Department of Botany & the U.S. National Herbarium

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Botany Profile
Mellon Grant Begins to Bear Fruit

By Rusty Russell

More than 35 years after the United States National Herbarium designed the first digital plant specimen database, we are continuing to make improvements to this unique resource and a significant contribution to the electronic distribution of museum information. With funding from the Mellon Foundation through a grant to W. John Kress and Rusty Russell, we are participating in a multi-institutional effort to produce digital plant species information for Latin America and consolidate these data in an online presentation under the auspices of Aluka <http://www.aluka.org>, an international non-profit organization dedicated to constructing digital libraries of academic resources.

Dubbed the Latin American Plant Initiative (LAPI), the initial task supported by Mellon is to database and image all type specimens from Latin America. For many of the participating institutions, this project represents their first attempt to identify and organize the type specimens in their custody. For others, it allows them to fully digitize their type holdings. For the U.S. National Herbarium, whose pioneering efforts at digitization began in 1970 and has resulted in the largest, fully verified and completely imaged type specimen collection (supported in part by a grant from the National Science Foundation), our participation allows Aluka to take advantage of the considerable resources we have amassed over many years. It also permits us to significantly improve upon what is already the most complete type specimen resource in the botanical community.

In the middle of the last century, when the types were segregated from the general herbarium, the decision was made to leave duplicate types (either isotypes or syntypes) in the main collection. This was viewed as both a convenience to researchers and a form of protection by hedging against loss. But ever since the Type Register project began in 1970, this decision has been debated. A few years ago the Collections Advisory Committee recommended that all verified type specimens should be segregated from the general collection. This segregation included all the left-behind specimens, which had been stamped "Additional Material". The reasoning was that taxonomic studies required the information for all existing types, especially all syntypes for which lectotypification was eventually needed. Our ability to produce and make available the digital versions of these specimens made the convenience argument moot, and supplanted the protection argument. However, because the numbers were expected to be quite large, and the personnel to process them was lacking, there was no concerted effort made to separate them at that time.

Our participation in the Latin American Plants Initiative allows us to accomplish two primary objectives. The first is to address our need to consolidate all Latin American type specimens by extracting, databasing and imaging the specimens which are currently located in the general collection. This includes the above-mentioned duplicate types, as well as any other types located during the extraction process. The second goal of the project is to improve the resolution and image quality of the original digital images by rescanning them with newer technology. At the completion of this project, the data and high-resolution images of more than 50,000 Latin American type specimens will be made available to Aluka for the benefit of the world's academicians.

In April of this year, Christine Allocca and Michael Butts were hired by the Department to spearhead the effort to improve our Latin American type specimen resources. Allocca comes to us with extensive experience in the information technology field and a more recent history of assisting with various herbarium collections projects. Butts received his undergraduate training at Duke University and recently completed a contract working with Kress and Ida Lopez on the NSF-sponsored project to build an Instant Image Identification System (see the *Plant Press*, 10(1): 10; 2007). Longtime contract photographer Ingrid Lin, who has been personally responsible for the production of more than 150,000 high-resolution specimen images, has been brought aboard to provide her expertise at digital imaging of types.

In consultation with different Department staff members, various strategies have been developed for locating and extracting types from the general collection. We want to locate as many types as possible, and those that are clearly marked are easier to find than those for which the type status is more cryptic or even missing. Employing a combination of techniques, including the compilation

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Travel

Pedro Acevedo traveled to Patillas, Puerto Rico (5/9 – 5/12) to advise a local non-profit organization, Tropical Venture, on cultivating and harvesting woody species of vines.

Walter Adey traveled to Shepherdstown, West Virginia (4/16 – 4/20) to give a presentation at a scientific meeting held by Virginia Tech and the Freshwater Institute; and to Nova Scotia, Canada (5/24 – 7/28) to study the algal community structure and to collect marine algae.

Laurence Dorr traveled to Bronx, New York (5/9 – 5/11) and to Cambridge, Massachusetts (6/18 – 6/29) to conduct library research on the final supplements to *Taxonomic Literature, edition 2* and to use the herbarium.

Maria Faust traveled to Belize (5/9 – 5/24) to conduct collection-based field research on marine dinoflagellate algae.

Vicki Funk traveled to Medellin, Colombia (4/21 – 4/26) to present an invited talk at the Colombian Botanical Congress.

Linda Hollenberg traveled to Saint Paul, Minnesota (5/20 – 5/27) to attend and participate in the annual meeting of the Society for the Preservation of Natural History Collections.

W. John Kress traveled to Dominica (4/4 – 4/18; 5/22 – 6/2) to continue his investigations of the plant-pollinator interaction between *Heliconia* and the Purple-throated Carib hummingbird; to Medellin, Colombia (4/22 – 4/25) to give a plenary lecture and two invited lectures at the Colombian Botanical Congress; and to Toronto, Canada (6/17 – 6/20) to present a talk at a DNA barcode meeting at Guelph University.

Mark and **Diane Littler** traveled to Fort Pierce, Florida, and the Bahamas (6/4 – 8/5) to continue on-going taxonomic and ecological research.

Ida Lopez and **Ling Zhang** traveled to Manhattan, New York (6/13 – 6/16) to collect woody plant specimens in Central Park for the Image Identification System project.

Rusty Russell traveled to New Haven, Connecticut (4/25 – 4/27) with **Bianca Lipscomb** to conduct research on the U.S. Exploring Expedition at the Yale University herbarium library; to Palm Springs, California (5/20 – 5/27) to present a series of talks at a three-day "Scholars in the Schools" program in the Coachella Valley; to Bronx, New York (6/6 – 6/8) to conduct research on the U.S. Ex. Ex. at the New York Botanical Garden; and to London, Great Britain (6/16 – 6/24) to attend a training program of the Latin American Plants Initiative at the Royal Botanic Gardens Kew and to give a presentation to the Earthwatch Institute in Oxford.

Laurence Skog traveled to Sarasota, Florida (5/16 – 5/22) to work on Gesneriaceae at Marie Selby Botanical Gardens.

Alain Touwaide traveled to Manhattan, New York (4/15 – 4/19) to present a lecture at Columbia University and to conduct research at the Pierpont Morgan Library and the New York Public Library; to Montreal, Canada (4/27 – 4/29) to present a talk at an international workshop at McGill University; and with **Emanuela Appetiti** to Italy (5/9 – 5/16) to present talks in Rome, Tivoli, and Naples; and to Greece (5/23 – 6/7) to deliver a keynote address at a conference held at the Hippocratic Foundation in Kos and to conduct research on medicinal plants, and, in Patmos, to examine ancient medical manuscripts conserved in the library of St. John's Monastery.

Jun Wen traveled to Austin, Texas (5/22 – 5/26) to collect *Parthenocissus* (Vitaceae) in central Texas; and to China (6/1 – 6/20) to collect *Prunus* in Zhejiang, Guangxi, and Yunnan provinces.

Kenneth Wurdack traveled to Gainesville, Florida (4/10 – 4/13) and to Paris, France (5/7 – 5/13) to attend a workshop and an organizational meeting of the *Euphorbia* Planetary Biodiversity Inventory (PBI) project; and to Bronx, New York (6/21 – 6/23) to conduct herbarium research at the New York Botanical Garden.

Elizabeth Zimmer traveled to Boston, Massachusetts (5/17 – 5/22) to attend a Radcliffe workshop on "Genetics and Genomics of Emerging Model Species."

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Visitors

Konstantyn Romaschenko, National Academy of Science of Ukranie; Poaceae, Stipeae (11/30/06-5/30/07).

Ki-Oug Yoo, Kangwon National University, South Korea; Coryloideae and Vitaceae (12/12/06-12/11/07).

Lei Xie, Chinese Academy of Sciences; *Clematis* (Ranunculaceae), *Circaea* and *Fuchsi*a (Onagraceae) (1/1/07-12/31/08).

Ying Meng and **Zelong Nie**, Kunming Institute of Botany, China; Biodiversity conservation of Himalayan Tibet (1/18-5/31).

Tieyao Tu, Kunming Institute of Botany; *Nolana* (Solanaceae) (1/18/07-1/17/08).

Ling Zhang, Xishuangbanna Tropical Botanic Garden, Chinese Academy of Sciences; Instant Identification System (1/22/07-1/21/08).

John Page Cotton, **Jeffrey Leon**, **Sam Raker** and **Bryan Randolph**, George Washington University; Medicinal plants of antiquity (1/29-6/30).

John Mitchell and **Susan Pell**, New York Botanical Garden; Anacardiaceae (3/1-4/1).

Antonia Posada, Universidad de Antioquia Colombia; Molecular techniques (3/16-5/18).

Arthur Tucker, Delaware State University; Lamiaceae (4/3).

Mary Ann Feist, Illinois Natural History Survey; Apiaceae, *Oxypolis* and *Ptilimni-*

Editor's Note

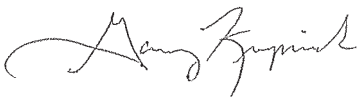
The Library Will Be a Bit Quieter

With this issue of the *Plant Press*, we sadly say goodbye to a dear friend of the Department – Botany Branch Librarian Ruth Schallert. Ruth retired in May after 41 years of service at the Smithsonian Institution. Not only was she dearly appreciated by the members of the Department, but she won over many herbarium and library visitors who were grateful for her wonderful assistance in the library.

Ruth was so respected by researchers in the library that a plant species was named for her in her honor, the Philippine asclepiad *Hoya schallertiae* C.M. Burton in 1982. The listing of the species in *The Hoyan* includes this dedication by Christine Burton: "This hoya ... is named in honor of Mrs. Ruth Schallert, Botany Librarian at the Smithsonian Institution in Washington, D.C. U.S.A., who has helped me, (and HSI) far beyond the call of duty, in obtaining *Hoya* research material." Ruth was unaware that a species had been named for her, and she wrote a thank-you note, twenty years late.

Ruth has received many honors in her career including the prestigious Charles Robert Long Award of Merit, which was presented by the Council on Botanical and Horticultural Libraries (CBHL) to Ruth in June 2000. She was chosen by the CBHL to receive the extraordinary award for a number of reasons, including: 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.

The Botany Branch Library is just one link in an extensive Natural History Museum network of departmental libraries. The library and all of its resources serve an important function for research in the Department. Under Ruth's care, the library has grown to the tune of 60,000 books. Ruth, you will most sincerely be missed.



Gary Krupnick, Editor

um (Umbelliferae) (4/4-4/5).

Diane and **Robert Stewart**, Independent researchers; Gesneriaceae (4/11-4/17).

Susan Gonsalves, **Beverly Karp** and **Judy Patchan**, Earthwatch Institute; Medicinal plants of antiquity (4/23-4/27).

Amalia D'Aronco, University of Udine, Italy; *Historia Plantarum* collection (4/24).

Hongli Tian, Beijing Institute of Botany; *Nelumbo* (Nelumbonaceae) (4/25-10/24).

Juarez Wagner, Universidad Federación do Rio Grande do Sul, Brazil; Herbarium research (4/27).

Kim Boatright, **Carol McConnell**, **David Steinnagel** and **Daniel Sulzbach**, Earthwatch Institute; Pacific Island ethnobotany (4/30-5/4).

Chris Lyal, Natural History Museum, London; INOTAXA project, Botany and EMu migration (4/30-5/2).

Alexander Rojas, Jardin Botanico Lankester, Universidad de Costa Rica; Central American ferns (4/30-5/5).

Rich Spellenberg, New Mexico State University; Nyctaginaceae (4/30-5/1).

Shelaine Hetrick, Independent researcher**;** INOTAXA project (5/2).

Chris Meacham, Independent researcher; Consultation and INOTAXA project (5/2-5/5).

Emily Gilmore, Georgetown University; Internship interview (5/3).

Rodrigo Duno de Stefano, Centro de Investigación Científica de Yucatán, Mexico; Leguminosae in Yucatan Peninsula Biotic Province (5/3-7/7).

Marion Allred, **Dominique Cheyns**, **Florence Fitzgerald** and **Helen Nichols**, Earthwatch Institute; Pacific Island ethnobotany (5/7-5/11).

Yi-Lin Chen and **Shu-Ying Jin**, Institute of Botany, Chinese Academy of Sciences; Flora of China (5/7-5/11).

Peter Hoch, Missouri Botanical Garden; Ongraceae (5/7-5/10).

Yunjuan Zuo, Beijing Institute of Botany, China; *Panax* (Araliaceae) (5/7/07-5/6/08).

Pedro Fiaschi, Virginia Commonwealth University; *Schefflera* (Araliaceae) (5/10).

Youxing Ling and **Zhongren Wang**, Beijing Institute of Botany; Chinese Pteridophytes 5/12-5/20).

Tsitsi McPherson, University of Connecticut; Specimen data collection (5/16-5/25).

Chunghee and **Jeongho Lee**, National Arboretum of Korea, South Korea; Araliaceae, *Leontopodium* (Asteraceae), *Scrophularia* (Scrophulariaceae) and *Angelica* (Apiaceae) (5/16-5/20).

Andrea Weeks, George Mason University; *Cordia polyantha* (Boraginaceae) (5/16).

Urs Eggli, Grun Stadt Zurich, Sukkulentum Sammlung, Switzerland; Cactaceae, esp. *Cardenas* types (5/21-5/25).

Maribeth Kniffin, Smith College; Botanical art (5/29-8/3).

Mauricio Diazgranados, University of Missouri-St. Louis; *Espeletiinae* (Asteraceae) (6/4-8/10).

Charles Zartman, Instituto Nacional de Pesquisas da Amazonia, Brazil; Herbarium and collaboration (6/4-7/9).

Kate Huber, **Becky Huncosky**, **Allie Pyan**, **Amanda Rubasch** and **Charles Umbanhowar Jr**., St. Olaf College; Charles Geyer specimens from Nicollet Expedition (6/11-6/13).

Chris Johnson, Independent researcher; Volunteer interview (6/11).

Katie Walther, Notre Dame University; Liberia Inventory project (6/13-6/23).

Thomas F. Daniel, California Academy of Sciences; Acanthaceae (6/24-6/27).

Brendan Hodkinson, Duke University; Virginia lichens, esp. Parmeliaceae (6/25-6/27).

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Staff Research & Activities

W. John Kress traveled to Dominica in the Eastern Caribbean in April and again in May to continue his investigations of the plant-pollinator interaction between *Heliconia* and the Purple-throated Carib hummingbird. He worked with his collaborator former SI Senior Fellow Ethan Temeles from Amherst College and Chinese colleagues Qing-Jun Li and Ling Zhang.

Rusty Russell and **Bianca Lipscomb** traveled to Yale University in April to visit the Beinecke Rare Book & Manuscript Library and the Yale University Herbarium. The purpose of the visit was to investigate the journals of officers aboard the US Exploring Expedition 1838-1842 held in Beinecke's Western Americana collections and examine the specimens from the Expedition held at the Yale University Herbarium. The trip proved to be a great success. Information was collected on the latitude and longitude of the flagship Vincennes and the Expedition's Rubiaceae specimens. In June, Russell and Lipscomb traveled to the New York Botanic Garden to continue their research. The Rubiaceae holdings of the Steere Herbarium were examined for Expedition specimens. In addition, the correspondence of John Torrey held in the Archives of the Mertz Library were investigated for Expedition relevant passages, namely in those written by Asa Gray to John Torrey.

Russell also traveled to Palm Springs, California, the week of May 20 for a three-day "Scholars in the Schools" program, sponsored by the Ford Motor Company Fund through the Smithsonian Associates. Russell and **Marilyn London** of the Repatriation Office London gave a total of 18 presentations over three days to 750 students and 59 teachers in the Coachella Valley. Six schools with a focus on science were visited. One of the presentations introduced Smithsonian web resources to local educators.

For the fourth time, **Stanwyn Shetler** was the botanist for the Virginia Native Plant Society's June wildflower tour of the Bruce Peninsula of southwestern Ontario. The week-long program of daily field-trips ran 16-23 June. The Bruce Peninsula is famous for its orchids and ferns, and the group, including 14 besides Shetler and his wife, Elaine, saw 20 species of orchids and 23 species of ferns, among many other plants.

Shetler is the "Smithsonian Consultant" for these just released Smithsonian pocket guides in the Collins "Wild Guide" series by HarperCollins: *Trees: East* (192 p., 2007) and *Trees: West* (192 p., 2007), both by Steve Cafferty.

From 23 May to 7 June, **Alain Touwaide** and **Emanuela Appetiti** traveled to Greece to continue their research on ancient botanical manuscripts. First, they visited the island of Kos to attend the 1st Amphictyony of Societies of History of Medicine. Touwaide delivered the keynote lecture "Old Herbs, New Remedies?" and chaired a session on "Post-Byzantine Iatrosophic Texts." They also participated in the inauguration of the garden of Hippocratic medicinal plants, and had several meetings with the president of the Hippocratic Foundation and the president of the International Institute for Medical Humanities. They then visited Patmos, where they analyzed Byzantine and post-Byzantine medical manuscripts at the Library of St. John's Monastery. The library has the one of the best collections of Greek manuscripts on parchment, dating back to the 11th century, in the world. Finally, they visited Athens to meet with the director of the Centre for Historical Studies of the Cultural Foundation, National Bank of Greece, and with the director of the Instituto Cervantes.

Staff Retirements

Ruth Schallert, the first Botany Librarian at the Smithsonian Institution, officially retired in May after 41 years of federal service. A native of western Wisconsin, she received her professional librarian degree from the University of Michigan at Ann Arbor. Since her first job, in the Art Library of the University of Iowa, Schallert's career has encompassed three government libraries: the Pacific Salmon Investigations library of the U.S. Fish and Wildlife Service in Seattle, Washington; the Naval Oceanographic Office library in Washington, D.C.; and, since 1966, the National Museum of Natural History,

Ruth Schallert joined the Smithsonian Institution in 1966.

largely as Botany Branch librarian, with a brief part-time stint covering the Entomology Branch library. Schallert was previously profiled in the *Plant Press* (3(1); 2000).

Awards & Grants

Pedro Acevedo received a grant from the U.S. Department of Agriculture to conduct an "Assessment of the Adventive and Weedy Flora of the West Indies."

In April 2007, **Vinita Gowda**, graduate student of **W. John Kress**, received a Sigma Xi Grants-in-Aid of Research, for "A Population Genetics Approach to Understand Sex-specific Adaptation in the Caribbean *Heliconia*-Hummingbird System."

Alain Touwaide has been appointed as President of the Washington Academy of Sciences.

New Faces

For over 27 years, outstanding college-students from around the world have been specially selected to pursue scientific research at NMNH in the ten-week summer Research Training Program (RTP). Fourteen students were chosen from a field of 130 applicants to participate in RTP 2007, and seventeen NMNH research scien-

tists agreed to serve as their research advisers. Hailing from five countries: Colombia, Brazil, Indonesia, Canada, and the United States, and pursuing a variety of research projects ranging from investigating the oxidation of the Earth's mantle to studying the gland morphology of foam-nesting frogs to examining the co-evolution of *Heliconia* and hummingbirds to deriving Native American trade routes by analyzing iron meteoritic Hopewell beads, this elite group of students has welcomed inter-disciplinary and inter-cultural exchange. Three of the 14 students are pursuing research projects in the Department of Botany.

Emma Harrower is a fourth-year undergraduate student studying Plant Biology at the University of British Columbia, Vancouver, Canada. Harrower is researching the population genetics and taxonomy of *Muhlenbergia montana* and *M. filiculmis* with **Paul Peterson**. These two sister species of grasses have very similar morphologies, although the former species has shorter, involute, and sharp-pointed leaf blades, and shorter spikelets with short-awned lemmas. *Muhlenbergia montana* is ecologically a dominant component of grasslands found in the southwestern United States, throughout Mexico, and the highlands of Guatemala. *Muhlenbergia filiculmis* is restricted to the southern Rocky Mountains in the United States where it occurs on similar habitats at higher elevations. Harrower hopes to clarify taxonomical differences between *M. montana* and *M. filiculmis* by studying macromorphological characters. She will also look at the genetic diversity within and among 15 populations of *M. montana* and *M. filiculmis* using amplified fragment length polymorphisms (AFLPs). The geographic locations of 100 vouchers of *M. filiculmis* and *M. montana* will be mapped to show distribution patterns.

Laura Lagomarsino, from Sacramento, California, is a fourth-year Genetics and Plant Biology major at the University of California, Berkeley. In Berkeley, she is reconstructing the phylogeny of *Heliconia* using molecular data under the guidance of Department of Botany alum Chelsea Specht. This summer, she is working under **W. John Kress** on a project entitled "Phylogeny, Floral Evolution, and Co-Radiation with Hummingbird Pollinators in *Heliconia* subgenus *Heliconia* (Heliconiaceae)." The project involves collecting additional DNA sequence data to gain better support for the phylogeny so that comparative phylogenetic methods can be used to detect evolutionary trends and patterns within a subgenus of *Heliconia*. Morphological characters relevant to pollination biology, such as floral curvature, nectar chamber size, and flower color, are going to be measured for this purpose because it is hypothesized that speciation in the group was greatly influenced by pollinator selection. Additionally, a parallel phylogeny of hummingbirds will be used to assess the possibility of a tight co-evolution between *Heliconia* and their pollinators.

Cecily Marroquin is an intern from Los Alamos, New Mexico. She is currently a rising sophomore at New Mexico State University in Las Cruces, New Mexico, where she is double majoring in Anthropology and Journalism/Mass Communications. Marroquin is working with **Alain Touwaide** on the project: Quantifying Diseases in Societies without Epidemiological Record: a Methodological Essay. The project is an approach to help determine the epidemiology of the Old World. Although the predecessors of modern medicine such as Hippocrates, Dioscorides, and Galen recorded the uses and benefits of therapeutics, they left little trace of the period's population health. Due to many difficulties, the best way to uncover the epidemiology would be by analyzing information from the ancient texts. By quantifying the amount of therapeutic agents available, a conclusion can be made on the diseases prevalent under the assumption that the more frequent a disease is, the more medicines there will be to treat it. In order to verify the assumption, the project analyzes the epidemiology of the 20th century, a well recorded time period, to make the correlation between disease and therapeutic agents. Marroquin is taking the frequency of the diseases mentioned in important therapeutic references (specifically all editions of Goodman and Gilman's *The Pharmacological Basis of Therapeutics*) and comparing the most mentioned diseases to the leading causes of death throughout the entirety of the century. If a correlation can be made, a model will be built to help recover the epidemiology of the Old World.

BioBlitz Sweeps Rock Creek Park

From 18 May at noon until 19 May at noon, several scientists from the National Museum of Natural History (NMNH) participated in a BioBlitz at Rock Creek Park in the District of Columbia, to help record plant and animal species there. It was the first of 10 annual BioBlitz events that will occur across the United States until 2016, when the National Parks Service (NPS) will celebrate its 100th anniversary. Each BioBlitz, a 24-hour inventory of all species in a park, will be organized and co-sponsored by the NPS and the National Geographic Society (NGS).

Festivities for the Rock Creek Park BioBlitz began on 17 May, when members of the Plant Instant Identification System (IIS) project, **W. John Kress**, **Ida Lopez**, **Ling Zhang,** and **Michael Butts,** demonstrated the Plant Identifier during the International Conservation Caucus Foundation event for the U.S. Congress and their staff at the Sam Rayburn Building on Capitol Hill. The Plant Identifier is a prototype device that allows users to take a digital photo of a leaf that automatically transfers via WiFi or Bluetooth technology to the Identifier notebook computers. Using recognition software, the Identifier then gives the user a choice of leaf images of taxa that are possible matches. Other IIS Project members present were David Jacobs and Sameer Shirdhonkar from the Computer Science Department of the University of Maryland, and Steven Feiner, Sean White and Oren Yeshua from the Computer Science Department of Columbia University.

The following day, some seventy scientists, mostly local, but from as far away as Kansas, were joined by hundreds of volunteers to discuss biodiversity and lead school groups and the public on trips to observe nature and collect specimens in Rock Creek Park. The IIS team demonstrated the Plant Identifier, and **Vinita Gowda** and **Norm Bourg** led groups that identified and recorded the botanical specimens found in Rock Creek Park.

At the end of the 24-hour BioBlitz, 30 aquatic plants, 232 terrestrial plants, 17 amphibians and reptiles, 21 aquatic invertebrates, 29 birds, 20 fish, 52 fungi, 12 mammals, 10 soil invertebrates and 243 terrestrial insects were inventoried. The total of 666 species is bound to increase after lab analysis is finished by researchers.

Seaweed Flora of Saba Island

Diane and **Mark Littler** and **Barrett Brooks** have recently published an online seaweed flora (more than 100 species) of Saba Island available at <http://sweetgum.nybg.org/saba/algae.html>.

Users can search for any combination of phylum, family, genus, species, infraspecific rank, author, collector, collector number and precise location as a satellite map with longitude and latitude. Searching for a given parameter generates information associated with the specimens collected by the project under that parameter. Images of photos of living plants *in situ* from the field are attached at the bottom of the label data.

Saba Island, southeast of Puerto Rico, is one of the Windward Islands of the Netherlands Antilles. Because there is little room for agriculture on the island's 5 square miles, the 1,500 islanders rely mainly on income from tourists that come to scuba dive. The Saban fishing community also generates a significant income from fishing nearby Saba Bank.

In response to rising concerns about oil tanker traffic and anchoring, Conservation International, in conjunction with the Netherland Antilles Department of the Environment and Nature, as well as local concerned groups and a total of 12 marine scientists, initiated an investigation of Saba Bank, a massive undersea mountain. Encircled by about 85 square miles of actively growing coral reefs, Saba Bank is the third largest atoll and, until the January 2006 expedition, was one of the least-explored places on the planet. Saba Bank was threatened by the bustling oil transshipment depot on nearby St. Eustatius Island. Supertankers stop there to transfer oil to smaller ships that can enter countries without deep-water ports. Rather than pay minimal mooring fees at St. Eustatius, tankers drop anchor for free just a few miles away at Saba Bank.

The Littler team found Saba Bank to be by far the richest location for seaweed diversity thus far discovered in the Caribbean – a distinction they formerly attributed to Diamond Rock off the coast of Martinique. Many new species of seaweed were discovered around the atoll, including an abundance of several commercially valuable species – precisely what the conservation groups were hoping for. This is particularly significant for a community looking to diversify its economy. The data collected from the 2-week expedition will strengthen the small island community's petition for international protection as a Particularly Sensitive Sea Area by the International Maritime Organization.

Saba Island in the Caribbean Sea. (Photo by Jeff Williams)

Profile

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of type specimen records from numerous other herbaria, the initial results in the Annonaceae, Anacardiaceae and Vitaceae have been promising. It is expected that 14,000 to 16,000 additional types will be located.

In his role as the Type Register specialist, John Boggan will be dedicated almost exclusively to the task of verifying the type status of these specimens, and will be the primary point of contact for LAPI staff relative to typification and data entry issues. As specimens are added to the database, they will immediately contribute to the Department's online Type Register <http://ravenel.si.edu/botany/types>. Once a type has been entered, the decision will be made whether to scan or photograph the specimen. This decision is based primarily on the thickness or bulkiness of the specimen.

During the first three years of the type imaging project, begun in 2000, we used a PhaseOne LightPhase digital camera back that produced a maximum file size of 18MB. Our current digital setup, using a PhaseOne H20, produces a maximum unprocessed (RAW) file size of 48MB. For the LAPI project, we have installed two specially designed flatbed scanners in the former dark room. These scanners, designed at the Royal Botanic Gardens, Kew, are oriented upside down so that individual specimens can be digitized from above to avoid flipping them over. This setup produces an average processed TIFF file of 200MB. All the Latin American type specimens that had been digitized with the LightPhase will be re-scanned or re-photographed, therefore, at a significantly higher resolution.

The organization behind this effort is Aluka, an international, collaborative initiative building an online digital library of scholarly resources. Their name, 'Aluka,' is derived from a Zulu word meaning 'to weave,' reflecting Aluka's mission to connect resources and scholars from around the world.

Aluka seeks to attract high-quality scholarly content from institutions and individuals across the globe. Their website includes a wide variety of scholarly materials contributed by Aluka's partners, ranging from archival documents, periodicals, books, reports, manuscripts, and reference works, to three-dimensional models, maps, oral histories, plant specimens, photographs, and slides. By aggregating these materials online, they link materials that are widely dispersed and difficult to access, opening up new opportunities for research, teaching, and broader public discussion. An effort to assemble data and images for all African plant types, the African Plant Initiative (API) is near completion and can be seen on the Aluka website.

When the Type Register project was first developed in 1970, it was hard to imagine what the informatics world would look like in the 21st century. Working with

keypunch cards and mainframe computers, the work was tedious. The task of cataloging the specimen, collection, and typification data for more than 80,000 covered 13 years. When it was completed in 1983, the U.S. National Herbarium's Type Register was not simply the largest electronic dataset of plant specimens, it was the largest electronic specimen dataset anywhere. And, most importantly for researchers, each record had been verified against the published botanical literature in order to validate its type status.

Fast forward another 20 years and the electronic landscape has changed dramatically. The U.S. National Herbarium has become a major online presence with a content-rich website that features outstanding sources of information for botanists and the general public. Today, scientists and museum professionals do not simply take advantage of the data and images on our website; they count on it to provide them with the tools and resources necessary to conduct their research. Upon completion of this project, scholars working in Latin American botany will recognize our Type Register as the most significant online resource available.

Visitors

Continued from page 3

Julio Lombardi, Universidad Estaadual de Sao Paulo - Rio Claro Campus, Brazil; Hippocrateaceae, Sabiaceae, Vitaceae and Brazilian *Meliosma* (Meliosmaceae) *(*6/25-6/29).

Kate Hertweck, University of Missouri Columbia; Ph.D. research consultation (6/26-6/29).

Jim Locklear, University of Nebraska State Museum; *Phlox* (Polemoniaceae) (6/27).

Gary Ferngren, Oregon State University; *Historia Plantarum* collection (6/28).

Peter Barker, Oklahoma University; *Historia Plantarum* collection (6/29).

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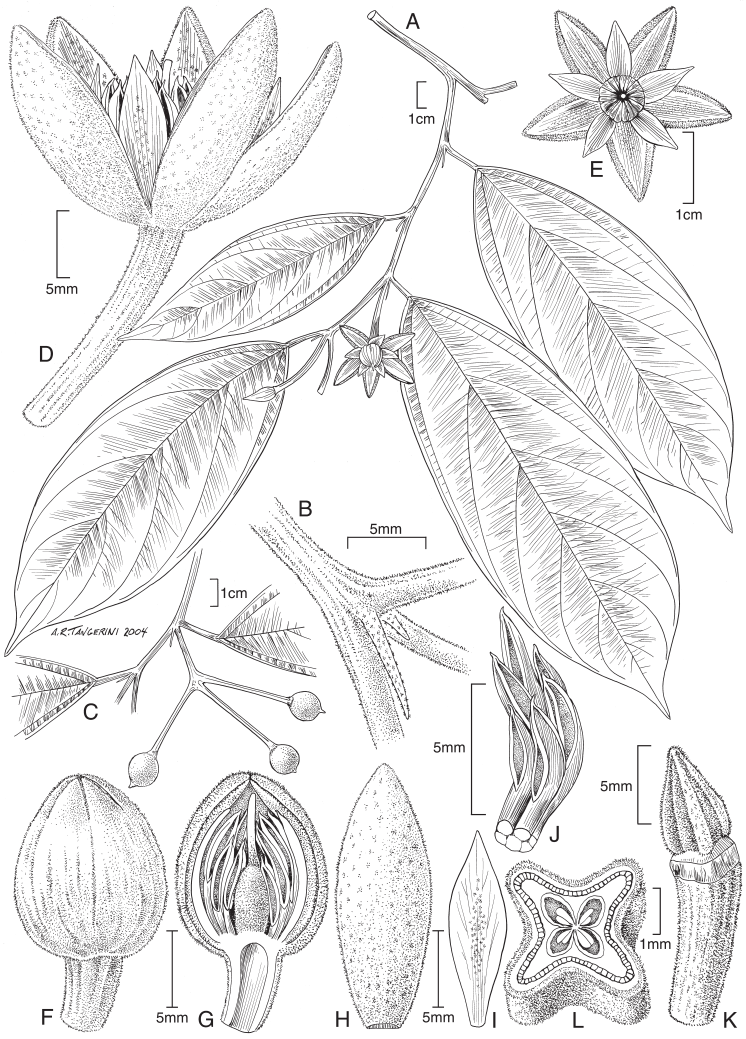
Art by Alice Tangerini

Mortoniodendron uxpanapense Dorr & T. Wendt

Currently 38,000 Latin American type specimens are housed at the U.S. National Herbarium, including this one from the Isthmus of Tehuantepec, Mexico. Collected from a lowland rain forest in Veracruz, Mexico, the type species was the basis for this drawing of *Mortoniodendron uxpanapense* (Malvaceae), originally published in *Lundellia* (7: 44-52; 2004). Known from only one small population, in an area under continual threat of deforestation and burning, the species is Critically Endangered based on IUCN Red List criteria. Tangerini's drawing was on exhibit in the summer of 2006 at the Athenaeum in Alexandria, Virginia, as part of a group exhibit by the Botanical Art Society of the National Capital Region.



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