Department of Botany & the U.S. National Herbarium

The Plant Press

Smithsonian
National Museum of Natural History

New Series – Vol. 9 – No. 3 July–September 2006

Special Symposium Issue - see page 8

Botany Profile

Islands in the Stream of Evolution

By Gary A. Krupnick

On 21-22 April, more than 125 participants gathered at the National Museum of Natural History to attend the Sixth Annual Smithsonian Botanical Symposium, "Island Archipelagos: Cauldrons of Evolution." The Symposium explored the role that island archipelagos have played in our understanding of ecological and evolutionary processes as well as the future conservation of these unique ecosystems. Six invited speakers presented talks that described different island systems, each containing unique biotas that experience selective pressures different from those that dominate mainland ecosystems.

An opening reception at the United States Botanic Garden, a co-sponsor of the symposium, kicked-off the conference on the evening of 21 April. Gathering in the Garden's atrium, an enthusiastic crowd enjoyed food, conversation, and tours of the amazing collection of plants. The latest Garden exhibit featured plant species that were collected during the U.S. Exploring Expedition (1838-1842).

W. John Kress, symposium convener, welcomed the audience at the morning session on 22 April. Kress described the "what" and "where" of archipelagos, and explained how archipelagos make wonderful systems that can provide to us unique insights about ecology and evolution. He also gave a brief history of how islands have shaped the study of evolution, natural selection, and biogeography.

The morning session began with the awarding of the sixth José Cuatrecasas Medal for Excellence in Tropical Botany, which was awarded to Sherwin Carlquist (see related article, page 8). A leader in the study of phylogeny, biogeography, and anatomy of island plants, Carlquist was highly appreciative of the award and spoke about how the award will encourage him to continue to do better work. "The award is not closure, but a vote of confidence," he said. Carlquist received accolades throughout the day as each of the speakers began their talks by paying tribute to their highly respected colleague.

Smithsonian Botanical Symposium

The first invited speaker was Warren Wagner, Curator of Pacific Botany in the Department of Botany at the Smithsonian Institution, who presented "Out of Hawaii: A Remote Archipelago as a Source Area." Oceanic islands, explained Wagner, are natural laboratories for examining evolutionary diversification. He described (1) what plant diversity exists in the Hawaiian Islands; (2) how independently derived groups exhibit similar patterns of colonization and diversification; (3) which groups radiated more than others; and (4) if colonization to isolated archipelagos was one-way. Using diverse images of the Hawaiian flora, Wagner gave a brief tour of the most species-rich lineages: Campanulaceae, Gesneriaceae, Lamiaceae, Rutaceae, Caryophyllaceae, Asteraceae, Arecaceae, Rubiaceae, and Myrsinaceae. He demonstrated that the Hawaiian Islands are not only a place where divergent species arose in many adaptive radiations, but that the islands are a source area for colonization to other oceanic islands leading to new adaptive radiations.

Bruce G. Baldwin, Professor of Integrative Biology and Curator of the Jepson Herbarium at the University of California, Berkeley, next spoke on "Pacific Dispersals and Radiations of Western North American Origin: An Emergent Pattern." In describing the adaptive radiations from the west coast of North America to Hawaii, Baldwin presented case studies from the Hawaiian silversword alliance (Asteraceae), Hawaiian sanicles (*Sanicula*: Apiaceae), Hawaiian violets (*Viola*), Hawaiian mints (*Haplostachys*), and Hawaiian *Schiedea* (Caryophyllaceae). He described how five western North American lineages account for more than 12 percent of Hawaiian angiosperms. Baldwin also described how shrubby tarweeds from the islands off the coast of California paralleled the adaptive radiation of the Hawaiian silversword alliance.

Moving from the Pacific Ocean to the Atlantic Ocean, Javier Francisco-Ortega, Head of the Plant Molecular Systematics and Conservation Biology Laboratory jointly operated by Florida International University and Fairchild Tropical Botanic Garden, ushered in the afternoon session with his presentation of "New and Old Paradigms for the Macaronesian Flora: Molecular Phylo-

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Travel

Pedro Acevedo traveled to Santo Domingo, Dominican Republic, and San Juan, Puerto Rico (6/17 – 7/2) to present the keynote address at the 9th Latin American Botanical Congress and to attend the meeting of the Organization for Flora Neotropica, both in the Dominican Republic, and to fundraise in Puerto Rico.

Walter Adey traveled to Newfoundland and Nova Scotia, Canada (6/12 – 8/12) to conduct research in the Canadian Maritimes.

Michael Bordelon traveled to Denver, Colorado (6/12 – 6/14) to give a presentation at the Applied Plant Conservation Training Program at the Denver Botanic Gardens; and to San Francisco, California (6/28 – 7/3) to consult on greenhouse operations and the ginger collections at the University of California, Berkeley.

Maria Faust traveled to Belize City, Belize (4/26 – 5/11) to conduct research on red tide-forming, toxic, dinoflagellate microalgae in the Atlantic Barrier coral reef-mangrove habitats.

Vicki Funk, Sara Alexander, and Maya Sthral traveled to Bronx, New York (6/5 – 6/8) to study specimens from the Venezulean Guayana at the New York Botanical Garden.

Linda Hollenberg and Jamie Whitacre traveled to Albuquerque, New Mexico (5/22 – 5/27) to present a poster at the joint meeting of the Society for the Preservation of Natural History Collections (SPNHC) and the Natural Science Collections Alliance (NSCA).

W. John Kress traveled to Panama City, Panama (5/8 – 5/11) to participate in a workshop on plant phylogeny, phylogeography, and DNA barcoding; and to Grenada and Trinidad (5/19 – 6/1) to conduct field work on hummingbirds and *Heliconia*.

Mark and **Diane Littler** traveled to Fort Pierce, Florida (6/4 – 7/5) to continue work on the flora of the Indian River Lagoon in collaboration with M. Dennis Hanisak at Harbor Branch Oceanographic.

Dan Nicolson traveled to Richmond, Virginia (4/4) with **Emanuela Appetiti** to consult with the librarian and director of the Lewis Ginter Botanical Garden in Richmond on identification of plant species in artwork; and to New York (5/21 – 5/26) to work on *Taxonomic Literature, F & G Supplement*.

James Norris and **Robert Sims** traveled to Belize City, Belize (5/7 – 5/25) to collect marine red algae for studies in Carrie Bow Cay.

Rusty Russell traveled to Cambridge, Massachusetts (6/5 – 6/6) to visit the Harvard University Botany Library and Archives to investigate the Wilkes collection.

Alain Touwaide and **Emanuela Appetiti** traveled to Tbilisi, Georgia (5/3 – 5/7) to participate in a conference on traditional medicine; to Pompeii, Italy (5/13 – 5/20) to study biological material from excavations; to Rome, Italy (5/24 – 7/5) to conduct research on Renaissance printed herbals; to Baku, Azerbaijan (6/10 – 6/14) to attend a conference on ancient manuscripts and materia medica; and to Istanbul, Turkey (6/15 – 6/16) to work with colleagues from the universities of Istanbul, Ankara, and Cyprus.

Warren Wagner traveled to Pullman, Washington (4/2 – 4/11) to give a lecture and to participate in a graduate student committee meeting at Washington State University; to Kauai and Oahu, Hawaii (4/30 – 5/9) to make a presentation at the National Tropical Botanical Garden Board of Trustees meeting and to conduct research at the Bishop Museum Herbarium; and to Santo Domingo, Dominican Republic (6/17 – 6/20) to attend the council meeting of the International Association for Plant Taxonomy.

Anna Weitzman traveled to Edinburgh, Scotland, and London, England (5/2 – 5/13) to discuss data standards for taxonomy and issues related to rearranging herbarium collections at the Royal Botanic Garden Edinburgh and at the Natural History Museum in London.

Jun Wen traveled to New Haven, Connecticut (4/4 – 4/6) to give a lecture at Yale University; to Chicago, Illinois (4/27 – 4/30) to work on her collections at the Field Museum; to Mexico (5/8 – 5/22) to present a seminar at Universidad Nacional Autónoma de México and to conduct field research on Vitaceae, Araliaceae, and *Prunus*; to China (5/28 – 6/11) to teach a training course on molecular techniques in ethnobotany organized by Missouri Botanical Garden and Kunming Institute of Botany, and to conduct research on Araliaceae and Vitaceae; and to Santo Domingo, Dominican Republic (6/17 – 6/20) to attend the council meeting of the International Association for Plant Taxonomy.

Kenneth Wurdack traveled to Bronx, New York (5/15 – 5/17) to conduct research at the herbarium and attend the dedication of the Pfizer Plant Research Laboratory at the New York Botanical Garden.

The Plant Press

New Series - Vol. 9 - No. 3

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Visitors

Ze-Long Nie, Kunming Institute of Botany, Chinese Academy of Sciences; Eastern Himalayan conservation and biodiversity, and molecular biogeography of Northern Hemisphere disjunct plants (10/10-6/9).

Robert Leucking, Field Museum; Mason Hale Costa Rican collections (1/30-4/2).

Federico Luebert, Universidad de Chile, Santiago; *Heliotropium* (Boraginaceae) (2/5-8/4).

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Asian Botany at the Smithsonian: Past, Present and Future

The recent annual meeting of the Association for Tropical Biology and Conservation (ATBC) held in China in July ended with the publication of the "Kunming Declaration." The conference was hosted by the Xishuangbanna Tropical Botanical Garden and sponsored by the Chinese Academy of Sciences and National Natural Science Foundation as well as ATBC. Growth of Chinese science during the last decade has been impressive and it was very clear at the meeting that the government was fully committed to increase funding for ecological and environmental research.

The "Kunming Declaration," approved unanimously at an ATBC plenary session on the last day of the conference, urged the nations of tropical Asia to expand the number and size of protected areas within their borders, especially for forest types and eco-regions that are poorly protected in existing reserves, and for the increasingly rare areas that still retain their highly vulnerable megafauna. The Declaration also stated that financial support be substantially increased for scientific strategies to (a) restore degraded and secondary forests, (b) identify key regions of high biological and conservation significance, (c) enhance and maintain functional connectivity for wildlife among existing and planned reserves; (d) develop multi-national research, collaboration, and capacity-building; and (e) devise sustainable strategies for natural-resource development. The Kunming Declaration was distribution to the local and international media by the end of the conference.

The success of the ATBC meeting in China and the announcement of the Kunming Declaration was a clear signal that biodiversity and conservation sciences are strong and growing in Asia. As stated in the Declaration the biological diversity of tropical forests in Asia is among the very richest and most spectacular on the planet and likely accounts for at least a quarter of all species on Earth. But at the same time Asia has the highest deforestation rate of any major tropical region in the world, and is also being massively altered by rampant industrial logging, plantation expansion, overhunting, the illegal trade in wildlife and wildlife products, pollution and degradation of freshwater and coastal marine ecosystems, rapid human population growth, and other threats. Yet rapid economic growth and the impressive development of scientific expertise in tropical Asia are creating important new opportunities for targeted research and conservation initiatives.

Not always recognized, curators in the Department of Botany have contributed significantly to Asian botany and biodiversity studies. In April, Botany hosted the Joint Meeting of the Editorial Committee of the Flora of China Project. Editorial members from China as well as the US and UK attended to discuss and plan the final volumes of this massive project that will eventually include over 31,000 species of flowering plants. The Department of Botany has been a participant in the Flora of China Project since the early 1990s. Although this participation has been one of the most obvious Asian-based programs in Botany during the last several decades, it should not be forgotten that we have a long history of working in various parts of Asia since the very beginning of the United States National Herbarium in the 1800s.

The U.S. South Pacific Exploring Expedition led by Lt. Charles Wilkes returned to the Nation's Capitol in 1842 with tens of thousands of botanical specimens, many from islands in the Pacific which was a focus of the voyage. These specimens eventually became the basis of the US. National Herbarium which was officially formed in 1893 when Frederick V. Coville was appointed Honorary Curator of the National Herbarium. Since that time a series of well-known botanists have made significant contributions to Asian Botany at the Smithsonian, including

Elmer D. Merrill (1876-1956), who collected over 6,000 species from the Philippines during and after the Spanish-American War;

Joseph F. Rock (1884-1962), whose 25,149 collections from China, Tibet, Thailand, Burma, and Assam are the foundation of our Asian materials;

Floyd McClure (1897-1970), who studied bamboos and taught at Lingnan University in Guangdong, China, came to the Smithsonian in 1941 and his massive bamboo collections and library are deposited here;

Egbert H. Walker (1899-1991), who also taught in China at Canton Christian College, came to the US National Herbarium in 1928; he was eventually co-author with Merrill on the *Bibliography of Eastern Asiatic Botany* (1938) and sole author of the *Supplement* (1960);

Albert C. Smith (1906-1999), who first went to Fiji in 1933, came to the Smithsonian in 1948 and rose to become Assistant Secretary of the Institution; he completed his *Flora Vitiensis Nova* (5 volumes) in 1991;

Francis Raymond Fosberg (1908-1993), who studied South Pacific botany made over 150,000 collections and published the *Revised Handbook of the Flora of Ceylon*.

More recently a number of contemporary members of the Department have continued this tradition of Asian Botany with sustained field work, collections, and publications in a number of different countries:

Dan H. Nicolson, who joined the staff in 1963, conducted field work and made collections in the Philippines, Indonesia, New Guinea, Thailand,

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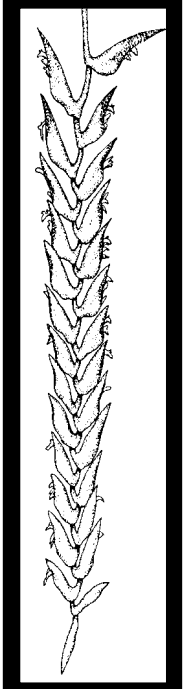
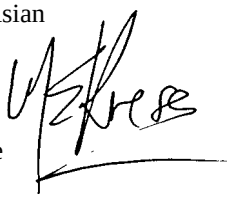
Chair With A View — W. John Kress





Staff Research & Activities

On 9 May, **Robert Faden** was an invited guest of the open house of the U.S. National Arboretum's Floral and Nursery Plants Research Unit/Green Industry. The research done by the 15 researchers in the FNPRU was presented by research leader, John Hammond. The researchers include taxonomists, horticulturalists, geneticists, plant pathologists, microbiologists and physiologists. They are stationed in Beltsville, Maryland, at the USNA in Washington, DC, and McMinnville, Tennessee. Research is focused on the development of new, woody plants for horticulture and on the diseases of ornamental plants. The presentation was followed by discussion groups that focused on the work of the USNA and its intersection with the needs of the Green Industry (essentially the horticultural trade at all levels). This was followed by lunch and tours of the USNA collections, including the herbarium (NA), and the research facilities at Beltsville.

On 18 May, **Gary Krupnick** presented the keynote address, "Plant Conservation at the U.S. National Herbarium," at the symposium "Charting the Future of Plant-based Conservation Education in the United States." Held at the United States Botanic Garden, the symposium was designed to address Target 14 of the Global Strategy for Plant Conservation and was co-sponsored by Botanic Gardens Conservation International.

Krupnick was also an invited speaker at the Maryland Master Gardeners Annual Training Day at the University of Maryland, College Park, on 25 May, where he presented "A Natural History Approach to Plant Conservation."

On 4 April, **Dan Nicolson** and **Emanuela Appetiti** visited the library of the Lewis Ginter Botanical Garden in Richmond, Virginia, to view the Descubes collection, which comprises 2,300 drawings (in pencil and painted in watercolor, most of them signed) of plants of the Indian subcontinent and areas such as Pakistan, Buthan and the Himalayan region. Each plate lists botanical information, from family, genus and species, to countries in which the plant was found and related literary references. The plates were produced by artist A. Descubes during the late 19th and early 20th centuries.

In May, **James Norris** and Suzanne Fredericq (co-principal investigators of the Belize Marine Algae Project), with **Robert Sims**, Fred Gurgel (Smithsonian Marine Station post-doctoral fellow) and Chip Clark (Smithsonian photographer) traveled to the Smithsonian's Marine Laboratory on Carrie Bow Cay, Belize, to dive and collect marine macroalgae for comparative morphological studies and molecular analyses, focusing primarily on mangrove algae, colloid producing species of *Hypnea* , *Eucheuma* and *Gracilaria*, as well as new species of Liagoraceae and *Wrangelia*, and photo documentation of their research and diving at Carrie Bow Cay and vicinity.

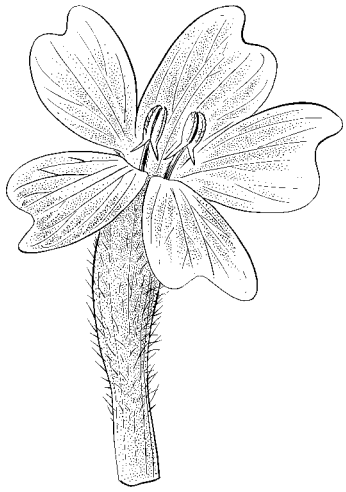
On 5 June, **Rusty Russel**l and Bianca Lipscomb visited the Harvard University Botany Library and Archives to complete their review of Asa Gray's handwritten and unpublished fourth manuscript which lists 1,192 species names of the plant collections made during the U.S. Exploring Expedition.

At the 2006 joint meeting of the Society for the Preservation of Natural History Collections (SPNHC) and the Natural Science Collections Alliance (NSCA) in Albuquerque, New Mexico, Jamie Whitacre presented a poster entitled "Ethnobotany of the Border Regions of the U.S. and Mexico" whose authors included Russell, Bill Merrill and **Linda Hollenberg**.

Alice Tangerini is exhibiting two of her botanical illustrations, *Mortoniodendron uxpanapense* and *Alloplectus serpens* at the Athenaeum Gallery in Alexandria, Virginia, as part of an exhibition, "Inspired by the Plant," organized by the Botanical Art Society of the National Capital Region (BASNCR). The exhibit runs until 30 July and features botanical subjects in watercolor, color pencil, graphite, pen and ink, and mixed media. The BASNCR is a local group of botanical artists who freelance and teach classes in their specialties. Some of the members are long time illustrators associated with the Smithsonian. On 24 June, Tangerini discussed botanical illustration using herbarium specimens and demonstrated her pen and ink techniques.

An exhibit at the Desert Botanical Garden (DBG) in Phoenix, Arizona, "Botany Beautiful, The Tradition Continues" features three *Oenothera* illustrations by Tangerini and three watercolor paintings by Mary Eaton from the Department's Art Collection. The exhibit, curated by Marilyn Garber, educational director of the American Society of Botanical Artists, concentrates on plants native to the southwestern U.S. and also exhibits art from the Harvard collections as well as DBG. The exhibit runs until 3 May 2007.

Anna Weitzman has taken a full time detail assisting the Bureau of Industry & Security at the Department of Commerce in managing some internet technology projects. She will continue to keep an affiliation with the Botany Department. Weitzman is excited about revitalizing her work in botany and plans to have a more active role in botanical and biodiversity informatics research projects through the department than she has been able to for some years.



New Faces

Maya Strahl, a Research Training Program (RTP) intern, is working with **Vicki Funk** this summer on a project titled "Phylogeny and Biodiversity of the Compositae Family in the Guiana Shield." Strahl was born in New York City but grew up in a small village near Canada in upstate New York. She is currently majoring in biology at Berry College, a small liberal arts college in northwestern Georgia. She has been doing undergradu-

ate research since the spring semester of 2005 and has worked on research in oak seedling leaf ontogeny and cotyledon reserves, and on a study to assess the results of prescribed burning on fire-suppressed longleaf pine stands. More recently she has been responsible for a long-term project on a limestone glade community on the Berry College campus. In addition, Strahl began a vegetation survey and drafted a management plan as a National Science Foundation intern during the summer of 2005. This spring she presented her findings at the annual meeting of the Association of Southeastern Biologists. After completing the RTP at the Natural History Museum she will finish her senior year at Berry College and apply for graduate school.

Awards & Grants

Vicki Funk and **Warren Wagner** each received a 2005 National Museum of Natural History Science Achievement Award. The awards were established in 2004 to recognize outstanding scientific contributions by NMNH staff during the preceding calendar year. Each spring a committee comprising members of the permanent scientific staff and chaired by the Associate Director of Research and Collections (ADRC) reviews up to three publications nominated by each curatorial department as well as nominations from individual staff. Funk and Wagner were recognized for the following publications:

Funk, V.A. *et al*. 2005. Everywhere but Antarctica: Using a supertree to understand the diversity and distribution of the Compositae. *Biologiske Skrifter* 55: 343-373.

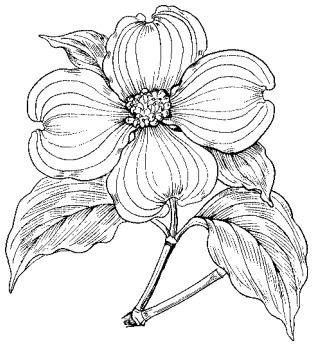
Wagner, W.L., S.G. Weller, and A. Sakai. 2005. Monograph of *Schiedea* (Caryophyllaceae - Alsinoideae). *Systematic Botany Monographs* 72: 1-169.

Rusty Russell and **W. John Kress** received a grant from the Earthwatch Institute for "Plants and People: Extracting Ethnobotanical Data from Historic Specimens."

Alain Touwaide has been elected President-Elect of the Washington Academy of Sciences.

Jun Wen was honored as a guest professor for a four-year term by the Kunming Institute of Botany of the Chinese Academy of Sciences.

Elizabeth Zimmer has been appointed Associate Editor of the journal *Plant Systematics and Evolution*.



Grass Collecting in Argentina

From 1 March to 12 April, **Paul Peterson** and **Robert Soreng** visited Argentina to collect grasses and review specimens at Darwinion (SI), Fundacíon Miguel Lillo (LIL), Universidad de Buenos Aires (BAA), Instituto Nacional de Tecnología Agropecuaria (BAB), and Museo de La Plata (LP). Diego Lionel Salariato and Adela Maria Panizza, two students from Darwinion, accompanied Peterson and Soreng on the collecting trip that began in southern Mendoza and continued north through San Juan, La Rioja, Catamarca, Tucumán, and Salta to La Quiaca, Jujuy. High elevation slopes of the Cordillera de los Andes were visited to collect cool-season grasses (Pooideae) while the intervening valleys and lower slopes provided good habitat for warm-season grasses (Chloridoideae). A total of 503 numbers of grasses were gathered and duplicates were left at our host institution, Instituto de Darwinion in San Isidro.

Department Hosts the Flora of China Project

The Department hosted the Joint Editorial Committee Meeting for the Flora of China project on 17-18 April. The meeting was organized by **W. John Kress** and **Jun Wen**. Twenty-five members of the Committee from China, Japan, England, Scotland, and several major US botanical institutions, including the Missouri Botanical Garden, Harvard University, and the California Academy of Sciences, attended the two-day meeting. The Department has been a partner in the Flora of China Project for several decades. The *Flora of China* will describe and document about 31,000 or one-eighth of the world's total plant species. This number includes about 8,000 species of medicinal and economically important plants and about 7,500 species of trees and shrubs. More than 600 scientists from throughout the world are cooperating in the preparation of individual treatments of the Flora, including several curators in the Department of Botany at the Smithsonian.

The Flora of China Editorial Committee at the National Museum of Natural History. (Photo by Chip Clark)

New Synthesis of Flora for Famed Plummers Island

A checklist of the flora of Plummers Island, in the Potomac River narrowly separated from the Maryland shore just inside Washington DC's Capital Beltway (I-495) and below the American Legion Bridge, has just been published by **Stanwyn G. Shetler**, **Sylvia S. Orli**, Elizabeth F. Wells, and Marcie Beyersdorfer, in the *Bulletin of the Biological Society of Washington*. The Washington Biologists' Field Club has been studying the biology of Plummers Island and its adjoining mainland since 1901, when the Club leased the island and established a headquarters there. Today, it is one of the most studied small islands or sites of comparable size anywhere. The first and only previous checklist was published in 1935, with an addendum in 1953.

The new checklist reports a cumulative total of 885 species since records were first kept and documented with specimens. This is 92 species more than previously reported in 1934 and 1953. Of the 885, only 300-350 of these are present today. The flora has been in constant flux from season to season and year to year, especially because of the frequent flooding of the river. Among the species that have disappeared from the island over the years are the locally native prickly-pear cactus (*Opuntia humifusa*) on Cactus Rock and bloodleaf (*Iresine rhizomatosa*), which was first described new to science from the island. Others have given way to invaders. The native hop (*Humulus lupulus*) has been displaced by the Japanese hop (*Humulus japonicus*), and the American bittersweet (*Celastrus scandens*) has given way to the Oriental bittersweet (*Celastrus orbiculatus*).

The island is still relatively unspoiled, but as everywhere, invasive aliens are taking their toll. Although only about 21% of the historical total of 885 species and the 300-350 contemporary species are aliens, 55% of the 42 species that have been recorded since the last update in 1953 are aliens.

The new checklist will provide a focus for the Electronic Field Guide Project and the DNA Barcoding Project of **W.J. Kress** and collaborators.

East end of Plummers Island with large sign identifying island. (Photo by E. Lohnes)

Cuatrecasas Travel Award

The Cuatrecasas Travel Award (CTA) is a new annual competition offered by the Department, which will usually result in one to two awards, each not exceeding $3,000. The award is to support work in the spirit of the research of the late Dr. José Cuatrecasas, a long time associate of the US National Herbarium. Priority is given to scientists from Latin America or from elsewhere who work on tropical plants. Funds are to be used to study specimens housed in the US National Herbarium.

This year, the CTA Committee (**Pedro Acevedo**, **Laurence Dorr**, and **Vicki Funk**) selected three proposals to fund for a total of $6,000. Fortunately, the Director of the National Museum of Natural History, Cristián Samper, will provide an extra $6,000, to bring a total of five applicants to the US National Herbarium:

- **Rodrigo Bernal** - "Study of Palms (Arecaceae) at US, Towards a Treatment of the Family for the Flora of Colombia"
- **Rodrigo Duno de Stefano** - "Study of the Family Leguminosae in the Yucatan Peninsula Biotic Province (YPBP), Mexico. Part III."
- **Jorge Andrés Pérez Zabala** - "Curation of Neotropical *Prunus* (Rosaceae) and Colombian Rosaceae Based on Collections Deposited at the US National Herbarium"
- **Oscar Mauricio Vargas** - "Study of the Genus *Diplostephium* (Asteraceae, Astereae)"
- **Alejandra Vasco** - "Monograph and Phylogenetic Study of the Fern Genus *Elaphoglossum* Subsection *Muscosa* (Dryopteridaceae)"

These awards will bring in four colleagues from Colombia and one from Venezuela (now in Mexico). These trips will help build institutional collaboration and advance botanical systematics.

Visitors

Continued from page 2

Wenying Wu, Philipps University, Marburg, Germany; *Nolana* (Solanaceae) (2/28/06-2/27/08).

Ying Meng, Kunming Institute of Botany, China; *Smilacina* (Liliaceae) (2/28-6/6).

Shiliang Zhou, Institute of Botany, Chinese Academy of Sciences, Beijing;

Calycanthaceae (3/14-8/14).

Michael Dillon, Field Museum; Peruvian Asteraceae (3/31-4/7).

Thaweesak Thitimetharoch, Khon Kaen University, Thailand; Commelinaceae (4/3-5/2).

Lynn Russo, Independent researcher; Volunteer interview (4/12).

Mark Tebbitt, Brooklyn Botanic Garden; Begoniaceae (4/13-4/14).

Jean Molina, Rutgers University; *Leea* (Nyctaginaceae) (4/21).

Donald McClelland, New York Botanical Garden; *Solanum* (Solanaceae) (4/21-4/22).

Jen Whipple, USDI-NPS-Yellowstone; Frank Tweedy collections (4/24-4/26).

John Freudenstein, Ohio State University; Orchidaceae (4/28).

WendyLynn Sacerdoti, Independent researcher; Ethnobotany lecture (4/28).

Frank Axelrod, University of Puerto Rico, San Juan; Flora of Puerto Rico (5/1-5/5).

Judy Chen, University of Florida; Vitaceae (5/8- 5/12).

Steve Manchester, Florida Museum; Cornales (5/8-5/12).

Elizabeth O'Leary, University of Florida Museum of Natural History; Winged fruit database (5/8-5/12).

Nicolas Cuvi, Universitat Autònoma de Barcelona, Spain; Cinchona Mission files (5/17).

Rose Broome and **James Reveal**, Independent researchers; *Dodecatheon* (Primulaceae) (5/19-5/22).

Sarah Wakamiya and **Kim Winter**, North American Pollinator Protection Campaign; Conservation database (5/24).

Orlando Alvarez F., Michigan State University; *Thelypteris* (Thelypteridaceae) (6/8-6/11).

Jackie Kallunki, New York Botanical Garden; Rutaceae (6/12).

Ray Mims, United States Botanic Garden; Plant conservation (6/13).

Qing Liu, South China Botanic Garden, Chinese Academy of Sciences, Guangzhou; Poaceae (6/13-7/21).

Kathryn Mauz, University of Arizona; Arizona historical collections (6/14).

Alice Calvente, Universidad de Sao Paulo, Brazil; *Rhipsalis* (Cactaceae) (6/26- 6/29).

Leonardo Versieux, Universidad de Sao Paulo, Brazil; Bromeliaceae (6/26-6/29).

Joao Nunes, Universidad de Sao Paulo, Brazil; Brazilian Bromeliaceae (6/26-7/10).

Chair

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Burma, India, Nepal and China;

Laurance Skog, **Robert DeFilipps** (now deceased), **Anna Weitzman** and **John Kress**, who have served as editors and advisors to the Flora of China Project since 1990;

Warren Wagner, who took over the Pacific Botany Program when Fosberg retired, focuses on the Flora of Hawaii and Pacific Islands;

John Kress, who has worked on the systematics and pollination biology of the Zingiberaceae in China, Thailand, Myanmar, and other Southeast Asian countries, recently published a new checklist of the flowering plants of Burma;

Jun Wen, who is one of the newest hires in the Department, will continue her floristic, biogeographic and taxonomic work in China and neighboring countries as Curator of Botany.

Curators at the United States National Herbarium have a rich history, past and present, of working in Asia and it is expected that this work will continue into the future. As suggested by the Kunming Declaration biodiversity is exceptionally rich in Asia but is also under exceptional threat from over exploitation and ecosystem degradation. Increased activity by botanists at the US National Herbarium as well as other institutions both in Asia and outside Asia will be necessary to discover and describe this plant diversity before it disappears.

Note: Thanks to Dan Nicolson who contributed facts and dates on Asian Botany at the US National Herbarium.

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Smithsonian
Botanical Symposium

Carlquist Receives Sixth Cuatrecasas Medal

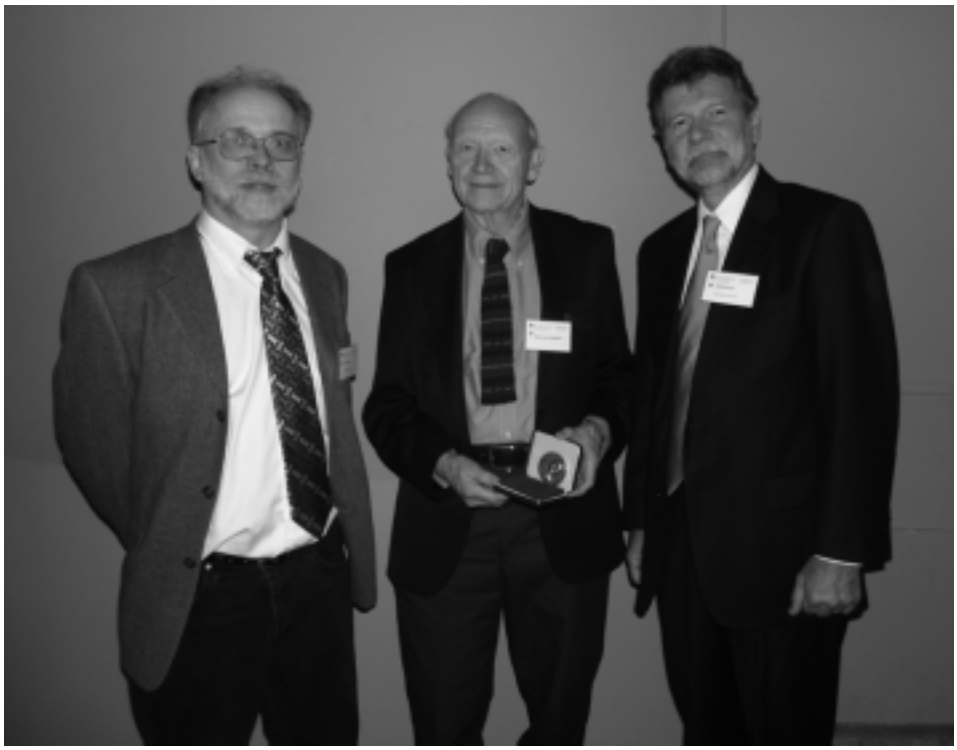
The Department of Botany and the United States National Herbarium present this annual award to a botanist and scholar of international stature who has contributed significantly to advancing the field of tropical botany. The José Cuatrecasas Medal for Excellence in Tropical Botany is named in honor of Dr. José Cuatrecasas, a pioneering botanist and taxonomist who spent nearly a half-century working in the Smithsonian Institution's Department of Botany. Dr. Cuatrecasas devoted his career to plant exploration in tropical South America and this award serves to keep vibrant the accomplishments and memory of this outstanding scientist.

The winner of this prestigious award is selected by a committee made up of three botanists on the staff of the Department, in consultation with other plant scientists in the Washington area. Nominations for the Medal are accepted from all scientists in the Botany Department. The award consists of a bronze medal bearing an image of José Cuatrecasas on the front with the recipient's name and date of presentation on the back. Highlights from past presentations to the recipients are available on the Symposium Archives at http://persoon.si.edu/sbsarchives/.

Sherwin Carlquist is the sixth recipient of the José Cuatrecasas Medal for Excellence in Tropical Botany. Carlquist is a wood anatomist who focused on many tropical angiosperm families and who also addressed questions about the evolution of plants on islands. The award committee was impressed with his many contributions to scientific journals as well as a significant number of books published over the course of his career, including *Island Life: A Natural History of the Islands of the World* (1965); *Island Biology* (1974); *Hawaii: A Natural History; Geology, Climate, Native Flora and Fauna Above the Shoreline* (1970, 1980); and *Tarweeds & Silverswords: Evolution of the Madiinae (Asteraceae)* (2003).

Carlquist received his B.A. and Ph.D. from the University of California at Berkeley in 1952 and 1956, respectively. In 1955-1956, he conducted his post-doctoral study at Harvard University. He was a Professor of Botany at the Claremont Graduate School, 1956-1992, with a joint position at Pomona College, 1977-1984. His position was funded jointly by Rancho Santa Ana Botanic Garden and Pomona College, 1984-1992 (during which time the title of Plant Anatomist was held at Rancho Santa Ana Botanic Garden, and the titles as Professor were retained at Claremont Graduate School and Pomona College). He also servered as Adjunct Professor of Biological Sciences at the University of California at Santa Barbara, 1993-1998.

Other than academic honors (including Phi Beta Kappa and Sigma Xi), Carlquist has received the Gleason Prize of the New York Botanical Garden for *Island Life*, 1967; career award (Certificate of Merit), Botanical Society of America, 1977; Fellow, International Academy of Wood Science, 1987; Allerton Medal of the National Tropical Botanical Garden, 1992; Asa Gray Award, American Society of Plant Taxonomists, 1993; Career Award, Santa Barbara Botanic Garden, 1996; Fellows' Medal, California Academy of Sciences, 1996; and the Margaret T. Getman Teaching Award, University of California at Santa Barbara, 1996.



Sherwin Carlquist (center), recipient of the José Cuatrecasas Medal for Excellence in Tropical Botany, receives his award from Laurence Dorr (left) and W. John Kress. (Photo by Jim Harle)

Abstracts from the Speakers at the Smithsonian Botanical Symposium

The sixth annual Smithsonian Botanical Symposium was held 21-22 April 2006. The symposium, "Island Archipelagos: Cauldrons of Evolution," explored the role that island archipelagos have played in our understanding of ecological and evolutionary processes. Below are the speakers' abstracts from the papers that were presented.

Speakers of the 2006 Smithsonian Botanical Symposium (from left): W. John Kress, Robert Ricklefs, Robert Fleischer, Warren Wagner, Sherwin Carlquist, Bruce Baldwin, Mike Maunder, Javier Francisco-Ortega, Ole Hamann (Photo by Jim Harle).

Warren L. Wagner
Smithsonian Institution, U.S.A.

"Out of Hawaii: A Remote Archipelago as a Source Area"

Oceanic islands have been viewed as natural laboratories for understanding evolutionary diversification. Pacific islands support an unparalleled array of biota whose patterns of diversity have contributed significant insights into evolutionary theory. Many of the concepts have been derived from traditional comparative biology and taxonomic systems. One fundamental conclusion is plants and animals on isolated archipelagos stem from a one-way colonization event from continents, sometimes moving in stepping-stone fashion across regions with smaller inter-archipelago distances, to end up on the most remote islands like Hawaii. Tremendous growth in geologic knowledge of Pacific tectonics and dating of oceanic hot-spot archipelagos has opened a new era of discovery of biogeographic patterns. The advent of cladistic approaches to polygenetics and the incorporation of molecular data have launched a new and exciting era of Pacific biogeography. Data from the genus *Melicope* (Rutaceae) revealed a significant new biogeographic pattern of the remote Hawaiian Islands serving as a source area for colonization followed by radiation. Hawaiian *Melicope* (56 species), which have diversified throughout the main Hawaiian Islands, and another 10 to 15 vascular plant lineages have further colonized to the Marquesas Islands, other islands of southeastern Polynesia, and as far as Fiji. New data demonstrate more dynamic patterns of colonization across the Pacific, and suggest that remote archipelagos inhabited by unique island-adapted lineages can and do disperse to other archipelagos, if not back to continents.

Bruce G. Baldwin
University of California at Berkeley, U.S.A.

"Pacific Dispersals and Radiations of Western North American Origin: An Emergent Pattern"

Recent progress in understanding origins of Hawaiian angiosperms has greatly increased support for the importance of western temperate and boreal North America as a source of founder lineages. Molecular phylogenetic evidence for North American ancestry of prominent Hawaiian radiations, such as the silversword alliance, mints, schiedeas, sanicles, and violets, underscores the potential of long-distance dispersal to shape floras, in accord with hypotheses championed by Sherwin Carlquist and reinforced by recent phytogeographic studies on a worldwide scale. As noted by Carlquist, high-elevation environments on the main islands of the Hawaiian chain and associated dry habitats leeward of major volcanic summits present unusual ecological opportunities in a tropical setting for colonists from temperate or boreal areas of North America. Comparison of two Pacific island clades that were founded by closely related Californian ancestors addresses in part the difficult question of whether some lineages have intrinsic potential for diversification under insular conditions. Results of these molecular and cytogenetic studies confirm Carlquist's suggestion that the Hawaiian silversword alliance (*Argyroxiphium*, *Dubautia*, and *Wilkesia*) and California Island tarweeds (*Deinandra*), although differing greatly in levels of diversity,

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Sponsors of the 6th Smithsonian Botanical Symposium

- Cuatrecasas Family Foundation
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Abstracts

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have undergone parallel adaptive radiations marked by strikingly similar processes and patterns of evolutionary change.

Javier Francisco-Ortega
Florida International University, U.S.A.
Arnoldo Santos-Guerra
Jardín de Aclimatación de La Orotava, Canary Islands
Javier Fuertes
Real Jardín Botánico, Spain
Mark A. Carine
Natural History Museum, London, U.K.

"New and Old Paradigms for the Macaronesian Flora: Molecular Phylogenetic Perspectives"

In the last 15 years molecular phylogenies have been obtained to a great proportion of plant species restricted to the Macaronesian region (i.e., Azores, Madeira, Salvagens, Canaries, and Cape Verde archipelagos). These phylogenies have provided a unique framework to test previous taxonomic, evolutionary and biogeographical hypothesis about the Macaronesian flora. In this presentation we will review and evaluate the available phylogenies for Macaronesian plants. We will also assess to what extend some of these hypotheses are confirmed by the molecular data. Phylogenetic patterns of taxa restricted to old geological regions of the archipelago (i.e., paleo-islands), colonization routes between the islands and the mainland, dispersal tracks within the region, and major phylogenetic incongruences will be discussed. Few of the molecular phylogenies are based on more than one DNA region, have strong phylogenetic support for relevant nodes, and have extensive taxonomic sampling in the mainland. Despite these limitations our study supports a region with complex biogeographical and evolutionary patterns. Therefore we believe that early hypothesis concerning the origin and evolution of the Macaronesian flora were too simplistic and generalistic and did not consider the complex environmental history of the region.

Robert E. Ricklefs
University of Missouri-St. Louis, U.S.A.

"Avian Perspectives on Evolution and Diversification in Archipelagoes"

The diversity of species in archipelagoes balances colonization, diversification, and extinction. Each of these processes has historic and geographic dimensions that can be perceived through phylogenetic analyses of taxa in archipelagoes. Whereas classic island biogeography theory was developed in the context of equilibrium systems composed of homogeneous organisms, recent studies suggest that this is hardly the case. Especially in archipelagoes, local extinction, recolonization, and species formation create a complex pattern of diversity and distribution from interacting processes. Phylogeographic studies of birds in the Lesser Antilles reveal a highly dynamic system far from equilibrium in which the outcome of coevolutionary relationships influence abundance and habitat distribution, extinction, and the secondary spread of populations among islands. The degree to which these processes are apparent, and how they influence evolutionary change and diversification, depends on how well their temporal and spatial scales match the geography and history of an archipelago. This is evident in comparisons of taxa with different potential for dispersal and for resisting extinction. Such comparisons also emphasize the well-known utility of archipelagoes for the study of evolution.

Ole Hamann
Botanic Garden, University of Copenhagen, Denmark

"The Galápagos Islands – Aspects of Vegetation Dynamics and Conservation"

The demography of selected woody species and changes in vegetation has been studied in the Galápagos Islands since 1972. Characteristic and dominant trees and shrubs of the arid and humid zone (*Opuntia* spp., *Bursera graveolens*, and *Scalesia* spp.) display different patterns of growth, mortality, turnover and life expectancy. This leads to different recovery patterns in different vegetation types after disturbances caused by, for example, goat grazing or El Niño events. *In situ* plant conservation measures include protection of native vegetation and species, and control or elimination of invasive alien plants and animals. *Ex situ* plant conservation measures in the islands comprise growing and propagating rare and endangered species for habitat restoration or population enhancement. Outside the islands, such species may be conserved *ex situ* in seed- and gene-banks as the ultimate insurance against extinction.

Mike Maunder
Fairchild Tropical Botanic Garden, U.S.A.
Marie M. Bruegmann
U.S. Fish and Wildlife Service Hawaii, U.S.A.

"Extinction and Restoration: Oceanic Islands as Testing Grounds for Conservation Biology"

Oceanic islands are being stripped of their evolutionary heritage; unique biological assemblages and associated ecosystem resources are being lost from a lethal combination of poor resource management, habitat loss and invasive species. Ironically these islands have also been intellectual crucibles where the concepts of conservation and sustainable management have been tested since the eighteenth century. Using case studies from Macaronesia, the Mascarenes, St. Helena, and the Pacific Islands case

Acknowledgments

The success of the Symposium was due to the significant time and efforts of the following people:

Organizers
- Mary Ann Apicelli
- Patricia Davis
- Laurence Dorr
- Ellen Farr
- Gary Krupnick
- Sue Lutz
- Warren Wagner

Core Collections Management Staff

Reception
- Holly Shimizu and the United States Botanic Garden staff

Photographer
- Jim Harle

And many others who had helped in a myriad number of ways.

studies will be reviewed that illustrate the alarming collapse of many island biotas and the evolving portfolio of conservation techniques available to avert habitat loss and extinction. Particular emphasis will be given to the acute issue of managing the "living dead," an increasing number of species that survive as tiny and often non-reproductive relictual populations, in some cases surviving as single wild individuals. Some species have survived only as *ex situ* populations in overseas botanic gardens (e.g. *Sophora toromiro* from Easter Island); others such as the Round Island Bottle Palm (*Hyophorbe lagenicaulis*) are recovering after intensive habitat restoration *in situ*. A set of island-wide declines will be highlighted, particularly the decline in wild populations of island endemic palms and hibiscoids largely as a result of invasive species.

Symposium

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genetic Perspectives." Francisco-Ortega began his talk with a description of the unique biogeography of Macaronesia. He then presented arguments against two major paradigms for the Macaronesian flora. The first paradigm says that many Macaronesian taxa are sister to taxa restricted to remote regions of Eastern and Southern Africa, Arabia, and Asia. He argues that most lineages instead have links with the Mediterranean region. The second paradigm states that taxa that are endemic to the palaeo-islands of Tenerife form early branching lineages, which is evidence for old speciation events. Francisco-Ortega explained that there are only a few examples that support that claim. He then presented a new paradigm based on molecular phylogenetics: phylogenies for only 27 percent of endemic species are robust enough to make clear conclusions about continental affinities.

The next speaker presented an ornithological viewpoint. Robert E. Ricklefs, Curators' Professor of Biology at the University of Missouri St. Louis, spoke about "Avian Perspectives on Evolution and Diversification in Archipelagoes." Using the West Indies as a case study, Ricklefs described biogeographic patterns and processes of the avian fauna. He explained that the basic pattern of island biography is the species-area relationship; but area is often confounded by environmental heterogeneity. Distance from the site colonization, recolonization, and local extinctions also are important factors on species richness.

Following Ricklefs was Ole Hamann, Director of the Botanical Garden & Museum, Natural History Museum of Denmark, University of Copenhagen, who presented "The Galápagos Islands – Aspects of Vegetation Dynamics and Conservation." Using three case studies (*Opuntia*, *Bursera*, and *Scalesia*), Hamann described how the Galápagos flora has regenerated time and again after severe disturbances, such as El Niño events and invasive species like goats. He argued that arid and humid zone woody plants display different patterns of mortality and survival and thus have different life expectancies. These species react differently to El Niño events. Whereas *Opuntia* and *Bursera* can survive during these long-term disturbances, many species of *Scalesia* can not and thus deserve high conservation priority.

The final invited talk was "Extinction and Restoration: Oceanic Islands as Testing Grounds for Conservation Biology" presented by Mike Maunder, Executive Director of Fairchild Tropical Botanic Garden in Coral Gables, Miami, and Chair of the World Conservation Union–Species Survival Plant Conservation Committee. In describing the essence of his talk, Maunder said that his presentation will be a "first aid course when you have the last four or five individuals of a species." Maunder emphasized why islands are important and provided a list of threats to island species. His "islands of the living dead" included Rodgrigues, Mauritius, and St. Helena. After presenting images of extinct and near-extinct plant species, Maunder offered some hope. He described how recovery is possible, and outlined three stages of restoration: salvage, siege, and restore.

Robert Fleischer, Head of the Genetics Program at the Smithsonian Institution, concluded the afternoon session with a "Summary and Perspective." Fleischer was able to discern four general conclusions: (1) molecular data have greatly clarified our understanding of timing of colonization, region of origin, speciation, and coevolution; (2) plants, like birds, can really move around (sometimes in or on birds); (3) communities are usually not in equilibrium, and only roughly match expectations of theory; and (4) many unexpected phylogenetic relationships and geographic origins have been discovered, which have challenged existing paradigms for many biotas. In addition, island floras and faunas seem to be particularly susceptible to invasion from introduced species, which have devastating impacts on island organisms. Development of effective conservation strategies are usually difficult, and often involve both *in situ* and *ex situ* solutions.

In his discussion, Fleischer provided a list of suggested future directions: (1) increase the use of DNA marker methods to document patterns of colonization, geographic origins of biotas, colonization times and rates of evolution; (2) refine studies of island biogeography using temporal scales and information from the fossil record; (3) analyze genes involved in development to better understand adaptation and speciation; (4) consider multiple factors and their interactions in conservation management; and (5) conduct better outreach to the public and government agencies about drastic conservation problems facing island biotas.

To conclude the day of presentations, Kress invited John Burns from Smithsonian's Department of Entomology to deliver a poem that Burns had written 30 years ago about *Drosophila* evolution and island biogeography.

Next year, the Smithsonian Botanical Symposium will consider plant classification and conservation in the light of Linnaeus' 200 birthday celebration. All are invited to attend.

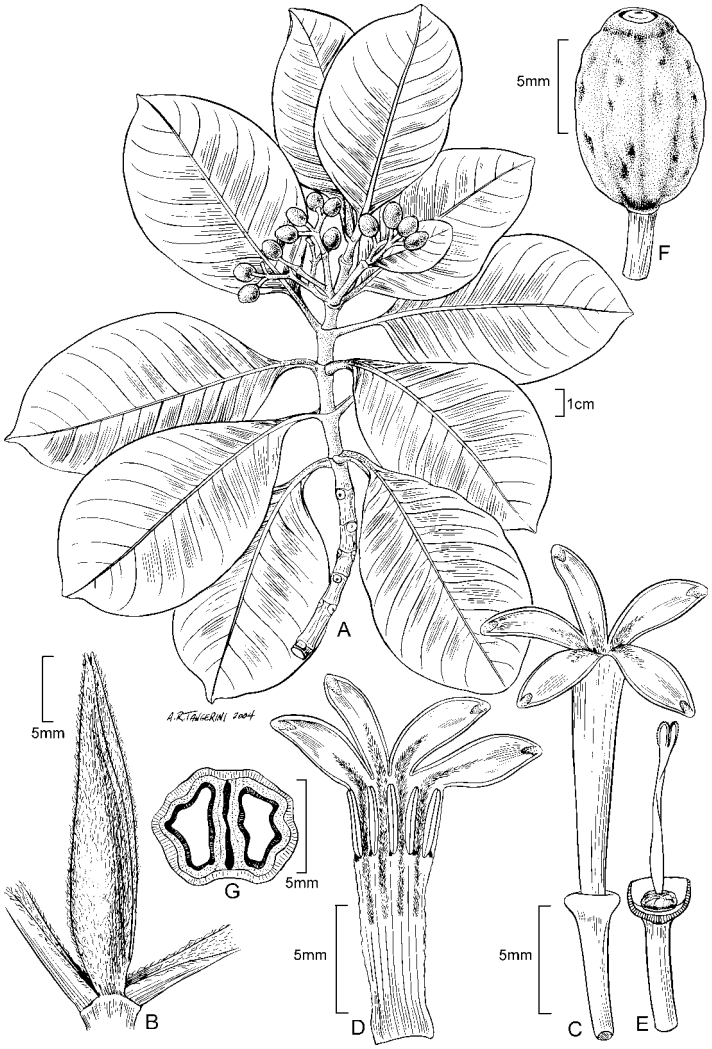
Supplementary Symposium Links on the Web

The Web site to the 6th Annual Smithsonian Botanical Symposium <http://persoon.si.edu/sbsarchives/sbs2006/> has many links and documents related to the conference. Included on the Web site is the full program, abstracts of the talks, links related to the speaker's presentations, and selected images from the various events. Additional items related to the symposium can be added to the list of links and documents by sending an E-mail to sbs@nmnh.si.edu.

Art by Alice Tangerini

Psychotria uapoensis Lorence & W. L. Wagner

A recently described species (*Allertonia* 9(1), 2005) from the Marquesas Islands, *Psychotria uapoensis* is known only from the island of Ua Pou and grows on the windswept and cloud-shrouded summit ridge of the island. More than a decade of exploration by David Lorence and Warren Wagner along with collectors Steve Perlman, Ken Wood, Liloa Dunn and several French collaborators Jean-Yves Meyer and Jacques Florence have increased the known vascular flora of the archipelago by 20% with the discovery of 60 species new to science. They are being illustrated by Alice Tangerini for publication. A flora of the islands is being developed online at <http://ravenel.si.edu/botany/pacificislandbiodiversity/marquesasflora/index.htm>.



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