Department of Systematic Biology - Botany & the U.S. National Herbarium

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Botany Profile

With Liberty and *Justicia* for All

By Robert DeFilipps

Justicia is an attractive genus in the dicot family Acanthaceae. It is named for James Justice (1698-1763), an early tulipomaniac and the first person in England to grow a pineapple to the fruiting stage. All botanists and horticulturists, and numerous other visitors to the tropics, are familiar with the "shrimp plant," an evergreen shrub with arching spikes having conspicuous, coppery bronze, overlapping bracts resembling the carapace of a large shrimp. The technical name of this widely cultivated plant, once endemic to Mexico, is *Justicia brandegeana* Wasshausen & L.B. Smith. The joint authors of the species, Dieter C. Wasshausen (Acanthaceae and Begoniaceae specialist) and Lyman B. Smith (Bromeliaceae and Begoniaceae specialist, deceased) have remained associated in a number of ways by mutual botanical interests over the years.

Dieter Carl Wasshausen, curator in the United States National Herbarium (US), was born in Jena, Germany in 1938. After the Second World War, his father, an eminent German rocket scientist, settled the family in New Jersey. Later, Dieter Wasshausen joined the U.S. Army to spend six months in Greenland testing the rate of movement of nuclear fallout radiation on the Greenland Icecap. His three degrees were earned at George Washington University (Washington, D.C.): B.S. in 1962; M.S. in 1965 with a thesis on Acanthaceae for C.L. Lundell's *Flora of Texas*; and Ph. D. in 1972 with a dissertation monograph of the genus *Aphelandra* (Acanthaceae). The major advisor for his degrees was Lyman Smith, curator in the Smithsonian Institution's Department of Botany.

Wasshausen began working in Smithsonian Botany on May 20, 1962, as a technician with Velva Rudd, the Fabaceae expert. In a span of 14 years, he worked upwards from technician to the position of Chairman of the Botany Department, which he assumed in 1976 and held until 1982. Prior to that he had been an associate curator from 1969 to 1976, and later became a full curator from 1982 to the present time. A great affinity for field collecting and exploration pervades his botanical interests, and one early influence was his opportunity to peruse the vast collections that had recently been brought back from Amazonian Peru by J.J. Wurdack. At nearly the same time it was realized that Emery C. Leonard (1892-1968), an Acanthaceae specialist at the Smithsonian, had abruptly left behind eight herbarium cases of Texas Acanthaceae, and Lyman Smith suggested that Wasshausen might want to examine them. This led to his master's study as a treatment for Lundell's *Flora of Texas*, and was the genesis of a lifelong interest in the New World Acanthaceae.

In the 1980s he diverged slightly to collaborate with L.B. Smith and R.M. Klein in a study of the taxonomically difficult grass family (Poaceae) for the *Flora Ilustrada Catarinense*, a flora of the state of Santa Catarina, Brazil, resulting in 998 pages of text. Wasshausen's excursions into the taxonomy of begonias (Begoniaceae) also began with the stimulus of Smith, and their first joint paper on the subject was on begonias in Ecuador (1979), followed by a treatment for the *Flora of Ecuador* in 1987. In addition to those previously mentioned, Wasshausen has contributed family taxonomic treatments of Acanthaceae for the flora of Texas by Correll & Johnston, and of the Galapagos Islands, Dominica, Pico das Almas (Bahia, Brazil) and Venezuelan Guayana, as well as for checklists or catalogues of the family in the three Guianas (Guyana, Suriname, French Guiana), French Guiana (edited by Cremers & Hoff), and Peru.

Among his numerous begonia publications is a treatment of the family for the *Flora of Venezuela* (1989), and the world-scope treatment in the definitive *Begoniaceae, Edition 2, Part I: Annotated Species List; Part II: Illustrated Key, Abridgement and Supplement*, by J. Golding and D.C. Wasshausen, which recently appeared in *Contrib. U.S. Nat. Herb.* 43: 1-289 (2002); its precursor (ed. 1) appeared in *Smithsonian Contrib. Bot.* 60: 1-584 (1986), of which Wasshausen was a co-author with L.B. Smith, J. Golding and C.E. Karegeannes.

Altogether, Wasshausen has described approximately 247 new species in various families, and five new species have been named for him, including the composite *Vernonia wasshausenii* S.B. Jones from Brazil; the melastome *Tibouchina wasshausenii* J.J. Wurdack from Peru; and *Vellozia wasshausenii* L.B. Smith & E.S. Ayensu from Brazil. Many of the new species in both categories have been collected during his strenuous field work of the past

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Travel

Vicki Funk traveled to Urbana, Illinois (7/1 – 7/3) to attend the annual meeting of the Society for the Study of Evolution (SSE); to Madison, Wisconsin (8/2 – 8/8) to attend the annual meeting of the American Institute of Biological Sciences (AIBS) and to collect Asteraceae for research; to Patras, Greece (9/11 – 9/16) to attend the Sixth International Congress on Systematic and Evolutionary Biology (ICSEB-VI); and to London, U.K. (9/17 – 9/23) to conduct herbarium work at the Royal Botanic Gardens, Kew.

Laurence Skog traveled to Costa Rica (7/14 – 7/23) to conduct field work and herbarium studies; to Scotland (9/23 – 10/2) to participate in the Gesneriaceae workshop at Royal Botanical Gardens in Edinburgh; and to Tampa, Florida (10/12 – 10/16) to visit Selby Botanical Garden and to select materials for loan.

W. John Kress traveled to Panama (7/28 – 8/4) to attend the annual meeting of the Association for Tropical Biology; and to Miami, Florida (9/20 – 9/22) to attend the biannual symposium of the Coalition for Excellence in Tropical Biology (CETroB).

Paula DePriest traveled to Hartford, Connecticut (7/25 – 7/28) to attended the American Bryological and Lichenological Society meeting at the University of Connecticut.

Maria Faust traveled to Madison, Wisconsin (8/4 – 8/7) to attend the annual meeting of the Phycological Society of America (PSA).

Warren Wagner traveled to Madison, Wisconsin (8/4 – 8/8) to present a talk at the annual meeting of the Botanical Society of America (BSA).

Liz Zimmer traveled to Madison, Wisconsin (8/4 – 8/8) to present a poster at the annual meeting of the Botanical Society of America (BSA); and to Cambridge, Massachusetts (8/21) to discuss collaborative opportunities.

Paul Peterson traveled to Madison, Wisconsin (8/4 – 8/8) to present a talk on Chloridoideae (Poaceae) at the annual meeting of the Botanical Society of America (BSA); and to Mexico (9/15 – 10/20) to collect grasses.

Robert Faden traveled to London, U.K. and Nairobi, Kenya (8/4 – 8/25) to study collections of Commelinaceae at the Royal Botanic Gardens, Kew and East African Herbarium, National Museum of Kenya.

Laurence Dorr traveled to Caracas, Venezuela (8/8 – 8/29) to collect plant specimens in the Teta de Niquitao-Guirigay National Monument and the Guaramacal National Park and use the herbarium in Guanare; and to Bronx, New York (9/24 – 9/27) to visit the New York Botanical Garden and to work on *Taxonomic Literature II*, Supplement F-G.

Pedro Acevedo traveled to Puerto Rico (8/15 – 9/7) to continue a survey on the vascular plant flora of karst limestone areas; and to Bronx, New York (9/27 – 9/28) for a visit to the New York Botanical Garden.

Gary Krupnick traveled to Patras, Greece (9/12 – 9/17) to co-chair a symposium and present a paper at the Sixth International Congress on Systematic and Evolutionary Biology (ICSEB-VI).

Dan Nicolson traveled to Bronx, New York (9/24 – 9/30) to visit the New York Botanical Garden and to work on *Taxonomic Literature II*, Supplement F-G.

Mark and **Diane Littler** traveled to Panama (10/8 – 10/22) to conduct research on coral reefs in Bocas del Toro.

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Visitors

Katherine Smith, Private researcher; Peruvian plants (7/17).

Katharine Lofdahl, University of Guam; Tree ferns (8/14 - 8/16).

Jeff Saarela, University of Alberta, Canada; *Bromus*, *Brachyelytrum* (Poaceae), *Acorus* (Acoraceae) (8/16 - 8/17).

Michael Tamessar, University of Guyana, Georgetown; Biological Diversity of the Guianas Program (8/18 - 8/28).

Roger Troutman, Sprint Corporation (retired); Independent research (8/26 - 9/8).

Susan Grose, University of Washington, Seattle; Asteraceae (8/27 - 9/7).

Patricia Tester, Team Leader, Lower Food Dynamics and Plankton Ecology, National Marine Fisheries Service, NOAA; Biodiversity of dinoflagellates and copepods in coral reef-mangrove ecosystems (9/6).

Robert Raguso , University of South Carolina; Pollination biology (9/5 - 9/6).

Jerrold Davis, Department of Botany, Cornell University; *Puccinellia* (Poaceae) and *Phytolacca* (Phytolaccaceae) (9/12 - 9/13).

Hestor Bell, Rancho Santa Ana Botanic Garden, California; Poaceae (9/16).

Frederica Bowcutt, The Evergreen State College; *Lithocarpus* (Fagaceae) (9/18).

Terry Macfarlane, Department of Conservation and Land Management; Poaceae, DELTA (9/18 - 9/19).

Gerrit Davidse, Missouri Botanical Garden, St. Louis; Identification of grasses collected by Paul Peterson (9/24 - 10/14).

Tarciso Filgueiras, Instituto Brasileiro do Geografia y Estatística, Brazil (IBGE); Identification of grasses collected by Paul Peterson (9/28 - 11/19).

Natural History Exploration: Yesterday, Today, and Tomorrow

The rush to discover new species of plants and animals began during the Great Age of Natural History Exploration in the 1700s and 1800s. Although local species had been described and named for centuries before that time, it wasn't until the major exploring expeditions set out on voyages around the world that a concept of global biodiversity began to emerge. As biologists, when we think of the great explorers, the names that come to mind are Captain Cook, Joseph Banks and the Forsters, von Humboldt and Bonpland, Charles Darwin and Alfred Russell Wallace.

Most of us do not think about the exploration efforts of the young United States of America as it entered the international scientific arena. In the early 1800s scientists in the newly established capitol of Washington formed the Columbia Institute for the Promotion of Arts and Sciences. Chartered by Congress in 1818, the Institute started the first botanical garden on the nation's Mall and established the beginnings of a national herbarium with specimens from local naturalists William Darlington and Alexander McWilliams. Although the Institute went defunct in 1837, it provided the impetus for the first U.S. international exploring expedition.

In 1828 Congress approved the United States South Seas Exploring Expedition, especially through the efforts of John Cleves Symmes of Ohio, who believed in the "Holes in the Poles" theory that the Earth was hollow and could be entered through cavities at the two poles. Part of the mission of this expedition, which had commercial, diplomatic, and scientific objectives, was to find these entrances to the center of the Earth and claim their rights for the newly developing country. Ten years later in 1838 the expedition actually began when Lt. Charles Wilkes set sail from Virginia in the flagship *Vincennes* with a fleet of six vessels. The Wilkes Expedition, as it was to be called, cost $928,000, lasted four years, covered nearly 87,000 miles, and visited most of the continents of the world, including a significant effort in the exploration of the coast of Antarctica.

Nine "scientifics" were on board representing all of the major natural history disciplines. William Brackenridge and William Rich were the botanists. Asa Gray, America's foremost botanist at the time, was originally slated to go on the voyage, but declined at the last minute in order to take a position as professor of botany at the University of Michigan. He eventually assisted in preparation of the Expedition volumes on plants.

When the Expedition finally returned at the end of four years, over four thousand animal specimens, fifty thousand plant specimens (both living and preserved), thousands of anthropological artifacts, and thousands of minerals, gems, and fossils had been amassed. These collections comprised the largest number of natural history objects that young America had accumulated, and represented specimens native to our own country as well as regions throughout the world. They formed the basis for the beginning of two of the great scientific institutions now based in Washington: the Smithsonian Institution and the United States Botanic Garden.

After the demise of the Columbia Institute, the remainder of that establishment merged with the Historical Society of Washington in 1841 to form the National Institute for the Promotion of Science. The natural history collections as well as the garden plants were placed under custody of the National Institute. With the return of the Wilkes Expedition in 1842 with its thousands of specimens, Congress authorized the formation of the Smithsonian Institution to serve as a National Museum for the advancement and diffusion of knowledge.

Almost simultaneously Congress authorized the construction of a botanical garden on the Mall and in 1856 it was officially named the "United States Botanic Garden" under the jurisdiction of the Joint Committee on the Library. Thus began the nearly 150 year history of the Department of Botany at the Smithsonian Institution and the U.S. Botanic Garden.

The publication of the discoveries of the Expedition was the responsibility of Wilkes who eventually published 19 volumes over the course of 30 years. For the botanical discoveries Asa Gray and Wilkes argued over the publication of the new plant taxa. Interestingly they first disagreed over the extent of the Latin descriptions of the new taxa. Secondly, Wilkes wanted this work to be an entirely American "enterprise" without any assistance from foreigners while Gray insisted that proper identifications and descriptions of the new species were dependent on making comparisons to specimens found only in European herbaria. Eventually Gray won the day by distributing duplicates of the collections to the major European herbaria and obtaining assistance from foreign plant specialists in making proper determinations. Gray fundamentally established botany as a recognized science in our country and brought American botany into the international arena.

Today the U.S. Botanic Garden continues to be a freestanding institution under the administration of

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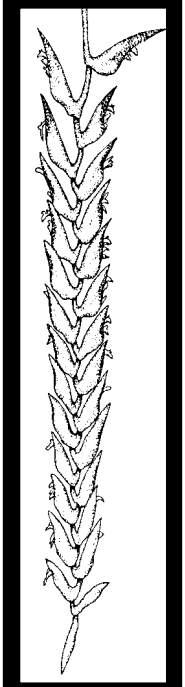
Chair With A View — W. John Kress



Staff Research

Pedro Acevedo presented a plenary talk entitled "Caribbean Botany" at the 2002 Caribbean Botanic Gardens for Conservation Meeting, held at the Fairchild Tropical Garden during 15-18 May. At the meeting, Acevedo was presented an award from the consortium for contributing to the knowledge of Caribbean botany, specifically for the publication of Flora of St. John, U.S. Virgin Islands.

With funding from NSF, **John Clark** conducted a one-month field trip to Bolivia to collect and study Gesneriaceae. An interesting discovery was the presence of resupinate flowers in *Alloplectus bolivianus*. It took two weeks (equivalent of 50 to 60 hours of walking) to find this species. It was collected on the Mapiri trail in the Yungas region of Bolivia. He recently returned from Europe, where he studied herbarium specimens at Paris (P), Brussels (BR), London (BM), Kew (K), and Edinburgh (E).

Robert Faden traveled to U.K. and Kenya on 4 - 26 August to continue his research on *Flora of Tropical East Africa (FTEA)* Commelinaceae, especially the genus *Commelina*. At the Royal Botanic Gardens, Kew he focused on specimens from Paris (P), Geneva (G) and Brussels (BR) that had been borrowed on his request. A type from G and numerous Madagascan collections from P enabled him to finally confirm that a species from Kenya and Tanzania is indeed undescribed. In Nairobi, at the East African Herbarium, National Museums of Kenya, Faden was able to clear up a number of misidentifications among the numerous East African *Commelina* species and was able to check the details of many of his descriptions made from Kew specimens. Other studies added data to the recently completed Research Training Program summer intern research paper, and other ongoing projects. Two day-trips in the Nairobi area allowed the observation and collection of several uncommon species, including a cultivated plant of a recently discovered, new species of *Coleotrype*: just the fourth species from mainland Africa and not closely related to the other two FTEA species. A cutting of the latter is growing well in the Botany Research Greenhouse.

Dan Nicolson and **Laurence Dorr** traveled to New York Botanic Garden from 24-27 September to begin work on the now reorganized *Taxonomic Literature edition 2 (TL-2)* masterfiles deposited there by Frans Stafleu. They aim to write the final supplement for authors whose names begin with F & G. *TL-2* began in 1976 with *Volume 1* covering A-G being done without support and, with this 1,136 page publication in hand (*TL-1* of 1967 was 556 pages), Richard Cowan and Frans Stafleu went to NSF for support that enabled a major increase in coverage. They estimated that using the final standards of H-Z would require at least two additional volumes to bring A-G to the same standard. While compiling material, with support for NSF, for volumes H-Z, they compiled material for A-G. After completing H-Z, Stafleu and Eric Mennega began mining the *TL-2* masterfiles to create a supplement for A-G that would bring it to the same standard as H-Z. They generated the supplements A-E (in six volumes) before both of them died, leaving F-G in limbo. Nicolson and Dorr were pleasantly surprised to find that Eric Mennega had hand-written a number of F-G treatments. Basil Stergios and Miquel Niño, botanists from UNELLEZ, Herbario Universitario (PORT), Guanare, Venezuela, accompanied Nicolson and Dorr to New York. Stergios and Niño are working with Dorr on a Flora of Guaramacal in the Venezuelan Andes.

In July, **Laurence Skog** visited the National Museum (CR) in San Jose and the Instituto Nacional de Biodiversidad (INBio) in San Jose, Costa Rica, to examine specimens of Gesneriaceae. He also visited the Organization for Tropical Studies (OTS) Field Stations at La Selva and Palos Verdes to collect samples for molecular research, as well as visiting the new La Paz Waterfall Gardens in Alajuela province for additional samples.

Skog also traveled to Edinburgh, Scotland from 25-28 September to participate in the three and a half day Gesneriaceae Workshop at the Royal Botanic Garden. He gave an invited lecture as part of the Taxonomy—Large Scale Pattern: New World portion of the program entitled "The Changing Relationships within the Gesnerioideae, Particularly the Gloxinieae" (co-authored with Eric Roalson, **John Boggan**, and **Elizabeth Zimmer**). Others attending from US and presenting contributed papers were **Christian Feuillet** "*Lampadaria* and *Cremersia* – Two New Genera from the Guianas" (co-authored with Laurence Skog), and **John Clark** "A Preliminary Phylogeny of *Alloplectus*: Implications for Taxonomic Circumscription and Evolution of Flower Resupination." Skog visited the herbaria at Edinburgh and Kew during his week (23 September-2 October) in the United Kingdom.

Staff Activities

John Boggan traveled to Morristown, New Jersey (2-7 July) to attend the national convention of the American Gloxinia and Gesneriad Society, where he served on the board of directors as an outgoing director and as chairman of the botanical review committee, and also as a contributing editor to the society's magazine, *The Gloxinian*. **Laurence Skog** attended the same convention as an invited speaker, and served as the newly appointed chairman of the research committee.

Robert DeFilipps traveled to Haiti (1-8 August) with Beverly Wolpert, graduate student at George Washington University, to assist her collecting medicinal plants used locally as anthelmintics (vermifuges) to expel intestinal parasitic worms. Specimens were obtained from practitioners at a voodoo temple (Peristyle de Mariani) near Port-au-Prince, as well as from various herb sellers and markets, and from an akee (*Blighia sapida*) plantation near Croix-des-Bouquets. Although Haiti has no formally established botanical garden, DeFilipps and Wolpert were pleased to learn that plans for the establishment of three botanical gardens are underway. They will be at Djode near Cap Haitien, under auspices of the Fondasyon Ayizan Velekete; at Kenscoff, on a portion

of the Wynne Nature Preserve Center; and in Port-au-Prince at Habitation Leclerc, the 30-acre garden estate of famous dancer and choreographer Katherine Dunham, once the home of Pauline Bonaparte, Napoleon's sister.

John Kress and **Mike Bordelon** traveled to Thailand and Myanmar in July. The first stop was Khon Kaen University in Thailand to attend the 3rd International Conference on the Family Zingiberaceae. Kress delivered the keynote address presenting his new classification of the gingers (co-authored by Linda Prince and Kyle Williams) and Bordelon presented his slide show on the gingers of the Botany Research Greenhouses (with Burmese musical accompaniment). After the meeting, they traveled to Yangon, Myanmar for discussions with the Forest Department and the Botany Department at the University of Yangon, concerning the final revisions on the soon-to-be-published "Checklist of the Trees, Shrubs, Herbs, and Climbers of Myanmar." They also spent several days in the field north of Yangon on the eastern slopes of the Arakan Yoma near Pye. After Yangon, they went back to Thailand to attend the meeting of the Heliconia Society International in Pataya at the Noon Nooch Botanical Garden. The subject of that conference included heliconias, gingers, prayer plants, and cannas.

Alice Tangerini attended the annual national meeting of the Guild of Natural Science Illustrators (GNSI) held at the University of Kansas in Lawrence, Kansas from 4-10 August. Lawrence is the home of Allen Press, one of the major publishers of scientific journals in the U.S. and a sponsor of this year's meeting. The GNSI organizers arranged for half day tours of the Allen Press facility. Members viewed their design and scanning rooms and the large printing area where issues of *Brittonia* could be seen running through the presses. Workshops on scanning and printing illustrations given by the staff of Allen Press were well attended by guild members. One of the great discoveries for Tangerini was how many different approaches can be used in scanning artwork. Although her methods differed from the designers at Allen the results were about the same for black and white images where the most important concern is resolution. The Allen staff prefers illustrators to learn how to scan their own work and send electronic files if possible. Color scanning is another matter and Allen's $50, 000 color scanner is able to scan images with much better color output than most desktop models. Several members brought color work and the Press staff demonstrated making color adjustments to their scanned pieces.

Also featured during the week of meetings were workshops and lectures on traditional techniques (watercolor, scratchboard, mixed media and pen and ink) and digital media (Photoshop, Illustrator, PowerPoint and 3D programs). Tangerini gave a pen (and brush) and ink workshop on botanical illustration during the Techniques Showcase: a round table format in which many styles of traditional illustration were demonstrated. The GNSI Annual Exhibit was displayed in the University of Kansas Natural History Museum where it shared space with the dioramas of stuffed bears, wolves and other local fauna. Tangerini had her pen and ink drawing of *Xenophyllum staffordiae,* one of **Vicki Funk's** Andean comps, included in the exhibit.

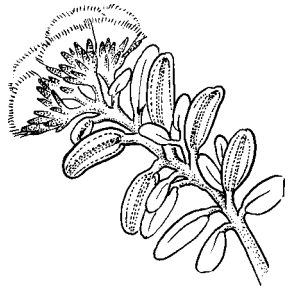
Alice Tangerini also participated in the annual meeting of the American Society of Botanical Artists (ASBA) on 4-5 October, held at the U.S. Botanic Garden and the Holiday Inn in SW Washington, DC. Tangerini organized a behind-the-scenes tour at the Renwick Gallery for a group of illustrators. The tour, given by Ellen Myette, operations facility manager, included some ceramic and glass collections with botanical influences and motifs. An opening reception for the ASBA juried show was held at the Botanic Garden Conservatory on Friday evening along with awards for outstanding work by participating artists. Holly Shimizu, director of the Garden, was in attendance as hostess and as one of the jurors of the exhibit. Saturday's agenda featured portfolio sharing and half-day workshops on techniques of design and on painting concepts.

Elizabeth Zimmer attended the annual Botanical Society of America (BSA) meeting from 4-7 August, in Madison, Wisconsin, and presented a poster entitled "Origin and Biogeography of Pacific *Melicope*." Co-authors were Gery Allan, Andrew Medina-Marino and **Warren Wagner**. On 8 August, she stayed over in Madison and participated in the "Deep Gene" group discussion sponsored by an NSF RCN program grant. Later in the month, on 21 August, Zimmer visited Peter Del Tredici at the Arnold Arboretum and Elena Kramer at Harvard University in order to discuss collaborative opportunities.

Awards & Grants

John Clark obtained a Doctoral Dissertation Improvement Grant from the National Science Foundation to finish his research on *Alloplectus* (Gesneriaceae) for his Ph.D. dissertation. Clark will continue to pursue this research in conjunction with Patrick Herendeen at George Washington University and **Elizabeth Zimmer** and **Laurence Skog** in Botany. Funding from this grant will allow Clark to expand his doctoral dissertation and monographic revision of *Alloplectus* (Gesneriaceae) to include morphological and molecular studies on the biology of resupination (upside down flowers) in *Alloplectus*.

On 11 October, **Ruth Schallert**, Botany librarian, received a Distinguished Service Award for excellence in achievement from Luther College in Decorah, Iowa, where she completed her bachelor's degree. Schallert received the award at a class reunion and homecoming ceremony.



Searching for Lichens Where the Reindeer Play

Paula DePriest and **Sue Lutz** traveled to northwestern Mongolia in June to conduct research on lichens of the Tsaatan reindeer herding grounds. Mongolia, a high plateau bordered on the north by Russia and the south by China, is well known for its Gobi Desert and grassy steppes. However, it also has high mountains with Siberia-like larch forest and alpine meadows. The Sayan Mountains, in the extreme northwest, bordering on Russian Tuva and Siberia, are home to the remaining wild and domesticated reindeer of Mongolia. This small region at the headwaters of the Yenisei River may be the area where reindeer were originally domesticated 2,000 – 3,000 years ago. Both the domesticated and wild reindeers of this area are southern disjuncts from the large reindeer herds of northern Siberia; global climate warming may threaten their survival. The goal of the trip was to study the lichen flora of the seasonal feeding grounds of domesticated reindeer in this area.

Paula DePriest (second from left) examines the reindeer mount of a young Tsaatan girl with her grandfather, Tsaatan Herder Sanjin, and an interpreter. (Photo by Sue Lutz)

A group of U.S. and Mongolian anthropologists and botanists traveled to the summer reindeer feeding grounds of the Tsaatan. The Tsaatan (literally, 'reindeer possessing people' in Mongolian) are nomadic hunter-gatherers who use reindeer for transportation, milk and cheese, and, only rarely, meat and leather. Nomadic Tsaatan, fewer than 200 individuals representing around 30 family groups, live in summer camps to the east and west of the Darkhat Valley near the famous Hovsgol Lake. Together the camps herd approximately 700 reindeer (*Rangifer tarandus*). The summer feeding grounds in the alpine tundra and the winter feeding grounds in the larch taiga are covered by lichens, providing year-round food for the reindeer. A Tsaatan guide, Sanjin, was able to distinguish and provide traditional names for eleven dominant lichen species in the summer feeding ground, demonstrating that traditional lichen taxonomy in this culture is sophisticated and in line with lichenological taxonomy.

***Cladonia rangiferina* is called "Tsaa hag," literally 'reindeer lichen,' by the Tsaatan. (Illustration by Wm. Keith Harrison)**

In addition to the scientific benefits of the expedition, DePriest and Lutz had the adventure of a lifetime. During the expedition they traveled by airplane, Russian jeep, and horseback to reach the remote camp near the Russian border. On the way they visited numerous sites with Bronze Age deer stone monuments, one of which was cast by members of the expedition, Carolyn Thome and Paul Rhymer, modelers in SI Exhibits Central, for display in the special exhibition "Modern Mongolia: Reclaiming Genghis Khan." The group made a side trip to Hustai National Park to see the reintroduced Przewalski's horses, the only remaining species of wild horse that is native to Mongolia. In the capitol Ulaan Bataar they visited herbaria at the Academy of Sciences and Mongolian State University, the Migjed Janraisig Buddhist Temple and the Black Market. A missed airline connection in Beijing allowed them to tour the Forbidden City.

The trip was part of a larger project to study this most southern reindeer herding culture, led by William Fitzhugh (NMNH Anthropology), and the ancient empires of Mongolia by Dan Rogers and Matt Gallon (NMNH Anthropology). Botanists and biologists on the trip included Steve Young (Center for Arctic Studies, Vermont), Ts. Tsendeekhuu (Mongolian State University) and O. Sukhbaatar (Chinggis Khan University). The group plans to travel to the Tsaatan camp again next summer.

The 2003 Smithsonian Botanical Symposium, 28-29 March, is Set to Explore the Botanical Frontiers in Southeast Asia

Over the last decade significant new biodiversity discoveries and advances in the plant sciences have been made in the tropical areas of Southeast Asia through the collaborative efforts of local and foreign scientists. Exploration in many remote and poorly surveyed regions in such countries as Laos, Cambodia, and Myanmar is uncovering new taxa of plants and animals and expanding the inventory of biodiversity. At the same time in China, Vietnam, Indonesia, and Malaysia innovative field and laboratory investigations have led to great strides in our understanding of the ecological complexity of habitats as well as the evolutionary history and genetic diversity of plants in this region. Despite these innovations the increasing rate of destruction of pristine environments necessitates rapid conservation action.

The 2003 Smithsonian Botanical Symposium, entitled **"Botanical Frontiers in Southeast Asia: from the Discovery of the Earliest Flowering Plants to the Sequencing of the Rice Genome,"** will explore the numerous new developments in our knowledge of plant diversity in Southeast Asia by bringing together botanists from around the world for discussion and exchange. Topics will include recent fossil discoveries of the earliest angiosperms, ethnobotanical surveys, systematics and floristics, forest structure, conservation, and breakthroughs in genome technology.

This Symposium, to be held 28-29 March 2003 at the National Museum of Natural History in Washington, D.C., follows the first two highly successful Smithsonian Botanical Symposia hosted by Botany. The 2001 conference, entitled "Linnaean Taxonomy in the 21st Century," addressed the fundamental question of how we name plants and animals in light of recent advances in understanding the evolutionary relationships of organisms. The 2002 conference, entitled "The Convention on Biological Diversity: The Globalization of Natural History Science," addressed the impact of the CDB on scientists and its ramifications for understanding the natural world.

The third José Cuatrecasas Medal in Tropical Botany will be awarded at the Smithsonian Botanical Symposium. This prestigious award is presented annually to an international scholar who has contributed significantly to advancing the field of tropical botany. The award is named in honor of Dr. José Cuatrecasas, a pioneering botanist who spent many years working in the Department of Botany at the Smithsonian and devoted his career to plant exploration in tropical South America.

The Symposium will include a day of invited speakers followed by a keynote address, and is being sponsored by the National Museum of Natural History, the Cuatrecasas Family Foundation, the International Association for Plant Taxonomy, and the United States Botanic Garden.

Two associated exhibits are planned to open to coincide with the symposium. At the National Museum of Natural History, "A Passion for Plants: Contemporary Art from the Shirley Sherwood Collection" will open in March. "Traditions in Elegance" will open in January at the U.S. Botanic Garden.

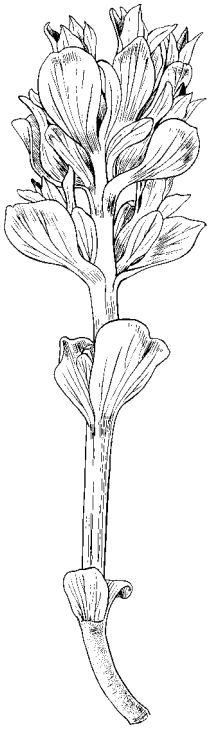
For more information and registration, visit <http://persoon.si.edu/sbs/> or call 202-357-2534.

Completing the D.C. Flora Checklist

The D.C. Flora Checklist Project is pleased to announce that the second part of the checklist of the flora of the Washington-Baltimore area is now available in pdf format at <http://www.nmnh.si.edu/botany/projects/dcflora/checklistproject.htm>.

The aim of this project has been to revise completely Frederick J. Hermann's much outdated and long out-of-print *A Checklist of Plants in the Washington-Baltimore Area* (ed. 2), published in 1946 in duplicated form. The publication of the *Annotated Checklist of the Vascular Plants of the Washington-Baltimore Area*, the new revision by **Stanwyn Shetler** and **Sylvia Orli**, has now been completed with the release of *Part II, Monocotyledons* (95 p.), on 30 August. *Part I, Ferns, Fern Allies, Gymnosperms, and Dicotyledons* (186 p.), was issued 21 March 2000. It is hoped that the revised checklist will become the basis for preparing a completely new manual of the flora of the Washington-Baltimore Area, to replace the 1919 *Flora of the District of Columbia and Vicinity* of A.S. Hitchcock and P.C. Standley.

The *Checklist* includes all native and naturalized species of vascular plants (ferns and fern allies, conifers [gymnosperms], flowering plants [angiosperms]) known to occur in the Washington-Baltimore area. The new *Checklist* includes a total of 2,794 species – 1,801 native species and 993 introduced species. Of the total, 2,001 species (1,220 native, 781 introduced [39%]) are in *Part I*, and 793 species (581 native, 212 introduced [27%]) are in *Part II*.



The Conservation Column

By Gary A. Krupnick

The fields of biological diversity and conservation were at the forefront at the Sixth International Congress of Systematic and Evolutionary Biology (ICSEB VI) held 9-16 September at the University of Patras in Patras, Greece. The theme of the conference was "Biodiversity in the Information Age" and several symposia focused on conservation research.

Among the keynote addresses, two were highly significant for conservationists. James Edwards of the Global Biodiversity Information Facility (GBIF), in Denmark, presented "Biodiversity Informatics as a Megascience: Fully Exploiting Biodiversity Data," giving attendees a clear understanding of how GBIF plans to operate. Daniel Janzen of the University of Pennsylvania presented his views on the "gardenification" of wild areas in his talk "Conserving Tropical Wildland Biodiversity through Non-Damaging Development."

Several symposia of invited speakers focused on biodiversity and conservation. Global change, biogeography, GBIF, and the ALL Species Foundation were the topics of a few symposia. Two others looked at global biodiversity and the use of natural history resources in conservation assessments. The former was the focus of "Life, the Universe and Everything," a symposium organized by **Vicki Funk** and Dennis P. Gordon of the National Institute of Water and Atmospheric Research, New Zealand. The symposium investigated how far taxonomists have come in our efforts to understand the history of life. Seventeen speakers attempted to cover all of the major clades of life. Each speaker had been asked to address three questions with respect to his/her group: Where are we in our attempts to determine the phylogeny and sister group relationships of this group?; How can these results be interpreted in the light of the history of Earth?; and, Where do we go from here? The symposium ended with a presentation of the current phylogeny of life in graphic form.

A separate symposium addressed how natural history collections have been and can be used in conservation work. "Using Natural History Resources for Conservation Assessment" was the title of a symposium organized by **John Kress** and **Gary Krupnick**. Speakers of the symposium addressed the strengths and weaknesses of several classes of information, used to assess levels of species diversity and distribution for conservation purposes. These classes of biological information range from a complete inventory of all organisms on Earth, to collected biological specimens, to expert opinion. All classes of information comprise the resources found in natural history institutions and botanical gardens.

Held every four to six years, ICSEB is the primary meeting of systematists and evolutionary biologists worldwide. Currently, the Congress is held under the auspices of IOSEB (International Organization for Systematic and Evolutionary Biology), which was created at ICSEB V in Budapest. The aim of the Organization is to embrace all relevant aspects of systematic and evolutionary biology including subjects ranging from molecular to global, and from descriptive to theoretical.

Staff on the Move

Cameron Cooley, a Smithsonian Minority Internship fellow, spent June and July working with **Elizabeth Zimmer** and **Warren Wagner** on a molecular phylogeny of the Hawaiian composite genus *Remya*. Cooley now is a first year graduate student in the Botany and Plant Pathology Department at Purdue University.

On 1 September, **Rose Gulledge** transferred from the Smithsonian's Museum Support Center (MSC) in Suitland, Maryland, to join Botany at the National Museum of Natural History as **Laurence Dorr's** half-time assistant. This is a temporary assignment until the vacant full-time assistant position that reports to Dorr is advertised. Gulledge has been settling in and learning new inventorying procedures, botanical terms, and trying not to get lost in the herbarium. She began her employment at the museum in 1990 after completing a master's degree in biological oceanography (phytoplankton nutrient work) at North Carolina State University. Initially she was a Trust Fund employee at the Smithsonian Oceanographic Sorting Center (SOSC) at MSC. A few months later Gulledge became a Federal employee with Botany working half-time with **Maria Faust** on tropical benthic dinoflagellates and half-time with Rafael Lemaitre, then with SOSC, on deep-water hermit crabs and other decapods. In May 1992, however, SOSC was dissolved and Lemaitre joined the Department of Invertebrate Zoology (IZ) - Section Crustacea where she followed as his half-time assistant. Gulledge still continues to work half-time for Lemaitre in IZ on various projects, one of which is the *Decapod Guide of the Indian River Estuary* (via SMS - Fort Pierce, Florida). She will continue to alternate weekly with IZ and Botany.

Riddled by Botany

This is the first in a new series of occasional columns, in which we will present various tidbits of botanical *varia* for your edification. We invite curators to search the upper registers of their minds for items of interest. Meanwhile, here is our first challenge: a thorny piece from **Dan H. Nicolson**.

An old botanical riddle: Who or what are these five strange brothers?

Quinque sumus fratres, et eodem tempore nati,
Sunt duo barbati, duo sunt barba absque creati,
Unus et e quinque non est barbatus utrinque.

There are many versions of this poem in Latin, English and German, testifying to its being transmitted from person to person from the Middle Ages.

Fünf Brüder sind's, zu gleicher Zeit geboren,
Doch zweien nur erwuchs ein voller Bart,
Zwei andern bleib die Wange unbehaart,
Dem fünfte hat den halben Bart bloss.

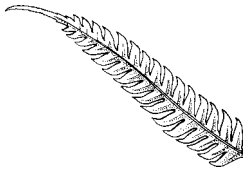
Still not getting it?

Five brethren of one birth are we
All in a little family,
Two have beards, and two have none
And only half a beard has one.

The five brothers are, in short, the five sepals of *Rosa canina* and other dog-roses. The manner in which the parts of the calyx are disposed within an unopened flower is constant for whole groups of plants and is technically known as aestivation. There exist various types. The kind of imbricate or overlapping aestivation occurring in *Rosa* and other genera with five sepals is called quincuncial. Here two of the five are completely outside the others and, in *R. canina* (and most other roses), have appendages or beard along both edges; two with plain unappendaged edges are completely overlapped along the edges by other sepals, the fifth has one edge outside and appendaged, its other side inside and plain, in other words it has only half a beard!

Thus the keen-witted medieval author of the riddle of the five brethren touched on an interesting matter of floral organization.

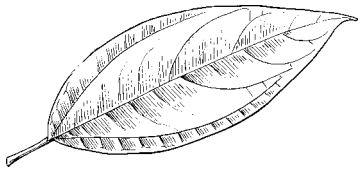
Source: Stearn, W.T. 1965. The five brethren of the rose: an old botanical riddle. *Huntia* 2: 180-184.



Progress on the Catalogue of New World Grasses

Botany is host to two visitors over the next two months who are working on treatments for the Catalogue of New World Grasses (CNWG). Gerrit Davidse (from Missouri Botanical Garden, MO) is visiting from 24 September to 14 October, and Tarciso Filgueiras (from Instituto Brasileiro do Geografia y Estatística, IBGE, Brazil) is visiting from 28 September to 19 November. They are working on the treatments of the Aristidoideae, Arundinoideae, Danthonioideae, Centotheceae, and Andropogoneae for CNWG. Fernando Zuloaga and Osvaldo Morrone (SI, Argentina) visited Botany this spring to work on CNWG Paniceae. The CNWG editors (including **Paul Peterson**, Emmet Judziewicz [UWSP], and **Robert Soreng**) and collaborators are working toward full coverage of names, protologues, types, taxonomy, synonymy, higher classification, and distribution for New World grasses from Greenland to Tierra del Fuego. All the work is prepared in a database format and is available at <http://mobot.mobot.org/W3T/Search/nwgc.html>.

The group plans to publish accounts of the Pooideae, Panicoideae and smaller PACC clade subfamilies in 2003, in the *Contributions from the U.S. National Herbarium*, as was done for Chloridoideae (vol. 41, 2001), and Anomochlooideae, Bambusoideae, Ehrhartoideae, and Pharoideae (vol. 39, 2000). Manuscripts for the printed volumes are produced directly from the database. The CNWG Web site is a dynamic one that makes all data immediately available to users as the data is entered into TROPICOS (in St. Louis or from remote locations via Telnet). In addition to the detailed data on New World grasses, Old World grass names can be accessed through the database. Although coverage for the Old World is less complete, new data is entered on a regular basis. In addition to basic nomenclatural and types data, many cross-references to their usage in monographs, revisions, floras, and checklists, images (including type photos), and specimens and maps (data presently primarily from MO) are available through the website. Currently the database contains information on some 77,000 names for grasses worldwide.



Staff Lecture Series Continues

The Botany lecture series took a break over the summer. The series resumed on 10 September with **Paula T. DePriest** presenting "Examining Symbiosis and Coevolution in Lichen Systems." Botany curators will continue delivering research seminars each month for the remainder of the year.

Chair

Continued from page 3

the Architect of the Capitol and is uniquely situated at the heart of the U.S. Government at the base of Capitol Hill. This major botanical exhibition center positioned on the National Mall includes the Conservatories, the future National Garden, and Bartholdi Park as well as an extensive 25-acre propagation nursery facility with 85,000 square feet of glass house space outside of Washington. The strength of the USBG lies in its clear ability to successfully display and exhibit plant diversity to the over 750,000 visitors per year.

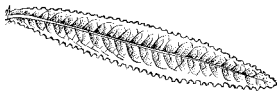
At the same time, the Department of Botany at the Smithsonian has developed into an international research and education center in the botanical sciences, especially plant taxonomy and classification. The Department is one of the largest botanical centers in the world and serves as a magnet for hundreds of students, visiting researchers, and enthusiastic volunteers. The Department operates the U.S. National Herbarium containing 4.6 million preserved plant specimens from all areas of the globe.

In consideration of the strengths of the two institutions, the plant exhibition and propagation capabilities of the USBG richly complement the research, professional training, and conservation programs of the NMNH Department of Botany. In 2000 the USBG and the NMNH signed a Memorandum of Understanding to greatly increase their interactions and enhance the overall mission of each institution through effective collaborations. The research, field exploration, training, and conservation components provided by the Department of Botany, in combination with the horticultural and public display elements at the U.S. Botanic Garden, formed a new and highly significant botanical consortium in the Washington area and the Nation.

Already many activities are underway as a result of this collaboration. We are jointly developing a permanent botany exhibit at the Botanic Garden while research plants collected by NMNH botanists are on display in the conservatories. The two institutions also co-sponsor the Smithsonian Botanical Symposium held at NMNH each spring. The first joint temporary public program supported by Twinings Tea Co. will be "Traditions in Elegance," an exhibition celebrating the history and enjoyment of tea, which will open at the botanic garden in late January 2003. The public collaboration will continue with the exhibition, "A Passion for Plants: Contemporary Art from the Sherwood Collection," which will open at the NMNH in March 2003. Featuring an extraordinary presentation of botanical paintings, the exhibition will explore the interplay between art and science from the perspective of style, form, purpose, use, and content.

In the future we plan to initiate a joint seminar series on botany and environmental conservation in the new educational center to be constructed at the National Garden, pursue programs on horticultural conservation of endangered plants, develop web links, and, perhaps most importantly, promote both our goals through fundraising efforts.

Who would have thought that the kernel of an idea of a national herbarium and a national botanical garden planted in 1818 at the Columbia Institute would be blossoming today in 2002 through a new collaboration between Botany at the Smithsonian and the United States Botanic Garden. Botanical exploration continues into the 21st century.

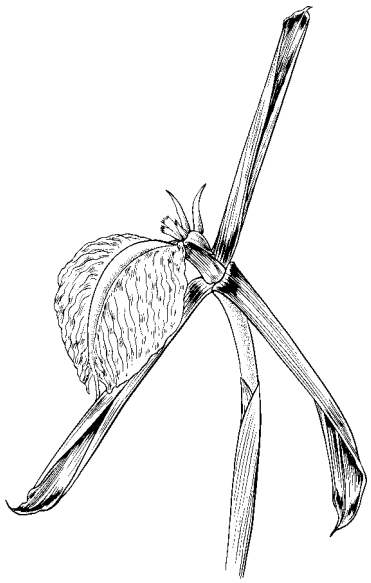


Botanical Type Collection on the Web

The Type Imaging Project continues to make progress and has now completed a total of 22,910 specimen images (up from the 10,000th previously reported in *Plant Press* 5(2): 6. 2002). The project has been designed to create a high resolution digital image of each specimen in the United States National Herbarium's Type Register.

Types chosen for the project are currently selected in one of three ways. Firstly, all type specimens being sent on loan are being digitized prior to shipment. Secondly, special projects or requests made by staff and visitors are considered. Thirdly, entire families are chosen for digitizing.

Future plans include providing close-ups of critical features and three-dimensional views of bulky fruits and other large parts. A list of digitized type material is available by visiting <http://rathbun.si.edu/botany/types/>.



Wasshausen

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decades. In addition to work in Texas, he has collected in an astonishing array of places: Puerto Rico; Dominica; Trinidad (Mt. Aripo); Tobago; Brazil (states of Goias, Minas Gerais); Peru's Cordillera Vilcabamba, Rio Urubamba, Tambopata Valley and other Amazonian areas; the Bahamas (Abaco, Exuma, Rum Cay, San Salvador); French Guiana; Queensland, Australia; Bolivia (Chuquiasca, Santa Cruz, Cochabamba, La Paz); northern Argentina (Jujuy, Salta, Misiones); and two trips (1987, 1990) to observe and collect the endemics of Madagascar with the incomparable Werner Rauh (University of Heidelberg). Additionally, required library research has led him to visit foreign herbaria too numerous to mention.

In 1979, Wasshausen received the Willdenow Medal during the Tercentenary Celebration of the Botanic Garden, Berlin. It was awarded in recognition of his significant assistance in rebuilding the general collections of the Berlin Herbarium, which had been severely damaged during WWII. At present he has a number of

projects going on simultaneously, and variously in press, such as treatments of the Acanthaceae for the *Vascular Flora of the Southeastern United States* and the *Flora of the Guianas*; a revision of Brazilian *Begonia* with Smith; comprehensive treatments of the acanths for the floras of Peru, Ecuador and Bolivia; and floristic studies of the Begoniaceae occurring in the Guianas, Brazil and Peru.

Although Wasshausen has covered so much territory and contributed greatly towards our understanding of the taxonomy and systematics of the Acanthaceae and Begoniaceae, he indicates that there still remains much to be investigated. We can make some mental extrapolations for ourselves based on his comments. He has noted, for example, that originally there were 120 species of acanth known from Bolivia, but after three field trips he was able to increase that number by one-fourth more, to around 160 species. Perhaps even more startling is his remark that during just three weeks collecting in the Apurimac region of Peru, he discovered 37 species of Acanthaceae new to science, just by walking and boating within a 25-mile radius: there, every valley has its own assemblage of acanth species. Detailed work on pollinators and pollen morphology are still desirable goals for future workers.

Currently as busy as ever, work has been finished on two chapters in the forthcoming Botany book on conservation of plant biodiversity being edited by W.J. Kress and G.A. Krupnick, and for a treatment of Acanthaceae in Scott Mori's (NY) book on Flowering Plant Families of the American Tropics. For the next three years, Wasshausen's projects will include writing species descriptions for a marvelous set of books depicting in color photographs the Acanthaceae and Begoniaceae of Brazil, to be published by the Brazilian Harri Lorenzi. In 2003, if all permissions are granted, he is planning a collecting trip to the state of Mato Grosso, Brazil. A move to Southport, in coastal North Carolina, is also anticipated for this veteran botanist.

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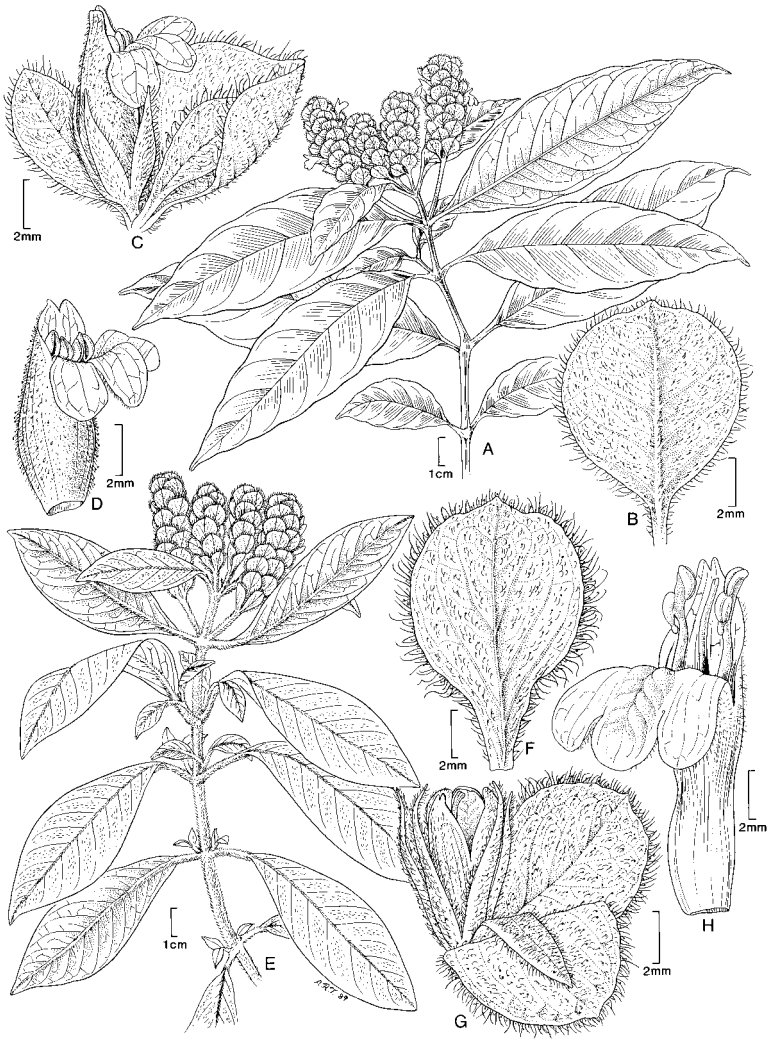
Art by Alice Tangerini

Justicia fortunensis and *J. readii* Daniel & Wasshausen

Justicia fortunensis and *J. readii* Daniel & Wasshausen, *Proc. Calif. Acad. Sci.* 46: 289-297 (1990) are new species of Acanthaceae confined to cloud forest in Panama. Both species were recently collected, *J. fortunensis* by T. Daniel in Chiriquí, vicinity of the Fortuna Dam, and *J. readii* by our former staff member Robert Read in the Cerro Jefe. They are showy shrubs with conspicuous dark pink to drying dark red bracts and calyx lobes and white to pale pink or lavender corollas. *J. fortunensis* is known only from the Pacific slopes of the Cordillera Central in western Panama (north-central Chiriquí) in the watershed of the Río Chiriquí at elevations from about 1025-1250 meters. *J. readii* is found in the cloud forest of eastern Panama at elevations from 500-1300 meters.



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