Gifford Arboretum Newsletter

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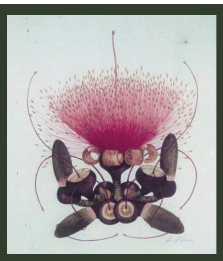

Dr. Carol C. Horvitz

24th Annual Gifford Lecturer

Dr. Carol C. Horvitz is a Professor of Biology and a Cooper Fellow (2008-2010) in the College of Arts and Sciences of the University of Miami. She is a plant population biologist whose research is characterized by the combination of field intensive studies with mathematical modeling, focused particularly on structured populations in variable environments. This conceptual arena includes the development and application of new parameters (e.g. environment-specific elasticity) and encompasses an array of topics from the biology of ageing and the evolution of life span, to the spatial population dynamics of both native and exotic species. Importantly, this work has exciting applications for understanding plant-animal interactions, forest dynamics, as well as disturbance, global change and invasion biology.

Known for her strong commitment to facilitating interdisciplinary training between empirical and theoretical ecologists, and mathematicians interested in biological systems, Dr. Horvitz has participated in working groups of the National Center for Ecological Analysis and Synthesis and workshops at the Max Planck Institute for Demography as well as at Stanford University. She has also offered several invited graduate-level short courses in matrix modeling, both nationally (e. g. Kellogg Biological Station) and internationally (e.g. Uppsala University, Sweden).

Dr. Horvitz received her Ph.D. degree in 1980 from Northwestern University for her work on seed dispersal by ants of a neotropical herb in the Mexican rainforest. After postdoctoral training at the University of Chicago, she joined the faculty of the Biology Department at UM in the mid 1980's. Dr. Horvitz is a founding member of UM's Institute for Theoretical and Mathematical Ecology, and she has been teaching graduate level courses in theoretical ecology for over two decades. Dr. Horvitz and her students have done considerable fieldwork and modeling of the dynamics of invasive trees and shrubs in southern Florida and of plant-animal interactions in tropical understory monocots.

She serves on the governing body of the Organization for Tropical Studies, and she has previously served on the editorial board of the American Naturalist. She has also organized several symposia on invasive species and has a keen interest in developing appropriate experimental design and conceptual tools for making cross-continental comparative studies of population dynamics, especially those focused on understanding why and how species become invasive when they move to a new geographic range. Dr. Horvitz's work has recently been supported by a National Science Foundation OPUS grant and a National Institute on Aging (National Institute of Health) grant.

As part of her endeavors, Dr. Horvitz has been promoting an increase in facilities and programs for the study of tropical plants at UM. That has included very commendable and tireless work on increasing the educational functions and value of the Gifford Arboretum while she served as its Director for many years. Although being the Director of the Gifford Arboretum was an "add-on" to the multitude of other tasks that she had to handle as a scientist and educator, Dr. Horvitz unhesitatingly gave her best to maintain and improve the Arboretum. Sadly, Hurricanes Wilma and Katrina devastated the Gifford Arboretum during her tenure in 2005. With her characteristic determination, Dr. Horvitz was the driving force in re-planting and restoring the Gifford Arboretum as she secured two grants from the Institute of Museum and Library Services, a federal agency. She was also responsible for raising matching funds that were required for these grants. During her term as Director , Dr. Horvitz was also instrumental in the creation of two endowed

positions in the Department of Biology: a Chair of Tropical Biology, funded by the generosity of Mrs. Christiane Tyson, and the position of the Aldridge Graduate Curator for the Gifford Arboretum.

As a scientist and educator, Dr. Horvitz understood that the Arboretum's primary role is for education and research. As a lover of nature, she also understood that it should inspire interest in tropical plants and be accessible to visitors. As the Director, Dr. Horvitz spearheaded many activities that enabled the Gifford Arboretum to play all of these roles successfully. She improved the interpretive signage in the Arboretum, and increased the value of the collection by planting trees that represent a wide variety of families. She was particularly interested in Florida native plants and their ecosystems.

Under Dr. Horvitz's direction, the Gifford Arboretum joined the American Association of Botanical Gardens and Arboreta. To help ensure that the Arboretum was maximizing it's potential and receiving its due recognition, Dr. Horvitz also initiated an external review process by inviting experts from across the country to participate and advice the University on the importance of the Arboretum. She also continued the Annual Gifford Lecture series, an event that has hosted an illustrious roster of speakers over the years.

We are very pleased and honored to have Dr. Carol Horvitz as the 2012 Gifford Lecturer. Dr. Horvitz's topic will be "Gardens are Great, Forests are Phenomenal" and this program promises to be a wonderful opportunity to learn about the importance of wild plants in their natural habitats, and why natural ecosystems mean so much more to the health of our planet than altered environments created by man. Dr. Horvitz understands the urgent need for more study and research to understand the varied relations and dependencies of natural systems, and the environmental costs of disturbing them. Frequently these costs are ignored and the detrimental effects of this on our planet and mankind are significant.

We also take this opportunity to publicly say "THANK YOU!" to her for the invaluable service and dedication she has rendered to the Gifford Arboretum for 27 years.

Dr. Carol C. Horvitz and some of her students during a field visit.

Message from Steve Pearson, Director of the John C. Gifford Arboretum

Since becoming Director of the Gifford Arboretum in October, 2011, I have enjoyed indulging my passions for plants and the environment. While there has also been (and continues to be) a lot to learn as well as a lot of work to do, I have relished the opportunity of being the steward of a resource that is of increasing importance in today's world. I think that science holds the key to so many aspects of our future and, in this regard, the Gifford Arboretum is a treasure that should be more widely recognized, utilized, and appreciated. I feel privileged to have the opportunity to try to build greater awareness and use of this resource; to further increase its value for education and research; and to make it an effective tool for inspiring interest in tropical plants and a greater understanding of their importance.

I am grateful that I have had lots of help in my initial efforts, and I thank each of the fine people who are listed as part of the Gifford Arboretum Advisory Committee. Their guidance, support, and suggestions have been extremely valuable. In particular, I want to thank Dr. Carol Horvitz for her inspirational love of the Arboretum and for being my mentor as I learned my new job duties. I also thank Dr. Kathryn Tosney for her guidance and her desire to make everything in the Biology Department first rate. Both of them are dedicated scientists who are helping to make this University even greater. Finally, I want to also thank Mr. John DeMott of Redland Nursery, Ms. Dolores Fugina of Bloomin' Good Nursery, Mr. John Lawson of Silent Native Nursery, Dr. Scott Zona, Dr. and Mrs. Eric Cohen, Montgomery Botanical Center, and Fairchild Tropical Botanic Garden for donations of plants that have been added to the Arboretum.

A large portion of my initial time has been spent assessing the collection. In doing so, I have developed a renewed admiration for the many great botanists and plant lovers who have influenced the development of the Gifford Arboretum. It has

always been intended that the Arboretum serve as a resource for education and research, and it has been an intriguing pleasure to learn (or ponder) why historical plant choices were made. Our Arboretum contains many instructive stories, not only about botany, but also about evolution, symbiotic relations between organisms, and the roles plants have played, and still play, in human life. Our Arboretum also contains many potentialities, again not only for botanical research, but also for medicinal, biofuel, and a myriad other research uses, many of which lie undiscovered or undeveloped.

While the breadth and overall health of the collection is generally good, there have also been some problems that have developed over the years. The Arboretum lost many of its trees in the extraordinarily cold winters of 2009 and 2010, and it has also been observed that some of our plants have been suffering from nutritional deficiencies, disease, or lack of adequate irrigation. With the advice of Ms. Adrian Hunsberger, Dr. Scott Zona, Mr. Lenny Goldstein, Mr. Craig Morrell and others, I have been determining what is needed and taking corrective action. As I learned to better understand the collection, I have also started adding trees, primarily to replace things that were lost (please see our list of Recent Additions). I have initially concentrated on our palm and Florida native exhibits, but we will be focusing on our other exhibits in the coming months.

One of my goals for the Arboretum is to increase the amount and value of its interpretative materials. This includes making an inventory of our existing signage and ordering new signs for those that have been lost or damaged, as well as creating signs for new plants and, in a few instances, where the existing signs are incorrect due to changes in species names, a not infrequent occurrence in the world of botany. I also want to expand the interpretation of the collection that is available on our website and I have been working to develop links that will have descriptions of the different Arboretum exhibits and their plants. Eventually, I also hope that QR Codes can be employed to provide self-guided tours where guests can learn about Arboretum exhibits and plants at any time with the use of a smartphone.

Besides the general goal of having diverse families represented in the Arboretum, I also want to continue to develop the collection in ways that demonstrate the evolution of trees. In this regard, I am happy to report that we have recently increased our cycad collection, and I thank Mr. Lenny Goldstein for his important assistance with that endeavor. With the help and guidance of Dr. Chad Husby of Montgomery Botanical Center, I also plan to further increase our collection of tropical gymnosperms, a fascinating group of plants deserving greater study.

I also think that a vital purpose of gardens in today's world of global warming, increasing pollution and habitat destruction is to serve as arks for species that are disappearing from the wild. Accordingly, I plan to favor additions that are endangered or threatened species. In this regard, I am pleased to have recently planted *Pseudophoenix sargentii*, an endangered palm that is one of only 12 palm species indigenous to Florida, and *Alloxylon wickhamii*, a very rare and beautiful tree from Australia that now provides an example of the Proteaceae family in the Arboretum.

I also want to continue to emphasize plants that provide examples of the importance of trees to man. This emphasis on ethnobotany obviously includes medicinal plants, and I am happy to report that the Arboretum now contains *Calycophyllum spruceanum*, a tree used by the people of the Amazon for medicinal purposes and that may have yet to be discovered value in modern medicine. This plant is reputedly used for curing diabetes, but it is disappearing from natural areas because of habitat destruction and its value as timber.

Although I believe that the primary focus of an arboretum should be on trees, I want to make an exception for species indigenous to Florida. We have an excellent collection of Florida's native trees in the Arboretum, but I want to include more understory shrubs and herbaceous plants so that we can better demonstrate the benefits of native plant communities. In this regard, I have been working with some undergraduate students to eradicate *Sansevieria* and other invasive species amongst the native collection that borders San Amaro, and I will later be replacing them with native shrubs and other understory plants that help create cover and food for native fauna.

I thank you for your interest in and support of the Gifford Arboretum, and I will welcome your ideas and suggestions as we move forward in seeking to make the Gifford Arboretum the best that it can be.

Horticultural Tip from Steve

The Arboretum has been inflicted with an infestation of fire ants. Since we strive to minimize the use of pesticides, I looked for alternate, more environmentally safe ways of controlling this pest. Thanks to an article in Tropical Fruit News (the publication of the Rare Fruit Council International), I learned that corn meal can be used to kill fire ants. It works because the ants love to eat it, but then are unable to digest the corn meal. This inability not only kills the ant that originally eats the corn meal, but can then eradicate an entire colony as other ants eat the ones that died. The number of fire ants in the Arboretum have plummeted and I recommend this as an alternate to pesticides, which may also damage other organisms in the food chain. Please note that you should not buy processed or refined corn meal. The course, gritty meal is far more effective in killing fire ants.

SUMMARY OF PRIOR EVENTS FALL 2011 – SPRING 2012

September 7, 2011: Dr. Hong Liu, Asst. Professor in FIU's Earth and Environment Department - In "The Threats to Wild Orchids in China", Dr. Liu described some very rare and beautiful orchids of China; their current status; and her hopes for their future. Dr. Liu is currently leading several conservation and restoration research projects in a remote area in southwestern China, where China's first orchid preserve is located. She revealed some of the challenges and rewards in her work trying to save endangered species in their natural environments.

October 5, 2011: Mr. Chris Rollins, Director of the Miami-Dade County Fruit and Spice Park - In "Fruit Trees of South Florida", Mr. Rollins described the uses, care, and culture of many of our commonly-grown fruits, as well as some unusual ones that deserve greater planting and utilization. Mr. Rollings has played a significant role in introducing new tropical fruits and vegetables to for our area, and he has done an exceptional job managing the Fruit and Spice Park for over 20 years.

November 16, 2011: Dr. Scott Zona, Conservatory & Greenhouse Curator of the Biology Department of FIU
A well-known and respected scientist with special expertise on palms, Dr. Zona shared his expertise on a wide array of plant families and species in "A Botanical Tour of Chile". With beautiful photos and scholarly descriptions, he taught attendees about some of the trees, palms, wildflowers, and even parasitic plants of Chile.

December 3, 2011: The Gifford Arboretum Annual Picnic – This year's edition featured a discussion and tour by Mr. Steve Pearson, Director of the Gifford Arboretum, and some delicious food that included a specially prepared Haitian pork dish with special relish, along with grilled chicken for those who like less spicy fare. It was a beautiful day and a good time was had by all.

February 1, 2012: Mr. Larry Schokman, Director Emeritus of the Kampong
Mr. Schokman's "E-X-P-A-N-D-I-N-G Your Plant Palette" was an informative talk on some of the best and newest tropical flowering trees that deserve a place in our gardens. An excellent horticulturist, Mr. Schokman also provided guidance on proper planting and care of these trees. He encouraged us to "Color the Horizon."

March 7, 2012: Mr. Roger Hammer, renown naturalist and wildflower expert
In "Florida's Most Exquisite Wildflowers", Mr. Hammer provided a close look at some of the most beautiful wildflowers of the Sunshine State, including some that are also amongst the rarest plant species in the United States. Mr. Hammer renewed our appreciation for natural beauty as well as the fragile nature of the environment.

Mr. Larry Schokman addressing the Friends of the Arboretum in February, 2012

Mr. Steve Pearson leading a tour of the Arboretum before the Annual Picnic in December, 2011

We have more activities lined up for the remainder of the Spring semester. Please join us and check them out!

April 14 and May 5, 2012: Mr. Steve Pearson, Gifford Arboretum Director
Walking tours and discussions of the Arboretum collections begin at 9:00 AM at the stone bench near the south end of the Arboretum

May 2,2012: Mr. Steve Woodmansee, President of the Florida Native Plant Society - An expert naturalist, Mr Woodmansee will speak about "The How To's, Challenges and Benefits of Restoring and Re-creating Pine Rockland Habitat". With a lifelong passion for Florida's native plants and years working as a Research Associate at The Institute for Regional Conservation, Mr. Woodmansee will teach us about one of our most valuable and threatened ecosystems, and what we can do to help preserve them. This event will be at 7:00 PM in Cox Science Center Room 166.

For information about upcoming events, please visit our website www.bio.miami.edu/arboretum. In coming months, we will be adding information about the collection, and links to other botanical resources in Miami.

Gifford Arboretum Plant of the Year Program

2012 Gifford Arboretum Plant of the year Bourreria succulenta
Left:Habit of B. succulenta Right: Some flowers and berries of the tree
Photos: Roger L. Hammer

As many of you are aware, we lost our greenhouse recently as part of the expansion of the Cox Science Center into a new annex building. Although plant propagation and horticulture are not primary emphases of the Gifford Arboretum, we wanted to continue these endeavors on a smaller scale with the goal of simultaneously doing something positive for our environment and gaining positive notice for the Arboretum. Accordingly, we instituted the Gifford Arboretum "Plant of the Year" program where a particular plant will be identified, grown and distributed each year based on it being a species that should be planted more widely for its value to native fauna. If the plant is also endangered, as is the case with our 2012 selection, then the program is all the more beneficial.

This year's selection is *Bourreria succulenta*, a small Florida native tree commonly known as Bahama Stongbark, Bahama Strongback or Smooth Strongback. This species in listed as endangered by the State of Florida and it is believed to naturally exist today only in a few places in the Keys. However, it was once common in southern Miami-Dade County, and it supports a wide array of birds and butterflies, some of which are also endangered. It is also a lovely landscape plant with fragrant clusters of small white flowers followed by colorful red or orange berries. Please see our information sheet on this plant which will be available at the Gifford Lecture and also on our website in the near future. With nursery space graciously donated by the Montgomery Botanical Center, we have been growing this wonderful plant and will have it available for sale at a nominal amount to recoup costs. Please consider adding one of these exceptional plants to your home garden. Our birds and butterflies will thank you!

Because of her interest in Florida's native plants and her dedication to preserving natural ecosystems, the Friends of the Gifford Arboretum dedicate our first Gifford Arboretum Plant of the Year in honor of Carol C. Horvitz.

Recent Additions to the Gifford Arboretum

Alloxylon wickhamii (Proteaceae) – Representing a new family for the Arboretum, this is a very rare and beautiful tree that is endemic to northern Queensland, Australia. The Proteaceae are some of the oldest tree species and are believed to have evolved during the mid Cretaceous when Australia, Antarctica and South America were linked. This family includes *Oreocallis*, a South American genus, and this species was formerly known as *Oreocallis wickhamii* before the genera were distinguished.

Bactris gasipaes (Arecaceae) – The peach palm is a slender, pinnate palm that usually grows with several stems bearing edible fruit that are eaten by parrots as well as man in Central and tropical South America. It has become important as a commercial source of heart of palms because the multiple stems allow harvest without killing the plant. This has made this palm a great example of sustainable agriculture that can help reduce pressure on harvesting wild palms that are endangered.

Bourreria succulenta (Boraginaceae) – Bahama strongbark a/k/a Bahama strongback is an endangered Florida native that benefits many birds and butterflies. Please see our feature article on this Gifford Arboretum "Plant of the Year."

Brysonima lucida (Malpighiaceae) – Locustberry is a rounded shrub that is native to southern Florida and the Keys. It has dense foliage and, in the spring, small, attractive flowers that change colors from white to pink to red. It provides cover to birds, and it is a nectar and a larval food for some butterflies.

Calycophyllum spruceannum (Rubiaceae) – Called mulateriro in its Amazon home, this is an endangered plant, primarily due to the value of its timber. However, native peoples have used it for a host of medicinal and other purposes, with claims ranging from curing diabetes to being an effective antifungal agent and insect repellant. It is also a beautiful species that annually sheds its reddish orange bark (the sustainable, main ingredient is many medicinal applications) and produces an abundant of small, white, fragrant flowers.

Campyloneurum phyllitidis (Polypodiaceae) – Long strap fern is an endangered Florida native that grows in hammocks, either as an epiphyte or on rocks.

Capparis flexuosa (Capparaceae) – Limber caper is our second, less common Florida native caper (the other is *Capparis cynophallophora*, known as Jamaican caper). It is a clambering shrub or small tree growing to 10-20 feet in coastal thickets and hammock margins. Its large white flowers with many stamens are showy. It provides food for birds and is a larval host for Florida White butterflies.

Chamaedorea metallica (Arecaceae) – A second species of Chamaedorea for the Arboretum, it was added for diversity and beauty, as well as to form a protective barrier around a rattan palm (*Calamus*) that will be planted once one of the smaller, less rampant species can be acquired. This palm is endemic to southern Mexico.

Chamaerops humilis var. cerifera (Arecaceae) – This is the only palm that is native to continental Europe and the northernmost naturally occurring palm in the world. It is a clumping, slow-growing palm with palmate leaves. We were fortunate to obtain a rare variety with bluish leaves.

Cnidoscolus aconitifolius (Euphorbiaceae) – Chaya or Mayan tree spinach is believed to have originated in the Yucatan Peninsula of Mexico. Although toxic (and with varying amounts of stinging hairs that can irritate your skin) when raw, the cooked leaves make a potherb green that resembles spinach, but with even more nutrients. A USDA study reported very high yields from this easy-to-propagate plant so perhaps someday it will become a major tropical food crop. Has anyone brought it to Haiti?

Dioon edule, Dioon mejiae, and ***Dioon spinulosum*** (Zamiaceae) – These Mexican cycads are very attractive and add to the educational benefits of our Gymnosperm Exhibit. They are increasingly endangered due to habitat loss.

Encephalartos ferox (Zamiaceae) – This endangered African cycad was accidentally damaged by some construction equipment, but we are hoping to save it. Preferring shade and growing in sand so that it can develop its subterranean trunk, these are some of the most primitive of the gymnosperms. A bread-like starchy food can be prepared from the center of the stem.

Gymnostroma nobile (Casuarinaceae) – Having scale-like foliage similar to pines, this tropical angiosperm is evergreen and has nitrogen fixing nodules in its roots. Native to Borneo and the Phillipines, this tree is valuable for timber as well as for landscaping because of its graceful form.

Inga edulis (Fabaceae) From Central America and the Amazon region of South America, this tree has been used for shade, food, timber, medicine, and "cachiri," an alcoholic beverage made from its seeds. Commonly called ice-cream-bean, the sweet, white cotton within the seed pods has a taste similar to vanilla ice cream. It has been used for shade in conjunction with growing cacao, coffee, tea and vanilla.

Magnolia champaca (Magnoliaceae) – Formerly known as *Michelia champaca*, this tree is noted for its perfumed oils that are the basis for Joy perfume. Native to areas of Southeast Asia and China, it commonly adorns Buddhist temples and is cultivated for timber as well as perfume.

Podocarpus henkelii (Podocarpaceae) – Indigenous to South Africa and now protected in the wild, this conifer is one of the "yellowwoods." Due to its pyramid shape and drooping foliage, it is the one most prized for ornamental beauty. Its wood is also used for making furniture and, in the past, floor boards.

Psuedophoenix sargentii (Arecaceae) - The buccanneer or Sargent's cherry palm is an endangered Florida native with wild populations surviving only on Elliot Key. It is one of 12 palm species native to Florida. It is a slow-growing palm whose pinnate leaves are produced in a single plane when young.

Rhipsalis baccifera (Cactaceae) - Mistletoe cactus is an endangered epiphytic cactus that is native to southern Florida. Growing as cylindrical pendent stems that are pale green, they can reach lengths of up to 30 feet in nature,

Schizolobium parahybrum (Fabaceae) - The fern tree or yellow jacaranda is a fast-growing, nitrogen-fixing species with long and graceful bipinnate leaflets. A pioneer species native to Brazil, its branch tips have a characteristic stickiness whose evolutionary purpose is not certain, but the most commonly accepted explanation is that this stickiness captures insects which in turn attract birds that help pollinate its golden yellow flowers growing on terminal panicles. The soft wood has a repulsive smell when fresh, but has potential for paper pulp and plywood uses. A leaf extract has been shown to effectively neutralize certain snakes' venom.

Some examples of recent additions to the specimen collection at Gifford Arboretum : From L to R : Brysonima lucida , Dioon edule and Capparis flexuosa

Other Additions : Licuala peltata **var.** ***sumawongii*** (Arecaceae) – a new palm to South Florida, it is more cold tolerant and showier than *Licuala grandis*; ***Strongylodon macroboides*** (Fabaceae) -the beautiful and inspiring jade vine; ***Zamia pumila*** (Zamiaceae) – our native Coontie is the larval host for the endangered Atala Hairstreak butterfly and Florida's indigenous peoples and later European settlers processed its root to extract an edible starch; and ***Cereus peruvianus*** (Cactaceae) – Peruvian apple is a treelike cactus that is native to Argentina, Brazil and Peru. It blooms at night with flowers up to 7 inches in diameter that are followed by edible fruits.

Please Donate to the Gifford Arboretum

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