads, some sort of physical injury is likely but what would wreak this kind of havoc? Even more amazing is why it hasn't been blown over by the wind!

Seed Distribution Update

by Mike Dahme

In recent weeks palm and cycad seed distributed have included *Normanbya*, *Wodyetia*, *Serenoa* [silver form], *Zamia integrifolia*, *Linospadix monostachya* and *Arenga caudata* with seed being posted to locales as far afield as Zimbabwe, South Africa, Alaska [why? - for woodcarving!], California, and Deland [why?]. Special thanks go to donors Dave Hopkins for the Australian seed, to Rick Kern of Palm Beach for over 1000 seed of the Hobe Sound *Serenoa* [all sent out and we could have used about 800 more] and to Ed Brown of Jacksonville for the approximately 800 seed of the "Walking Stick" palm [*L. monostachya*], which also was oversubscribed. These donations resulted in approximately $350 of income for the chapter's treasury.

Receipt of seed of the "Talipot Palm", *Corypha umbraculifera* is expected soon. Requested donation of 50 cents per seed [or $30/100], if interested please call myself or Neil Yorio.

CFPACS member Edgar Hall just bought property in Weeki Wachee which has about 20 beautiful mature Sabal palmettos (the Florida State Tree) on it that he wants to find a good home for. Interested? They're free for the taking. Just give Ed a call at (352) 596-2914.

Effects of the Freeze...

(Continued from page 7)

understand they represent averages. Therefore, a location in between 28F and 32F may have an actual reading of 30F or 31F.

What was the duration of the cold?

Unfortunately, the minimum temperature does not always supply enough information to explain damage to palms. I made a crusade to the palm capital of the free world to examine the damage at a Homestead 31F and a Tampa 31F, and as I expected the damage in Dade county was much less than my back yard by the bay. Therefore, I searched for additional differences in the meteorological data concerning the night of January 19, 1997, and I found the data displayed in Figure 2, the duration of temperatures below 32F. Immediately, one notices that south Tampa had a duration below 32F of approximately 5 hours, whereas, the duration in western Dade is less than 1 hour. This factor was certainly accounted for by the conditions of palms in both locales.

What were palm conditions following the Freeze of 1997?

The conditions represented in Table 2 are a compilation of observations from growers throughout central and south Florida following the freeze of January 19, 1997. Unfortunately, most growers do not track duration of minimum temperatures and that data is absent from this table. These conditions represent only observations made during 1997. For example, *Acoelorrhaphe wrightii* have been documented to take lower minimum temperatures than 26F without damage; however, the only documented data I have for the species this year is a minimum temperature of 26F. In addition, central Florida growers may want to compare official temperatures with the damage in their backyard.

Interesting results of the freeze are most striking with *Bismarckia*. The silver selects seem to exhibit much more cold tolerance than green or intermediate forms. While this has been considered conventional wisdom, the difference in tolerance is striking (complete or partial defoliation versus tip burn). Also, initial results with *Cyphophoenix nucele* as do *Linospadix monostachya, Attalea butyracea, Cryosophila stauracantha* seem promising and suggest further trials with these species in protected areas.

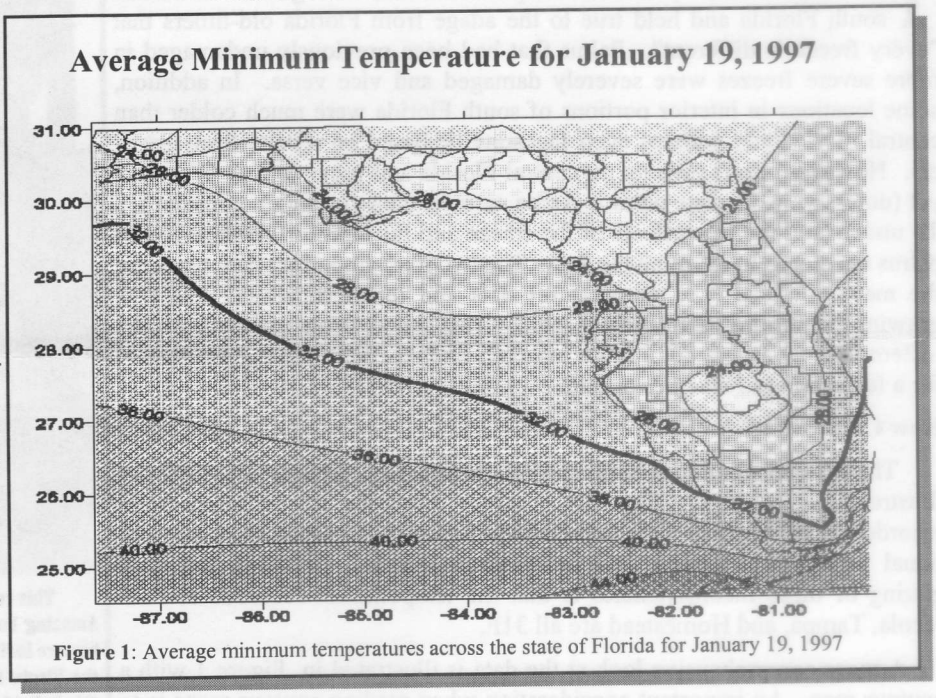


Figure 1: Average minimum temperatures across the state of Florida for January 19, 1997

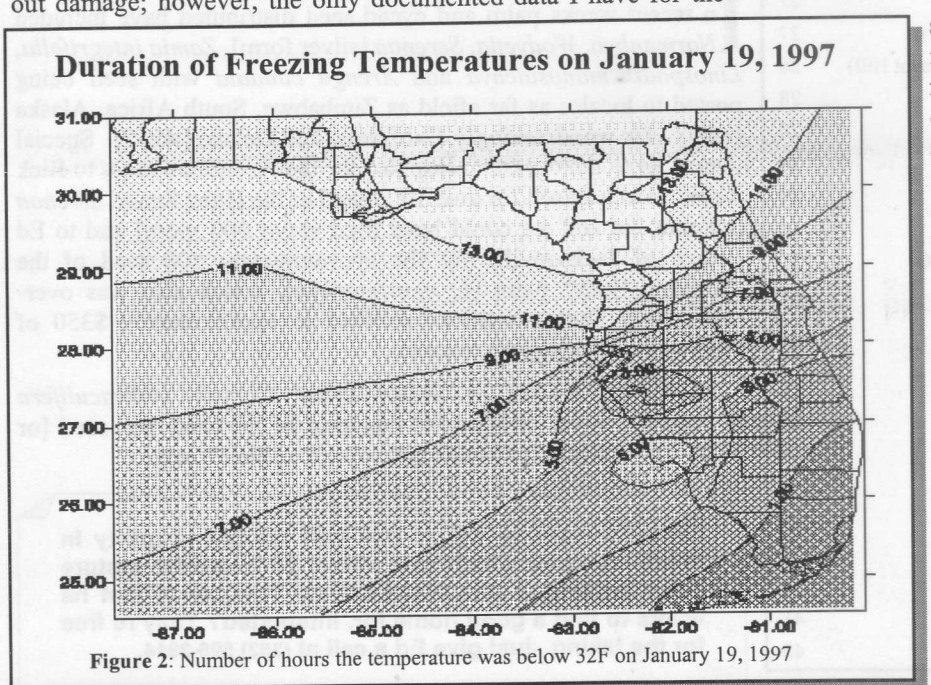


Figure 2: Number of hours the temperature was below 32F on January 19, 1997

In summary, many tropical palms seem to be susceptible to frost damage on the foliage even if the temperature is above freezing. Fortunately, this damage is primarily cosmetic and does not seem to effect the health of the bud. In addition, duration of temperatures below freezing of 3 hours or less seem to result in minimal damage to tropical species. Other variables which play key roles are certainly horticultural. The presence or absence of irrigation made a tremendous difference to the conditions of *Roystonea regia* and *Cocos nucifera* planted in the Naples landscape. Irrigated palms were scarcely damaged; whereas, unirrigated palms were severely damaged in adjacent lots.

Acknowledgments:

Many thanks to all who contributed including: Paul Craft, Jay Ostaffe, David and Geri Prall, Dave Witt, and others. Maps and Table 1 provided by The Southeast Regional Climate Center. ■

Effects of the Freeze .....

Species	Min. Temp. w/o Damage (1997 only)	Min. Temp. w/ minumal damage (<50%)	Min.Temp. w/ moderate damage (50- 75%)	Min. Temp. where death occured (>75%)
Acoelorraphe wrightii	26F			
Acrocomia total	26F			
Allagoptera arenaria				26F
Archontophoenix alexandrae		31 F		
A. cunninghamiana 'Illawara'		26F		
Areca catechu			35F (Frost)	
Arenga engleri	26F			
Arenga pinnata				31 F
Attalea butyracea		26F		
Beccariophoenix madagascariensis		26F		
Bismarckia nobilis (Intermediate)			31F	
Bismarckia nobilis (Silver select)		26F		
Borassus aethiopum	26F			
Butia capitata	26F			
Caryota mitis			31 F	
Caryota mitis		31 F		26F
Caryota ochlandra			26F	
Chamaedorea cataractarum	26F			
Chamaedorea stolonifera	26F			
Chamaerops humilis	26F			
Chambeyronia macrocarpa	31F			
Chamedorea metallica		26F		
Chamedorea selfrizii	31F			
Chameyronia "hookeri'		26F		
Coccothrinax argentata	26F			
Coccothrinax barabedensis		31 F		
Coccothrlnax crinita	26F			
Coccothrlnax miraquama		26F		
Cocos nucifera		31 F		28F
Copernicia alba	26F			
Copernicia berteroana		31-32 (Frost)		
Copernicia hospita		26F		
Copernicia macroglossa				26F
Copemlcla prunifera	26F			
Corypha utan				26F
Cryosophila argentea stauracantha		26F		
Cyphophoenix nucele		26F		
Dictyosperma album		31F		
Dypsis cabadae		31 F	26F	
Dypsis decaryii	31F			26F
Dypsis decipiens		26F		
Euterpe edulis		35F (Frost)		
Gastrococos crispa		26F		
Gaussia maya			31F	26F
Guihaia argyrata	26F			
Gulubla microspadix		31F		
S. romanzoffianum X B. eriospatha)	26F			
Hyhorbe indica		31 F		
Hyophorbe verschaffeltii	31F			26F
Kerriodoxa elegans			26F	
Laccospadix australasica	25F			

Species	Min. Temp. w/o Damage (1997 only)	Min. Temp. w/ minumal damage (<50%)	Min.Temp. w/ moderate damage (50- 75%)	Min. Temp. Death occured (>75%)
Latania vershaffeltii		31-32 (Frost)		
Lepidorrachis mooreana	25F			
Licuala elegans		26F		
Licuala grandis		31 F		26F
Licuala spinosa		26F		
Linospadix monostachia	25F			
Livistona australis	26F			
Livistona benthamii		26F		
Livistona chinensis	26F			
Livistona decepiens	26F			
Livistona fulva			26F	
Livistona Jenkinsiana		26F		
Livistona mariae		26F		
Livistona muelleri				26F?
Livistona rigida (West Palm)		35F (Frost)		
Livlstona rigida (Orlando)		26F		
Livistona rotundifolia		31 F		
Livistona saribus	26F			
Lytocarium weddellianum				26F?
Nannorrhops ritchiana	26F			
Oranigpsis appendiculata				25F?
Phoenlx canariensis	26F			
Phoenix pussila			26F	
Phoenlx reclinata		26F		
Phoenlx roebelenii		26F		
Pritchardia beccariana			26F	
Pritchardia vuystekiana			31 F	
Pseudophoenix sargentii		26F		
Ravenea rivularis	31 F	26F		
Ravenea xerophylla	26F			
Roystonea regia			26F	
Rhapidophyllum hystrix	26F			
Sabal causiarum	26F			
Sabal domingensis	26F			
Sabal mauritiiformis		26F		
Sabal palmetto	26F			
Sabal yapa		26F		
Satakentia llkukluensis		31 F		
Scheelea robusta			35F (Frost)	
Schippia concolor		26F		
Syagrus "costae"			26F	
Syagrus amara		26F		
Syagrus coronata		26F		
Syagrus romanzoffianum	26F			
Thrinax morrissii	26F			
Thirnax parviflora		26F		
Thrinax radiata		26F		
Veitchia montgomeryana		31-32 (Frost)		
Washingtonia filifera	26F			
Wodyetia bifurcata	31 F	26F		
Zombia antillarum	26F			

Table 2: A compilation of observations from growers throughout central and south Florida following the freeze of January 19, 1997.

Ask The Expert...

(Continued from page 4)

shrubs away from their trunks. Protect your palms from damage whenever possible, and don't allow outside maintenance personnel to prune your palms unless their tools have been sterilized. Palms that die for any reason should be removed as completely as possible, roots and all since *Ganoderma* will readily infect already dead palms and stumps. *Ganoderma* kills more palms in Florida than Lethal Yellowing but doesn't receive the publicity that LY does, which is a shame since it is sometimes preventable. Some palm species are more susceptible than others to *Ganoderma*, but none are known to be immune. It's possible that young palms without a woody trunk are immune, at least until they develop a trunk.

Bernie,

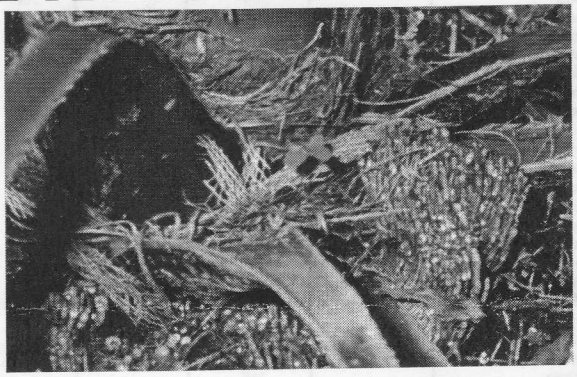
Besides *Chamaedorea* species, what are some other palms that grow "fast" to maturity (seeding size) ?

-Dave Witt, Orlando

Dave,

I think you have already named the genus with the most species which produce seed at an early age. A few palms which I have known to produce seed while still in a 15 gallon container or smaller are *Rhapis subtilis*, *Sabal minor*, *S. etonia* and *Butia capitata*. Also, most *Phoenix* species flower at an early age, especially considering the ultimate size of some of them. *Pinanga* spp. have been known to produce seeds within 3 to 4 years of germination. Other likely candidates would be understory palms with growth habits and habitats similar to those of *Chamadorea*, i.e. *Nenga*, *Areca*, *Arenga caudata*, smaller species of *Dypsis* and perhaps *Licuala*. *Chamadorea* has great diversity within the genus, they are relatively easy to obtain and cultivate, and have an entire beautiful book written about them, which by the way is on sale through the IPS Bookstore. Why grow anything else? ■

PALM PUZZLER



This Livistona ridgida appeared in the last issue of the Palm Review and we asked that someone enlighten us about the projections coming from its base. Dr. Jack Fisher of Fairchild Tropical Gardens rose to the challenge and we thank him for sending this informative response:

Dear Palm Review Editor,

These structures appear to be erect breathing roots, or pneumatothodes. These can be vertical lateral roots on the horizontal roots from the trunk, or they can be produced directly from the trunk. By trunk, I also include the stem tissue of a sucker (off-shoot) or seedling that is not yet visible above ground.

Pneumatothodes are produced regularly by palms (and other plants including broad-leafed trees) native to wet soils *(Elaeis)* or swamps *(Raphia)*. Some palms produce these structures only when the soil is flooded *(Phoenix* spp.) and apparently so does your *Livistona rigida.* I have also seen pneumatothodes on the trunks of *Pandanus* after a very rainy spell.

These unusual roots grow up, away from gravity, and their surface cells proliferate and become spongy. The air spaces between the cells cause the roots to look white. The spongy tissue allows oxygen to diffuse down into the buried parts of the root system. Roots, just like other living parts of the palm, must have oxygen to grow and function properly.

With regards,

Jack B. Fisher, Ph.D.
Senior Research Scientist
Fairchild Tropical Garden

Seen something you're not familiar with? Submit a photo for next issue's Palm Puzzeler!

An Introduction to Cycads

by Tom Broome

Now that our Chapter's name has been changed, showing an interest in cycads, I thought an introduction to cycads would help people who are familiar only with palms.

Cycads are the oldest living seed-bearing plants in the world. They predate palms by at least 150 million years. Instead of flowering plants, they are cone bearing. All cycads are dioecious, meaning they have separate male and female plants.

Cycads are amazing plants. Most cycads live on rocky or sandy habitats. Some habitats endure hard frosts and snow. These habitats are so desolate that the faster growing, flowering plants have not had a chance to overtake the cycads. To aid survival, cycads have a specialized secondary root system called corroloid roots. These roots grow up to the surface, instead of down. A nitrogen fixing, blue green algae lives on these roots. This symbiotic relationship helps, more or less produce food for the plant. These plants are incredibly resilient. I have cut the stems and roots up in pieces, and started new plants from these pieces. Cycads have many defensive mechanisms to help them survive in their native habitat. Most cycads have spines on the leaflets or petioles. This will deter some animals from eating the foliage. If this isn't enough, all parts of the plant are poisonous. This may keep small herbivores away, but for us you would have to eat alot to really get sick.

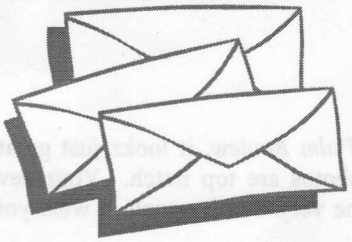
Despite their toughness, all species of cycads are on the endangered species list. In this case it is man that makes these plants endangered. Habitat destruction and poaching have taken a toll on populations all over the world. Because cycads can live in excess of 1000 years, the only way to get a large one is to take it from the wild. Some old rare plants can be sold on the black market for 15 to 25 thousand dollars.

There are 11 genera of cycads. *Bowenia*, *Lepidozamia* and *Macrozamia* are only from Australia. *Encephalartos* and *Stangeria* are from Africa. *Ceratozamia*, *Dioon*, *Zamia*, *Microcycas* and *Chigua* all come from different parts of Central and South America and the Caribbean. One species, *Zamia integrifolia*, is native to Florida. Cycads come from many parts of Asia, Australia, and islands from the Indian to Pacific Oceans. As with palms, there has been alot of new names put on cycads. In 1993 there were 187 valid species. Today's count is up to 252 species, but I'm sure that will change soon.

There are many fascinating species of cycads I can talk about but for this article I would like to concentrate on some species that will do best in the central Florida area. Because it can be very hot in Florida, some high altitude plants don't do well here. What is most important is that it gets very cold in parts of our area. Some cycads are frost hardy. Some will tolerate the temperature but will lose their leaves from a frost. Usually a cycad that loses its leaves will look fine in the spring after a new flush of growth. A totally burned palm may take a year to look good again. Experienced cycad growers seldom worry if the foliage gets burned.

The two common *Cycas* species are *C. revoluta*, and *C. circi-*

(Continued on page 15)



Letters to The Editor

Dear CFPACS,

What a wonderful new journal! A dream is a wish your heart makes- thank you for helping me keep my dream alive of one day living in Florida and attending one of your meetings.

Steve Ashton, Brinnon, Washington

Dear Editor,

This is almost too much excitement for one evening following a rough day. The new CFPACS Journal *Palm Review* is simply put, outstanding! I couldn't put it down! Professionalism is very much evident and you are to be commended for it.

Finally, our own web site. It looks great. I wish you the best of luck and will enjoy contributing what I can to it and the Journal in the future.

Doug Keene, DeLand

Dear Editor,

I would like know more about the "Ecosane" product mentioned recently in *Principes*. I will step up to the front of the jury box and admit that I have purchased and am "testing the product" on all my palms (and basically everything else in my yard!). I have talked with some of you on the product and get different reactions. In my eyes, I'm in it for fun so what the heck. Will I complain if I actually see some trunk forming on my *Corypha* in my lifetime? Other thoughts would be nice from general "lay" members (like myself) to any of the "old timers" (anyone who has been into palms longer than me, about 4 yrs.)

Dave Duren, St. Petersburg DAVEDUREN@AOL.COM

Dear Editor,

We wanted to write and congratulate you on a job WELL DONE!!! We are really pleased with the new look and format of the CFPACS journal. We liked the graphics and the idea of the continuing columns i.e., ask the expert, letters to the editor, membership profiles, etc. Let us hope that this new publication will generate some excitement in our Society and perhaps get people more involved.

It is our opinion that articles published in this Journal should concentrate on those species of palms and cycads that are adaptable to our central Florida climate. There are many publications from various sub-chapters of the IPS reflecting their own special climates and special needs…we need to remember our chapter has its own specific temperate zone (9a) and articles about tropical palms and cycads only serve to give a sense of false hope. How can we forget the winters of 1983, 1985, and 1989? We highly recommend that this journal re-print some rudimentary articles written by Dent Smith (founder of the IPS) concerning his experiences of growing palms in Daytona Beach. In this way, new members who have not had the opportunity to read them, can learn about what experiences he had with growing palms and their cold-hardiness.

We have some grave misgivings about the CFPACS Seed Bank distribution program. During the last meeting, there was a discussion about the cleaning of the seeds meant for distribution which was not resolved. Further, when the journal came out recently, an article was written about seed and distribution but nowhere was it mentioned that the seeds should be cleaned, dried, and free from insects and disease. We have a problem with this and so should the CFPACS. Any seed posted in the U.S., must be clean before mailing. Any seed sent internationally should be clean and have a phytosanitary certificate (especially if it is under the auspices of the CFPACS). The fruit on seed can carry insects and diseases, and to send un-cleaned seed, we feel is reckless behavior. Examples of what can result; The case of Fusarium Wilt which came from California by way of a *Phoenix canariensis*…it is predicted that in the next 10 to 15 years Florida will be totally *Phoenix*-less….or the case of the Brazilian Citrus Canker unwittingly carried into this country by illegally smuggled fruit. At present, 140 square miles in Dade County is under quarantine trying to stop the spread of this disease and agriculture agents are going from door to door destroying orange trees. To send seed with fruit still attached to states such as Ariz., Texas, Ca., and Hawaii where the agricultural business is extremely important, is criminal and ethically wrong. The CFPACS should not be affiliated with these practices. We have no problem with the Seed Bank if it is run in a professional manner and under the guidelines of the USDA…but the Society cannot afford the liability if it is not.

Finally, what is all this zeal to raise money if we have no goals to utilize it?? If our sole purpose is for our Palm Journal publication then it seems logical to figure out yearly expenses and pass that on to the members in the form of dues. Maybe this would be a good way to get the members of the society who don't contribute to the journal, don't attend meetings and never host them, and never contribute financially to the society to give their fair share in the form of dues… This at least, would be a statement of interest by those non-active members, and furthermore, it would take the burden off the other members of constantly trying to raise money. It is time fellow members, to give some value to this society…to pay your dues! Not just financially but by action in contributing your time or writing articles for this publication!

Again dear editor, our heartfelt thanks for your efforts on this fantastic publication… This was a giant step for the Society.

Bob and Marita Bobick, Orlando

(Continued on page 12)

More About Cold Tolerance

by Dent Smith

Reprinted in part from 8(1) 1964 of Principes

Six years ago nearly everybody was convinced that the world was growing warmer. Most of the meteorologists subscribed to the notion and helped to give it wide credence. The ice was said to be melting and the glaciers receding. Certainly in the United States much of the eastern seaboard had been enjoying less rigorous winters for several years. But if the trend was in a warm direction, it was not confirmed by the weather in many states following the 1956-1957 winter, for the very next winter there were several hard freezes extending well down into Florida. Such severe cold, the Floridians thought, might not again invade their peninsula for decades. It would have been against reason to expect that much worse would come within a few years, but come it did in December, 1962.

..everyone was convinced the world was growing warmer...

The delay in publishing this report until January, 1964, thirteen months after the freeze occurred, is owing to valid reasons. The freeze effects upon the injured palms were not simultaneous with the occurrence of the freeze itself. On the contrary, these effects were in a state of constant change over more or less extended periods of time, with the outcome continuing to be in doubt for from one month to as many as ten months. In some instances it was still impossible to know, by late summer, which palms would survive among all those still ailing but alive at that time; and even somewhat later on, ten months after freeze injury, the issue remained doubtful in a few cases. Not until late November was it possible to tabulate all the facts and to prepare this account for publication in the next issue of *Principes* -the current one.

At the time of the freeze there were one thousand planted palms, slightly more or less, under the writer's care at 2514-2518 South Peninsula Drive, Daytona Beach, Florida. This number was substantially larger than in prior years, but the number of genera and species had been reduced by losses from 94 genera and 242 species to 70 and 207 respectively.

Accompanied by high surface winds from the northwest, a mass of Arctic air descended on December 12, 1962, and blanketed most of Florida. The northern and central regions were subjected to much deeper cold than the southern, and generally the inland sections at any given latitude were colder than the immediate coasts. Marine influence was lessened, however, even on the littoral of the Atlantic Ocean, for the strong northwest winds off the land hardly permitted much warmth from the water to make headway landwards. Although the palm plantings reported on here are located a scant quarter-mile from the open sea, any benefit from the proximity was, if not negligible, quite small on this occasion.

There was less than one day's warning of a record-breaking freeze, making the time all too short to prepare for it. In the few hours of grace some six hundred small palms in pots and cans were placed in a heated shed and an unheated garage, as a consequence of which none was lost. Stakes were driven upright around some of the smallest planted palms and sheet blankets draped over them, so that the plants were enveloped without being touched by the fleecy cotton material. Shelters of windproof but translucent acetate mesh stapled to stakes were built around three sides of about thirty small palms, leaving the south side and top open to be covered with a sheet blanket in case of a threatened cold attack as in this instance.

No heat was used outdoors for several reasons, the chief one being that not even two hundred "salamanders" or other grove heaters could give full protection to every palm needing it. Firing would have been of little value anyhow, for as it turned out the force of the icy winds would have dissipated most of the heat. A still more compelling reason for the lack of any heat at all was that the rush to buy grove beaters had exhausted the supply in central Florida at the first alarm and they were not to be had.

On that fatal day, December 12, the temperature fell to 32F at 8 p.m. and continued falling till it reached a minimum of 22F at 7 a.m. on the morning of the 13th. It gradually started to rise at 8:30 a.m., but did not reach 32F until 10 a.m., thus making a total of 14 hours below freezing. The maximum temperature during the daylight hours of the 13th was only 42F. Two more consecutive nights with freezing temperatures were to ensue: 11 hours from 9 p.m. on the

(Continued on page 13)

Letters....

(Continued from page 11)

Dear Editor,

Congratulations on your new *Palm Review*, it looks just great. The graphics and quality of the photos are top notch. Your new board of directors have set up some very worthy goals, I wish you much luck in your endeavors.

There were a couple of things that I wonder might possibly make it easier for a reader to enjoy. Would it be possible to print on a 11 "x 17" sheet of paper and then fold it in the middle so that it would not be stapled at the top left corner, but rather in the middle? I also, personally would prefer to have the various articles start and finish without having to go to a different page to continue reading it. It's done like that in all the newspapers, and it bothers me there also. I've never been an editor, so I'm not sure if the way you're doing is that much easier, but anyway, those were the only two areas that came to my mind for a possible change.

Ralph Velez, Westminster, CA

Others have expressed similar concerns, so I would like to address them here. We chose the standard paper size because it is less expensive. I agree, it would be more enjoyable to read a larger page which was folded down the center. Perhaps in the future, if we have the funds to upgrade, this could be implemented. Also, articles are different sizes, some longer and some shorter than one page. Because of expense (postage and paper costs) we can't waste space and must fill all parts of each page. Also, we try to have an item of visual interest on each page (a photo, etc.). Both prevent articles from beginning and ending on a single page. - Editor

About Cold Tolerance...

(Continued from page 12)

13th to 8 a.m. on the 14th, with a minimum of 26F; and 3 hours from 10 p.m. on the 14th to 1 a.m. on the 15th, with a minimum of 29F.

The damage to plants was apparent enough at first, but not nearly so appalling as a week later when it looked as if a fire had run through the grounds. Immediately, however, once the frozen vegetation had thawed out, a faintly sweet but sickly odor began to permeate the air, becoming more pronounced within the next few days and not unlike that of a battlefield strewn with dead.

With the lapse of a week dead fishes floated in the river shallows and others were cast up to rot on the bank, adding nothing pleasant to the pervading stench from decaying vegetation. It looked as if six or seven hundred palms had been lost, though a correct tally could not be made before fall.

Figure 1: *Syagrus flexuosa* recovering from the freeze and the loss of the upper 18 inches of its trunk to the pruning saw.

Many palms, including some of those that had always been considered absolutely cold-tolerant for the locality, suffered severe damage to the foliage or else lost all of it together with any unexpanded leaves. Some of these died, and some made a natural recovery; others had to be aided by human agency, as without it they were doomed. If, as time wore on, no new growth became visible within six weeks to three months, radical surgery was resorted to in an effort to save any palms that, though devoid of foliage, remained upright with the lower part of the stems (trunks) still sound up to within two feet of the top. Nothing was to be lost by it, for these palms appeared to be already dead or about to die, most of them rotting at the top of the stem which at that point was infested with maggots. However futile it seemed, the larvae-infested rotten tops of the stem or trunk were sawed off with a pruning saw. From only a few inches of a very small stem to as much as two feet of a large woody trunk had to be amputated, thus leaving in the latter instance only a gaunt pole with a flat top. These cutoffs were made many times at a point well below the base of the latest leaf to emerge, and certainly where no vestige of the sheathing leaves could be readily discerned. Nevertheless, about eighty of these shorn and sawed-off palms, out of approximately one hundred and fifty so treated, began to push up new leaf growth that was feeble, sickly and stunted at first, but becoming more promising with each succeeding leaf until, in some instances, the normal leaf crown was attained and in other instances a slow progress maintained (Fig. 1). Not miraculous, perhaps, but most amazing to this writer, who had been zealously attached to the belief that palms chopped in twain are finished for all eternity. And so they were in every case where a cut had to be made below the shoot apex. Regeneration could not take place when the removal of all unsound tissue resulted in a cut too far below the crown, and this was the case with many of the palms cut back.

The emerging leaves (or "buds") had to be lifted or pulled out of hundreds of the writer's palms, often leaving deep sockets which had to be drained of rainwater to prevent new rot. The innermost leaves extracted were of course dead, but not uniformly loose; a good deal of force had to be exerted for removal of some. No ordinary bulb-syringe proved long enough to reach the bottom of the largest sockets; a twenty-inch catheter had to be added to a battery filler to drain the deepest cavities created by extraction of emergent leaves. No wonder someone was prompted to remark that only a palm-nut of the first magnitude would lavish such care on the sorry snags and stumps then abounding. It was not love, however, that redeemed a few of the seemingly most hopeless palms, nor was it faith; it was unremitting attention and effort.

Not to be overlooked is the fact that the 1962-1963 winter as a whole was slightly warmer than normal for the area. All the damage resulted from the one cold outbreak beginning the evening of December 12th and ending in early morning of the 15th. The temperature did not again fall to the freezing point during the remainder of the winter and frost did not recur, yet the severity of the one outbreak caused more damage than any other of the century.

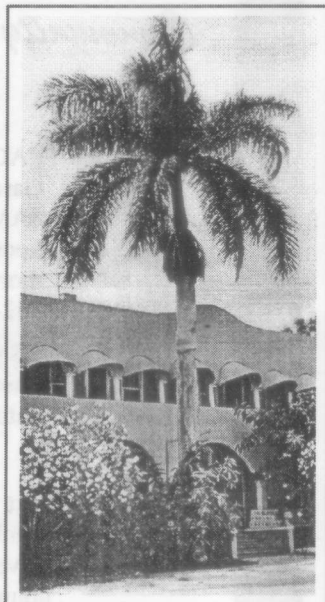


Figure 2: This *Roystonea regia* on the mainland at Daytona Beach, is said to have been 46 years old when destroyed by the freeze of December, 1962.

Witness Fig. 2, showing a palm nearly half a century old that was finally struck down by the 1962 freeze after having defied perhaps one hundred or more less violent freezes. Numerous palms and other plants in the writer's collections that had survived the long cold winter of 1957-1958, officially the coldest of record, were at last destroyed by the short but unprecedented cold outbreak of 1962.

By no means were all the survivors of the 1957-1958 winter damaged by the 1962 outbreak, much less killed. Moreover, the number of recoveries of severely injured palms exceeded by far any reasonable expectation. Certainly to judge by early appearances there were no grounds for optimism, and no one would have been rash enough to predict that, despite the heavy losses, there would be many survivors among the palms of strictly tropical habitat-which there were, especially notable in such genera as *Bismarckia, Licuala, Livistona, Sabal, Acrocomia, Syagrus and Orbignya,* to name a few. ■

Community Clipboard

April

5th -6th: CFPACS plant sale at Harry P. Leu Gardens in Orlando. Hours are 8AM - 5PM on Saturday and noon to 5PM on Sunday. For more info call Dave Witt (407) 352-4115

12th: CFPACS plant sale at the University of South Florida Botanical Garden Saturday from 10 AM - 4 PM.

May

24th: Our next CFPACS trip will be to Ron Lambert's Buckhorn Nursery. Reserve your calendars now! See announcement on page 15.

If you have events you would like to let other CFPACS members know about, please submit them to the Palm Review editor.

Miami PalmFest...

(Continued from page 3)

front of the house (that big *Kentiopsis*) and to the north side (a full-size *Copernicia macroglossa*), but there was. . . the rest of De's phantasmagoria. Hundreds of cages of breeding lovebirds, cockatoos, small parrots lined the area behind the house (Figure 3). On the south side of the house were two immense shade houses, packed with palms, some cycads, a few other tropicals; each shade house contained thousands of palms in pots no larger than five gallons, most smaller. A few of the palms were labeled. Stunned visitors edged carefully through the narrow pathways. Outside? Larger pots, larger palms stretched not quite to the horizon.

At the opposite end of the scale was the final stop on Sunday: Carol Graff's backyard nursery. This was dominated by a gigantic (20-foot?) *Wallichia disticha*. In the middle of Carol's nursery was a deep, empty hole--perhaps 8 feet across and 6 feet deep--that seemed lined with concrete. Not concrete, however, but the lime rock that underlies a frequently thin layer of topsoil in Dade County, the flip side, as it were, to the ease (or lack thereof) in gardening in Miami.

What visual souvenirs of Miami did the happy, weary visitors take home with them? Coconut palms everywhere, tall *Veitchias* in all directions, solitaire palms in nearly every yard. Foxtails lining some streets. All more lush than Central Floridians can imagine or believe.

* * * * * * *

Our special thanks to our hosts who answered patiently innumerable questions. Rick and Dee provided welcome refreshments. We especially appreciate Rick's great kindness in setting up our tour with such efficiency.

To insure that he would not appear on the cover of this issue as he did on the last, Mike Dahme offered to take the pictures for this article. Thanks Mike for some great shots! ■

Figure 3: An upside-down pair of ? The sight was amazing, hundreds of cages of all kinds of birds. De could have been in charge of loading the Ark.

Winters at Harry P. Leu Gardens

by Eric Schmidt

The winter of 1995-1996 was a long cold one here in Orlando. We didn't have record-shattering temperatures but we did have 5 nights below 32F. Below freezing temperatures were found in December, January and February. The coldest was 26F on February 5th. Almost all the palms which did not recover were only minimally to slightly damaged until the knock-out in February came. We also had many nights below 40F and days below 60F. March had no freezing temperatures but did have several nights in the mid 30s. This made for a prolonged cool winter.

As of February 25, 1997, Orlando had only one night below 32F; this occurred on January 18 when the official low was 26F. This was accompanied by nearly still winds and a heavy frost. Despite this seemingly severe cold, I can report that nearly all our palms escaped injury. A few showed some minor but insignificant burn. This included the *Cocos nucifera*, *Aiphanes aculeata* and *A. acanthophylla*, *Bactris gasipaes*, *Syagrus picrophylla*, *Copernicia baileyana*, *C. fallaense*, *C. hospita* and *Caryota mitis*. All the other palms that survived the 1995-96 winter escaped uninjured. No cycads were injured this past winter.

Eric has provided a list of the palms and cycads at Leu Gardens along with his observations of the conditions of each following the past two winters. If you would like a copy of these lists, please send a self-addressed stamped envelope with that request to the Palm Review *editor.* ■

Our Next Meeting

We have the privilage of touring Ron Lambert's Buckhorn Nursery for our next meeting which is scheduled for Saturday May 24. Ron has been at this location for 33 years and now Buckhorn Nursery is a second generation business. The 91 acre nursury is located between Avon Park and Wauchula. Ron is well known in the nursery trade for his work with *Phoenix* hybrids and mule palms. Among other interesting things to see are his very silver *Chamaerops* and an impressive natural stand of *Rhapidophylum hysterix* (needle palms). For people who want to venture out to the woods, Ron has carts for tourning his extensive property. Look for more details (times, directions, etc.) in the May issue of this journal and in the mean time, be sure to reserve May 24th for this unique event because this may be the only time we get a chance to tour this nursery.

Cycads...

(Continued from page 10)

nalis, the king and queen sago. The queen sago is not very cold hardy, but the king sago should be good to around 10F. *C. taitungensis* is bigger than *C. revoluta* and has been tested in Alabama to below 5F. *C. revoluta*, and *C. taitungensis* can get spotting of the leaves or will defoliate at the more severe temperatures. The new species to look out for is *C. panzhihuaensis*. These plants in full sun, can have beautiful blue leaves. Only after several months will these leaves turn green. I have tested this species down to 20F and a moderate frost.

Bowenia prefer to be in the shade and are not frost tolerant. Some people have problems growing *Bowenia* in the landscape, but I have seen plants grown in deep sand flourish and grow to six feet tall. I tested *Bowenia* in containers to 24F, but because the stems are subterranean the plant won't die at lower temperatures. I was shocked to find this year that the foliage did not burn at 24F, when grown under trees. Because the leaves hold up so well, the foliage of *B. serrulata* is used for flower arrangements in Australia.

Ceratozamia in general are well suited for our area. Of all the rare plants I own, my favorite is *Ceratozamia hildae*. Known as the bamboo cycad, the leaves are upright, instead of the typical fountain form of cycads. *C. hildae* prefers shade, but can tolerate full sun for most of the day. Plants grown in Louisiana during the 1989 freeze had no problems. I know of plants that have tolerated 11F. *C. kuesteriana* is another good one. Plants in my nursery, growing in full sun, tolerated 20F and the worst frost I've ever seen without any leaf burn. There are other *Ceratozamia* that do well but just about any of them are worth trying. Most prefer shade and mulching. Because most *Ceratozamias* are subterranean, these plants can be grown in the northern part of our area.

Encephalartos plants are very popular, especially in California. All the species that we can grow would have to be an article in itself. The blue plants like *E. horridus* or E. *lehmannii* are beautiful and very cold hardy. *E. Ferox* has large holly-shaped leaflets and bright red cones. As a general rule, plants from South Africa will be more cold hardy than plants from central Africa. Even though most stems of *Encephalartos* will tolerate temperatures around 20F, there are only a few that can take hard frosts without burning.

Macrozamias in general should all grow well in our area. I have found most of them to be very cold hardy. Most prefer shade, but the larger growing plants do better in full sun. I've found that if they are grown in a sand mixture, they are less likely to rot. *M. moorei*, and *M. communis* should be the best species to grow. Both species withstood 17F with little or no burn.

Dioons are another group of plants well suited for our area. *Dioon edule* is probably the most cold hardy of all cycads. I know of people who have tested it to 10F, but I would bet they can withstand lower temperatures. *D. edule* is very frost tolerant. In 1989, when my *Cycas revoluta* defoliated, *D. edule* did not even have tip burn. Almost all *Dioons* should work well for us, but *D. mejiae*, and *D. merolae* would burn badly during a hard freeze.

Zamia is a genus that is made up of plants that vary from the smallest of all cycads, to plants with 10 feet of clear trunk. There are more species of *Zamia* that are not cold hardy than species that are cold hardy. Most of these plants come from tropical areas. In our coldest areas, only the subterranean species would survive. *Zamia integrifolia*, or "Coontie" is native to Florida and obviously suited for our area. *Z. furfuracea*, *Z. fischeri*, and *Z. pumila* are the other common *Zamias* used in landscapes. These species however, will burn with frost.

Lepidozamia peroffskyana makes a good plant for landscaping in our area. These plants prefer a little shade and can tolerate temperatures around 20 degrees. This species has no spines and will attain a 15 foot leaf spread.

Stangeria is a monotypic genus that until 1853 was thought to be a fern. It is a very beautiful, fernlike plant but will burn in even a moderate freeze.

The other two genera are *Chigua*, from Colombia, and *Microcycas*, from Cuba. Both of these are rare and not cold hardy, so I would not attempt to use these in a landscape.

Even though I have gone over some of these genera very quickly, this should give the novice cycad enthusiast a place to start. If you are not familiar with cycads yet, the basic species I have mentioned should give you a good start on a collection that will be easy to maintain. ■

The new CFPACS T-Shirts are now available! The price is $18.00 plus $3.00 postage. Please send your check (made payable to "CFPACS") to: Ed Hall, 1111 Glen Garry Circle, Maitland Florida, 32751

Notes From the Officers...

(Continued from page 3)

These sales are one of our main sources of income. This year they are located in Orlando as well as Tampa. For those of you in the east part of Florida, at least you will not have to travel as far to make a sale. However, for those of you looking for a special plant, there will be some vendors at one sale but not the other. The serious collectors may want to consider going to both.

That's all for now, I hope to see many of you at one of our next meetings, or sales.

West Vice President — Edgar Hall

Edgar Hall recently moved to the central Florida area from California. A long-time member of the IPS, Ed joined our society shortly after purchasing several acres of land in Weekie Watchie. We welcome Ed into our society and look forward to hearing from him in the future.

Immediate Past President — Mike Dahme

As a result of a decision taken by the officers of the chapter and approved, if not by acclamation at least without visible signs of protest [perhaps it was too cold], by the membership at the November 9th meeting, a formal application for incorporation as a non-profit corporation was made to the State of Florida. By letter dated February 14, 1997 The Division of Corporations [Florida Department of State] advises that the Articles of Incorporation for The Central Florida Palm & Cycad Society were filed on February 11 and assigned document # N97000000847. [The letter went on to mention in not so veiled terms what would happen if the various annual reports weren't submitted or other needed documents obtained, but we won't dwell on that here.] So now the chapter lives in the legal sense, the fixed annual cost for such life being apparently $70. Pass the hat

Membership — John Stryjewski

I have just finished updating the new CFPACS membership database (it's in MS Excel Format). A number of members have sent me letters with address corrections — if yours is wrong send me a note at: *Membership, 5155 Wildwood Ave. Merritt Island, FL 32953.*

Currently, the Society has 335 registered members, 256 of which are IPS members. We have 4 foreign members and 14 members which reside in the US but outside Florida. There are 317 members in Florida of which 289 are in Central Florida (Alachua:15, Brevard:39, Desoto:1, Hardee:1, Hernando:3, Highlands:4, Hillsborough:39, Indian River:14, Lake:12, Manatee:8, Marion:2, Orange: 41, Oceola:3, Pasco:6, Pinellas:38, Polk:11, Sarasota:20, St. Lucie:4, Seminole:13, and Volusia:15). The remaining Florida members reside in the following counties: Baker:1, Broward:3, Charlotte:1, Clay:2, Collier:2 Dade:7, Duval:4, Lee:1, Martin:3, Palm Beach:3, Santa Rosa:1.

I would also like to welcome the many new members who have joined our society in the last 3 months. I hope you will enjoy the society as much as I do.

Unfortunately, only 214 of our old members have sent us notification that they wish to continue receiving the *Palm Review*. We would like to hear from the rest of you as well. If your issue has the phrase **"Last issue — see page 16, lower left, Membership"** on the address label, then we have not heard from you and this is your last issue. If you would like to continue receiving this journal, please let me know and I will add your name back to our list. If you did respond, but still have this message, I apologize for the error but you still need to send a note to me at the above address.

Lastly, I would like to thank John Kennedy for graciously offering to help me with membership. If Anyone else wants to help, let me know!

Revenue — You?

Our society still needs someone to run our fundraising efforts. If you would like more information on just what this position entails, please call Tom Broome.

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Position Vacant! Call Tom Broome!

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Secretary:
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The Central Florida Palm and Cycad Society

What is the Central Florida Palm and Cycad Society?

- ◊ *The CFPACS is dedicated to the preservation and promotion of palms and cycads. We are an affiliate of the International Palm Society which serves the Central Florida Region.*

Why Join the Central Florida Palm and Cycad Society?

- ◊ *Learn how to grow exotic Palms and Cycads*
- ◊ *Meet interesting people*
- ◊ *You can get this journal!*
- ◊ *Help promote something great — the greening of our cities*

How do I join the Central Florida Palm Society?

- ◊ *Fill out the CFPACS form below*

How do I join the International Palm Society?

- ◊ *Fill out the International Palm Society form below*

International Palm Society

Central Florida Palm and Cycad Society Membership Application

*Name:*_____ *Street:* _____ *County:* _____
Phone: _____ *City, State, ZIP Code:* _____ *Country:* _____

For IPS members living in the Florida counties of: *Alachua, Brevard, Citrus, Desoto, Flagler, Hardee, Hernando, Highlands, Hillsborough, Indian River, Lake, Levy, Manatee, Marion, Okeechobee, Orange, Osceola, Pasco, Pinellas, Polk, Putnam, Sarasota, St. Lucie, Seminole, Sumpter and Volusia, Membership is Free.* ***For Non-IPS members and anyone living elsewhere in North America,*** *Membership is US$7 per year.* ***Outside North America:*** *Membership is US$12* ***Make check payable in US$ to CFPACS***

Send the above information and fee (if applicable) to:

Membership
5155 Wildwood Avenue
Merritt Island, FL 32953

How did you find out about us?_____

INTERNATIONAL PALM SOCIETY MEMBERSHIP APPLICATION

MEMBERSHIP CATEGORIES:

Regular - USA	US$30.00 per year	**Supporting**	US$100.00-$499.00 per year
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Commercial	US$40.00 per year	**Libraries - USA**	US$35.00 per year
Friend	US$40.00-$99.00 per year	**Libraries - All other countries***	US$35.00 per year

*DIRECT AIRMAIL DELIVERY? Member dues at above rates include airlift delivery, where available. Direct airmail service is also available to all non-USA destinations for an extra fee of US$20 per year. Please indicate by a check here [ ] if you wish this optional service for faster delivery to be added to your subscription charges. [Note that the "airlift" delivery to most non-USA addresses is included in dues and is faster than surface mail, but slower than Direct Airmail.]

IPS membership is accepted on a calendar year basis. New members' dues received after October 1 will be applied toward the following year unless otherwise specified.You may also pre-pay membership dues for up to three years (at the rates specified above). This would protect you from any dues increase in 1998 or 1999 -- but is offered primarily as a convenience for those members paying by international bank draft in US dollars. MasterCard and Visa payments are also accepted. Please indicate here if you wish to sign up for additional years: _____(2 years total) or _____(3 yrs total). **Notice:** Foreign checks must be in US$ payable on US bank. Credit card orders my be sent by fax to (913)-843-1274.

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Circle one: check/draft MasterCard Visa

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CFPACS
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Merritt Island, FL 32953

Michael Merritt
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