



Montgomery Botanical NEWS

Advancing Research, Conservation, and Education through Scientific Plant Collections

Fall/Winter 2011

Volume 19, Number 2

Marion and Tex Haynes Patio Dedicated

On April 2, 2011, Montgomery was excited to dedicate The **Marion and Tex Haynes Patio**. The very generous support of Walter Haynes, Marion Haynes, and the Haynes Family has enabled MBC to add this wonderful new outdoor gathering space. This improvement restores the area south of the Arthur Montgomery Guesthouse to its original function—an outdoor space to bring friends and colleagues together to enjoy each other’s company among beautiful landscape vistas. This project, designed by our landscape architect Joe Hibbard, fully integrates the central complex of buildings at MBC, from Nell’s House, south to the Guesthouse, the Studio, and all the way to the recently dedicated Chris Tyson Plant Conservation Building.

Tex and Marion Haynes were some of Robert and Nell Montgomery’s closest friends. Tex Haynes, Colonel Montgomery’s business partner, was present when the Colonel first moved into the main house in 1932, and Tex was also with Col. Montgomery when he first met Nell at Chapman Field in 1934. Marion was Matron of Honor at Nell’s wedding to Al Jennings, and has the distinction of having the longest-standing relationship with our botanic garden—Marion and Tex stayed in the Montgomery guesthouse on their honeymoon in 1936!

For the dedication, Marion visited from Ponte Vedra as our guest of honor, and was joined by many of her family and friends. She loved the new patio, and enjoyed spending the day in the garden, sharing stories of her times here, and her recollections about Nell and many others. It was a delightful opportunity to hear a first-hand narrative from the beginnings of our history here.

Walter Haynes, MBC Treasurer, presented a slideshow highlighting the project, and also the history of the Haynes family at MBC, beginning with a great photo of The Colonel and Tex enjoying the early palm collection with family and friends (please see back cover). Please join MBC in thanking Marion Haynes, Walter Haynes, the Haynes family and all of their friends. This is a very generous gift and important improvement to Montgomery!



Marion Haynes and the Haynes Family at Montgomery



*M. Patrick Griffith, Executive Director
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To advance science, education & conservation of tropical plants, emphasizing palms and cycads, Montgomery Botanical Center keeps living plants from around the world in population-based, documented, scientific collections in a 120-acre botanical garden exemplifying excellent design.

Montgomery Botanical Center 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 Montgomery Palm
(*Veitchia arecina*)

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F r o m t h e
Executive Director



Dear Friends,

This newsletter is about SYNTHESIS—bringing things together to produce something greater. That old adage—the *whole is more than the sum of its parts*—holds true for Montgomery Botanical Center and its work in many ways.

With the Marion and Tex Haynes Patio (front cover), integration, coordination and good outcomes—the essence of synthesis—are very tangible. The Haynes family came together for this generous gift, which combines function and form—logistics and landscape—for a solidly improved facility. Even the purposes of the Marion and Tex Haynes Patio reflect the synthesis principle; both a place for people to gather, and a vital arterial integrating office to lab.

Our botanical work shows more clear examples of applied synthesis. Michael (facing page) was one of several experts brought together to study Caribbean cycads. This project had important conservation and education outcomes in The Bahamas. Larry's research fieldwork with Brazilian palms (page 6) integrates every species of *Syagrus*.

Pages 4 and 5 describe fieldwork to integrate our understanding of Florida's native *Zamia*, and to discover its connection to *Zamia* from nearby islands. This work is supported by the National Science Foundation (see page 7), who recognized the ability of the unique team brought together for the project—another example of this issue's theme.

We know that Colonel Montgomery was a master of synthesis. The Colonel brought together great ideas, plants and people (see back cover). Today, we benefit from and carry forward his great work. I look forward to sharing that work with you here at Montgomery.

Pictured: Dr. Griffith on fieldwork in northeast Florida (see pages 4-5).

Zamia lucayana: A living treasure from The Bahamas

A recent project worked to study and conserve the Endangered Bahamian cycad, *Zamia lucayana* (see our Spring 2010 Newsletter). The project brought together experts from The Bahamas National Trust (BNT), Florida International University (FIU), Fairchild Tropical Botanic Garden (FTBG), the United States Department of Agriculture (USDA) and Montgomery Botanical Center (MBC), in a highly successful collaboration. This cycad is only known from one small area on Long Island in The Bahamas. Herbarium specimens, seeds, geographic data and DNA samples were collected from *Z. lucayana* and its relatives throughout The Bahamas, with the support of the Mohamed bin Zayed Species Conservation Fund.

As part of the project, public seminars were presented at the Retreat Garden National Park in Nassau and at the Community Center on Long Island. Javier Francisco-Ortega (FIU/FTBG) spoke about tropical botany and education, Tracy Magellan (MBC) spoke about *ex situ* conservation, Michael Calonje



Revisiting the plant pictured on the *Zamia lucayana* outreach postcard



Javier, Lindy and Michael in *Zamia* habitat

(MBC) presented our findings about Bahamian cycads and *Zamia lucayana*, and Lindy Knowles presented an overview of The Bahamas National Trust.

The audiences were highly engaged and interested to learn the local *Zamia*, known as “Bay Rush,” was a globally rare species. Informational posters and postcards were distributed to environmental and government agencies, to the Long Island Museum, and to several schools.

The team returned to the *Zamia lucayana* habitat studied one and a half years ago, and were pleased to find the

habitat and plants remain intact. Some of the land may change ownership in the near future—thus, the broad outreach from this project can help inform important future stewards of this living treasure.

The *Zamia lucayana* project was highly successful, bringing together all the components of Montgomery Botanical Center’s mission of supporting research, conservation, and education.

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Public Meeting at the Retreat Garden National Park, Nassau

Florida's Living Fossil: ?

What are we learning about our native cycad



FLORIDA HOUSES RELICS OF A BYGONE ERA. In one site on the Georgia border two conifers —*Taxus floridana* and *Torreya taxifolia*—endure since before the last ice age. Growing around Miami is *Psilotum nudum*, a plant more primitive than most ferns. But surely our most intriguing living fossil is *Zamia floridana*, the only cycad from the mainland United States.

Many Names, Many Questions

Zamia floridana has a distinction—the most names of any cycad. For years it was known as *Zamia integrifolia*, and sometimes *Zamia pumila*. The many scientific names highlight a poor understanding of the species and its relatives, but they also show how the plants in Florida have some interesting variation north to south: wide-leaflet and narrow-leaflet plants can be found here. The plants, commonly called “coon-tie,” were used by Native Americans as a food, and also by 19th and 20th century settlers as a source of industrial starch.

Those scientific and common names prompt two questions: How do our *Zamia* relate to other Caribbean zamias? And, what impacts did early and modern Floridians have on these plants?

A New Look at Old Plants

Our research team—people from MBC, USDA, FIU, FTBG, NYBG and international colleagues—has looked carefully at *Zamia* in Jamaica, Puerto Rico, The Bahamas, and the Dominican Republic for a number of years (see MBC Newsletters from Fall 2008, Fall 2009, Spring 2010, and here on page 3).

Another critical piece of the puzzle is here in our home state. With generous support from the National Science Foundation (see page 7), our *Zamia* team worked through the spring and summer to collect over 800 DNA samples, numerous her-



Tracy Magellan, SE Florida

barium specimens, and precise, fine-scale geographic data, to better understand the big picture throughout the region.

Southeastern Florida: Alan Meerow and Tracy Magellan performed fieldwork in the most populated part of the state. Over the course of long days afield, they were able to find 13 specimens in Broward County and 24 in Palm Beach County—perhaps demonstrating the effects of modern urban growth.

Everglades National Park: Javier Francisco-Ortega and Alan braved mosquitoes to sample the very abundant zamias on Long Pine Key, a Pine Rockland ‘island’ in the Everglades. Park rangers also showed us many zamias, which had been planted out as reintroductions—early 20th century industry had taken the original plants.

Southwestern Florida: The Florida State Park team generously ferried Javier and Alan out to Cayo Costa on their crew boat. Javier and Alan also covered sites in Oscar Scherer State Park and Koreshan State Park on this leg of the trip—3 diverse populations.

Northeastern Florida: Patrick Griffith and Alan traveled to the Georgia state line, sampling *Zamia* populations from the Canaveral Seashore northward to Amelia Island. *Zamia* plants in Ocala National Forest grew in sand and full sun among cacti, turkey oak, and ground lichen—certainly very different than the humid coastal forests of Faver-Dykes. At Tomoka State Park, some zamias were concentrated on an ancient shell mound—perhaps these are descendants from an old Tomokan garden? And, at one site, the team came face to face with a legendary cycad—the PALATKA GIANT.



Michael Calonje, NW Florida

Northwestern Florida: Michael Calonje and Chad



Husby went the farthest distance, all the way to the Big Bend National Wildlife Refuge, sampling *Zamia* from Crystal River Preserve State Park to Ichetucknee Springs and between. More interesting associations with Native American shell mounds were noted at the Lower Suwannee National Wildlife Refuge.

Moving Forward

The Florida fieldwork ties in with the large scale Caribbean project—with over 2,000 samples collected—and will help illuminate cycad evolution in this unique island region. At Alan's Chapman Field lab, Dayana Salas-Leiva and Kyoko Nakamura are working hard to genotype each leaflet with new DNA markers they are

developing. The results of this expert labwork, combined with precise geographic data, will help tell the story of our local cycad—where did it come from, how does it relate to other Caribbean zamias, and how have the people of Florida impacted the plants?

We are very grateful for the help and support of the Federal and State land managers in Florida who kindly permitted access and sampling for this work. In many cases these professionals offered information, transport (by truck or by boat), and expert advice on managing mosquitoes, alligators, snakes and ticks.

Contact: patrick@montgomerybotanical.org



Chad Husby, NW Florida

"Our *Zamia* team worked through the spring and summer to collect over 800 DNA samples"



Alan Meerow, NE Florida

Plants & People

Bringing It All Together: Studies in *Syagrus*

Syagrus is my favorite genus since I began studying palms over 30 years ago. All *Syagrus* have interesting 'miniature coconuts' and most species occur in Brazil. Initially, many looked alike, but like twins, after you are around them long enough, you begin to notice differences. During years of fieldwork and study, I have measured morphological characters (plant structures, sizes, shapes, colors, hairs, scales, etc.) noting these differences. These differences often led to discovery and description of new species. Further examination of anatomical characters (like the internal structure of a leaflet) can show differences or similarities only apparent under a microscope. Bringing together so many *Syagrus* species at MBC allows these comparisons.

Modern methods go directly to the genes for further information. I was

glad to participate in recent studies led by Alan Meerow (USDA), which offer a robust picture of the *Syagrus* family tree. My biggest satisfaction is to see the time I spent studying morphology and anatomy in *Syagrus* has been productive—my structural data are reinforced and further defined by Alan's DNA information.

Currently, *Syagrus* can be organized into three groups. First is the rainforest group from northern South America and the Amazon, with a few from the humid coastal Atlantic forest. This grouping reinforces the theory that these two great forests were united during more humid periods. The second is the Eastern Brazilian group with many species occupying coastal mountains or interior ancient weather-worn mountains (chapadas) in Bahia and Minas Gerais, and extending into Ceara and Goias, atop South America's ancient tectonic plate. Finally,



Harri Lorenzi observing *Syagrus glaucescens* in Minas Gerais, Brazil (2008).

there is a group from the savanna (ceradão) region of Brazil, many of which have clustering stems.

It is ideal when information from different sources gives similar results, tells a common story and together offers clearer insight. This is the best synthesis a scientist can hope for.

Larry Noblick, Palm Biologist
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Larry collecting *Syagrus oleracea* in Cocos, Bahia, Brazil (1986).



Measuring *Syagrus petraea* near Chiquitos, Santa Cruz, Bolivia (2010)



Dr. Larry Noblick with *Syagrus coronata* at Montgomery Botanical Center (2011)



Summer 2011 Interns

Two Important Grants Support Research at MBC

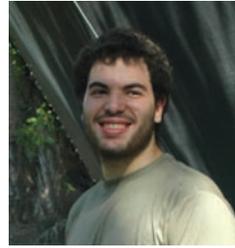
This year Montgomery was awarded two important grants to help cycad research and conservation. Please join Montgomery in thanking these important supporters.

National Science Foundation

MBC is part of a multi-institutional project, led by Javier Francisco-Ortega of FIU/FTBG, and including Alan Meerow of USDA, Dennis Stevenson of NYBG and Patrick Griffith of MBC. The project funds labwork and fieldwork to study biogeography and conservation genetics of Caribbean *Zamia* (see pages 4 and 5).

National Geographic Society

Patrick Griffith was awarded a grant by the Committee for Research and Exploration of the National Geographic Society, to support research fieldwork for Caribbean *Zamia*. This project also includes Alan, Javier, Dennis, as well as Ramona Oviedo of the Cuban National Herbarium. This fieldwork is critical to understanding biogeography in the Caribbean region.



Nicolas Espinosa from FIU was jointly hired as the National Science Foundation (NSF) Intern for our *Zamia* project with our collaborators at FIU, FTBG, and USDA. While at MBC, Nicolas worked to manage Caribbean *Zamia* living collections.



Jonathan Hirst was our first Kelly Foundation Undergraduate Intern. Jonathan worked in every department at Montgomery and successfully completed a diverse program of botanic garden training. Jonathan begins his studies at George Washington University this fall.



Patrick Meus-Caris from Florida A&M University, was our horticulture intern this summer. Patrick worked primarily with palms and cycads. Patrick worked to manage the young plants in the nursery, as well as help with research projects.

Montgomery Botanical Center would like to thank all of our interns for their hard work, dedication and enthusiasm.

Research Progress

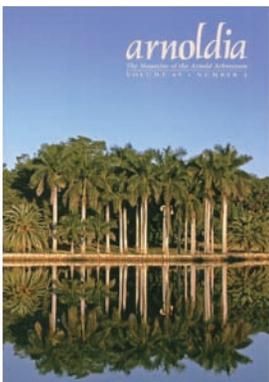
Our living plant collections remain a vital science resource for experts worldwide and our own team at MBC. Below are some recent examples:

- A book on palm anatomy by **Barry Tomlinson**, Harvard Professor Emeritus (and MBC Research Associate), along with **Jack Fisher** and **Jay Horn**. The work makes extensive use of MBC palm collections. Barry also has a recent study on the Wollemi Pine, appearing in *ANNALS OF BOTANY*.

- A series of studies on palm flower anatomy were recently published by **Fred Stauffer** of the Conservatoire et Jardin Botaniques de la Ville de Genève, Switzerland, and his colleagues **Felipe Castaño**, **Michèle Crèvecoeur**, **Nesly Ortega-Chavez**, **Jean-Christophe Pintaud** and **Rodolphe Spichiger**. Fred is also a Kelly Research Fellow here at Montgomery – these studies made extensive use of the MBC palm collections. The papers appear in *ANNALS OF BOTANY*, *CANDOLLEA* and *PALMS*.

- Also in *ANNALS OF BOTANY* is a study of DNA barcoding for palms, by **Marc Jeanson**, **Jean-Noël Labat**, and **Damon Little**, of the New York Botanical Garden and the Muséum national d'Histoire naturelle (Paris). Damon, also a Research Fellow at MBC, has made use of the palm, cycad and conifer collections at Montgomery in his research.

- The Montgomery Team had two recent cover articles featured in *ARNOLDIA* and *HORTTECHNOLOGY* (see left), authored by **Ericka Witcher**, **Judy Kay**, **Michael Calonje**, **Vickie Murphy**, **Arantza Strader**, **Lan Nghiem-Phu**, and **Patrick Griffith**. The studies highlight remote sensing and conservation horticulture at botanic gardens.



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FROM THE MONTGOMERY ARCHIVE



Marion and Tex Haynes have been part of the history of Montgomery Botanical Center since the earliest years. The picture on the left shows (left to right) Colonel Robert Montgomery, Walter Shaffer, Mac Foster, Tex Haynes and Isabel Foster enjoying the Colonel's palms in the 1930s. To the right are other photographs of Marion and Tex at Montgomery. Gathered at the table are Nell Montgomery's friends and family: (left to right) Mitsu, Yoni, Tex, Marion, Walt and Isabel.

The Marion and Tex Haynes Patio, dedicated in April 2011, is built in the exact location depicted in the outdoor photo of Tex and Marion at right. The MBC team was honored to host Marion Haynes here for the dedication (see front cover). Please join us in thanking the Haynes family for their generous gift.