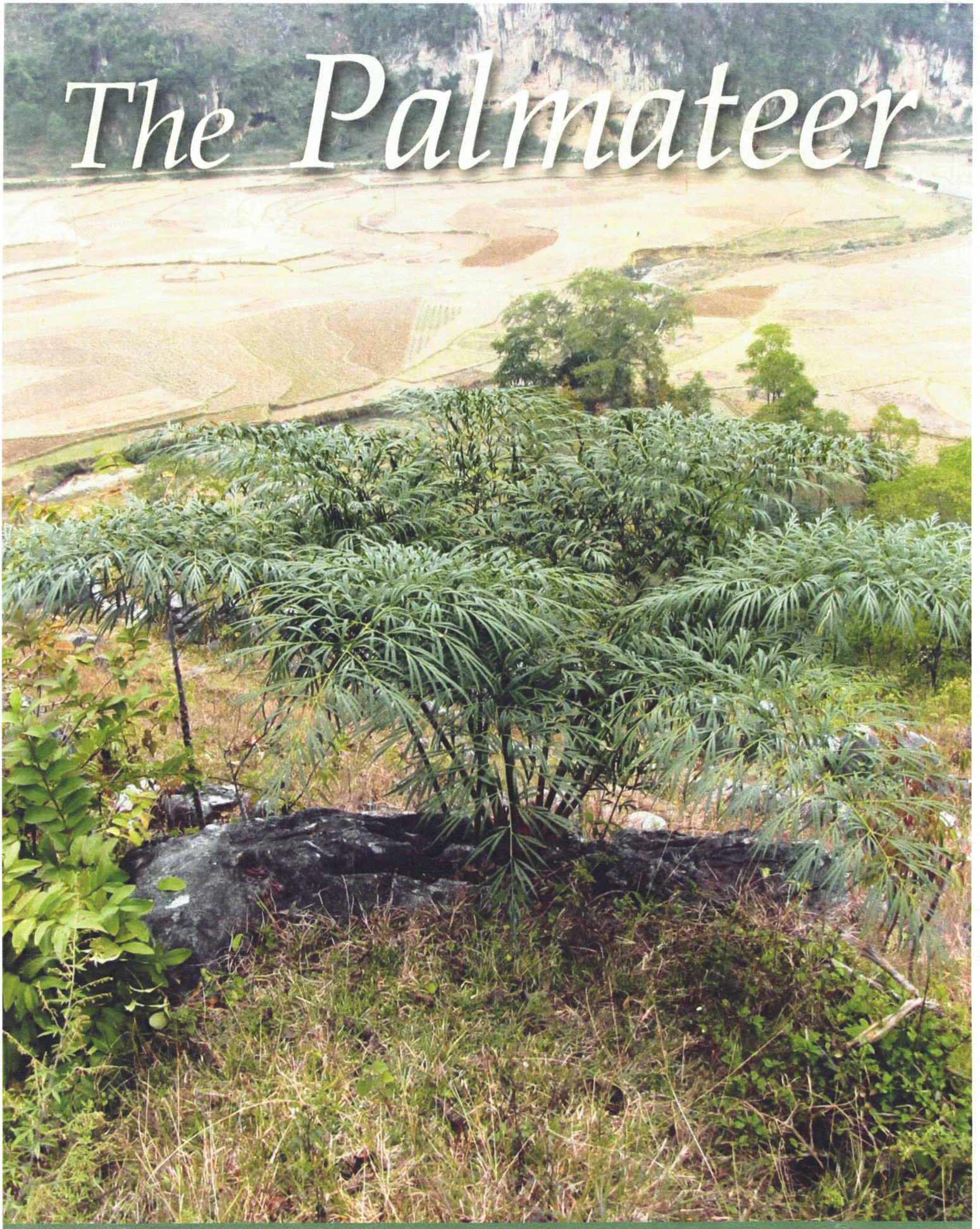
The Palmateer



Central Florida Palm & Cycad Society • Winter, 2011 • Volume 31, Number 3

The Palmateer

Central Florida Palm & Cycad Society

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Contents

***The Palmateer* Editorial Team**

Editor: Bob Johnson

Contributors: Tom Broome, Christopher Mink, David Reid, Eric Scmidt, William Tang, Lek Wallace

Layout/Production: Bob Johnson

Front cover: Wild *Cycas debaoensis* at the type locality in Guangxi Province, China *(photo by William Tang).*

Inside front cover: *Chambeyronia macrocarpa double growing at Sea World, Orlando, Florida (photo by Eric Schmidt).*

Right: *Copernicia eckmanii seen at the Gizella Kopsick Palm Arboretum at 2007 CFPACS meeting. Come to the March 31st CFPACS meeting to see how it and other Kopsick palms have grown over the past 5 years (photo by Bob Johnson).*

Back cover: *Copernicia baileyana at Nong Nook Garden, Thailand (photo by William Tang).*

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The **Central Florida Palm & Cycad Society** is an affiliate of the **International Palm Society** and **The Cycad Society**. CFPACS is a nonprofit, nonpartisan organization dedicated to scientific and educational projects related to the study of palms and cycads, their propagation, culture, conservation, care, and development. We assist in the preservation of palms and cycads for future generations as well as promote and maintain public interest in palms and cycads.

CFPACS serves 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 and Volusia.* We also welcome palm and cycad enthusiasts from beyond Central Florida to become members.

CFPACS Membership Dues for 2011:

US Members (1-year): $15

US Members (3-years): $40

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About the International Palm Society: IPS membership dues are $45 a year. Membership includes a subscription to *Palms*, the quarterly journal of the IPS. For further information on the IPS, please visit their web site: www.palms.org

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Since 1977

About The Cycad Society: TCS membership dues are $35 a year. Membership includes a subscription to *The Cycad Newsletter*, the quarterly journal of TCS, and access to The Cycad Society seed bank. For further information on the TCS, please visit their web site: www.cycad.org

CFPACS News

From the Editor

After three years as editor of *The Palmateer* it is time for me to move on so that I can spend time on other things. Three years is not very long, but after two years as treasurer, and three years as president I have served CFPACS for a total of eight years, and that is enough! It is time for others to step up and serve.

As I close my tenure as editor, I want to thank those who have helped to make our newsletter possible over the past three years. Mike Dahme, Walt Darnall, Jim Hawk, John Kennedy, Randal Knight, Mike Merritt, Christopher Mink, Geri Prall, David Reid, Eric Rosenfeld, Stephane Ringot, Lek Wallace and Dave Witt have contributed articles and photos, some short, some long, but all of them interesting and appreciated.

Special thanks are due Tom Broome, René Coativy, Chuck Grieneisen , Donald Hodel, Eric Schmidt, and William Tang. Each of these men have made a substantial contribution to *The Palmateer's* run over the past three years by writing multiple outstanding articles for CFPACS.

Without the contributions of our authors and photographers we would not have a newsletter. My heartfelt thanks to all who have supported CFPACS and *The Palmateer!*

Bob Johnson

Find us on Facebook

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CFPACS Spring Meeting

March 31 in St. Petersburg

Meeting Schedule
10 am to noon: Tour of Kopsick Arboretum
Noon to 1 pm: Lunch (on your own)
1 pm to ?: Tour of Mike & Marjorie Evans' garden, plant auction and sale

More info on the CFPACS Facebook page

Time to Renew!

If you received a **renewal form** along with this issue of **The Palmateer** it is time for you to **renew** your CFPACS membership - your current membership expires with this issue. **Please send in your renewal form along with your payment today!**

CFPACS Holiday Meeting

December 10th, 2011 • Indian Harbour Beach & Merritt Island

Photos by Lek Wallace

About 35 CFPACS members and friends attended our first meeting in over a year on the Space Coast. It rained off and on but a good time was had anyway. Thanks to Neil Yorio and Dave Reid for hosting us!

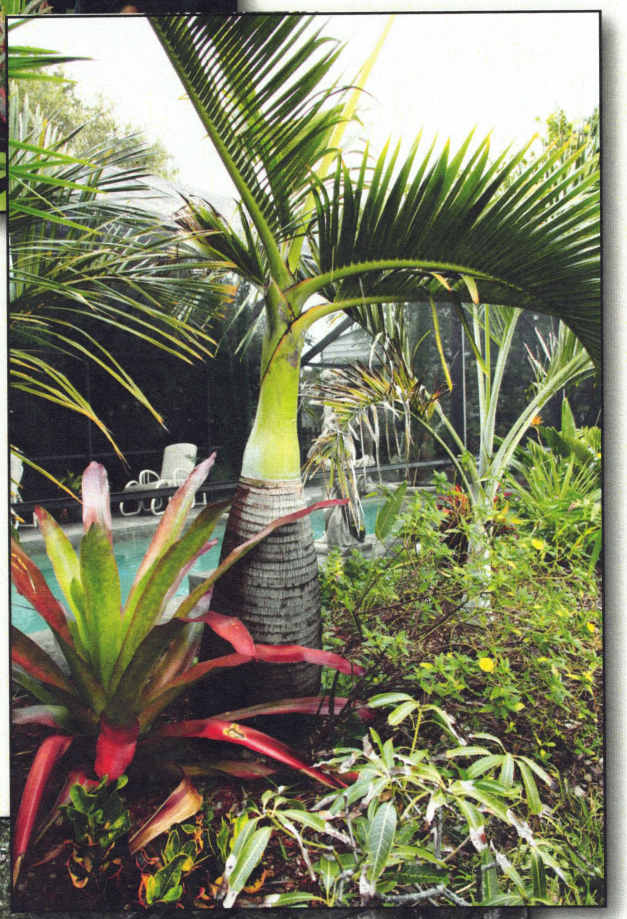
Left - Neil Yorio (holding umbrella) and the gang waiting for the rain to let up.

Center - some of the morning sale plants available at Neil's.

Below - Who says that South African blue cycads don't do well in Florida! Beuatiful specimen in Neil's garden.

Above - Dale Wallace posing next to a spindle palm (Hyophorbe verschaffeltii) at Neil's.

Next page - magnificent displays of cycads and palms in Neil Yorio's garden.



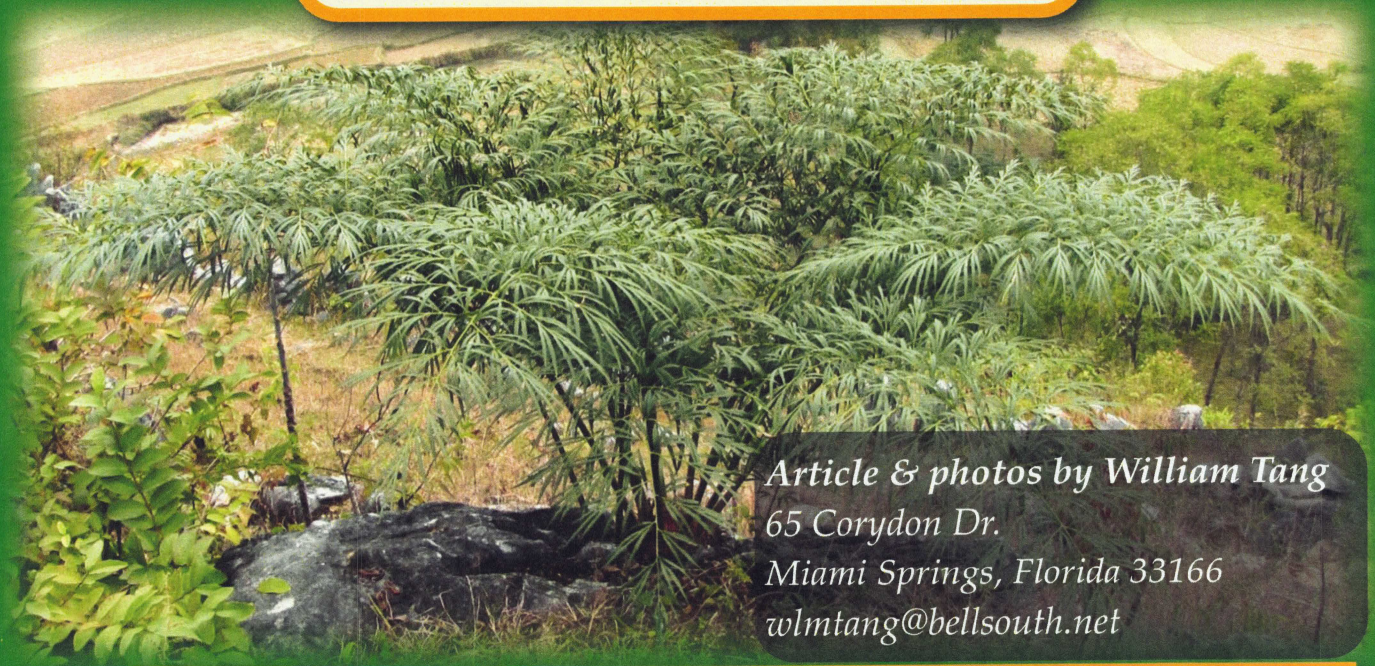
Top and bottom - Attendees enjoy socializing in addition to the plant sale and auction.

Center left - CFPACS president Dave Reid addressing the group before the auction. Leu Gardens made a substantial donation of over 70 plants representing over 30 species.

Center right - bottle palm (Hyophorbe lagenicaulis) and a stunning bromeliad in Dave Reid's garden.

The *Cycas dabaoensis* Project: 12 Years On

CFPACS Grants in Action



Article & photos by William Tang
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In 1998 CFPACS provided a $100 grant to me to start a conservation project in China, deep in the mountainous province of Guangxi, on an exceptionally beautiful and ornamental cycad, *Cycas debaoensis* (Fig. 1). Over the years I have reported to members on the progress of this project (see Tang 2002, 2003, 2004). It has been over 12 years since the beginning and it is time for an update. In 2011 CFPACS granted me another $100 to work on this project. I ventured once again into the rugged karst interior of Guangxi, my sixth trip on behalf of the project.

Much has changed in China in the past dozen years. With 10% growth of the economy on average each year the country has been and continues to be transformed. Debao county, in Guangxi Province, where the natural population of this cycad exists, has not escaped development. Vast deposits of aluminum ore were discovered in this region and to develop this resource the roads in the area are being paved. Where once it took many hours over bumpy dirt roads to reach the cycad population, a mere 1.5 hours is now required to drive from the county seat of Debao City. Seven mountains were leveled to provide a flat area where a processing plant could be built for the aluminum ore. The once clean air and skies are now

Fig. 1

Fig. 2

filled with coal smoke from the power plants needed to fuel the ore processing. The population of the county has doubled as immigrant labor has come to work at the ore facility. The people of the village next to the cycad population that we have been working with have also been affected. Many of the young men have gone to work in the ore facility and other associated jobs and the price of the produce they grow in the valley has also risen with rising demand. I and the other managers of this project, Prof. Liu Nian, of Zhongkai University in Guangzhou, Anders Lindström, of Nong Nooch Tropical Garden in Thailand, and my wife Limei have had to adjust our approaches to this project in the face of this change.


Fig. 3

In the beginning of the project we focused on establishing a village nursery for this cycad (Fig. 2) and, at the request of the villagers, we also worked on building a school for the village (a project for which CFPACS provided $1000). Much local fanfare accompanied the construction of this school, an international project that attracted national TV coverage in China. This building is now nearly complete (see Fig. 3). Due to redistricting of the school system, however, provincial authorities decided that only one elementary school could be designated for this valley at a locality two kilometers away. In honor of this rare plant and the conservation effort on its behalf, however, it was decided to name that school the Debao Cycad School, the only school in China, and perhaps the world that is named after a cycad.

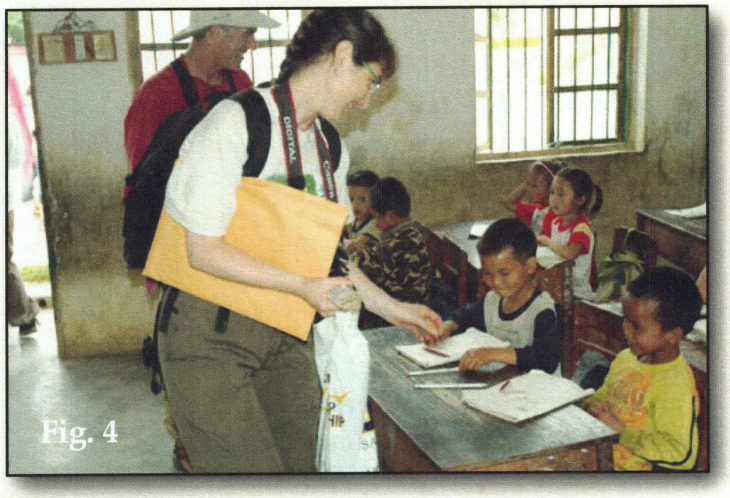
Fig. 4

Since these early years of the project Prof. Liu, Anders, my wife and I have continued to focus on the education of children in our conservation efforts. In 2008 we led a group of scientists from the IUCN Cycad Specialist Group (CSG) to the valley. We visited the children in their classrooms, handing out


Fig. 5

Facing page
Figure 1. Cycas debaoensis in habitat.
Figure 2. The cycad nursery at Shang Ping Tun village in 2011; plants are mature and producing large numbers of seed.

This page
Figure 3. The school building at Shang Ping Tub village constructed with funds from the project and labor from villagers; it is currently used as a Forestry office and for storage of crops.
Figure 4. Cycad Specialist Group members hand out pencils to students during a visit to the Debao Cycad School in 2008.
Figure 5. CSG members present computer equipment to the Debao Cycad School in 2008.

pens and pencils (Fig. 4) and made a gift of two computers as well as books and software to their school (Fig. 5).

In December of 2011, after the CYCAD2011 conference held in Shenzhen, China, I went back once again to Debao county with Michael and Claudia Calonje, of the Montgomery Botanical Center, and Cristina Lopez-Gallego, of the Universidad de Antioquia in Colombia, to work on the project. Young students at the Debao Cycad School, most of who have never met a foreigner, crowded around them in fascination (Fig. 6). We talked to the headmaster of the Debao Cycad School and it was decided that a small donation should be made to the school for sporting equipment so that all the elementary students from the entire valley would have some benefit from our conservation project. The bulk of the funds that we had, including cash donations from members of the CSG, would be used as scholarships to the 38 elementary students from Shang Ping Tun village next the cycad population. This is the village that we have been focusing our attention on for the past 12 years. We timed our scholarship presentation to coincide with the arrival of the CYCAD2011 post-tour group. The village children ran to join the post-tour group as they explored the wild population of *Cycas debaoensis*. The children each received a certificate for scholarship and conservation, signed by members of the CSG, and 100 yuan (about $16). Both the visitors and kids were excited and pleased by the whole event (Figs. 7-8). Taken together the scholarship money was a modest sum, but the international recognition given to the villagers, in front of a television camera, for their conservation work must have had a great effect.

Visits from foreigners in such an out of the way place as Debao county have a big impact in a country like China. There is no doubt in my mind that this project, funded in part by members of CFPACS, has been an inspiration to villagers,

Figure 6. Michael and Claudia Calonje and Cristina Lopez-Gallego with students of the Debao Cycad School.

Figure 7. My wife Limei (left) and the local Forestry ranger hand out scholarship certificates to students as a cameraman stands by.

teachers and government officials in this region. Before the advent of the project the wild population of *Cycas debaoensis* was dwindling rapidly due to collectors. The population has remained stable over the years of the project and finally after a long period of discussion the wild habitat for the species has been declared a provincial reserve by the Forestry department, with the hiring of two local villagers as rangers. The next step for the project managers is to work with the Forestry department to ensure that this transition is a success (Fig. 9).


Fig. 8


Fig. 9

Figure 8. CYCAD2011 tour members with kids holding their certificates

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Figure 9. The Head of the Debao County Forestry Department, Mr. Nong Bao Quan (left), examines a map of the wild population with the author.

For more information on the *Cycas Debaoensis* Project visit the website: www.debaocycad.info

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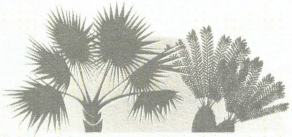

Pilgrimage to *Cycas petraea*

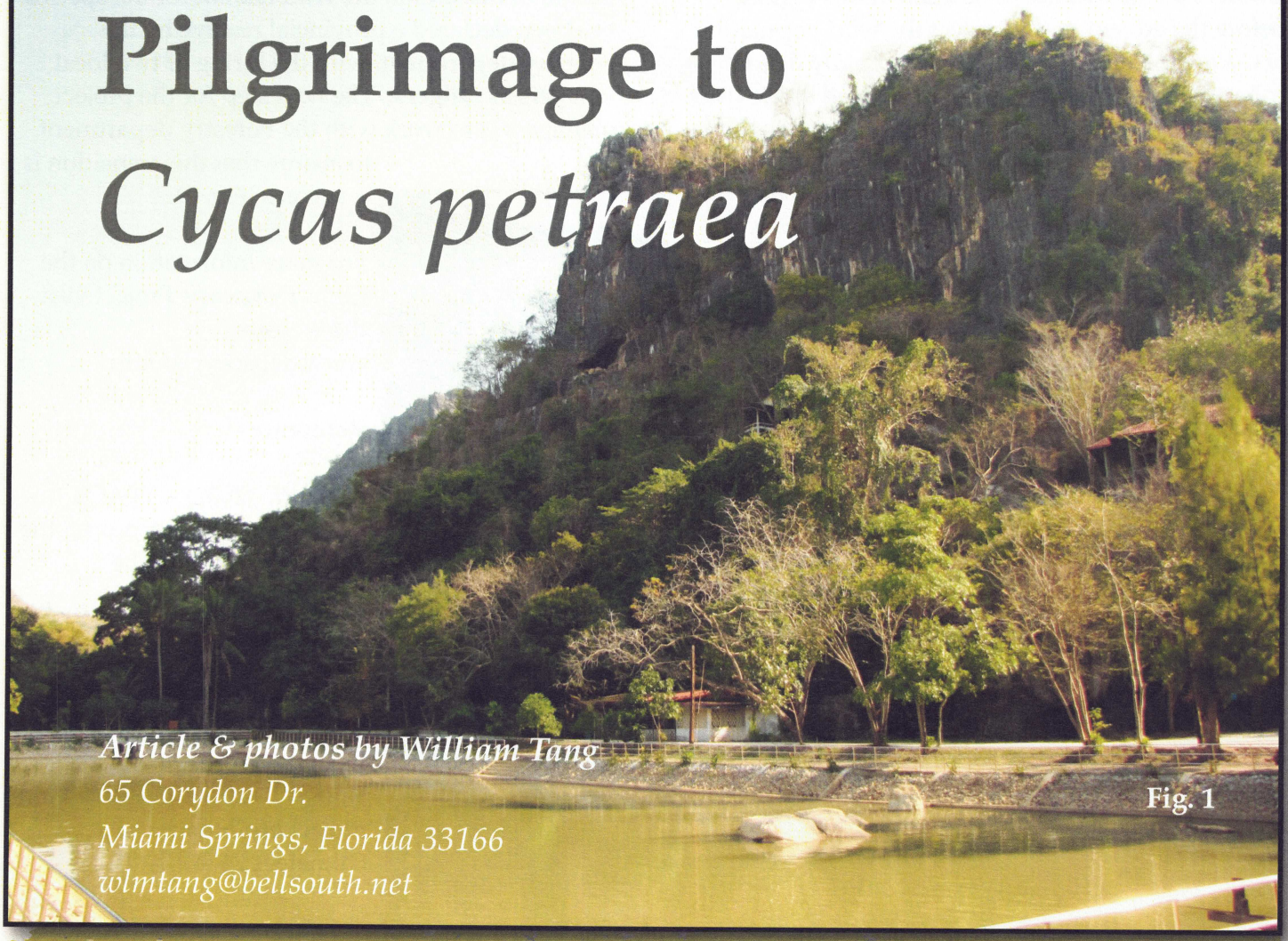

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Fig. 1

Many cycad species inhabit cliffs. To be able to touch or see a wild plant of these species up close requires mountain-climbing skills and is beyond the abilities of most cycad aficionados. One such cliff-dwelling cycad is *Cycas petraea*, which is native to central Thailand. Unlike other cliff cycads, this species produces tall erect trunks that do not lean out from their steep perches (Figs 1-2). Its narrow, smooth, white stems make it among the most ornamental member of its genus. According to Nazor and Lindström (2010) this is a fairly cold hardy species that can withstand temperatures down to the low 30s˚F without leaf damage, making it a suitable candidate for gardens in central Florida. Like many of the species in Thailand it should have natural resistance to the cycas aulacaspis scale.

Recently I made a trek to visit this species in its native abode. This population was located at a holy site, a Buddhist temple and cave complex. Monks have inhabited cave sites like this for centuries and to make them accessible ladders are installed so that steep slopes and cliffs can be scaled. Because such sites are holy

ground, local inhabitants do not remove plants for risk of incurring bad karma.

Coming from the flat topography of Florida I was, of course, out of shape for climbing. I huffed and puffed up numerous steps and ladders and crawled through narrow cave openings. After an hour of struggle, however, I made it up to the top of the karst tower where this cycad lives. A sweeping vista of the surrounding plains was before me. The summit was an alien world of razor sharp ridges with bottomless sinkholes. I gingerly picked my way along ledges careful to avoid cutting my hands on the jagged rocks. Then I reached the end of my pilgrimage. In front of me was a plant with a cone. I had come to study the insect pollinator of the cycad and had reached my grail. I leaned out from my perch to collect my samples and returned down from the mountain.

When one ascends a cycad mountain, I don't think one completely returns. I know that in my mind I will be up there for a long time. These are magical places that make us realize that our garden plants offer us but a glimpse of their truly mysterious wild origins.

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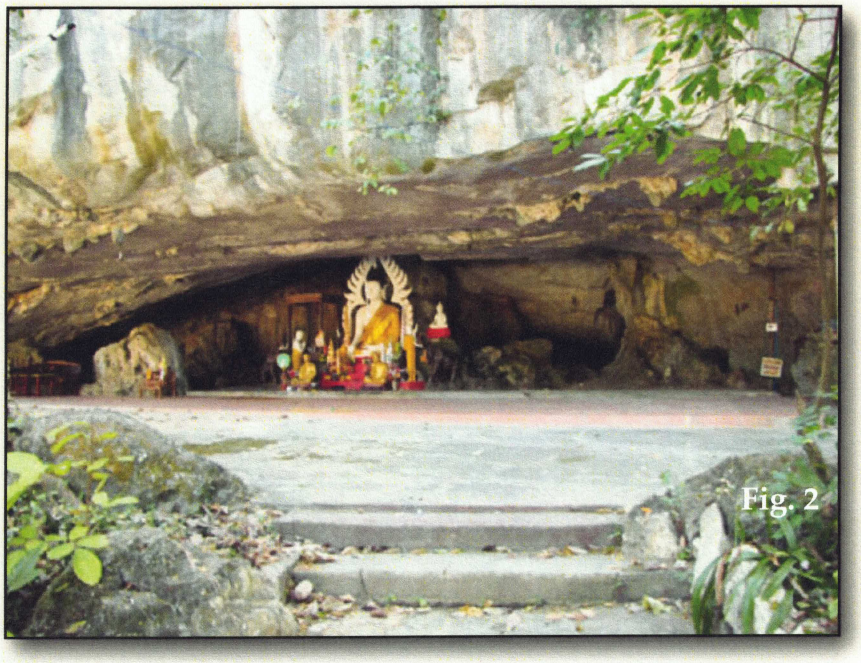

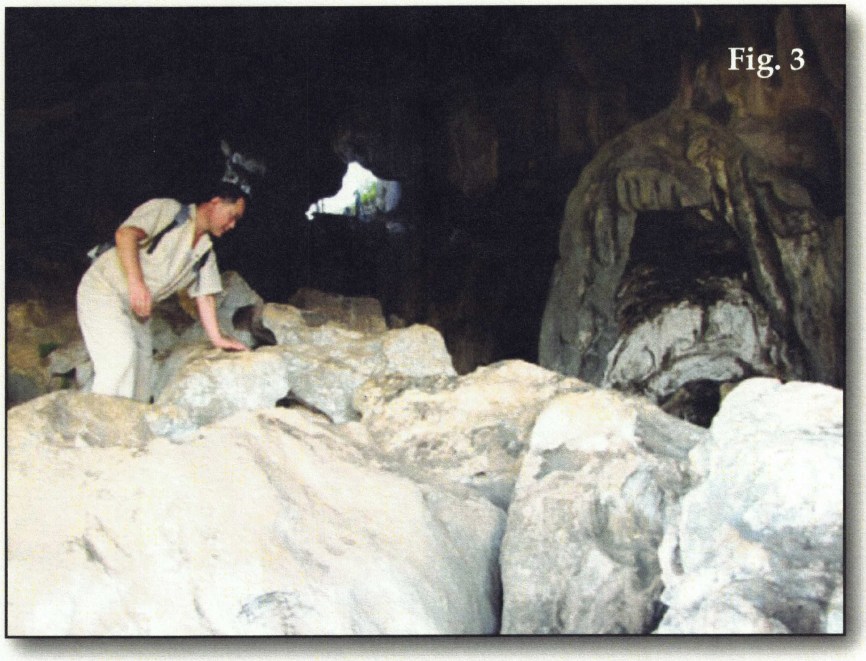

Photo Key

Facing page:

Figure 1. Limestone mountain habitat of Cycas petraea.

Above:

Figure 2. Buddha shrine at cliff base.

Figure 3. Climbing through caves.

Following pages:

Figure 4. Erect plant of Cycas petraea on cliff face.

Figure 5. View of Cycas petraea overlooking surrounding plains.

Figure 6. Weird topography of ridges and sinkholes at the summit.

Figure 7. Cycas petraea stem wedged into a hole in the limestone.

Figure 8. Author examining male cone of Cycas petrea for pollinating insects.

Fig. 4

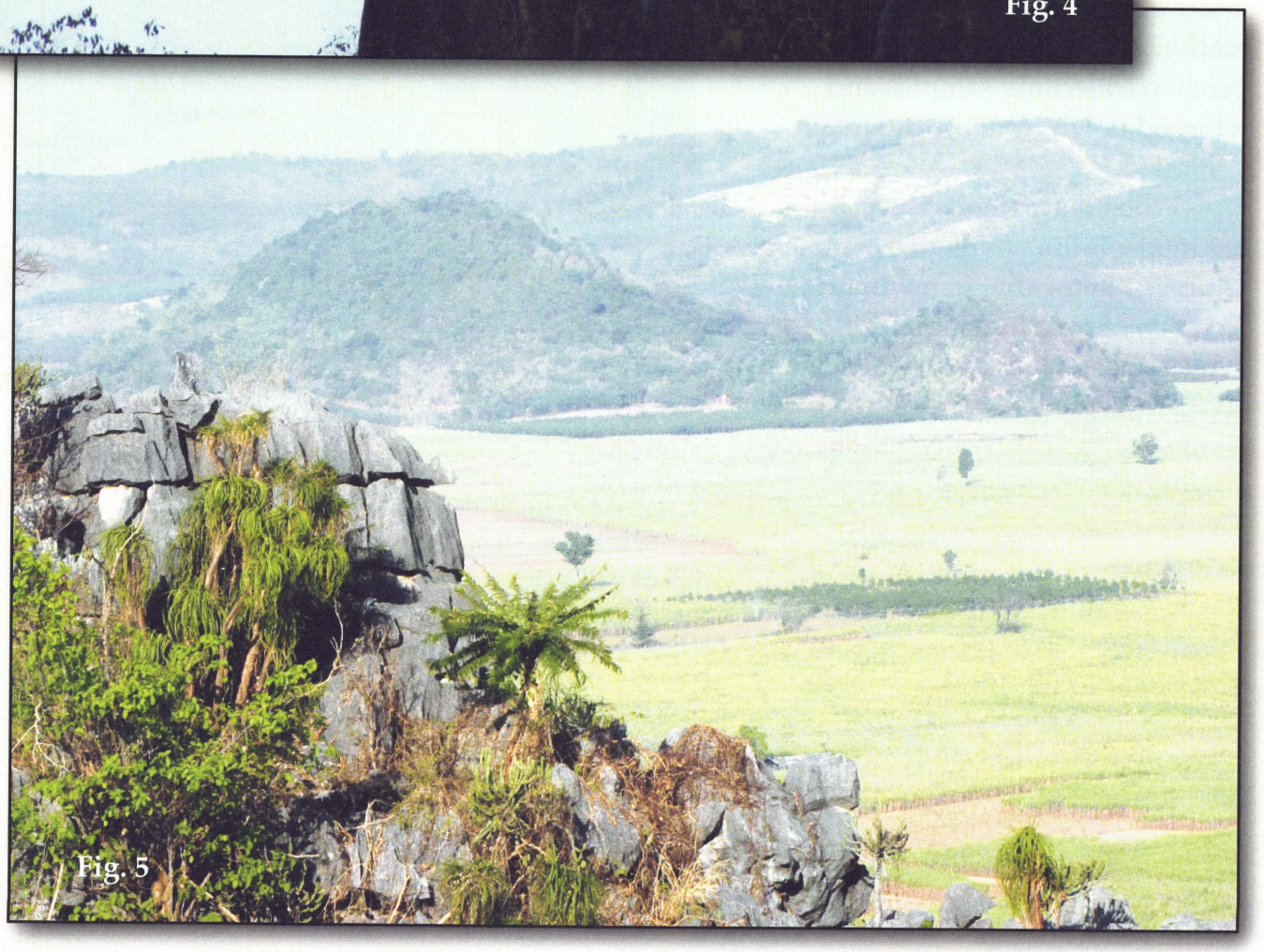

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Chambeyronia macrocarpa in Central Florida

My Life With The Red Feather Palm

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When you think of the color red, what comes to mind? Hot, danger, romance, desire? When a red feather palm *(Chambeyronia macrocarpa)* throws out a new red frond it tells me to stop, go grab the camera, and take multiple shots. Also, anyone who walks through the garden picks it out as well. It is an very inspirational palm in the landscape.

Figure 1. Chambeyronia macrocarpa growing in Leu Gardens (photo by Dave Witt).

Figure 2. C. macrocarpa growing in Dave Reid's Merritt island garden (photo by Dave Reid).

The red feather palm is one of the most ornamental palms one can have in their garden. Its crownshaft can vary from a dark green, mottled, or creamy yellowish color. In select specimens the new frond emerges brilliantly red. As the frond ages and fades to green, the large and animated fronds are intriguing and give off a look-at-me quality which makes it an excellent garden specimen.

Hailing from the far away island of New Caledonia in the South Pacific, near the coast of Australia, the red feather palm has found its way in just about every palm collector's garden. The reason why the big box stores have not offered this palm yet is probably due to its daunting slow growth that limiting its production in nurseries. However, the red feather palm is readily available at plant sales and specialized nurseries.

I currently have nine red feather palms in my yard and have been growing them for seven years. My experience has been that they are fairly easy palms to grow. I have them on a regular palm fertilizer schedule and water them only when we are in an extreme drought. They prefer a shady spot, but can take full sun if allowed to grow into it. *Chambeyronia macrocarpa* is a rainforest palm and prefers a shaded spot where it can get established before emerging above the canopy to full sun.

For cold tolerance, mine have seen down to 28F and have shown no damage. If growing them in colder climates I think having a tree canopy over the palm will help even further North. Some palms grown in inland Central Florida have died in our past cold winters. Thus, you must protect them in a severe freeze.

The red feather palm is also a 'gateway-drug' to other New Caledonian palms. Once you get a taste of the beauty of *Chambeyronia macrocarpa* and start investigating what other beautiful palms come from New Caledonia you start to salivate. The bad news here is that the other palms from the island are difficult to grow. I've tried numerous others and none of them are as carefree and easy to grow than the red feather.

I have bought many different seedlings from Floribunda in Hawaii and the only ones I have had any success with is *Chambeyronia macrocarpa*. Others I have tried and are still alive are *Cyphophoenix nucele, C. elegans, Kentiopsis oliveformis*, and *Burretiokentia hapala*. *B. vieillardii, B.koghiensis, B.grandiflora*, and *B.dumasii* all croaked for various reasons. Also, I thought I was going to have some luck with *Cyphophoenix alba* as the seedlings looked to have took. However, just one week in the August humidity and they died. New Caledonia has exact soil and climate conditions that I can't provide in Central Florida.

There is another variety of *Chambeyronia* and its name is *C. lepidota*. I obtained a seedling for a hefty price and planted it in a very sheltered location. I nursed it along and it seemed to be growing. However, one morning, and to my horror, it was gnawed down to its roots by a rabbit. They must taste good as well!

Fig. 2

An interesting theory in nature is why does a palm throw a new red frond? How in the natural selection process does this benefit the plant? Is it a survival method amongst all the other plant life it has to compete with? New Caledonia was once part of the great continental divide. At one time it connected with the neighboring continent of Australia and Asia. This 'breaking' away island is a biological lifeboat and many of the endemic flora and fauna are part of a unique and ancient Earth. Maybe there was once a great 'rabbit' like creature that didn't like to eat red fronds? The color red signified danger to whatever creature wanted to eat

it. Thus, the color of the new frond protects the species. If you have any more theories let me know!

Chambeyronia macrocarpa looks to survive in the future by offering that red frond as a romantic and desirable ornamental to man. There are many red feather palms that have set seed in Florida. That is a sign the red feather palm will survive the evolutionary changes that are taking place. Why don't you help its chances and plant one today?

Figure 3. Young Chambeyronia macrocarpa growing in Leu Gardens (photo by Eric Scmidt).

Figure 4. Even when all the leaves are green, C. macrocarpa is an attractive palm. Leu Gardens specimen (photp by Eric Schmidt).

Fugure 5. Stem and crownshaft of a young C. macrocarpa (photo by Eric Schmidt).

Growing *Chambeyronia macrocarpa* in Orlando

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Chambeyronia macrocarpa is a pinnate palm native to New Caledonia where it grows in rainforest habitat. It can reach 40 feet tall in habitat but will probably stay in the 20-30 foot range in cultivation. Common names for this palm include the Flame Palm or the Red Feather Palm. These names allude to the fact that the new leaves emerge a bright scarlet red. This color persists for a couple of weeks and fades to green. The trunks have a smooth, dark green crownshaft.

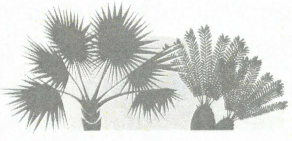
Here at Leu Gardens it has proven to be a fairly easy to grow palm. It prefers part sun or shade when young though mature specimens can tolerate full sun. It is reasonably cold hardy suffering only minor damage following temperatures down to 28-29F. However, it is sensitive to frost so it is best grown under tree canopy. *Chambeyronia macrocarpa* is not very drought tolerant and prefers moist, fertile soil. Fertilizing with a good palm fertilizer and a layer of mulch will help keep this palm happy. Its growing conditions are similar to *Archontophoenix cunninghamiana* or *Howea forsteriana* but it is a slower grower when young, producing on average 4-5 leaves a year. As it matures the growth rate picks up but it still would not be considered a fast grower. Several varying forms of this palm exist. One of these has a more yellowish or cream colored crownshaft and at one time was called *C. hookeri.* Other

Fig. 4

Fig. 5

than the crownshaft difference, growth and hardiness have been about the same here.

Our *C. macrocarpa* was planted out as a 3 gal. specimen in May 2004 and has reached a height of about 7ft. We also have a specimen of the form that was formerly known as *C. hookeri.* It was also planted out in May 2004 but was a smaller 1 gal. size specimen. It is now almost 5ft. tall. There are also several mature specimens growing at Sea World in Orlando. They have been planted out for about 8 years or so. They are around 15 ft. tall and have been flowering the past couple of years. In Florida these palms are hardy in zone 10 and the warmest sections of zone 9b.



The Coontie of Florida

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Introduction

When I first started researching this article, I did not know what I was getting into regarding the taxonomic problems of the Coontie. All I wanted to do was show everyone the different forms of *Zamia* that inhabit my home state of Florida. The more I dug, the more I found out that most people cannot agree with what this plant, or these plants, should be called. Although I will get into some of the details later, I am not the person to sort out and define what species these plants belong to. Instead of having a "focus on" article on *Zamia integrifolia*, or whatever the name should be, I felt that I was safe with "The Coontie of Florida" and let the taxonomists battle with the names.

History

There have been tribes of native people in Florida for the last 10,000 years. As new tribes came down from the main part of North America, these tribes changed. It is hard to say how long these plants have been used for food, but the first people known to eat this plant are the Calusa and Timucua Indians. In certain areas there were vast colonies of these plants, mainly in south Florida near Miami and Ft. Lauderdale. There is a reference to the mass quantities of plants around New River in Ft. Lauderdale; the native Indians called this place "Coonte Hatchee".

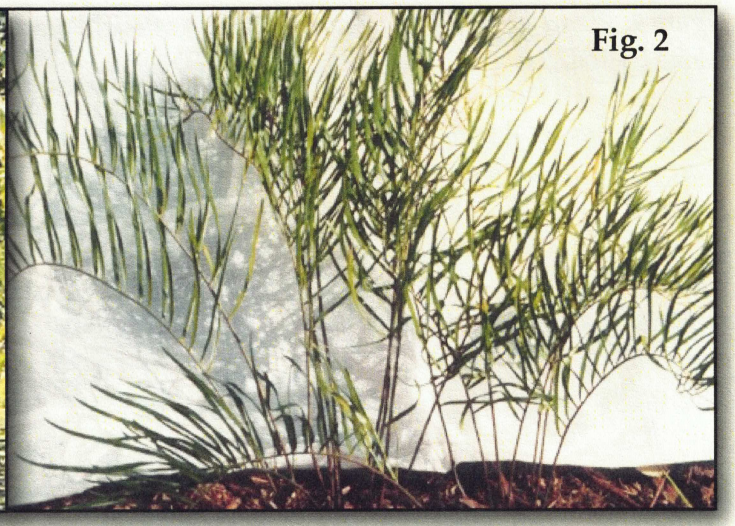
When the Seminoles moved into Florida in the mid-18th century, they picked up on this very important food source. In fact, "Coontie" is one of the names the Seminoles had for this plant and it roughly means "flour root". The Indians would cut up pieces of the stems and pound them out into a powder as much as possible. They would then wash this in water several times and then let the starch sink to the bottom. The paste was taken and fermented, and then dried to a powder. When the white men came to Florida they also used the stems for food. Their name for this plant was "Arrow Root".

Around 1845, several factories sprung up all over south Florida to produce starch from the Coontie. One of the mills along the Miami River is said to have processed 10-15 tons of product per day at peak production. In south Florida, a natural population would grow very slow. It can take 30 years to grow a plant that might weigh five pounds. These factories produced starch until 1925. Between the starch factories and the building in south Florida, only small remnants of these vast populations remain. I grew up in this area and I am afraid to say with all the building going on, there may only be a few isolated plants left.

Distribution

There are several forms of Coontie in Florida. There is a very thin-leaf form that grows on the eastern coast in St. Lucie County, in southern, central Florida. This plant is distributed all the way to the southern tip of Florida and into the Keys. The plant picks up again on the western coast in Everglades National Park; from there it runs north all the way up the coast to Taylor County, near the panhandle. There are old references that mention these plants growing halfway into the panhandle, but I do not know anyone who has seen them this far to the west. In most cases, these plants live in sandy soils in pine hammocks, although further to the North, the plants grow under turkey oaks as well. In Miami, and along some parts of the western coast, plants can be seen imbedded in coral rock; these plants show that Coontie can be grown in very alkaline soils and have a great tolerance to salt. All along the western coast, small plants can be seen growing on small outlying islands. The plants that grow in coral rock grow very slowly and are usually not very big. The plants that grow in sand can get much bigger.

Figure 1 shows a plant growing at the Montgomery Botanical Center, in an area that has been kept natural. Many of the plants that grow on rock or in semi-wet areas will have their apexes exposed. When I went to the habitat in Steinhatchee, a very xeric area, the tops of the tubers were at least thirty centimeters from the surface. Even though all these plants are called "the thin-leaf form," there is a lot of variation in certain areas. One unique plant, which has the thinnest leaflet of all the forms, occurs



from the western side of Gainesville to Fanning Springs. The leaflets are also longer on this plant than on the other thin-leaf forms. (It reminds me a lot of *Zamia portoricensis* as far as leaflet size.) Figure 2 shows one of these plants in Fanning Springs. I had to put a white background in the picture just so the plant could be seen on film.

In certain areas of the western coast, plants that have leaflets of moderate width can be seen. These plants grow in pockets and do not have large distributions. There is a lot of controversy over whether many of these populations are natural or whether these plants were brought in and cultivated by the Indians. It is interesting to note that many of these populations are alongside rivers, growing in sand. Figure 3 shows the distribution of the thin-leaf forms. Even though I agree with this map for the most part, I have heard of plants growing south and north of the shaded areas on the western coast.

The " wide-leaf " forms grow mainly in the northeastern part of Florida. The southern tip of its distribution starts in Brevard County and extends north into an area close to Jacksonville and west into Marion and Alachua Counties. This plant grows mainly in sand and usually grows under pines and oaks. Once again, in certain areas, plants can be seen growing where saltwater can flood for short periods of time. These plants will usually grow to be much larger, and I think they are much nicer looking for ornamental use.

Figure 4 shows a plant growing in Ocala National Forest. Again, within this area there are different looking plants. The most noteworthy plant has been called the "Palatka giant" by local people. This is truly an incredible plant. It grows

Fig. 3

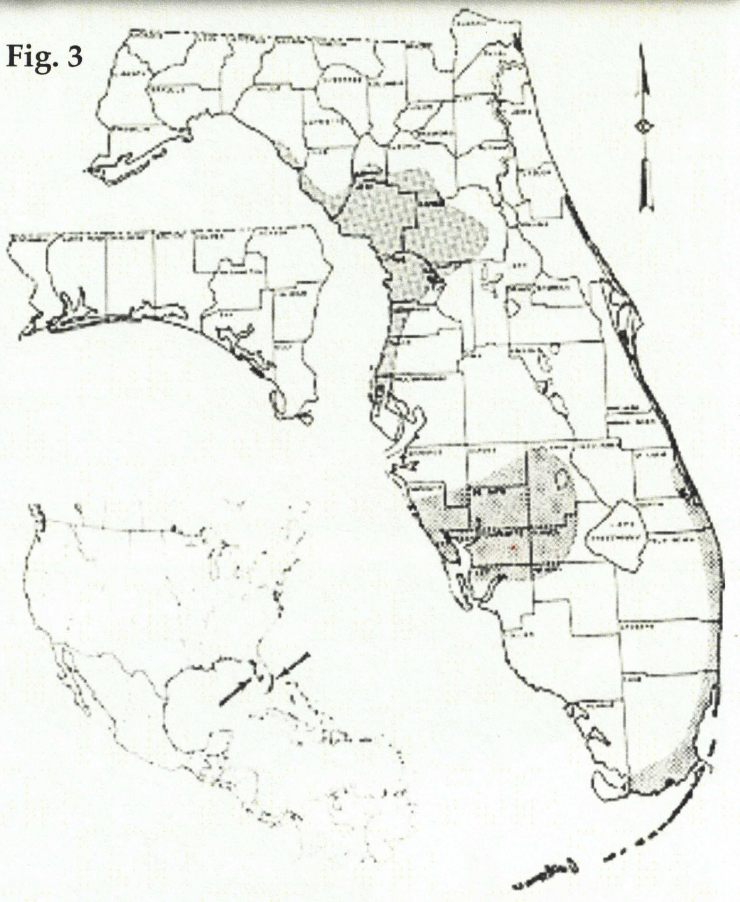


Figure 1. The south Florida Coontie in a natural stand at the Montgomery Botanical Center (photo by Tom Broome).

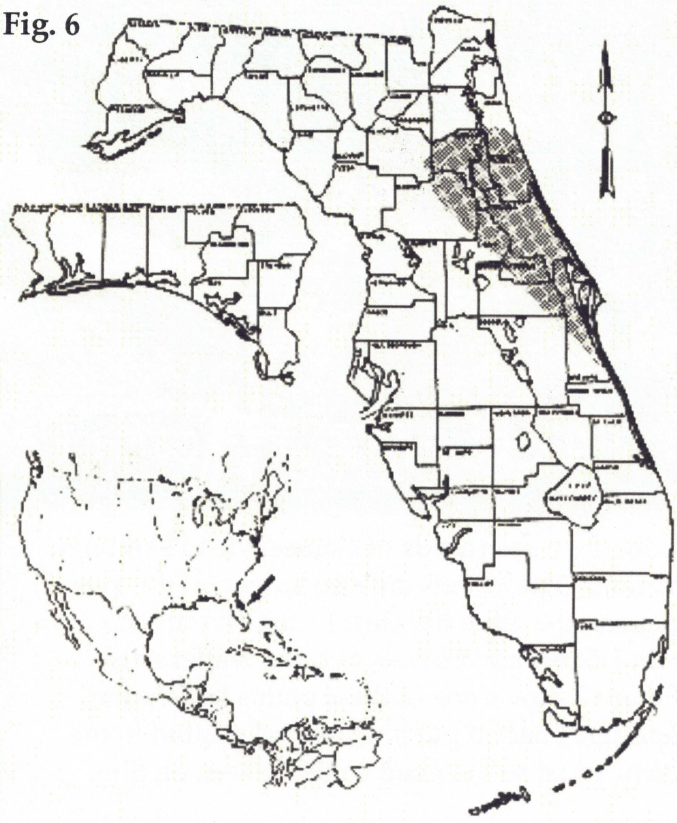
Figure 2. Coontie from Fanning Springs. This has the thinnest leaflets of any Coontie that I have ever seen (photo by Tom Broome).

Figure 3. Distribution of the thin-leaf form in Florida. Map prepared by Daniel B. Wardand Kent D. Perkins, who called this plant Zamia floridana.

Figure 4. Plants growing in habitat in Ocala National Forest (photo by Tom Broome).

Figure 5. Russell Adams standing beside a "Palatka giant" plant that is in cultivation in Gainesville (photo by Tom Broome).

Figure 6. Distribution of the wide-leaf form in Florida. Map prepared by Daniel B. Ward, who called this plant Zamia umbrosa.



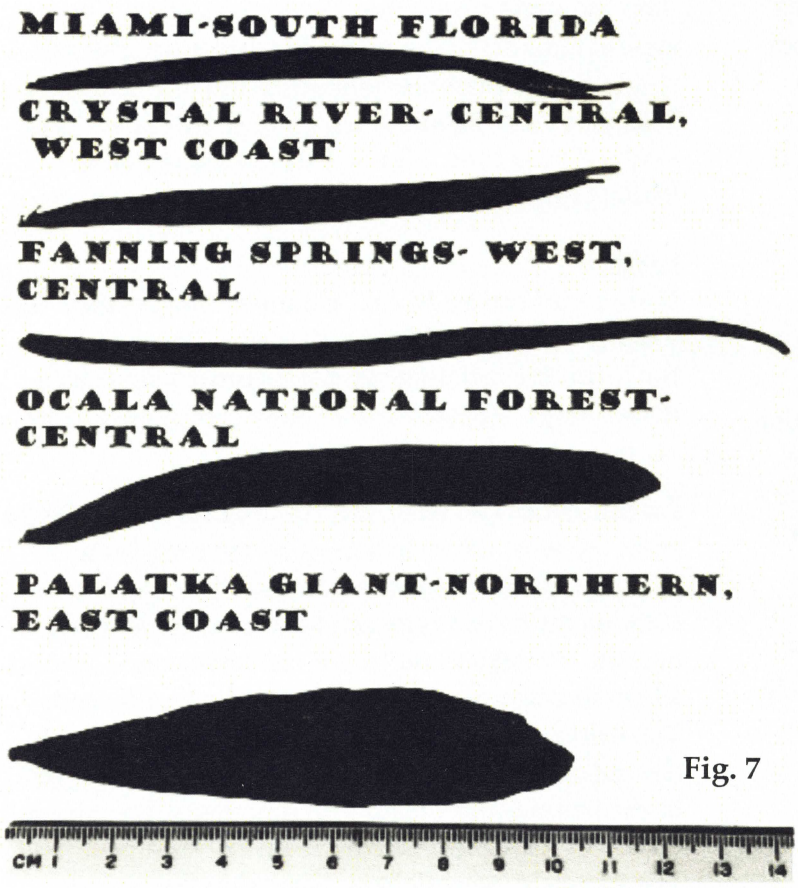


Fig. 7

Figure 7. Leaflets taken from some of the different forms in Florida.

Figure 8. Male cones emerging on a cultivated wide-leaf form (photo by Tom Broome).

Figure 9. Older female cone with seeds and the new emerging female cones at the bottom (photo by Tom Broome).

more upright than most of the other forms; the leaflets are wider, the cones are larger, and the leaves have been said to reach 2.3 meters in length. Figure 5 shows a cultivated plant of the "Palatka giant" form growing in Gainesville. Figure 6 shows the distribution of the wide leaf form.

Taxonomy

In 1763, Linnaeus described *Zamia pumila* as coming from the Dominican Republic, Puerto Rico, and Cuba. This was the first *Zamia* to be described. James Eckenwalder feels that the *Zamia*s from the Caribbean, including the plants from Florida, should all be *Zamia pumila*. There are many people who agree with this view on the Florida plants.

In 1789, William Aiton described *Zamia integrifolia* from a plant found in the Halifax River region--within the distribution of the wide-leaf form. According to Dan Ward, who works for the University of Florida in the Botany Department, the description of *Zamia integrifolia* is invalid. He says that in a certain area of the text, it is written that *Z. integrifolia* = *Z. pumila*, making these names synonymous and voiding the description. I could not find a copy of the original description to check this out for myself.

The next description of a Florida *Zamia* was in 1868, by Alphonse De Candolle, and was named *Zamia floridana*. This was one of the thin-leaf forms from an area north of Tampa. Then, in 1921, John Small described *Zamia umbrosa*, the wide-leaf form from around the Saint Johns watershed.
So what does this all mean? If you believe Eckenwalder, all the plants from Florida are *Z. pumila*. If not, then they are *Z. integrifolia*. If this latter speicies is invalid, then *Z. floridana* should be what they are called. If you believe that there are two separate species in Florida, the thin-leaf and the wide-leaf plants, then the thin-leaf form should be called *Z. floridana* and the wide-leaf form should be called *Z. umbrosa*. To confuse matters further, there are some people that feel there are more than two species in Florida. I have observed considerable variation in leaflet shape, cone size, and cone color on the different forms in Florida. The big question is "What is a large enough difference between two plants to make them separate species?"

Description

Stem

The stem of a single-headed plant can be 10 cm in diameter. Many times after a plant has produced a cone, the apex will split into two separate heads. After years of this, a stem can get to be very large. Also, large plants in the ground will push new tubers from the main stem, ending up in clumps up to 2 m in diameter. Stems are almost always subterranean unless the plants are growing on coral rock.

Leaves

Leaves can vary from 30 cm in length for the Fanning Springs plant to more than 2 m in length for the "Palatka giant". Leaflets vary in width from 2 mm for the Fanning Springs plant to 3 cm for the "Palatka giant". Most of the leaflets on the thin-leaf forms will curl up and twist, whereas most of the wide-leaf forms stay flat.

I have noticed that the leaflets of these plants will flatten out more if they are grown in the shade, whereas if you put them in full sun the leaflets will reduce in width and curl up sometimes. This appears to be a way to decrease the amount of moisture lost from the plant, by reducing the amount of surface area facing the sun. When my cultivated plants are pushing new leaves I will water them more. These plants will flatten out more than the same plants that I water less often. The typical habitats of the wide-leaf forms usually are shaded more than the habitats of the thin-leaf forms. This may have been the way that these plants have evolved over time. Figure 7 shows some of the leaflets from the different plants I have talked about.

Cones

Male cones can be 16 cm or more in length; they will usually be around 3 cm in diameter. Depending on the form, the cones can be black, brown, or even a dark orange. Figure 8 shows newly emerging male cones on a wide-leaf form.

Female cones can be only 6 cm long for a dwarf type from the west coast, to almost 30 cm long for a "Palatka giant" that is full of seeds. The width of the cone on the dwarf type can be as narrow as 4 cm, and the "Palatka giant" plant can have cones around 14 cm in diameter when they are filled with seeds. The colors of the female cones match the colors of the male cones. There are a lot of minor differences in the female cones from different areas. The nipple on top of the cone will vary from tall to almost flat. The female cone scales can vary as to the pattern and size. Usually, cones emerge around August and are receptive in January. Figure 9 shows an old cone and a couple newly-emerging cones on a wide-leaf form.

Animal relationships

There are two beetles that pollinate the *Zamia*s in Florida: *Pharaxonotha zamiae* and *Rhopalotria slossoni*. They will feed on the starch-rich male cones and are attracted to the female cones from what appears to be a change in color and temperature. I have not noticed any particular odor from the female cones but it is likely that these cones do emit some sort of odor not obvious to humans. The larvae of the Atala butterfly feeds on the leaves of the Coontie in south Florida, where the larvae of the Echo moth will eat the leaves of Coontie in north Florida.

There are many animals that aid in seed dispersal. Mockingbirds, grackles and blue jays seem to be the best dispersal agents. Rats and mice will move seeds to a lesser extent, but they will eat most of them. When the seed coat starts getting soft around April or May, many of these animals will

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In Search of the 'Palatka Giant'

Article by Christopher Mink
Photos by Erika Benvenuto

Most avid gardeners in Florida have grown a 'Coontie' (Zamia floridana), but it seems only a few are growing its larger relative, the Palatka Giant (Zamia umbrosa). After ten years of experimenting with tender tropicals, and two recent winters of heavy frosts, it's time for me to get back to basics: hardy palms and cycads, and some fun day trips around old Florida. If you like native plants and cycads, try growing this hardy and impressive plant.

Driving through Palatka, Florida, on our way to St. Augustine, I remembered reading about the giant Zamia native to that area. As we drove, we spotted a few specimens from our car and agreed to come back later on and look for more. Having seen our first plants at the St. Joseph Cemetery, we decided to start our tour there. Good idea, as the cemetery is over a century old and there are some big healthy giants growing there. (Fig. 1)

Fig. 1

It is a mostly shady and natural spot, and landscaping is at a bare minimum, so it has been easier for the plants to reproduce and colonize. The *Zamia umbrosa* are volunteering here and there with the help of some friendly neighborhood critter. (Fig. 4) There are dozens of plants throughout the area in all stages of growth from first-year seedlings to coning adults. (Figs. 4 - 7) They are generally larger than the Coontie in all regards, and the older clumps can be 4' to 5' feet tall and almost three times as wide. They are accompanied by various types of lilies, ferns, and cast iron plants that have naturalized themselves. The sago palms showed no sign of scale, but had cold damage instead. The male cones on this species are about the same size as on *Zamia floridana*, but the female cones are much bigger. (Figs. 2 & 3)


Fig. 2


Fig. 3


Fig. 4


Fig. 5


Fig. 6


Fig. 7

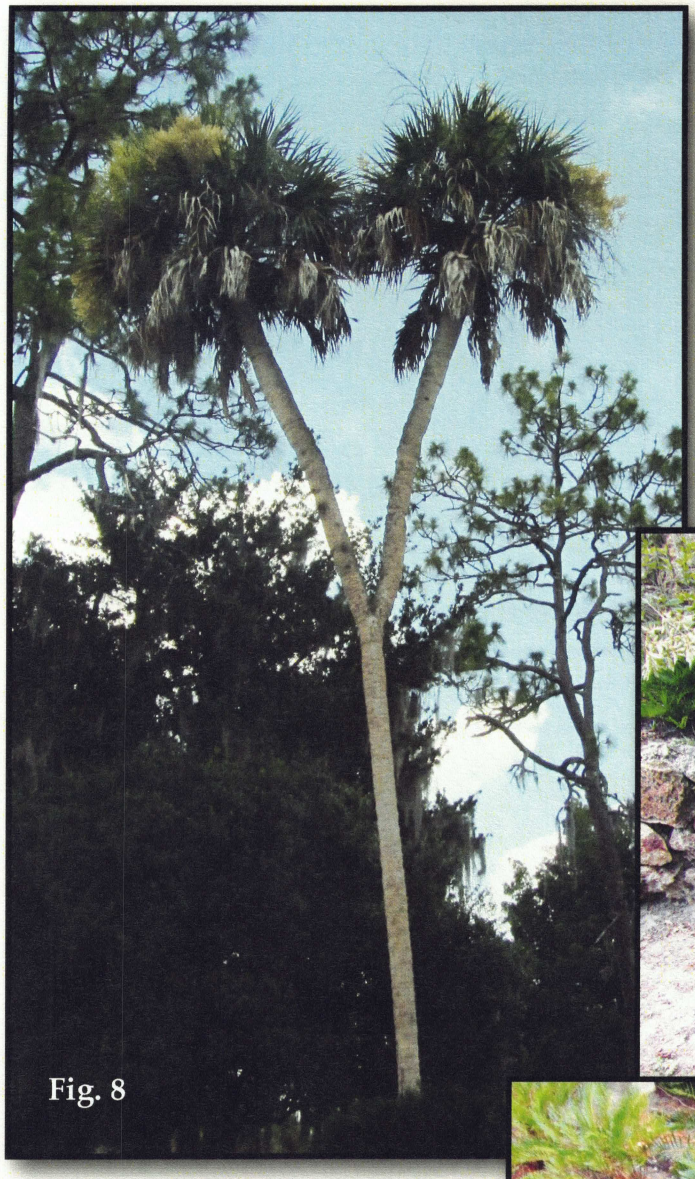

Fig. 8

themselves into the landscape. The garden also features many *Zamia umbrosa* planted throughout the park, most of which are growing in full sun which has stunted them a bit. (Fig. 9) If you plan to make a Palatka pilgrimage, try to include Ravine Garden State Park in your itinerary, especially when the azaleas are in bloom (Jan. - Apr.).

Our last official stop was Silver Glen Springs in Ocala National Forest, another spot where I expected the *Zamia umbrosa* to be growing naturally. The giant is a conspicuous part of the public area plantings, but after hiking into the woods on the trail that leads out to Lake George, we saw none growing wild. They very well may be growing naturally there; we just didn't see any on this trip. Several of the plants growing at the public areas are heavily laden with seeds, so it is only a

Fig. 9

Fig. 10

Oak Hill is another old cemetery across the street from St. Joseph. There are many older plants of *Zamia umbrosa* here also; the only difference is that Oak Hill is heavily landscaped which has greatly reduced the seedling rate. It is also much sunnier and the plants do not look as green and healthy.

Our next destination was the Ravine Garden State Park. It was created in 1933 by the federal Works Progress Administration and still retains much of the original coral rockwork and plantings. Some of the interesting features of this garden are a two-headed *Sabal palmetto* that is truly a giant in its own right (Fig. 8), and almost a century of garden "escapes" that have re-seeded and cloned

matter of time before it spreads itself around anyway.

Of course, like good plant hunters we drove around the residential areas looking for old houses with old plantings to check out. Some of the best specimens of the 'Palatka Giant' we saw were growing in people's front yards and gardens that were visible from the street. (Fig. 10 & 11) A little extra attention goes a long way when growing this plant, and by far the biggest and best looking plants were protected under large oak trees in all-day shade or dappled sunlight. (Fig. 12 & 13) Note: Erika is 6' tall!

We have been growing the 'Palatka Giant' *(Zamia umbrosa)* in our garden in Venice, Florida for a couple of years with great results, and we want to plant more of them now that we have seen how hardy they are and how beautifully they can grow if left undisturbed in the wild or if planted in a shady garden.


Fig. 11


Fig. 12

The Coontie of Florida

continued from page 26

carry off the seeds. Pill bugs will clean the seeds that are left around the mother plant. It is interesting to note that when the seeds drop off the plant, there is a waiting time before the seeds are ready to germinate. Right about the time that these animals start moving the seeds is when they should start germinating.

Cultivation

Most of the habitats have sandy soils. Thus, when growing these plants they should have good drainage. Most of the habitats are considerably shaded. Therefore, plants look their best when grown in partial shade; however, when grown in full sun they have the extra energy to produce more cones and leaves. Fertilizer should be applied on a regular basis, but the most significant time for producing leaves is in late spring. Cones emerge around August, so a high nitrogen fertilizer applied around June should help produce more cones. This is at least the timing in Florida. It would be interesting to see how these times change in the different parts of the world.

Fig. 13

Fig. 14

Acknowledgements

I would like to thank Daniel Ward for a lot of information on the taxonomy of the Coontie, as well as letting me use his maps of the distribution of the two forms in Florida. I would also like to thank Knut Norstog and Bart Schutzman for making me aware of the taxonomic problems. Also, I would like to thank Frank Brandt and Russell Adams for showing me around their areas to look at plants. And finally, thanks to Terrence Walters, Executive Director of The Montgomery Botanical Center, for letting me photograph plants in a habitat situation.

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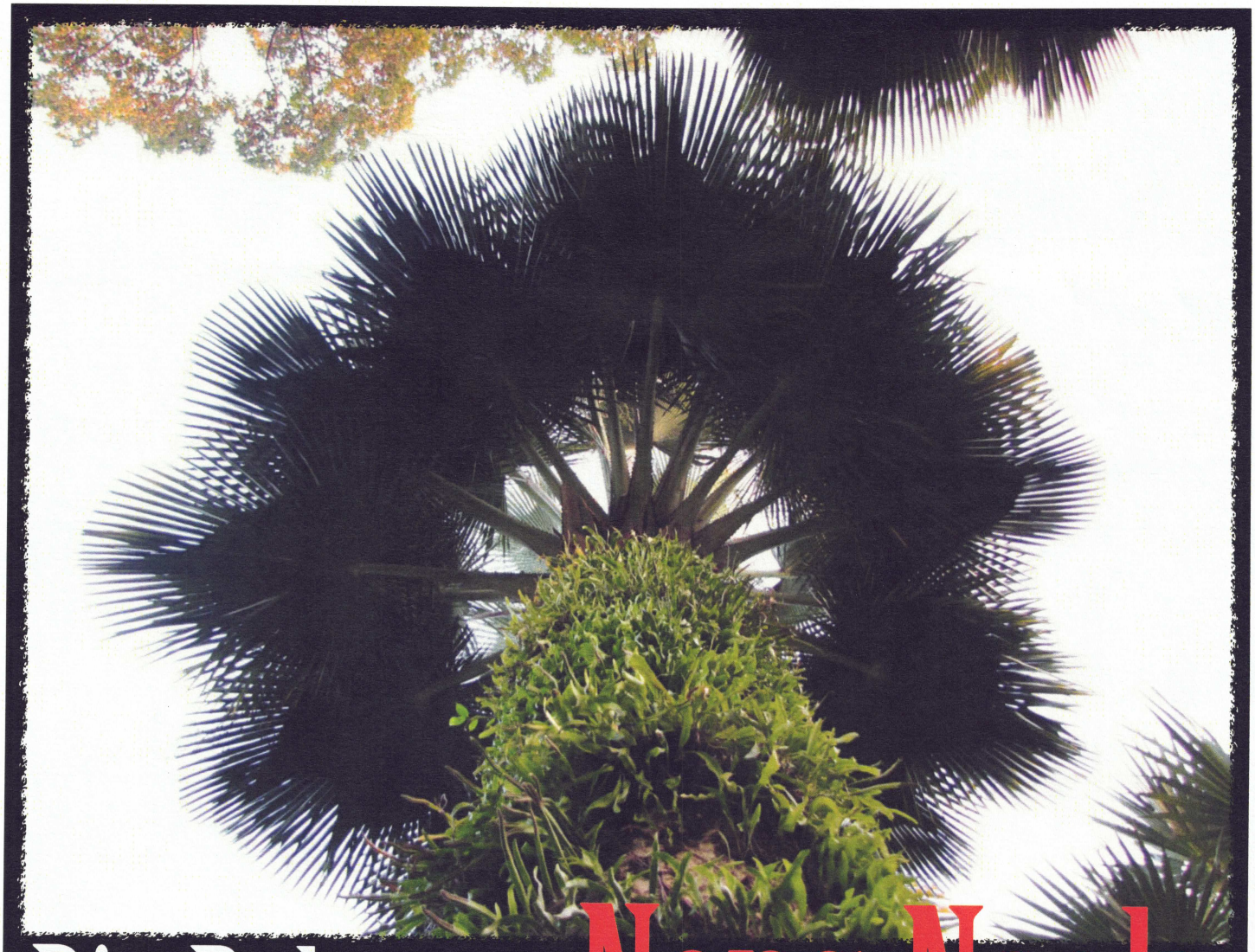

Big Palms at Nong Nook

Article & photos by William Tang
Miami Springs, Florida

On a recent trip to Thailand I visited Nong Nooch Tropical Botanical Garden, near Pattaya. I last viewed the plantings at this garden in 2002 and was stunned by the amount of growth that occurred in its landscape since that trip. Nong Nooch enjoys tropical temperatures year round. Add elephant droppings for fertilizer and regular watering and we have ideal growth rates for many species of palms. I was astounded by the *Copernicia bailyeana* at Nong Nooch (*above and back cover*), which were planted from seed in the early 1980's. The largest specimen now stands over 40 feet high after less than 30 years. These appear comparable in size to the specimens growing at Fairchild Tropical Botanical Garden that were planting in the 1930's and are more than 70 years old (see Bob Johnson's article in *The Palmateer* Vol. 31 No.2).

Another big palm at Nong Nooch is the double coconut, *Lodoicea maldivica*, which possesses the largest seed in the world. This rare and highly prized palm receives special security measures, with young seedlings often housed behind bars (Fig. 3). Even germinating seedlings are impressive (Figs. 2-4). Larger specimens have been planted widely in the garden and are used in stunning effect in the landscape (Fig. 5-7).


Fig. 1


Fig. 3


Fig. 4


Fig. 2

Figure 1. Seed of the valuable double coconut are enclosed in cages to deter theft.
Figure 2. Germinating seedling of the double coconut still attached to seed.
Figure 3. Seedling leaflet of Lodoicea maldivica.
Figure 4. Potted seedling of Lodoicea maldivica.

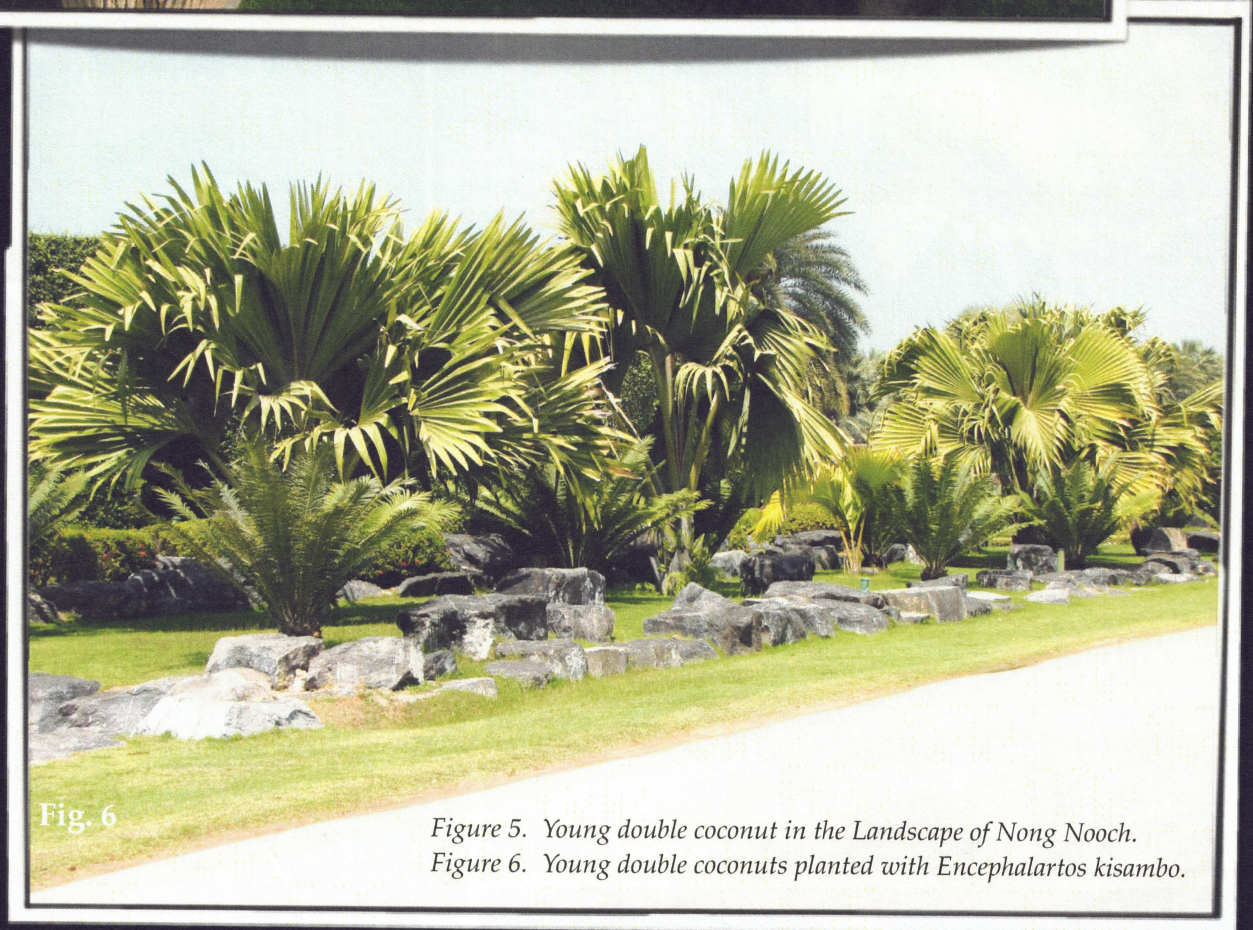

Figure 5. Young double coconut in the Landscape of Nong Nooch.
Figure 6. Young double coconuts planted with Encephalartos kisambo.

Figure 7. A nearly mature specimen of the double coconut planted with *Encephalartos kisambo*.
Figure 8. Inflorescence of *Lodoicea maldivica*.
Figure 9. Elephants are abundant at Nong Nooch Tropical Botanical Garden and their droppings make excellent palm fertilizer.