

The Plant Press



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April-June 2012

Botany Profile

Seeing the Forest for the Trees

This May, the Center for Tropical Forest Science-Smithsonian Institution Global Earth Observatory (CTFS-SIGEO) will relocate from its current headquarters at Harvard University to the Smithsonian Institution National Museum of Natural History. This move to NMNH will enhance coordination efforts for the 46-plot research network, which partners with more than 75 institutions in 21 countries, including NMNH, the Smithsonian Conservation Biology Institute (SCBI), and the Smithsonian Environmental Research Center (SERC). Stuart J. Davies, CTFS-SIGEO Director and Senior Staff Scientist at the Smithsonian Tropical Research Institute (STRI), will make the move along with David Kenfack, CTFS-SIGEO Africa Program Coordinator.

Stuart Davies, director of the network since 2005, is looking forward to this upcoming move. Davies has been based at Harvard University, where he received his Ph.D., but sees the need for increased presence at the Smithsonian in Washington, D.C. as the network continues to build partnerships within different Smithsonian units. Davies is a botanist by training, and the goal of his current research is to understand broad-scale patterns in the diversity and dynamics of tropical rain forests. He is particularly interested in how variation in resource availability affects the composition and dynamics of rain forests. Understanding how environmental factors constrain species distributions and affect growth and mortality rates is fundamental to predicting the likely impacts of changes

in land-use and global climatic conditions on tropical rain forests.

David Kenfack coordinates research efforts at the CTFS-SIGEO forest dynamics plots located in Kenya, Gabon, the Democratic Republic of the Congo, and in his home country of Cameroon. Kenfack studied at the University of Yaoundé, Cameroon, before receiving his Ph.D. from the University of Missouri-St. Louis. His primary interest is plant systematics; he uses a combination of morphological, molecular, ecological, and spatial data to explore species limits in plant groups with challenging taxonomy and to understand their evolutionary history and their biogeography. He is also interested in understanding ecological processes that explain tropical forest dynamics through long-term ecological forest plot monitoring in Africa.

CTFS-SIGEO is a global network of forest research plots committed to the study of tropical and temperate forest function and diversity. The multi-institutional network includes plots across the Americas, Africa, Asia, and Europe, with a strong focus on tropical regions. Ecologists at STRI established the first forest dynamics plot on Barro Colorado Island, Panama, in 1980. Before then scientists had never attempted to measure tropical forests so intensively and at such a large scale. Today, the scale and intensity of the research program remains unprecedented in forest science. CTFS-SIGEO scientists monitor the growth and survival of about 4.5 million trees of approximately 8,500 species in 21 different countries. Research aims to increase the scientific understanding of forest ecosystems, guide

sustainable forest management and natural-resource policy, monitor the impacts of climate change, and build capacity in forest science.

Because of its extensive biological monitoring, unique databases, and the expertise of its partners, CTFS-SIGEO enhances society's ability to evaluate and respond to the impacts of global climate change. Monitoring so many forest plots at once is providing a comprehensive, yet locally detailed perspective on how the world's forests are being transformed by global change. In the last five years, CTFS-SIGEO has undergone a period of rapid growth and expansion, which has transformed the network into a platform for a broad range of scientific investigations. Research on tropical forest dynamics continues, but is joined by new initiatives studying carbon fluxes, temperate forests, ecosystem services, and biodiversity. CTFS-SIGEO and its many institutional partners are leveraging huge intellectual horsepower to transform our understanding of forest-ecosystem structure and function. The network has been so successful that the Smithsonian is now planning to extend its system of earth observatories to the near shore marine realm.

Capacity building and training are a critical part of the CTFS-SIGEO program as it seeks to empower local scientists in research and conservation efforts. Through a small Research Grants Program, postdoctoral fellows and graduate students have the opportunity to use existing CTFS-SIGEO plots and plot

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Travel

Walter Adey traveled to Orono, Maine (3/28 – 3/31) to give an invited seminar at the University of Maine.

Laurence Dorr traveled to Smolenice, Slovak Republic (3/12 – 3/16) to participate in a workshop on the Future of Botanical Monography organized by the International Association for Plant Taxonomy (IAPT); and to Vienna, Austria (3/16 – 3/21) to conduct research in the herbarium of the Naturhistorisches Museum (W).

Carlos García-Robledo traveled to Stanford, California (1/30) to give an invited seminar at Stanford University; and throughout Costa Rica (2/9 – 3/19) to perform research at La Selva, Las Cruces and Las Alturas Biological Stations, and to participate as a professor in the Organization for Tropical Studies graduate course entitled Tropical Biology: An Ecological Approach.

Carol Kelloff traveled to Honolulu,

Hawaii (2/26 – 3/7) to attend a workshop on Pacific biogeography.

John Kress traveled to San Jose, Costa Rica (3/3 – 3/11) to participate as visiting faculty for the Organization for Tropical Studies (OTS) tropical ecology course and to attend the OTS Board of Delegates meeting; and to Japan, Thailand, and China (3/16 – 4/1) to attend a meeting as the Executive Director of the Association for Tropical Biology and Conservation and to conduct field work.

Rusty Russell, Carolyn Sheffield, Sonoe Nakasone and **Emily Hunter** traveled to Baltimore, Maryland (3/1) to present the Field Book Project at Web Wise, a conference of museum professionals across the U.S.

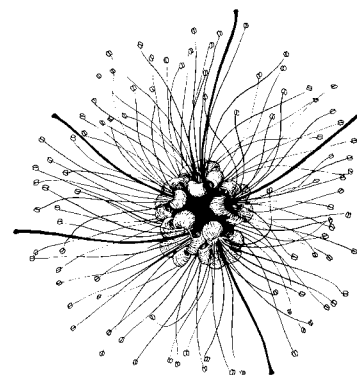
Laurence Skog traveled to Sarasota, Florida (2/16 – 2/23) to visit the Marie Selby Botanical Gardens where he dealt with the reliquia of the Wiehler collections of Gesneriaceae from the Gesneriad Research Foundation and to discuss items of interest prior to the meeting of the Board of Directors of the Gesneriad Society.

Alice Tangerini traveled to Ames, Iowa (3/28 – 3/31) to participate as a guest

instructor for the Biological & Pre-Medical Illustration (BPMI) program at Iowa State University.

Jun Wen and graduate student **Limin Lu** traveled to St. Louis, Missouri (1/3 – 1/7) to conduct herbarium research on the morphological studies of Vitaceae and taxonomic revision of tropical *Prunus* (Rosaceae) at the Missouri Botanical Garden.

Elizabeth Zimmer traveled to Durham, North Carolina (2/27 – 3/3) to participate in a workshop on the interaction between *Silene* (Caryophyllaceae) and its moth pollinator *Hadena* (Noctuidae) at the National Evolutionary Synthesis Center (NESCent).



The Plant Press

Reu Series - Vol. 15 - No. 2

Chair of Botany

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Visitors

Carlos García-Robledo, Smithsonian Fellow; Plant-herbivore interactions (7/20/10-7/20/12).

Vinita Gowda, Indian Institute of Science, Bangalore, India; *Alpinia* (Zingiberaceae) (11/15/10-3/31/12).

Ying Meng, Kunming Institute of Botany, China; Polygonaceae (1/9/11-8/31/12).

Xianzhou Kan, Anhui Normal University, China; Vitaceae (6/15/11-6/15/12).

Iliana Lang, Bethesda, Maryland; Plant conservation internship (9/12/11-5/18/12).

Liu Qiuqun, Huazhong Agricultural University, China; Vitaceae (9/15/11-9/15/12).

Yoomi Park, Konkuk University South Korea; Pacific *Peperomia* (Piperaceae) (10/1/11-8/31/12).

Suzanne Nagi, University of Illinois at Urbana-Champaign; *Trientalis* (Myrsinaceae) (11/1/11-6/30/12).

Rubens Coelho, State University of Campinas, São Paulo, Brazil; Sapindaceae (11/14/11-11/14/12).

Gustavo Heiden, Univeridade de São Paulo, Brazil; *Baccharis* (Compositae) (12/12/11-1/16/12).

Heather McGettigan, Virginia Polytechnic Institute and State University; Seeds of Success internship (12/19/11-1/13/12).

Matthew Smith, Virginia Polytechnic Institute and State University; Plant conservation internship (12/19/11-1/13/12).

Nettie McMiller, The University of North Carolina at Chapel Hill; Plant conservation internship (12/19/11-1/6/12).

Michelle Daniel, University of Toronto; Seeds of Success internship (12/27/11-1/6/12).

Elise Cavicchi, Bennington College; Seeds of Success internship (1/3-2/17).

A Brave New Digital World

For more than four decades, the Department of Botany has dedicated itself to an aggressive program of collections digitization and outreach. Beginning with the Type Register in 1970, the very first digital record of museum collections (using keypunch cards), we have been a pioneer in every aspect of creating and sharing electronic data. In retrospect, the many “firsts” served to whet the appetite of curators and herbarium managers around the world, increasing need and raising expectations. Rapid improvements in technology (speed, storage, hardware, software, miniaturization, informatics, etc.) served to provide the infrastructure and drive progress at the same time. And, eventually, we found ourselves paddling fast to keep up. Today, Botany finds itself at the intersection of multiple opportunities that signal a likely quantum jump in our management and sharing of collection and research information.

The first opportunity is Institutional. Secretary Clough has set the bar high in suggesting to Congress that the Smithsonian Institution will work toward complete digitization of its collections. To that end, two SI Directives, Digital Asset Access and Use (SD-609) and Digitization and Digital Access Management Policy (SD-610), were approved in 2011 to guide Institutional planning for digitization. Two SI-wide working groups are developing guidelines for Unit Digitization Plans and Digital Asset Management Plans. And the new Director of the Digitization Program Office, Günther Waibel, is championing both efforts.

The second opportunity is structural. With funding from the Research and Collections Information Systems (RCIS) Pool, Botany is in the process of bringing together all of its disparate databases into a single EMu-compliant data structure that will support better management and use of research and collections data. This is not a trivial task. Botany suffers from the “curse of the pioneer.” Over many years, our inclination and capacity to build specimen and nomenclature databases resulted in an enormous amount of data that was designed for specific, not shared, uses. This made sense at the time, but it has made it difficult to respond to internal and external inquiries across different database structures. By September 2012, we will have the major-

ity of collection records in a single EMu-compliant repository. In addition, all multimedia content (specimen images, illustrations, maps, color slide images, photographs, SEMs, etc.) will be uploaded to EMu and associated with the appropriate specimen, taxon name, and/or collecting event and locality data.

The third opportunity is personnel related. In the next few months we will be hiring a new Collections Manager, a new Head of Informatics, and a new Multimedia Manager. Together, and working closely with research staff, they will develop an enterprise strategic plan, following SD-609 and SD-610 guidelines, for serving the information needs of our research program, our collections program, and our digital outreach activities. For the first time since we began this digital journey in 1970, there will be consensus Departmental policies and processes for everything digital. With this kind of structure and predictability, we can justify every digital priority and every digital project within Botany.

The last opportunity is global momentum. Digitization of biological collections has long ago ceased to be a local issue. Our search for answers to modern questions depends on the historical collections and research data that are available at every Institution, not ours alone. Aggregators of data such as the Global Biological Information Facility (GBIF), societies of informaticians such as Biological Information Standards (formerly Taxonomic Databases Working Group-TDWG), and national efforts such as the NSF’s ten-year support of Integrated Digitized Biocollections (iDigBio) are in place to provide support for global efforts in harnessing and delivering these data.

This is an exciting time for Botany. We have the potential to double in the next five years what it took us 40 years to create. Challenges such as this never hinge on technology...it is always about human commitment.

- Rusty Russell, guest contributor
Collections Manager

Chair

With

A

View

Warren
L.
Wagner



ShuMing Huang, Smith College; Seeds of Success internship (1/3-1/20).

Kaslyn Holder-Collins, University of Guyana; Orchidaceae (1/4-1/12).

Audrey Wilde, McLean, Virginia; D.C. Flora internship (1/9-8/1).

Tim Callahan, Bastyr University; Collaboration (1/17).

Andrew McCarthy, Cyprus American

Archaeological Research Institute; Archaeobotany (1/19).

Jorge Monterrosa Salomón, La Laguna Botanical Garden, El Salvador; El Salvadorian Pteridophyta (1/22-2/1).

Fabian Michelangeli, New York Botanical Garden; Melastomataceae (1/25).

Michael Herchenbach, Rheinische Friedrich-Wilhelms-Universität, Germany;

Roman Empire gardens (2/1).

Lourdes Tinajero, Government Printing Office; Renaissance herbals (2/3).

Eric Cline, George Washington University; *Historia Plantarum* Collection (2/8).

Wenna Chen, South China Botanical Garden, Chinese Academy of Sciences; DNA barcoding internship (2/9/12-2/9/13).

Continued on page 5

Staff Research & Activities

Over a three-day span, **Alice Tangerini** interacted with over 230 students. On March 9, she gave a presentation on botanical illustration as one of the presenters for the “Big Draw,” a yearly event organized by Jacqueline Moore, instructor for Montgomery County schools in Maryland. Tangerini taught four classes of 3rd through 6th graders, beginning with a quick overview of how specimens are collected and pressed, using *Anthurium ramoncaracasii* as an example. She followed this with a demonstration of illustrating techniques exhibiting the drawing process and providing a display of the tools used by illustrators. Students were provided photocopies of plant outline drawings to complete by adding their own detail and stippling using fine pointed markers.

The next week on March 16, Tangerini gave a presentation on botanical illustration to 5th graders at Clearspring Elementary School in Damascus, Maryland. The students concentrated on a stippling exercise using a Stargazer lily (*Lilium orientalis*) as the sample.

The following day, March 17, Tangerini gave a presentation to Woodson High middle school students in Fairfax, Virginia, as part of “Technology: Careers Unlimited” sponsored by the American Association of University Women. The career day is designed to provide 7th and 8th grade girls an opportunity to meet women professionals in math, science, and technology careers.

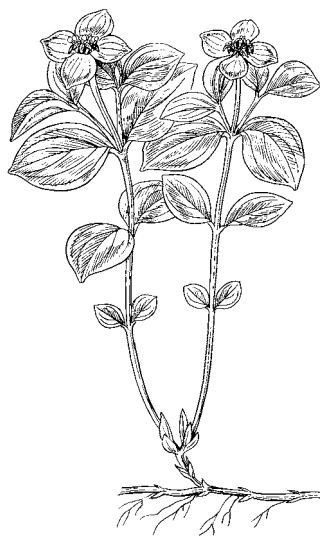
Alain Touwaide and Emanuela

Appetiti’s bi-weekly seminars devoted to Medical Traditions have attracted not only students from George Washington and Georgetown Universities (see *The Plant Press* 15(1): 6; 2012), but also students from St. John’s College, Maryland, and the University of Richmond, Virginia, who were able to attend the seminar taking advantage of their spring break. The seminars will continue until the end of the academic year. They are currently followed by seven students at different stages of their careers.

On March 6, Touwaide delivered a

2-hour seminar at George Washington’s Medical School entitled, “Using Remedies from Antiquity for Renewed Application in Medicine.”

On the occasion of the annual meeting of the Renaissance Society of America, held in Washington, D.C., on March 24, Touwaide and Appetiti organized the roundtable entitled The Digital Herbal: Roundtable on Renaissance Botanical Illustration on the Internet, in which they presented and discussed the PLANT website <<http://www.sil.si.edu/digitalcollections/herbals/index.htm>>, a joint project between NMNH, Smithsonian Institution Libraries, and the National Library of Rome, aimed at presenting the reproduction of all pages in Renaissance printed herbals (from 1481 to 1650) containing plant illustrations. Once the website is completed, it will include the scientific, common, and vernacular names of the species in several languages, as well as biographies of the authors of the herbals and of the Renaissance publishers.

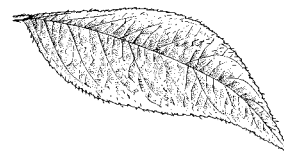


Awards & Grants

Carlos García-Robledo was awarded a Heliconia Society grant to continue his research on climate change and cascades of coextinctions in tropical mountains. In addition, he was awarded with **John Kress**, **Dave Erickson** and John Lill (George Washington University) a grant from the Washington Biologists’ Field Club to support a project on species diversity and the evolution of trophic interac-

tions between plants and herbivores.

Further, García-Robledo was awarded an “honorable mention” (2nd place) for the Elton Award of the British Ecological Society – young investigator prize. His co-authored paper, “Experimental demography and the vital rates of generalist and specialist insect herbivores on native and novel host plants” (García-Robledo and Horvitz, 2011; *Journal of Animal Ecology* 80(5): 976-989), was included in a special virtual issue of the British Ecological Society: Young Investigator Prizewinners of 2011.



New Faces

Marc Appelhans started as a post-doctoral fellow in February and will be working with **Warren Wagner** and **Jun Wen**. Appelhans studied Biology and Geography at the Philipps-University in Marburg, Germany, and for his diploma thesis (equivalent to a master’s degree) he studied mycorrhizal structures in the rue family (Rutaceae). From February 2008 until January 2012 Appelhans was a Ph.D. student at Leiden University (Netherlands Center for Biodiversity Naturalis) in the Netherlands, where he studied the phylogeny and biogeography of Spathelioideae, a subfamily of Rutaceae. He graduated in November 2011. The fellowship at the Smithsonian is Appelhans’ first post-



Marc Appelhans

doctoral position and his project is divided into two parts. First, he will study the Hawaiian radiation of the genus *Melicope* (Rutaceae), and subsequently carry out a detailed phylogenetic and biogeographical study of the whole genus. Appelhans is planning to collect *Melicope* together with Wen on a field trip to New Guinea sometime later this year. Prior field work took Appelhans to the Alps (Austria, France, Italy), Jamaica, Malaysia (Borneo), the Mediterranean (Mallorca, Malta), Namibia and South America (Argentina, Chile).

Botanists are Fully Immersible

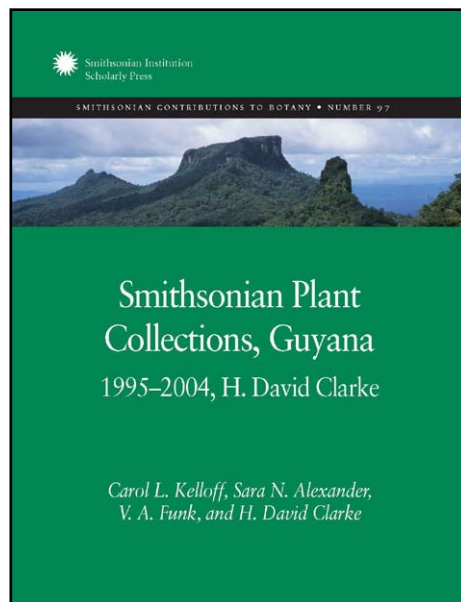
Report from the rain forests of Guyana, June 2003: "As remaining personnel, supplies, and equipment traveled downstream from Malek Falls by boat, the stern wave of a passing boat transporting miners upstream flooded our bow, causing it to sink with the chain saw, tree climbing spikes, outboard, machetes, and aluminum clipper poles. All other supplies and equipment floated because they were secured in either plastic buckets or heavy plastic bags. Members of the expedition party swam to shore, collecting flotsam in the process, establishing once again and yet in a novel fashion that everything on a plant-collecting expedition, including the botanists, is fully immersible."

H. David Clarke was the eighth, and last, full-time resident plant collector for the Biological Diversity of the Guiana Shield Program (1995–1997). After his position as resident collector he continued making botanical expeditions to Guyana. Between 1994 and 2004 he spent more than 20 months in the field, collecting nearly 12,300 specimen numbers.

A new publication from *Smithsonian Contributions to Botany* covers the expeditions and specimen collections of David Clarke: "Smithsonian Plant Collections, Guyana: 1995–2004, H. David Clarke," by Carol L. Kelloff, Sara N. Alexander, V. A. Funk, and H. David Clarke (*Smithsonian. Contrib. Bot.* Number 97: viii + 307 pages, 18 figures, 4 plates, 11 maps, 2011).

This publication includes detailed information about collection localities, exsiccate of specimens ordered by collection number and by identification, a list of collections of special interest, maps tracing Clarke's expeditions, and Clarke's

narrative notes from his trips, including stories about remote mountains, wildlife, and immersible botanists.



Visitors

Continued from page 3

James Beck, Wichita State University; *Cheilanthes* and *Astroblepis* (Pteridaceae) (2/20–2/21).

Paul Berry, University of Michigan; Euphorbiaceae (2/21–2/24).

Cassandra Quave, Emory University; Ethnobotany and history of botany (2/23).

Yuwang Long, University of Michigan; Plant conservation internship (2/27–3/2).

Mohd Suhaimi Che Ani, Rochester Institute of Technology, and **Piangfan Naksukpaiboon**, Clark University; Plant conservation internship (3/5–3/9).

Ana Gomes, Instituto Nacional de Pesquisas da Amazônia, Manaus, Brazil; DNA barcoding techniques (3/5–3/30).

Michelle Muncey, Syracuse University; Bulky bamboo internship (3/5–3/30).

Bryan Piatkowski, Roanoke College; Bulky bamboo internship (3/5–3/9).

Scott Mori, New York Botanical Garden; Lecythidaceae (3/6–3/8).

Mike Barker, University of Arizona; Seminar presentations (3/12–3/14).

Katrina Jackson, Montana State University; Zingiberales internship (3/12–3/16).

Jyoti Sharma, Montana State University; Spring flowering internship (3/12–3/16).

Alexey Shipunov, Minot State University; North American Plantaginaceae (3/12–3/16).

Hannah Sieracki, Whitman College, **Maeve Tischbein**, Franklin and Marshall College; Bulky bamboo internship (3/12–3/16).

Amalia Diaz and **Juan Palacio**, University of Texas at Austin; Eriocaulaceae (3/13–3/14).

Alex Webb, California State University Sacramento; Plant conservation internship (3/19–3/23).

Colleen Allen, University of Durham; U.S. Exploring Expedition (3/20–4/19).

Robert Lucking, Field Museum of Natural History; Lichens (3/21).

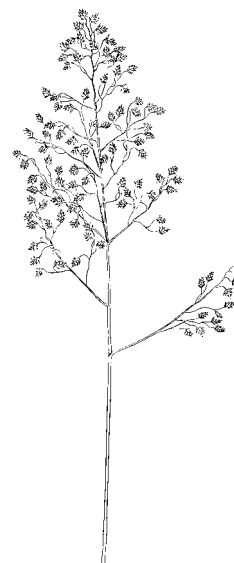
Andrew Degnan, **Cecily Marroquin**, **Alexander O'Neill**, George Washington University, **Daniel Woolridge**, Georgetown University, and **Baxter Sapp**, St. John's College; Medical Traditions seminar (3/23).

Karen Reeds, Princeton University; Renaissance botany (3/23).

Rodney Dever, West Virginia University; *Allium* (Liliaceae) (3/26).

Rosemeri Morokawa, Universidade Estadual de Campinas; Willughbeieae (Apocynaceae) (3/26–3/29).

Jeff Boutain, University of Hawaii at Manoa; *Humulus* (Cannabaceae) (3/27).



Stephen F. Smith (1948-2012)

Editor's note: Steve Smith died on February 8, 2012. The remarks by Carol, Steve's widow, are abridged from what she said at a Memorial Service held for Steve at Tikvat Israel Congregation, Rockville, Maryland on February 19, 2012.

The basic facts of Steve's life are simple and uncomplicated. He was born in Bethesda, Maryland on March 11, 1948 to Ruth (née Gates) and Lyman Smith. Lyman was a plant taxonomist who had grown up in Winchester, Massachusetts, received his degrees from Harvard University, and worked at the Gray Herbarium until 1947 when he moved his family to Washington, D.C., to begin work at the Smithsonian Institution. Ruth graduated from Radcliffe College and married Lyman, a young man who lived in the neighborhood and with whom she had commuted to college. She was a homemaker and volunteer extraordinaire who raised four children and a foster daughter while also finding time to enjoy her passions for reading and for music.

Steve grew up in Kensington, Maryland. His siblings were older than he by 18, 16, and 10 years respectively. He lived in a neighborhood full of families and playmates, ready to get together for pick-up games of football and basketball, as well as playing and roughhousing at each other's homes. He loved basketball and played it all his life. He spent many hours during his youth and adult life just going to a playground or a gym to practice shooting, as well as joining informal pickup games. It was also during Steve's childhood that he began to collect stamps and to go bird watching. Steve's summers, until adolescence, were spent at a family home in Rockport, Massachusetts, where he swam in the cold waters of the Atlantic, got to know his aunts and uncles, spent time with his cousins, and visited his grandparents.

Steve graduated from high school in 1966. It was in high school that we met and began dating in the spring of our senior year. Looking back I think we fell in love that summer of 1966, spending as much time together as we could. In the fall, however, we went off to our respective colleges, me to Douglass College in New Jersey and Steve to the University of



Stephen Smith pressing plants in Gabon, 2002. (Photo by Deborah Bell)

Michigan where he majored in zoology. We saw each other over vacations and wrote each other constantly. In addition, Steve called me on the dorm phone once per week (that was an extravagance but his parents provided him with a generous allowance). But the letters and calls and vacation time were not enough and in 1969 I transferred to Ann Arbor and we were soon married.

As an undergraduate Steve worked at the university herbarium, mounting plant specimens and doing some plant identification. He enjoyed that work very much and had good talks with his father about Michigan's collection. As our college years came to a close, I helped Steve with his applications for graduate school. He also applied to medical schools because he had received a draft lottery number that virtually guaranteed him a spot in the US Army and service in Vietnam (and med school students would have an exemption). When he went to one interview Steve was asked how long he had wanted to become a doctor. He answered that he really had not aspired to a medical career; needless to say that answer did not impress his interviewer. But he did want to pursue graduate studies in ecology and he was very pleased that the University of California at Berkeley was willing to take him. In April 1970 we graduated. In

June our daughter Becky was born and in August we moved back to Kensington where Becky and I would live with my parents while Steve completed six months' active duty as a reservist in the US Marine Corps.

Military obligation met, Steve began his doctoral program in the spring of 1971 and he really enjoyed graduate school. He held the typical grad student jobs—teaching assistant in a variety of zoology courses, as well as research assistant in the Museum of Vertebrate Zoology and in UC's herbarium. On several occasions Becky and I accompanied him on trips to explore possible field study sites and determine which animal would be worthy of a dissertation. I am not a camper, but Steve actually got me to agree to camp out on one trip in the Sierra Nevada Mountains. Unfortunately, we heard on the car radio that an axe murderer was on the loose somewhere in the vicinity and had killed some campers in their tents. I was all for turning around, but Steve would not hear of it. So we found a nice spot, ate our dinner cooked on the Coleman stove, and prepared to go to sleep. I relieved Steve of his keys, and Becky and I spent the night locked in our car. That was the last time I have ever gone camping.

Steve ultimately did his research on the ecology of chipmunks near Ukiah,

California. He spent three years collecting data, watching every move that critters on his study plot made, and shooting other chipmunks outside the study plot to examine their teeth, take various measurements, find out what they were eating, and, for females, find out about their reproductive history. He had the quaint habit of putting chipmunk carcasses in our apartment freezer, thereby frightening neighbors and friends.

The early 1970s was the peak time of women's consciousness raising. Women were determined to "have it all." I was taking courses at Cal State University at Hayward, as well as tending to the house and raising Becky. In 1973 I embarked on a program toward a teaching credential, finishing my student teaching and receiving my credential about three months before our older son Jordan's birth. My intention was to become a teacher. Steve was always very supportive of whatever I wanted to do. In late 1975 I decided to take the examination to qualify for Federal employment. Steve was planning to finish his degree in 1976 and there appeared to be a glut of ecologists in the pipeline for academic positions.

One spring morning in 1976 I received a long-distance call from the Office of Education in Washington, D.C., and was asked, almost apologetically, whether I might consider accepting a program specialist position. The only condition was that I had to begin working before the end of the Federal fiscal year on June 30. Without even thinking very hard, I accepted. Steve did not hear this news until that evening, and it did not faze him a bit. Since he had planned to spend the summer in California to finish writing and to fulfill his final two weeks of active Marine duty, he would drive us cross-country in June, fly back to California, finish out the summer, pack up the apartment, and drive back to Maryland in the fall. And so he did.

Steve was working in the US National Herbarium by 1978, thanks to the help of his father and Eddie Ayensu, Botany Chairman. Steve worked under a USDA contract for the first few years until he received a regular Smithsonian appointment in 1980. Although it may seem odd that a zoologist could be hired to work in a herbarium, Steve had studied a lot of botany and had relevant work experience. He loved the herbarium and may

have known more about its collections than anyone else. Making a determination of a specimen was important to him and his innate love of puzzles made these challenges highly entertaining. In addition to the work itself, Steve spoke affectionately of many colleagues with whom he worked. He also became known to many in the museum as "that guy who rummages around trash bins for stamps" as Steve returned to his stamp collections. So we spent our careers working downtown not too far from each other.

Steve connected with our local community through basketball and birding. He played at the local recreation center and always updated me on emails indicating how many players would be available for a game (probably the only email he ever cared about receiving or sending) and only missed if we were going out of town or he was undergoing treatment. Steve was happy to go birding on his own but he participated in annual Christmas bird counts every year.

I can sum up our life over these past 30 years as terrific. We raised three beautiful, loving, talented, accomplished children, whom we love very much, and of whom we are so proud, and because of whom we consider ourselves to be so fortunate. And then there was the travel to visit family and friends, as well as to see far-off places, and the quiet times together. So you see that Steve lived a pretty conventional and simple life. A life filled with happy times, love, adventure, and laughter.

Here is what really counted for Steve: his family, his work, and his pastimes. He put a lot of effort and time into each and derived great pleasure from all. He was a shy guy who would not want to interfere with whatever you might be doing. However, if you wanted to learn what he knew and what he loved, he was a very attentive teacher. I think his children, his grandchildren, and others knew that this was the secret to getting close to him.

Sometimes I catch myself not believing that Steve is actually gone. He was first diagnosed with metastatic melanoma in 2007 and he fought that cancer with all his strength and determination and we were able to have and enjoy another four years. When Steve was first diagnosed I asked him to promise me that he would seek out and try any treatment that held promise for curing the cancer and extending his

life. And he agreed and over the next four years that is exactly what he did. Recently Steve asked me to promise him that when he was gone I would continue to live life as fully as possible. So, although my heart is broken, I will keep that promise.

— Carol Chelemer

Addendum: Those of us who attended Steve's memorial were touched to learn things about him that he was too self-effacing or shy to share with coworkers. We appreciate the very important role he played in the functioning of the U.S. National Herbarium; regularly checking published revisions and monographs to annotate or update the names on our specimens, identifying unnamed collections especially those from southern Brazil and begonias, and distributing or filing the many mounted specimens that are constantly being added to the herbarium. Steve's ability to recognize many plant families was a critical component of his job. Those of us who worked with Steve and the collections will think about him often as we recognize his ubiquitous handwriting on covers and specimens throughout the herbarium.

Steve also participated in several Smithsonian expeditions to collect plants in tropical countries, most notably trips to Peru and Gabon. He published at least one paper on the ecology of chipmunks and co-authored several contributions to plant taxonomy, including the USDA's *National List of Scientific Plant Names* (1982), novelties or combinations in *Begonia* (Begoniaceae), *Croton* (Euphorbiaceae), and *Tapeinostemon* (Gentianaceae), and most recently a checklist of grasses for the *Catalogue of Seed Plants of the West Indies* (2012).

— L.J. Dorr



Around the World in 60 Years: The Traveling Field Books of F. Raymond Fosberg

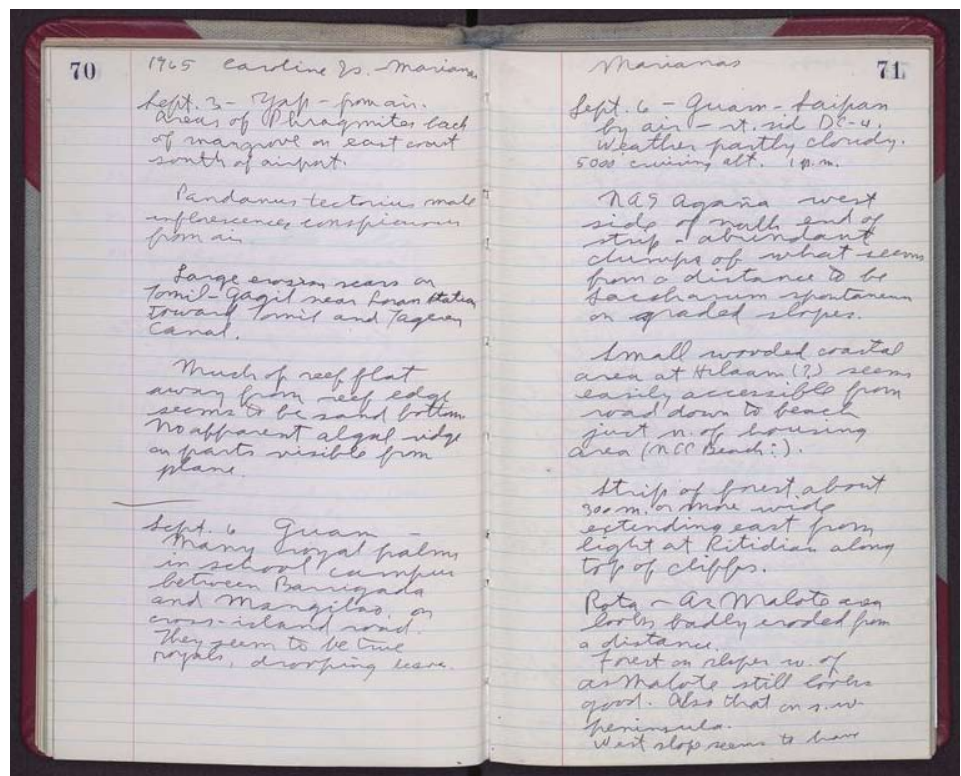
By Emily Hunter

Adapted from the Field Book Project blog

<<http://nmnh.typepad.com/fieldbooks/2012/02/fosberg.html>>

F. Raymond Fosberg was a botanist with a long and remarkable career. He joined the staff of the National Museum of Natural History in 1966, working as Curator of Botany, Senior Botanist, and eventually Emeritus Botanist. Fosberg collected specimens all over the globe, including the Americas, Pacific Islands, Europe, Africa, and Asia. He documented his activities in 129 field books, spanning 62 years, across seven decades (1931-1993).

It is not just sheer quantity that is so incredible about Fosberg's field notes. His notes are comprehensively inclusive, descriptive, and meticulously detailed. **Rusty Russell** noted in his Field Book Project blog post <<http://nmnh.typepad.com/fieldbooks/2012/01/canfield-review.html>> that Fosberg encouraged him to record everything he saw. Fosberg himself maintained a zealous yet thoughtful and deliberate record of his activities in the field through his carefully dated and numbered field books. He collected wherever he happened to be, including outside of



Field Book Record 92-1712, F. Raymond Fosberg, (1908-1993), botanist and ecologist, looking at leaves on a tree, was on the staff of the National Museum of Natural History from 1966 to 1993 (Smithsonian Archives - History Division)

hotel rooms.

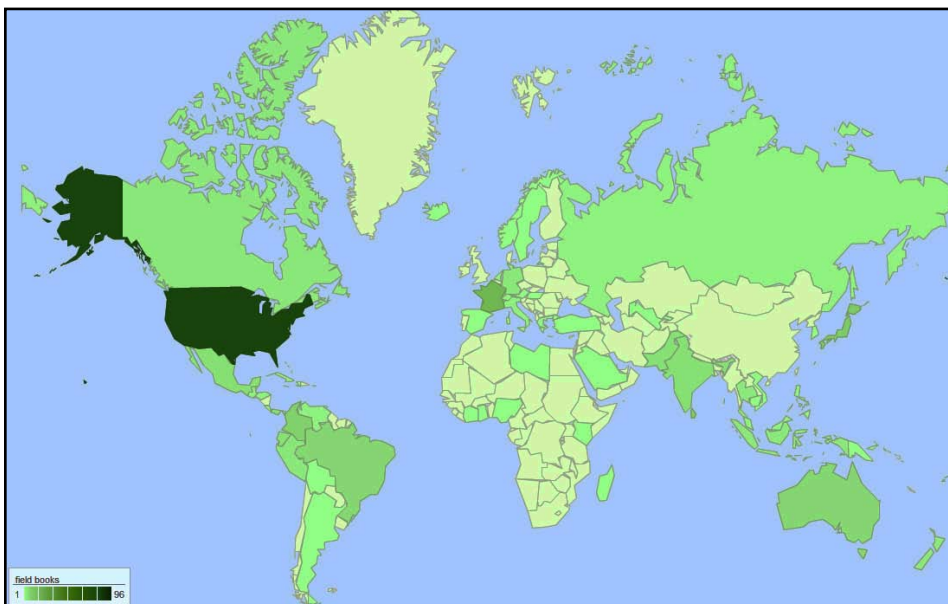
Fosberg always found opportunities for recording in his field books. When I began cataloging them, I often found notes labeled "Germany to Pakistan" or "Washington, D.C. to Miami" and wondered at this very broad style of geographic description. Then I realized that Fosberg was actually writing field notes *from the airplane*! Indeed, Fosberg recorded even

as he traveled from point A to point B, peering from the windows of airplanes, trains, and taxis, and noting everything he saw.

Fosberg was an exceptionally well traveled individual. From the field books, we can see that he collected in 73 countries and 45 U.S. states!

The world map on the left shows countries visited by Fosberg and displays the number of field books that include field notes from that country. On the interactive map on the Field Book Project webpage <<http://nmnh.typepad.com/fieldbooks/2012/02/fosberg.html>> you can hover your mouse over the countries to get further information. You will see a small window that displays the country (or dependent state) name and the number of field books held by the Smithsonian (NMNH Department of Botany) that contain field notes from that place.

Fosberg didn't just collect abroad in exotic environments. He often collected and created field notes very close to home. In fact, 68 field books contain notes from Virginia. Fosberg visited numerous states and countries each year, so nearby locations like Virginia, Maryland, and North Carolina are peppered throughout as he left and returned to his office in Washing-



F. Raymond Fosberg collected plants from 73 counties over the course of 62 years.

ton, D.C.

Fosberg was active up until his death in 1993. His final field book (March 1992 to May 1993) shows that he traveled to Hawaii, California, Virginia, Maryland, the Caroline Islands, and Okinawa, Japan, collecting 153 specimens. No decline in the rigor and precision can be observed from these final pages. A final entry is dated 29 May 1993. Fosberg passed away the following September.

Profile

Continued from page 1

data to conduct research and analyses with the support of affiliated senior scientists. CTFS-SIGEO also organizes thematic workshops for leaders in the fields of global carbon cycling, climate change, and soil ecology to develop powerful research protocols for the network, and to mentor and train young scientists. Short-term fellowships and field courses ensure that early-career scientists are able to collaborate and interact with the experts associated with the network. Finally, a new

scholarship program funded by the Swire Educational Trust develops new leaders in the field of research and conservation science in the tremendously fragile and biologically important forests of Papua New Guinea.

SIGEO has had a growing presence in the Department of Botany at NMNH over the past few years through the work of Curator John Kress and SIGEO-supported Biologist David Erickson on plant DNA barcoding. Kress and Erickson have been in the thick of DNA barcoding since the publication of the first paper in the *Proceedings of the National Academy of Sciences* on applying barcoding to plants, which appeared in 2005. Since that time they have concentrated a lot of their work on barcoding the tree species in the CTFS-SIGEO plots around the world. They started first by barcoding the 281 species of trees in the famous 50-hectare plot on Barro Colorado Island in Panama. Not only were they able to identify 98 percent of the species in that plot using a three-locus DNA barcode, but they also generated a community phylogeny



Stuart Davies (Photo by Nick Welles, Harvard News Office)

of those species using the sequence data from the barcodes. Kress, Erickson, and their colleagues around the world hope to eventually barcode all 8,500 tree species

Continued on page 10



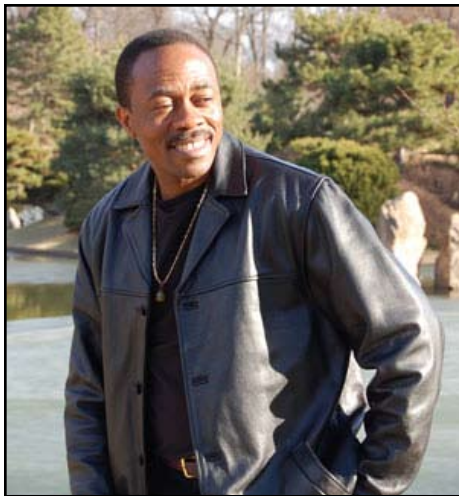
The Center for Tropical Forest Science (CTFS) is a global network of forest research plots and scientists dedicated to the study of tropical and temperate forest function and diversity. The multi-institutional network comprises 46 forest research plots across the Americas, Africa, Asia, and Europe, with a strong focus on tropical regions. CTFS monitors the growth and survival of approximately 4.5 million trees and 8,500 species.

Profile

Continued from page 9

in the 46 forest dynamics plots. This will require a huge effort from all partners in the global network.

The move of leadership to Washington, D.C., promises great things for the CTFSSIGEO network. Davies and Kenfack look forward to their home at NMNH and are eager to develop new scientific partnerships with researchers at NMNH and other DC-based units of SI. They graciously thank the National Museum of Natural History for hosting the new SIGEO-CTFS headquarters.



David Kenfack (Photo by Arnold Arbo-
retum of Harvard University)

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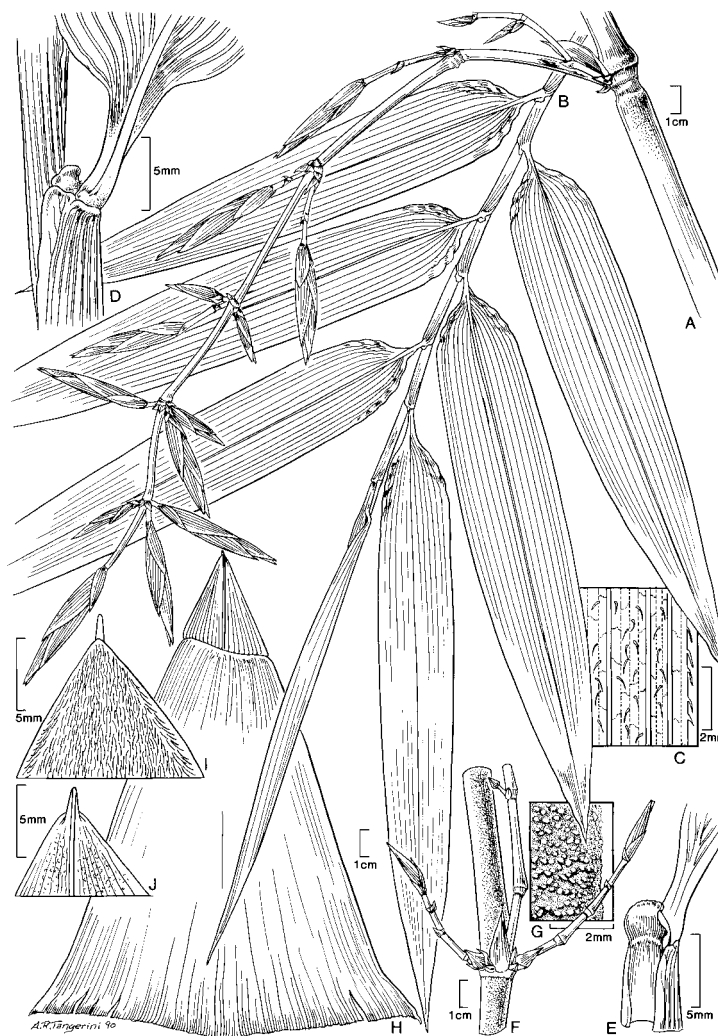
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Art by Alice Tangerini

***Guadua sarcocarpa* Londoño & P.M. Peterson**

Stephen Smith (remembrance appears on page 6) participated in several Smithsonian expeditions to collect plants. In 1997, he was a member of a team of botanists that collected plants as part of the project Biodiversity Assessment of the Lower Urubamba Region, Peru. This multi-disciplinary effort was funded by Shell Prospecting and Development, Peru (SPDP). Described by Ximena Londoño and Paul Peterson in 1991, pictured here is one of the bamboo species they collected. *Guadua sarcocarpa* grows in transitional bamboo forests in southern Amazonian Peru; Acre, Brazil; and Santa Cruz, Bolivia.



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