Department of Botany & the U.S. National Herbarium

The Plant Press

Smithsonian
National Museum of Natural History

New Series – Vol. 9 – No. 4 October–December 2006

Botany Profile
A Century of Links

By Rusty Russell and Jamie Whitacre

What is the link between *Larrea tridentata* (creosote), the scale insect *Tachardiella larrae*, the native Tarahumaras of northern Mexico, and a former 19th century Army medic? The answer is lac. You see, the scale parasitizes the plant, one of only three species that serve as its host, producing a resiny substance called lac. And for more than one hundred years, the Tarahumara have used this material to seal cracks in earthenware.

Using Smithsonian plant, insect and ethnographic collections that date to the 19th century, we can clearly document this biological and ethnobotanical phenomenon. And the person responsible for these collections is Edward Palmer, a former agent of the Smithsonian, U.S. Department of Agriculture and Harvard, who helped define the subject of ethnobotany in the New World. This is just one of many stories being reconstructed in an exhibit case that will be unveiled in the National Museum of Natural History's Constitution Avenue lobby in December 2006.

The exhibit is but one early product of a three year project entitled "Ethnobotanical Diversity of the Border Regions of the U.S. and Mexico." Designed and managed by Collections Manager Rusty Russell, funded by the Smithsonian Latino Center, and supported by a large cast of Smithsonian staff, Mexican colleagues, contractors, and volunteers, this project represents a model way to highlight the value of historical plant collections beyond the traditional and highly productive taxonomic research that takes place in the United States National Herbarium. And the results have been impressive.

Focusing on herbarium specimens collected by Palmer, the Mexican Boundary Survey and our holdings from Chihuahua, almost 20,000 specimens have been located and inventoried. High resolution images of thousands of these have been produced. Palmer's journals and handwritten notes have been assembled from the Botany Library, the National Anthropological Archives, the Harvard Botany Library and Archives, and from the fragment pockets of Palmer's own plant collections! Photographs taken by Palmer or his hired photographers have been located and will be digitized.

The wealth of Palmer's ethnographic material in the Department of Anthropology is being linked directly to herbarium specimens, which was always Palmer's intention. The herbarium specimens, scarce of label data, are being augmented with dates, uses, references, and improved locality data. This spring a team of GIS students from George Mason University, working with biodiversity experts in Mexico, will begin to analyze these locality data and assign geo-reference points to each specimen. A website, which will integrate all of these resources in a manner useful to both researchers and the general public, is under construction.

Over the last few decades, museums have returned to a multidisciplinary approach in attempting to understand biological and human phenomena, reversing an early 20th century trend to compartmentalize research disciplines. Ironically, this was always Edward Palmer's purpose in choosing to collect what he did. Following on his experiences as a medic, an archaeological field assistant, and a professional collector for numerous academic institutions, Palmer followed the expanding railroad lines into areas of Mexico that had been little explored.

In addition to collecting tens of thousands of herbarium specimens in the traditional manner, Palmer consulted with local inhabitants to understand how these plants were used; he studied and documented the processing of plant material into consumables, medicines, and a wide range of tools and useful objects. Where appropriate, he described the relationship between these plants and other biological organisms. He purchased plant material directly from markets. And he acquired thousands of objects produced or used by many native cultures in southwestern United States and northern Mexico. Between expeditions, he returned to Washington where he processed and distributed his collections. Unfortunately, the plant and ethnographic materials have been separated since their arrival in the Museum, to the detriment of both collections.

Now, through the collaborative efforts of the Department of Botany and other NMNH collections, we are improving the physical and informational state of the collections and assembling the many puzzle pieces that

Continued on page 10

Travel

Pedro Acevedo traveled to Berlin, Germany (8/22 – 8/27) to attend the Flora of the Guianas meeting and to present a talk on floristics and conservation.

Norm Bourg traveled to Chico, California (7/27 – 8/3) to present a paper at the Botany 2006 conference; and to Memphis, Tennessee (8/6 – 8/11) to attend the Ecological Society of America meeting.

Maria Faust traveled to Fort Pierce Smithsonian Marine Station, Florida (7/5 – 7/14) tocontinue field workon deep sea oceanicdinoflagellate algaein the Gulf Stream; andto Copenhagen, Denmark (8/2 – 8/10) to give presentations on the distribution ofharmful, bloom-forming dinoflagellates and toxic *Gambierdiscus* species in the Belizean coral reef-mangrove ecosystems at the 12th International Conference on Harmful Algae.

Vicki Funk traveled to Barcelona, Spain (6/30 – 7/10) to present a talk at the International Compositae Alliance meeting; to Chico, California (7/27 – 8/3) to present a paper at the Botany 2006 conference; and to Tibet, China (8/29 – 9/20) to collect Asteraceae.

Carol Kelloff traveled to Barcelona, Spain (7/1 – 7/6) to attend the International Compositae Alliance meeting; to London, England (7/6 – 7/10) to study the Grammitidaceae for the Flora of the Guianas treatment at the Kew Herbarium; and to Chico, California (7/29 – 8/2) to presented a paper at the Botany 2006 conference.

W. John Kress traveled to Singapore (7/3 – 7/6) to attend the International Symposium on the Family Zingiberaceae; and to Kunming, China (7/6 – 7/21) to conduct field work and with **Ida Lopez** and **Vinita Gowda** to give presentations at the Association for Tropical Biology and Conservation annual meeting.

Mark and **Diane Littler** traveled to Juneau, Alaska (7/67/13) to make a presentation at the Phycological Society of America meetings; to Green Turtle Cay, Abacos, Bahamas (7/20 – 8/5) with **Barrett Brooks** to continue ongoing collaborative research with Brian Lapointe which this year focuses on intensified sampling of the poorly know windward reefs of the outer islands.

Paul Peterson traveled to Chico, California (7/30 – 8/3) to present a paper at the Botany 2006 conference; throughout northern California and Oregon (8/3 – 8/13) to collect grasses; and throughout Mexico (8/29 – 10/4) to collect grasses.

Harold Robinson traveled to Barcelona, Spain (7/1 – 7/7) to present a talk at the International Compositae Alliance meeting.

Laurence Skog traveled to Chico, California (7/29 – 8/3) to attend the Botany 2006 conference.

Robert Soreng traveled through eastern Kyrgyzstan (8/1 – 8/27) to collect grasses on a USDA sponsored expedition.

Alice Tangerini traveled to Madison, Wisconsin (7/30 – 8/6) to attend the annual meeting of the Guild of Natural Science Illustrators.

Alain Touwaide traveled to London, England (7/19 – 7/21) to attend the meeting of the International Association for the History of Nephrology (IAHN) as the president of the association; to London, England (8/19 – 8/26) with **Emanuela Appetiti** to attend the Congress of the International Society for Byzantine Studies; to Budapest, Hungary (8/26 – 8/31) with Appetiti to attend the 41st Congress of the International Society for the History of Medicine; and to Padua, Italy (9/13 – 10/26) with Appetiti to participate in the Earthwatch Program at the Botanical Garden of Padua and to conduct research in Naples and Pompeii.

Warren Wagner traveled to Chico, California (7/29 – 8/3) to give an invited presentation paper at the Botany 2006 conference; and to Kauai, Hawaii (8/3 – 8/30) to conduct research.

Jun Wen traveled to China (7/12 – 8/10) to conduct field work on *Prunus* and Araliaceae in seven provinces; and to Tibet, China (8/29 – 9/20) with **Vicki Funk** and **Deborah Bell** for biodiversity and conservation research and training in the Eastern Himalaya with support from the MacArthur Foundation as a collaborative effort with colleagues of the Field Museum.

Kenneth Wurdack traveled to Guyana (8/19 – 10/4) to conduct field work.

The Plant Press

New Series - Vol. 9 - No. 4

Chair of Botany
Warren L. Wagner
(wagnerw@si.edu)

EDITORIAL STAFF

Editor
Gary Krupnick
(krupnickg@si.edu)

News Contacts
MaryAnn Apicelli, Robert Faden, Ellen Farr, Shirley Maina, Rusty Russell, Alice Tangerini, and Elizabeth Zimmer

The Plant Press is a quarterly publication provided free of charge. If you would like to be added to the mailing list, please contact Dr. Gary Krupnick at: Department of Botany, Smithsonian Institution, PO Box 37012, NMNH MRC-166, Washington, DC 20013-7012, or by E-mail: krupnickg@si.edu.

Web site: http://www.nmnh.si.edu/botany

Visitors

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

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

Shiliang Zhou, Institute of Botany, Chinese Academy of Sciences, Beijing; Calycanthaceae (3/14-8/14).

Hui Ren, South China Botanical Garden, Guangzhou; Vitaceae (5/7/06-4/1/07).

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

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

Stefanie Ickert-Bond, University of Alaska; Altingiaceae and other intercontinental disjunct plants (7/10-9/23).

Uriel Bachrach, Hebrew University, Jerusalem, Israel; Historia Plantarum Library (7/13).

Continued on page 6

"Nothing makes sense…"

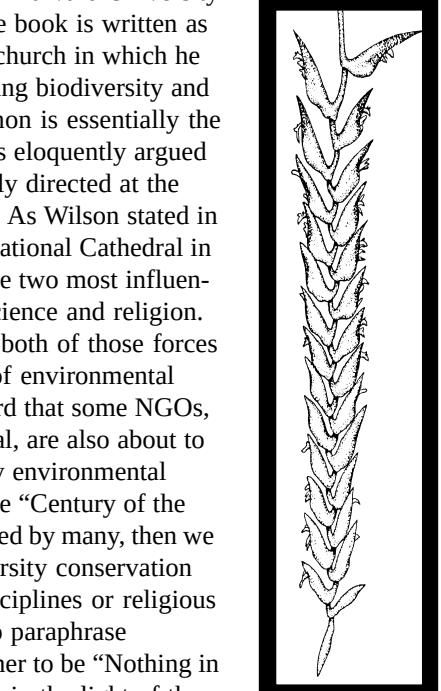
Theodosius Dobzhansky, one of the great evolutionary biologists of the 20th century, published a statement in 1973 about the relevance of the study of evolution to the field of biology. He said "Nothing in biology makes sense except in the light of evolution." This quote has become a classic when referring to the role that the theory of evolution has played in the development of the biological sciences during the last sixty years. The contribution of the "Modern Evolutionary Synthesis" beginning in the 1930's and 1940's to a wide range of fields was immense and even today many fields, such as evolutionary psychology and other areas of medicine, are incorporating evolutionary models into their conceptual foundations. The influence of Darwinian evolution on science has been profound.

More recently a new field of science, namely conservation biology, has similarly begun to influence how various biological disciplines are structured. A wave of books published in the last few years, among them *Phylogeny and Conservation*, *Plant Taxonomy and Conservation*, *Plant Conservation - An Ecosystem Approach*, and our own volume *Plant Conservation - A Natural History Approach*, all link a particular sub-discipline of biology to the theory and practice of environmental conservation. Especially in the fields of organismal biology, what we do as scientists seems to be more and more linked with assessing and conserving biodiversity. It is no secret why this linkage is happening. As the degree of environmental degradation and threat of extinction of species increases, our commitment as biologists to protecting and saving this diversity has become more and more relevant to our everyday work. Perhaps Dobzhansky's statement should now be paraphrased to read "Nothing in biology makes sense except in the light of biodiversity conservation."

Concern for the environment and the importance of conservation have not only affected the way we conduct science, but obviously has increased in society as a whole. The environmental movement has grown exponentially since the publication of Aldo Leopold's *A Sand County Almanac* in 1949. The bewildering array of non-governmental organizations devoted to conservation is nearly intractable. Today we not only have "green" architects designing green buildings to protect the environment, but also green politicians and green political parties with platforms designed to conserve biodiversity and legislate regulations to decrease our human impact on the environment. Yet with the world population continuing to grow (I was astounded that we actually celebrated in the United States reaching the 300,000,000 population mark!), and our natural resources continuing to be disproportionately exploited around the world, it is clear we are not yet green enough.

Perhaps the most surprising, but not unexpected nor unwelcome, emerging environmental group is the green Christian evangelical movement, which is part of a larger movement that crosses all religious denominations. A recent article in the *New York Times* described the work of the National Religious Partnership for the Environment that supports efforts to tackle local environmental issues, such as preserving wetlands, stopping landfills, and reforming mining practices. The article focused on efforts by Christian environmental activists in Appalachia to halt "mountaintop removal" coal mining practices that are severely degrading forests, creeks, and the atmosphere of surrounding areas. The *Times* reporter quoted one former coal minor who is now very critical of mountaintop removal mining practices as saying "The coal company says it's God's will. Well, God ain't ever run no bulldozer."

Another sign of the times is the book recently published by Prof. E.O. Wilson of Harvard University entitled simply *The Creation*. The book is written as one long letter to the pastor of a church in which he lays out his rationale for conserving biodiversity and the environmental. Wilson's sermon is essentially the same line of reasoning that he has eloquently argued for years, but now it is specifically directed at the evangelical Christian community. As Wilson stated in his book-signing address at the National Cathedral in Washington a few months ago, the two most influential forces in society today are science and religion. His efforts now attempt to bring both of those forces to bear on the critical necessity of environmental conservation. I have recently heard that some NGOs, such as Conservation International, are also about to initiate an evangelical community environmental campaign. If the 21st century is the "Century of the Environment" as it has been dubbed by many, then we must apply our efforts to biodiversity conservation whether they are in scientific disciplines or religious partnerships. Perhaps it is time to paraphrase Dobzhanky's statement even further to be "Nothing in society today makes sense except in the light of the environment."



P.S. As I step down from being chairman of the Department of Botany this contribution will be my last "Chair with a View." Thanks for everyone's support, enthusiasm, trust, and tolerance during these past nine years.

Chair With A View — W. John Kress

Staff Research & Activities

As President Elect of American Society of Plant Taxonomists (ASPT), **Vicki Funk** gave the after dinner presidential address at the "Botany 2006" meeting at the University of California in Chico, California, on 29 July - August 2. The talk "Enology and Phylogeny, A Botanical Perspective" featured a biodiversity and phylogenetic analysis of flowers on wine bottle labels. Others who attended and gave presentations at the Botany 2006 meeting were **Norm Bourg**, **Pat Herendeen, Carol Kelloff**, **Paul Peterson**, **Laurence Skog**, **Warren Wagner**, and graduate student **Karen Redden**. Bourg's talk was titled "Pollination Biology of *Xerophyllum asphodeloides* in the Appalachian Mountains in the Context of Fire." Peterson's lecture was titled "Evolution of the Muhlenbergiinae (Poaceae: Chloridoideae: Cynodonteae) in México." A collaborative paper was delivered by Lynn Gillespie titled "Deep Structure and Reticulate Evolution in a Large Polyploid Genus: ITS and trnT-trnF Data Help Crack the Bluegrass (*Poa*) Puzzle," by L.J. Gillespie, **R.J. Soreng**, and A. Archambault.

After the meeting Paul Peterson was joined by Jeff Saarela (former Smithsonian Research Training Intern and Ph.D. student at the University of British Columbia) and Chris Sears (Ph.D. student at the University of British Columbia) for a 10 day collecting trip visiting the coastal redwood forests, the Siskiyou Mountains, Russian Wilderness, Scott Mountains, Mount Shasta, and Mount Lassen. One hundred seventy-four numbers (mostly grasses) were collected. In addition to looking for species of *Bromus* and *Calamagrostis* who Peterson and Saarela are studying the phylogeny, biogeography, and evolution using molecular markers, Sears was looking for species of *Crepis* (Asteraceae). It was particularly interesting collecting near the *Darlingtonia-Narthecium* bogs of Scott Mountain Summit where the elusive *Calamagrostis koelerioides* Vasey was located. Peterson also collected grasses throughout Mexico during the month of September.

In May and June, **Robert Ireland** collected approximately 200 specimens of bryophytes in the Atacama Desert region of northern Chile and then prepared the specimens for the herbarium at the Universidad de Concepción and duplicate specimens for the US National Herbarium. During August and September, Irelandwas at the Missouri Botanical Garden in St. Louis identifying the Chile mosses and writing research papers.

W. John Kress, **Ida Lopez** and **Vinita Gowda** attended the Association for Tropical Biology and Conservation annual meeting in Kunming, Yunnan, China held 17-21 July. Kress and Gowda chaired a session of talks on Vertebrate Pollination - Specialists vs. Generalists. Gowda presented a talk titled "*Heliconia*-Purple-throated Carib (*Eulampis jugularis*) Interaction in the Caribbean: An Example of Geographical Mosaics in a Co-evolving Plant-Pollinator System." Lopez presented a poster with research study data titled "Genetic Drift in a Plant-Pollinator Coevolutionary System in the Caribbean."

Mark and **Diane Littler** presented a lecture "Assessment of Coral Reefs Using Herbivory/Nutrient Assays and Indicator Groups of Benthic Primary Producers: A Critical Synthesis, Proposed Protocols and Critique of Management Strategies" at the Phycological Society of America 60th Annual Meeting with the Northwest Algal Symposium. The meeting was held at the University of Alaska Northeast in Juneau, Alaska, on 6-12 July.

Stanwyn Shetler is teaching an eight-week course on Fall Woody Plant Identification again for the Graduate School, USDA. The course, which runs from 13 September to 1 November, includes lectures, practical exercises, and field trips.

Robert Soreng traveled through eastern Kyrgyzstan during the month of August, as a grass taxonomist on a U.S. Department of Agriculture sponsored expedition to search for drought and grazing tolerant turf grasses. He collected over 200 herbarium specimens of different steppe grasses, nearly all of subfamily Pooideae, in the Tien Shan. In Soviet days there were as many as 40 million sheep in the Tien Shan, but as numbers are down to around 3 million today the vegetation is recovering nicely in many places.

Alice Tangerini attended the national annual meeting of the Guild of Natural Science Illustrators (GNSI) held this year at the University of Wisconsin in Madison, Wisconsin. The meetings began with a portfolio sharing with members exploring the variety of techniques and methods of illustration in the science field. At least half the portfolios involved some form of digital media often combining traditional drawing as well. There were many PowerPoint lectures including one where Tangerini supplied several of her drawings as examples of design. Tangerini represented the Washington DC chapter of the GNSI at the chapter's business meetings. Tangerini's drawing of *Rhynchospora bolivarana* was on display in the GNSI annual exhibit at the Health Sciences Learning Center on the Madison campus.

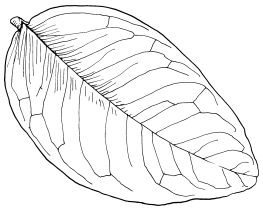
Tangerini's ink drawing, "Precatory bean, *Abrus precatorius*" from Tippo and Stern's *Humanistic Botany*, is included in the fall exhibition, *What We Collect: Recent Art Acquisitions*, at the Hunt Institute for Botanical Documentation at Carnegie Mellon University in Pennsylvania. The exhibit is on display until 20 December.

Alain Touwaide and **Emanuela Appetiti** attended the 21st International Congress of Byzantine Studies held in London, 21-26 August, where Touwaide organized a session on "Byzantine Medicine." During their time in London, Touwaide also met with Ashgate Publishing to discuss the series "Medicine in the Medieval Mediterranean," which he is the series editor. Five volumes of the series are under contract and three more proposals are currently under review by the Board.

Touwaide and Appetiti also attended the 41st Congress of the International Society for the History of Medicine, in Budapest, 26-30 August. Touwaide organized and chaired a session on "Renaissance Medicine;" delivered a paper on "Sambucus' Project of a New Greek Edition of Dioscorides, *De materia medica*;" and attended the meeting of the Administrative Council of

the International Society for the History of Medicine, as well as the General Assembly.

In mid-July, **Jun Wen** gave an invited lecture at a symposium on the biodiversity and biogeography of eastern Asia, held in Kunming Institute of Botany, the Chinese Academy of Sciences. Her talk was on the biogeographic relationships of eastern Asia and the New World. After, she conducted field work in seven provinces of China and collected 400 plant specimens, including two new species of the ginseng plant family.



Awards & Grants

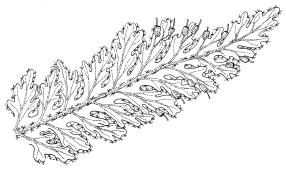
W. John Kress and his co-Principal Investigator Ethan Temeles from Amherst College have been awarded a four-year grant from the National Science Foundation to continue their work on "Coevolutionary Convergence and Displacement Across a Geographic Mosaic: Hummingbirds and Heliconias of the Lesser Antilles." Kress and Temeles together with GWU graduate student **Vinita Gowda** and undergraduates from Amherst College will pursue studies on the interactions between the purple-throated Carib Hummingbird and two species of the plant genus *Heliconia* on the islands of Dominica, St. Kitts, St. Vincent, and Tobago in the Eastern Caribbean. Following on their 2003 paper in *Science* the researchers will explore the ecology and systematics of adaptation in this co-evolved system between plants and their pollinators.

W. John Kress has received the Yunnan Province International Cooperation Award (called the "Caiyun Award" in China) for his work with the Xishuangbanna Tropical Botanical Garden (XTBG). This award is the highest honor at the provincial level for foreign scientists who have contributed to the development of Chinese science and technology. Kress, who was nominated by his colleague Li Qing-Jun, an ecologist at the Garden, has worked in China for the last ten years collaborating on research projects and publications, training students, and providing guidance to XTBG on developing long-term programs in research. He is an honorary professor at XTBG and the Chinese Academy of Sciences.

New Faces

Ethan Temeles is a Smithsonian Senior Fellow with **W. John Kress** and Gary Graves, currently on sabbatical from Amherst College, where he is a professor of biology specializing in evolutionary ecology. His current research consists of two projects that examine polymorphisms and coevolution in hummingbirds and heliconias. In one project, he will quantify sexual dimorphism in size and bill morphology within the subfamily Phaethorithinae, one of two subfamilies of hummingbirds, using the museum's ornithological collection. The species comprising this subfamily are commonly nicknamed "the hermits," owing to their drab plumage, and have been believed to exhibit little sexual dimorphism. Temeles's pilot research indicates that sexual differences in bill curvature are present in approximately 50 percent of the hermits, and that it is closely associated with heliconias as food plants. His research will test hypotheses for ecological causation of sexual dimorphism in hermit hummingbirds, and especially for associations with heliconias, using the museum's botanical collection. In the second project, he will use the museum's collections as well as field data to test for the evolution of non-random size differences within assemblages of hermit hummingbirds and the Lesser Antillean hummingbird fauna (non-hermits), matched with corresponding tests in their *Heliconia* food plants.

Omar A. Monsegur Rivera from the University of Puerto Rico, Mayagüez Campus, is a Smithsonian Graduate Student Fellow with **Pedro Acevedo**. His research goal at the Smithsonian is to complete a floristic inventory and to get a historical perspective of changes in the floristic composition of the Guánica Forest Reserve (GFR) in southern Puerto Rico. During Rivera's visit, he has been able to study over 550 plant specimens collected within the general area of the GFR. These represent 275 species, some of which constitute new records for the GFR. The majority of the specimens are historical collections from the early botanist that worked in Puerto Rico during late 19th and early 20th centuries. This includes primarily the collections of Paul Sintenis and Nathaniel L. Britton, who substantially contributed to the knowledge of the Puerto Rican flora. The data associated with these collections are essential to study changes in the composition of the flora. Moreover he has been able to identify all of his unidentified samples by comparing them with the herbarium specimens. Duplicates from his collections will be deposited at the US National Herbarium as a reference for future studies on the flora of the Caribbean.



Cassava Targeted for Genome Sequencing

Cassava (*Manihot esculenta*) has recently been selected by the U.S. Department of Energy Joint Genome Institute's (DOE JGI) Community Sequencing Program to have its 770 million base pair genome fully sequenced. The starchy roots of cassava daily feed over 600 million people in tropical areas. The cassava project is lead by Claude M. Fauquet of the Danforth Plant Science Center in St. Louis and includes Smithsonian participation from **Kenneth Wurdack**. Wurdack is an expert on the systematics and evolution of the family Euphorbiaceae to which cassava belongs, along with other familiar members, poinsettias, castor bean, and natural rubber plants. Museum director **Cristián Samper** and colleagues had recently advocated (*Science* 311: 468, 27 Jan 2006) the importance of cassava as the next major plant genome to be sequenced. The genome will allow modern tools to be applied to crop improvement and provide a bridge to related economic plants.

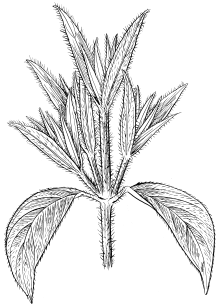
A Blossoming Relationship: The Department of Botany Hosts Earthwatch Institute Volunteers

By Bianca Lipscomb and Rusty Russell

This summer the Department teamed up with the Earthwatch Institute to pursue an extensive effort to database and image ethnobotanical specimens from the Pacific Islands. Under the direction of **Rusty Russell** and **W. John Kress**, the project, titled "Plants and People through the Ages," aims to inventory specimens with label-explicit ethnobotanical data such as common name or use information, ultimately providing a searchable database of the ethnobotanical specimens of the US National Herbarium.

The project attracted a total of 27 volunteers from across the country and one from the UK. Over the course of 5 weeks, the volunteers successfully extracted and databased more than 3,200 specimens while enjoying the privilege of working behind-the-scenes in the US National Herbarium. **Elaine Haug** was instrumental in providing data-entry orientation and program support throughout the project.

Mirroring the success of **Alain Touwaide's** collaboration with Earthwatch on "Medicinal Plants of Antiquity" in Rome, "Plants and People through the Ages" began as a response to the ever increasing need to support the immense task of databasing one of the world's largest herbaria. The Earthwatch Institute provided the funding and volunteer labor to support databasing needs, acquire project equipment, and create a student intern position, this summer held by **Bianca Lipscomb**. More importantly, the relationship between the Department of Botany and the Earthwatch Institute has defined a model for the future of volunteer based inventory projects in the US National Herbarium. The 2007 Earthwatch program will comprise 8 weeks beginning in the spring. Volunteers will continue their focus on Pacific Island ethnobotany.



Earthwatch volunteers Don and Sandi McVay plugging away at the database. (Photo by Earthwatch volunteer Jill Pulgar)

Visitors

Continued from page 2

Zohara Yaniv, Agricultural Research Center of Israel, Tel Aviv; Historia Plantarum Library (7/13).

Catherine Bornfleth, **Diane Wright** and **LaVerne Zehrung**, Earthwatch Institute; Medicinal Plants of Antiquity (7/24-7/28).

Eduardo Garcia M., Independent researcher, Spain; Volunteer interview (7/27).

Elizabeth Williamson, *The Washington Post*; Plummers Island flora and spring flowering database (7/28).

United States National Arboretum (10 visitors)**;** Intern tour of Botany Greenhouse (8/9).

Douglas Ladd, Nature Conservancy; Ozarks lichens (8/14-8/18).

Maria Fokina, Iowa; Research Training Program (8/16).

Smithsonian Associates (50 visitors); Botany Greenhouse tour (8/17).

Lori Bristol, National Park Service; Botany Greenhouse tour (8/19).

Emmet Judziewicz, University of Wisconsin-Stevens Point; Poaceae (8/21-8/22).

Ted Hoff, Katherine Keane, Richell Mintzlaff, Jeane Renick and **Barbara Rutzer**, Earthwatch Institute; Useful Plants of the Pacific Islands (9/11-9/15).

Robert Bye, UNAM, Instituto de Biologia, Mexico City; Northern Mexico flora and Edward Palmer collections (9/11-9/30).

Shirley Ballard, **Kathleen Desterhaft, Florence Jacksen, Don McVay**, **Sandi McVay**, and **Jill Pulgar,** Earthwatch Institute; Useful Plants of the Pacific Islands (9/18-9/22).

Le Kang, Chinese Academy of Sciences, Beijing; Biodiversity management (9/21).

Zhiduan Chen, Institute of Botany, Chinese Academy of Sciences, Beijing; *Parthenocissus* (Vitaceae) (9/22-12/20).

Flora of the Guianas Consortium Meets in Berlin

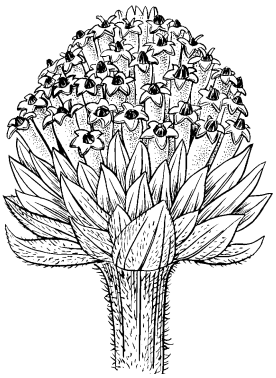
Plant diversity is the highest in the tropics of the world where it is being threatened by continued deforestation. One of the first steps in plant conservation is to know what grows where; and this is the goal of the Flora of the Guianas Consortium which is a multinational effort to document the plant diversity of the three northeastern South American countries: Guyana, Surinam, and French Guiana. The Consortium met from 24 to 26 August at the Botanical Garden and Museum of the Freie Universität of Berlin, Germany. **Pedro Acevedo** represented the Department at the meeting.

The Flora of the Guianas books about different plant families are authored by botanical specialists throughout the world who are recruited and directed by an international advisory board consisting of representatives from Botanischer Garten und Botanisches Museum Berlin-Dahlem; Institut de Recherche pour le Développement, Centre de Cayenne; University of Guyana; Royal Botanic Gardens, Kew; New York Botanical Garden; Nationaal Herbarium, University of Suriname; Muséum National d'Histoire Naturelle, Paris; Nationaal Herbarium Nederland, Utrecht, and the US National Herbarium. The collections in these plant museums provide the information needed to describe the plants of the Guianas in such a way that plant species can be distinguished from other plant species. The first step in obtaining knowledge about plants is learning the name of the plant and that is perhaps the principal goal of the project. The editorial office of the Consortium is at the University of Utrecht and the books are published by the Royal Botanic Gardens in Kew.

The August meeting marked the twentieth year of the project. During this period, 32 books describing families of plants have been published totaling 4,676 printed pages. Although a great detail has been accomplished during this period there is still much to do as only 21 percent of the flowering plant species growing in this region have been described in the books.

All members of the Consortium enthusiastically endorsed studies of the plants of the Guianas and efforts will be made over the next several years to renew the Memoranda of Understanding among the nine institutions heading the project. Especially important was the continued desire of the three Guianan countries to continue to promote the studies of plants of their countries. The following statement from the representatives of Guyana (Phillip da Silva), Surinam (Caroline Rahan-Chin), and French Guiana (Sophie Gonzalez), respectively, was issued:

> "The Guianas appreciate previous efforts made by the collaborating institutions to document our Flora by the world's botanists and wish to continue and expand this collaboration with the Flora of the Guianas consortium. We appreciate the expressed intention of the collaborating institutes to, through this program, promote capacity building in our Herbaria where thousands of valuable collections representing our Flora are housed."



Botany Awarded Andrew W. Mellon Foundation Grant for Digitizing Type Specimens

The Department has been awarded a grant of $234,000 from the Andrew W. Mellon Foundation to continue work on digitizing the type collections in the US National Herbarium. Principle Investigators **W. John Kress** and **Rusty Russell** will oversee the two-year project that will focus primarily on type specimens from Latin America. The work in the Department is part of a large project supported by the Mellon Foundation to develop a coordinated digital database of images and information on Latin American plants. A number of international botanical institutions are participating.

Currently the Herbarium holds approximately 41,000 types from Mexico, Central and South America. This number accounts for nearly half of the total 95,000 type specimens. A major part of the project will be to comb through the general collections for "hidden" types that are not yet recorded in the Botany Type Specimen Register. These hidden types include historical specimens as well as duplicates that may have been previously overlooked by scientists working in the collections. It is estimated that as many as 12,000 additional Latin American types may be located as a result of this effort. Five temporary staff will be hired to help on the project with funds from the Mellon Foundation grant. In addition new specimen scanning equipment and associated computer hardware will be acquired to facilitate creation of the high-resolution digital images of the specimens.

This project will build on the 79,500 images of type specimens already available on-line through the Department's Botany Type Specimen Register web site <http://ravenel.si.edu/botany/types/>. The digital plant type library at the Smithsonian Institution is the most thoroughly documented collection in the world and is accessed over the web by hundreds of scientists each year.

The International Compositae Alliance Meets in Barcelona

By Vicki Funk

The International Compositae Alliance (TICA) held its third global meeting in Barcelona, Spain, on 7-9 July. Over 120 attendants and 226 authors from 36 countries (Argentina, Australia, Austria, Bolivia, Brasil, Canada, Colombia, Cuba, Czech Republic, France, Germany, Greece, India, Iran, Italy, Japan, Lebanon, Mexico, Mongolia, Netherlands, New Zealand, Nigeria, Poland, Russia, Slovakia, South Africa, Spain, Sweden, Spain, Switzerland, Thailand, Tunisia, Ukraine, United Kingdom, USA and Yemen) presented 135 contributions (invited talks, oral presentations and posters) reflecting the latest advances in all fields of systematics and evolution. Together these presentations provided a modern synthesis for the Compositae.

The impetus for the meeting was the 30th anniversary of the Heywood, Harborne & Turner meeting (1975) and volume (1977) and like the original meeting a publication is planned. Seven attendees were present that had participated in the 1975 meeting (V. Heywood, C. Jeffrey, W. Lack, B. Nordenstam, **H. Robinson**, J. Skvarla, T. Stuessy).

The invited talks for the meeting were divided into two types, the first ten papers were general talks covering many aspects of the Compositae; among other important presentations such as, the history of the Compositae systematics (V. Heywood), the updated supertree (**V. Funk**, *et al.*); floral evolution (C. Jeffrey), gene flow and hybridization (J. Whitton & L. Rieseberg), micro-characters (H. Robinson); pollen types (S. Blackmore, *et al.*), economic importance (B. Simpson); colonization of oceanic islands (D. Crawford & T. Lowrey).

The second type of invited presentations were the twenty systematic talks that offered state-of-the-art revisions of the systematics of the tribes. The list of 63 contributors to the systematic talks covers just about everyone working on the phylogeny of the family (including a discussion on the closest relatives of the family). Presenters were as follows: A. Anderberg, B. Baldwin, R. Bayer, L. Brouillet, D. Crawford, M. Dillon, S. Freire, N. Garcia-Jacas, B. Gemeinholzer, L. Katinas, P.O. Karis, S. Keeley, D. Keil, W. Lack, J. Lundgren, B. Nordenstam, C. Oberprieler, S. Ortiz, P. Pelser, H. Robinson, T. Stuessy, A. Susanna, and M. Unwin. It was clear that major advances had been made in understanding many of the major clades but especially notable were the new phylogenies for the tribes Astereae and Senecioneae, which had been problems in the past. In addition, many characters that had confusing patterns in the 1977 volume, such as pollen and floral morphology, were shown to fit well with the new phylogenies.

Afternoons were devoted to the 36 oral presentations (87 authors) which covered a broad scope within Compositae: from the hybridization process in *Senecio* reviewed by J. Kadereit or the search of low-copy genes for phylogenetic studies by I. Álvarez, to the ethnobotanic studies in Compositae by J. Vallès, a review of the importance of phytomelanin by A. Pandey and T. Stuessy, and discussions of problematic taxa such as *Helichrysum* by M. Koekemoer.

A diverse array of 67 posters (157 authors) was contributed, covering a broad range of interests within the Compositae. A good indicator of the relevance of poster presentations was the geographic origin of the posters: Argentina, Australia, Brazil, Colombia, Cuba, Denmark, France, Germany, Iran, Italy, Japan, Greece, New Zealand, Russia, Slovak Republic, South Africa, Thailand, Tunisia, the USA, and, as could be expected, an excellent representation of Spanish contributors, demonstrating the good health of Compositae studies in the organizing country.

Part of the final day of the meeting was devoted to a workshop on the Global Species Checklist for the Compositae project headed by I. Breitwieser, J. Cooper, C. Flann, and C. Miller and a large group of partner institutions.

The final part of the program was devoted to the business meeting for TICA. The main goal of this short meeting of the Alliance was to discuss the future of the group. The success of the Barcelona meeting in figures of attending people and relevance of contributions speaks to the good health of our association. As for the meetings, a consensus was reached that the next TICA meeting will be in four years (2010) hosted by the Botanical Institute and Botanic Gardens of Montréal, Canada, the representative of which, Luc Brouillet, gladly volunteered.

A field trip was organized so that participants could see the boundaries between the Mediterranean and the Eurosiberian vegetation in the Pyrenees: from the foothills of the dry Prepyrenees to the alpine meadows of Central Pyrenees. The excursion was thoughtfully organized by Neus Nualart, Samuel Pyke, Ángel Romo and Ignasi Soriano, who made an excellent descriptive booklet of the places that were visited and the most remarkable plants to see. Forty-two people took part in the excursion. Additional information and photos can be found on the website <http://www.compositae.org>.

Participants of the 2006 TICA meeting in Barcelona, Spain.

A History of Chairs

By Dan H. Nicolson

The recent delivery of the front office keys from **W. John Kress** (having served as Chair for 9 years) to **Warren Wagner** (who is beginning a second term as Chair) led to a question: has any chairman served longer than Kress? A difficulty is that the term "Chairman" is relatively new – a single Curator was essentially the "Chairman" for many years.

The history of botany at the Smithsonian Institution dates from the founding of the Institution in 1846, involving plant collections from early U.S. expeditions. These were turned over to Asa Gray (1810-1888) and John Torrey (1779-1873). In 1868 the specimens were returned and arrangements were made to house them at the Department of Agriculture. **Joseph Nelson Rose** (1862-1928) was made Assistant Curator (1896-1905) and became Associate Curator (1905-1912), the first full-time professional botanist.

In 1893, Spencer Baird (second Secretary of the Smithsonian) established the U.S. National Museum and the U.S. National Herbarium. **Frederick Vernon Coville** (1867-1937), Chief Botanist of the Department of Agriculture, was appointed Honorary Curator of the National Herbarium, a post Coville retained until his death (served 44 years).

In 1894, **Charles Louis Pollard** (1877-1945) was appointed Assistant Curator, a post he held until 1903 (served 8 years).

In 1899, **William Ralph Maxon** (1877-1948) was appointed Aid in the Division of Plants and became its first Curator following Coville's death in 1937 retiring in 1946 (served 9 years).

In 1946, Maxon retired and **Ellsworth Paine Killip** (1890-1968) was made Curator. Shortly after, the former Division of Plants of the Department of Biology became the Department of Botany with the four divisions: Phanerogams, Grasses, Ferns, and Cryptogams.

Following the retirement of Killip in 1950 (served 4 years), **Jason Richard Swallen** (1903-1991) was made Curator and retired in 1964 (served 14 years).

William Louis Stern (1926-x) was Chair during the move from the Castle (1965) and left in 1968 (served 3 years).

Mason Ellsworth Hale, Jr. (1928-1990) became Chair 1 July 1968, and stepped down in 1970 (served 3 years).

The Botany Chairs: (*top row left to right*) J.N. Rose (photo from the New York Botanical Garden), F.V. Coville, C.L. Pollard, W.R. Maxon; (*second row*) E.P. Killip; J.R. Swallen; W.L. Stern; M.E. Hale, Jr.; (*third row*) E.S. Ayensu (photo from Botany Department Archives); D.C. Wasshausen (photo from Botany Department Archives); M.M. Littler (photo from Botany Department Archives); L.E. Skog; (*bottom row*) W.L. Wagner; W.J. Kress; and W.L. Wagner, again (All photos from the Washington Biologists' Field Club Archives, except where noted).

Edward Solomon Ayensu (1935-x) became Chair 2 April 1970, and stepped down in 1976 (served 6 years).

Dieter Carl Wasshausen (1938-x) became Chair 18 July 1976, and stepped down in 1982 (served 5+ years).

Mark Masterson Littler (1939-x) became Chair in 1982, and stepped down 31 August 1987 (served 5 years).

Lawrence Edgar Skog (1943-x) became Chair 1 September 1987, and stepped down August 1992 (served 5 years).

Warren Lambert Wagner (1950-x) became Chair 1 September 1992, and stepped down December 1997 (served 5 years).

(Walter) John Kress (1951-x) became Chair January 1998, and stepped down September 2006 (served nearly 9 years).

Warren Lambert Wagner (1950-x) started a second term 1 October 2006, indicating he will serve three more years.

Taxon Publishes Presentations from Botanical Symposium

For centuries botanists have created floras for the purposes of inventory, identification, and classification of plants. But what will the floras of the future look like? New technologies are now being developed to facilitate the coupling of field work with rapid and direct access to data that exist in biodiversity institutions. To address this issue "The Future of Floras: New Frameworks, New Technologies, New Uses" was the topic of discussion at the Smithsonian Botanical Symposium hosted by the Department and the United States Botanic Garden in April 2005. Written versions of four of the six invited oral presentations, plus an introduction by **W. John Kress** and **Gary Krupnick**, who edited the contributions, appear in the August 2006 issue of *Taxon*. Each paper represents a different perspective on the forms and uses of floras and identification systems that will be available in the near future. Smithsonian botanists **Norm Bourg**, **Vicki Funk** and **Rusty Russell** also contributed to the papers as authors.

Edward Palmer's 1875 collection of creosote (below) is covered with the lac used by the Tarahumaras to seal pots like this Mohave seed-carrying pot (above; Accession #10319), also collected by Palmer. Both specimens will share a display in the National Museum of Natural History's North Lobby, marking the first time in more than 120 years that these related collections have been brought together.

Profile

Continued from page 1

allow us to tell stories that describe the intersection of nature and human culture along the border.

Stories include the sustainable harvesting of a threatened species of *Dasylirion* (Nolinaceae) that is used by the Tarahumara in making baskets; how tunas (*Opuntia* spp.) are harvested in the same manner as a century ago, using the same plant materials; the use of mesquite spines (*Prosopis* sp.) for ceremonial tattooing; the development of numerous plant species for fiber products; how logging has affected the distribution of Apache pine (*Pinus engelmannii*) in the Sierra Madre which, in turn, modified the migration pattern of the thick-billed parrot; and defining a connection between the historic boundaries of cultural groups and the natural distributions of the plant species they used.

Establishing the value of historical plant specimens to science is more easily accomplished than demonstrating their *relevance* in a modern social context. In order for biological systematics collections to continue to receive the necessary support they require, it is important to clearly illustrate why the general public should care. The Mexican Ethnobotany project is one of many efforts underway in the U.S. National Herbarium to help bridge the gap between our work and the public appreciation for our work. However, it is far more than a public relations exercise. At the same time, we are significantly enhancing the physical and informational content of our collections. Physical conservation, more specimen data, high quality images, and exceptional outreach vehicles all serve to make our collections a more useful and more accessible resource.

Projects of this size are never a singular effort. To help tell these stories, and assist in project management, Jamie Whitacre was hired to work with Rusty Russell, Bill Merrill in Anthropology, and Robert Bye, an ethnobotanist at the Universidad Autonoma de Mexico. Her coordination of activities ranging from research in the archives and collections of both SI and Harvard, production of a poster presented at the National Science Collections Alliance meeting in Albuquerque, developing content for the website, and oversight of volunteers has been outstanding.

Rob Leopold (National Anthropological Archives) and Deb Hull-Walski (Anthropology Conservation Lab) and their staffs have been extraordinarily helpful.

The staffs of the Harvard Botany Library and the Gray Herbarium have assisted significantly. Patty Gomez has single-handedly databased every specimen. Ingrid Lin provided the high resolution images. Anu Krishnan has researched ethnographic issues and Aleithea Williams has provided online research. Rocio Rufrancos, Lynn Russo, Christine Allocca, and an army of high school and college students over two summers have located and organized all the plant specimens.

Publications

Agarwal, G., H. Ling, D. Jacobs, S. Shirdhonkar, **W.J. Kress**, **R. Russell**, **N.A. Bourg**, P. Belhumeur, N. Dixit, S. Feiner, D. Mahajan, K. Sunkavalli, R. Ramamoorthi and S. White. 2006. First steps toward an electronic field guide for plants. *Taxon* 55: 597-610.

Almeda, F. and **L.J. Dorr**. 2006. *Miconia amilcariana* (Melastomataceae: Miconieae), a new species from the Venezuelan Andes with notes on the distribution and origin of dioecy in the Melastomataceae. *Proc. Calif. Acad. Sci., ser. 4* 57(19): 549-555.

Chen, S.L. and **P.M. Peterson**. 2006. *Eragrostis*. Pp. 471-479. *In*: Z.Y. Wu, P.H. Raven and D.Y. Hong, eds. *Flora of China: Poaceae, Volume 22.* Science Press and Missouri Botanical Garden Press, Beijing and St. Louis.

Chen, S.L., Z.L. Wu, S.L. Lu, B.X. Sun, S.M. Phillips and **P.M. Peterson.** 2006. Tribe Eragrostideae. Pp. 457-487. *In*: Z.Y. Wu, P.H. Raven and D.Y. Hong, eds. *Flora of China: Poaceae, Volume 22.* Science Press and Missouri Botanical Garden Press, Beijing and St. Louis.

Cowan, R.S., M.W. Chase, **W.J. Kress** and V. Savolainen. 2006. 300,000 species to identify: problems, progress, and prospects in DNA barcoding of land plants. *Taxon* 55: 611-616.

De Santo N.G., C. Bisaccia, R.M. De Santo, M.Cirillo and **A. Touwaide**. 2006. Pre-Vesalian anatomy: the kidney of Berengario da Carpi. *Dialysis Transplant.* 34(6): 388-394.

Dorr, L.J. 2006. Review: *William Stimpson's Journal from the North Pacific Exploring Expedition, 1853-1856.* R.S. Vasile, R.B. Manning & R. Lemaitre, eds. *Taxon* 55(2): 550-551.

Funk, V.A. 2006. Floras: a model for biodiversity studies or a thing of the past? *Taxon* 55: 581-588.

Ireland, R.R., **H. Robinson** and G. Bellolio. 2006. On the distribution and morphology of *Hebantia rigida* (Bryopsida, Polytrichaceae). *J. Hattori Bot. Lab.* 100: 201-209.

Kress, W.J. and **G.A. Krupnick**. 2006. The future of floras: new frameworks, new technologies, new uses. *Taxon* 55: 579-580.

Kvist, L.P., **L.E. Skog**, M. Amaya-Márquez and I. Salinas. 2005. Las Gesneriáceas de Perú. *Arnaldoa* 12(1-2): 16-40.

Littler, M.M., **D.S. Littler**, **B.L. Brooks** and B.E. Lapointe. 2006. Nutrient manipulation methods for coral reef studies: a critical review and experimental field data. *J. Exp. Mar. Biol. Ecol.* 336: 242-253.

Littler, M.M., D.S. Littler, B.E. Lapointe and P.J. Barile. 2006. Toxic cyanobacteria (blue-green algae) associated with groundwater conduits in the Bahamas. *Coral Reefs* 25: 186.

Liu, L., G.H. Zhu, **R.J. Soreng** and M.V. Olonova. 2006.*Poa*. Pp. 257-309. *In*: Z.Y. Wu, P.H. Raven and D.Y. Hong, eds. *Flora of China: Poaceae, Volume 22.* Science Press and Missouri Botanical Garden Press, Beijing and St. Louis.

Prince, L.M. and **W.J. Kress**. 2006. Phylogenetic relationships in the Prayer Plant Family (Marantaceae): Insight from plastid DNA sequence data. *Taxon* 55: 281-296.

Robinson, H. 2006. Compositae-Heliantheae, Part I: Introduction, genera A-L. *In:* Harling, G. and L. Andersson. *Flora of Ecuador* 77(1): 1-232.

Robinson, H. 2006. Compositae-Heliantheae, Part II: Introduction, genera M-Z. *In:* Harling, G. and L. Andersson. *Flora of Ecuador* 77(2): 1-235.

Robinson, H. 2006. *Mikania urcuensis*, a new species from Ecuador (Eupatorieae: Asteraceae). *Phytologia* 88(1): 107-110.

Robinson, H. 2006. Two new species of *Grosvenoria* from Ecuador and Peru (Eupatorieae: Asteraceae). *Phytologia* 88(1): 100-106.

Sakai, A.K., S.G. Weller**, W.L. Wagner,** M. Nepokroeff, T.M. Culley and D.R. Campbell. 2006. Adaptive radiation and evolution of breeding system in *Schiedea* (Caryophyllaceae), an endemic Hawaiian genus. *Ann. Missouri Bot. Gard.* 93: 50-65.

Skog, L.E. and **J.K. Boggan**. 2006. A new classification of the Western Hemisphere Gesneriaceae. *Gesneriads* 56(3): 12-17.

Stauffer, F.W., R. Duno de Stefano, **L.J. Dorr**, F. Jacquemoud and N. Fumeaux. 2006. Contribución del Dr. José María Vargas a las ciencias botánicas en Venezuela. *Acta Botánica Venezuelica* 29(1): 135-164.

Terrell, E. and **H. Robinson**. 2006. Taxonomy of North American species of *Oldenlandia* (Rubiaceae). *Sida* 22(1): 305-329.

Art by Alice Tangerini

Blepharoneuron shepherdii (Vasey) Peterson & Annable

In 1887, plant collector Edward Palmer (see cover article) collected *Blepharoneuron shepherdii*, in Hacienda San Miguel, near Batópilas, Chihuahua, Mexico. The Lectotype, housed in the US National Herbarium, is one of the original specimens used to describe *Sporobolus shepherdii* Vasey, which was then transferred to *Muhlenbergia* by Jason R. Swallen. Paul Peterson and Carol Annable placed it in *Blepharoneuron* (Poaceae: Eragrostideae) in a revision of the latter genus published in 1990 (*Systematic Botany*; 15: 515-525). This grass species is endemic to the Sierra Madre Occidental and found in wet seepage banks, washes, and slopes of pine-oak-madrone forests between 1,440 and 2,600 m in Chihuahua, Durango, and Sonora.

Smithsonian
National Museum of Natural History

Department of Botany
PO Box 37012
NMNH, MRC-166
Washington DC 20013-7012