

Congress News

#5 THURSDAY 25 JULY



Sponsorship



GOBIERNO DE ESPAÑA

MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES



Edited by



REAL JARDÍN BOTÁNICO



SOCIEDAD BOTÁNICA ESPAÑOLA



A delicious night

Almost 500 botanists attended to the Congress Dinner yesterday night. They were able to taste a delicious example of avant-garde cuisine, based on local products, together with a selection of Spanish wine and cava. The dinner took place at Finca La Alquería, a beautiful country house in the south of Madrid, surrounded by a delicate garden where assistants could shelter under the shade of the trees and be accompanied by the sunset light before dinner. Dinner photo gallery on Page 3

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SCIENCE, ART AND TRADITION ON THE EXHIBITION FLOOR

Publishers, laboratories and botanical organizations show their scientific, disseminating and artistic activities at the congress

Scientific activity at IBC2024 also extends to the exhibition floor. This area next to the plenary room, includes a total of 20 booths where institutions, botanical societies, commercial brands,

and scientific publishers are represented. This brings the opportunity for exhibitors to showcase their activities and interested visitors to interact with them in person.

Several scientific publications editorials are present at IBC2024, from Oxford University Press Group to Wiley or Annals of Botany Journal. In this way, interested users can approach and obtain information about editorial lines, publication conditions, or the latest updates.

Around 1000 physical posters are also displayed on the exhibition floor, providing exceptional opportunities for fruitful and more informal discussions during coffee breaks. A blend of science, art, and tradition also has its place on the exhibition floor, taking advantage of the spaces near the symposium and workshop rooms.

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General view of the exhibition floor at the IBC.

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TODAY'S LECTURES

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Jaume Flexas

09:30 - 10:25
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IAPT. The International Association of Plant Taxonomy makes use of its space to showcase the projects the association is developing to build a strong global plant systematic community, such as grants for students and for the improvement of small plant collections, their journal 'Taxon' and the 'Oral History of Botany', an initiative that has been initiated in the XX IBC.



MITECO. The Spanish Ministry for Ecological Transition and the Demographic Challenge dedicates its space to the conservation projects it supports, particularly focusing on *Cistus heterophyllus* subsp. *carthaginensis*, a critically endangered species known as 'Jara de Cartagena'. Dissemination initiatives for these projects are also available, along with a paper representation of this curious plant.



IBC2024-Madrid. IBC2024 also features a dedicated stand where visitors can access detailed information about the congress, including lecture and talk schedules. The stand provides an opportunity to purchase IBC2024 merchandising, allowing attendees to take home a memento of their experience at the congress.



MACROGEN. The international sequencing company MacroGen, based in Korea, has a dedicated space where visitors can learn about their online sequencing order system, which simplifies access to sequencing results for users. Many researchers attending this congress are currently utilizing their services.



RJB-CSIC. The Real Jardín Botánico (Royal Botanic Garden)-CSIC of Madrid has a dedicated space where attendees can have a glance at its history and treasures. An XX IBC special edition of the RJB annual calendar is available for purchase. The calendar shows a selection of original drawings by José Celestino Mutis, which are kept in their Archives.



SEBOT. The space of the Spanish Botanical Society (SEBOT) is a point of information about the society objectives and activities and also to purchase merchandising items available, which help fundraising SEBOT. Visitors can also get information about the II Spanish Congress of Botany that will take place in Seville in 2025.

SCIENCE, ART AND TRADITION...

[...Comes from the front page]

The presence of botanical societies provides these institutions with an opportunity to showcase their activities beyond their borders, represent their national flora, and engage directly with some of their members. From the Italian Botanical Society to the Botanical Society of Britain and Ireland, and the Botanical Society of Brazil, which is about to celebrate its 75th anniversary, botanists from around the world can meet and exchange ideas about the role of botanical societies in the field.

The exhibition floor is also a space for science-related art, such as the botanical illustrations that can be found at the back of the booth area. These drawings are part of the art installation 'Living soil', within the "Artists in the Campus" project at the Autonomous University of Madrid.

The artist, Ana Zdravković, performed enlarged illustrations of different lichens and bryophytes species with the idea of making more visible these microscopic organisms and their impressive diversity in a world that "prevents us from stopping to contemplate the elements of our natural environment".

Congress attendees can also enjoy a beautiful installation explaining the Life project 'Life 4 Pollinators,' located in the corridor between the symposium rooms at the first floor of IFEMA's North Convention Center. The project aims to raise awareness about the global issues pollinators are facing through various actions directed at specific stakeholders, such as educators, farmers, and students, among others. Prof. Marta Galloni, one of the project coordinators, explained that the installation has been specially designed to

be easily transported and used in science dissemination activities.

As part of the exhibition space, a workshop on the uses of esparto grass was held yesterday morning in the hall adjacent to the symposium rooms. 'Esparto Grass: More Than a Plant' was organized by Manuel Pardo de Santayana and featured several artisans specialized in the manufacturing of traditional Spanish esparto products.

Attendees had the opportunity to learn how to create items such as brooms, bracelets, and decorative horns from this grass. The workshop aimed to promote these

traditional products, which have been widely used in Spain and other Mediterranean regions, but also in other parts of the world.



IBC2029 Cape Town. Cape Town will organize the XXI IBC edition. This space is an opportunity to engage scientists to the mailing list that will update the latest news on the next event in South Africa. Visitors can also discover the biological diversity treasures from a video projection and postcards, such as South Africa's national flower, *Protea cyanoides*.



Illustration by artist Ana Zdravković within the installation "Living soil".



"Esparto Grass: More Than a Plant", the workshop for learning how to use this plant to make craft products.

XX IBC DINNER



The dinner was a wonderful occasion to enjoy Spanish cuisine accompanied by relaxed conversation with the colleagues and to celebrate the success of this XX IBC edition



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POSTER EXHIBITION

An interactive experience

In addition to the lectures, symposia, and workshops, the IBC 2024 conference places significant emphasis on its poster exhibition, which is an important element of the event. This exhibition encompasses a wide variety of scientific results, which represents a comprehensive overview of the latest advancements in various fields. Attendees have the opportunity to explore nearly 1,400 posters, which are presented either in digital format (around two thirds of the total number) or in traditional paper format. The digital poster exhibition, located near the symposium and workshop

rooms, provides an interactive experience. This setup enables attendees to explore a broad spectrum of global investigations from a single location. Discussions for physical posters are scheduled to coincide with the coffee breaks, allowing for networking and scientific discussion. Attendees are invited to participate in voting for the various awards that will be given to the best posters and talks by students. This initiative provides an opportunity to recognize outstanding contributions from young and senior researchers, as well as further enrich the overall conference experience.



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Pamela S. Soltis.

Novel uses of herbaria collections

Traditionally, herbaria have been considered fundamental sources for understanding and documenting biodiversity, but they are much more. In the last years, botanical collections have returned to the spotlight thanks to their many unexpected applications, a topic explored in detail at yesterday's lecture by Prof. Pamela Soltis. For example, preserved specimens represent a huge source of genetic data for researchers to assess phylogenetic questions. Furthermore, digitalized herbarium specimens combined with AI can help to analyze and forecast past, present and future niche of species in the face of climate change or the identification of crop wild relatives which might be used to improve food security. "These applications", highlighted Prof. Soltis, "are fundamental to address societal changes", a subject raised up earlier this week as well at the IBC opening lecture by Dr. Sandra Knapp. Prof. Soltis also pointed out the challenges faced by herbaria, such as insufficient technical infrastructure, space or funding, and the need of global collaboration.



Keping Ma.

The importance of biodiversity on ecosystem functioning

Biodiversity loss is one of the greatest threats for nature all around the globe. Most worrying, the reduction in the number of species also implies a decrease in the functioning of natural processes. A very insightful record of the relationship between both factors was explored yesterday in the keynote lecture by Prof. Keping Ma, who presented the results of a large-scale, long-term experiment established in 2009 in subtropical China. The Biodiversity – Ecosystem Functioning Experiment (BEF China) is currently the largest forest experimental platform worldwide and consists of 50 ha of artificially-established forests divided into several sampling plots comprising species-poor and species-rich environments, ranging from monocultures to 24-species mixtures. Prof. Ma and his team found that, after 8 years, species-rich plots were related to higher functional and phylogenetic diversity, as well as higher carbon accumulation, community stability by increasing asynchrony and the abundance of herbivores, predators in the environment, highlighting the importance of biodiversity protection.

TODAY LECTURES

The evolution of extant south american tropical biomes



Carlos Jaramillo

Carlos Jaramillo is a staff scientist at the Smithsonian Tropical Research Institute in Ancón, Panamá. He investigates the causes, patterns, and processes of tropical biodiversity at diverse temporal and spatial scales, as well as the evolution of tropical landscapes over geological time, with a special focus on palynology.

PLENARY LECTURE

🕒 09:30 - 10.25 📍 Plenary Room

When and why did South American tropical biomes develop? The tropic of South America holds one of the highest plant diversities in the world. Several mechanisms have been proposed to explain this phenomenon, but the patterns of diversification of Neotropical floras over geological time have been relatively understudied. Pollen and spore diversity records show a significant shift in tropical vegetation: from non-angiosperm dominance at the onset of the Cretaceous to the current angiosperm dominance. Cretaceous tropical biomes do not have extant equivalents; lowland forests were dominated mainly by gymnosperms and ferns lacking a closed canopy. This structure was transformed following the Cretaceous-Paleogene meteorite event. The extant lowland tropical rainforests first developed at the onset of the Cenozoic with a multistratified forest, an angiosperm-dominated closed canopy, and abundant legumes. Cenozoic rainforest diversity has

increased during periods of warming and decreased during periods of cooling. Tropical dry forests emerged by at least the late Eocene, whereas other drier Neotropical biomes are much younger. The overall pattern shows that plant diversity in the Neotropics is subject to historical accidents that have produced discrete pulses of origination and extinction.

Reimagining Arid Zone Ecology in a Changing World: is rainfall all that matters?



Amy T. Austin

Amy Austin is Professor of Ecology at the University of Buenos Aires, a Distinguished Research Scientist at the National Research Council of Argentina and an Editor of Journal of Ecology and New Phytologist. Her focus of research is ecosystem ecology and controls on carbon turnover in tropical, temperate, and human modified ecosystems.

PUBLIC LECTURE

🕒 19:05 - 19:55 📍 Plenary Room

While forests have received intense attention regarding their role in the global carbon cycle, the drier parts of the world, constituting over 40% of the terrestrial land surface, are often overlooked as unproductive and unresponsive to human-induced global change. In contrast to forest ecosystems, these arid regions present unique conditions, encompassing a matrix of climate, land use, and plant-soil interactions that suggest complex responses to changing environmental conditions, which we are only beginning to comprehend. Our research specifically focuses on understanding how alternative climatic controls, such as exposure to solar radiation, temperature, and the seasonality of rainfall, exert substantial impacts on carbon turnover and storage in arid land ecosystems. Instead of a singular focus on rainfall as the primary determinant of ecosystem functioning in arid lands, our findings highlight the significant positive effect of solar

radiation exposure on carbon emissions and subsequent microbial turnover. By shedding light on these often-neglected arid land ecosystems and their specific controls, we aim to provide more predictive power for effective management and conservation amidst ongoing climate and land use changes.

Digging deeper: Understanding belowground disease risk in diverse plant communities

KEYNOTE LECTURE

🕒 08:30 - 10.25 📍 Plenary Room



Liesje Mommer

Liesje Mommer is Professor in Belowground Ecology at Wageningen University & Research (Netherlands). She initiated and leads the Wageningen Biodiversity Initiative, a transdisciplinary network of scientists and stakeholders

working towards nature-positive futures by research projects integrating nature and society, guide policy making and science communication.

Traditionally, plant ecologists have explained diversity-disease relationships by distinguishing between host and non-host species. When biodiversity loss increases the density of hosts compared to non-hosts, disease risk increases, and vice versa. However, focusing on this dichotomy overlooks the substantial variation in 'host quality'—a measure of a host's contribution to parasite fitness. To illustrate this concept, I will present findings from a temperate grassland biodiversity experiment involving 16 plant species (forbs and grasses). Using Illumina MiSeq amplicon sequencing, we assessed the abundance of root-associated fungal pathogens in plant monocultures and four-species mixtures. Our study identified three major fungal pathogens with differing host ranges and discovered that plant community composition rather than plant species richness per se significantly influences pathogen relative abundance. Another important factor that may modify diversity-disease relationships belowground is the presence of arbuscular mycorrhizal fungi. I will present preliminary evidence that these mycorrhizal fungi modify plant-pathogen interactions in grassland systems. Our findings highlight the intricate interplay between plant community properties, host-pathogen and host-symbiont interactions and their vital role for understanding the impacts on overall grassland productivity and ecosystem health.

Into the wild: how we can use nature markets to reintroduce wild populations of plants at risk of extinction

KEYNOTE LECTURE

🕒 09:30 - 10.25 📍 N103



Rachael V. Gallagher

Rachael Gallagher is an associate Professor in Plant Ecology and Conservation at Hawkesbury Institute for the Environment at the Western Sydney University in Australia. Since 2016, she has also been involved in the

legislative protection of Australia's plants as a member of two Threatened Species Scientific Committees.

Over the last three decades, vast international resources have been committed to conservation seed banking, to great success. Seed bank collections have grown rapidly and seeds and plant germplasm are now routinely stored to safeguard species against extinction. Yet seed banks were never intended to be a final stop along the road to the recovery for plant species. Currently, when we do reintroduce or translocate plant populations, failure rates associated with their establishment can be unacceptably high. We also often do not know where to situate new plant populations relative to their historical distributions, given immense changes in climate and land use. New science is therefore needed to improve and intensify the strategic reintroduction of plant populations to the landscape. This talk will outline gaps in ecological and conservation knowledge that hamper current reintroduction success, explore solutions, and demonstrate how we might use emerging financial market mechanisms to fund initiatives that reduce plant extinction risk. I hope to inspire new thinking about how we can thoughtfully design initiatives that get more plant species out of the fridge and into the wild across the world.

Bringing ecophysiology closer to plants from extreme environments and diverse phylogenetic groups

KEYNOTE LECTURE

🕒 09:30 - 10.25 📍 N104



Jaume Flexas Sans

Jaume Flexas is a Professor at the University of the Balearic Islands (Spain) and member of the Balearic Institute of Agroenvironmental Research and Water Economy. His research deals mostly with plant ecophysiological

responses to abiotic stresses and he is one of the Web of Science most cited authors in Plant Sciences and Ecology.

Plant (eco) physiology deals with the physiological responses of plants to environmental conditions, but, perhaps due to technical complexity, most studies focus with a limited number of angiosperms, and are most often conducted under tropical, temperate and Mediterranean conditions. Here I will present examples of physiological research extended along the land plant phylogeny and towards climatically extreme ecosystems. I will show how photosynthetic capacity changes along the land plant phylogeny, and its underlying physiological, anatomical and biochemical causes. I will also present some techniques for assessing the short-term tolerance of plant photosynthetic organs to dehydration, low and high temperature, and excess visible and UV-B radiation, and how the use of these devices is allowing us to test for the trade-off between photosynthetic capacity and abiotic stress tolerance across land plant phylogeny and along Earth biomes. Finally, I will focus on two specific studies: firstly, how commercially available ecophysiological tools allowed for a physiological diagnosis without the need for previous species knowledge along a Chinese transect and, secondly, the particular case of giant cushion Azorella species along the Chilean Andes Range.