Montgomery Botanical NEWS

Advancing Research, Conservation, and Education through Scientific Plant Collections

Spring/Summer 2008 Volume 16, Number 1

GUAM & ROTA 2007
Working Against Cycad Extinction

Cycas micronesica is a large, arborescent cycad found in the remote Pacific islands of Guam, Rota, Palau, and Yap. Uniquely adapted to its island environment, it withstands frequent typhoons, and, along with other closely related species, it has a spongy flotation layer within the seed coat to aid in ocean dispersal. Montgomery Botanical Center (MBC) is playing a key role in the conservation of this cycad.

AN ENDANGERED CYCAD

Until recently, *Cycas micronesica* was the most common forest tree in Guam. In 2003, a tiny insect forever altered the future of Guam's forest giants. *Aulacaspis yasumatsui*, commonly known as cycad aulacaspis scale (CAS), made its way to Guam in 2003 via the importation of king sago (*Cycas revoluta)* plants. With no native predators, widespread hosts, and year-round trade winds to aid dispersal, CAS quickly spread throughout Guam. CAS attacks *Cycas* leaves by inserting needle-like mouthparts and feeding on the plant's sap. It reproduces very rapidly and leaves are quickly covered by white scale, eventually overwhelming the plant until it dies. The effect on Guam's native cycads has been so devastating that *C. micronesica* was listed as Endangered (EN) in the 2006 IUCN Red List of threatened species.

Michael Calonje next to *Cycas micronesica* in Guam

In addition, the cycad blue butterfly (*Chilades pandava*) arrived in Guam in 2005. The butterfly lays its eggs on newly emerging *Cycas* leaves. Soon after hatching, the caterpillars begin consuming tender leaves. Any remaining leaves may be infested by CAS after hardening.

COLLABORATIVE EFFORTS

Funding from the Association of Zoological Horticulture allowed MBC to obtain an *ex situ* conservation collection of *Cycas micronesica* from Guam. Montgomery Botanical received seeds from Dr. Thomas Marler, botany professor and cycad researcher at the University of Guam, in early 2007. At the same time, Dr. Irene Terry, University of Utah, discovered CAS had made its way to a native *C. micronesica* population on the island of Rota, 60 km north of Guam.

Dr. Marler is coordinating multi-institutional efforts to combat CAS, gain a better understanding of *Cycas micronesica*, and preserve its genetic diversity. He is studying pollination biology of *C. micronesica* with Dr. Terry, and releasing natural CAS predators for biological control with colleagues from the University of Guam and the Guam National Wildlife Refuge. Despite intensive *in situ* conservation efforts, the infestation is not contained and populations continue to decline at an alarming rate.

In late 2007, I had the unique opportunity to work with Dr. Marler in Guam and Rota; collect *Cycas micronesica* leaflet samples for DNA extraction for genetic studies by Dr. Angélica Cibrián-Jaramillo and Dr. Eric Brenner of

(continued on page 3)

To advance science, education, conservation and horticultural knowledge of tropical plants, emphasizing palms and cycads, Montgomery Botanical Center collects seeds from wild plant populations around the world and grows the resulting plants in population-based, documented, scientific collections, for use by botanists, scientists, and educators, in a 120-acre botanical garden exemplifying excellent design.

Montgomery Botanical Center (originally The Montgomery Foundation) is a tax-exempt, nonprofit institution established by Nell Montgomery Jennings in memory of her husband, Colonel Robert H. Montgomery, and his love of palms and cycads.

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Masthead photo of *Veitchia arecina* (formerly *V. montgomeryana*) by Harvey Bernstein

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From the Executive Director

Measuring success is essential. For a botanical institution, defining the metrics of success can be challenging. How can we quantify botany?

At Montgomery Botanical Center, collaboration and colleagueship are deep principles, established by Nell and The Colonel. Thus, quantifying collaborations can offer a measure of our success. The number of these collaborations has risen in recent years: from 2005 to 2006, the number of Montgomery Botanical Center collaborators increased by 60 percent; 2007 saw an additional 36 percent increase. Our partnerships in research, conservation, and education continue to grow. Collaboration is the best path forward — by dividing costs and multiplying outcomes, everyone achieves more.

Other statistics provide insight into our work. Last year, we conducted six collecting expeditions, planted a total of 807 living specimens, and distributed *nearly one million seeds*. In the first three months of 2008, we've already completed three more expeditions. Articles throughout this issue highlight other achievements — consistent, focused effort is accomplishing a great deal.

Numbers clearly demonstrate our success. Harder to measure, though, is the increasing goodwill that MBC generates in the local, national, and international botanical community. It seems MBC helps enable more projects than ever. Personally, I noted this at the recent *Cycad 2008* conference in Panama. Dr. Alberto Taylor, University of Panama professor and Montgomery Botanical Research Fellow, chaired an excellent meeting — scientists from around the globe presented their work. Seeing so many of our colleagues in one place highlighted Montgomery's contribution to botany.

With expanding operations, MBC will need increased capacity. I am very excited to report a generous pledge from Christiane Tyson for a new plant conservation building (see page 6). Please join me in thanking Mrs. Tyson for her wonderful support.

In 2007, Montgomery Botanical Center saw many successes. I look forward to working with you to advance our mission even further this year.

Pictured: Dr. Griffith with a specimen of Encephalartos woodii*, at Longwood Gardens, Pennsylvania.*

Developing
Our Collections

GUAM & ROTA 2007
Working Against Cycad Extinction *(continued from front page)*

The New York Botanical Garden (NYBG); and collect seeds and biogeographic data to augment MBC's *ex situ* conservation collection. During an intense month of non-stop fieldwork, we studied a total of 25 different populations of *C. micronesica* in Guam and Rota. Funding from the Western Pacific Tropical Research Center, College of Natural and Applied Sciences, University of Guam, generously supported Montgomery Botanical's work.

GUAM

The collecting protocol for NYBG's gene flow studies required sampling a total of 15 plants every 20 meters along a straight transect. This presented an enormous challenge as Guam has very rugged terrain, abundant limestone cliffs, and areas of scrub forest with virtually impenetrable vegetation. Moreover, scale had infested the entire island and, in several populations, over 80 percent of standing cycads were dead — finding live plants in the correct transect location was difficult. In some populations, cone production had ceased entirely and seeds could not be found. In the 17 populations I visited in Guam, I observed only one, single-leaf seedling, likely to soon succumb to scale.

Cycas micronesica population on Rota, devastated by CAS

ROTA

The environment on Rota was more encouraging, with large, healthy, actively reproducing *Cycas micronesica* populations — as Guam's populations must have been before CAS invaded. Nine months after Dr. Terry first found CAS on a single population in Rota, the scale remained confined to that single population. Although a natural scale predator beetle (*Rhyzobius lophanthae*) was introduced into Rota just two months after Dr. Terry's discovery, extensive devastation from CAS in that population was still evident. It is probably only a matter of time before the scale spreads throughout Rota. This demonstrates the vital importance of our quarantine procedures.

Cycad Blue butterfly, wingspan to 3 cm

EX SITU CONSERVATION

Montgomery Botanical's Guam and Rota 2007 Expedition secured valuable DNA collections for studies at NYBG, and MBC obtained 561 seeds from 18 populations of *Cycas micronesica* for *ex situ* conservation. MBC now has 150 accessions of *C. micronesica* from 24 different populations — the most complete single-species representation of any cycad in MBC's collection. With native *C. micronesica* populations declining rapidly, the crucial role of *ex situ* conservation collections has never been clearer — Montgomery Botanical Center is working directly to prevent extinction of cycad populations.

Healthy *Cycas micronesica* population on Rota

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Panama 2007 Expedition
Comarca Kuna Yala

Comarca Kuna Yala is an autonomous territory in Panama controlled by the Kuna indigenous people. It is a thin strip of land approximately 200 miles long by 10 miles wide on the eastern Caribbean coast of Panama, bordering Darien Province and Colombia. Along the coast is an archipelago of coral islands called the San Blas Islands. Most of the 40,000–50,000 Kuna Indians in Kuna Yala live on 40 densely populated islands with only 12 communities located on the mainland. In 2007, Montgomery Botanical Center (MBC) conducted conservation fieldwork in Kuna Yala. Randy and Cindy Moore generously supported our project.

Heraclio Herrera, Domingo Díaz, Randy Moore, Dr. Alberto Taylor, and Michael Calonje with Kuna guides

Unlike Darien Province, which has been largely deforested along the Pan-American Highway, the forests of Kuna Yala are particularly well preserved. This preservation is due, in part, to there being only one road crossing the Comarca, but also because of the Kuna conservation ethic. Forests in Kuna Yala are considered spiritual sanctuaries that should not be disturbed, and the Kuna Yala authorities have, thus far, refused to grant logging concessions.

Kuna Yala has not been botanically well-explored, due to its inaccessibility. Randy had visited Kuna Yala to research coconut palm diseases on behalf of the USDA, and has returned several times, on his own, since then. He was instrumental in planning the logistics for MBC's two-week exploratory expedition to Kuna Yala. We were joined by Dr. Alberto Taylor, Montgomery Botanical Research Fellow and University of Panama professor, as well as by Kuna botanist Heraclio Herrera, and agricultural technician and Kuna guide, Domingo Díaz, from the Dobbo Yala Foundation.

Conducting scientific research in Kuna Yala can be a complicated matter as each of the 52 communities has ownership and controls access to the land surrounding the populated area. Obtaining permission from each community required the expedition team to meet the village elders to explain our intentions. The elders, known as Sahilas, sat in hammocks and spoke in the Kuna language through translators. They asked many questions until they were assured that our intentions were ethically sound, and then allowed us on our way.

We discovered an extensive population of *Zamia cunaria*, which was previously only known from a single location and presumed very rare. Field morphological study of this population suggests that *Z. cunaria* is very similar to *Z. ipetiensis*, and the range of morphologies intergrade. This new biogeographic and morphological data expands our understanding of Panamanian cycad diversity, and will prompt further investigation.

Male cones, *Zamia cunaria*

This brief expedition brought MBC a total of 471 seeds from eight species and 17 accessions of palms and cycads, further augmenting Montgomery Botanical's *ex situ* collection of Panamanian *Zamia*. The cooperation and collaboration of the Kuna and the University of Panama is advancing cycad conservation.

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The Colonel's Conifer Legacy
New Partnerships in Long-term Conservation

Colonel Robert Montgomery's first botanical passion was conifers, and he developed an important collection at his estate in Cos Cob, Connecticut. The Montgomery Pinetum grew into the then-largest private conifer collection, comprising 850 varieties. Col. Montgomery donated a selection of 200 varieties to The New York Botanical Garden in 1945 — The Montgomery Ornamental Conifer Collection.

Nageia wallichiana, a rare and unusual tropical conifer, Royal Botanic Garden Edinburgh

Cycads, the most ancient of gymnosperms, were especially favored by Col. Montgomery. Although he focused on cycads and palms after moving to Florida, his dedication to the other major gymnosperm group, the conifers, continued. In *Fifty Years of Accountancy* (1939), the Colonel declares: "In conifers and palms I find two families which include the greatest variety and the greatest beauty". The Montgomery Archive contains an extensive list of temperate conifer taxa brought from Cos Cob for the Coconut Grove Palmetum in 1938.

Significant rare tropical conifers were added to the Montgomery Botanical Center (MBC) collections in the 1970s and 1980s. These have done quite well and several have produced cones. Dr. P. Barry Tomlinson of Harvard has used the MBC conifer collection for research and teaching since the early 1980s, observing that "tropical conifers are quite underrepresented in botanical collections, especially in the U.S., yet their antiquity and diversity of structure and function are of fundamental interest". In recent years, the tropical conifer collection at MBC has grown through accessions from other botanical gardens and cuttings collected afield, and MBC has seen increasing research visits and requests for these conifer specimens.

For many years, the International Conifer Conservation Programme (ICCP) of the Royal Botanic Garden Edinburgh (RBGE) has also been collecting wild tropical conifer specimens for *ex situ* conservation and research. At RBGE, tropical material must be housed under glass. Glasshouse space limits RBGE's capacity for large tropical trees and can prevent those specimens from reaching mature coning size. Therefore, the ICCP is seeking "safe sites" for tropical conifers to enhance its *ex situ* conservation efforts. Montgomery Botanical is a natural choice due to its subtropical location and shared dedication to well-documented, wild-origin plant collections.

In October 2007, Ron Determann, conservatory and conservation director of Atlanta Botanical Garden (ABG), and I visited RBGE to collect material. This project was funded by the Plant Exploration and Exchange Program of the USDA. In total, 54 cuttings and 64 plants comprising 34 species in four families were collected, nearly all of wild origin. In addition to collecting new plant material, Ron and I became familiar with the operations of the ICCP, visited the RBGE collections at Benmore and Logan, and made plans for RGBE staff to visit MBC and ABG in 2008.

Cones of *Agathis atropurpurea,* Montgomery Botanical Center

Close collaboration between Scottish and American institutions is leading to very successful outcomes. Colonel Montgomery would undoubtedly be proud of MBC's very important contributions to *ex situ* conifer conservation; with the ongoing development of our conifer collection, MBC represents the full range of his botanical legacy.

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Christiane Tyson Funds New Plant Conservation Building *at* Montgomery Botanical Center

With a very generous gift from Christiane Tyson, Montgomery Botanical Center (MBC) will greatly expand its capacity for conservation and research. The Chris Tyson Plant Conservation Building will house the MBC Seedbank program and provide workspace for visiting scientists. By providing this new facility, Mrs. Tyson's generosity fulfills a crucial need for added capacity at MBC, enabling further conservation and research outcomes.

The conservation work of the MBC Seedbank program sees growing success. By producing large volumes of hand-pollinated cycad seed, MBC works to reduce the demand for poaching of wild cycads. This effort directly leverages our living collections for world cycad conservation.

The Montgomery Estate has enthusiastically hosted scientists since its founding. In recent years, there has been great growth in visiting researchers. These botanists utilize crowded ad hoc spaces around the property for specimen preparation, microscopy, or dissection; the new building will provide important dedicated capacity for this central use of our collections. The new building will increase available plant processing space at MBC threefold, while integrating with the existing landscape and architectural tradition of the Montgomery property.

Christiane Tyson has been a significant benefactor of tropical botany. Her ongoing support has benefited The Kampong, The Gifford Arboretum and the University of Miami, Fairchild Tropical Botanic Garden, and the Organization for Tropical Studies, as well as MBC. Mrs. Tyson states: "Growing up with chocolate and coffee while my father was president of Nestlé afforded me a good life and these Organizations are making it possible for others to enjoy the "fruits" (environmentally speaking) of the tropics."

MBC is deeply grateful for this very significant support, allowing greater advancement of botanical research and conservation.

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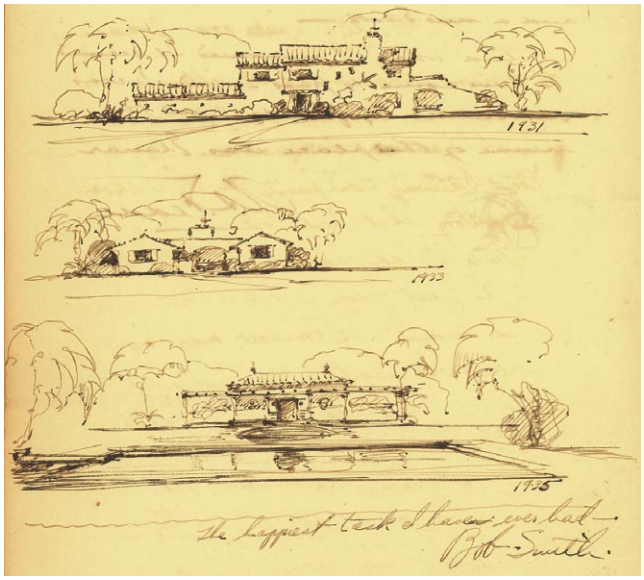
The Villagers Grant Funds *for* Montgomery Guesthouse Restoration

With generous funding from The Villagers, Inc., Montgomery Botanical Center (MBC) will begin restoring the Arthur Montgomery Guesthouse, ensuring the long-term integrity of this important part of the original Montgomery Estate. Designed by architect Robert Fitch Smith and completed *circa* 1934, the Guesthouse is experiencing the effects of over 70 years of use; exposure to south Florida moisture has affected its subflooring.

Notable biologists visited the Montgomerys as early as the 1930s. Liberty Hyde Bailey frequently stayed at the Guesthouse in the 1930s and 1940s. Richard Archbold visited in March 1938, just weeks before his famous expedition to New Guinea.

In 1980, Nell Montgomery Jennings expressed her desire that the Montgomery Estate be used "for visiting scientists, for educational or scientific purposes". In the Arthur Montgomery Guesthouse, MBC has hosted researchers from every continent representing internationally recognized institutions. Montgomery Botanical offers the Arthur Montgomery Guesthouse, without charge, to scientists, educators, students, and researchers so they can maximize their time with MBC's scientific plant collections.



Guestbook entry by Robert Fitch Smith, 1937.
Sketch of his designs for Montgomery Estate buildings.
From top: Montgomery home, Guesthouse, Nell's art studio.

Arthur Montgomery, the youngest of Colonel Robert Montgomery's sons, was one of the original 1959 incorporators of Montgomery Botanical Center. A noted mineralogist, he founded what is now the Montgomery Botanical Fellows Program, which continues through the Kelly Foundation. The Guesthouse was formally named the Arthur Montgomery Guesthouse in March 1992. Arthur died in December 1999; he was 90 years old.

"Montgomery Botanical Center gratefully acknowledges The Villagers for their generous funding," said Dr. Patrick Griffith, MBC executive director. "The historic Arthur Montgomery Guesthouse has continuously supported the scientific community since its construction — this generous grant helps that tradition continue."

The Villagers, Inc., has been dedicated to the restoration and preservation of historic sites for over 40 years.

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Kelly Foundation Advances Botanical Research *via the* Montgomery Fellows

Generous funding from the Kelly Foundation, Inc., is developing a productive research program at Montgomery Botanical Center (MBC). Since 2005, the Montgomery Botanical Research Fellows program has seen increasing successes, and funding has been renewed for the next three-year cycle.

The Montgomery Botanical Research Fellows program advances collections-based research by bringing research scientists to MBC. Through lectures, the Fellows provide educational opportunities for the community. Since 2005, the program has supported travel for eight U.S. and international scientists to study and lecture at MBC.

Currently, MBC has six Research Fellows, from Australia, Bolivia, Mexico, Panama, and the United States. The program has produced many successes (*please see table*); MBC is deeply grateful to the Kelly Foundation for advancing research and education in this way. Through the Fellows, MBC initiated projects in molecular phylogenetics, morphometric analysis, germination studies, and ethnobotany. Novel syntheses of collections data and laboratory investigation are important outcomes of the program.

Montgomery Botanical Research Fellows 2005-2007	
International Research Fellowships	8
U.S. Research Fellowships	3
Lectures and Seminars	21
Conference Presentations	8
Field Studies	5
Publications	2
Manuscripts	8

I am excited to report that the Fellows funding has been renewed for 2008-2010, with additional support for early-career botanists. We anticipate further advancement of research and education through the Kelly Foundation.

Loyd Kelly, president of the Kelly Foundation, Inc., has been a member of MBC since 1979, and was president of The Montgomery Foundation from 1990 to 1996 — the very important period immediately following Nell Montgomery's passing. The MBC team and the botanical community are very grateful for Loyd's generous support and guidance.

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Montgomery Botanical's Growth & Development Imaging Program

Montgomery Botanical Center's (MBC) plant collections are rigorously documented. Image records are first seen in the detailed work of Dexter Davis, Colonel Montgomery's botanist at the Montgomery Pinetum in the 1930s. Montgomery Botanical has digitally documented its collections since 1998. An image database now documents the growth and development of palm and cycad collections. Representative plants are photographed every two years, until a sufficient record of growth and development is established. Images include a meter scale and timestamp.

Syagrus cearensis, 2002, at MBC

Dr. Noblick with same specimen, 2008

With many rare and endangered species in the MBC collections, the Growth and Development Program is a valuable resource for researchers. This documentation is a permanent biological record, augmenting and complementing both the living collection and the herbarium specimen.

Image documentation can support identification or the botanical description of new taxa. These images also aid in the aesthetic appreciation of a plant's potential for landscaping purposes throughout its growth and development process.

At left is a palm species collected in Ceará, Brazil in 1994 by MBC palm biologist, Dr. Larry Noblick. After being propagated from seed and planted in the ground in 1999, *Syagrus cearensis* was described by Dr. Noblick in 2004. For the specimen shown, the growth of the stem is estimated at 1.75 m in eight years.

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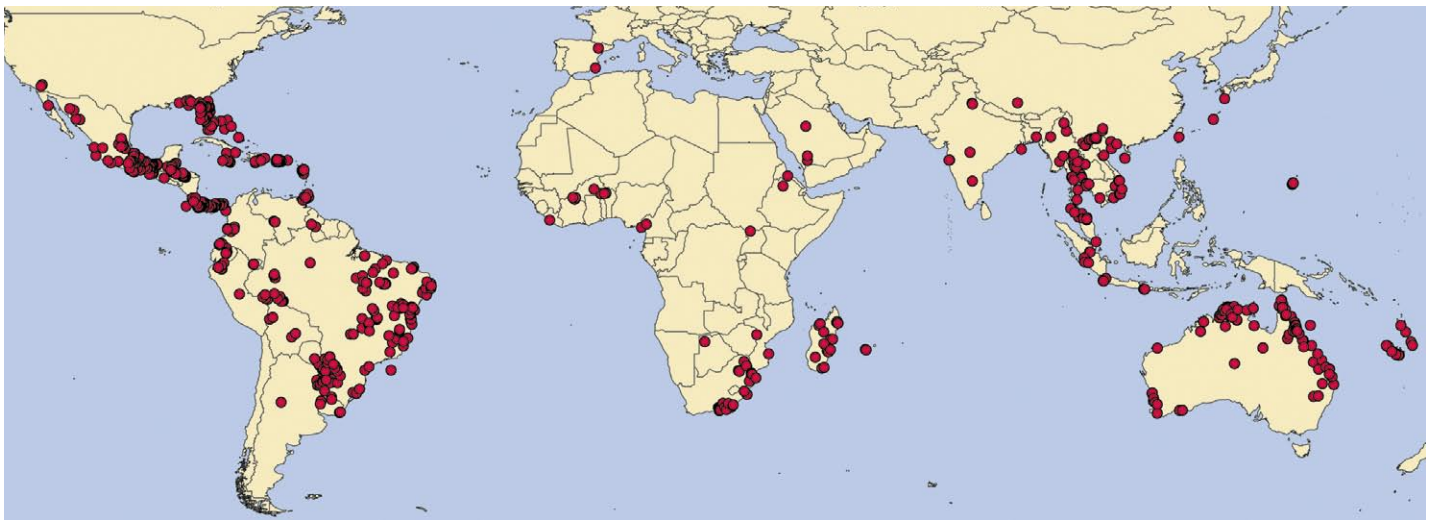
Collections Receive International Recognition

Montgomery Botanical Center's plant collections recently received high praise through an international review. Following an in-depth examination by the North American Plant Collections Consortium (NAPCC), Montgomery Botanical Center's (MBC) Palm Collection and Cycad Collection were both certified as Collections of National Significance.

NAPCC's review thoroughly examined most aspects of MBC. Every related function, from field collecting to record-keeping and horticulture, and even administration, was studied. "These are important accreditations for Montgomery Botanical, which directly verify our mission," stated Dr. Patrick Griffith, MBC's executive director. "Each member of the Montgomery team can share the credit for these achievements."

Scientific plant collections with rigorous curation are essential to guard against plant extinctions. Chad Husby, MBC collections manager, stated, "MBC and NAPCC share the common goal of promoting focused and responsible plant conservation. Public recognition of MBC's palm and cycad collections reflects the success of MBC's ongoing efforts to practice excellence in *ex situ* conservation."

Pam Allenstein, NAPCC coordinator, writes, "[MBC] stands among a prestigious group of gardens and arboreta that have committed themselves to the conservation and care of specific plant collections curated at the highest professional level." The American Public Gardens Association (formerly the American Association of Botanic Gardens and Arboreta), through the NAPCC, is working to promote high standards of curation for plant collections.



Provenance of Montgomery Botanical Center palm and cycad accessions.
Biogeographic data is essential for conservation and research.

Three Grants Advance MBC Data Systems

Documentation, data stewardship, and labeling are essential for scientific plant collections. Montgomery Botanical Center's strong tradition of rigorous plant curation began in the 1930s in Colonel Montgomery's Coconut Grove Palmetum. In recent months, three grants totaling over $35,000 allowed significant advances in MBC data systems.

Firstly, MBC obtained two in-kind grants from Environmental Systems Research Institute: a Conservation Program Grant and a Botanic Gardens and Zoological Parks Grant. This support enables interactive maps which communicate the provenance of our research collections; data from individual accessions can be easily retrieved. As well as being an intuitive interface, this provides a useful tool for evaluating collections strategy and for planning future expeditions.

Secondly, the Stanley Smith Horticultural Trust awarded MBC $15,000 to purchase an upgraded engraving machine, a handheld sub-meter GPS unit, and computer hardware and software to support each. These upgrades will streamline the flow of information throughout the entire collections process — from fieldwork, to planting, to labeling.

Additionally, we recently implemented a handheld, weather-resistant PDA interface system. The PDA interface allows us to review and collect data while in the field. This direct field interface reduces error, and significantly improves speed and efficiency.

By creatively adapting industry standard technology through external funding, these upgrades allow our collections development team greater efficiency and flexibility. Through new technologies, MBC can do much more, much more quickly — keeping our precious resources focused on achieving our mission.

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Montgomery Botanical Center apologizes for any omissions or errors in accuracy.

Interested in volunteering? Why not join Montgomery Botanical's volunteer team? Be part of our important conservation mission. Check out volunteer opportunities at www.montgomerybotanical.org or phone (305) 667-3800, extension 114.

Paul Drummond Fund Supports Palm Conservation

A very generous gift from Jeff Shimonski recently established the Paul Drummond Fund at Montgomery Botanical Center (MBC). The Fund honors the life and work of Paul Drummond, past president of the International Palm Society and lifelong palm enthusiast. The Paul Drummond Fund will advance the conservation of palms through field expeditions to collect and conserve palms.

Born in 1924 and raised in New York City, Mr. Drummond first admired a palm as a young boy at the New York World's Fair of 1939 and 1940. At the Fair's Florida exhibit, he saw the *Sabal palmetto*. His love of the tropics and palms led him to Miami in 1948.

Paul Drummond passed away on September 15, 2007. The palms he generously distributed as seeds and seedlings from his vast collection remain a lasting tribute. With the Paul Drummond Fund, Montgomery Botanical Center will continue to honor Mr. Drummond through dedicated fieldwork for palm conservation.

Please consider supporting MBC's important palm conservation work by contributing to the Paul Drummond Fund. To honor Paul Drummond in this way or for more information, please contact me at any time.

M. Patrick Griffith, Ph.D., Executive Director
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MBC Team News

Felix Beruvides joined MBC as assistant curator and is working with MBC's palm collections. Felix is a graduate of University of Florida's horticulture program and brings long-term experience with plants to MBC. Felix has also worked in fundraising at Fairchild Tropical Botanic Garden. His diligent attention to the collections and his hard work have been essential to MBC. In the future, Felix will be working toward his master's degree, having been accepted into NASA's horticulture program.

Claudia Calonje joined MBC as assistant curator and is working with the nursery collections. She began as a volunteer in MBC's collections development department. Claudia's extensive field, laboratory, and greenhouse experience make her a valuable addition to MBC's nursery team. Claudia is skilled in plant propagation and field evaluation, with experience in statistics and data management. Claudia received a degree in biology and botany from the Universidad del Valle in Cali, Colombia.

Montgomery Botanical Center 2007 Collection Inventory

	Palms	Cycads	Other
Total Taxa	418	255	511
in ground	353	228	423
in nursery	144	134	116
Total Accessions	2,263	1,904	2,137
in ground	1,794	1,269	1,996
in nursery	523	721	144
Total Plants	15,507	8,085	3,053
in ground	5,185	3,067	2,354
in nursery	10,322	5,018	699

"Other" includes tropical conifers and tropical flowering trees.

In this inventory, taxa counts are of species, subspecies, and varieties.

An accession is a collection of seeds from one source or locality.

Water Resource Conservation at MBC

Water management agency irrigation restrictions for south Florida will likely continue into the future. Montgomery Botanical Center's facilities team has been challenged to provide adequate irrigation for the scientific plant collections, while adhering to the restrictions applicable to MBC's status as a botanical research facility.

Of Montgomery's 120 acres, approximately 50 acres are irrigated. The facilities team evaluated the areas covered by the irrigation system and determined the areas that have reached the developmental point to meet sustainable horticultural requirements with minimal auxiliary irrigation.

Several expansive zones supporting primarily drought tolerant grasses, such as *Paspalum notatum* (Bahia grass), and palm species such as *Hyphaene*, *Phoenix*, and *Sabal*, were identified as being sufficiently mature to thrive under natural rainfall conditions. Areas totaling just under 16 acres were identified as self-sustaining, at least as far as irrigation requirements. This definitely represents a notable decrease in consumption, and complies with the voluntary 30 percent cutback suggested by the South Florida Water Management District.

The MBC staff is developing and implementing a Best Management Practices program according to guidelines from the Florida Department of Agriculture and Consumer Services, addressing the unique needs of a botanical research and education facility. Looking for additional ways to conserve, experts from the University of Florida/Miami-Dade County Extension's Mobile Irrigation Lab have been called upon to suggest conservation tactics.

Just as our horticultural staff is faced with conservation issues of a botanical nature, our facilities team anticipates the challenges of natural resource management in general, and water conservation in particular.

Lee Anderson, Superintendent
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FROM THE MONTGOMERY ARCHIVE

This photo of Colonel and Nell Montgomery was taken on the Montgomery Estate in November 1945. Montgomery Botanical Center records show *Phoenix canariensis* (pictured) was part of the Montgomery Collection as early as 1939. Several *P. canariensis* dating from 1939 still stand today in Montgomery Botanical Center's Coconut Grove Palmetum.