

Montgomery Botanical NEWS

*Advancing Research, Conservation, and Education
through Scientific Plant Collections*

Spring/Summer 2016

Volume 24, Number 1

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at Montgomery**
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Established 1959

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

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

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**From the
Executive Director**



Dear Friends,

We just finished a BANNER YEAR for cycad work! Montgomery saw remarkable advancement centered on this ancient and amazing group of living fossils. Thus, we devote this issue to all the great cycad work performed in 2015.

On the next page begins a special account of Michael's series of cycad expeditions in Cuba. Times are changing; note the re-opening of the US Embassy last summer. But as I have seen so often, botanical collegueship can precede official diplomacy. Our cherished colleagues in Cuba – exceptional botanists and great friends – worked closely with us to plan and perform these expeditions long before the recent detente. The back cover shows how this collegueship has its roots with Robert and Nell Montgomery – plants are ALWAYS our common ground.

Continuing that theme – INTERNATIONAL CYCAD COOPERATION – last summer also saw Cycad 2015 (see pages 6-7), which brought together the world's cycad people in Medellín, Colombia. Michael and I were honored to work with our Colombian colleague, Cristina Lopez-Gallego, to promote cycad science.

Montgomery's work to foster these international cycad connections has not gone unnoticed. The community of cycad experts called for MBC to assume greater leadership in service to these amazing plants – see page 8. And on the subject of leadership, I am honored and humbled to tell you about the LOYD G. KELLY LEADERSHIP ENDOWMENT, an amazingly generous gift that greatly advances Montgomery (page 9).

All these successes are only possible through a great Team – Board, staff, volunteers and colleagues – and through the amazing generosity of our supporters: a look at pages 10 and 11 show how important you are to getting us this far. I look forward to moving further ahead with you in 2016!

A handwritten signature in black ink, appearing to read "MP Griffith".

PS FOR THE PALM PEOPLE: Please know we have *many* palm updates to share in future issues: Larry's recent palm work took him to Madagascar, the Seychelles, the Virgin Islands, Nevada and Arizona!

Pictured: Dr. Griffith hosting the Tropical Flowering Tree Society at Montgomery

Cycad Conservation in Cuba

In Search of the World's Smallest Cycads

Montgomery is involved in The Caribbean Cycad Project, a broad, multi-institutional study of the *Zamia pumila* complex. While the cycad species of Florida and the Caribbean share many similarities, classification is controversial and largely based on leaflet shape. Our project is clarifying these relationships by extensive study throughout the Caribbean.

Montgomery and collaborating institutions conducted extensive fieldwork in Florida (USA), Puerto Rico, Dominican Republic, The Bahamas, Jamaica, and the Cayman Islands. This winter, fieldwork was completed with a final expedition to study the poorly understood cycads of Cuba. We collected DNA samples, evaluated morphological diversity, assessed the health of native *Zamia* populations, and worked to create a Conservation Action Plan for Cuban cycads.




Even though all Cuban zamias are closely related, the diversity we observed was astounding. In the nutrient poor quartz sand savannas of the Isle of Youth, we studied *Zamia pygmaea* – the smallest cycad in the world. At one location, the largest leaves were less than 6 inches long! **CONTINUED on pages 4-5.**



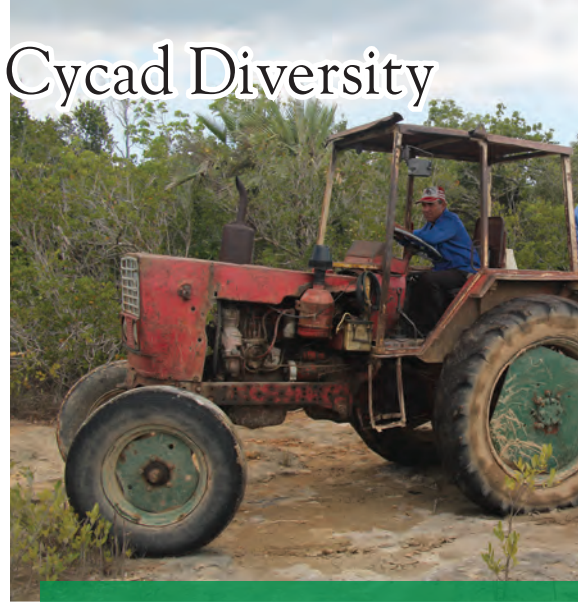
Background: *Zamia angustifolia* overlooks the Caribbean Sea.

Cuba's Astounding Cycad Diversity



For Caribbean cycads, Cuba is by far the most diverse in terms of the number of species (6 *Zamia*, plus *Microcycas*), and variation in morphology and habitats.


Due to this astounding diversity, it took FOUR SEPARATE EXPEDITIONS and OVER 8,000 ROAD MILES to adequately survey these cycads. We also had the rare opportunity to observe the magnificent endemic *Microcycas calocoma* at several locations.



Our travels took us throughout the entire Isle of Youth. Getting to remote field sites with our modes of transportation were quite varied: mule-pulled carriage, ferry, and even an old Russian tractor.



On steep, rocky limestone mountains in the driest area of Eastern Cuba, we found several morphotypes of *Zamia angustifolia*, some with leaflets that resemble pine needles – quite likely the narrowest of any cycad.



I was honored to collaborate in this endeavor with colleagues Ramona Oviedo and Lisbet Gonzalez-Oliva from the Instituto de Ecología y Sistemática and Gabriel Brull from the Empresa Nacional para la Protección de Flora y Fauna (ENPFF) of Cuba. We were accompanied at various times by other colleagues from Cuban Botanical Gardens and staff from the protected areas we visited.

A Conservation Action Plan is underway, and several critical populations will be monitored, propagated, and used for environmental education purposes.



the island and the adjacent
was often challenging, and
ed: car, horse, tractor-
an military truck!



Over 60 individual *Zamia* populations were thoroughly studied: leaflet DNA samples collected, herbarium specimens deposited in several herbaria, and seeds cultivated at MBC and Cuban botanic gardens. This fieldwork represents the most comprehensive survey of Cuban zamias, and has greatly increased our understanding of these fascinating cycads.



We also surveyed populations of the broad-leafleted zamias on three widely separated mountain ranges. These plants varied in the texture of their leaflets, the robustness of their habit, and the color of the new foliage – plants in eastern Cuba had particularly beautiful bronze new leaves.



NATIONAL
GEOGRAPHIC



MBC is deeply thankful to colleagues and institutions supporting this amazing project. We thank the Empresa Nacional para la Protección de Flora y Fauna and the Instituto de Ecología y Sistemática for collaboration, permission, and logistics. The fieldwork in Cuba, initially facilitated by Javier Francisco-Ortega of FIU and FTBG, was funded by The National Geographic Society and Charles and Dorothy Sacher. Raul Verdecia, Ramiro Chaves, and the Flora y Fauna protected areas staff provided invaluable field support. Labwork, coordinated by Alan Meerow of USDA-ARS, was funded by The National Science Foundation (DEB 1050340), USDA, and the Chris Tyson Research Fellowship.

*Michael Calonje, MBC Cycad Biologist
michaels@montgomerybotanical.org*



Cycad 2015

All about the world's most threatened plants!



Cycads are the most threatened plant group! Gaining and sharing knowledge is key to saving these living treasures and bringing together world expertise is essential. Thus, over 100 cycad experts from 21 different countries recently gathered in Medellín, Colombia, for CYCAD 2015: The 10TH INTERNATIONAL CONFERENCE ON CYCAD BIOLOGY.

Conference Chair Cristina Lopez-Gallego, Academic Chair Michael Calonje, and Treasurer Patrick Griffith organized the activities and program, which centered on 8 plenary lectures, 55 contributed talks and 10 posters, addressing conservation, systematics, anatomy, ecology, horticulture and ethnobotany. Montgomery staff contributed four presentations, on *Zamia* phylogeny (Michael), cycad conservation (Patrick), cycad anatomy (Tracy Magellan), and the World List of Cycads (Michael).

The weeklong gathering began and ended with exceptional food and live entertainment, featuring the wonderful cuisine and music of Colombia. Cristina also introduced a nice new feature to the group, a special “cycad forum,” with specific topics encouraging discussion and networking to address major challenges in cycad work – from taxonomy to horticulture, and even cycad ecotourism!

One very exciting development of Cycad 2015 was the official founding of the SOCIEDAD COLOMBIANA CÍCADAS (Colombian Cycad Society), launched by the “DECLARATION BY THE PARTICIPANTS OF CYCAD 2015,” which states:

Since years ago, conservation actions have been carried out in Colombia to try to save the *Zamias*

from extinction. These actions include research in remnant populations, efforts to protect their natural habitat, and programs to rescue and propagate plants to help impoverished populations . . . It is imperative that more people from our society join us and support our conservation efforts to save our *Zamias* from extinction.

A special recognition was given to Dr. Dennis Stevenson— who participated in all 10 conferences, beginning in 1987— for his longtime support for these gatherings, his contributions to cycad science, and his commitment to training students. The *Cycad d'Or*, “Golden Cycad” was presented to Dennis by Patrick, Cristina, Michael, Alan Meerow, and Angelica Cibrian Jaramillo. Dennis cited his mentors and friends from years past as sharing the honor. Dennis is also a longtime collaborator of Montgomery, frequently visiting to make use of the collections.

Cristina and Michael also organized and led pre- and post-conference cycad fieldtrips. These trips studied the amazing *Zamia* diversity of Colombia's Pacific slope, taking the enthusiastic delegates through mountain, river and marsh habitats.

The delegates also previewed and decided on future conference venues. Cycad 2018 will be held in South Africa, home to many amazing *Encephalartos* species. Next decade, the world cycad community will gather in Cuba, eager to see the great diversity of *Zamia* there (see pages 3-5). It is inspiring to know that these cherished plants have such a dedicated following!

Background photo: Cycad 2015 delegates study *Zamia oligodonta* in the field.



Cycad 2015 Participants came from around the world to discuss critical issues in cycad science.



The meeting, a joint effort of Montgomery Botanical Center and Universidad de Antioquia, in partnership with The New York Botanical Garden, Jardín Botánico Medellín, and the IUCN SSC Cycad Specialist Group (see page 8), was supported by generous sponsorships from the Mohamed bin Zayed Species Conservation Fund, Martin-Rami Fund, and Instituto de Investigación de Recursos Biológicos Alexander von Humboldt.

And we are especially grateful for our educational sponsors! The Cycad Society and Cycad Society of South Africa funded student travel and participation in the conference – helping to develop the next generation of cycad experts!

Montgomery Provides a World Office for Cycad Conservation

Montgomery has a leadership role for cycad conservation! MBC is now the official PROGRAMME OFFICE for the Cycad Specialist Group (CSG). This group brings together the world's cycad conservation expertise, including experts in biology and horticulture, as part of an official commission of the International Union for the Conservation of Nature (IUCN). The CSG provides their combined expertise to organizations and agencies which can use this guidance.

Montgomery has contributed to global cycad conservation work for decades. In 2002, MBC hosted a Cycad Classification Workshop, which resulted in a landmark book on this subject. In 2011, Montgomery assumed responsibility for the online World List of Cycads, (see cycadlist.org).

With an increasing need to organize and coordinate cycad conservation, IUCN selected Montgomery as a natural home for the CSG. Montgomery will support a staff member as an Officer of the Cycad Specialist Group, help develop the next generation of cycad conservation expertise, and provide technical capacity. This official host relationship was formalized in June 2015.

A recent major success of this program was a worldwide workshop, hosted in conjunction with CYCAD 2015 (see pages 6-7) to clarify the conservation status of the 343 remaining cycad species. Bringing together 30 experts from 13 countries – in Africa, Asia, Australia, and the New World – the CSG met in Medellín, Colombia for two full days of in-depth scientific review. Montgomery and the CSG thank the Mohamed bin Zayed Species Conservation Fund for generously supporting our successful workshop.

Please see cycadgroup.org for more info.



The Cycad Specialist Group meeting in Colombia, August 2015.

Montgomery is the VERY FIRST botanic garden to make this commitment to plant conservation.



Group photo with a "cycad-eating" Triceratops

MONTGOMERY BOTANICAL CENTER 2015 COLLECTION INVENTORY

	PALMS	CYCADS	OTHER		PALMS	CYCADS	OTHER
TOTAL TAXA	434	245	665	TOTAL PLANTS	14,810	8,689	3,169
IN GROUND	388	229	588	IN GROUND	6,364	4,927	2,666
IN NURSERY	116	78	141	IN NURSERY	8,446	3,762	503
TOTAL ACCESSIONS	2,274	1,947	2,386	26,668 PLANTS!			
IN GROUND	2,045	1,758	2,210				
IN NURSERY	287	420	205				

Lloyd G. Kelly Leadership Endowment

To Honor a Leading Talent

A remarkable advancement for our garden! Montgomery recently received a *one million dollar gift* – THE LOYD G. KELLY LEADERSHIP ENDOWMENT. This exceptionally generous donation comes from the Kelly Foundation, in honor and in memory of Lloyd's talent, skill and dedicated work to set Montgomery on its course to achievement.

Lloyd had an illustrious career of leadership and service, as a veteran of World War II, serving as a US Navy Commanding Officer, and the President of Kelly Tractor Company. Lloyd's generous service to and support for civic, botanical, and charitable organizations touched many lives and made a tremendous amount of great work possible.

Following the death of MBC's Founder, Nell Montgomery Jennings, Lloyd carried her vision forward as President from 1990 until 1996. During those critical years, Lloyd put his experience and leadership to work – creating a Master Plan for the landscape, developing new management, and restoring the plant collections, grounds and buildings following Hurricane Andrew. Lloyd's talent for leadership was matched by his enthusiasm for palms and cycads! *Dioon* and *Hyophorbe* were two of his favorites. The Board of Directors finally accepted Lloyd's retirement in 2010 only with great reluctance.

The Kelly Foundation's wonderful gift will continue and advance the exact legacy that Lloyd established at Montgomery – promoting good leadership. Lloyd himself exemplified great leadership, and we are glad to have his wisdom in this area:

"In leading this organization, I always believed in a good, rigorous selection process for the people that we bring in. I believe that we should bring in good people, set parameters on what we want to see, and then stand back and let the people do good work. Our successes here come from that philosophy, and I am glad to see all the good work being continued by our group here at MBC."

Lloyd's concise guidance remains a central principle, practiced by Montgomery's Board of Directors, its Executive Director, and its staff. At the center of Lloyd's guidance is the focus on good people. This new endowment is designed to do precisely that, supporting the right leadership for the great team at Montgomery. Words cannot fully express Montgomery's immense gratitude to The Kelly Foundation for its gift, which – just like Lloyd – shows exceptional leadership, forethought and generosity.



Lloyd Kelly on the Palm Walk, 1998.



The Kelly Family on the Palm Walk in 2015:
Nick, Barbara, Christabel, Luisa and Patrick.

MONTGOMERY BOTANICAL CENTER

Gratefully Acknowledges Your 2015 Support

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To help Montgomery contact
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(305)667-3800 ext. 114
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FROM THE MONTGOMERY ARCHIVE

ROBERT AND NELL MONTGOMERY IN CUBA, 1935

Pictured here are Robert & Nell at the Atkins Institute for Tropical Research in Cienfuegos, Cuba, collecting seeds of an *Arenga* palm. Robert & Nell travelled to Cuba in 1935 to exchange plants – sharing seeds from their Coconut Grove Palmetum with the Cuban botanic gardens and bringing back new species for their collection.

That early exchange was vital to both gardens, now known as Cienfuegos Botanical Garden (CBG) and Montgomery Botanical Center (MBC). At right is a table that was on display at CBG at the “Rol de los jardines Botánicos en la Conservación de la Diversidad Biológica Vegetal” conference (2009) highlighting sources of plants grown there; “Cocc. Grove Palm. Fla.” is near the top of the list, only exceeded by “Washington D.C.” Review of MBC’s current collections show that several seeds brought back from Robert & Nell’s 1935 trip still survive here as trees.

Montgomery is excited to continue this vital collaboration with international neighbors; Pages 3-5 show how this important botanical colleagueship is again thriving.



PROCEDENCIA	TAXON	# DE INTROD.
Washington D.C.	63	76
Cocc. Grove, Palm. Fla.	28	52
Florida	13	13
Exp. Gard. Canal Zone Panama	10	15
Arnold Arbor., Jamaica, Plain, Mass	8	10
Cocc. Grove, Fla.	7	7
Jardin Botanico Nacional	7	9
Castleton, Garden, Jamaica.	6	6
Est. Exp. Stgo de las Vegas	6	7
F.T.G. Cocc. Grove, Florida	6	6
Archobold Fairchild Exp. FTG.	5	5
Soledad, Cienfuegos, Cuba	5	5
Uto w. Exped	5	6
Bot. Gard. Buitenzorg, Java	4	5
Canal Zone Panama	4	6
Los Angeles, California	4	4
Park Dep. Rio Janeiro	4	4
Chapman Field, Fla.	4	4
Foster Gard. Honolulu, Hawaii	4	4
Cienfuegos, Cuba	4	4
Buenos Aires, Sta Clara, Cuba	3	3
Dept. Agr. Mauricio	3	3
Tela, Honduras	3	3

Relationship between taxa and number of introductions by provenance at CBG.