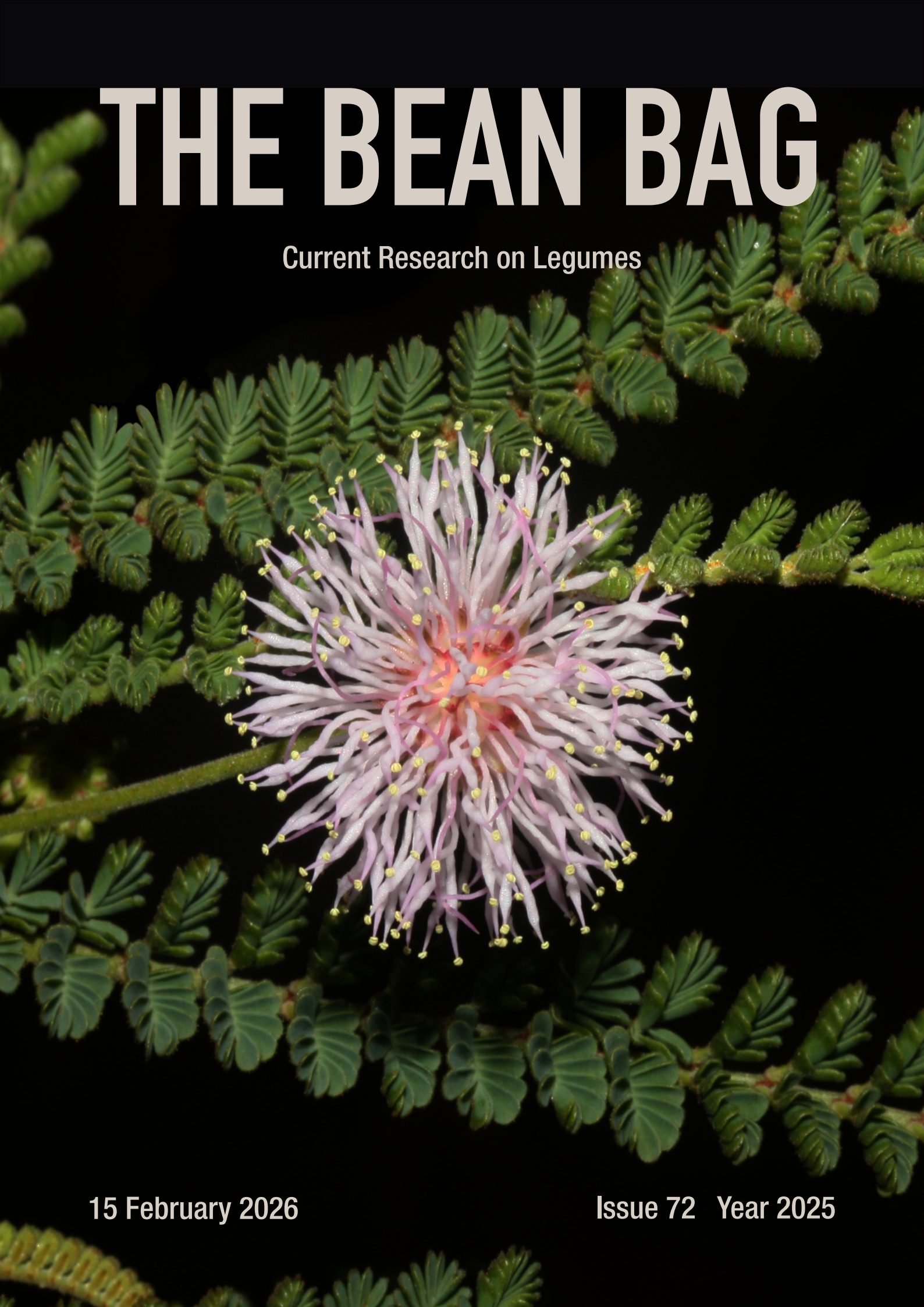




# THE BEAN BAG

Current Research on Legumes

15 February 2026

Issue 72 Year 2025

# THE BEAN BAG

Issue 72, Year 2025

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# WELCOME NOTE

## Issue 72: From the Editors

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**Leonardo Borges** (Universidade Federal de São Carlos, Brazil) & **Stephen Boatwright** (University of the Western Cape, South Africa)

with contributions by **Brian du Preez** (University of Cape Town, South Africa) & **Marcus Falcão** (Universidade Estadual do Rio de Janeiro, Brazil)

The Bean Bag has been in existence for more than 50 years, and was started on the initiative of Charles (Bob) Gunn and Richard Cowan in 1975, with the first printed issue distributed in May 1975. As an annual newsletter, it aims to keep legume researchers informed about new publications, events and projects focused on the systematics of the family Leguminosae. In the current global turmoil and unrest, it is wonderful to have this constant that keeps us connected as a global legume community.

Bean Bag Number 72 reports on diverse aspects of another productive year of global legume systematics research. It includes an overview of 50 years of Bean Bags, an important announcement on the next International Legume Conference (ILC), reports from working groups within the community, a student digest, portraits of two leguminologists, a book review, spotlight on one botanical artist, new legume species highlights from 2025, and the annual compilation of legume literature in the 2025 bibliography. As usual, there are also many spectacular photos of legumes in this issue.

We are very grateful to Colin Hughes for preparing the Bean Bag overview and particularly the new species highlights; Anne Bruneau, Bente Klitgaard, Colin Hughes, and Vidal Mansano for the Gallery of Leguminologists; Anne Bruneau for contributing the book review; Thiago Cobra e Monteiro for the Student Digest; the various coordinators of working groups for their update reports; and those who shared the beautiful photos and artwork illustrating this issue. We also thank Carole Sinou for assistance with posting the Bean Bag to the Legume Data Portal; Gwilym Lewis at Kew for reviewing parts of this issue and facilitating the archiving of the Bean Bag in the Kew Research Repository.

Finally, a word of appreciation to the legume community at large. As can be seen by the number of new species and articles in the bibliography, research on legumes is alive and well, and thriving despite the many challenges that research faces globally today. It is exciting to start preparing for another ILC, where we can meet as a community and spend a few days exploring our shared love of legumes.



To read more recent BB issues, visit the [Legume Data Portal](#).

A complete list of issues of the BB (since 1975) are available via the [Kew Research Repository](#).

To receive new volume notifications and eventual information of interest to the legume community, join the [BB email group](#) and don't forget to keep an eye on the [Legume Data Portal](#), which also posts news items of interest to the legume community.

**Cover image:** Flowering branch of *Mimosa blanchetii* Benth. The species occurs mainly in *campo rupestre* sites within the Caatinga Domain in Bahia, Brazil. Photo: Domingos Cardoso.



A praying mantis ambushes a bee visiting the inflorescence of *Mimosa bombycina* Barneby in Serra do Cipó, Minas Gerais, Brazil. Photo by Monique Maianne.

# TAXONOMY WORKING GROUP

Coordinators: **Marianne le Roux** (South African National Biodiversity Institute, SANBI, South Africa), **Anne Bruneau** (Université de Montréal, Canada), **Juliana Gastaldello Rando** (Universidade Federal do Oeste da Bahia, Brazil)

The Legume Phylogeny Working Group (LPWG) Taxonomic Working Group has advanced its core mission of developing a peer-reviewed, global consensus checklist for Leguminosae (Fabaceae) under the World Checklist of Vascular Plants (WCVF). In 2025, the group again focused on expanding taxonomic verifications. This work builds on the foundational data from the International Plant Names Index (IPNI), Plants of the World Online, and World Flora Online (WFO).

## Key Achievements in 2025

- **Publication of WCVF: Fabaceae Checklist 2025v.6:** Released on 22 May 2025, this version is accessible via the Legume Data Portal, ChecklistBank, GBIF, Catalogue of Life, and the WFO taxonomic backbones. It is [archived on Zenodo](#) for long-term preservation and citation. The checklist reflects the latest published taxonomies and adheres to the International Code of Nomenclature for algae, fungi, and plants.
- **Expanded Verification Coverage:** Approximately 62% of legume genera are now fully checked and peer-reviewed, a 12% increase from the 50% in the prior version. This includes verification of 45 additional genera in the subfamily Caesalpinioideae since early 2024, with minor corrections applied to names in other subfamilies. Specific updates targeted genera such as *Abarema*, *Calliandra*, *Chamaecrista*, *Cojoba*, *Entada*, *Pithecellobium*, and *Zapoteca*, addressing nomenclatural alignments and resolving unplaced taxa in *Crudia* and *Lotus*.
- **Community Collaboration:** The effort engaged 109 legume experts worldwide, including eight new contributors. Notable support came from the Plant and Fungal Names Team at Royal Botanic Gardens, Kew (including Rafaël Govaerts, and Nicholas Black), the World Flora Online TEN Manager, Alan Elliott, and the GBIF informatics team. Contributions were mobilised following the publication of *Advances in Legume Systematics* volume 14, emphasising community-driven refinements.

These updates enhance the checklist's utility for downstream applications, such as species distribution modelling and conservation assessments, by providing a more accurate and consensus-based taxonomic backbone.

## Plans for 2026

Looking ahead, the group will prioritise verification of remaining genera, with a targeted focus on the subfamily Papilionoideae, which still requires substantial review to reach full coverage. Revisions for the next iteration (2026v.7) are due by 10 April 2026, aiming for publication in May 2026. To support this, we encourage all collaborators to:

- Join the Taxonomy Working Group if not already registered using [this form](#).
- Follow editing procedures outlined at the [Legume Data Portal](#).
- Log into Rhakhis via the [WFO portal](#) to link your ORCID and make further contributions (particularly for unplaced names).

For queries, contact Juliana Rando ([juliana.rando@ufob.edu.br](mailto:juliana.rando@ufob.edu.br)), Marianne le Roux ([m.leroux@sanbi.org.za](mailto:m.leroux@sanbi.org.za)), or Anne Bruneau ([anne.bruneau@umontreal.ca](mailto:anne.bruneau@umontreal.ca)).

This progress underscores the value of sustained, collaborative input. Thank you to all contributors for driving these refinements forward. We anticipate even greater coverage and accuracy in the coming year.

# Phylogenomics Working Group

Coordinator: **Felix Forest** (Royal Botanic Gardens, Kew, UK)

The Legume Phylogeny Working Group is looking for volunteers to take over the coordination of the Phylogenomics Working Group.

This working group aims to bring together information on legume phylogenomics published along the year, and, most importantly, currently underway. Promoting coordination among different groups of researchers generating phylogenomic data is paramount to allow future merging of datasets, thus supporting broad scale analyses across legumes as a whole.

In previous years, two people served as coordinators, but a larger group including at least one representative for the larger subfamilies may better capture the diversity of ongoing sequencing initiatives.

If you would like to contribute, please write to Felix Forest ([F.Forest@kew.org](mailto:F.Forest@kew.org)) and Leo Borges ([aquitemcaqui@gmail.com](mailto:aquitemcaqui@gmail.com)).



# OCCURRENCE DATA WORKING GROUP

Coordinators: **Edeline Gagnon** (University of Guelph, Canada), **Joe Miller** (Global Biodiversity Information Facility (GBIF), Denmark), and **Jens Ringelberg** (Wageningen University, the Netherlands)

The Occurrence Data Working Group aims to promote the use of legume occurrence data in scientific studies. On our [webpage](#), we provide information and resources about the assembly and cleaning of occurrence data, as well as an up-to-date list of published studies with publicly available quality controlled legume occurrence datasets. We hope that this encourages other researchers to re-use these datasets, to avoid unnecessary repetition of work and promote collaboration. If your published dataset is not yet listed, please reach out to us.

Every year we provide an overview of recent legume studies that assembled or made use of detailed occurrence data. The past year has been an exciting year for legume biogeography studies, with a strong focus on the Neotropics, but several inspiring studies on legumes in other parts of the world as well.

Our overview starts in southern South America: **Matías Morales** (Instituto Nacional de Tecnología Agropecuaria, Argentina) and colleagues assembled a comprehensive occurrence dataset of legumes in the Gran Chaco ecoregion of Bolivia, Paraguay, and Argentina. They used this dataset to assess areas of endemism and to perform a bioregionalization analysis in this important, diverse, and understudied region, thereby highlighting the urgency of conserving the unfortunately highly deforested Gran Chaco. Towards the (north)east, two exciting studies shed light on the biogeography of *Mimosa* (Caesalpinioideae): **Fernanda Schmidt Silveira** and **Silvia Teresinha Sfoggia Miotto** (both from Universidade Federal Do Rio Grande Do Sul, Brazil) clarified the distribution of five rare species in the Southern Brazilian grasslands, whereas **Lucas Sá Barreto Jordão** (Instituto de Pesquisas Jardim Botânico do Rio de Janeiro, Brazil) and colleagues studied the distributions of the species of the *Petiolavariabilis* clade in the Brazilian highlands. Further to the north, in Central America and Mexico, **Juan David Sánchez-Rodríguez** (Instituto de Ecología, Mexico) and coworkers analysed the ecological niches of the so-called ant Acacias (actually *Vachellia* (Caesalpinioideae)) and their ant mutualists, highlighting how the partners in this symbiosis influence each other's geographical and ecological distributions. Finally, **Laís Couto Zeferino** (Universidade Estadual Paulista, Brazil) and colleagues provided a taxonomic synopsis of the circa 80 Neotropical species of the pantropical genus *Zornia* (Papilionoideae), including detailed distribution maps of all species.

Moving from the New to the Old World, **Aakash Maurya** (National Botanical Research

Institute, India) and coworkers carefully mapped the distribution of the enigmatic, monotypic genus *Indopiptadenia* (Caesalpinioideae). Its sole species only occurs in the foothills of the Himalayas along the border between India and Nepal, and Maurya *et al.* show that it should be a high conservation priority. In a cross-continental study, **Zhao-Yu Yan** (Southwest Forestry University, China) and colleagues compared distributions within the Caesalpinoid genus *Gleditsia*, which has an intriguing disjunct distribution between eastern Asia and eastern North America, where its species occupy similar but subtly different ecological niches. Finally, in an impressive global study, **Sazada Siddiqui** (King Abdullah University, Saudi Arabia) assessed distribution patterns of all legumes, highlighting the importance of various climatic and geographic factors in shaping the distribution of species richness. Unfortunately this study is not based on point occurrence data but on distributions aggregated at the level of botanical countries, but work is undergoing to assemble a finer-scale occurrence dataset of all legumes (see final part of this report).

Please note that several of the contributions listed above were published in **Advances in Legume Systematics 15**, which was edited by **Leonardo Borges** (Universidade Federal de São Carlos, Brazil) and colleagues. This special issue contains multiple other exciting legume distribution studies that were already published towards the end of 2024, and were therefore discussed in the previous issue of the Bean Bag.

Finally, the Legume Occurrence Working Group (still) **needs your help!** A project led by Jens Ringelberg, but with major input from Moabe Fernandes and many other legume researchers, is aiming to assemble a quality controlled occurrence dataset of the entire legume family. A crucial part of this project consists of the careful checking of maps of species and genera by experts of particular groups. Several dozens of legume experts have already contributed to this, but there still are many genera that remain unchecked. Anyone who would like to help is very welcome to, regardless of their career stage (students are more than welcome to participate), and all contributors are invited to be a co-author on the resulting publication(s). If you are interested in helping, or would like to learn more about the project, please just send an email to Jens (jens.ringelberg@gmail.com). Thank you!

## References

Jordão LSB, Morim MP, Simon MF, Baumgratz JFA (2025) **Advances in systematics of *Mimosa* (Fabaceae): phylogeny and biogeography of the *Petiolavariabilis* clade.**

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Silveira FS, Miotto STS (2025) **Sellow, where did these sensitive plants come from? New records shed light on poorly known *Mimosa* species from Southern Brazilian grasslands.** Brazilian Journal of Botany 48: 54. <https://doi.org/10.1007/s40415-025-01091-6>

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Zeferino LC, Lewis GP, Pezzini FF, Fortuna-perez AP (2025) **A taxonomic synopsis of the genus *Zornia* J.F. Gmel. (Leguminosae: Papilionoideae) for the Neotropics.** Acta Botanica Brasilica 39: e20240197. <https://doi.org/10.1590/1677-941X-ABB-2024-0197>

# TRAITS WORKING GROUP

Coordinators: **Leonardo Borges** (Universidade Federal de São Carlos, Brazil) & **Renske Onstein** (Naturalis Biodiversity Centre, Netherlands & German Centre for Integrative Biodiversity Research, iDiv, Germany)

In 2024 the Traits Working Group was not as active as in previous years. Nonetheless, we've noticed the efforts towards documentation of the diversity and understanding of the ecology and evolution of legume traits.

Many papers were published on this subject, a number of them in the [Advances in Legume Systematics 15](#), as well as others listed in this volume's [Legume Bibliography](#). A few interesting examples are [Zalko 2025](#), linking vascular anatomy and development in *Swartzia*; [Dörken et al. \(2025\)](#), on the morphology and development of *Jackonia* phylloclades (photosynthetic plane branches); [Huang et al. \(2025\)](#), unraveling the relationship between leaf traits, phylogeny and environment of Chinese legumes; and [Monteiro et al. \(2025\)](#) investigation of evolutionary trade-offs in flowers of the Adesmia clade (Dalbergieae, Papilionoideae).

Two news shared with us this year may be of interest to the wide legume community. First, Prof. Charles Stirton communicated the establishment of a small working group focused on traits of tribes Psoraleeae, Indigofereae and Crotalarieae in the Cape Region of Southern Africa. Their main goal is to understand trait evolution across these tribes using a newly generated phylogenomic tree. We strongly support the formation of such groups, which surely facilitate data collections across the different legume clades. Second, Meghan Forde (Missouri Botanical Garden, USA) is starting a project on legume seed traits. Besides a must needed update to the works by Gunn (1984) and Kirkbride et al. (2003), her research may unlock interesting knowledge on the diversity and evolution of legume seeds.

Looking ahead to 2026, we plan to have an online meeting with all colleagues interested in legume traits. The main goal of the meeting is to share updates on current research projects, understand the aims of different researchers, and, as always, to promote collaboration.

The meeting will happen between May and June. The exact date will be announced soon to all those interested in attending. If you would like to participate, [please fill this form](#). We hope to meet you there!

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Monteiro, T. C. E., Falcão, M. J. A., Mansano, V. F., Fortuna-Perez, A. P. (2025). **Unravelling floral ontogeny and evolutionary trade-offs in the *Adesmia* clade (Dalbergieae, Papilionoideae, Fabaceae)**. Botanical Journal of the Linnean Society, 1-20.

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# LEGUME DATA PORTAL

Coordinators: **Anne Bruneau** (Université de Montréal, Canada), **Carole Sinou** (Université de Montréal, Canada), **Flávia Pezzini** (Royal Botanic Garden Edinburgh, UK), **Joe Miller** (Global Biodiversity Information Facility (GBIF), Denmark)

The Legume Data Portal (<https://www.legumedata.org>) continues to actively publish news from the legume systematics community, such as the [Bean Bag Issues](#), and to host updated versions of the [legume species checklist](#). We also update as required the instructions on how to contribute to verifying this list (see [the checklist guidelines](#) and the Taxonomy Working Group report).

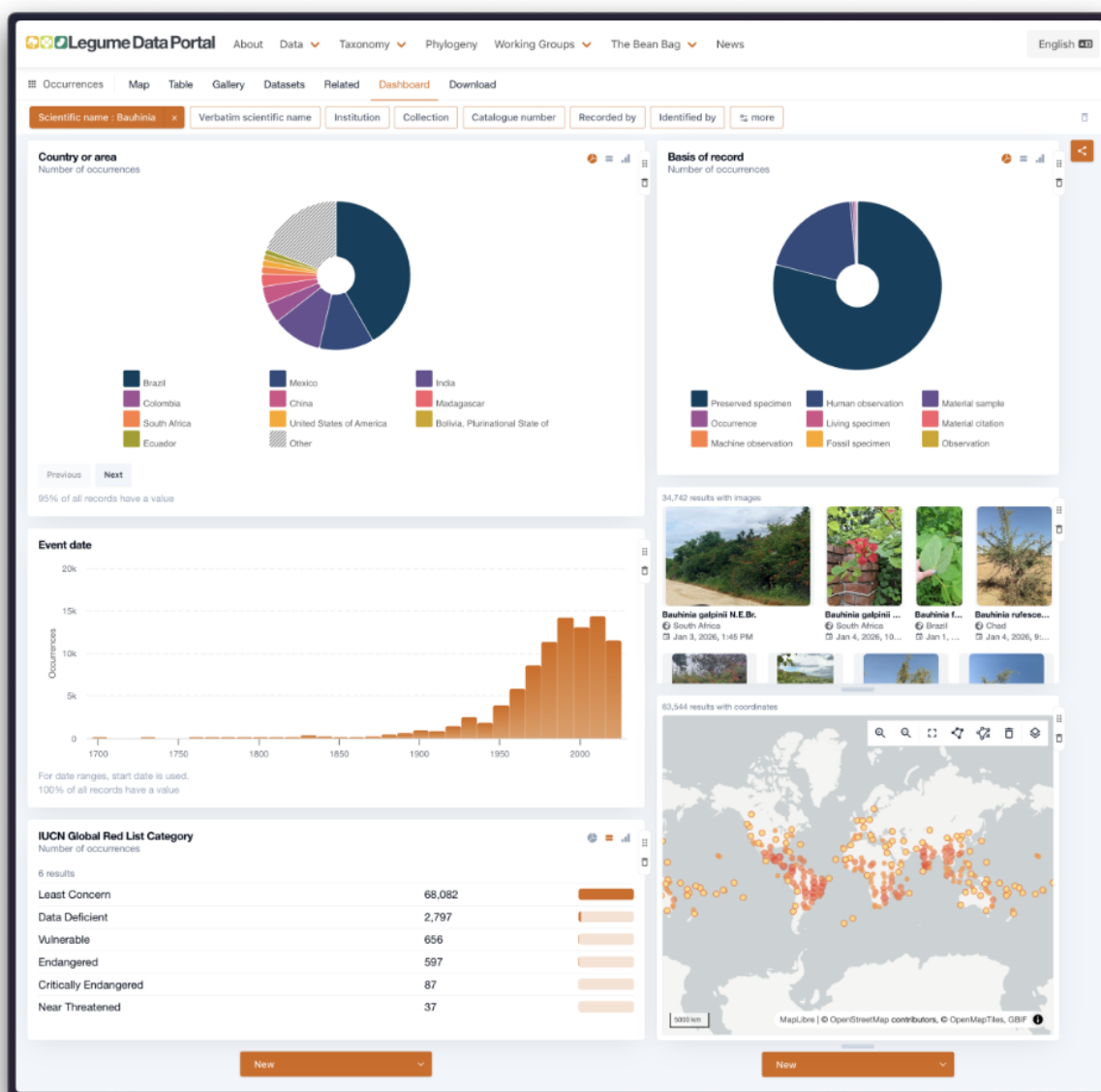
The Legume Data Portal, supported by [Canadensys](#) and [GBIF](#), runs as an instance of GBIF's [hosted portal service](#). The portal is currently available in English, French and Portuguese (in part). We remain keenly interested in seeing the translation of the portal into Spanish. If you wish to help on translations into Portuguese or Spanish, or if you would like to contribute to content, please contact us! There is tremendous scope to expand the Portal with other sorts of legume data beyond the current legume species checklist and species occurrence data.

During the year, we quietly added a [new dashboard](#) to the Data Occurrences page that allows you to create a view using specific filters, such as the country of origin or the year of collection, with graphics or lists. It is a great tool to create a visual summary of information about your group of interest. Try it out!

We thought Bean Bag readers might also be interested in seeing the use statistics for the Legume Data Portal for the past two years. These show that LDP has been visited 44 879 times, and the vast majority of users are using the Occurrences search page. The Taxonomy pages and the Subfamily pages are also at the top of those visited by users.

In 2026 GBIF will be investigating methods of displaying multiple phylogenies in the portal. If you have a phylogeny and want to see it on the portal, please contact Joe Miller ([jmiller@gbif.org](mailto:jmiller@gbif.org)).

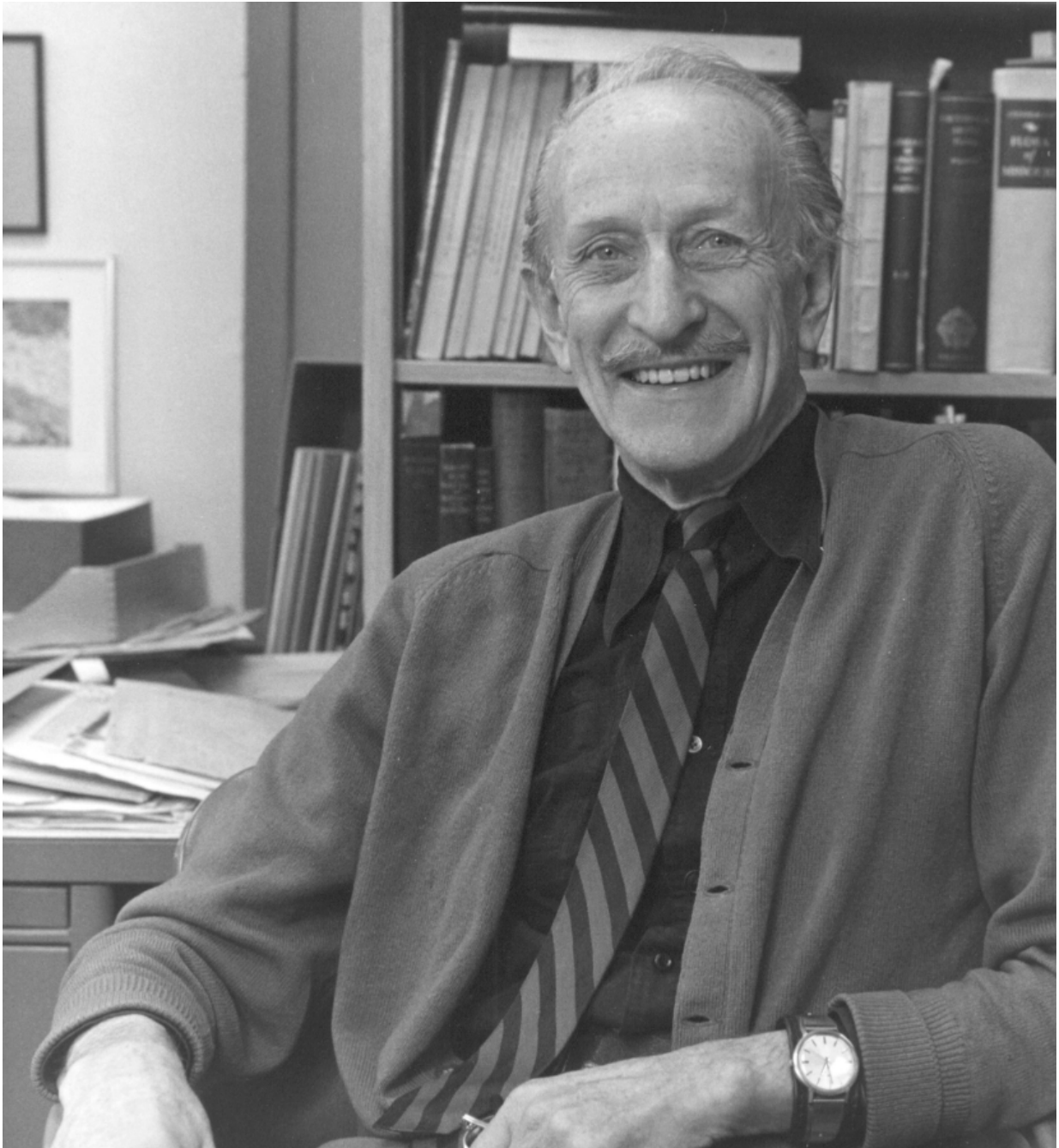
Send us your news items and announcements (outstanding publications, new projects, positions available in your legume research group, meetings, activities, etc.) to post on the Legume Data Portal. News items get published regularly on the Portal alongside the annual Bean Bag Newsletter. The entire community appreciates your contributions.



Screenshot of the new dashboard including user-defined tiles for different types of data on the genus *Bauhinia*.

# THE RUPERT BARNEBY AWARD OF THE NEW YORK BOTANICAL GARDEN

**Ben Torke** (The New York Botanical Garden, USA)



Barneby in office at the New York Botanical Garden (1989). Photo from The Barneby Legume Catalogue, by the NYBG.

The Rupert Barneby Award, named in honor of the late NYBG scientist and renowned legume expert, consists of US\$2000 granted to assist researchers to visit the New York

Botanical Garden to study the rich herbarium collection of Fabaceae. Graduate students and early career professionals with research in systematics and/or legume diversity are given special consideration. Projects that will result in the improved curation of the collection are desirable.

Anyone interested in applying for the award should submit the following: 1) curriculum vitae; 2) a proposal describing the project for which the award is sought; 3) contact information for two individuals who can vouch for the qualifications of the applicant.

The proposal should address specifically the activities to be performed at NYBG and should consist of four parts: 1) title page with proposal title, applicant's name, address, and e-mail address; 2) body of the proposal of no more than two pages, including justification, objectives, and research plan; 3) literature cited; 4) travel budget.

Please email your application to Dr. Benjamin M. Torke ([btorke@nybg.org](mailto:btorke@nybg.org)) no later than April 1, 2026 for consideration for the upcoming Award.

Announcement of the recipient will be made in May of 2026. Travel to NYBG should be planned for some period after July 1, 2026 and before June 30, 2027. Recipients are asked to give a presentation about their research.

# News on the 9th International Legume Conference (9ILC)

Tingshuang Yi (Kunming Institute of Botany, China)

Following the success of the 8th International Legume Conference (8ILC) in Brazil, the legume community looks forward to its next meeting. We are delighted to announce that China will host the 9th International Legume Conference (9ILC). **The 9ILC will take place at the Kunming Institute of Botany (KIB), Chinese Academy of Sciences (CAS)**, located in Yunnan province—a renowned plant kingdom harboring 19,333 land plant species, representing approximately 50.1% of China’s total plant diversity. KIB is dedicated to research in the fields of Botany and Phytochemistry, with botanical work focusing primarily on plant taxonomy, diversity, evolution, and systematics. Holding the 9ILC in China highlights the significant contributions of Chinese scientists to legume research, and reinforces the strong commitment of KIB and CAS to promote global scientific collaboration. We envision 9ILC as a premier in-person international conference providing an inclusive platform for researchers worldwide to share advances across legume biology, genomics, systematics, biogeography, ecology, and applied sciences. The conference is provisionally scheduled for **July 2027**. We cordially invite legume botanists worldwide to support the 9ILC and participate in planning discussions. Further details will be announced in the coming months. We are thrilled by the prospect of welcoming you to Kunming to continue the tradition of excellence and collaboration embodied by the International Legume Conferences.



The Germplasm Bank of Wild Species (GBWS), Kunming Institute of Botany (KIB), Chinese

Academy of Sciences (CAS), Kunming, Yunnan, in southwestern of China



# 50 YEARS OF BEAN BAGS

**Colin Hughes** (University of Zurich, Switzerland)

Co-founded in 1975 by Tom Elias, then Director of the Carey Arboretum at the New York Botanical Garden, Richard Cowan, curator at the US National Herbarium and Charles (Bob) Gunn, curator of the National Seed Herbarium, US Department of Agriculture, the *Bean Bag* reached 50 years old in 2025! The genesis of the *Bean Bag* occurred at an ad hoc meeting of legume taxonomists at the First International Congress of Systematics and Evolutionary Biology (Boulder, Colorado), when Tom Elias volunteered to produce a legume newsletter and distributed a questionnaire to potential readers worldwide. Cowan and Gunn assumed the editorial duties. They printed and distributed the first issue based on feedback from the questionnaires sent out by Elias. It was Mary Kalin Arroyo (then a postdoctoral fellow at the Missouri Botanical Garden) who suggested naming it the *Bean Bag*. Back in May 1975, when the first Issue of the *Bean Bag* was published, the founding editors probably were not thinking that the newsletter they had started would still be flourishing half a century later.

The *Bean Bag* was envisaged as a 'highly diversified collection of news and notes of interest to leguminologists' to promote communication among research scientists concerned with the systematics of the Leguminosae. Those aims and remit are still pretty much the same today. The core content has always been news from legume researchers--so called *Gleanings*--with updates on their research and offers / requests for research material, alongside a bibliography of recent legume literature. The initial joint editorship straddling herbarium taxonomy and more applied legume science reflected the broad focus of the *Bean Bag*, spanning new nodulation records and newly described species highlights, alongside the core News items, Gleanings from readers, and the bibliography. Latterly a gallery of leguminologists has been added, plus reports from the Legume Phylogeny Working Groups on taxonomy, traits, phylogeny, and geographic data.

Issue Number 1 of the *Bean Bag* was written on a type-writer, printed and distributed to 113 readers worldwide by post. Email distribution started in 1995 and continues nowadays to almost 500 readers. New issues are also made available on the [Legume Data Portal](#) and an archive of all 71 *Bean Bags* is available on the [Kew Research Repository](#). Initially two issues were produced per year, then from 1996 the *Bean Bag* was produced as a single annual newsletter. Colour was introduced in 2012 and recent issues include rich sets of legume images as well as an Artist Spotlight. In 2020, a new layout was designed by Warren Cardinal-McTeague. The first 40 issues benefitted from financial support from the United States Department of Agriculture and the next 20 issues from the Royal Botanic Gardens, Kew, while latterly no financial support has been needed.

The longevity of the *Bean Bag* is testament to the continued buoyancy and vibrancy of legume systematics research over the last 50 years, the harmonious collaborative spirit of the global legume research community, and the tremendous, sustained and productive advances in legume systematics knowledge which that collaboration has fostered. Long may it continue!

## **Editors**

1975--1981, Issues 1--13, Richard Cowan, U.S. National Herbarium, Smithsonian Institution, U.S.A. & Charles (Bob) Gunn, United States Department of Agriculture, U.S.A.

1981--1986, Issues 14--22, Charles (Bob) Gunn, United States Department of Agriculture, U.S.A. & James Lackey, U.S. National Herbarium, Smithsonian Institution, U.S.A.

1986, Issue 23, Charles (Bob) Gunn, United States Department of Agriculture, U.S.A.

1986--1992, Issues 24--35, Charles (Bob) Gunn & Joseph H. Kirkbride, Jr., United States Department of Agriculture, U.S.A.

1992--1994, Issues 36--39, Joseph H. Kirkbride, Jr., United States Department of Agriculture, U.S.A. & John H. Wiersema, Smithsonian Institution, U.S.A.

1994--1996, Issues 40--44, Joseph H. Kirkbride, Jr., United States Department of Agriculture, U.S.A., John H. Wiersema, Smithsonian Institution, U.S.A. & Roger M. Polhill, Royal Botanic Gardens, Kew, U.K.

1997--2010, Issues 45--58, Barbara Mackinder, Royal Botanic Gardens, Kew, U.K.

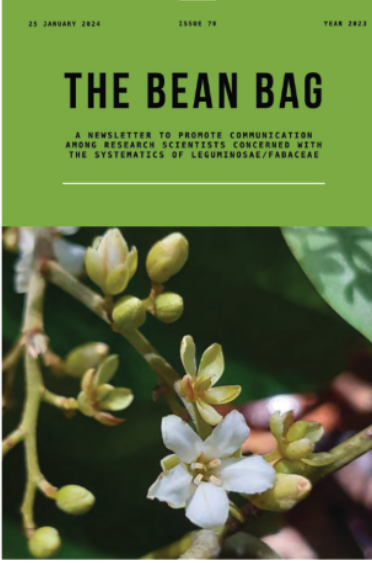
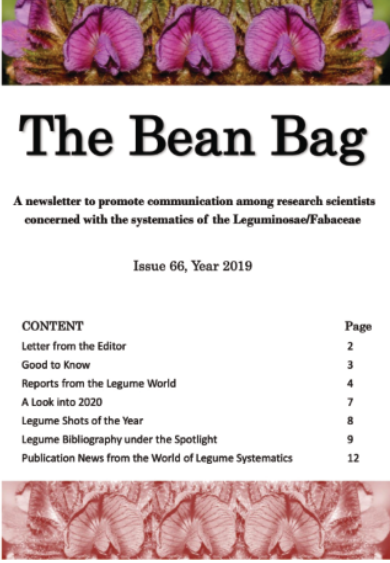
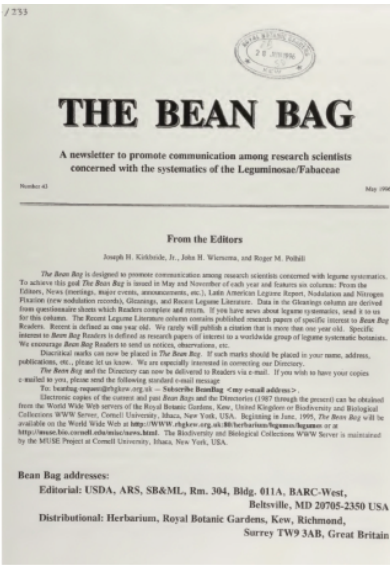
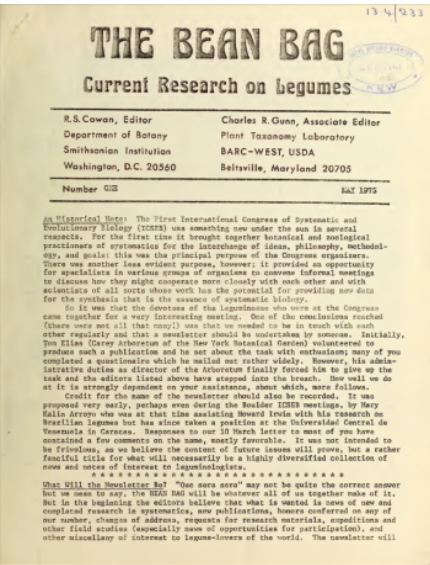
2012--2014, Issues 57--61, Lourdes Rico Arce, Royal Botanic Gardens, Kew, U.K.

2015--2019, Issues 62--66, Brigitte Marazzi, Natural History Museum of Canton Ticino, Switzerland.

2020--2021, Issues 67--68, Colin Hughes, University of Zurich, Switzerland & Warren Cardinal-McTeague, University of British Columbia, Canada.

2022--2023, Issues 69--70, Colin Hughes, University of Zurich, Switzerland, Warren Cardinal-McTeague, University of British Columbia, Canada & Leonardo Borges, Universidade Federal de São Carlos, Brazil

2024--present, Issues 71--72, Leonardo Borges, Universidade Federal de São Carlos, Brazil & Stephen Boatwright, University of the Western Cape, South Africa.



Bean Bag covers across the years.

# ARTIST SPOTLIGHT: GILLIAN CONDY

**J. Stephen Boatwright** (University of the Western Cape, South Africa)

Gillian Sara Condry (1952-) was born in Nairobi, Kenya, and attended primary school in Kampala, Uganda, during which time her love of the outdoors was nurtured. In 1964 she returned to the UK with her parents, where she completed high school, after which she attended Bournemouth Art College for the Foundation course, then studied Graphics and Scientific Illustration at Middlesex Polytechnic, with distinction. This was followed by a Master's Degree at the Royal College of Art, London with a thesis on '*British Poisonous Plants*'.

After graduating, she freelanced in London and in spring 1977 was the accompanying artist on a five-week botanical expedition to Andalusia in Spain organised by J.W. Carr. Her herbarium and botanical art from this journey are now housed at Reading University (RNG).

She then applied to the International Voluntary Services UK, which took her back to Botswana for two years, after which she took up a contract with the Botswana Department of Education, Primary Curriculum, based at the Lobatse Educational Centre. On completion of her contract, she returned to the UK to await work permits for a contract with the South African National Biodiversity Institute (formally the Botanical Research Institute) as resident botanical artist at the National Herbarium, Pretoria, which began in 1983. A three-year contract turned into 35 rewarding years of service. Her artwork has appeared in many SANBI publications, including more than 400 plates for *Flowering Plants of Africa*. She also curated the SANBI art collection, organized nationwide art exhibitions and presented art courses. She illustrated two books by Charles Graib, *Geophytic Pelargoniums* (2001) and *South African Grass Aloes in the Veld* (2005), where all species were drawn in their natural habitat, something she still loves to do. Gillian also provided most of the biographical entries for *South African Botanical Art: Peeling Back the Petals* (2001) and eight plates for *Curtis's Botanical Magazine*. She retired from SANBI in December 2017.

During her career, Gillian also remained active as a freelance artist, contributing to dozens of scientific publications and has organized several botanical art exhibitions across the country, many linked to local and international conferences. She has participated in over 250 group exhibitions worldwide, including those of the Royal Horticultural Society in London, 7<sup>th</sup> Hunt Institute for Botanical Documentation in Pittsburgh, USA 1992, was awarded gold and silver medals at Kirstenbosch Biennale Exhibition of Botanical Art (2000 -- 2010), worked on *Exact Imaginations: 300 years of botanically inspired art in South Africa*, Standard Bank Johannesburg 2014; curated the 21<sup>st</sup> World Orchid Conference Botanical Art Exhibition, Johannesburg 2014; and the South African leg of *Botanical Art Worldwide* 2018 and 2025

which brought together 30 countries across the world. She has five paintings in the Shirley Sherwood Collection in London.

One of her paintings features in the prestigious *Highgrove Florilegium vol. 1*, commissioned by His Royal Highness, King Charles along with 4 works in his *Transylvanian Florilegium*, and works in the *Sydney Botanical Garden's Florilegium*, the *Sydney Cook and Solander Florilegium* and South Africa's *Grootbos Florilegium*. She has designed 14 sets of stamps for Botswana Post Office and 4 sets for South Africa. In 1996 she presented a painting of 'Mandela's Gold' to President Nelson Mandela.

Gillian was a founding member of the Botanical Artists Association of Southern Africa (BAASA) in 1999, and current Gauteng Chair. She has received a number of awards for her artwork, including the *Jill Smythies Award* from the Linnean Society of London (1990); the Beeld Stamp Design of the Year award (1992), the *Cythna Letty Medal* from the Botanical Society of South Africa (2002), Honorary Life Membership of BAASA (2017), and *Certificate of Merit* from The South African Association of Botanists (2018). In addition, the cliff-dwelling grass Aloe, *Aloe condyae* from the Barberton area in Mpumalanga, was named after her.

Since retiring at the end of 2017, she was invited to join the 'Artist in Residence' programme at the Tswalu Kalahari Reserve painting plants and a few mammals over a calendar year. She is also currently involved with a project 'Butterflies and their host plants', and illustrations for a book on the genus *Barleria* (Acanthaceae). She continues illustrating for *Flowering Plants of Africa* and is preparing artworks for the RHS botanical art exhibition.



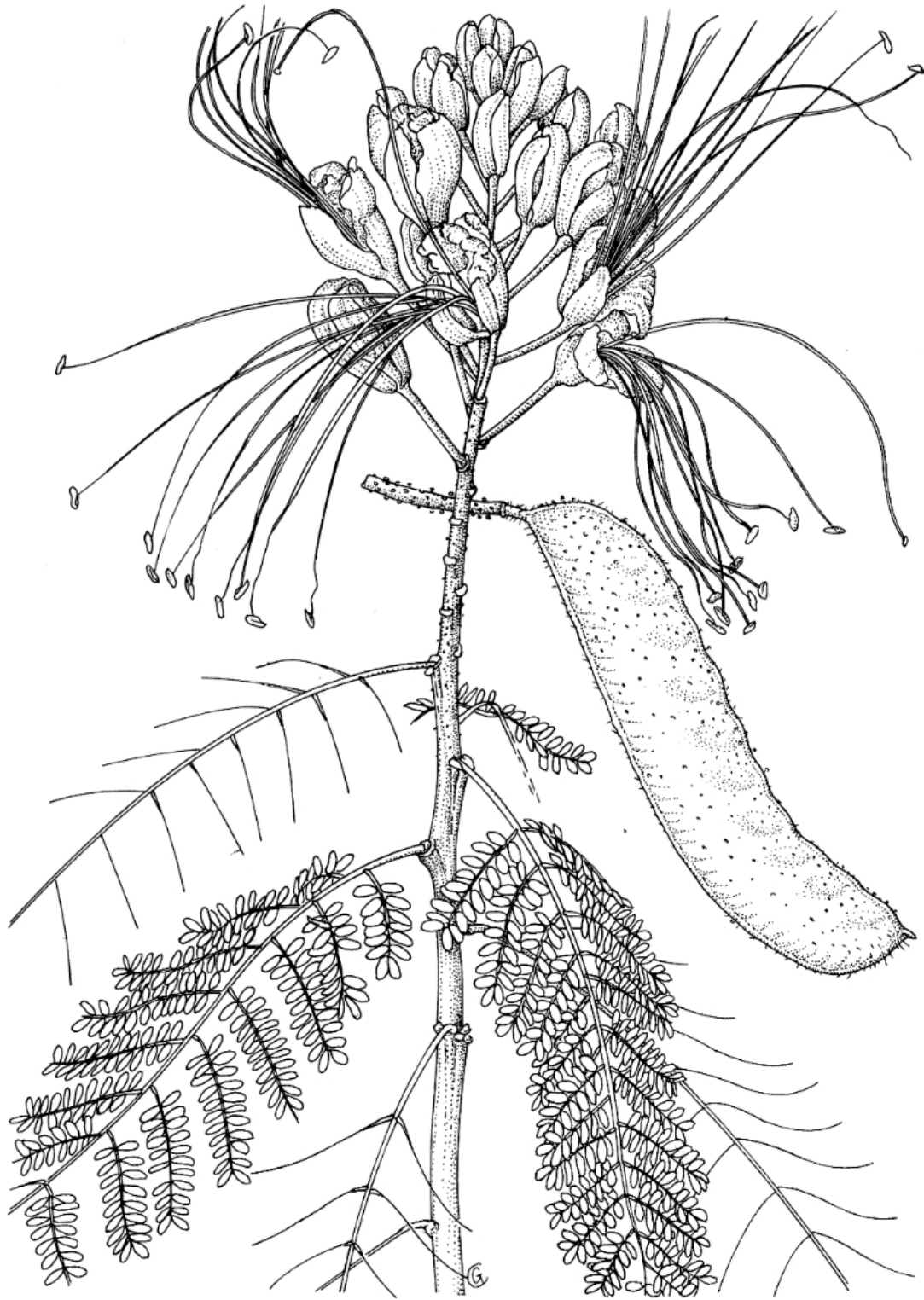


Watercolor of *Erythrina zeyheri* Harv.





Watercolor of *Lablab purpureus* (L.) Sweet.



Line drawing of *Caesalpinia gilliesii* (Hook.) D. Dietr.

# BOOK REVIEW

**Anne Bruneau** (Université de Montréal)

## **Monographie des Leguminosae de France** by Pierre Coulot and Philippe Rabaute

In 1763, Michel Adanson published the first classification of the legumes, initiating a long-standing contribution by French botanists to the knowledge of the legume family. This was followed by Antoine-Laurent de Jussieu, who in 1789 published the name Leguminosae and proposed a classification based on floral structure that served as the foundation for future classifications. French botanists have been contributing to our knowledge of the family since then, from Aimé Bonpland (1773--1858), who accompanied Alexander von Humboldt on his explorations of South America, to more contemporary botanists such as Philippe Guinet (palynologist, 1925--2019), Jean-François Villiers (Mimoseae, 1943--2001), Jacques Vassal (Acacias), René Viguier (1880-1931) and Jean-Noël Labat (1959--2011), who specialised on the legumes of Madagascar, alongside numerous other systematists, ecologists and evolutionary biologists.

Most recently, building on this rich history of French legume research, this year Pierre Coulot and Philippe Rabaute published the last of their four-volume series, *Monographie des Leguminosae de France*, presenting close to 350 legume species native and naturalised of France. Pharmacists by profession and field biologists by passion, these two scientists and long-term collaborators have explored the country from one end to the other collecting and documenting legume species, reviewed the literature, examined herbarium specimens, and delved into databases to put together this remarkable work on one of the most important angiosperm families of France.

Volume 3 published in 2013, followed by Volume 4 in 2016 and Volume 2 in 2020, all focused on Papilionoideae tribes, the authors now present [Volume 1](#), which describes the Caesalpinioideae and Cercidoideae of France, as well as several Papilionoideae tribes. The last of these volumes to be published, which brings to fruition more than 20 years of detailed work by these two colleagues, begins with an up-to-date and comprehensive summary of the Leguminosae, highlighting the taxonomic knowledge, from the first contributions in the 18<sup>th</sup> century to those of contemporary authors, discusses the importance of legumes in the development of agriculture throughout the world and their present-day economic importance, and describes in detail their phytochemical diversity and pharmaceutical importance. The Introduction itself is a source of information that is both accessible to the broader public and invaluable to students of Leguminosae.

For each species, the description is accompanied by photos to highlight its characteristic morphological features for ease of identification. A nomenclatural history, the protologue, a

detailed morphological description, as well as the conservation status, etymology, ecology and a distribution map are presented. In addition, for each taxonomic group, the authors have included an identification key to the species, tables of comparative characters, an exhaustive list of species, a recent literature review and a history of the taxonomy. An index to synonyms is included to facilitate searching for names. Notably, Volume 1 presents an identification key to all legumes of France, in itself an impressive feat to be commended.



Cover and some pages of Tome 1 of the Monographie des Leguminosae de France.

With this comprehensive, precise and up-to-date *Monographie des Leguminosae de France* in four volumes, Pierre Coulot and Philippe Rabaute have achieved not only their personal goal of documenting the legumes of France, but also an immensely valuable and massive (over 2800 pages!) contribution to our knowledge of the family. Because France is one of the most climatically and physiographically diverse countries of Europe, spanning Mediterranean, temperate forest and alpine biomes, we have here a compendium of legume diversity, useful not only for France, but for Europe in general. At a time when world biodiversity is in rapid decline and constant change, such high-quality contributions that document local and national biodiversity have a critical role in stimulating our connection to nature and fortifying our commitment to its protection.

**Monographie des Leguminosae de France** by Pierre Coulot and Philippe Rabaute.

Published by the Bulletin de la Société botanique du Centre-Ouest, France.

*Tome 1 -- Sous-familles des Cercidoideae, des Caesalpinioideae, des Papilionoideae (tribus*



*Cladrastrideae, Wistereae, Indigofereae, Desmodieae, Phaseoleae, Psoraleae, Amorpheae, Dalbergieae et Loteae*). Numéro spécial 51. 2025. 706 pages.

*Tome 2 -- Robinieae, Sesbanieae, Galegeae, Glycyrrhizeae, Coluteae, Astragaleae, Caraganeae, Hedysareae et Thermopsideae*. Numéro spécial 49. 2020. 518 pages.

*Tome 3 -- Tribu des Trifolieae*. Numéro spécial 40. 2013. 760 pages.

*Tome 4 -- Tribus des Fabeae, des Cicereae et des Genisteae*. Numéro spécial 46. 2016. 902 pages.

# STUDENT DIGEST

## Bee Flowers with a Twist: Are Keel Flowers responsible for Papilionoideae evolutionary success?

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**Thiago Cobra e Monteiro** (PhD candidate, Universidade Estadual Paulista Júlio de Mesquita Filho, Instituto de Biociências, campus de Botucatu, Brazil)

What drives bursts of diversification in species-rich lineages? This question is a long-standing dilemma for biologists. Some suggest the answer relies on the combined effects of whole-genome duplications, ecological opportunity, and morphological traits (Donoghue & Sanderson 2015), while others believe species radiations may be fueled by single key morphological innovations, such as specialized pollination syndromes (Kay & Sargent 2009).

One potential key morphological innovation is the keel flower, a pollination syndrome that has evolved multiple times across angiosperms but is particularly abundant in Fabales, especially in Polygalaceae (tribe Polygaleae) and in the Leguminosae subfamily Papilionoideae (Faegri & van der Pijl 1979). Keel flowers guide bees to nectar while concealing pollen, depositing it precisely on parts of the bee's body inaccessible to the insect (Westerkamp 1997). Because bees collect pollen to feed their larvae---which can reduce pollination efficiency---keel flowers can be viewed as "bee flowers with adaptations against bees". They are morphologically diverse and can operate by four different mechanisms, sometimes involving secondary pollen presentation.

In an exciting study published this year, Cai et al. tested whether the evolution of keel flowers is the main driver behind bursts of diversification in Fabales. They generated a robust phylogenomic framework using 1,456 low-copy nuclear genes from 287 legume species and dated the tree with eleven fossils. This backbone phylogeny was used to constrain uncertain nodes in a larger matK phylogeny including 3,326 Fabales species. They then estimated diversification-rate shifts with Bayesian Analysis of Macroevolutionary Mixtures (BAMM). After coding species by flower type (keel vs. non-keel), they inferred diversification rates under state-dependent and state-independent speciation and extinction (SSE) models (e.g. models accounting for the correlation between keel flower evolution and bursts of diversification and models where these two variables are independent) for both their entire dataset (Fabales) and Papilionoideae only. They also conducted a phylogenetic ANOVA to compare tip rates between keel and non-keel species and inferred keel flowers evolution with ancestral state estimation.





Diversity of shapes and colors in Papilionoideae keel flowers. Clockwise from top left. *Luetzelburgia andrade-limae* H.C.Lima. *Eriosema defoliatum* Benth.. *Lupinus paraguariensis* Chodat & Hassl. *Hymenolobium heterocarpum* Ducke. Photos by Thiago Cobra e Monteiro.

Cai et al. identified 18 diversification-rate shifts across Fabales, 11 within Papilionoideae--- nine during the Miocene, a period of global climatic change. Ancestral state reconstruction supports six independent origins of keel flowers, including near-simultaneous origins in Polygaleae and Papilionoideae around 60 Mya. This finding challenges previous estimates placing the origin of keel flowers of Papilionoideae ~20--10 million years before those of tribe Polygaleae (Uluer et al. 2022). They also detected 32 independent losses of keel flowers, most (28) in early-diverging papilionoid lineages. Together, these results suggest that ancestral Fabaceae and Papilionoideae as a whole likely had a more generalist pollination system, with flexible floral symmetry and petal number. Over time, ecological pressures and developmental canalization may have produced the conserved papilionoid floral form widespread in the Non-Protein Amino Acid-Accumulating (NPAAA) clade.

Importantly, trait-independent diversification models provided a better fit to the data, overturning the idea that keel flower evolution alone triggered major radiations. In this context, the authors suggest more complex scenarios in which multiple factors, such as nodulation, ecological opportunity, whole-genome duplications, and floral innovation, may have acted together to promote diversification.

Papilionoideae shows remarkable floral diversity, and even closely related genera can differ substantially in flower morphology and pollination mode (Monteiro et al. 2025). Although future research is needed to fully uncover the developmental and ecological drivers underlying this diversity, Cai et al.'s study is a major contribution towards understanding the evolution of keel flowers.

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# GALLERY OF LEGUMINOLOGISTS

This year the Gallery of Leguminologists features two pieces. One portrays an American botanist who contributed largely to the knowledge of Equatorial legumes and plants as a whole. The other provides a glimpse on the life of one of the main experts on the ontogeny of legume flowers and inflorescences.

If you would like to portray the life of researchers from other areas of legume taxonomy and biology, please get in touch with the Bean Bag editors. We are looking to highlight botanists who may be less well known to the current generation of the legume community, and leguminologists whose achievements have not always been celebrated elsewhere. Synopses need not be complete biographies but a few images would bring them to life.

## David Neill (1953–2025)

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**Colin Hughes** (University of Zurich, Switzerland), **Bente Klitgaard** (Royal Botanic Gardens Kew, UK) & **Anne Bruneau** (Université de Montréal, Canada)

David Neill was an American botanist who spent most of his career in Ecuador, living there since 1985, and making pivotal contributions to botanical knowledge, training, and capacity building in that country and more widely in the Neotropics. He published extensively on the neotropical flora and was a world expert on Ecuadorian trees, with an unmatched ability to identify them, and to teach others how to identify them.

David's botanical collecting started during his time as a Peace Corps volunteer in Nicaragua. He went on to do his PhD at Washington University, defending his thesis entitled *Experimental and Ecological Studies on Species Relationships in Erythrina (Leguminosae, Papilionoideae)*, in 1984, under the supervision of Peter Raven. David's doctoral research focused especially on experimental studies including crossability, hybridization and pollination among species of *Erythrina* and resulted in two landmark papers on these topics. Even today, 40 years later, there are very few woody plant genera for which interspecific crossability studies have been undertaken. As part of his PhD, he also spent many months collecting and observing the hummingbird pollinators of *Erythrina* species in Central America, again a remarkable contribution to our understanding of the pollination biology of tropical arborescent species. *Erythrina x neillii* Mabb. & Lorence was named for David in recognition of this work.





David Neill, 2019. Photo: John Clark.

From 1985 to 2010 David worked as Curator and resident botanist in Ecuador for the Missouri Botanical Garden and was Honorary Administrative Director at the National Herbarium of Ecuador (QCNE). Latterly he was Professor at the Universidad Estatal Amazónica, in Puyo, Pastaza and the Universidad Regional Amazónica IKIAM, at Tena in the Ecuadorian Amazon. A passionate advocate for both botanical science and conservation, David was co-founder and President and Executive Director of Fundación Jatun Sacha in Ecuador and, with Ecuadorian colleagues, in 1986, he established the Jatun Sacha Biological Station in Napo Province. David is widely known and respected for mentoring numerous generations of Ecuadorian and other Latin American botanists through his teaching. A considerable number of his collections were made with students, and his specimen labels are notable for their detailed and precise information, useful for understanding the ecological context in which the specimen was collected. Those of us who knew David and had the privilege of collaborating with him, always appreciated his calm,



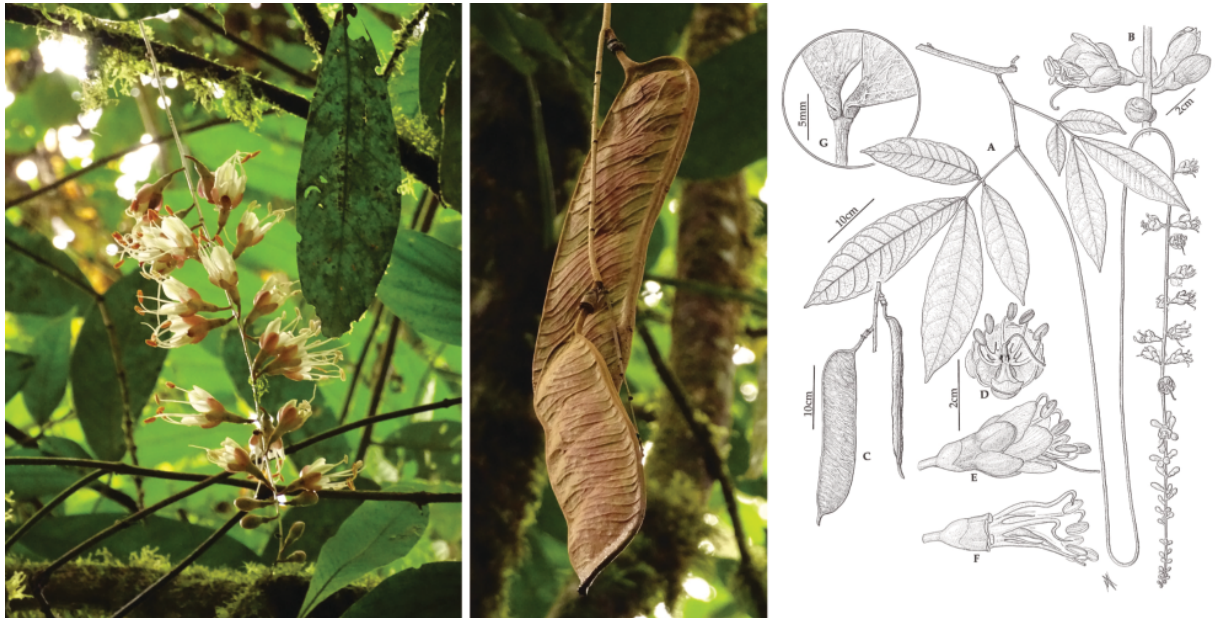
diligent, and gentle demeanour. Whilst always soft-spoken, he effortlessly commanded respect through his quiet, profound and unassuming presence.



Clock-wise from top left: David at the Jatun Sacha Reserve in 2023. Pressing plants at the field station of Reserva Canandé, Ecuadorian Chocó in 2018, photo Bente Klitgaard. Pressing plants, Cordillera del Cóndor, 2014. David in the Cordillera del Cóndor, 2016. Except when mentioned, all photos by John Clark.

Although David's botanical interests and knowledge were broad and his taxonomic work spanned various plant families, including especially Araliaceae and Magnoliaceae, throughout his career he worked on legumes and made diverse contributions to our knowledge of the family. He was lead author of the legume family for the *Catalogue of the*

*Vascular Plants of Ecuador* (1999):the *Libro Rojo de las Plantas Endémicas del Ecuador* (2000 & 2011) and the *Catálogo de las Plantas Vasculares de Bolivia* (2014). That broad legume-wide taxonomic span was reflected in the new legume taxa which he discovered and described in Caesalpinioideae (*Stryphnodendron porcatum* & *Parkia nana*) and Detarioideae (*Browneopsis puyensis* & the new genus *Ecuadendron*). The genus *Ecuadendron* (named from *Ecuador* = equator in Spanish and *dendron* = tree in Greek) described by David in 1998 epitomises his interests in Ecuadorian trees and legumes.



The monospecific legume genus *Ecuadendron*, described by David Neill in 1998, is a 30 m tall canopy tree, endemic to the Chocó rain forests of Ecuador, with long pendulous inflorescences of resupinate flowers with a rose to brick-red-coloured calyx and cream corolla, traits likely connected to bat pollination. Photos taken in the Reserva Canandé by Francisco Sornoza, Fundación Jocotoco; see also Lozano, P., Klitgaard, B., Neill, D. and Roa, L. 2022. Endemic Plants of Canandé Reserve. *Field Museum field guides* 1453. Drawing: John Myers.

Ecuador, where David made his home, lived for forty years, married fellow botanist Mercedes Asanza and raised their family, is a paradise for a field botanist. It is ecologically and botanically mega-diverse and in the mid-1980s when David started working there the flora was still very incompletely surveyed and known to have great scope for exploration of under-collected areas and the likely discovery of plants new to science. David conducted extensive botanical collections and surveys throughout Ecuador, from the high elevation tropical alpine páramo grasslands to the lowland tropical rainforests of the Amazon and the montane cloud forests in between. Legumes were always in his sights. For example, he made well over 100 collections of *Lupinus* in the páramos. From the year 2000, David pioneered the exploration of the endemic-rich Andean Tepuis-like forests of the sandstone plateaus of the Cordillera del Cóndor in southern Ecuador, where numerous new plant species are being discovered. These include the small Papilionoid legume tree, *Ormosia neillii* J.L.Clark & J.E.Guevara, named in 2025 in honour of David's legume and wider botanical legacy (see New Species



Highlights, this Issue of the Bean Bag).

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# Dr. Shirley Cotter Tucker: A Lifelong Passion for Plants

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**Vidal Mansano** (Jardim Botânico do Rio de Janeiro, Brazil) & **Anne Bruneau** (Université de Montréal, Canada)

Dr. Shirley Cotter Tucker (1927-) stands as a towering figure in botany, whose distinguished career as a researcher, educator, and philanthropist has left an indelible mark on the field. Her journey, which began in the greenhouses of the University of Minnesota, spans over six decades of profound contribution, notably in legumes to which she dedicated a large part of her career.

## From Minnesota Roots to Botanical Rigor

Daughter of plant pathologist Ralph Cotter, Shirley's childhood was spent amidst the verdant warmth of university greenhouses—a welcome refuge from Minnesota's long winters that forged an early bond with plants. This passion solidified during her undergraduate and Master's studies at the University of Minnesota, where she demonstrated extraordinary dedication by collecting over 4,000 herbarium specimens, with a focused interest in lichens.

Her pursuit of botany led her to the University of California, Davis, where she earned her Ph.D. in 1956 on the floral development of *Drimys winteri*, studying under the renowned plant anatomist, Dr. Katherine Esau.

## A Productive Career at Louisiana State University

At LSU in Baton Rouge, Louisiana, where Dr. Tucker spent the majority of her professional life, she built a highly productive career as a professor of botany. She authored over 140 seminal papers on floral morphology and plant systematics, many focused on characterizing the complex floral development of legumes of all subfamilies and from all parts of the world. Her work, often as the sole author, was characterized by meticulous observation, frequently utilizing scanning electron microscopy to describe in detail organogenesis and organ development in diverse legumes.



Shirley

Tucker accepting the BSA's Centennial Award in 2006 from Dr. Peter Raven. The award acknowledged and honored outstanding service to the plant sciences and the Society. Photo by Bill Dahl, Botanical Society of America.

She relished the fieldwork opportunities that Louisiana's climate afforded, collecting plant and lichen specimens year-round. Shirley was a person greatly admired by botanists around the world, among them, the renowned Dr. Peter Raven told me in 2018: *Shirley Tucker's amazing career has so far spanned more than sixty productive years, most of which she spent mostly as a faculty member at Louisiana State University. I got to know her when we were both students in the University of California system in the 1950s, and have enjoyed her fine works on floral anatomy, lichens, and many other subjects over the years. Shirley's charming modesty and evident pleasure in life have always made visits with her pleasant and memorable. She has given inspiration and support to so many in the course of her*

*"retirement" years studying lichens at the Santa Barbara Botanic Garden and became a fixture of that institution. Her preserved floral anatomy collection and associated laboratory tools have been given to the Missouri Botanical Garden. Finally, her recent endowment of a professorship in botany at LSU will stand as a lasting contribution to the science she loves so much.*

Although Tucker is recognized for her formidable contribution to our understanding of the complexity of flower development in legumes, she also worked on other plant families (e.g., Piperaceae, Saururaceae, Proteaceae) and all her life she remained fascinated by lichens. She returned to this passion after her formal retirement in 1995, when she moved to Santa Barbara with her husband Ken Tucker. There she continued to collect, study and publish on lichens. She donated more than 9,500 specimens of lichens to the Santa Barbara Botanical Garden and currently she has dozens of published papers on lichens.

### **A Philanthropic Legacy: Ensuring Botany's Future**

Following Ken's passing in 2014, Dr. Shirley C. Tucker channeled their shared resources into a lasting philanthropic legacy dedicated to botany. This legacy provides crucial support to institutions across the United States. Major initiatives include the renaming of the LSU Herbarium as the Shirley C. Tucker Herbarium. Furthermore, the legacy funds five full-time curatorial positions, ensuring sustained expertise in the field:

### **A Lasting Inspiration**

Even as a hand tremor led her to shift focus from delicate floral dissections to the study of lichens, her scientific drive never waned. She is now a fixture at the Santa Barbara Botanic Garden, where she mentors docents, identifies lichen collections, and continues to share her immense knowledge.

World-renowned morphologist and a generous benefactor, her journey has been one of constant growth and contribution. Her contributions also included acting as President both of the Botanical Society of America (1987–1988) and of the American Society of Plant Taxonomists (1995–1996). As one collaborator noted, a research trip with her was "one of the most significant scientific happenings of my entire career." Through her groundbreaking research, dedicated teaching, and visionary philanthropy, Dr. Tucker has ensured that her passion for botany will inspire and support generations to come.

Shirley Tucker's work has helped many taxonomists and phylogeneticists to find important morphological synapomorphies for different groups of Leguminosae. Among her contributions, noteworthy ontogenetic findings corroborate the segregation of *Cassia*, *Senna*, and *Chamaecrista*; distichous inflorescence arrangement in Dialioideae; the pentamerous base of the tetralobed calyx in many Detarioideae; and the base of dioecy in *Ceratonia*, among others. A selection from Shirley Tucker's numerous important articles follows below.



Shirley between Ken, to the left, and me (Vidal Mansano), to the right, at the Santa Barbara Museum of Natural History with a flowering Cercis tree behind us. "In 2001 during my PhD I went to Santa Barbara for two months to work with Shirley Tucker and study the floral development of some atypical Papilionoideae flowers. My first experience overseas. It was one of the most significant scientific happenings of my entire career!"

## **Examples of Shirley C. Tucker's landmark contributions on legumes\*\***

**Tucker, S.C. 1984.** Unidirectional organ initiation in leguminous flowers. *American Journal of Botany*, 71(8):1139-1148.

**Tucker, S.C. 1987.** Pseudoracemes in papilionoid legumes: their nature, development, and variation. *Botanical Journal of the Linnean Society*, 95(3):181–206.

**Tucker, S.C. 1989.** Overlapping organ initiation and common primordia in flowers of *Pisum sativum* (Leguminosae: Papilionoideae). *American Journal of Botany*, 76(5):714-729.

**Tucker, S.C. 1992.** The developmental basis for sexual expression in *Ceratonia siliqua* (Leguminosae: Caesalpinioideae: Cassieae). *American Journal of Botany*, 79(3):318–327.

**Tucker, S.C. 1992.** The role of floral development in studies of legume evolution. *Canadian Journal of Botany*, 70(4):692-700.

**Tucker, S.C. 1997.** Floral evolution, development, and convergence: the hierarchical-significance hypothesis. *International Journal of Plant Sciences*, 158(S6):S143-S161.

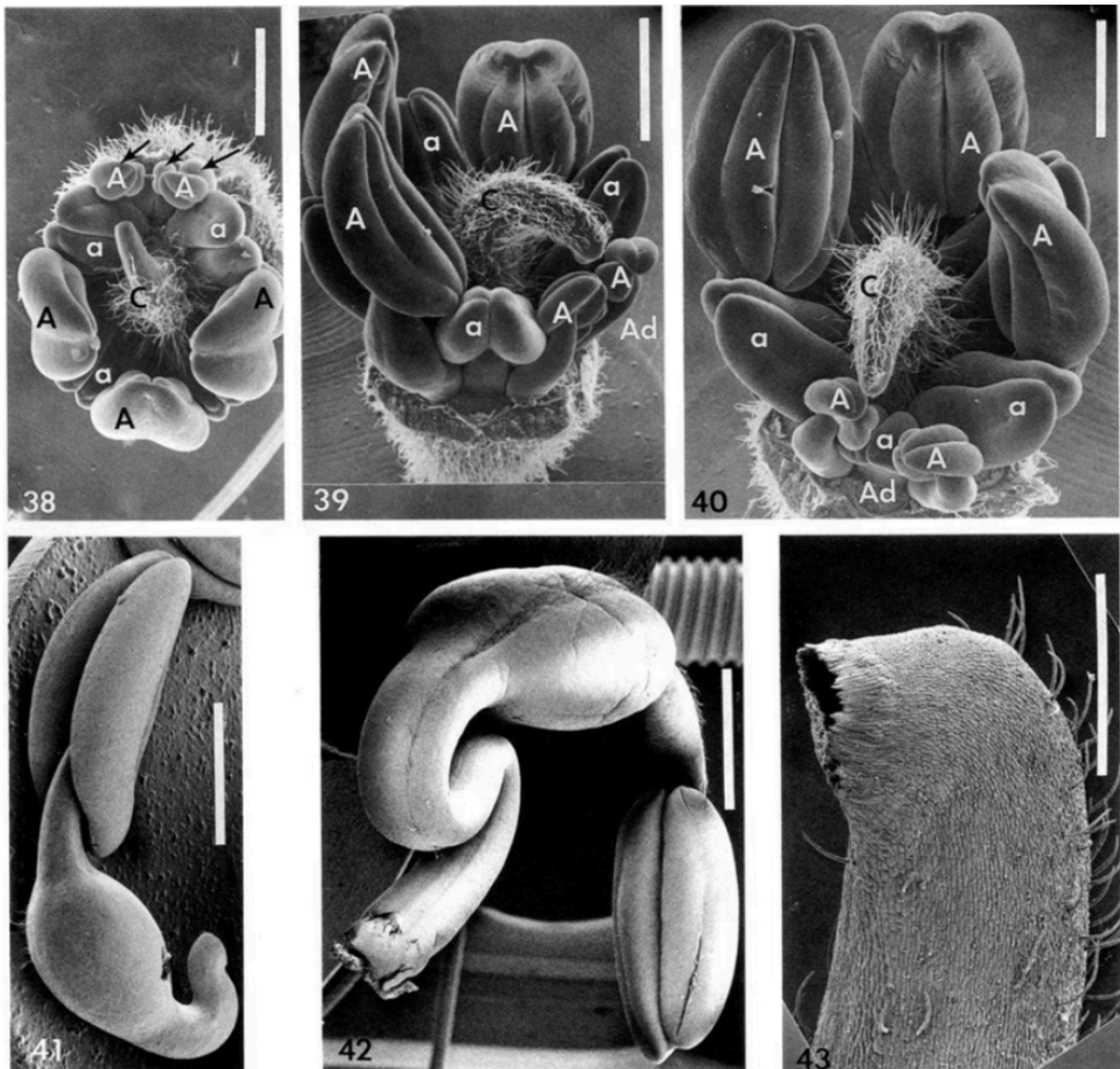


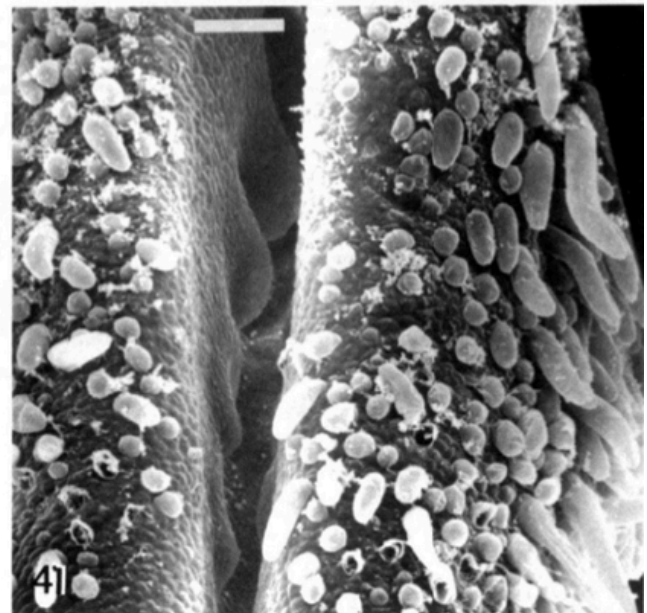
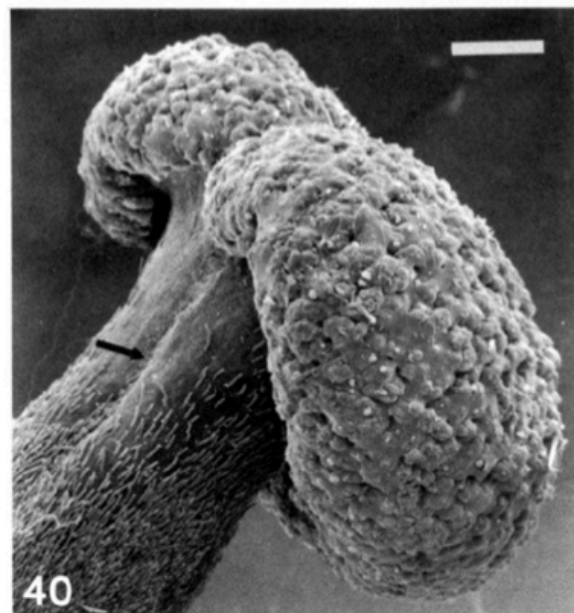
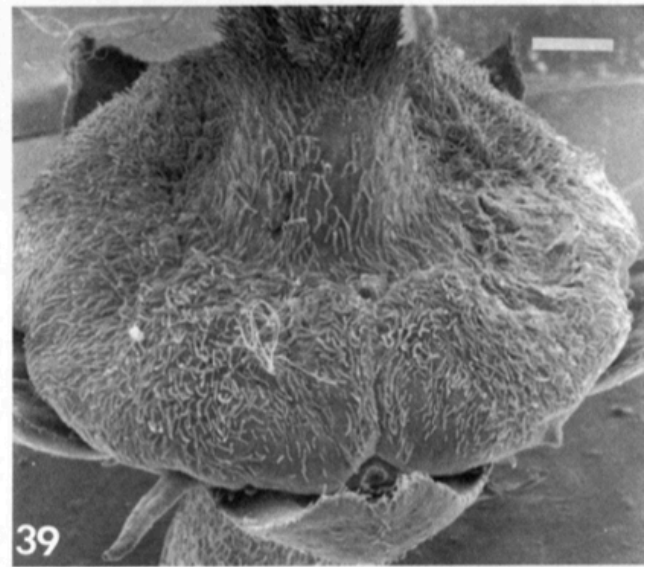
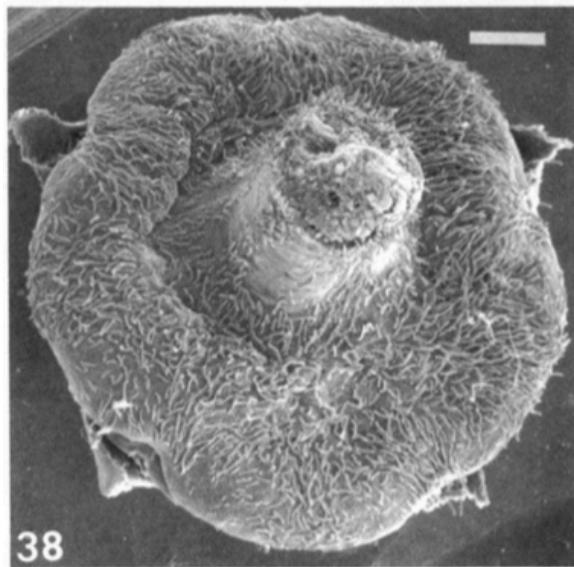
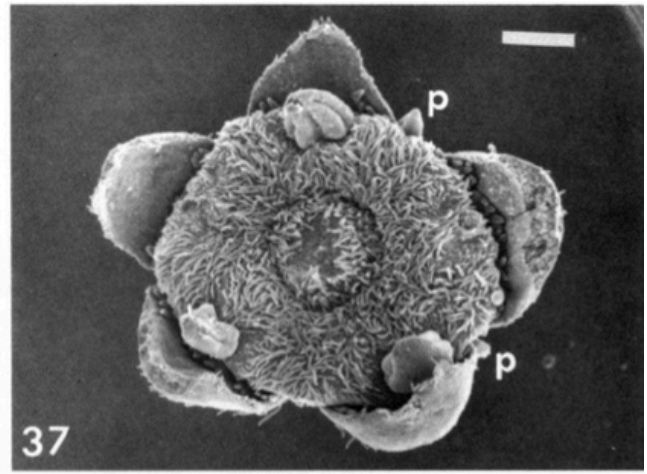
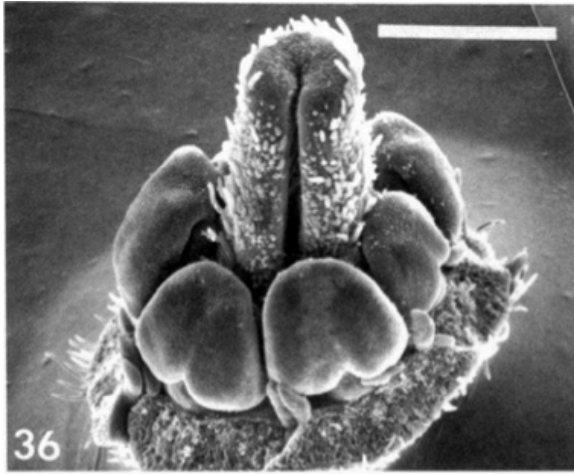
**Tucker, S.C. 1998.** Floral ontogeny in legume genera *Petalostylis*, *Labichea*, and *Dialium* (Caesalpinioideae: Casssiaeae):a series in floral reduction. *American Journal of Botany* 85(2): 184–208.

**Tucker, S.C. 1999.** Evolutionary lability of symmetry in early floral development. *International Journal of Plant Sciences*, 160(S6):S25-S39.

**Tucker, S.C. 2000.** Evolutionary loss of sepals and/or petals in detarioid legume taxa *Aphanocalyx*, *Brachystegia*, and *Monopetalanthus* (Leguminosae: Caesalpinioideae). *American Journal of Botany*, 87(5):608-624.

**Tucker, S.C. 2003.** Floral development in legumes. *Plant Physiology*, 131(3):911-926.





Examples of SEM images produced by Shirley Tucker. Top panel, *Cassia*, bottom panel, *Ceratonia*.

# NEW LEGUME SPECIES HIGHLIGHTS 2025

**Colin Hughes** (University of Zurich, Switzerland)

Here we present snapshots of 17 of the c. 70 new species of legumes published during 2025. The common threads that track a large majority of recently described legume species are: (i) they are mostly globally rare endemics, indeed, often narrowly restricted micro-endemics. That global rarity means that these species are of particular conservation value and concern because they are often threatened and endangered, and thus a vital element in completing the global inventory of legume species; (ii) most newly described legumes belong to large, species-rich genera; (iii) most new species papers are ever more comprehensively and beautifully illustrated.

This year's new species highlights come from Argentina, Brazil, Chile, China, Ecuador, Guatemala, India, Mongolia, Pakistan, Tanzania and Thailand. They span tropical rainforest, tropical dry forest, Mediterranean, and temperate biomes, as well as diverse plant growth forms including procumbent annual herbs, lianas, shrubs, small trees and giant rainforest emergent canopy trees, a span that embraces the global distribution and ecological diversity of the legume family.

## **A new species of *Adesmia* that looks like *Ephedra***

*Adesmia ephedroides* (Papilionoideae) is narrowly endemic to the Valparaíso Region of coastal central Chile and is currently known only from the type locality in the Melón Mountain Range. It grows in crevices on rocky outcrops in sclerophyllous open Mediterranean-climate, rupicolous shrubland. The name *ephedroides* alludes to the resemblance of its numerous young, vertically orientated green branches, deciduous leaflets and persistent cylindrical petioles and leaf rachises to the leafless shrubs of the genus *Ephedra* and its strong resemblance to *Ephedra chilensis*, which grows in sympatry with *A. ephedroides*. Known from fewer than 100 individuals it is classified as Critically Endangered.

**Rosende, B., Lavandero, N., Araneda, D. and Pérez, M.F. 2025.** *Adesmia ephedroides* (Fabaceae, Faboideae), a new species from the Mediterranean-type ecosystem of Valparaíso Region, Chile. *PhytoKeys* 259: 301-317.

<https://doi.org/10.3897/phytokeys.259.156135>





*Ephedra*-like habit growing in rocky crevices, flowers and fruit with plumose trichomes of *Adesmia ephedroides*. Photos: habit and fruit Benito Rosende; flowers Nicolás Lavandero.

## A critically-endangered new species of *Ancistrotropis* from Brazil

*Ancistrotropis pulchra* (Papilionoideae) is a micro-endemic, known only from the Parque Nacional do Caparaó, on the border between the states of Espírito Santo and Minas Gerais, in Brazil. Because of its global rarity it has been categorized as Critically Endangered. It occurs in high-altitude grasslands near cliff edges, at around 1,900 metres elevation, within the Atlantic Forest domain. The genus *Ancistrotropis* belongs in subtribe Phaseolinae of tribe Phaseoleae and, along with *Delgadoana* and *Sigmoidotropis*, is placed in the Sigmoid-keel clade characterized by a hooded standard petal, sigmoid-shaped keel petals with a hooked distal tubular region joined by interlacing marginal trichomes, and wings that are laterally parallel and perpendicular to the standard.



Flowers and leaves of *Ancistrotropis pulchra*. Photos: Felipe Santos.

**Da Silva Santos, F., Lima Ribeiro, C., Snak, C., Delgado-Salinas, A. and De Queiroz, L.P. 2025.** A new species of *Ancistrotropis* (leguminosae) from Parque Nacional do Caparaó (Brazil). *Phytotaxa* 726: 272--280. <https://doi.org/10.11646/phytotaxa.726.4.4>

### Three new Chinese species of *Apios*

With just six species previously recognized in the genus, these three new species of *Apios* (Papilionoideae), expand the number of species by 50% and break the general rule that most newly described species belong in large species-rich genera. All three new species of *Apios* are endemic to different provinces of China: *A. brevis* in bamboo forests of Anhui Province, *A. calcicola* in karst forests of Guangxi and Guizhou Provinces, and *A. chindiana* in humid secondary forests in Zhejiang and Fujian Provinces. All are twining perennial climbers with white latex and have a hooded standard petal and coiled or curved wing petals and style typical of the genus *Apios*, and two of the species have tubers.



Inflorescence, trifoliate leaves, flowers and tubers of *Apios calcicola*. Photos: Zhao-Cen Lu.





Habit, flowers, fruits and tubers of *Apios chindiana*. Photos: Jian-Sheng Wang & Jun-Feng Wang.



Trifoliolate leaf, inflorescence, flowers, pods and seeds of *Apios brevis*. Photos: Xin-Xin Zhu.

**Wang, J.F., Jiang, K., Zhong, J.P., Chen, Y., Wu, D.H., Li, B.H., Pan, B., Wan, K.Y., Chen, Z.H. and Wu, L.H. 2025.** *Apios chindiana* (Fabaceae: Papilionoideae: Phaseoleae), a new species from East China. *Phytotaxa* 697: 245-254.

<https://doi.org/10.11646/phytotaxa.697.3.3>

**Lu, Z.C., Wei, L., Song, Z.Q., Wei, S.J. and Pan, B. 2025.** *Apios calcicola* (Fabaceae: Papilionoideae: Phaseoleae), a new species from limestone mountains of Southwestern China. *Phytotaxa* 726: 193-200. <https://doi.org/10.11646/phytotaxa.726.3.7>

**Chen, Y., Shen, Y., Wan, K.Y., Pan, B. and Jiang, K. 2025.** *Apios brevis* (Fabaceae: Papilionoideae: Phaseoleae), a new species from eastern China. *Phytotaxa* 725: 205-212.

<https://doi.org/10.11646/phytotaxa.725.2.7>

## The relentless enlargement of the genus *Astragalus*

Every year several new species of *Astragalus* (Papilionoideae), the largest genus of legumes (and indeed of flowering plants as a whole) with > 3100 species, are described. This year was no exception with > 10 new species published in 2025. Here we highlight three new species endemic to the stony, arid steppes of Mongolia and one narrowly endemic to

northern Balochistan along the Pakistan--Afghanistan border. These add to the incredible diversity of the genus in central and south-west Asia.



*Astragalus uvsicus*, *A. oyunicus* and *A. teshigicus* from Mongolia. Photos: D. Munkhtulga.



*Astragalus zhobensis* from Pakistan. Photos: Tahir Khan.

**Munkhtulga, D., Baasanmunkh, S., Nyamgerel, N., Park, J.H., Tsegmed, Z., Tojibaev, K.S. and Choi, H.J. 2025.** Morphological and phylogenetic analysis approach to three new species and a new section of *Astragalus* (Fabaceae) from Mongolia. *PhytoKeys* 255: 51-73. <https://doi.org/10.3897/phytokeys.255.140805>

**Khan, T., Khan, N., Khan, A., Sultan, A. and Ishaq, K. 2025.** *Astragalus zhobensis*, a new species of section Caprini (Fabaceae) from Zhob, northern Balochistan, Pakistan. *Nordic Journal of Botany*, p.e04845. <https://doi.org/10.1002/njb.04845>

## ***Bauhinia angelae*, a cryptic species from the Caatinga**

*Bauhinia angelae* (Cercidoideae) is endemic to the Caatinga -- the seasonally dry tropical forests -- of NE Brazil where 15 species of *Bauhinia* are found, three of them endemic. The specific epithet honours Dr. Angela Maria Studart da Fonseca Vaz, former researcher at the Rio de Janeiro Botanical Garden, for her contribution to the knowledge of the Brazilian legumes, and especially for her research on *Bauhinia* and related genera in Brazil. This new species is a split from *B. catingae* and underscores the importance of careful analysis of



seemingly "common collected species", which often contain cryptic taxa hidden within their original circumscription, leading to problematic identification.



*Bauhinia angelae* flowers and leaf. Photos: Rubens Queiroz and Andrés Fonseca-Cortes.

**Casas-Restrepo, L.C., Fonseca-Cortés, A. and de Queiroz, L.P. 2025.** *Bauhinia angelae* (Leguminosae: Cercidoideae): An overlooked new species from drylands of Northeastern Brazil. *Phytotaxa* 691: 271-281. <https://doi.org/10.11646/phytotaxa.691.3.4>

### ***Copaifera ferrazii*: taxonomically challenging species delimitation**

Species delimitation in the large pantropical genus *Copaifera* continues to be taxonomically challenging due to a high degree of morphological plasticity and overlapping morphologies. These challenges demand careful evaluation of multiple characters, as pursued here, in order to discern robust species diagnoses. *Copaifera ferrazii* is a large tree narrowly endemic to Amazonas State, Brazil and grows in tropical rain forest. The species description is magnificently illustrated with an elegant botanical line drawing and a beautifully produced composite photo-based colour plate that comprehensively encapsulates the morphology of the species.



Tree form, foliage and inflorescence, flower and fruit of *Copaifera ferrazii*. Photos: Elzineide Moreira do Carmo.

do Carmo, E.M., da Cruz Vasconcelos, C., Calvi, G.P. and Ferraz, I.D.K. 2025. *Copaifera ferrazii* (Leguminosae: Detarioideae), a new Amazonian species from the eastern Madeira River Basin, Brazil. *Kew Bulletin* 80: 689--699. <https://doi.org/10.1007/s12225-025-10298-5>

### ***Crotalaria luteopurpurea*: an elegant new rattlepod from India**

*Crotalaria luteopurpurea* (Papilionoideae), newly described from the drylands of Karnataka State in India, is a procumbent, ruderal, annual herb growing in loose sandy soils in and around cultivated fields. It has dimorphic leaves and individual stems usually bear a solitary flower. The elegant photo plate in the paper shows off the striking contrast between the



bright yellow banner petal juxtaposed against the deep purple wing petals of the flowers of *C. luteopurpurea*, which owes its name to this dramatic flower colour contrast.



Annual herbaceous habit and solitary flowers of *Crotalaria luteopurpurea*. Photos: Jagdish Dalavi.

**Dalavi, J.V., Ramesh, P., Basavaraj, S., Yadav, S.R. and Jadhav-Rathod, V.D. 2025.** *Crotalaria luteopurpurea* (Fabaceae), a new elegant rattlepod from drylands of Karnataka, India. *Rheedea* 35: 13--18. <https://dx.doi.org/10.22244/rheedeae.2025.35.01.03>

## **A spectacular new species of *Derris* from Thailand**

Combined morphological, anatomical, and molecular evidence are presented to support the recognition of *Derris longiracemosa* (Papilionoideae) as a distinct species. A detailed description, distribution map, line drawing, photographs, and preliminary IUCN conservation status are presented. The species epithet, *longiracemosa*, refers to the unusually long inflorescences of the species which can reach > 150 cm, the longest recorded for any species of *Derris*. *Derris longiracemosa* is a liana, narrowly endemic to southwestern Thailand and restricted largely to karst limestone hilltops with wind-dispersed winged fruits. The authors suggest edaphic specialization to karst substrates has likely contributed to ecological segregation, setting the stage for divergence and eventual speciation within this complex landscape.



*Derris longiracemosa*: habit and inflorescences; close-up of inflorescence showing cluster of flowers on brachyblasts; flowers; unripe pods; leaves and long inflorescences. Photos: Yotsawate Sirichamorn.

**Boonprajan, P., Oncham, S. and Sirichamorn, Y. 2025.** *Derris longiracemosa* (Fabaceae), a new species from Thailand with extraordinary limestone adaptations and the longest inflorescences ever recorded. *PhytoKeys* 261: 13-32.

<https://doi.org/10.3897/phytokeys.261.156249>

## ***Erythrostemon guatemalensis*: an endangered micro-endemic from Guatemala**

*Erythrostemon guatemalensis* (Caesalpinioideae) is an Endangered micro-endemic to Dept. Sacatepéquez, at mid elevations in seasonally dry tropical forests and in the transition to



montane forests of the Pacific slope of Guatemala. In common with many dry tropical forest tree species, *E. guatemalensis* is locally abundant, but globally extremely rare, with a total extent of occurrence of  $< 50\text{km}^2$ . The description of this species is lavishly illustrated with five photoplates and two line drawings. As noted by the authors, in their phylogeny, *E. guatemalensis* is nested among accessions of *E. exostemma*, highlighting the need for a more densely sampled phylogenetic study of the *E. exostemma* species alliance.



Bark and flowers of *Erythrostemon guatemalensis* and bee pollinator, *Xylocopa frontalis* on flowers. Photos: Knut Eisermann.

**Eisermann, K., Lewis, G.P., Forest, F., Gagnon, E., Csiba, L., Aju, J. and Williamson, J. 2025.** *Erythrostemon guatemalensis* (Leguminosae: Caesalpinioideae: Caesalpinieae), a new Endangered tree species from the Pacific Slope highlands of Guatemala. *Kew Bulletin* 80: 663-678. <https://doi.org/10.1007/s12225-025-10300-0>

**A new stoloniferous *Indigofera* narrowly endemic in NE Argentina**

*Indigofera stolonifera* (Papilionoideae) is a micro-endemic, known from just the type locality in Misiones Province, northeastern Argentina. The stoloniferous herbaceous habit with elongated prostrate branches which give rise to new individuals, for which the species is named, is unique among South American *Indigofera*.



*Indigofera stolonifera* habit and flowers. Photos: Héctor Alexander Keller.

**Snak, C., Ribeiro, C.L., Rocha, L. and Queiroz, L.P.D. 2025.** A new species of *Indigofera* (Leguminosae, Papilionoideae) from Misiones with a key to species from Argentina. *Phytotaxa* 690: 293-300. <https://doi.org/10.11646/phytotaxa.690.2.10>

## **A new species of *Macrolobium* named for the Tukano people of the Upper Rio Negro, Amazonia**

*Macrolobium tukanorum* (Detarioideae) is known from just two localities in the Morro dos Seis Lagos (Six Lakes Mountain) and the Serra do Tunuí, in the municipality of São Gabriel da Cachoeira in the upper Negro River basin of Amazonia in northwestern Brazil.

The species is named in honour of the Tukano people who inhabit the forests of the Upper Rio Negro basin and are the largest ethnic group within the Balaio Indigenous Territory. It grows in low-stature forests on rocky and sandy soils in the Serra de Tunuí, as well as on iron-rich *canga* in the Morro dos Seis Lagos, an area which appears to harbour a poorly-known flora with high levels of endemism of species adapted to iron-rich soils.





Flowers, fruits, leaves and seed of *Macrolobium tukanorum*. Photos: Mário Terra-Araújo.

Farroñay, F., Cardoso, D.B.O.S., Pilco, M.V., Terra-Araújo, M.H. and Vicentini, A. 2025. *Macrolobium tukanorum* (Leguminosae, Detarioideae), a new species from the Upper Rio Negro basin. *Brittonia* 77: 40-50. <https://doi.org/10.1007/s12228-025-09827-0>

## A remarkable black-purple-flowered *Ormosia* from Ecuador

*Ormosia neillii* (Papilionoideae) is narrowly endemic to the botanically poorly-known Cordillera del Cóndor Region of south-eastern Ecuador. It forms a small or medium-sized tree on sandstone plateaus and, although globally extremely rare, it can be locally abundant in dwarf forests on Andean tepui-like formations on quartzitic white sand above 1000 m elevation, well above the typical elevations of other *Ormosia* species. Alongside occurrence in these unusual habitats, the species has remarkable blackish-purple flowers.

The species is named in honour of David Neill (1953--2025), an American botanist who dedicated over three decades to the study of Ecuadorian flora and who worked extensively on legumes (see Gallery of Leguminologists, this BB Issue).



Trunk with bark slash, leaflet, flower and fruits of *Ormosia neillii*; photos Juan E. Guevara and John L. Clark.

**Guevara-Andino, J.E., Clark, J.L. and Navas-Muñoz, D. 2025.** *Ormosia neillii* (Fabaceae), a remarkable new tree species from the Cordillera del Cóndor plateaus in Ecuador. *PhytoKeys* 256: 21-35. [10.3897/phytokeys.256.147923](https://doi.org/10.3897/phytokeys.256.147923)

## ***Tessmannia princeps*: a canopy-emergent rainforest giant from Tanzania**

Information provided by Andrea Bianchi, Museo delle Scienze, Trento, Italy & Udzungwa Corridor LTD, Iringa, Tanzania.

The idea that there are still giant, canopy-emergent rainforest legume tree species to be discovered and named seems at first sight surprising, but recent years have turned up a trickle of such novelties, including *Dinizia jueirana-facao* and *Dipteryx hermetopascoaliana* from the Mata Atlantica of Brazil. *Tessmannia princeps* (Detarioideae) from the Afromontane rainforests of the Udzungwa Mountains of Tanzania is the latest addition to these rare and cryptic legume giants. It is notable that *T. princeps* represents a brand-new field discovery with apparently no prior material of the species already in herbaria.

*Tessmannia princeps* forms a tree to 40 m ht and 2.7 m trunk diameter, with buttresses up to 15 m tall, radiating for up to 1.5 m from bole, and sometimes extending along the first branches. The specific epithet *princeps* from the Latin for *the first, the foremost, the most eminent*, refers to the canopy-emergent habit of the species. In common with the majority of newly described legumes, *T. princeps* is globally rare, known from fewer than 1000 individuals from just two populations, and is considered of Vulnerable conservation status. As part of the [Udzungwa Corridor project](#), a groundbreaking initiative to restore Afromontane forest in Tanzania, *T. princeps* is being propagated and several hundred individuals are being planted each year in and around the forest patches where *Tessmannia* occurs.

Tragically, in October 2025, Aloyce Mwakisoma, a renowned plant expert from Tanzania's Udzungwa Mountains, who co-discovered and co-authored *T. princeps*, and who appears in the photo below with the buttressed tree bole, [was struck and killed by a bus near the village of Sanje in Tanzania](#).





Aloyce Mwakisoma beside buttressed bole, canopy-emergent tree crown, leaves and flowers of *Tessmannia princeps*. Photos: Andrea Bianchi.

**Bianchi, A., Tomasi, L., Mwakisoma, A., Barbieri, M. and Luke, Q. 2025.** *Tessmannia princeps* (Fabaceae), a new rainforest tree from the Udzungwa Mountains, Tanzania. *Phytotaxa* 694: 109-118. <https://doi.org/10.11646/phytotaxa.694.2.1>

# LEGUME SHOTS OF THE YEAR

With every new volume of the Bean Bag, we have the chance to share some of the pictures of legumes we take during the previous year. This time, we get to see beautiful shots from India, the Madeira Island, and Brazil.



***Vachellia farnesiana* (L.) Wight & Arn.** – Commonly known as sweet Acacia. It is native range to Tropical & Subtropical America. It is used as animal food, a medicine and invertebrate food, has environmental uses and social uses and for fuel and food. Photo taken in Babu Jamal hills, Kolhapur district, Maharashtra, India, by Sandip Kisan Gavade.





***Lotus glaucus* Aiton subsp. *glaucus*** – Plants growing on basalt rocks at sea level on the Madeira Island. In full bloom on the 22nd of December. Photo by Filipe de Portugal.



***Tephrosia coccinea* Wall.** – A bright red color flowered *Thephrosia* from Maharashtra, India. It is native to Hainan, India, Laos, Myanmar, Thailand, and Vietnam. Photo taken in Salva, Vaibhavwadi, Sindhudurg district, Maharashtra, India, by Sandip Kisan Gavade.

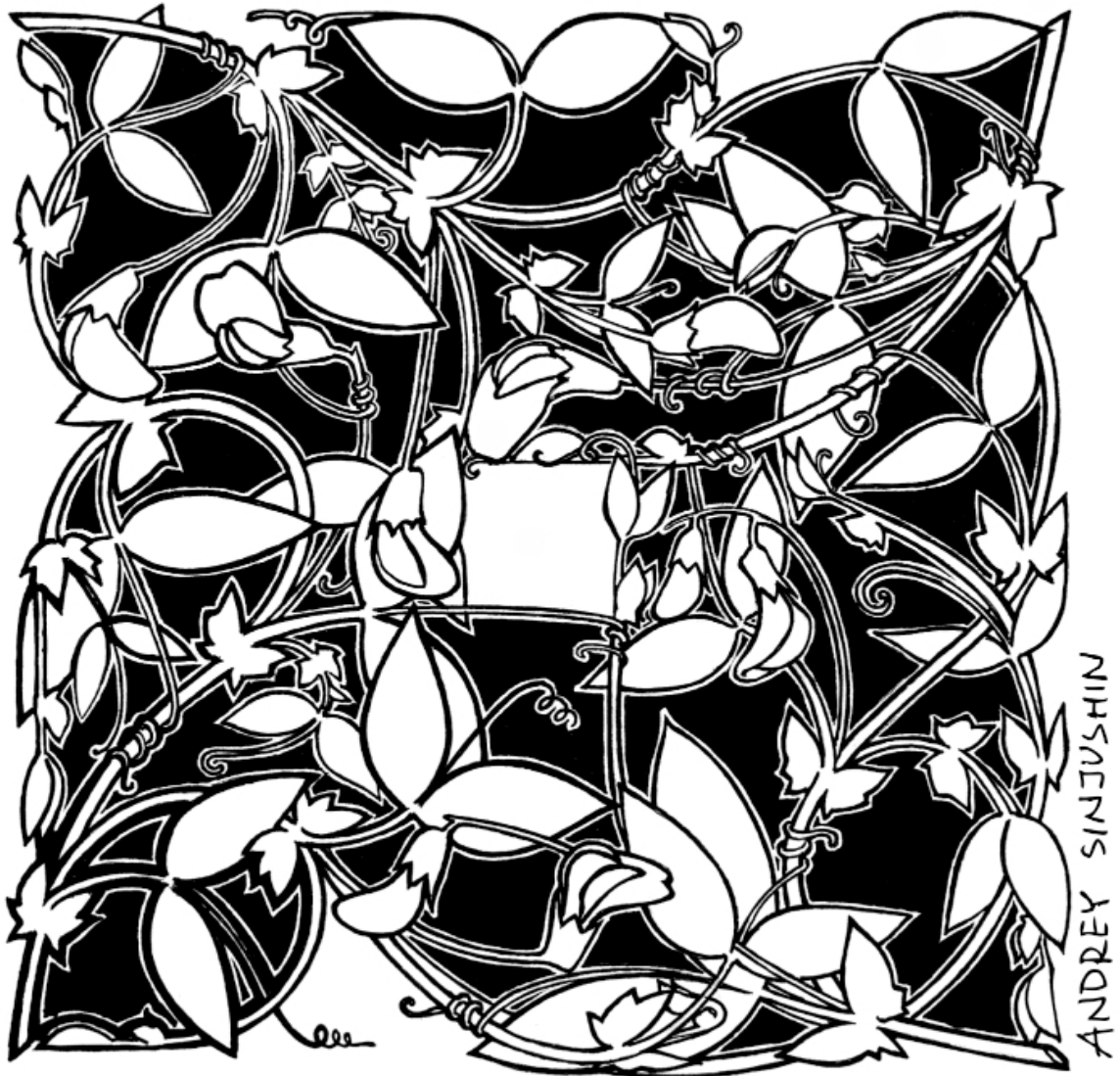




***Machaerium villosum* Vogel** – Close-up of the inflorescence of a plant in bloom at the Brasília Botanical Garden. The garden sits at the heart of the Cerrado, the Brazilian Savanna, and aims to promote conservation and appreciation of this rich but endangered biome. Photo by Giovane Nalin (shared by Leo Borges).

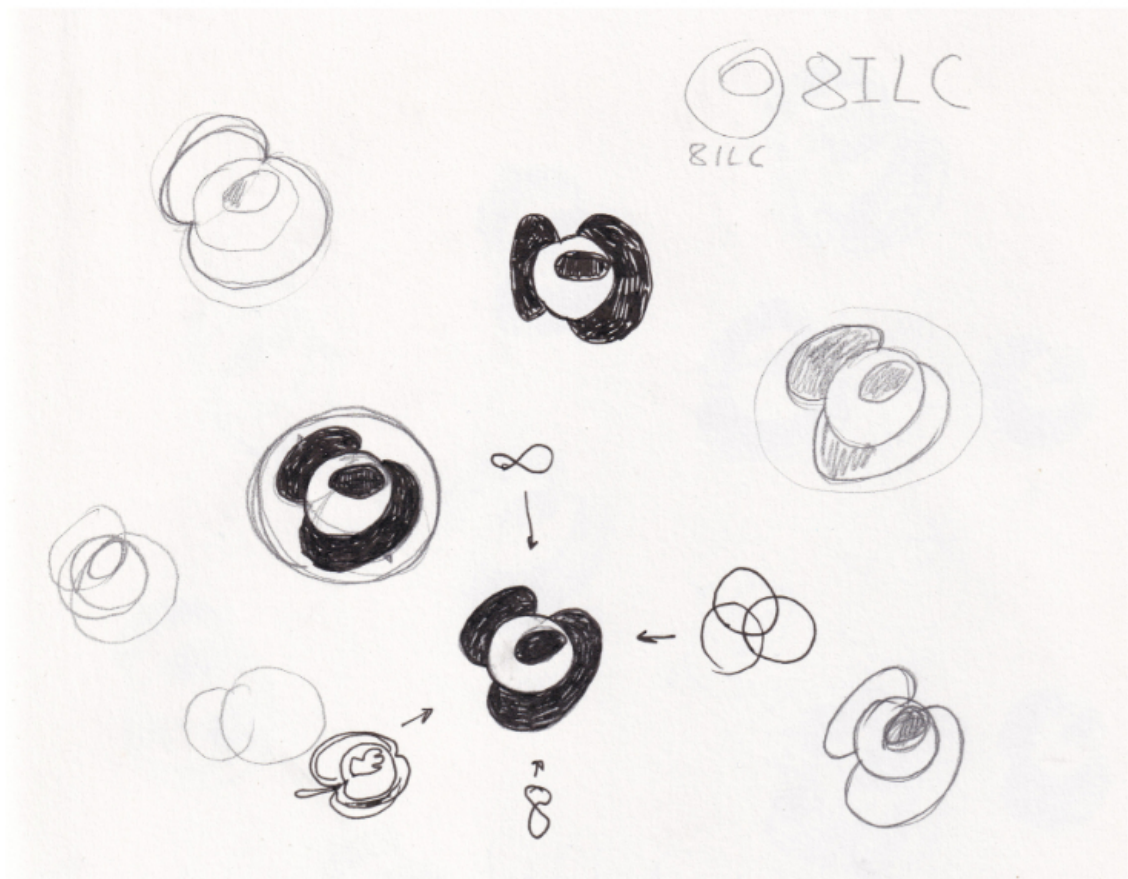
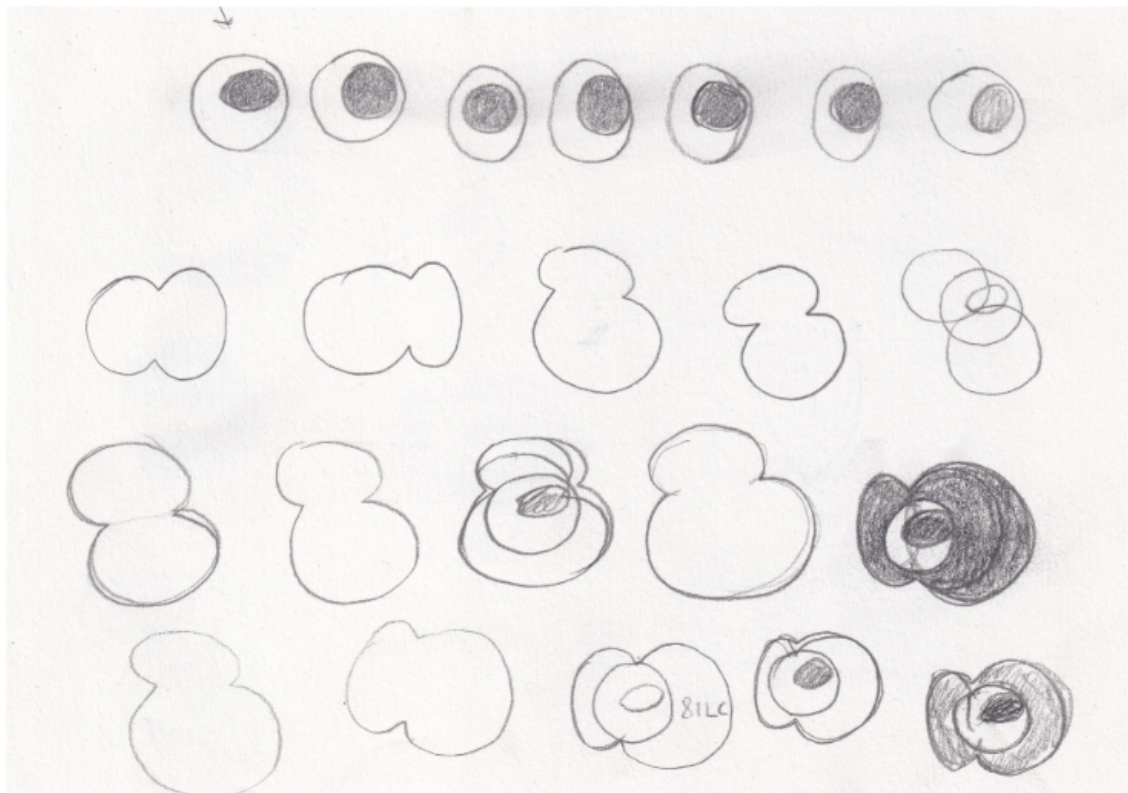
# LEGUME ARTWORK

This year we are introducing a new section where the legume community can share drawings, paintings and other creative works celebrating the beauty and diversity of legumes.



When drawing this, I mostly had *Lathyrus pratensis* in mind with its richly branching stems, unijugate leaves of various sizes, broadly lanceolate leaflets, and semisagittate stipules. However, this species produces several-flowered racemes, so the final drawing is a generalized image of a vetchling. — Andrey Sinjushin







The announcement of the next International Legume Conference prompted me to share a glimpse into the process of designing the 8ILC logo. The images show some of the sketches I made trying to merge a *copaíba* fruit, venn diagrams, and the number 8 (which resembles the infinity symbol) in a single concept. I had a good time making this logo! – Leo Borges



# LEGUME BIBLIOGRAPHY 2025

**Brian du Preez** (University of Cape Town, South Africa) & **Marcus Falcão** (Universidade do Estado do Rio de Janeiro, Brazil)

## Bibliography Index

A total of **337** new publications are presented in the Legume Bibliography 2025. These are presented in alphabetical order of first author last name and categorized in nine topics.

- [Anatomy, karyology, Morphology & Development](#)
- [Ethnobotany, Biochemistry, metabolomics, agriculture](#)
- [Ecology and niche modelling](#)
- [Floristics & Conservation](#)
- [Paleobotany](#)
- [Palynology](#)
- [Phylogeny, Evolution & Biogeography](#)
- [Taxonomy, Nomenclature & Systematics](#)
- [New Species](#)

## Anatomy, karyology, Morphology & Development

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Ángel-Vallejo, M. C., García-Marín, E. J., Feuillet-Hurtado, C., Rodríguez-Rey, G. T., Álvarez-Mejía, L. M., & Aguirre-Acosta, N. (2025). **Spatial variability in early reproductive characteristics of *Ulex europaeus* L. (Fabaceae) invading in the high-mountain of central Colombia.** *Acta Oecologica*, 128, 104098.

<https://doi.org/10.1016/j.actao.2025.104098>

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## New Species

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