

On closer inspection: APHIS team joins Botany

By Gary Krupnick

The Department of Botany is pleased to welcome three new members to the department. In December 2023, a Memorandum of Understanding (MOU) was signed between the Smithsonian's National Museum of Natural History (NMNH) and the United States Department of Agriculture's (USDA) Animal and Plant Health Inspection Service's (APHIS) Plant Protection and Quarantine division (PPQ). The three new scientists (two botanists and one technician) joining the department hail from National Identification Services (NIS) within PPQ. The focus of NIS is to provide rapid identification of plants and plant pests in support of the USDA's regulatory programs. NIS includes specialists in the fields of botany, entomology, malacology, and mycology, and they serve as the final taxonomic authorities for PPQ's identification programs. While the missions of PPQ and NMNH are separate and distinct, both provide information and scientific services to a wide array of researchers, customers, and stakeholders in the public and private sectors.

According to the MOU, NMNH will provide space to PPQ/NIS scientists, technicians, and affiliated individuals (e.g., visitors, fellows, interns, contractors) in return for PPQ's performance of collection curation activities. This arrangement

will allow PPQ, in conjunction with NMNH and other USDA employee scientists, to effectively perform pest identifications in support of agricultural quarantine inspection, pest detection, emergency and other PPQ programs. PPQ scientists have now joined the NMNH's Department of Botany and Department of Entomology curating specific taxa within the NMNH botanical and entomological collections. In Botany, they are focused on Asteraceae, Fabaceae, and other plant families with large numbers of federal noxious weeds or other taxa encountered in trade, while in Entomology, the

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The museum's association with federal partners is highly productive, providing support for and strengthening both scientific research and the national collections.



**The Plant Protection and Quarantine (PPQ)/National Identification Services (NIS) team:
Gregory Stull, Vijay Raman, and Madison ("Maddy") Dorr**



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On the cover: The Plant Protection and Quarantine Botany Lab, now in the NMNH Botany Department, includes a fruit and seed collection of over 6,000 accessions. (photo by Gary Krupnick)

focus is on Coleoptera, Diptera, Lepidoptera, and Hemiptera. The NMNH collections will also grow with the addition of officially identified PPQ botanical and arthropod specimens obtained from port-of-entry interceptions and from other PPQ programs, with specimens originating from locations throughout the world. The PPQ Botany Lab, now fully moved to the NMNH Botany Department, also includes a small reference library as well as a fruit and seed collection including over 6,000 accessions.

The mission of APHIS is to provide credible and timely identifications of insect pests, seeds, and other plant parts intercepted from imported cargo, arriving in international travelers, and mail. These identifications help determine if imported items may enter the United States or if an exotic pest or noxious weed should be addressed. The PPQ/NIS staff performs some of these pest identifications and coordinates other identifications with personnel in other PPQ units. Annually, PPQ sends more than 10,000 of its most difficult pest interceptions to NIS and/or the Systematic Entomology Laboratory (SEL) for identification.

In 2017, four PPQ entomologists and two technicians began working in the NMNH Department of Entomology. More recently, in February 2024, two PPQ bota-

nists, **Gregory Stull** and **Vijay Raman**, and a technician, **Madison ("Maddy") Dorr**, began working in the NMNH Department of Botany.

Greg Stull joined PPQ in September 2023. He received a bachelor's degree from Ohio Wesleyan University in 2010 and a doctoral degree from University of Florida in 2016. He conducted postdoctoral work at the University of Michigan as a National Science Foundation fellow and the Kunming Institute of Botany in Yunnan, China. His research background includes examinations of extant and fossil biodiversity to better understand major themes in flowering plant evolution ranging from the origin of phenotypic novelties to the role of climate change in shaping plant distributions, diversification, and extinction. In 2023, Stull was an invited speaker of the 20th Smithsonian Botanical Symposium, "New Horizons in the Study of Neotropical Floras." Stull has published around 40 peer-reviewed papers across the fields of plant systematics, phylogenomics, paleobotany, and biogeography.

Vijay Raman has been with PPQ since September 2023. Raman obtained his master's degree in Botany from Presidency College, Chennai, India, and earned his doctoral degree in Plant Taxonomy from Manonmaniam Sundaranar University, India. Between 2000 and 2010, he served

as a Botanist at FRLHT (Foundation for Revitalization of Local Health Traditions) in Bangalore, India. During this time, he conducted extensive field explorations across various regions of India and was involved in documenting Indian medicinal plants. He collected, prepared, and identified herbarium specimens, and curated the collections at the National Herbarium of Medicinal Plants. He also contributed to the Red Listing and conservation of endangered Indian medicinal plants.

From 2010 to 2023, Raman served as a Botanist at the National Center for Natural Products Research (NCNPR) at the University of Mississippi. In this role, he was responsible for the identification and authentication of botanicals used as dietary supplements. He curated and managed NCNPR's botanical repository collections, instructed training courses on botanical authentication, and established the University's scanning electron microscopy core facility, where he served as director from 2018 to 2023.

Raman was recently elected to the International Plant Protection Convention's Technical Panel for Diagnostic Protocols. He has published three books and over a hundred peer-reviewed research papers.

Maddy Dorr joined PPQ in April 2024. She graduated from Swarthmore College in 2021 with a bachelor's degree in Psychology, with additional coursework in studied Studio Art and Biology. She has been eager to work in a biological museum setting since she first joined the Smithsonian's National Museum of Natural History as a remote illustration intern in 2020. After graduating, she gained hands-on experience handling, preparing, sorting, and labeling thousands of insect specimens and associated plant specimens as an intern and contractor in the Entomology Department at the NMNH. She is extremely grateful for the opportunities she has had to work with entomology collections so far, and she is excited to continue growing in this field by learning how to care for botany collections.

In addition to their identification work, Stull and Raman will also conduct systematic research on plant groups of economic or regulatory significance and perform curatorial work on the PPQ fruit/seed collection as well as within the US National Herbarium. Dorr will assist the work of the National Taxonomists by handling shipments of interception plant material,

inventorying, and managing the PPQ fruit/seed collection, and performing other technical tasks such as specimen dissection and imaging.

The Smithsonian's Department of Botany has a long history with USDA. The herbarium had moved back and forth between the two institutions during the earliest years of the herbarium (see *The Plant Press* Vol. 13, No. 2; 2010). In 1893, the second Secretary of the Smithsonian, Spencer Baird, established the U.S. National Museum and the U.S. National Herbarium. Frederick Coville, Chief Botanist of the Department of Agriculture, was appointed Honorary Curator of Smithsonian's National Herbarium. During those early years, several USDA botanists such as Orator Fuller Cook, Walter T. Swingle, G.T. Moore, David G. Fairchild, and Bernhard E. Fernow did curatorial work on the collections in the herbarium at the Smithsonian. USDA botanist Albert S. Hitchcock was Custodian of Grasses at the Smithsonian, and after his death, Agnes Chase was appointed Honorary Custodian. In addition, many prominent

USDA botanists spent most of their time at the Smithsonian, among them William Edwin Safford and Ivar Tidestrom.

Other NMNH research departments have had and currently have strong partnerships with other affiliated federal agencies, including and not limited to Department of Defense (DOD), Walter Reed Army Institute of Research, U.S. Air Force, U.S. Navy, Federal Aviation Administration (FAA), U.S. Department of the Interior (DOI), National Aeronautics and Space Administration (NASA), and National Oceanic and Atmospheric Administration (NOAA). In some cases, these relationships have been in place for more than a century. Some of these affiliated agencies have a resident working within NMNH. The museum's association with these federal partners has been highly productive, providing support for and strengthening both scientific research and the national collections. The Smithsonian strives to continue and enhance the scientific synergy of NMNH and their partner organizations through improved bilateral communication and increased NMNH community engagement.



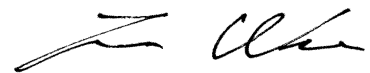
The Plant Protection and Quarantine Botany Lab, now in the NMNH Botany Department, includes a fruit and seed collection of over 6,000 accessions. (photo by Gary Krupnick)

Herbaria in the age of the Anthropocene and big data

The recent proposed closure of the Duke University Herbarium has rocked the scientific community. The Duke Herbarium holds a world-class collection of ~825,000 specimens of plants, fungi, algae, and lichens, representing major branches of the tree of life. It is well known for its depth and breadth of collections from southeastern USA, an important biodiversity hotspot, as well as global holdings, especially the Neotropics. The Herbarium has helped train generations of outstanding plant biologists.

Herbaria and the associated collections play important roles in research and training in biological sciences. They provide an invaluable record of the distribution of plants throughout the world and through time, and they have been used in many types of studies including systematics, biogeography, ecology, conservation, climate science, genetics and genomics, and monitoring and managing invasive species (Wen et al. 2015, *J. Syst. Evol.*; <https://doi.org/10.1111/jse.12181>). Collections are the only direct documentation of the biological, physical, and cultural diversity of the planet: past, present, and future (Funk 2018, *J. Syst. Evol.*; <https://doi.org/10.1111/jse.12315>). Yet herbaria and collections-based research are often under-appreciated and sometimes under threat. Herbaria are also important platforms to connect people with nature, and educate the public on critical issues on biodiversity, conservation, medicinal plants, food, agriculture, and health.

The decision to close the Duke University herbarium is very short-sighted and disappointing, especially at the time when the field of systematics is becoming highly relevant to society and is experiencing a major revolution with the development of collections-based big data (genomics and informatics) (Wen et al. 2023, *Pleione*; <http://pleione.ehsst.org/journals/Pleione172/001%20Collection%20Based%20Integrative%20Systematics.pdf>). Today, herbaria are far beyond being repositories for systematics and biodiversity science. They are also a genbank (we can get genomes from specimens that are over 100 years old), an ecobank (each specimen holds ecological data points on its environment), and a morphobank (each specimen renders rich morphological information and is being studied via machine deep learning in biodiversity science). These recent advances in the use of collections are opening many new opportunities for the scientific role of herbaria in the age of big data (Davis 2022, *Trends Ecol. Evol.*; <https://doi.org/10.1016/j.tree.2022.11.015>). Herbaria and collections should be well preserved and continue to be supported and developed. We are still in the infancy of understanding the biodiversity of our planet, and herbaria will be critical for exploring biodiversity, climate changes and the impacts on humans in the current epoch of the Anthropocene.



The United States National Herbarium in Washington, DC, includes more than 5 million plant specimens. (photo by Chip Clark)

Department of Botany transitions to new leadership structure

On March 1, 2024, **Jun Wen** became the new Chair of Botany at the National Museum of Natural History, while **Eric Schuettpelz** transitioned into a new role as Curator of the Herbarium.

Dr. Jun Wen (Chair of Botany). Jun Wen is a Research Botanist and Curator in the Department of Botany with a collections-based research program on phylogenetic systematics and biogeography of the flowering plants. Wen is a leading authority on the systematics of the ginseng plant family and the grape plant family. She has published extensively on the biogeographic relationships between eastern Asia and North America and the biogeographic patterns of Asian plants. Wen advocates collaborations and partnerships and she values collections. She has collected over 20,000 numbers of plant specimens. Wen works to inspire interest in science in young people. She actively mentors students and early-career professionals through the Smithsonian's fellowship and internship programs. She has trained many young scientists on biodiversity and evolution through her extensive field work and collaborative research. Wen actively serves her professional communities and is currently the President of the American Society of Plant Taxonomists. She is a co-Editor-in-Chief of the *Journal of Systematics and Evolution* and a co-editor of the Plant Systematics World column for *Taxon* published by International Associa-

tion for Plant Taxonomy. Wen received her Ph.D. in Biology in 1991 at The Ohio State University. She completed a postdoctoral position at the Arnold Arboretum at Harvard University in 1994 and then moved to the Smithsonian for a postdoctoral fellowship. She was appointed as an assistant professor and curator of the herbarium at Colorado State University in 1995. She became an associate curator for The Field Museum in Chicago in 2000 and remained there for five years. In 2005 she joined the Smithsonian's Department of Botany.

Dr. Eric Schuettpelz (Curator of the Herbarium). Eric Schuettpelz is a Research Botanist and Curator in the Department of Botany, with a collections-based research program focused on pteridophytes. He earned a B.S. and M.S. from the University of Wisconsin Milwaukee and a Ph.D. from Duke University. After completing postdoctoral fellowships at Duke University and the National Evolutionary Synthesis Center, he spent three years as a faculty member at the University of North Carolina Wilmington before joining the Smithsonian's Department of Botany in 2013. His research on ferns and lycophytes has been mostly systematic in nature, emphasizing taxonomy and the identification of phylogenetic relationships. However, he has also published on rates of molecular evolution, biogeography, the evolution of epiphytism, and links between fern and flowering plant radiations. Today, he con-

tinues to integrate fieldwork, morphological and molecular data, and phylogenetic approaches to elucidate the evolutionary history of ferns and other vascular plant lineages. He served as Chair of Botany since early 2019.

Wen, as Chair of Botany, will lead the department, with the support of Schuettpelz, as Curator of the Herbarium. Operationally, they will work as a team, overseeing responsibilities and staff under their purview while jointly conferring on shared items or with others within and outside the department as appropriate. They will attend meetings together when applicable and communicate consistently with Botany staff, seeking broader input where appropriate. Together they will form the leadership team for the Department of Botany.

As part of this transition, **Sue Lutz** has stepped away from her position as Acting Collections Manager. Lutz served admirably in this role for nearly 7 years and will continue to work closely with the Curator of the Herbarium on collections oversight.

Wen is the 17th Chair of Botany in the history of the U.S. National Herbarium, and the first woman and the first Asian-American to hold this title. For a past look at the Botany Chairs, see "A History of Chairs" in *The Plant Press*, Vol. 9, No. 4 (2006).



Jun Wen (left) is the new Chair of Botany at the National Museum of Natural History, and Eric Schuettpelz is the new Curator of the Herbarium. (photos by Smithsonian Institution)

Mark M. Littler (1939-2023)

Mark Masterton Littler, former Senior Scientist and Botany Departmental Chair, passed away on 25 July 2023 in New Mexico. He was 83 years old, born on 24 September 1939, in Athens, Ohio. Littler's lifelong passion for the outdoors began at an early age, fostered by explorations and fishing adventures in the aquatic habitats of his Appalachian surroundings. He discovered the thrill of saltwater fishing when his golf pro father moved the family to Key Biscayne, Florida, for the subsequent winters following the 1950 blizzard. He made his first scuba dive in 1955 in the upper Florida Keys at Fowey Rocks.

Littler graduated from Ohio University with a B.S. in 1961 and continued his academic pursuits at the same institution, earning an M.S. in Botany, focusing on the seasonal cycles of phytoplankton. It was at this time that Littler met his future wife, Diane Scullion. The two became inseparable collaborative colleagues for the rest of their professional careers. One rarely mentioned just one of "the Littlers", it was much more common to hear someone mention them as they always were, together.

In 1971, Littler earned his Ph.D. in Marine Botany from the University of Hawaii under the mentorship of Max Doty, where he delved into the intricacies of coral-reef ecology and advanced research methodologies. Littler was fond of repeating one of Max Doty's quotable sayings (regarding alpha taxonomy), "If you don't do the taxonomy, you don't know what you are talking about, but if all you do is taxonomy, you don't have anything to say."

The Chair of the Department of Ecology, University of California, Irvine (UCI), talked Littler into accepting a tenure track position there a full year prior to completion of his doctoral degree. During his early career he held academic and research positions at various west coast universities, but remained a Biological Sciences Professorship UCI, where aside from studying the California coastal seaweed flora, he and Diane directed very large research programs (up to 55 full-time employees), focusing on the ecology and physiology of rocky intertidal ecosystems.

In 1982 Littler was recruited to be the Chair of Botany at Smithsonian's National Museum of Natural History (NMNH), a position he held until 1987. Diane joined



Mark Littler in 2010. (photo by Smithsonian Institution)

Mark in the department as a Research Associate. In 1985, he became a Senior Scientist and continued in that capacity until his 2012 retirement. The Littlers' research was heavily dependent on fieldwork. During their entire tenure at the Botany Department, they spent each winter and summer season at the Smithsonian Marine Station in Fort Pierce, Florida. Whether he was in DC or in Florida, Littler, ever the outdoorsmen, would hunt or fish to keep his Shagbark Hickory fed smoker at home fully stocked. It was easy to know when the two Littlers had returned home from Florida because tubs of his smoked mackerel spread "Smak" would appear with bowls of crackers outside the Botany Chairs office.

Littler's research took him to diverse marine habitats around the world, from tropical reefs throughout the Caribbean to the remote islands and shores of the Pacific and Indian Oceans. His contributions to marine science were extensive and impactful. He was one of the first to quantitatively document the importance of coralline algae to the structure and functioning of tropical coral reefs. Littler was a significant figure in the study of marine algal functional morphology and evolution, which explores how various marine algae species have evolved different anatomical, physiological, and ecological features, and how these features have contributed to their survival and success in their respective environments even if they are not closely related phylogenetically. The Littlers have

held the record for discovering the deepest known living plant life on earth since 1983, a crustose coralline algae they found by submersible at 268 m depth on an uncharted seamount near San Salvador Island, Bahamas.

Together the Littlers penned over 200 papers and books. They are well known for the wide-ranging topics of their taxonomical, ecological, and experimental physiology papers. They were also pioneers in using underwater (UW) photography for both illustrations and as a research tool. Their now 24-year-old book, *Caribbean Reef Plants* (OffShore Graphics, Inc), is still much sought after. The book's production was a monumental task at the time when you consider it had hundreds of high-quality color in situ images. These photographs were all taken on 35mm Kodachrome film in SLR cameras that were encased in UW housings which limited the diver to 36 exposures per dive. His pioneering work and profound impact on the field of marine botany will be well remembered.

Mark is survived by his wife, Diane, of Silver City, New Mexico.

- Barrett Brooks



A botanical detective story: uncovering the true type locality of a rare grass species

By Robert J. Soreng

In 1992 I examined and annotated the holotype at Kew (K) of *Poa moabitica* Bor (published in 1972). Labelled as, “**Plants of the Holy Land** COLLECTED BY W. A. HAYNE,” the specimen was collected in 1872. As far as botanist Norman Bor knew, or I could discover, no one had collected this grass species since. Bor guessed the plant was collected in Jordan on the Moab Plateau because Hayne had published a general paper in 1872 “On The Flora of Moab”. The type specimen was unusual, mesophytic looking, tall, closed-sheathed, densely hairy-liguled, broad-leaved, large-panicled and small-spikeleted, floret callus hairs scant (easily missed) or absent, perennial. Back then I was not sure if it was a *Poa* or perhaps a *Glyceria* or something new until I saw the dorsal tuft of callus hairs, a trait known only from *Poa*.

My chance encounter in 2023 with two newer Henri A. Pabot specimens of *P. moabitica*, donated to the general herbarium at G (Geneva) in 1972, mistakenly determined as and filed under *Poa chaixii* Vill., lead to an extended investigation, combing through the old floristic literature of the Levant region (an historical geographical term referring to a large area in the Eastern Mediterranean region of West Asia), through many website searches (many dead ends), and language translations from French to Arabic and some back to English, and to contacts with multiple herbaria curators to track down where the original Hayne and newer Pabot specimens were actually collected, and where else Hayne’s collections might be housed.

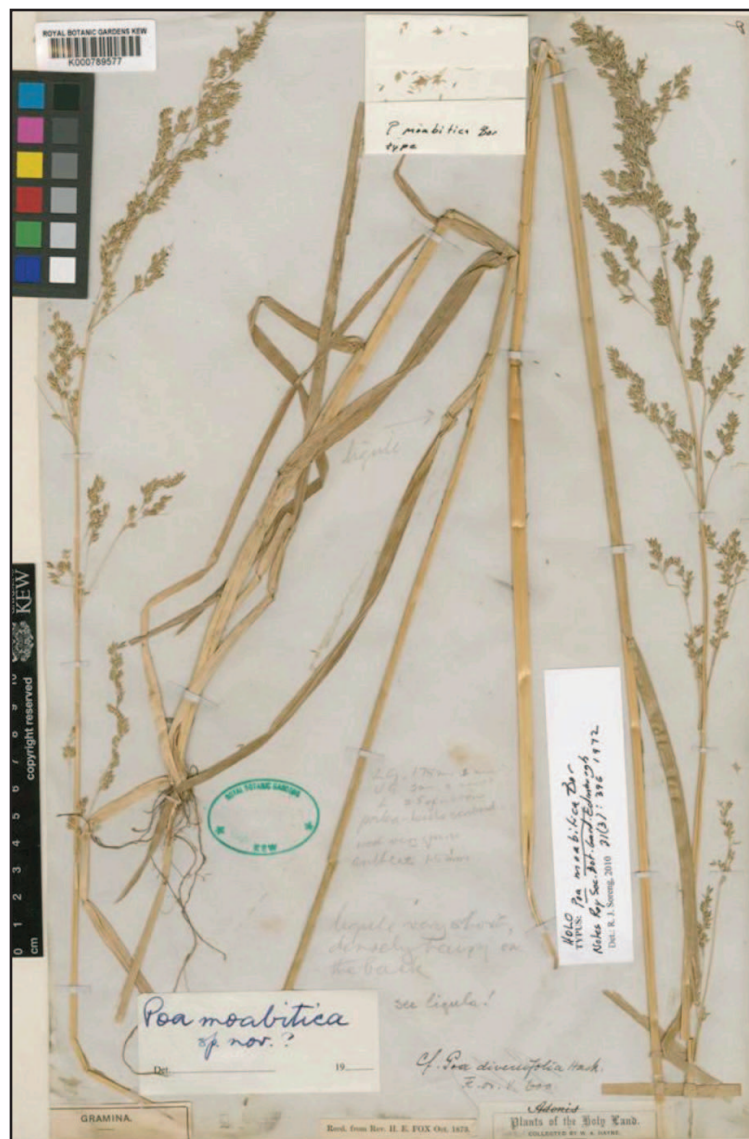
The story of the original collection place revolved around Hayne’s fine set of **Plants of the Holy Land**, but there was little known about William Amherst Hayne other than he survived less than a year after returning to Oxford from his seminal foray to the Moab Plateau. In 1873 Kew received a full set of Hayne’s **Plants of the Holy Land** specimens but no itinerary has been reconstructed nor inventory of taxa or collections has been found. Unfortunately, most of the K labels of this set seen online have little or very sketchy provinces or dates. All this sleuthing shed a little more light on the short life of Hayne (1847-1873), that his collecting expedition

extended northward to Lebanon and to Damascus, Syria, and that there is also a good set of duplicates at Oxford (OXF) with original labels, including places and dates.

This research led me to conclude that *P. moabitica* occurs only in wet habitats in forests of Lebanon and Syria, and not in Jordan as Bor assumed. As a result of my research, Harvard Index to Botanists has now been updated for Hayne and Pabot entries, and Plants of the World Online and Euro + Med PlantBase have corrected the ranges of both *P. chaixii* and *P. moabitica*.

Further detail about this research ap-

pears in my article, “Reassessment of *Poa moabitica* (Poaceae: Pooideae), mistaken identity of *P. chaixii*, and notes on Hayne’s Plants of the Holy Land,” (*Kew Bulletin*; <http://doi.org/10.1007/S12225-024-10165-9>). *Poa moabitica* belongs to *P.* sect. *Homalopoa* Dumort., is morphologically most similar to *P. asiae-minoris* H. Scholz & Byfield, of NW Anatolian Turkey, and allied to *P. chaixii*, *P. hybrida* Gaudin, and *P. remota* Forselles, which are mostly confined to Europe. The latter four are known to be diploids in the large (ca 580 spp.), predominantly polyploid genus. The paper also provides a good introduction to floras of the Levant Region.



Poa moabitica Bor, holotype K000789577, “**Plants of the Holy Land** COLLECTED BY W. A. HAYNE”, with “Adonis” crossed out.

Weniomeles, a new genus in the rose family named in honor of Jun Wen

By Bin-Bin Liu and Richard G.J. Hodel

A new genus, *Weniomeles* B.B.Liu, was recently described by former Botany fellow **Bin-Bin Liu** in honor of Smithsonian Botany Curator **Jun Wen**, in recognition of her substantial contributions to botany. The genus *Weniomeles* is in the apple tribe, Maleae, within the rose family, Rosaceae. Wen's extensive dedication to research and promoting collaboration has significantly advanced the field of botany, particularly in fostering Sino-American scholarly exchange within the plant systematics community. The international scientific partnerships she has worked to establish have broadened our collective botanical knowledge. Her influence and mentorship have inspired many researchers, leaving a lasting legacy in the botanical sciences.

This new genus was recently described in the journal *Molecular Phylogenetics and Evolution* (<https://doi.org/10.1016/j.ympev.2023.107914>), in a collaborative paper by Ze-Tao Jin and Jun Wu of Nanjing Agricultural University, **Richard G.J. Hodel** of the Smithsonian Institution (Botany Department and Data Science Lab), Bin-Bin Liu, Dai-Kun Ma, and Chao Xu from the Institute of Botany, Chinese Academy of Sciences, Hui Wang and Shui-Hu Jin from Zhejiang Agriculture and Forestry University, Guang-Ning Liu from China National Botanical Garden, Chen Ren from South China National Botanical Garden, Bin-Jie Ge from Shanghai Chenshan Botanical Garden, and Qiang Fan from Sun Yat-sen University.

The new genus *Weniomeles* occupies a range from central and southern China to



Morphological characteristics of *Weniomeles* (type species *W. bodinieri*) and comparison with its close relatives *Stranvaesia* and *Photinia*. I, *Weniomeles bodinieri* (photos by Bin-Jie Ge); (a-b) a complete and partial inflorescence; (c-d) top view of a single flower (unopen vs. open); (e) bottom view of young flower; (f) longitudinal-section of ovary; (g) stamens; (h) cross-section of ovary; (i) pistil; (j) flower dissection; (k-l) infructescence; (m) fruit; (n) cross-section of fruit. II, thorns on the stems of *Weniomeles bodinieri* (photo by Bin-Bin Liu). III, *Stranvaesia lasiogyna* (photo by Long-Yuan Wang). IV, *Photinia serratifolia* (photo by Xin-Xin Zhu).

northern Vietnam and Indonesia. It is distinguished from other genera of the apple tribe by its purple-black fruits, thorny tree trunk and branches, and a distinctive fruit

core anatomy characterized by multi-locules separated by a layer of sclereids and a cluster of sclereids at the top of the locules.

New studies from ForestGEO emphasize the importance of biodiversity

In the past few months, ForestGEO published three papers in major science journals, each discussing the importance of biodiversity and how it impacts forest community structure and relationships. The Hülsmann, et al. (2024) paper in *Nature* (<https://doi.org/10.1038/s41586-024-07118-4>) shows how trees perform better when they are surrounded by varied (rather than the same) species, especially in tropical forests, which highlights how

critical it is to maintain a diverse species population. The Kalyuzhny, et al. (2023) paper in *Science* (<https://doi.org/10.1126/science.adg7021>) further supports this idea, describing how a tree is more likely to survive when surrounded by different species with different resource needs, diseases, and herbivores, leading to greater distances separating trees of the same species. This helps explain why tropical forests have such high diversity. Lastly, the

Medina-Vega, et al. (2024) paper in *Nature Ecology & Evolution* (<https://doi.org/10.1038/s41559-023-02298-0>) dives deeper into functional diversity by exploring how the distribution and abundance of ectomycorrhizal-associated trees are independent of soil quality. The three papers demonstrate why biodiversity is essential for a healthy forest.

NEWS FROM THE BOTANY RESEARCH GREENHOUSE

Research botanists at the Smithsonian's National Museum of Natural History (NMNH) occasionally come across plants in the field that they cannot identify, and so they bring the living plant back to Washington, DC, for further study. The living collections are then cared for in the Botany Research Greenhouses, located in Suitland, Maryland, at the Smithsonian's Museum Support Center (MSC), where the plant may one day reach flowering stage for easier identification.

Such is the case of an unidentified plant specimen collected by **Jun Wen** a few years ago in Singapore. While Wen could identify it to Araliaceae, the plant needed to grow to flowering size to get a positive species identification. There are two specimens of this plant growing in the greenhouses, and with the horticultural expertise of **Carl Johnson**, both specimens began flowering in January 2024. With flowers at hand, the plants have now been identified as *Polyscias diversifolia*, a species that grows in wet tropical forests from Indo-China to west and central Malesia. In addition to the positive identification, Wen was able to take cuttings of the mature plants, which will be used to make herbarium vouchers.

This contribution of plant material from the greenhouse to the herbarium is a great example of the Department of Botany's greenhouse facility and the U.S. National Herbarium working in tandem with Smithsonian Gardens to facilitate research goals. As a collaboration between Smithsonian Gardens and NMNH, the goal of the greenhouses is to bring together shared botanical and horticultural resources, passions, and missions.

While the well-known herbarium has a collection of over 5 million dried, pressed plant specimens, the greenhouses maintain an impressive collection of just under 2,000 living plants. The new greenhouse facility, recently on the move from one location at MSC to another, is expected to open in its new location in June 2024.



A living collection of *Polyscias diversifolia* from Singapore growing in the Botany Research Greenhouses. (photo by Carl Johnson)

Department of Botany travel award recipients announced

Named awards are presented annually to support the study of collections in the United States National Herbarium. This year, a total of eight awards were made. Each of the 2024 awardees will visit for approximately one month over the course of the next year.

Harold E. Robinson & Vicki A. Funk Award

Danielle Remor
Universidade Estadual de Feira de Santana (Brazil)
"Systematic studies in the *Stilpnopappus* alliance (Asteraceae: Vernonieae)"

Fabiula Moreno Arantes
Uberlândia Federal University (Brazil)
"Systematics and floral evolution of Wunderlichioideae, an endemic subfamily of South America"

José Cuatrecasas Award

Ana Gabriela Martínez Becerril
National Autonomous University of Mexico
"Unraveling the systematics of a tropical fern clade in the megadiverse genus *Elaphoglossum* (Dryopteridaceae)"

Andrés Fonseca Cortés
Universidade Estadual de Feira de Santana (Brazil)
"Systematics of *Macropsychanthus* (Leguminosae): phylogeny, biogeography and taxonomic revision"

Atilés Reis Junior
Universidade Federal do Rio de Janeiro (Brazil)
"Systematics of the neotropical *Diplazium cristatum* complex"

Rosa María Villanueva Espinoza
South China Botanical Garden
"Taxonomy and phylogeny of the genus *Justicia* (Acanthaceae: Justicieae: Justiciinae) in Peru"

Yeison Londoño Echeverri
University of Antioquia (Colombia)
"Taxonomic synopsis of the family Rutaceae Juss. (Sapindales) in Colombia: diversity, endemism, new species, and conservation status"

Lyman B. & Ruth C. Smith Award

María Fernanda Valencia Escalante
Universidad Nacional de Colombia
"Systematics of the 'Sodirola' group within *Guzmania* Ruiz & Pav. (Bromeliaceae: Tillandsioideae)"

NEW FACES

Karina Alves, a 2023 Cuatrecasas Travel awardee, conducted research in the U.S. National Herbarium in March 2024. She is a Brazilian PhD student in Botany at the Postgraduate Program of Biological Sciences - Tropical Botany, of the Museu Paraense Emílio Goeldi and the Universidade Federal Rural da Amazônia in Pará, Brazil. Her thesis is focused on the Systematics and Evolution of *Rhynchospora* section *Pauciflorae* Kük. (Cyperaceae), a misunderstood group of sedges, unrevised since its creation in 1949, and enigmatic even among the Cyperaceae specialists. The U.S. National Herbarium houses a large collection made by the Flora of the Guianas project, one of the diversity centers for the species of section *Pauciflorae*, and the contributions of **Mark Strong**, one of the world's leading *Rhynchospora* scholars. The U.S. herbarium also has important collections from Australia and Asia, including types, where some species of the focused section occur. During her visit, Alves could consult ca. 400 specimens, describe new species, consult important type specimens for the group, and collect samples of leaf tissue for DNA extraction to perform with the phylogeny, especially from the Australasian specimens, that are not available for her re-



Karina Alves (left) and Ian Medeiros (right)

search in Brazil. The studies will contribute to the comprehension of the diversity of section *Pauciflorae*, its evolutionary history, and the relationships with the other sections of *Rhynchospora*, one of the largest genera of Cyperaceae, with high diversity levels in the Neotropics.

Ian Medeiros joined the Department of Botany as a Peter Buck Postdoctoral Fellow in February 2024. He is working under the supervision of **Eric Schuettelpelz** to investigate species boundaries in southern African *Xanthoparmelia*, the most speciose genus of lichen-forming fungi in the



Greater Cape Floristic Region. Medeiros recently completed his PhD at Duke University under the supervision of François Lutzoni, which included work on the systematics of the fungal classes Lecanoromycetes and Eurotiomycetes and the green algal genus *Trebouxia*. He is broadly interested in the systematics, genomics, ecology, and biogeography of ascomycete fungi involved in symbioses with photosynthetic organisms—primarily lichens, but also fungal endophytes and bryophilous (moss- and liverwort-inhabiting) fungi.

TRAVEL

Sue Lutz traveled to Red Hill, North Carolina (3/15-3/16) to transport specimens to **Annie Johnson**.

Paul Peterson traveled to San José, Costa Rica (3/10-3/16) to give a presentation on the biogeography and classification of the grasses (Poaceae) at Monocots VII, the 7th International Conference on Comparative Biology of Monocotyledons.

Laurence E. Skog traveled to Sarasota, Florida (2/25-2/29) to work with Smithsonian research associate John L. Clark on an article as well as to identify and sort specimens to send on exchange to US, and to see the new botanical research facilities (larger herbarium, library, and molecular laboratory) at Marie Selby Botanical Gardens.

Warren Wagner and **Gary Krupnick** traveled to Borrego Springs, California

(3/11-3/15) to participate in a discussion and writing workshop at the Steel Burnand Desert Research Center of the University of California, Irvine, with a focus on the Hawaiian genus *Schiedea* and the conservation genetics of other Hawaiian taxa of

conservation concern.

Jun Wen traveled to Fort Worth, Texas (2/4-2/9) to conduct research on Vitaceae and Araliaceae at the Fort Worth Botanical Garden.

VISITORS

Lei Duan, South China Botanical Garden, China; *Ormosia* (Fabaceae) (9/14/23-2/14/24).

Lina Han, South China Botanical Garden, China; Fabaceae (12/23/23-1/4/24).

Candie Shegogue and a group of 20 visitors, Federal Bureau of Investigation; Herbarium tour (1/11).

Andrea Hellier and a group of nine vis-

itors, Laurel Garden Club, Virginia; Herbarium tour (1/12).

Guy Nesom, Academy of Natural Sciences; Asteraceae (1/29-2/1 and 3/20-3/22).

Eun Ju Cheong, Kangwon National University, South Korea; Herbarium visit (2/2).

Laurel Kaminsky, University of Florida; Lichens (2/2).

Andrew Salywon, Desert Botanical Garden; *Agave* and *Yucca* (Asparagaceae) (2/8).

Zachary Rogers, New Mexico State University; E.O. Wootton & P.C. Standley ledger books and transaction records, Wootton & Standley types, Thymelaeaceae, Santalales, and *Eriodictyon* (Boraginaceae) (2/27-3/6).

James Beck, Wichita State University; Pteridaceae (3/7-3/8).

Carolyn Ferguson and **Mark Mayfield**, Kansas State University; *Phlox* (Polemoniaceae) (3/11-3/12).

Steven Manchester, University of Florida; Burseraceae (3/11).

Ernest Jenkins and **Daniel Koenemann**, Claflin University; *Ruprechtia* and *Triplaris* (Polygonaceae) (3/12-3/15).

Joo-Hwan Kim, Gachon University, South Korea; Liliales (3/18-3/19).

Remigiusz Pielech and **Marne Quigg**, Northwestern University & Chicago Botanic Garden; *Ulmus americana* (Ulmaceae) (3/21-3/22).

PUBLICATIONS

Ballantine, D.L., J. Sprung, and **J.N. Norris**. 2023. An Indian Ocean macroalga new to the Atlantic: *Halimeda macroloba* (Chlorophyta, Halimedaceae) discovered and now established in Biscayne Bay, Florida. *Bull. Mar. Sci.* 99(4): 559-560. <https://doi.org/10.5343/bms.2023.0036>

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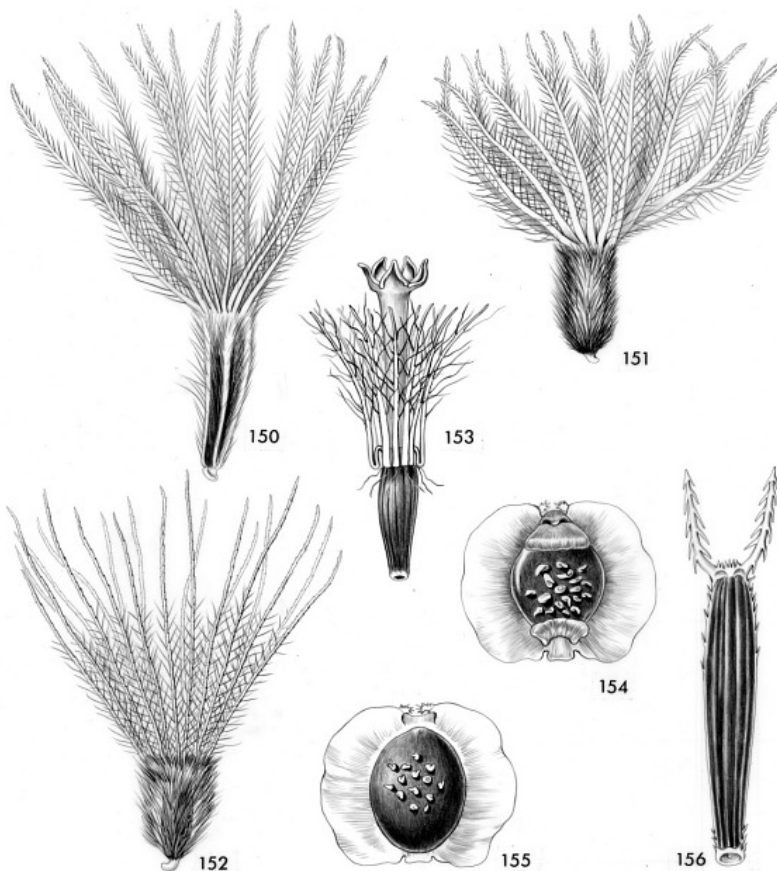
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ART BY ALICE TANGERINI

Asteraceae achenes

Many of the urgent identifications that botanists of the National Identification Services (NIS) perform are of Asteraceae achenes, as these are common contaminants of cargo shipments. The botanists must rule out the presence of a Federal Noxious Weed (FNW) species, and many of the designated FNWs are in Asteraceae. Illustrated here are Asteraceae achenes of (150) *Bebbia juncea*, (151) *Tridax procumbens*, (152) *Dyscritothamnus filifolius*, (153) *Dimeresia howellii*, (154-155) *Coreopsis lanceolata*, and (156) *Bidens pilosa*. In 1980, Alice Tangerini illustrated these achenes for Harold Robinson using a technique of polycarbonate pencils on drafting film. The depth of shading with the pencils defined the intricate ridges and hair types of the achenes and provided the best media for publication in *Smithsonian Contributions to Botany*, No. 51 (1981). She remembers the most laborious part of the illustration was cutting amberliths (silhouettes) around each achene to drop out the gray background—a process no longer necessary with current printing methods.



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