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Vicki Ann Funk, influential Smithsonian botanist, dies at 71

By friends and colleagues, Department of Botany

Vicki Funk was a Senior Research Botanist and Curator at the Smithsonian Institution, National Museum of Natural History, Department of Botany. She was a world expert on the taxonomy and biogeography of the sunflower family, Compositae, which is the largest family of flowering plants with more than 27,000 species. During her distinguished career, Vicki achieved preeminence in the fields of plant systematics, phylogenetic methods, biogeography, and biodiversity conservation. Vicki's global research, innovative ideas, and passion for mentoring have had a strong influence on the direction of botanical research and the career development of many colleagues, students and collaborators, both nationally and internationally. Following treatment for an aggressive cancer, Vicki died at her home in Arlington, Virginia on 22 October 2019.

Throughout her career, Vicki sustained an outstanding level of productivity, authoring more than 320 peer-reviewed publications and serving as an editor/author of nine collaborative books. The spectacular book *Systematics, Evolution, and Biogeography of the Compositae* (2009) will be a long-lasting testament to her legacy and impact on the field of plant biology. This nearly 1,000-page collaboration brought together essentially all of the world's experts and, in an award-winning standardized format, elaborated the evolution and classification of each genus across the entire family. The book is the most authoritative reference for the largest family of plants.

Vicki not only published extensively on the Compositae, but also was responsible for organizing major collaborative projects that generated a range of ground-breaking studies on the systematics and evolution of this large, diverse, ecologically important and taxonomically difficult family. As early as 1980, she was instrumental in pioneering the use

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Vicki Funk

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and development of modern phylogenetic methods (cladistics) in systematic botany and indeed across biology overall. As well, she recurrently participated in or organized research symposia which generated three seminal works (Funk and Brooks 1981, *Advances in cladistics: Proceedings of the first meeting of the Willi Hennig Society*; Platnick and Funk 1983, *Advances in cladistics: Proceedings of the second meeting of the Willi Hennig Society*; Wagner and Funk 1995, *Hawaiian Biogeography: Evolution on a hot spot Archipelago*). These volumes hastened an avalanche of new analyses on phylogenetics, biogeography and study of island evolution.

Most significantly, Vicki served as Director of the Biological Diversity of the Guiana Shield Program (BDG) for 31 years. This was a uniquely impactful international endeavor that sustained intellectual, administrative, and financial leadership that has supported countless collection and research programs. This program not only supported the collection of plants, but also included that of birds, amphibians, mammals, and insects. Over this period the BDG program made more than 60,000 new collections and databased those and another nearly 100,000 previously collected.

Another critical aspect of Vicki's influence was her strong and sustained contribution to the development, maintenance, and curation of botanical collections. She traveled extensively around the world in pursuit of Compositae and personally made upwards of 15,000 collections. Vicki was perhaps the most effective leader in plant taxonomy and systematics to advocate for the importance of systematic collections and to warn about the continued loss of regional collections as they are incorporated into larger, widely separated herbaria. She strongly supported collections-based science, and suggested innovative ways to use collections in a series of surveys and many of her publications. Her 2018 paper on "Collections-Based Sciences in the 21st Century" elegantly expounded on the discoveries from collections-based science that have changed the way we perceive ourselves and our environment.

Vicki Funk collecting plants on Volcano Tacna, Chile in 2014. (photo by Mauricio Diazgranados)

Vicki was an exemplary mentor and model of achievement to students at all levels, from advising undergraduate interns to mentoring current faculty. She actively mentored more than 40 undergraduate, graduate, and post-doctoral students and served as an unofficial mentor to countless other interns, students, and postdocs that have passed through the Botany Department. As well, she was an adjunct professor at George Mason University and Duke University. She was especially dedicated to mentoring, readily sharing her passion for research and enthusiasm for pushing the envelope in both applied methods and research questions. Vicki was extremely generous in sharing ideas and initiating collaborations that not only produced the best research results and the greatest impact on training and outreach, but were ultimately fun.

In addition to her remarkable achievements in scholarship and mentorship, Vicki had a career marked by outstanding vision and leadership through service. Most notably, she served as president of a number of major biological societies: Society for Systematic Biologists (1998–1999); International Biogeography Society, Founding Member and President (2007–2009); American Society of Plant Taxonomists (2006–2007); Botanical Society of Washington (2014); and International Association of Plant Taxonomists (2011–2017). In 2000, Vicki and her colleagues

founded "The International Compositae Alliance," which fosters work in the family and hosts international meetings.

Within the Smithsonian Institution, she not only served as Director of the Biological Diversity of the Guiana Shield Program (1987—2018), but also began the Global Genome Initiative for Gardens (2015—2018). These programs continue to explore global biodiversity under new leadership as of 2018. Her other significant service contributions to the Smithsonian community included serving as co-chair of the Smithsonian Strategic Planning Committee and chairing the professional evaluation committee, which performs reviews for all NMNH scientists, for nearly a decade (making significant strides to revamp the overall process). Most recently, she served as an advisor to the Smithsonian American Women's History Initiative; focusing on the contributions of women in science as part of the broader effort to create, disseminate, and amplify the historical record of the accomplishments of American women. All of these activities have had a significant effect on broadening the impact and visibility of botanical research at national and international levels while providing numerous training and fellowship opportunities.

Vicki was born on November 26, 1947, in Owensboro, Kentucky, to Edwin Joseph Funk and Betty Ann Massenburg Funk. She had two brothers: Edwin Jr. and Jared Kirk Funk. She grew up in Owensboro, except for stays on or near Air Force bases in Virginia, Texas, and Ohio, all of which ended before she started primary school. Vicki studied Biology and History at Murray State University in Kentucky and received her B.S. in 1969. She initially wanted to attend medical school, but decided against it after volunteering at a hospital one summer. After graduating, she lived and worked part-time in Germany for two years and returned to the United States to teach high school for one year. She subsequently spent a summer at the Hancock Biological Station on Kentucky Lake. There she discovered her passion for fieldwork and research. It was hard for her to believe that one could study and work at something so wonderfully engaging.

She entered Murray State University's graduate program in biology in the fall of 1973. In 1975 she received an M.S. in Biology at Murray State; her thesis was titled, "A Floristic and Geologic Survey of Selected Seeps of Calloway County, KY". Her advisor was Marian Fuller. She spent the summer of 1975 studying aquatic plants at Stone Lab at Lake Erie. Later that year she entered a Doctorate program at Ohio State University under the direction of Tod Stuessy. During her five years at Ohio State, she spent nearly a year doing field studies in Mexico and Central America, with an additional trip to Colombia for her

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Vicki Funk collecting below the Cerro de la Neblina in South America in 1984. (photo by Roy McDiarmid)

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Vicki Funk

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thesis on the classification of the genus *Montanoa*. She graduated in 1980. She then spent a postdoctoral year at the New York Botanical Garden with Art Cronquist and became deeply involved in the newly developing field of phylogenetics at the American Museum of Natural History. In 1981 Vicki joined the Smithsonian Institution as Curator of Compositae.

Vicki received many honors and awards acknowledging her career achievements. In 2009 she was presented with two Smithsonian awards: the Secretary's Award for Excellence in Collaboration and the National Museum of Natural History Science Achievement Award. In 2010, she was awarded the Stebbins Medal for the best publication in Plant Systematics or Plant Evolution from the International Association for Plant Taxonomy for the Compositae book. In 2012, she received the Smithsonian's Secretary's Award for Outstanding Publication and was appointed to a 2-year term on the board of the National Evolutionary Synthesis Center. In 2014 she received the Rolf Dahlgren Prize (in Sweden) for her major contributions to the understanding of the systematics and evolution of the flowering plants (angiosperms). Vicki received the prestigious Asa Gray Lifetime Achievement Award from the American Society of Plant Taxonomists in 2018, which is awarded to individuals who have produced outstanding achievements in the field of plant taxonomy. In 2019, the American Society of Plant Taxonomists announced a new grant named in her honor, funded by the Vicki Funk endowment fund for Graduate Student Research. Most recently she was awarded the Linnean Medal from The Linnean Society. It is bestowed annually as an expression of the Society's esteemed appreciation for service to science. Although Vicki was unable to attend the May meeting in London the current President of the Society, Sandy Knapp, brought the medal to Washington, DC. On what would be one of her final visits to the museum, Vicki was presented with the award on 2 October during a celebration with her peers and friends that strained the capacity of the meeting room.

Vicki Funk with silversword (*Argyroxiphium*) on Haleakala, Maui in 1991. (photo by Warren Wagner)

Vicki Funk: Appreciations and reflections

The Department of Botany received a great number of messages expressing sympathy and condolences upon the passing of our friend and colleague, Vicki Funk. Here are just a few.

Kristen Michelle van Neste (second from left) with Vicki Funk (center), Morgan Gostel (far right), and fellow interns at the U.S. Botanic Garden in 2015. (photo by Hilary-Morgan Watt)

Kristen Michelle Van Neste

I had the pleasure of working with Vicki Funk while I was a botany intern at NMNH. She taught me that after a hard day in the field, it is important to treat yourself. Vicki always bought the two of us a scoop of ice cream before returning to the office. She taught me not to take work so seriously by purchasing a bright blue wagon for me to pull my research equipment in and telling me stories of how she used to ride a scooter to meetings that were in the adjacent building. She taught me not to focus on myself but listen to the ideas of others. There was always time to talk in her office, no matter how much work she needed to complete. She taught me to treat everyone equally. She gave me, a lowly intern, the same respect she gave the Secretary of the Smithsonian. Everyone was equal in her eyes. Most importantly, Vicki Funk taught me how to have fun while conducting meaningful science. She was always the first to laugh at herself, to smile in the morning, and to get her work done before catching the afternoon metro home. When I think of the Smithsonian, I think of Vicki's office filled with sunflower decorations and knick-knacks. I think of her constant smile and her admirable confidence. Vicki Funk was as beautiful as the sunflowers she studied. She will be dearly missed.

Morgan Gostel

Sometimes a person enters your life and you're never the same. When they're gone it's all you can do but wonder on their imprint upon you. Vicki Funk is one of those people... and right now I sure miss her. Vicki changed my life - and I know she changed the lives of everyone who knew her. I met Vicki at my first botany meeting in 2009. She greeted me with friendliness and warmth as I came to learn she meets everyone. I know I am just one of many in this world who feels the same and I will never meet another Vicki Funk. It is all one can hope to leave the world a little better than you found it and Vicki leaves it better than anyone I have ever been fortunate enough to know. She leaves a legacy that will live forever and only grow stronger, and I hope to be able to continue that legacy in whatever small way I can. I know that the best way I can remember Vicki is to do good work, better the lives of others, and stand up for what I know to be true. Knowing Vicki has made me a better person, a better botanist, a better friend, and taught me part of her incredible way of doing these things selflessly and with enthusiasm and joy. I miss my friend who shared her passion for her life's work, her wisdom, and her amazing sense of humor. You're with us forever through your work and I hope to honor you through mine.

Vicki Funk with Morgan Gostel (front left) and a field trip crew at the Avenue of Baobabs, Madagascar in 2016. (photo by Morgan Gostel)

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Richard M. Bateman

I arrived at the Smithsonian Institution in September 1988 for what ultimately proved to be a career-defining three-year postdoctoral visit, working on paleobotanical projects in the Paleobiology Department of NMNH with Bill DiMichele. Happily, Bill wasted no time in telling me that a weekly systematics paper discussion group existed, primarily involving the Museum's postdoctoral researchers. The group proved to be hosted immediately above us in the office of a certain lively Botany curator called Vicki Funk.

It took only the first of those memorable paper discussions for me to get the measure of Vicki. She was one of us, ensuring that everyone had their say and never, ever talking down to anyone. Her contributions to the debates were clear and forthright, and although they occasionally exposed her periodic reluctance to actually read the paper under discussion, Vicki would be the first person to laugh at herself for any consequent faux pas. Only first-rate discussion groups lead to the publication of related papers, and this period of the group's existence (later identified by Vicki as its heyday) was – and remains – very important to me.

Vicki's innate egalitarianism meant that only gradually did I begin to appreciate her broader importance in the systematics world, learning that she had played a pivotal role in laying the groundwork for botanical cladistics alongside Chris Humphries in Britain and Kare Bremer in Sweden. Though by the time I knew her she had begun to drift away from hard-core cladistics, perturbed by the laddish excesses of certain infamous colleagues. Vicki was a restless

Richard Bateman (right) with, from left, Linda Prince, Lisa Campbell, Vicki Funk, and Chelsea Specht at the Botany 2004 meeting in Snowbird, Utah. (photo by Paula Rudall)

vessel of many passions, but at the time we first met her greatest academic investment was in progressing the Flora of the Guianas program, which had its innovative aspects but was rooted in traditional herbarium taxonomy and floristics. Vicki embraced the new and the old with equal conviction.

After I left the Smithsonian in 1991, my separation from Vicki lasted a mere fortnight, as she had invited me to guest lecture on a cladistics course that she was running at the Royal Botanic Gardens Kew. The course was fun, as always with Vicki. Towards its close, she and I were invited to what proved to be a memorably riotous dinner at the home of one of the researchers attending the course, namely Paula Rudall, who I had not previously met and would marry a quarter of a century later.

I naturally assumed that there were plenty more years left in our intermittent but mutually catalytic friendship, and I am desperately sad to discover that I was wrong. Vicki was not someone who merely touched your life but rather someone who hit it broadside on. You knew from the first second exactly where you stood with her, for she always told it exactly as she saw it. She loved telling, and being told, darkly humorous stories, though some of her best would be problematic to commit to print. Feathers were inevitably ruffled on occasion as a result of her scrupulous honesty, but few people can boast as big a heart. So many of us benefited from her extraordinary generosity, or had our spirits raised by her unquenchable energy, irrepressible humour and general joie de vivre. From serviceman's daughter to Woodstock veteran to pioneer cladist to stout defender of descriptive taxonomy and the world's herbaria, her impact was profound and her contribution unique, both professionally and personally.

Chelsea Specht

Perhaps the proudest moment of my life to date was being able to present Vicki with the Asa Gray Award for lifetime achievement in plant systematics. Vicki was President of American Society of Plant Taxonomists in 2006 and inspired my passion for the science and the society. She came to my presidential address in 2017 despite a recent back surgery, insisting on being there in person to support me as I struggled through making my slides with a broken arm. She was simultaneously the best friend, colleague, mentor, hostess, advocate, inspiration and life-mate anyone could ask for. Strong but humble, fiercely loyal. Her legacy is in all of us who have been touched by her generosity and formed by her example. I am thankful to her husband and partner in crime, Jim Nix, who has allowed all of us to share Vicki with him all these years, and especially those last days, and who fought to keep hope alive through some pretty dramatic times. Botany and botanists were robbed of her presence far too early. Her spirit lives on where compositae roam, which have a global distribution that seems directly correlated with the reach of her impact. I love and miss you, Vicki.

Chelsea Specht with Vicki Funk, who received the 2018 Asa Gray Award for outstanding accomplishments awarded by the American Society of Plant Taxonomists, in Rochester, Minnesota. (unknown photographer)

Vicki Funk with husband, Jim Nix, at La Reserva Ecológica El Ángel, Ecuador in 2018. (unknown photographer)

The 2020 Smithsonian Botanical Symposium, May 15, to explore plant symbioses

The Smithsonian's Department of Botany and the United States Botanic Garden will hold the 2020 Smithsonian Botanical Symposium, "Plant symbiosis: The good, the bad, and the complicated," at the National Museum of Natural History in Washington, D.C., on May 15, 2020.

Plants, like all organisms, exist in collaboration and competition with other life forms. As primary producers, plants form the basis of most food webs. In many cases, they also depend on insects, vertebrate animals, bacteria, and/or fungi to survive and reproduce. Sometimes, these interactions are especially close and long lasting and such symbioses are among the most fascinating relationships in the natural world. The 18th Smithsonian Botanical Symposium will explore current research in the diversity of plant symbioses, examining the relationships plants have with insects, fungi, bacteria, and even other plants. It will culminate with a panel Q&A session followed by poster presentations and a reception at the United States Botanic Garden. Speakers will include botanists, ecologists, microbiologists, and geneticists, whose research unravels the complicated relationships that plants have with their collaborators and competitors in the natural world.

In addition, the 18th José Cuatrecasas Medal in Tropical Botany will be awarded at the Symposium. This prestigious award is presented annually to an international scholar who has contributed significantly to advancing the field of tropical botany. The award is named in honor of Dr. José Cuatrecasas, a pioneering botanist who spent many years working in the Department of Botany at the Smithsonian, and devoted his career to plant exploration in tropical South America.

Abstracts for poster presentations may be emailed to sbs@si.edu. Topic must be related to the study of plant symbioses (e.g., lichen, mycorrhizae, pollination, root nodules, seed dispersal) and contain original research. The deadline for abstract submission is April 10, 2020. Abstract submissions should include the following: Author(s) name(s) including affiliation(s) and email address(es); list the title in sentence case; titles are limited to 150 characters; abstracts may not exceed 1,500 characters including spaces. Posters should be no larger than 30" x 40" (portrait orientation). Presenting authors are required to attend the poster session (6:30 pm – 8:30 pm) to take advantage of opportunities to discuss their work with symposium participants.

Attendees must register online at https://usbg.doubleknot.com/event/2020-smithsonian-botanical-symposium/2627079. Email sbs@si.edu for more information.

Rare benthic marine algae species discovered from the deep-water habitats of Bonaire

David Ballantine, **Barrett Brooks**, and **Gabe Johnson** of the Botany Department collaborated on a recent publication in which two rarely reported and one newly described species of benthic marine algae were reported from deep-water habitats in Bonaire, representing the first Caribbean reports of each. The study was published in *Botanica Marina* (62: 587-593; 2019).

Archestenogramma profundum is previously known only from its type collection in Bermuda, and the rarely reported *Halymenia integra* is known originally from its type locality at Cabo Frio, Brazil. The newly described *Verdigellas discoidea* represents the fourth species in a rarely encountered genus first described in 1994 by James Norris and David Ballantine. *Verdigellas* species have an extremely simple morphology in which small spherical cells are embedded within a gelatinous matrix. Like the other members of their order, Palmophyllales, they survive today almost exclusively in deep water.

The mesophotic realm, loosely defined as marine low light environments at depths from 30 - 150 m, has in recent years proven to be a rich source of undiscovered biodiversity, in terms of both fauna and flora. Given the technological difficulties and expense involved with working at such depths, only a small percent of such habitats has been examined and only a handful of deep-water programs have existed in the Caribbean region.

Johnson did the genetic barcoding for the newly described species. His findings supported the new species designation for the collection and underscored the need for more molecular resources to be developed in order to understand the evolution of these early-branching lineages of green plants.

Verdigellas discoidea. **(photo by Barry Brown)**

These collections were made in 2017 while Brooks participated in a NMNH Deep Reef Observation Project (DROP) expedition, using the deep research submersible Curasub (http://www.substationcuracao.com).

The Franck family succulent portraiture

By Julia Beros

In 2017, botany contractor Victor Shields was tasked with reorganizing the clutter of the Euphorbia cases, and among the sheets of pressed material he found one nearly empty with a small photograph pasted in the upper corner. And soon he found another. And then another, and another. Often in the collections various sheets void of plant material are stored with herbarium specimens, dubbed "literature" they are usually write-ups and keys to species and synonyms or cut-outs from articles with relevant information. The photographs Shields found, though sparse with information, were part of a more intricate history of succulent research.

At the turn of the 20th century J.N. Rose (noted motorcycle-riding botanist and curator at the Smithsonian Institution) along with N.L. Britton (co-founder of the New York Botanical Garden) were the major authorities on Cactaceae, collaborating as well in work on Crassulaceae. Abroad in Germany, Alwin Berger was a prominent figure in succulent botanical research, having worked in gardens throughout Europe he developed an interest in succulents, ultimately publishing multiple monographs and aiding in the nomenclature and evolutionary study of cacti and agaves. Rose and Britton even named a genus *Bergerocactus* in his honor. He was greatly supported by his fellow succulent enthusiasts, namely Harry Franck, a highly active member of the German Cactus Society. At the time Franck, a hobbyist in Frankfurt, had cultivated one of Europe's largest living collections of succulents.

His massive collections served the botanical community by providing live specimens, rare even in cultivation, for research. Though he died just before Berger's publication of *Die Sukkulente Euphorbien* in 1907, his passion and contributions live on through the photographs of his cultivated specimens gathered by his son Harry Franck, making the illustrations possible for this monograph. Haunting portraits, these statuesque creatures emerging from terra cotta with their names etched onto tags dangling at the nape of their pots, serve as historical research documents, and ethereal momentary impressions of the still steady work of a succulent: arms cutting into the sky as roots do below the surface, hoarding water through CAM (crassulacean acid metabolism).

In 2018 while digitizing the Crassulaceae family, many similar photographs were uncovered, attesting to the vast span of Franck's work. Father and son duo, the Francks, though little known, were two major contributors to botanical research and cultivation. Through these glamour shots, scattered throughout the collections, their work and legacy will continue to inspire curiosity and provide irreplaceable historic material.

Today commodity culture has sparked a fascination and fetishization of succulent plants that has created a massive surplus of these habitat-specific creatures in climates like windowsills and waiting-rooms, simultaneously making them a coveted and disposable item. Their proliferation in offices and Instagram posts in some ways parallels that of orchids, via the Victorian era Orchid Hunters transforming them from delicate exotic epiphytes to grocery store and bodega staples, housewarming gifts, and temporary décor, lasting only until the final blossom drops to the floor. Perhaps this is a method of counter-colonization. A subversive technique for plants lacking the autonomy to move beyond their highly temperamental habitat needs by capitalizing on the human quest to possess the beautiful and the bizarre. It is unclear what remains of Franck's once great succulent nursery, likely damaged or obliterated by war, its memory will continue to inspire horticulturalists and hobbyists alike to continue in their botanical pursuits.

Photographs of cultivated *Euphorbia cooperi*, *E. mamillosa*, and *E. tenuirama* appear on sheets in specimen folders.

Searching for holy wood in the dry forests of Colombia

By Betsy Collins

I recently spent two unforgettable weeks collecting in the tropical dry forests of Barranquilla, Santa Marta, and the Cauca River valley in Colombia for my doctoral research on the phylogeography of the dry forest specialist tree, *Bursera graveolens* (palo santo, holy wood). Other than its deliciously scented essential oils and funky fruit, what makes palo santo in particular so interesting to study?

Palo santo as currently described has a wide range, from Mexico, Central America (except Belize and Panama), Colombia, Venezuela, Ecuador (including the Galapagos), and Peru, although I hypothesize that it consists of multiple, distinct species. This widespread distribution is unique amongst dry forest specialist trees, which makes palo santo an ideal candidate for studying the evolutionary processes that formed the tropical dry forest biome, and whether these processes differ between Mesoamerican and South American dry forest.

One of my goals was to sample (almost) all the major tropical dry forest patches that palo santo occurs in, which is no small logistical feat!

After struggling for months trying to get collection permits for Colombia and being warned that exporting specimens from Colombia was pretty much impossible, I was close to giving up hope of ever collecting in Colombia. And then Morgan Gostel, previously a postdoctoral fellow at the Smithsonian, now a research botanist at the Botanical Research Institute of Texas (BRIT), introduced me to Alejandra Vasco, his colleague at BRIT. Vasco very kindly offered to make me a research associate at BRIT, which allowed me to collect and export under their permits and agreements with the herbarium at the Universidad de Antioquia (HUA) in Medellin.

Left: Essential oil dripping from a cut in the bark of a *Bursera graveolens* tree in Piura, Peru. Right: Palo santo fruit are dehiscent drupes. Fruits are green when unripe, and then turn red and the capsule dehisces, exposing a red pseudaril covering the black pyrene. (photos by Betsy Collins)

Caribbean field team selfie, taken in Taganga, Santa Marta. Left to right: Betsy Collins, Lewis Morfe, and Priscilla Saab. (photo by Betsy Collins)

I started my Colombian field expedition on the Caribbean coast near Barranquilla. My field team in Barranquilla consisted of Priscilla Saab, an intrepid and gregarious ecologist, and Lewis Morfe, a taxi driver-turned-field assistant. Marcela Celis, a professor at the Universidad del Norte in Barranquilla, connected me to them, in addition to allowing me to work out of the university's herbarium.

In an attempt to beat the relentless heat in Barranquilla, the three of us met up at 5:00 am the day after I arrived in Colombia. Our destination that day was a private nature reserve about an hour from Barranquilla called Reserva Palomar, where there had been several documented field observations and herbarium specimens collected of *Bursera graveolens*. In Latin America much of the original extent of dry forest has been converted to agriculture and human settlements. Having witnessed extensive habitat loss and conversion in

Peru and Mexico, I thought I was prepared for what I might see in Colombia. However, I was shocked by the extent of habitat loss along the Caribbean coast and the deforestation in the Cauca River valley in Antioquia. The Reserva Palomar (and especially the Santa Marta area, further east along the coast), were bright spots in an otherwise depressing (from a human impact aspect) collection trip.

After arriving at Reserva Palomar we hiked a few kilometers uphill to a farmhouse (casa de finca), where we were going to meet up with the farm workers who had agreed to help us locate palo santo. The hike to the farmhouse turned out to be magical - we spotted a flock of wild macaws! And we even had cloud cover the entire day, which made the temperature much more manageable.

Once we arrived at the farmhouse, I showed Manuel, one of the farmworkers, pictures of palo santo and he quickly recognized it as *caraña*. He agreed to take us to the few trees he knew of at the reserve – about a 4 km hike each way from the farmhouse.

We made collections from two palo santo trees at Palomar, both on the sites of former farm houses. Manuel told us that it is very common to plant a palo santo tree at your house (people use it to treat colds and arthritis), so that is probably why these two trees were in Palomar. It seems palo santo is not naturally found in the dry forest in Palomar, and that likely all the field observations and the other collection in Palomar (that was a few more kilometers away) were planted trees. I didn't know it at the time, but we would not find any naturally growing palo santo trees in Atlántico Department, either because all the natural populations have been extirpated (pretty likely) or because all previous collections had been from planted trees (I think less likely although not out of the question). I found this very interesting, and definitely not what I expected based on everything I had read, including the herbarium labels. I didn't find natural populations of palo santo until I traveled east several hours to Santa Marta and then flew south to the Cauca River valley near Medellin.

When we arrived back at the farmhouse we heard of another palo santo tree in a yard in a neighboring town called Loma de Arena.

Hiking with the farm dog to the palo santo trees at Reserva Palomar. (photo by Betsy Collins)

On our way to the town of Loma de Arena in Bolivar, we hit a little snag. Our car got stuck in the mud. We tried everything - we even tied a horse to the car (that did not go well). Finally, several more people came along, we yelled for their help, and we were all able to push it out.

I really wish I could have filmed the look on this family's face when we all showed up at their door in Loma de Arena asking if we could cut some leaves from their caraña tree (a mixture of amusement and bewilderment). The whole family pulled up plastic chairs in the backyard to watch the show of these crazy biologists cutting leaves from their tree.

The family told us the tree had been planted via cutting about 40 years ago. The cutting had been taken from a tree in the town of Clemencia in Bolivar. Maybe my genetic work can provide a clue about where these trees may have originally come from.

In addition to traveling to Colombia, this year I also had the privilege of collecting palo santo, with funding from the National Geographic Society, in northwestern Peru and Mexico (Veracruz and Oaxaca). I will be heading to Ecuador in February for my last collection trip.

Priscilla Saab holding the new collections from the backyard tree. (photo by Betsy Collins)

Illustration intern has a productive fall semester

Alice Tangerini hosted **Jacquelyn McPeck**, an intern acquired through the Smithsonian's Office of Fellowships and Internships' (OFI) partnership with Whitworth University, for the fall semester September 13 through December 13, 2019. Though McPeck's major is Biology, she has an interest in Horticulture and two-dimensional art media. She came highly recommended.

McPeck expressed an interest and had knowledge of working in Adobe Photoshop and came at just the opportune time to work on a project for **Harold Robinson** involving **Edith Scott**, former Research Associate in the Botany Department.

McPeck's first project was to scan and rework the photographs, diagrams, and maps for Scott's dissertation on "The Protosalvinia from Kentucky," a paper on Devonian fossils originally submitted to George Washington University in 1980. Scott's major professor was Francis Huber, former Paleobiology Curator at the National Museum of Natural History. The dissertation had never been published online. McPeck scanned and enhanced the old faded photographs and redrew maps using online models and old photocopies of Scott's maps. McPeck finished this project in record time, impressing even Robinson.

Alice Tangerini with intern Jacquelyn McPeck. (photo by Ken Wurdack)

McPeck followed up the initial project and continued by scanning a series of old botanical drawings that were waiting to be inventoried. One of these included a 1922 oil painting of a *Ferocactus* (discovered in the herbarium) covered with dust spots and stains which required removal in the scan. She also rescanned all of the Funk *Werneria* drawings at a higher resolution for optimum publication, and meticulously rehoused the illustrations in archival folders.

McPeck was actively working on an illustration of a species of *Perityle* for Botany researcher, Isaac Marck, during her last week at the museum.

Science Achievement Award presented to Botany staff

The National Museum of Natural History began awarding Science Achievement Awards in 2003. The awards recognize exceptional scientific publications in natural history. On November 21, 2019, in close consultation with the museum's Senate of Scientists, an interdisciplinary review committee recognized the outstanding work of staff scientists for five publications, each published in 2017. Awards for publications from 2018 and 2019 will be announced later this year.

Among the awards, **Eric Schuettpelz**, **Rebecca Dikow**, **Sylvia Orli**, **Vicki Funk**, and **Laurence Dorr** received recognition for their paper, "Applications of deep convolutional neural networks to digitized natural history collections" (*Biodiversity Data Journal* 5: e21139; http://doi.org/10.3897/BDJ.5.e21139).

NMNH Sant Director Kirk Johnson presents one of five 2017 Science Achievement Awards to Sylvia Orli, Eric Schuettpelz, Warren Wagner (accepting on behalf of Vicki Funk), Rebecca Dikow, and Laurence Dorr. (photo by Lucia RM Martino, Smithsonian Institution)

TRAVEL

Pedro Acevedo traveled to Brazil (10/19 – 10/30) to present a talk at the 70th Brazilian Botanical Congress in Alagoas, and to visit the Instituto Nacional de Pesquisas da Amazônia herbarium and the Museu Paraense Emílio Goeldi herbarium to study *Paullinia* (Sapindaceae) collections; and to Dominican Republic (11/16 – 11/30) with **Marcos Caraballo** to collect samples of plant genera endemic to the West Indies for the Global Genome Initiative project.

Betsy Collins traveled to Colombia (11/10 – 11/23) to collect samples of *Bursera* sp. (Burseraceae) for a range-wide phylogeographic study of *Bursera graveolens*.

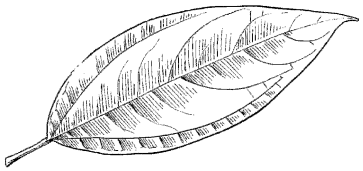
Sue Lutz and **Erika Gardner** traveled to Fremont, North Carolina (11/20) to visit an off-site plant mounting employee and to deliver supplies and review mounting techniques.

Paul Peterson and **Konstantin Romaschenko** traveled to Mexico (10/19 – 11/21) to present talks at the XXI Congresso Mexicano de Botánica held in Aguascalientes as part of the symposium, Sistemática y Evolución de las Gramíneas; and to conduct filed work on Poaceae.

Alice Tangerini traveled to Pittsburgh, Pennsylvania (10/16 – 10/20) to attend the conference of the American Society of Botanical Artists and to present a portfolio.

Jun Wen traveled to China (11/30 – 12/17) to conduct field work and herbarium work on Vitaceae.

Liz Zimmer traveled to Norfolk, Virginia (11/4 – 11/6) to attend a dissertation seminar and defense as co-advisor of Peter Schafran.



VISITORS

Peiwu Xie, Guangdong Academy of Forestry, China; Herbarium research (8/28/19-8/28/20).

Myoughai Kwak, National Institute of Biological Resources, South Korea; Herbarium research (9/3/19-3/3/20).

Cassiano Welker, Universidade Federal de Uberlândia, Brazil; Andropogoneae (Poaceae) (9/4-11/4).

Jacquelyn McPeck, Whitworth University; Botanical illustration internship (9/9-12/13).

Josimar Kulkamp, Jardim Botanico, Brazil; Euphorbiaceae (9/18-10/18).

Sandra Knapp, Natural History Museum, London, United Kingdom; Solanaceae (9/29-10/3).

Pierre-Emmanuel Du Pasquier and **Jason Grant**, University of Neuchâtel, Switzerland; Ophioglossaceae, Bromeliaceae, and Gentianaceae (10/16-10/18).

Saul Hoyos, University of Antioquia, Brazil; Violaceae (10/21-10/26).

Italo Coutinho, Universidade Federal do Ceara, Brazil; Fabaceae (10/23-11/5).

Xiaoping Han and **Renwu Wu**, Zhejiang Agriculture and Forestry University, China; Poaceae (10/24-10/31).

Ana Claudia Araujo and **Neil Brummitt**, Natural History Museum London, United Kingdom; Neotropical Angiosperms (10/28-11/1).

Carmen Ulloa, Missouri Botanic Garden; Berberidaceae (10/28-11/1).

Maria Vorontsova, Royal Botanic Garden, Kew, United Kingdom; Poaceae (10/28-10/31).

Santos Miguel Nino and **Daniela Canelón Barraez**, Universidad Nacional Experimental de los Llanos Ezequiel Zamora, Venezuela; Flora of Guaramacal (10/29/19-1/31/20).

Martha Tomecek, U.S. Department of Agriculture's Agricultural Research Service; Phytochemistry of plant specimens (11/5).

Valeria Sampaio, Ceará State University, Brazil; Solanaceae and Asteraceae (11/8-11/15).

Carla Sofia Islas Hernández, Universidad Nacional Autónoma de México, Mexico; *Spigelia* (Loganiaceae) (11/12-11/22).

Norman Wickett, Chicago Botanic Garden; Bryophyta (11/12-11/14).

Alison Colwell, National Park Service, Seattle; Poaceae (11/15).

Raymund Chan, Independent researcher, Singapore; Compositae (11/17-11/24).

Ingrid Carolina Romero Valero, University of Illinois at Urbana-Champaign; Malvaceae and Fabaceae (11/25-11/28).

Nick Ruppel and 14 students, Randolph-Macon College; Plant conservation and herbarium tour (11/25).

Mary Ann Feist, Wisconsin State Herbarium; Apiaceae (12/4-12/5).

Steven Sylvester, Royal Botanic Gardens Kew, United Kingdom; Poaceae (12/4/19-1/4/20).

Robert Naczi, New York Botanical Garden; New Manual of Vascular Plants of the Northeastern United States and Adjacent Canada (12/9-12/13).

PUBLICATIONS

***Archestenogramma profundum* is a species of benthic marine algae reported for the first time in the Caribbean from the deep-water habitats of Bonaire. See Ballantine, et al. (2019). (photo by Barry Brown)**

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ART BY ALICE TANGERINI

Erato costaricensis E. Moran & V.A. Funk

Known only from Costa Rica and Panama, *Erato costaricensis* (Compositae) grows in wet forest, forested hillsides, and along roadsides. This illustration is representative of Vicki Funk's passion for mentoring young scientists, especially women, and work in the family she studied during her career, Compositae, especially in Latin America. The research paper, published in *Systematic Botany* (31: 597-609; 2006 https://doi.org/10.1600/036364406778388728), was done by Emily Moran as part of the Research Training Program at the National Museum of Natural History, which was funded by the National Science Foundation. Alice Tangerini illustrated this drawing in polycarbonate pencil on drafting film to match the media of a previous drawing, *Erato polymnioides*, completed in 1976.

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