Newsletter of Montgomery Botanical Center

THE MONTGOMERY NEWS

# Designing the Design

## A Letter from the Executive Director

Terrence Walters, Ph.D.

*After spending three to five years under the care of Nursery Horticulturist Barbara Judd, the palms and cycads grown from seeds collected during MBC's international expeditions are ready to be transplanted into the ground. Each December, Dr. Larry Noblick and Barbara evaluate the Nursery Collection and select an assortment of accessions (i.e., population samples) with plantable palms. These accessions become the planting palette for the upcoming year. Larry then obtains an image, typically from a book, of how each species selected looks in its mature state. The image is added to our ever-growing design reference volume, respectfully called the "Palm Bible."*

*Every January, Laurie Danielson, Larry, and I spend three to four very long days with Joseph Hibbard of Sasaki Associates, Inc., who developed MBC's 1992 Master Site Plan. This Palm Planning Team first determines which sites of the Master Site Plan are scheduled for planting during the year. The team then walks these sites to visually document the available planting space, habitat types, soil types, elevations, available sunlight, and potential impact of existing plants on the future design. For each site, we also determine how to incorporate walking paths (for access to the collections by scientists), golf-cart paths (for access for horticultural care), and open spaces in support of the overall design. The team returns to Nell's House and begins many long hours evaluating each species listed on the planting palette, considering its visual appearance in the mature state, the type of environmental conditions it requires, and whether it adds value to MBC's scientific Palm Collection. Finally, we begin matching the sites to be planted with the available accessions. With this information, Joe Hibbard begins drafting the design plan.*

*Over the past four years, the primary focus of the design process has been MBC's Palm Walk, a 13-acre expanse which will contain a quarter-mile-long walk surrounded by a scientifically valuable collection of over 7,000 palms. The design for the Walk's vista, open spaces, walking and golf-cart paths, roads, and terminus is now complete. The palms creating the major structural elements of the Walk will all be planted by 2002.*

*Once the Palm Planning Team has completed its annual design work, Joe starts a similar process with the Cycad Planning Team. He then returns to Boston and produces a large detailed planting plan for the year, which is submitted to MBC's Directors in March for approval. In April, we start to site each plant according to the plan, planting humdreds of palms and cycads throughout the summer. By December, we're looking at the next group of mature specimens in the nursery, ready to begin designing the design once again.*

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# Under the Microcycas...

...cycad researcher Dennis Stevenson of the New York Botanical Garden examines the Florida native *Zamia integrifolia* (photo at left). This winter, Dr. Stevenson obtained over 20 female cycad cones from MBC. From the seeds, Drs. Stevenson and Gloria Coruzzi, a molecular geneticist at New York University, extracted a pharmacologically active compound called ß-N-methylamino-L-alanine (BMAA). This powerful neurotoxin is involved in the well-studied cases of dementia on the island of Guam. It is a non-protein amino acid that acts as a glutamate antagonist in neural receptors. Drs. Stevenson and Coruzzi also determined that BMAA occurs in all cycads and only in cycads, making BMAA diagnostic for this ancient group of plants. These researchers are also interested in the interaction between BMAA, which acts as a potent insecticide, and the insects that pollinate cycads. How do the pollinators and other insects that feed on cycad tissue survive?

Other research projects taking place at MBC include Dr. Andrew Henderson's study of the growth and development of young palms, graduate student Flor Chavez's comparative analysis of palm seedling anatomy, and Dr. Charles O'Brien and William Tang's survey of the insect fauna in MBC's native areas. In February, Dr. Scott Zona (Fairchild Tropical Garden) collected flowers of *Pseudophoenix vinifera* for his morphological study of this palm genus. This winter, Dr. David Bogler (Florida International University) collected leaf samples from 17 of MBC's cycads for molecular studies of species relationships. More recently, he sampled our *Microcycas calocoma* collection to assess the collection's genetic diversity. These data will support future seed production, allowing us to maintain diversity in the collection through selective breeding.

The purpose of Dr. Hugh Wilson's recent visit to MBC was to photograph over 250 of our palm and cycad plants for Texas A&M University's teaching website. National Geographic Society photographers also took an interest in MBC, choosing a sinkhole behind Nell's House as a backdrop for their series on tropical snakes.

Other educational activities taking place at MBC include University of Florida's (UF) "Public Garden Management" class in April, Harvard University's "Workshop: Plants of the Tropics" in June, and UF's "Tropical Botany" class in July. Fairchild Tropical Garden conducted a three-hour class entitled "Tour of the Montgomery Botanical Center" on February 11. The class, attended by 20 participants, included a field demonstration on surveying, which was taught by MBC staff.

On April 1, City of Pinecrest Webelo Den 6 held an Environmental Awareness Workday at MBC, planting native oaks. Afterwards, they were given an educational tour of MBC's plant collections and to each, a native palm seedling. The Webelos earned their "International Conservation" badge for their activities at MBC.

**Right:** Executive Director Terrence Walters explains cycad plant structure and life history to the Webelos of Den 6. **Below:** MBC's Larry Noblick (right) instructs field botanist John Janovec on how to climb palm trees in search of fruits.

# RESEARCH & EDUCATION

# Under the Banyan...

...next to the Jennings Studio was the perfect setting for South Florida Palm Society's (SFPS) luncheon on May 6 (photo at right). This active group of palm enthusiasts toured MBC earlier that day and held a plant auction after lunch. We welcomed them back again on June 10, when members generously gave their time and effort to plant over 80 palms at MBC. In the photograph below are MBC staff Laurie Danielson and Vickie Murphy working with SFPS President Steve Stern (right).

Other groups who recently toured our property include Big Pine Key Botanical Society, Dade Chapter of the Florida Nurserymen & Growers Association, Dadeland Garden Club, and The Coral Gables Orchid Society.

The biggest event by far, though, consisted of the tours given to guests of "The Villagers Garden Tours" during "Dade Heritage Days 2000" on Friday, March 17. The Villagers, Miami-Dade County's oldest historic preservation group, ran the affair along with MBC staff. Over 375 individuals purchased tickets through The Villagers to tour Nell's House, the Arthur Montgomery Guest House, and the grounds of MBC. The event was a great success for everyone involved.

In anticipation of MBC's participation in the Coalition for Excellence in Tropical Biology's first conference this fall, CETroB held a meeting at MBC's Smiley Room on June 20. We're thrilled to be part of a scientific coalition that includes Smithsonian Institution, Florida International University, University of Miami, Miami Museum of Science, Fairchild Tropical Garden, and the Kampong of the National Tropical Botanical Garden.

Other organizations with which we have active interactions include the American Association of Botanical Gardens & Arboreta (AABGA) and the International Palm Society (IPS). Executive Director Terrence Walters attended AABGA's annual meeting in North Carolina in June. There, he represented MBC at the annual BG-BASE Users Group and at the AABGA's Network Database Committee Meetings. This fall, Collections Manager Larry Noblick will represent MBC at IPS's annual meeting in New Caledonia.

Another aspect of MBC's outreach activities concerns our plant donations to appropriate institutions. This spring, MBC and Florida Nurserymen & Growers Association contributed 150 cycads from MBC's Asian collection to The University of Miami's new Palmetum. Terrence Walters, Lee Anderson, and Larry Noblick attended the inaugural celebration of the Palmetum on March 28.

Executive Director Terrence Walters (front right) relates the history of MBC to participants of The Villagers Garden Tours. He gave four tours of the MBC property to 375 visitors.

# OUTREACH & EVENTS

# Atlantic Crossing

## *& Other Adventures in Training*

*by Sue Katz, Collections Supervisor*

During his 1998 European lecture series on MBC, Executive Director Terrence Walters spent two days with Becky Govier, Plant Records Officer at the Royal Botanic Garden of Edinburgh (RBGE) in Scotland. Like MBC, RBGE maintains their plant records using BG-BASE. RBGE is one of the outstanding gardens in the world with respect to the accuracy, quality, and amount of documentation associated with their collections. Terrence immediately saw that MBC's Collections Development Department team could benefit by spending time with Becky, both here and in Edinburgh. With the support of the two creators of BG-BASE, Mike O'Neal and Kerry Walter, I worked with Becky to arrange a staff exchange. This May, Becky braved the Miami heat and spent a month with us evaluating our usage of BG-BASE. In September, I am off to the much cooler Edinburgh to complete the exchange. There, I will spend a month working with Becky, learning the procedures, protocols, and processes that distinguish RBGE's collection records.

Closer to home, I was able to enjoy the unique character of Bean Town during a trip in July. I was in Boston to visit Dennis Collins of Mount Auburn Cemetery (MAC) for advanced training on the mapping software AutoCAD. MAC is one of the best-mapped of U.S. botanical institutions. Both MBC and MAC use the mapping program BG-Map, which runs on AutoCAD. While in Boston, I had the opportunity to spend time with Joseph Hibbard, Principal Landscape Architect of Sasaki Associates. Joe, who continues to develop the site design for MBC, also uses AutoCad. My training will enhance our ability to exchange electronic files during our annual design activities (see page 1).

Collections Recorder Barbara Bohnsack is also jet-setting about these days. In May, she visited Phoenix's Desert Botanical Garden, meeting with their Curator of Plant Collections, Tracy Omar. This fall, Barbara heads to the Midwest for advanced BG-BASE training at Holden Arboretum in Ohio. Will the adventures never cease!

**Left:** Edinburgh's Becky Govier (center) consults with MBC's Collection Development Department on plant records. **Lower Left:** Volunteer Vivian Jordan (left) and Seedbank Coordinator Judy Kay hand-pollinate FTG's cannonball tree *(Couroupita guianensis)* with fresh pollen from the cannonball at MBC.

# Growth of the Seedbank Program

*by Judy Kay, Seedbank Coordinator*

Thanks to the numerous contributions from Members of the Dade Chapter of Florida Nurserymen & Growers Association (FNGA), and a grant from their Seedbank Committee, the MBC Seedbank Program has been able to double the number of seeds distributed each year since the program began. During the period of May 1, 1999 through May 30, 2000, MBC's Seedbank distributed 542,359 seeds from its diverse collections of palms and cycads. These were sent to 18 different countries, and divided among 11 societies, 10 universities, and 26 botanical gardens. My volunteers and I produced a record number of hand-pollinated seeds from rare cycads this year, including several species never before released from MBC. Our growth has allowed many new projects to be incorporated into the program. For example, we're hand-pollinating rare palms to increase the number of species available for distribution. I'm also training Fairchild (FTG) staff and volunteers so that they can develop a similar seedbank program. As our program grows, we hope that the botanical community at large will continue to benefit as well.

# Panamanian Paradise Found

*by Russell Adams, Gainesville Tree Farm*

The isthmus of Panama rises out of warm tropical waters separating the Pacific Ocean from the Caribbean Sea. With its tropical environment and unique geological history, this land bridge between the Americas is one of the most diverse ecosystems on the planet. Diversity is especially evident in a group of plants near and dear to my heart—cycads, and more specifically, zamias. Nowhere else do the zamias exhibit such wide variations in morphology, with six arborescent species, five subterranean species, and one epiphyte. This diversity led to a recent 10-day collecting expedition sponsored by three institutions. I represented MBC and was joined by Dr. Dennis Stevenson of New York Botanical Garden (NYBG) and Dr. Alberto Taylor of the University of Panama (UP). Chris Hardy, a graduate student from Cornell University, traveled with us on several excursions.

Our first forays out of Panama City were in search of an undescribed species of *Zamia* common in central Panama. This truly beautiful cycad has arborescent trunks to three meters tall. The leaves, which are almost white as they emerge, turn a bright glossy green as the leaflets expand. Normally, this plant occurs at low elevations along rocky streams and rivers. However, we collected it near the top of its range, between 700–800 m ASL, at Cerro Azul. There, one female cone was observed in a population of about 80 individuals. At another site, an old military training camp with a much drier habitat, we found several hundred plants associated with limestone outcroppings. Some were actually growing on top of the rocks in small depressions that held only 1–2 inches of soil.

Days four and five were spent in the low mountains north of Panama City looking for *Zamia dresslerii*. This subterranean cycad usually has only one or two leaves at a time, but what leaves they are, measuring up to two meters long! The leaflets are thick and deeply grooved, giving them a corrugated appearance for which Panamanian zamias are famous. We found over 200 individuals. Although no cones were seen, we were able to collect seedlings for MBC, three mature plants for UP, herbarium specimens, and DNA samples.

On day six, we braved the El Llano-Carti Road east of Panama City (photo above). As it was the beginning of the rainy season, the condition of the muddy byway was deteriorating rapidly. We were only able to travel 16 km before the road became impassable. Negotiating the steep slippery hillsides on foot was not much easier than driving. After almost a full day of slipping and sliding and hacking our way through the replanted teak forest, we still had not seen any zamias. Tired, muddy, and dejected, we met back at the vehicle to discuss our options, when a local farmer walked by. In desperation, we described to him the plant for which we were looking—*Z. cunaria*. Once he was certain he would be paid for his efforts, he smiled and pointed up the hill above us. Not 10 meters from where we were parked we could see a glossy green leaf of *Z. cunaria*. We had literally parked under the plant!

Russell Adams holding a leaf of *Zamia dresslerii*.

The next two days were spent mostly driving and hoping. The further we drove along the road to Canglon in southeastern Panama, the more we realized how little of the once great Darien forest was left. Our best find was of *Zamia ipetiensis* in its type locality near the town of Ipeti.

The last two days of the trip were the most productive and, to me, the most exciting. Two and a half hours drive northwest of Panama City, in the Cordillera Central, we were blessed to find primary forest. Here, on either side of the continental divide, *Z. pseudoparasitica* grows in great profusion. We saw over a thousand individuals! Some trees were home to as many as 12 of these epiphytic cycads. And these epiphytes were huge; at least one was estimated to have a leaf span of nearly 10 meters!

On the Caribbean slope of the mountain, about an hour's hike from the summit, we found one of the rarest and most beautiful cycads—*Z. skinneri*. These impressive plants have trunks to 2 m tall and 18 cm in diameter, and leaves up to 3 m long.

The Panama expedition was a great success. Fifty-six zamia plants and five cones of seeds, as well as 12 palm accessions, are now potted in MBC's nursery. DNA vouchers of all collections were sent to NYBG and herbarium vouchers were deposited at UP, FTG, NYBG, and UTREC in Europe. Collaborations among MBC, UP, and NYBG are ongoing, and a collecting trip to northwestern Panama is in the works for 2001.

# Nexus for the South Palmetum Expansion Project

*by Lee Anderson, Property Manager*

For years, the capped-off well and decrepit pumphouse in the South Palmetum, hidden away in a dense jungle of rampant aroids and sanseveria, were a source of mystery and speculation. There was no mention of the well in the Montgomery Archive—of when and by whom it was dug, or why it had been abandoned. Then, about a year ago, Facilities staff Jack Bauer, Ansel Thomas, and Juan Corona, out of curiousity mostly, pried the cap off the well and dropped a rock into the pipe. A second or two later, they heard a resounding splash and surmised that the well shaft had not caved in and that the aquifer was fairly close to the surface.

Juan Serrano was brought in to do some preliminary water testing, which showed the water to be not only fresh, but also clean (i.e., very low in total dissolved solids). The Facilities Staff then set up a portable pump and spent the next few weeks pumping the well for a couple hours each day, testing it to make sure the original tests were not a fluke.

Meanwhile, Joe Hibbard of Sasaki Associates—MBC's landscape architecture firm—was developing a suite of projects for the underutilized 12-acre South Palmetum area. His vision included a royal palm nursery for growing replacement plants for the Colonnade, a couple acres dedicated to the scientific rattan collection, a striking terminus to the Palm Walk composed of white serenoa palms highlighted by a backdrop of stately arenga palms, an oak-lined extension of Historic Old Cutler Road, and additional cycad beds as part of the Cycad Walk.

The concept was impressive, but the logistics of the project bordered on the overwhelming. The major stumbling block was irrigation. All of these plants, beds, and collections would need water, of course. Even though there is an irrigation system in place already in the South Palmetum, it is literally at "the end of the line" and would be hard-pressed to serve Joe's horticultural visions.

As we continued to pump and test water from the Old Well, we began to realize that it might act as the nexus for the development of the grand South Palmetum project. Arrangements were made with Florida Power & Light to bring 480-volt service across Red Road onto the property to the pumphouse. Permits for the project were pulled, with City of Coral Gables showing their generous support by waiving permit fees. Landscapers Hilton Rollison, Mario Borroto, and Jessie Pender began trimming the oaks on the site, most of which had not been touched since Hurricane Andrew. Other members of the grounds crew, Willie Payne, Willie Dye, and Hostilio Torres, led by Supervisor Orlando Coy, removed the invasive exotics that had overgrown areas marked for development. As each area was cleared, graded, and seeded with quick-germinating rye grass, Landscaper Randy Russ found himself with more and more turf to mow.

Much of the area had once been a nursery for crotons. Although the crotons were slated for removal, since they had some historical value, Nursery Horticulturist Barbara Judd, assisted by a group of Master Gardener volunteers, took cuttings for propagation in the greenhouse. Meanwhile, Palm Horticulturists Laurie Danielson and Vickie Murphy evaluated the existing palms at the site for overall health, aesthetics, and suitability of location in the design. Cycad Horticulturists Eric Shroyer and Stella Cuestas started to develop the first cycad bed in the South Palmetum, which will be devoted to Chinese specimens collected in 1992.

Looking back over the past few months, the change that has come about in the South Palmetum is quite remarkable. But, when one considers that the efforts of every member of the Horticulture and Facilities Staff, as well as those of volunteers, went into the project, one can appreciate what the organization and dedication of a team of individuals can accomplish.

## The Care Givers

Gathered together in the Full Sun Nursery are (from left to right in the photo) Horticulturists Stella Cuestas, Eric Shroyer, Barbara Judd, Laurie Danielson, and Vickie Murphy. These care givers are shown preparing for the 2000 planting season, which will include transplanting 750 palms and 350 cycads from the Nursery Collection to the Grounds Collection. Our plants are well-nurtured from seed to maturity by this team!

# TEAM WORK

## In With the New

Newness is everywhere at MBC. We begin by welcoming four fresh faces to the MBC team. Shown in the photograph below (from left to right) are Grounds Supervisor Orlando Coy, temporary Receptionist Jackelin Jarquin (who finished her tenure in July), Maintenance Assistant Pierre Valcourt, and Assistant Horticulturist Stella Cuestas. We also welcome new MBC Director Charles P. Sacher and new Member Scott Smiley.

New training opportunities for the staff were plentiful over the past six months. In March, Lee Anderson attended "The Color Conference" sponsored by the Tropical Flowering Tree Society. Later in the spring, he participated in two workshops, one on "Environmental Essentials" and the other on "Urban Tree Canopy: County Master Plan." Barbara Judd attended the "Tropical Plant Industry Exhibition" in January. On May 12, Evelyn Young learned more about "How to Maintain and Organize Files and Records" and Vickie Murphy learned about "Integrated Pest Management." The Collections Development Team received BG-Map training in February, and advanced survey training in May. Executive Director Terrence Walters participated in a HTML Export workshop in June.

A new view was enjoyed by Members of MBC during their annual meeting in March. The panorama of Duck Lake and the Lowland Palmetum was seen from the new Walter Haynes Overlook. The photograph above shows the ribbon-cutting ceremony that inaugurated the Overlook on March 25. From left to right are Gaye and Walter Haynes, Terrence Walters, and Terry Beaty.

Recent bequests, contributions, and grants are supporting other projects, both old and new. Evelyn Shelley left a $100,000 bequest to MBC with a request that the funds be used to renovate the Archive, upgrade our computer network, and make road repairs. Dr. Arthur Montgomery left a bequest of $1,750,000 in support of the research use of MBC's collections. Recent contributions from over 40 organizations and individuals are making various projects possible, including the development of the new Rattan Area. MBC received a significant grant from the Dade Chapter of the Florida Nurserymen & Growers Association, allowing Judy Kay to commit herself fulltime to the Seedbank Program.

If you would like to support projects old or new, MBC welcomes your financial contribution. We could also use some items that you might be ready to part with—a Pentium 260 (or better) laptop computer with modem, a good-quality electric typewriter, a horizontal legal file cabinet, a VCR, a digital video camcorder, truck-loads of clean bulk soil, a compound microscope with light, 6–10 marching office chairs, and 12 B/B or potted 10–15-foot-tall live oak and gumbo limbo trees are all needed!

## Volunteering at Montgomery

*by Evelyn Young*

Since Dr. Terrence Walters accepted the Executive Director position at MBC in 1994, our Volunteer Program has grown by leaps and bounds. Today, more than 25 competent and loyal individuals lend their support on a weekly basis. On any given day, a volunteer may be found scanning expedition photos into MBC's collections database, photographing our current plant collection, or recording changes in plant records. Others may be creating decorative horticultural displays, maintaining the Archive or Library, or assisting with clerical work. Still others help the horticulturists to care for the collection by harvesting seeds, planting trees, or making plant labels. The areas of involvement at MBC are as diverse and unique as each volunteer. This organization would not be the same without them. Each January, the MBC staff hosts a Volunteer Luncheon to show our appreciation for all the long, hard hours the volunteers devote to MBC. While several of our volunteers are newcomers, many have years of service with us. And, we're always looking to add new members to the Volunteer Team. If you think you might be interested in joining us, please contact me, the Volunteer Coordinator, at 305-667-3800 ext. 10.

# Who We Are

*Terrence Walters, Ph.D.*
Executive Director
*Lee Anderson*
Property Manager
*Jack Bauer*
Facilities Supervisor
*Barbara Bohnsack*
Collections Recorder
*Mario Borroto*
Landscaper
*Juan F. Corona*
Equipment Specialist
*Orlando Coy*
Grounds Supervisor
*Stella Cuestas*
Assistant Horticulturist
*Laurie Danielson*
Palm Horticulturist
*Willy Dye*
Landscaper
*Barbara Judd*
Nursery Horticulturist
*Sue Katz*
Collections Supervisor
*Judith Kay*
Seedbank Coordinator
*Marta Lagos*
Housekeeper
*Vickie Murphy*
Assistant Horticulturist
*Larry Noblick, Ph.D.*
Collections Manager
*Willie Payne*
Landscaper
*Jessie Pender*
Landscaper
*Hilton Rollison*
Dicot Specialist
*Randy Russ*
Landscaper
*Juan Serrano*
Spray Technician
*Eric Shroyer*
Cycad Horticulturist
*Ansel Thomas*
Irrigation Specialist
*Hostilio Torres*
Equipment Operator
*Michael Torres*
Collections Recorder
*Pierre Valcourt*
Maintenance Assistant
*Evelyn Young*
Administration Manager

### *The Montgomery News*

*Deena Decker-Walters, Ph.D.*
Publications Coordinator, Editor

***The Montgomery News*** is published twice a year by the Montgomery Botanical Center, a non-profit private operating institution specializing in tropical plant research collections, emphasizing palms and cycads.

We can be reached by telephone (305-667-3800), by fax (305-661-5984), and by email (montgome@fiu.edu). Our normal operating hours are 7:00-3:30 Monday-Friday.

*From the Montgomery Archive comes this 1979 photograph of MBC's Past President and current Director Jeanne Bellamy (left) and Nell Montgomery Jennings.*

MONTGOMERY BOTANICAL CENTER
11901 Old Cutler Road
Miami, Florida 33156