

The Plant Press



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July-September 2003

Botany Profile

A Colossus of the Compositae

By Robert DeFilipps

He has named or described 2,800 new species and subtribes, a figure equal to one-quarter the number of flowering plants named by Carl Linnaeus, the originator of binomial nomenclature, and the equivalent of approximately one-tenth the total number of species in his chosen family of expertise, the immense Compositae (Asteraceae). His singular contribution of more than 650 publications advancing the taxonomy of the composites, as well as of the bryophytes (mosses and liverworts), the insect family Dolichopodidae, and many other groups, reflect both the previously under-investigated state of affairs in the classification of those organisms, and the prolonged exercise of a remarkable capacity for deciphering the taxonomic relevance of minutiae. Such is the world of Harold E. Robinson, curator of botany and Argus of the Asteraceae. Statistically prorated, to be in his league, a researcher would have to name one new species every day for 7.5 years.

Robinson was born in Syracuse, New York, in 1932. He majored in Botany for all degrees, and earned a B.S. from Ohio University in 1955 (Zoology minor), an M.S. from the University of Tennessee in 1957, with a thesis on the Scrophulariaceae of Tennessee under A.J. Sharp (Entomology minor); and a Ph.D. from Duke University, with a dissertation on the moss family Brachytheciaceae under Louis E. Anderson (Zoology minor) in 1960. His prolific career began as an assistant professor at Wofford College in Spartanburg, South Carolina (1960-1962), then shifted to

employment in Washington, D.C., as Associate Curator of lower plants (1962-1964) at the Smithsonian Institution, and successively as Associate Curator (1964-1971) and Curator of Botany from 1971 to the present.

An incisive, perennially questing mind has allowed him to delve, often with collaborators, into the taxonomy of groups as diverse as the bryophytes of many regions; green algae (a new genus *Struveopsis* from Diego Garcia, Indian Ocean, with Charlie Rhyne); the Brazilian members of the dicot family Hippocrateaceae, with Lyman Smith; scanning electron microscopy (SEM) of Cactaceae spines relevant to taxonomic changes; a new subtribe of rice-like grasses (oryzoid Poaceae) and study of *Houstonia* (Rubiaceae), both with Ed Terrell; a new genus of epiphytic Paraguayan mosquito-pollinated orchid (*Synanthes*) based on technical characters of the columella, with Pamela Balogh and Mercedes Foster; and 32 new species of Bromeliaceae, mostly in *Navia* and *Lindmania*, with Lyman Smith. Field work has taken him to Mexico, Guyana, Dominica (West Indies) and Australia.

Notwithstanding the demonstrable taxonomic breadth of the above, his major interest among flowering plants is now in the Compositae. This began as research with R.M. King in the Tribe Eupatorieae. The eupatorium tribe contains a familiar garden bedding plant, the purplish-blue "floss-flower" *Ageratum houstonianum*, but it is with the enormity of the wild Eupatorieae that Robinson has

labored. For example, just a glance at the South American journal *Ernstia* will reveal that in the Tribe Eupatorieae as represented in Venezuela with 35 genera, Robinson (with co-worker King) has named at least one species in 27 of the genera (V. Badillo, vol. 11. 2001). Similarly, new country records of species named by Robinson seem to appear everywhere, such as in Peru, from which three species of Eupatorieae previously regarded as endemic to Ecuador have recently been reported (*Cronquistianthus leucophyllus*, *Crossothamnus gentryi*, *Ophryosporus integrifolia*; H. Beltran & A. Granda, *Compositae Newsletter* 39. 2003). Later efforts have involved reorganizations of the Tribes Senecioneae, Heliantheae, Liabeae and Vernonieae, the latter being most actively pursued lately. Most of these reorganizations involved analyses of large "garbage-pit" genera that needed splitting, such as *Eupatorium*, *Senecio*, and *Vernonia*.

The Compositae are known to contain thousands of secondary metabolite chemicals such as alkaloids, acetylenes, and terpenoids, both beneficial and harmful, rendering the plants into "little poison factories," as Robinson calls them. An example of the lethality of certain members may be seen in the genus *Ichthyothere* (literally meaning "fish-poison"); Brazilian *I. terminalis* has acetylenic compounds so powerful that they make the fish jump out of the water when ingested as bait. In fact, the Tribe Eupatorieae itself takes its name from the

Continued on page 10

Visitors

Ann Sakai, University of California, Irvine; Caryophyllaceae (*Schiedea*) (4/3).

Harvey Ballard, Miami University (Ohio); Violaceae (4/4).

Molly Nepokroeff, University of South Dakota; Caryophyllaceae (4/8).

Gardene Maria do Sousa, Instituto de Botanica, Brazil; Xyridaceae and Bromeliaceae (*Aechmea* and *Orthophytum*) (4/9-4/10).

Maria das Gracas Wanderley, Instituto de Botanica, Brazil; Xyridaceae and Bromeliaceae (*Aechmea*, *Orthophytum*) (4/9-4/10).

Rebecca Bray, Old Dominion University; Fern Allies (*Isoetes*) (4/10).

Kerry Heafner, Miami University (Ohio); Fern Allies (*Isoetes*) (4/10).

Vicki Bryan, National Science Foundation; Herbarium and Collections Management (4/15).

Kristen Oberriight, National Science Foundation; Herbarium and Collections Management (4/15).

Beth Page, Archives of American Gardens; AABGA October 2003 Conference and Workshops (4/18).

Christina Flann, University of Melbourne; Asteraceae (*Nephelium*) (4/21).

Jennifer Dropkin, Private Individual; Collections Management (4/23).

Juan Carlos Montero, Universidad Nacional Autonoma de Mexico; Solanaceae (*Cestrum*) (4/23-4/24).

Michael Nee, New York Botanical Garden; Solanaceae (4/23-4/24).

Michael Sundue, New York Botanical Garden; Bolivian Ferns (4/23-4/24).

Francisco Morales, Instituto Nacional de Biodiversidad (INBio), Costa Rica; Guianas Apocynaceae and Asclepiadaceae (4/25-4/27).

Julia Scher, USDA, APHIS, PPQ; Noxious Plant Species (4/28-5/2).

Arthur Zangerl, University of Illinois (Entomology); Apiaceae (*Pastinaca sativa*) (4/29).

George Proctor, Institute of Jamaica (IJ); Identification of Jamaican Collections (5/2-5/9).

Julie Dragon, University of Vermont; Cyperaceae (*Carex*) (5/28).

Michael Woods, Troy State University; Fabaceae (Alabama *Lespedeza*) (5/29).

G.P. Lewis, Royal Botanic Gardens, Kew; Fabaceae (6/2-6/7).

Anne Bruneau, University of Montreal; Fabaceae (6/3-6/9).

Continued on page 5

Travel

Pedro Acevedo traveled to Puerto Rico and the Dominican Republic (5/14-8/12) to collect data and specimens in the karst region and to conduct general plant inventory.

Laurence Dorr traveled to Caracas, Venezuela (4/5-4/19) to collect plant specimens in the Teta de Niquitao-Guirigay National Monument and the Guaramacal National Park and use the herbarium in Guanare.

Robert Faden traveled to Ontario, California (3/30-4/5) to attend the Monocots III Symposium.

Maria Faust traveled to Belize City, Belize (4/30-5/15) to conduct research on dinoflagellates.

Vicki Funk traveled to Copenhagen, Denmark, and London, England (5/23-6/5) to present a paper and to study Asteraceae at the Royal Botanic Gardens Kew.

W. John Kress traveled to Ontario, California (3/31-4/5) to attend and present a research paper at the Monocot III Symposium, and to present a lecture at the Los Angeles County Arboretum and Botanic Garden; to New York City, New York (4/8-4/10) to present an invited lecture at Columbia University, Center for Ecological Conservation; to St. Lucia (5/2-5/16) to conduct field and laboratory work

in the Lesser Antilles; and to Copenhagen, Denmark (5/25-5/30) to participate in a symposium on plant diversity.

Mark and Diane Littler traveled to Carrie Bow Cay, Belize (4/2-4/17) to conduct ongoing research on coral reefs.

Dan Nicolson traveled to Bronx, New York (5/26-5/30) to work on the *Taxonomic Literature edition 2 (TL-2)* at the library of the New York Botanical Garden.

Alain Touwaide traveled to State College, Pennsylvania (4/4-4/5) to lecture at the annual conference of the Center for Medieval Studies; to Rome, Italy (4/24-4/27) to present a lecture at the 4th Congress of the International Society for the History of Nephrology; to Boston, Massachusetts (5/1-5/4) to attend the American Association for the History of Medicine meeting; to Kalamazoo, Michigan (5/8-5/11) to attend the 38th meeting of the Medieval Conference; and to Rome, Italy, (6/2-7/15) for an Earthwatch expedition studying Renaissance printed herbals at the National Library of Rome.

Liz Zimmer traveled to Boston, Massachusetts (4/13-4/18) to conduct research and consult with collaborators at Harvard University.



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Beyond Paradise

What should tropical biologists be doing in the 21st century as tropical habitats further degrade with the unchecked expansion of human populations and development? What are the major scientific questions that must be addressed by ecologists, systematists, evolutionary biologists, and conservationists, before tropical biomes are irrevocably converted to unrestorable land? The Association for Tropical Biology and Conservation (ATBC), which is headquartered in Botany at the Smithsonian, launched a major effort three years ago to define the top research priorities that should be pursued by tropical biologists during the first decades of the new century. The penultimate phase of this task was reached at the recent annual meeting of ATBC in Aberdeen, Scotland (Why tropical biologists are meeting in Scotland is another story), where the first draft of the "white paper" on priorities was presented to the membership.

The objectives of ATBC in this priority-setting process of defining tropical research priorities were three-fold. The first was to create a broad participatory forum to generate thinking on the current state of the tropics and tropical biology; the second was to bring together a multidisciplinary group of scientists to discuss and synthesize current areas of scientific activity in the tropics as well as future research activities; and the third was to disseminate the conclusions on priorities to a variety of audiences, including scientists, funding agencies, policy makers, and the public. The first two of these objectives were discussed and debated through a series of workshops and retreats in India, Panama, Washington, and Scotland; over 150 tropical biologists from at least 25 countries participated in these discussions. These efforts have been supported by ATBC, the Ashoka Trust for Research in Ecology and the Environment (Bangalore), the Organization for Tropical Studies, the Smithsonian Tropical Research Institute, the National Science Foundation, and the British Ecological Society. The process has worked and the document, tentatively entitled "Beyond Paradise: Meeting the Challenges of Tropical Biology in the 21st Century," is now being drafted.

This statement by ATBC is not the first attempt to set scientific goals for the tropics. A 1980 report, "Research Priorities in Tropical Biology," was published by the National Research Council of the US National Academy of Sciences. The Committee that composed the report was made up of 14 scientists from five countries and was chaired by Peter Raven. Twenty-one scientists representing an additional ten countries served on panels that made recommendations to this Committee. Many of the recommendations of that NRC Report are still relevant today and they have been reviewed carefully in the current priority-setting exercise. However, the world has changed much over the last two decades since that Report was published.

As noted by Tom Lovejoy: "There were two billion fewer people on the earth, the trans-Amazonian highway was yet to be built, and the Tree of Life had a much simpler architecture." More regrettably over that time period the world has lost 288 million hectares of tropical forests, nearly 15% of the total forest area that existed in 1980.

The recent discussions and deliberations led by ATBC have concluded that if tropical ecosystems and biodiversity are to be safely ushered through the environmental crises of the 21st Century, tropical biologists must conduct research in three central areas: 1) structure and functioning of tropical ecosystems with respect to diversity, productivity, and services; 2) anthropogenic effects on tropical diversity and ecosystems; and 3) conservation, restoration, and sustainable management of tropical diversity and ecosystems. One of the obvious changes in our future efforts that differs from the 1980 NRC report is the inclusion of humans as a central part of tropical environments. Although we as scientists must understand the "natural" functioning of tropical ecosystems, no longer is it enough to study these processes without considering the anthropogenic stresses that are also placed on these environments. For this reason a major recommendation will be that the social sciences must be fully integrated with the natural sciences to understand what is currently happening in tropical regions and what will happen in the future. In fact many of our colleagues feel that this integration is one of the top priorities for tropical biology. As stated by Achim Steiner, Director General of the IUCN, in an address at NMNH this month, "Nature works without conservation and it is the impact of humans on nature that requires out conservation efforts in the first place. However, following the World Summit on Sustainable Development in Johannesburg in 2002, the new paradigm for the environmental movement squarely puts humans and sustainability at the center of all international conservation efforts." Tropical biologists have also made this realization.

Many additional critical questions were discussed during the ATBC priority-setting process. Can and should scientists play an advocacy role in public policy? Can science be conducted in a "value-free" environment? How do we best transfer the bulk of tropical biology research to biologists that are citizens of tropical countries? Is tropical biology a discipline for which we can actually determine research priorities? The discussions in Aberdeen made it plain that these questions have not yet been fully answered. Now it is up to ATBC with input from tropical biologists around the world to formulate the final recommendations and priorities that will have the most impact on science and society in the foreseeable future.

Chair

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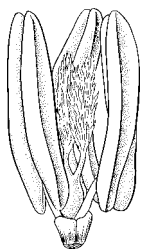
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John
Kress



Staff Research

On 27-29 May, **Dan Nicolson** visited the New York Botanical Garden to work on the *Taxonomic Literature* edition 2 (TL-2) Supplement 6 (F-G). Last September Nicolson and **Laurence Dorr** borrowed four boxes of the TL-2 master files to begin work on the final Supplement. The basic mission was to return the first four boxes and borrow the next four. However, Nicolson was able to finish two boxes while there. Since returning Nicolson has completed another two boxes making a total of eight boxes of a total of 85 boxes, through E. Fenzl, for which only four works were given in TL-2 Volume 1.



Staff Activities

Dan Nicolson led two spring wildflower forays for the Botanical Society of Washington on 5 and 12 April from the Old Angler's Inn up the C & O Canal towpath to Widewater, across Bear Island to the rocks overlooking the Potomac and back on the Billy Goat Trail. Lots of *Jeffersonia diphylla* (twin-leaf), *Dirca palustris* (leatherwood), and *Erigenia bulbosa* (harbinger-of-spring) were seen on the first trip.

On 29 May, **Rusty Russell** addressed the Virginia Academy of Sciences Annual Meeting in Charlottesville, Virginia. He spoke on the natural history of the Lewis and Clark Expedition.

Stanwyn Shetler was the botanical leader again this year for the Virginia Native Plant Society's (VNPS) annual wildflower tour of the Bruce Peninsula, Ontario, 7-14 June. He was assisted by his wife, Elaine, and tour leader and president of VNPS, Nicky Staunton. Among the many species seen were the yellow lady's-slipper, *Cypripedium*

calceolus; ram's-head lady's-slipper, *C. arietinum*; fairy-slipper, *Calypso bulbosa*; and the Great Lakes endemic, dwarf lake iris, *Iris lacustris*—all in peak flowering condition.

On 14 May, **Alain Touwaide** delivered an illustrated lecture at the DEA (Drug Enforcement Administration) Museum and Visitors Center on "Athena Contested: Psycho-active Substances in Classical Greece." Recent anthropological research has suggested that Classical Greek culture included non-rational components - among others the use of natural psycho-active products such as ergot, deadly nightshade and poppy. Apart from some archaeological remains of contested interpretation, evidence is lacking. This talk examined the topic and brought to light overlooked textual material. This new evidence makes the question of irrationality in Antiquity more complex, since textual data shows evidence of a good knowledge of psycho-activity.



Awards & Grants

A National Science Foundation grant has been awarded to Suzanne Fredericq (Principal Investigator, University of Louisiana at Lafayette), and Co-PIs **James Norris** (National Museum of Natural History, Smithsonian Institution), Max Hommersand (University of North Carolina at Chapel Hill), and Wilson Freshwater (University of North Carolina at Wilmington).

One of only 10 funded, this 5-year, multi-institutional NSF-Systematic Biology/PEET project, "*Monographic Research and Phylogenetic Investigations of the Ceramiales (Rhodophyta)*," will address the need for taxonomic research and training with one of the dominant and diverse algal groups in the marine environment, the red algae. Red algae are of great interest because they are common to abundant in a range of marine habitats worldwide, including rocky shores, kelp forests, seagrass beds, mangroves, coral reefs, sand-plains, and rock reefs. Ranging from the intertidal to deep-water depths of up to 927 ft., red algae are ecologically important as major primary producers, providing oxygen, food and shelter for a great number of invertebrates and fish. The Order Ceramiales is one of the most diverse, but least understood groups of marine red algae, and will form the core of the taxonomic work. Using specimen based research, the algal collections of the US National Herbarium and those of collaborators will be studied using various data gathering techniques and data analyzing protocols for morphological, anatomical and molecular sequence data. Students will be trained in field-work, collecting using SCUBA, and identifying and monographing species in the Ceramiaceae. The goal is to produce the first modern synthesis for the classification and phylogenetics of this species rich family, and to compile the information in an Internet accessible database that will connect species descriptions with images and publications related to them.

The grant is designed to ensure that there will be a new generation of red algal scientists with a background in both the classical elements of classification and the newer research tools and technologies to further the understanding of the red algae in the next decades. The research includes the training of at least two doctoral students, one postdoctoral fellow, and four undergraduate students in modern systematic methods. The project goals are to make many common and important algal components of marine environments accurately identifiable. This research will provide a predictive, conceptual framework for the evolution of a large number of other algal groups, as well as an easily accessible source for identification.

The prestigious Charles Robert Long Award of Merit was presented by the Council on Botanical and Horticultural Libraries (CBHL) to **Ruth Schallert**, Botany/Horticulture Branch Librarian in the National Museum of Natural History, on 13 June, at the New York Botanical Garden's LuEsther T. Mertz Library, Bronx, New York.

Schallert was chosen by the CBHL to receive the extraordinary award for a number of reasons, expressed in the citation on the certificate as follows: in recognition of extraordinary merit; with gratitude for outstanding contributions and service to CBHL; in acknowledgment of professional encouragement to colleagues; and in appreciation for many collaborative activities with scientists, librarians and students in the field of botanical libraries and literature. Her professional library service at the Smithsonian Institution began in 1966, yielding meritorious work including noteworthy collaborations with members of the CBHL as well as the American Library Association (ALA); Special Libraries Association (SLA); European Botanical and Horticultural Libraries Group (EBHL); and the Society for the History of Natural History.

Schallert's publications include an article with Sylvia Churgin entitled "History of the Smithsonian Libraries, with special emphasis on natural history," which appeared in *Journal of the Society for the Bibliography of Natural History* 9 (1980); and with James J. White entitled "Illustrations in the *Contributions from the U.S. National Herbarium, 1890-1974*," in *Huntia* 6 (1986). Details of her career in librarianship may be found in *The Plant Press* n.s. 3(1): 1, 10 (2000); on the recent merging of the Botany and Horticulture Libraries, *op. cit.* 6(2): 6 (2003); and on the plant species named for Ruth Schallert, the Philippine asclepiad *Hoya schallertiae* C.M. Burton, reported *op. cit.* 6(1): 8 (2003). Schallert is a past-president of the CBHL and was instrumental in designing the original bylaws for the Council.

On 13 May, **Alain Touwaide** was awarded the "2003 Award for Behavioral and Social Sciences" of the Washington Academy of Sciences during a ceremony held at Meadowlark Gardens in Vienna, Virginia. With the award, Touwaide becomes a member of the academy.

Departures

In June, **Gene Rosenberg**, a collaborator in the functional morphology laboratory of **Mark and Diane Littler**, moved to Miami to join the faculty of the Department of Biological Sciences at Florida International University (FIU). Rosenberg is the Associate Chair of this department of over 40 faculty members. At FIU, Rosenberg will teach Introduction to Marine Biology and other courses, in addition to pursuing his interests in biodiversity, biogeography, and ecology of Caribbean marine macroalgae. Rosenberg has arranged to place future algae collections in the herbarium of the Fairchild Tropical Garden. NMNH, FIU, and Fairchild are among the partners of the Miami-based Coalition for Excellence in Tropical Biology (CETroB).



Botany Seminar Series

On 15 April, **Robert DeFilipps** and Beverly Wolpert (George Washington University graduate student) presented a lecture entitled "Medicinal Plants of Haitian Voodoo," primarily on the use of plants for treating hookworm; many rural Haitians believe that illnesses are brought by the spirits (lwa) of vodou.

On 29 April, **Gary Krupnick** presented a seminar entitled "A Test of Southeast Asian Conservation Hotspots and Eco-regions Using Taxonomic Data."

On 5 June, **Rusty Russell** presented a lecture entitled "The Plant Collections of the U.S. Exploring Expedition 1838-1842."

On 17 June, **Susan Pennington** presented a lecture entitled "Rhyme or Reason: Floristic Analyses of Habitat Descriptions in an Old English Herbal."

Visitors

Continued from page 2

Marie Fougere, University of Montreal; Fabaceae (6/3-6/8).

Tracey Slotta, Virginia Polytechnic University; Malvaceae (*Iliamna*, *Malacothamnus*, *Phymosia*) (6/3-6/7).

Bente Kiltgaard, The Natural History Museum, London; Fabaceae (6/5-6/10).

Muriel Poston, Howard University, Washington, D.C. (currently assigned to National Science Foundation); Loasaceae (6/11).

Herbert Kessler, Fairchild Tropical Garden; Cocos Island, Costa Rica (6/12-6/13).

Jen Trusty, Fairchild Tropical Garden and Florida Atlantic University; Cocos Island, Costa Rica (6/12-6/13).

Michael Barker, Miami University (Ohio); Ferns (*Adiantopsis*) (6/13-6/14).

Mac Alford, Cornell University; Guianan Flacourtiaceae (6/17-6/20).

Seung Lak An, National Science Museum, South Korea; Collections Management (6/17).

Hojoon Kim, National Science Museum, South Korea; Collections Management; Araceae (6/17).

Sang Myong Lee, National Science Museum, South Korea; Collections Management (6/17).

Mark Lyle, Private Individual; Poaceae (*Cortaderia*) (6/18-6/19).

Bruce Hoffman, University of Hawai'i; Suriname Lianas (6/23-6/26).

Ximena Londono, Colombia Bamboo Society; Poaceae: Bambusoideae (6/23-7/5).

Liliana Giussani, Instituto Botanica Darwinion, Argentina; Poaceae (*Poa*) (6/25-8/7).

Tracey Parker, Private Individual; Guatemalan Trees (6/30-7/3).



Harry Potter and the US National Herbarium

As children and adults read the latest *Harry Potter* book by J.K. Rowling throughout the United States and the rest of the world this summer, it should be interesting to note that a collected plant specimen housed in the US National Herbarium has been named after a word found in the *Harry Potter* series. Jason Grant, a former intern of retired Botany curator Lyman Smith (1989), named a new species of the gentian family after a term from *Harry Potter and the Chamber of Secrets*. The plant *Macrocarpaea apparata* J.R. Grant & Struwe is described in the June 27 issue of *Harvard Papers in Botany* [8(1): 61-81, 2003]. The species name, *apparata*, is drawn from the term “to apparate” as in apparition, a verb used throughout the *Harry Potter* book. Rowling uses the word to refer to a wizard’s ability to disappear and reappear elsewhere instantaneously.

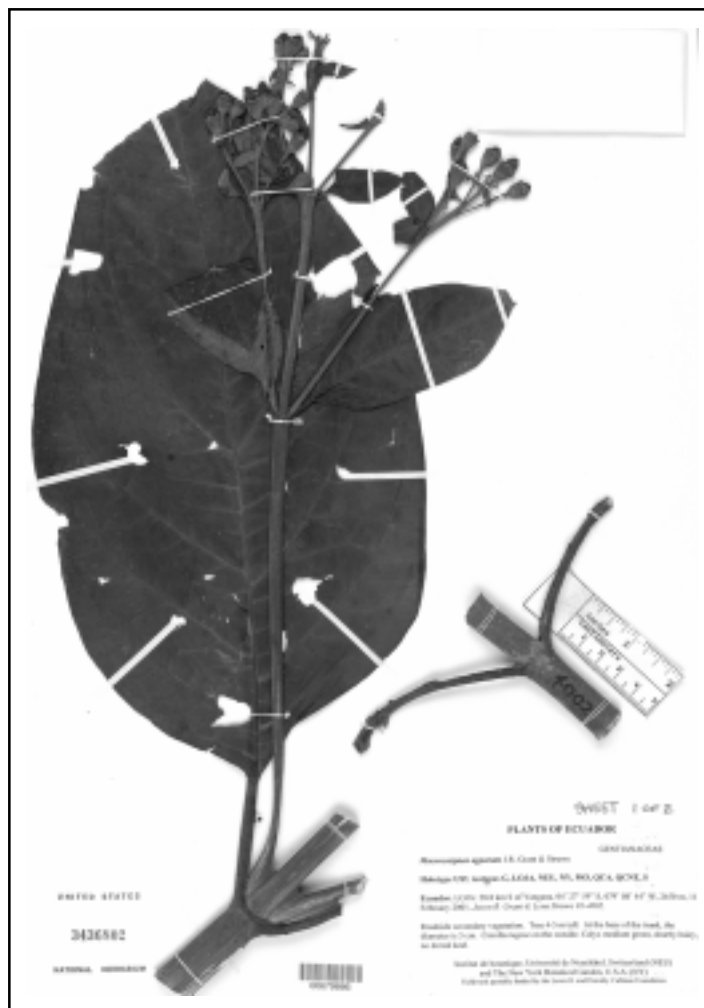
Grant, now a graduate student completing a Ph.D. degree on the genus *Macrocarpaea* (Gentianaceae) at the University of Neuchâtel, Switzerland, and Lena Struwe, an assistant professor at Cook College at Rutgers, The State University of New Jersey, discovered the species while doing field work in southern Ecuador in 2001 in Parque Nacional Podocarpus, one of the largest National Parks in the Andes. They were traveling along a road in the rain forest when they suddenly found a very strange looking plant without flowers. Since the plant had no flowers or fruits they could not be sure it was a gentian, and if it was, it was a very unique-looking

one. They continued on the road and about the time they were ready to give up due to rain and impending darkness, a

flowering tree of this plant suddenly appeared, or ‘apparated.’ From this event, the species got the name ‘*apparata*.’

“When we found the plant, the word came to mind,” Grant says. “We actually decided on the name together, that day in the field. Our collection is the only one of this species.” The holotype is housed in the US National Herbarium. Grant describes the plant as “a small tree, 12-15 feet tall, full with yellowish-white, bell-shaped flowers adapted to nocturnal pollination by bats and moths.”

Struwe had previously identified a new gentian genus in Brazil *Aripuana* and a dozen new gentian species, while Grant has more than 20 new species of *Macrocarpaea* to his credit. Their research was funded by the New York Botanical Garden, Rutgers University and the Université de Neuchâtel, Switzerland.



The holotype of *Macrocarpaea apparata* J.R. Grant & Struwe is housed in the US National Herbarium.



Macrocarpaea apparata in flower in Loja, Parque Nacional Podocarpus, Ecuador. (Photo by J.R. Grant)

By Gary A. Krupnick

In a previous issue of *The Plant Press* n.s. 4(4) (2001), the research of plant conservation biology was profiled. As editor, I thought it would be interesting to include an estimate of how many species in the US National Herbarium are considered extinct. After speaking with the collections manager, **Rusty Russell**, it was determined that such an estimate was not available.

This summer, **Amara Myaing**, an intern for the Plant Conservation Unit, has been attempting to answer such a conundrum. Myaing graduated from Gettysburg College this past year, obtaining a bachelor's degree in Environmental Studies. During the past two months, Myaing has been combing through the herbarium, pulling collected specimens that have been identified as "Extinct" and "Extinct in the Wild" by the 1997 IUCN

Red List of Threatened Plants. By identifying which species in the herbarium have gone extinct, extra care can be given to those specimens, as they are among the last of their kind that exist on Earth. If new specimens that arrive at the herbarium can be identified as one of those extinct, then IUCN can be contacted to update the *Red List*.

Forty-seven of the 380 listed extinct species reside in the herbarium. Among the finds are *Mimulus whipplei* A.L. Grant (Scrophulariaceae), known only from the type collection (in 1854 from Murphys, California), and *Romulea sulphurea* Bég. (Iridaceae), discovered and last collected in 1897, in Cape Province, South Africa. The results are preliminary and the research is on-going. As the search continues, the results will be compiled and presented on a Botany Web page.



Since its discovery in 1897, *Romulea sulphurea* Bég. has never been found again.

Botanical Fun Blossoms at the 2003 "Sunflower Fest"

On 17 May, the National Museum of Natural History hosted the "Sunflower Fest," which was presented in conjunction with the museum exhibit "A Passion for Plants—Contemporary Art from the Shirley Sherwood Collection." The event reached some 2,500 adults and children in spite of the temperature being 20 degrees cooler than normal and three days of rain prior to the event. Within two tents in the east parking lot of the museum, many activities took place:

- Adults and authors trained in Reading is Fundamental (RIF) read stories about gardening and flowers to children;
- Visitors of all ages colored their own sun visor, state flower, and a sunflower picture that was made into a button pin;
- In "Sow a Seed," children were encouraged to take a Jiffy pot, put in soil mix, sow sunflower seed and then take it home in a baggy with growing instructions. Botany intern Mariana Ibarcena-Escudero was an enthusiastic volunteer;
- Botanical artist **Alice Tangerini** impressed visitors with her scientific

illustrations and discussed the illustration process and use;

- **Linda Hollenberg, Greg McKee, and Deborah Bell** displayed collections from the U.S. National Herbarium and fresh materials, exhibiting plants that create the ingredients for a candy bar, a variety of commonly eaten members of the Rosaceae and various members of the Asteraceae. Poison ivy and 'look-alikes' were also a popular display;
- Honeybee and caterpillar costumed characters were well received as they walked around the museum and about the Mall encouraging families to attend the festival;
- Sakata Seed America donated 200 stems of fresh sunflowers used to decorate the tent and then were given to visitors; and
- In a unique photo opportunity, "sunflower people" were cut out of sunflowers 3-, 4- and 6-feet tall for people to stand behind, put their faces in the flower bloom areas and have a Polaroid photo taken for free.

The success of the event was due to the collaborative effort of Botany, the

Smithsonian Institution's Department of Horticulture Services Division, the National Museum of Natural History's Department of Education, Reading is Fundamental (RIF), and the 53 National Garden Bureau Member Companies.

Book on Forsters Botanical Work is Published

Dan Nicolson and former Emeritus Curator F. Raymond Fosberg (died 1993) have published "The Forsters and the Botany of the Second Cook Expedition (1772-1775)," a 758-page book due July 2003. The Forsters (father and teen-aged son) and the Linnaean student Anders Sparman were the scientists on the 2nd Cook Expedition and, unlike those of the 1st Cook Expedition, actually published their findings. Hence their publications and specimens underlie Pacific botany (zoology and anthropology). They were falsely accused of being incapable of original work and having copied from the manuscripts of the 1st Cook Expedition which led to the importance of their work being widely ignored.

Report from *Monocots III*

By Robert Faden

Monocots III, the Third International Conference on the Comparative Biology of the Monocotyledons and the Fourth International Symposium on Grass Systematics and Evolution, was hosted by Rancho Santa Ana Botanic Garden, Claremont, California, on 30 March to 4 April, at the Ontario Convention Center in Ontario, California. The first grass symposium in this series was hosted by the Smithsonian Institution in 1986. Previous joint monocot and grass symposia took place at the Royal Botanic Gardens, Kew (1993) and in Sydney, Australia (1998). The meetings in California were the first to include a poster session and to encourage undergraduate participation.

The meetings began each day with a plenary session on topics of broad interest, such as monocot phylogeny, floral evolution in monocots, and evolution of monocot pollen. These were followed by four or five concurrent "organized sessions" on specific topics and contributed paper sessions. On the last day of the conference, there were only parallel sessions, which were followed by the plenary closing meeting.

The organized sessions were mainly focused on systematics and evolution within a single, large lineage, such as Cyperales, Dioscoreales, Liliales and Pooideae, but some sessions were broader in their coverage, e.g. "Basal Monocots," and some, such as "New Approaches in *Trillium*," were narrower. Among Smithsonian Botany participants, **Paul Peterson** organized the session "Classification and Biogeography of New World Grasses" and delivered the paper (also co-authored by Travis Columbus and **Susan Pennington**) "Classification and biogeography of New World Grasses: Chloridoideae." He also was a co-author on a paper that was delivered by former Botany intern (and Research Training Program participant) Jeff Saarela. **Robert Soreng** presented the paper "Classification and biogeography of New World Grasses: Pooideae" in Peterson's session and co-authored two other grass papers. **Robert Faden** organized the session "Advances in Commelinales" and co-authored the paper "Subtribal relationships in the tribe Tradescantieae (Com-

melinaceae) based on *rbcL* and *ndhF* sequences."

John Kress, with Mark Newman (Royal Botanic Garden, Edinburgh), co-organized the session "Bananas to Arrowroot: The Phylogeny and Biogeography of the Major Clades of the Zingiberlaes" and presented the paper "Tropical Zingiberales: time, place, and pattern of diversification." Kress also co-authored two other papers and three posters.

Attendees at the conference included other Smithsonian affiliates, notably former interns Chris Hardy, Jason Grant and Ken Cameron, former Smithsonian graduate fellow Tim Evans, former post-doctoral fellow Linda Prince, and current post-doctoral fellow Aizhong Liu. The organizer of the conference, Travis Columbus, was also a former Smithsonian graduate fellow. Current Smithsonian graduate student fellows in attendance were Tanya Rehse (Duke University), Kyle Williams (Duke University), and Chelsea Specht (New York University).

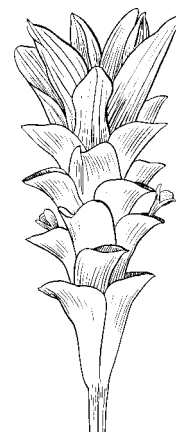
There were no major shifts in the patterns of relationships among the major



groups of monocots since 1995, concluded Mark Chase during one of the plenary sessions. Increased data had produced the same topology but better support. The position of some previously unplaced families was now clear.

In conjunction with the conference, numerous field trips were held before and afterwards. During the conference, visits and tours of the Rancho Santa Ana Botanic Gardens and Huntington Gardens were organized.

The next meeting in this series will be hosted by the Universities of Copenhagen and Aarhus in 2008.



Celebrating Admiral Wilkes

The Botany Section cosponsored an exhibit, "Celebrating the Legacy of Admiral Charles Wilkes," at the U.S. Botanic Garden during April 2003. The exhibit included herbarium specimens from the U.S. Exploring Expedition (under the command of Wilkes) accompanied by living representatives of the featured specimens, and several of the original publications resulting from this expedition.

A special celebration was held on 3 April, to commemorate the 205th birthday of Admiral Wilkes. The birthday celebration included tours, a performance by The Navy Sea Chanters

and a number of lectures. **Rusty Russell** presented a seminar on "The Plants of the U.S. Exploring Expedition." The plant exploration theme

continued through the month via a special lecture series. On 10 April, **John Kress** presented a lecture on "Plant Exploration in the Golden Land of Burma," highlighting current research projects in Myanmar; on 17 April, **Vicki Funk** presented a lecture on "Collecting Expeditions in the Andes"; and on 24 April, **Laurence Dorr** presented a lecture on "Plant Exploration from Madagascar to the Andes."

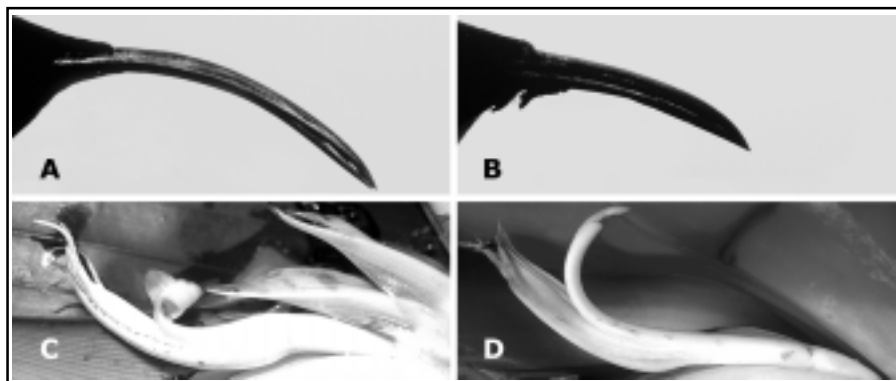


Evidence Found for Adaptation in a Plant-Hummingbird Association

In the 28 April issue of *Science*, **W. John Kress** and co-author Ethan Temeles, professor of biology at Amherst College, describe the principle of co-adaptation in an association among two *Heliconia* plant species and the pollinating Caribbean purple-throated carib hummingbird. This hummingbird is the sole pollinator of *H. caribaea* and *H. bihai*.

Kress and Temeles traveled to two Lesser Antillean islands to study this plant-hummingbird mutualism. Each sex of the bird prefers and feeds most efficiently from the *Heliconia* species whose flowers correspond to its bill size and shape, which is consistent with the predictions of ecological causation and feeding adaptation. The flowers of *H. caribaea* correspond to the short, straight bills of the male birds; the flowers of *H. bihai* correspond to the long, curved bills of the females.

On St. Lucia, where *H. caribaea* is rare, *H. bihai* compensates by evolving a second color morph with flowers matching the bills of males. Male birds at these sites are associated primarily with the red-green bracted morph of *H. bihai*, whereas females visit both the red-green and green-



Polymorphisms in the flowers and hummingbird bills in St. Lucia and Dominica, West Indies. (A) *Eulampis jugularis*, female bill; (B) *E. jugularis*, male bill; (C) *Heliconia bihai*, flower; (D) *H. caribaea*, flower. *Eulampis jugularis* is also known as the Purple Throated Carib.

bracted morphs. In contrast, the pattern of floral dimorphism on Dominica is completely reversed from the pattern on St. Lucia. *Heliconia bihai* has only one color morph on Dominica: red with a yellow stripe. *Heliconia caribaea* has two color morphs, red or yellow, which correspond to the bills of females. In addition, the nectar rewards of all *Heliconia* morphs are consistent with each sex's choice for the morph corresponding to its bill morphology and energy requirements, supporting the hypothesis that feeding preferences have driven their co-adaptation.

The complete reversal between St. Lucia and Dominica in floral dimorphism of the two *Heliconia* species together with an increase in the length and curvature of flowers of the red *H. caribaea* morph to match the bills of females provides a "natural experiment" on the two islands for detecting co-adaptation between bill morphology of this hummingbird species and the size and shape of *Heliconia* flowers. Research on this co-adaptive system is now on-going through support by the Smithsonian Institution Neotropical Islands Research Program.

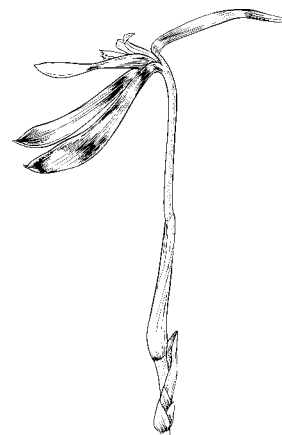


This photograph of a hermit hummingbird (*Phaethornis longuemareus*) at a flower of *Heliconia trichocarpa* was chosen for the cover of *Science* 300 (5619), 25 April 2003. (Photo by Phil Savoie)

2,000-Year Old Grape Seeds Discovered

Four Botany Section staff and research associates, **Robert Faden, Dan Nicolson, Steve Smith and Aaron Goldberg**, recently examined seeds from sediment cores obtained at 5 to 7 m in Abu Qir Bay off the coast of Egypt from the submerged city of Eastern Canopus by Paleobiology curator Daniel Stanley. The older seeds were approximately 2,000 years old, while the younger ones, from near the core-tops, were of more recent origin. Museum specialist Tom Jorstad brought the samples to Botany where they were examined under a dissecting microscope. Two of the samples resembled watermelon seeds, but because of their poor state of preservation more detailed study will be required to identify them. Two other samples stumped everyone, although one of them looked like a stone from a fleshy

fruit, such as an olive. The most satisfying result was the certain identification of grape seeds from the 2,000-year old horizon. These very closely resembled modern grape seeds.



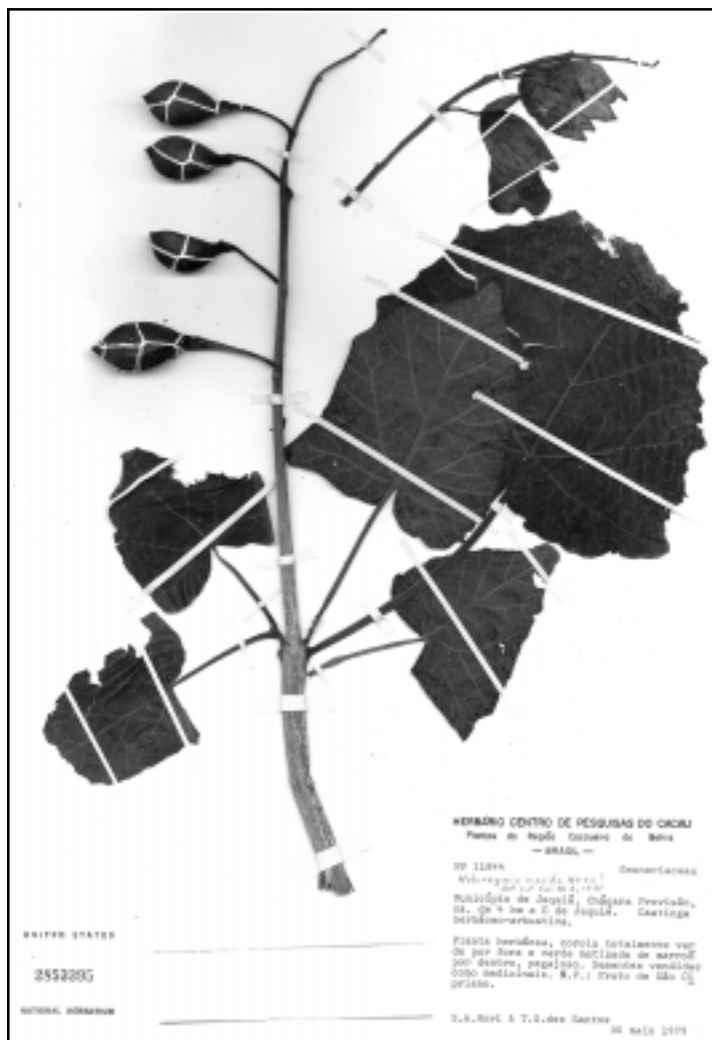
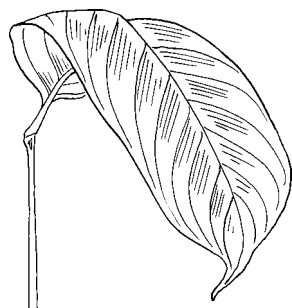
Holoregmia Nees: Rediscovered or Overlooked?

By John Boggan

A recent article in *Kew Bulletin* (Harley et al. 2003) announced the “rediscovery” of a long-lost genus of Martyniaceae, *Holoregmia* Nees. The authors comment, “Until very recently [that is, since the collection of the type specimen in 1817] no other material of *Holoregmia* has been detected.... It is remarkable that this most striking plant has for so long remained unknown in the botanical community.”

A search of the holdings of Martyniaceae in the United States National Herbarium (US) revealed that this genus was not as unknown as the authors of the article may have thought. In fact, there are two sheets in the US herbarium, one collected in 1979 (Mori & dos Santos 11844), the other in 1985 (Hatschbach & Silva 50071). Both sheets were tentatively identified as *Holoregmia viscida* Nees by US herbarium staff member **Stephen F. Smith** in 1991 and filed in the herbarium folder for that species. The specimens are excellent (the Mori collection has both flowers and fruit) and are good matches for the detailed description of the species given in the article. Both collections presumably have duplicates at other herbaria (the Mori collection is surely at NY as well as US) but neither collection is cited in the paper. No medicinal uses or vernacular names are mentioned in the paper, but according to the Mori specimen, the seeds are used medicinally and the vernacular name is “fruto de São Cipriano.” One interesting note, however, is that on both US specimens the flower color is described as “verde” (green) whereas the article describes the flowers as “pale ochraceous yellow.”

Harley, R.M., Giulietti, A.M. & dos Santos, F.A.R. 2003. *Holoregmia* Nees, a recently rediscovered genus of Martyniaceae from Bahia, Brazil. *Kew Bull.* 58(1): 205-212.



A 1979 collection from Brazil of *Holoregmia viscida* Nees resides in the US National Herbarium.

Robinson

Continued from page 1

genus *Eupatorium*, which has many medicinal uses. It was named by Tournefort ex Linnaeus to commemorate King Mithridates VI *Eupator* (132-63 B.C.), who ruled the district of Pontus in Asia Minor along the Black Sea near Armenia. Mithridates the Great overcame his paranoid fear of poisoning by slowly administering to himself small doses of poison from a species of *Eupatorium* in order to develop an immunity; alas, he was later killed by a guard and Pontus annexed to the Roman Empire. In dealing with the great number of chemicals in the Compositae as they relate to chemosystematics, King and Robinson began a long period of

collaboration with the late Ferdinand Bohlmann of the Technical University in Berlin, who had a grant to discover secondary compounds mostly amongst the acetylenes and sesquiterpene lactones. This resulted in the publication of a series of 231 articles with Bohlmann and co-workers, mostly in the journal *Phytochemistry* in the 1970s and 1980s, detailing new compounds. Some derived papers have treated how these secondary metabolites relate to the taxonomy of the Compositae.

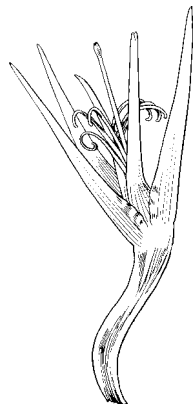
As evidence for the need to base phenetic plant taxonomy on good diagnostic character analysis, in 1970 Robinson and King presented to the world a classic

article entitled “The new synantherology” (*Taxon* 19: 6-11) (Compositae were once called Synanthereae for their syngeneous (fused) anthers), recognizing the need to stress dozens of hitherto overlooked or inadequately used features of microscopic structures, and encouraging actual observation of such traditional characters as the form of style-branches in the Asteraceae. Also in the category of constructive criticism is his opinion of cladistics, which was articulated during the early use of phylogenetic systematics in a 1986 article, entitled “A key to the common errors of cladistics” (*Taxon* 35: 309-311).

Remarkably, a very special part of Robinson’s research itinerary deals with insect taxonomy. Animals are a somewhat unusual focus for a botanist, although other departmental botanists are dealing with syndromes of tropical animal-plant relationships of pollination by insects, birds, bats and other mammals. In Robinson’s case, the insects under study are tiny, often bright metallic green-bodied, predatory flies of the family Dolichopodidae. They frequently occur in proximity to water bodies, and consume mosquito larvae. True to his university days when interested in entomology, Robinson has described over 200 new species and a half-dozen genera of dolichopodid flies, while trays of undescribed species await his future attention. In fact, one fly has been named in his honor, and he has derived the most personal satisfaction (what scientists call “fun”) from the study of these dolichopod (literally, “slender-footed”) creatures.

Over the years, many persons have had an opportunity to work as technicians and research assistants with Robinson, including Smithsonian Research Training Program administrator Mary Sangrey. His current assistant is Marjorie B. Knowles, and a summer intern, Abigail Moore from the University of Utah (Salt Lake City), is studying Andean and Brazilian species of the composite *Viguiera*. Upon the death of José Cuatrecasas, who left an enormously comprehensive but unfinished manuscript on the Espeletiinae, a subtribe of Heliantheae in the Asteraceae, it has been the task of Robinson to re-work the manuscript on these fascinating plants of the páramo and subpáramo areas in the high northern Andes. Having completed three asteraceous tribes for the *Flora of Ecuador* and the Eupatorieae for *Flora*

Mesoamericana, there seems to be no end in sight for this tireless taxonomist.



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Temeles, E.J. and **W.J. Kress**. 2003. Adaptation in a plant-hummingbird association. *Science* 300: 630-633.



Art by Alice Tangerini

***Navia aliciae* L.B. Smith, Steyermark & H. Rob.**

This species of *Navia* was one of a group of Venezuelan bromeliads given to **Alice Tangerini** to draw by **Harold Robinson** and **Lyman Smith** in 1982 for publication in the journal *Acta Botanica*. After drawing several of the specimens, Tangerini was skeptical of some of the characters used to distinguish the species. After some investigating, she found new characters separating it from its relative, *Navia nubicola*, and thus had a species named in her honor. A copy of a letter, found with the drawing, written by Smith to Jim Luteyn reads, "...with her deft fingers and sharp eyes, she discovered some characters which altered our concepts considerably, hence, *Navia aliciae*."



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