Mark your Calendar!  
Gifford Annual Picnic:  
A celebration of tropical woods on December 6

The Gifford Arboretum will celebrate tropical woods and their uses at its Annual Picnic on Saturday, December 6 from 11:30-4:30pm. The picnic will feature various local wood sculptors including our own Advisory Board member, Douglas Parks, giving demonstrations of wood sculpting. This will be a wonderful event to learn how tropical woods can be used to make musical instruments, sculptures, and even boats.

Like last year, there will also be a plant sale at the event. In addition, many Arboretum items will be for sale including t-shirts, checklists, books, and other items. Sandwiches and salads will be for sale and complimentary refreshments will be served. There will also be a tour of the Arboretum and other botanical areas on campus. The event is free and open to the public so bring your friends and family and help celebrate the beauty and uses of tropical woods! We hope to see you all there on Saturday, December 6.

Research and Teaching in the Gifford Arboretum

Many of us enjoy the peacefulness and tranquility of the Arboretum, but it is also a vibrant setting in which UM faculty and students participate in research and teaching.

Professor Ted Fleming and his students from the Vertebrate Ecology course recently performed experiments on bird behavior and ecology in the Arboretum. They used mist-nets to capture the birds in different areas of the Arboretum. A total of 20 birds were captured and released. Dr. Fleming also taught the course in 1998 and performed the same experiment (see page 4 for multi-year summary).

Professor Bill Searey and his Continued on page 3

Students from the Vertebrate Ecology class study birds captured with mist-nets in the Gifford Arboretum. A total of 20 birds were captured during the Saturday experiment.

A black-throated blue warbler captured in a mist-net used by students in a recent experiment in the Arboretum.
Director's Notes

Vision for UM to Assume Leadership Role in Tropical Plant Biology
Summarized by Carol C. Horvitz, Ph.D.

The Botanical Collections of UM provide a diverse and beautiful, constant, no-cost, readily accessible source of tropical plant material right on campus. Other universities who need access to tropical plant material for research or teaching have to order it from supply houses or build and maintain expensive conservatories that can house only a fraction of what we have here surrounding us everyday.

* Unique leverage of Miami's tropical environment

We are the only locals in the continental U.S. where tropical tree families are dominant natives in nearby natural areas and where we can readily grow an outdoor living collection of tropical plants right on campus.

* Unmatched opportunities for applied research

  - Biotechnology and screening for plant pharmaceuticals

    The high diversity of species provides an array of bioactive natural products with potential for medical and agricultural applications that can be screened from material right here on campus. An example does the toxin in the latex produced by the “Sandbox Tree” (Tabernaemontana), known to be the most toxic plant product (when injected into a vertebrate it is 500,000 x more toxic than cyanide), have potential for research on biochemical processes related to cell death?

  - Living material close to lab facilities allows rapid analysis of tissues e.g. screening for active ingredients in various tropical plants with potential medicinal properties. There is no need for elaborate methods to preserve and transport tissues.

* Living laboratory for pure research

  - Somatic mutation

    Here at UM, a grad student has obtained NSF funding for research on the importance of somatic mutation as a source of genetic diversity in the progeny of large trees; the success of the project rests on the large number of readily accessible of "Royal Poinciana trees" (Delonix regia) on campus.

  - Determinants of plant development and architecture

    Why do some cells die and others differentiate to form branches in plants? What causes senescence in plant tissues? Fractal patterns in tree branching and the "decision" to create somatic vs. sexual cell lines are other developmental issues.

  - Biomechanics and hydraulics of tropical trees

    What is the relative importance of ground water vs. atmospheric water for tropical trees? How do trees affect the availability of water to other species—do the deep roots pull it up by hydraulic lift, or do they have some of it leak out of the shallow roots?

* Diverse intellectual endeavors

The diverse set of collections including the tropical trees of the Gifford Arboretum, the Taylor Alexander Microbiome, the rare and endangered palm collection, The Florida Keys habitat, and other areas, provide a diverse set of beautiful outdoor environments that foster diverse intellectual endeavors including artistic and expressive as well as scientific work. The collections thus benefit all the arts and sciences and add to the CAS' ability to recruit top faculty. Currently, English, Art, Architecture, Physics, Geology, Film, in addition to the Biology Department regularly make use of the spaces and the environments created by the plantings. UM's Living Botanical Collections can come to achieve international renown as a distinctive cultural resource, akin to a fine art museum.

* Premier status quickly: rallying and focusing existing intellectual talent

With a very modest investment of resources, by recruiting a high profile, team building visionary leader, UM could quickly become the premier center for the study of tropical plant sciences in the country and the world. We can not only add to our own internationally recognized strength in tropical plant ecology, but we can become the academic home and anchor of the community of scholars and scientists who form the research staff of our sister garden institutions, FTG, MBC, Kampong, NTBG and the USDA. By engaging in appropriate partnerships for synergistic research and graduate training we could rally the intellectual resources of nearly 40 Ph.D. level researchers in the plant sciences in the area; most would welcome an affiliation with a major University. We have just barely scratched the surface of this potential.
External Review Panel Advises College on Need for Director of Living Collections

Prominent botanists from across the nation visited UM and helped forge the five-star vision (see previous page) of UM as the premier academic institution in tropical plant science. The Gifford Arboretum has been charged with a leadership role to help implement this vision. As part of UM’s capital campaign, we are now in an active phase of raising funds. The University has a preliminary goal of $50 million, the amount necessary to endow the Directorship and ensure leadership of the collection in perpetuity.

In June 2003, at the request of James H. Wyche, Vice Provost and Dean of the College of Arts and Sciences, Dr. Carol Horvitz assembled an external review panel to advise the College on the need for establishing a Director of the Living Botanical Collections and the importance of establishing an academic program that would realize the research and teaching potential of UM’s special plantings, including not only the Gifford Arboretum (which needs renovation), but also the Palm Court, the Florida Keys Collection, the Flowering Tree Collection and other special plantings across the campus.

The panel, all of whom donated their time during a full day that lasted from 8:30 am to 9 pm (visiting the collections, discussing the issues and producing a written summary of the recommendations), included several prominent botanists from across the nation and the leaders of our local botanical institutions as well as from other UM schools. The botanists who flew in from other cities to participate included: Bob Cook, the Director of Harvard’s Arnold Arboretum; Barry Tomlinson, Professor Emeritus of Botany at Harvard University; Paul Cox, the Director of the National Tropical Botanical Garden; and James Swaney, the Director of Graduate Studies at Longwood Gardens. Our Miami/Florida leader included Julia Kornegay, Director of Fairchild Tropical Garden, Terrence Walters, Director of the Montgomery Botanical Center, and Larry Schisk, Director of the Kampong Garden.

UM’s School of Architecture was represented by Richard John and our School of Business program in Non-Profit Management was represented by Leonard Tarkell. In addition, Peter Raven, Director of the Missouri Botanical Garden, generously reviewed all the materials produced by the committee from afar, even though he was not able to attend the panel meeting.

Cooper’s Hawk Nesting in Arboretum

Several months ago, a pair of Cooper’s Hawks (Accipiter cooperi) were spotted nesting high up in the “Sandbox Tree” (Hura crepiacens) near the half-moon bench. During a recent windstorm, the nest, along with the chicks, fell to the ground. Sadly, none of the chicks survived and the adult birds have not been spotted since the windstorm.

In its native habitat, the Cannonball Tree’s (Conocarpus erectus) fragrant, waxy flowers are bat-pollinated. Photo by Derek Aziz

Picture of a Cooper’s Hawk (Accipiter cooperi) perched on a tree limb. These are magnificent predators that feed mainly on other birds and small rodents.

Research and Teaching continued...

students from his ornithology class performed bird behavior experiments in the arboretum. In this experiment, the students played back mockingbird songs both local and from New York to examine if there were differential responses to the sounds. They found that birds responded more to the local sounds than from the songs from New York.

Graduate student Doug Scaife has been working with Royal Poinciana (Delonix regia) in his studies of mutations in this species. He and his team of student volunteers collected flowers along the branches in the morning and examined the pollen from the flowers in the lab. They used Royal Poinciana from the Arboretum, the UM campus, as well as from neighborhoods in the community. Throughout the experiment, they collected...
Gifford Arboretum 2004 Spring Lecture

Named Time Magazine’s
“America’s Best in Ecology” in 2001,

Dr. Peter Vitousek
of Stanford University will speak on
"Biological Invasion as Global Environmental
Change: Hawaii as A Model Ecosystem"
April 1, 2004

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The Gifford Arboretum of the University of Miami is a collection of living tropical and subtropical trees. Our goal is to promote knowledge about tropical trees, both native and from around the world.