

# BOTANICAL INSTITUTE OF BARCELONA



Annual Report 2014



**institut  
botànic**

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# **BOTANICAL INSTITUTE OF BARCELONA**

**Annual Report 2014**

Barcelona, July 2015

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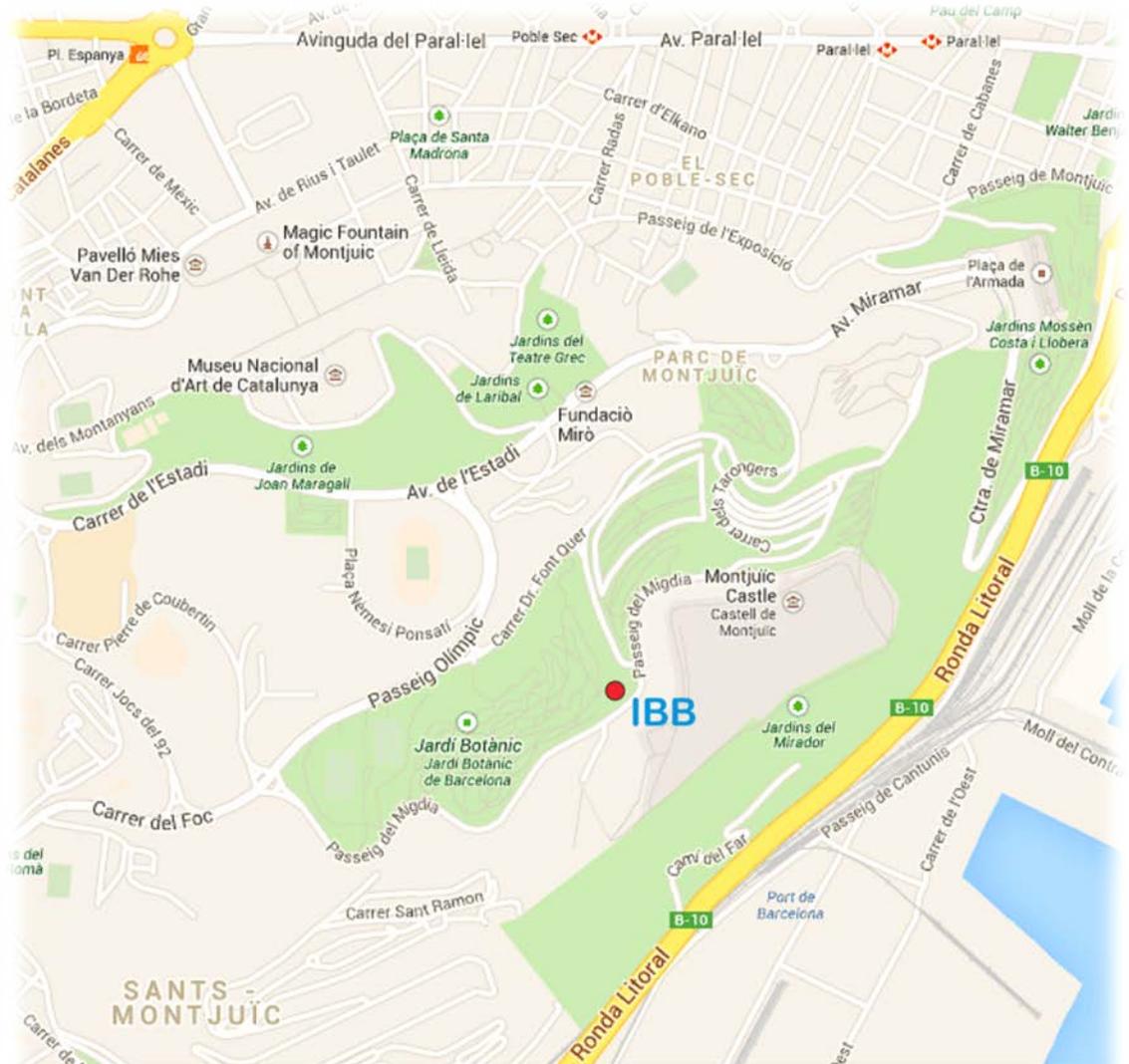
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# THE INSTITUTE



Passeig del Migdia s/n  
08038 Barcelona  
Tel. 93 289 06 11  
<http://www.ibb.bcn-csic.es/>



## INTRODUCTION

### Description

The *Botanical Institute of Barcelona* (IBB) is a joint venture between the Spanish National Research Council (CSIC) and the Barcelona City Council (AB). In 2011, the Consortium of the Natural Sciences Museum of Barcelona (MCNB) was created, integrating the municipal section of the IBB and the Botanical Garden of Barcelona (JBB). The Institute was established in 1934; in 1942 Pius Font i Quer was appointed as tenured scientist for the Institute. In 1986, IBB was incorporated as an associated centre; one year later, the first tenured scientist of IBB's modern era joined the institution. In 1998, a new agreement was signed with the City Council creating the Institute as a joint centre.

The second largest botanical centre in Spain, IBB stands out due to both its scientific significance and the volume of its collections. Current botanical collections include approximately 800,000 herbarium specimens. These collections, as well as the specialised library, are part of the CSIC Library Network, which can be accessed via the Internet and is fully accessible to all interested researchers. The IBB also holds the Salvador Cabinet, one of the few naturalist collections of the Enlightenment period still preserved. This collection includes a variety of specimens: fossils, shells, seeds, various animal and plant products and the herbarium. Holdings also include a scientific, medical and pharmaceutical library from the 16th and 18th centuries—one of the most important libraries of its kind in the world.

The IBB is located in *Montjuïc Park*, one of the most emblematic areas of Barcelona, both culturally and historically. The previous building—occupying a construction from the 1929 Barcelona Universal Exposition—corresponded to the second headquarters of the Institute, close to the National Palace. Currently, the IBB is located in a newer building (2003), located atop the *Botanical Garden of Barcelona* (JBB)—an institution with which it has a close relationship.

### Mission and objectives

Under the current agreement between the Research Council (CSIC) and City Council (AB), signed June 5, 2008, the Institute's mission is to promote quality research in the various branches of Botany, with the following objectives:

- *To contribute to research advancement and technological development in all branches of botanical sciences according to the guidelines laid down in successive strategic plans of the IBB.*

- *To provide scientific advice to the Botanical Garden of Barcelona.*
- *To train research personnel and support postgraduate teaching.*
- *To coordinate general and technical equipment services to make better use of existing resources as well as those acquired after the implementation of this agreement.*
- *To promote collaborations with other national and international centres.*
- *To collaborate with the government by contributing to the advancement of industry, transference of knowledge and research results.*



Botanical Institute of Barcelona. Photo: IBB

## ORGANIZATIONAL STRUCTURE

### Management

**Director:** Valentí Rull del Castillo

**Deputy Director:** Ángel María Romo Díez

**Manager:** Joan Lambea Castro

### Departments

Currently, the IBB is structured in three units or departments, with their corresponding departmental heads:

- Research (Roser Vilatersana Lluch)
- Library and Archive (Karina Barros Ferradás)
- Collections (Neus Ibáñez Cortina)

### Scientific Advisors

The scientific advisory board is comprised of researchers from the institute, including public officials and those employed with doctorates. In 2014, the board was comprised by:

- Marisa Alarcón Caveró
- Juan José Aldasoro Martín
- Núria Garcia Jacas
- María Teresa Garnatje Roca
- Neus Ibáñez Cortina
- Sara López Vinyallonga
- Noemí Montes Moreno
- Ángel María Romo Díez
- Valentí Rull del Castillo
- Alfonso Susanna de la Serna
- Roser Vilatersana Lluch

## Institute's Scientific Board

The Scientific Board of the Institute is constituted by the department heads, along with three labour representatives for employees under contract (permanent and temporary), the director, the deputy director and the manager of the IBB. During 2014, the Board has been composed by:

- Valentí Rull del Castillo (Director)
- Ángel María Romo Díez (Deputy Director)
- Juan José Aldasoro, Teresa Garnatje Roca (Research)
- Karina Barros Ferradás (Documentation)
- Neus Ibáñez Cortina (Collections)
- Joan Lambea Castro (Manager)
- Sergi Massó Alemán (Temporary Personnel)
- Anna Maria Prats Solano (Permanent Personnel)
- Diana Muñoz Pérez (Temporary Personnel)

## Governing Unit

The highest governing and management body is the governing unit, consisting of two representatives from the City Council (appointed by the mayor of the city), two representatives from the Research Council (appointed by the president of CSIC) and the Director and Manager of the IBB, with the Manager acting as the Secretary. The governing unit in 2014 was composed by:

- Josep Lluís Alay (Barcelona's Institute for Culture)
- Anna Omedes (Barcelona's Natural Sciences Museum)
- Lluís Calvo (CSIC delegate in Catalonia)
- Xavier Querol (Coordinator of the Natural Resources Area)
- Valentí Rull del Castillo (IBB Director)
- Joan Lambea Castro (IBB Manager)

## PERSONNEL

### CSIC

#### Public officials

- Juan José Aldasoro Martín (Tenured Scientist)
- Karina Barros Ferradás (Librarian)
- Núria Garcia Jacas (Tenured Researcher)
- Maria Teresa Garnatje Roca (Tenured Scientist)
- Joan Lambea Castro (Manager)
- Montserrat Roig Lozano (Accounts Payable)
- Ángel María Romo Díez (Tenured Scientist)
- Valentí Rull del Castillo (Tenured Scientist)
- Alfonso Susanna de la Serna (Tenured Researcher)
- Roser Vilatersana Lluch (Tenured Scientist)

#### Employed (temporary)

- Marisa Alarcón Caveró (JAE-doc) September 2011-2014
- Airy Gras Mas (Contract by project)
- Sara López Vinyallonga (Support Technician, *Mr. Uriach Donation*) June 2013/March 2014
- Noemí Montes Moreno (Support Technician, *PTA Ministry – 2011/2014*)

### Barcelona City Hall

#### Public officials

- Rosa Fernández Fernández (Herbarium Assistant)
- Neus Ibáñez Cortina (Collections Director and Curator)
- María Jiménez Rodríguez (Receptionist)
- Isidora Manso Calzada (Library Assistant)

#### Employed (permanent)

- Neus Nualart Dexeus (Collections Curator)
- Jordi Pallàs Serra (Herbarium Technician)

- Anna Maria Prats Solano (Herbarium Assistant)
- Miquel Veny Mesquida (Collections Curator)

### Employed (temporary)

- Josep Aurell Garrido (Archivist, self-employed)
- Natàlia Hervàs Fernández (Restorer, self-employed)
- Álvaro Mélendez Galan (Archivist, self-employed)
- Diana Muñiz Pérez (Archivist, Nubilum)
- Trini Prunera Pardell (Archivist, Nubilum)
- Noemí Montes Moreno (Archivist, Casal & Badosa and self-employed)

### Collaborators

- Ugo D'Ambrosio Palau
- Laura Gavioli
- Carlos Gómez Bellver
- Jordi López Pujol
- David Pérez Prieto

### Predoctoral researchers

- Núria Cañellas Boltà (FPI Fellow)
- Pau Carnicero Campmany (UAB Fellow)
- Almudena Galian Millán
- Sandra Garcés Pastor (Collaboration Fellowship, UB)
- Sara Garcia Aloy
- Arantzazu Lara Corbacho (Contract 'Obra i Servei') May/August 2014
- Julià López Vila
- Gemma Mas Xarxars Giner (ADR-UB Fellow)
- Sergi Massó Alemán (ADR-UB Fellow)
- Montserrat Rigat Coll
- Elisabet Safont Crespo (APIF-UB Fellow)
- Daniel Vitales Serrano (FPU Fellow)

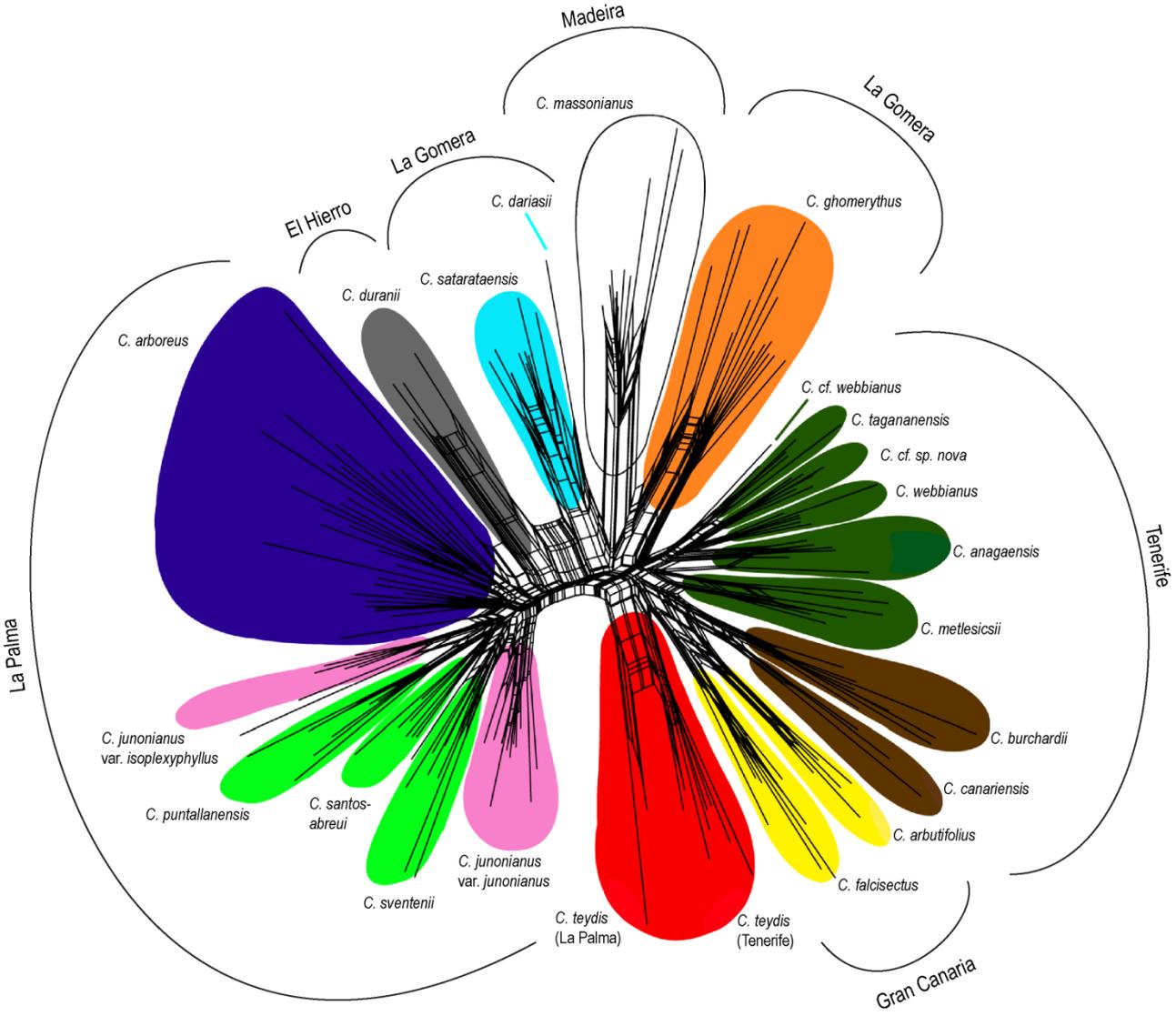
## Associated Researchers

Following CSIC's regulations, two Associated Units were created in 2013, corresponding to the Ecology Department (Faculty of Biology) and the Botany Unit (Department of Natural Products, Plant Biology and Edaphology, Faculty of Pharmacy), both at the University of Barcelona (UB). These associated units were approved on June 24, 2013 and have a term of 3 years.

By virtue of its approval, the following researchers are considered IBB Associated Researchers:

- Sònia Garcia Giménez (Faculty of Pharmacy, University of Barcelona)
- Joan Martín Villodre (Faculty of Pharmacy, University of Barcelona)
- Joan Vallès Xirau (Faculty of Pharmacy, University of Barcelona)
- Teresa Vegas Vilarrúbia (Faculty of Biology, University of Barcelona)

# RESEARCH





## RESEARCH LINES

Currently, the IBB focuses on three main lines of research:

- Biodiversity
- Palynology and Paleoecology
- History of Botany

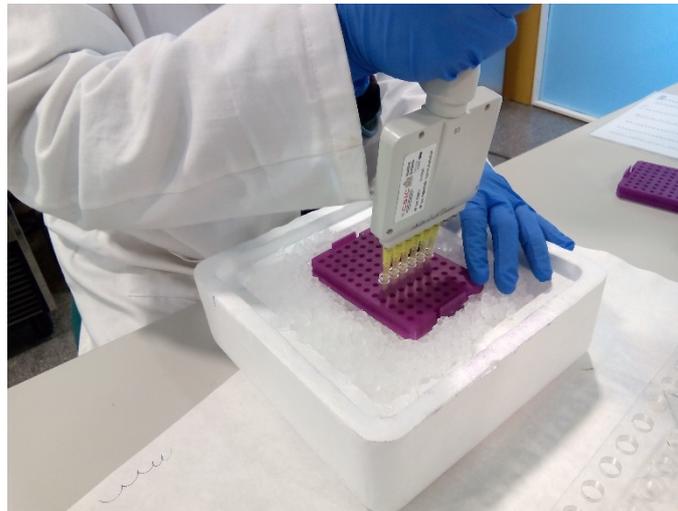
These lines constitute the official Research Groups at IBB, compiled in CSIC's Strategic Plan for 2014-2017. Amongst them, the third research line is financed by the City Hall of Barcelona.

### Biodiversity

#### Systematics, evolution, biogeography, cytogenetics and plant conservation

- *Systematics and molecular studies of different taxonomic groups* (mainly Asteraceae, Campanulaceae, Geraniaceae, Plantaginaceae, Capparidaceae, Cupressaceae and Pinaceae), elaboration of dated phylogenetic trees and analysis of diversification rates.
- *Studies on the evolution of characters* in the biology of each group and of adaptation and coevolution processes with their pollinators.
- *Biometric studies* on functional traits in plants living in extreme environments.
- *Biogeographic analyses* using diversification-extinction-cladogenesis (DEC) or dispersion and vicariance (DIVA).
- *Identification of biodiversity concentration areas* ("hotspots") and on potential refuges. Study of ecological and climatic factors conditioning distribution using niche modelling with past, present and future climatic layers.
- *Phylogeographic analyses, genotyping, neutrality and effective population size tests* to deepen knowledge on the recent history of each studied group.
- *Studies on the role of hybridization* in evolution and genesis of new species.
- *Studies on the origin and patterns of colonization in invasive species.*
- *Genetic and demographic studies on botanical groups facing diverse challenges* (especially taxa included in red lists). Analyses of genetic variability and structure in the studied species. Proposal of conservation measures and criteria to preserve genetic and functional variability in various menaced species (population prioritization, germplasm banks, etc.). Elaboration of management, conservation and recovery plans.

- *Palynology*. Studies on the morphology of pollen grains under light microscopy to determine size, under scanning electron microscopy to determine ornamentation, and under transmission electron microscopy to study exine ultrastructure.
- *Karyology*. Chromosome counts are carried out to establish the evolution of chromosome numbers and ploidy levels in the studied groups.
- *Molecular cytogenetics*. We carry out fluorochrome banding techniques, fluorescence in situ hybridization (FISH) and staining of organizer nucleolar regions (NOR), as well as numerous research studies about ribosomal DNA and telomeric regions in several plant groups. We have developed a database which the most relevant data acquired in this field ([www.plantrdnadatabase.com](http://www.plantrdnadatabase.com)). We study the role of transposable elements (TEs) in plant genome evolution through NGS.
- *Genome size*. We carry out measurements of nuclear DNA content by flow cytometry of the studied species.
- Update data bases on nuclear DNA amounts in Asteraceae ([www.asteraceagenomesize.com](http://www.asteraceagenomesize.com)) and ribosomal DNA ([www.plantrdnadatabase.com](http://www.plantrdnadatabase.com)) in order to analyse the data and to establish general patterns of evolution.



Laboratory research. Photo: IBB

## Ethnobotany

Study of ethnobotanical Catalan-speaking territories and their comparison with other territories, mostly Iberian and Mediterranean, including the following focuses of interest:

- *Ethnofloristic studies*. One purpose of these studies is to contribute to the creation of an inventory of cultural and natural heritage. Additionally, our intention is to constitute one of the stages of bioprospection, searching forms of exploitation and management of biodiversity.
- *Study of agro-ecosystems, particularly homegardens*. Ecosystems shaped by farming activities not only provide a reservoir of wild and cultivated biodiversity, but also the management practices and knowledge, which makes them of particular interest.
- *Study of wild edible plants*. We address our efforts concerning wild edible plants and minor crops to the compilation of the traditional knowledge of these types of plants with ethnobotanical prospections in the territories we study. We also try to understand current status and how far the perception and consumption of these plants by people has varied over time.
- *Phytonomy*. Popular names of plants are one of the most abundant and diverse ethnobotanical data sets. Catalan names of plants are first compiled and then we study their variation, geographical distribution, originality and ethnobotanical meaning.

## Palynology and Paleoecology

- *Reconstruction* of temporal dynamics of ecosystems and analysis of potential causes.
- *Study* of biotic responses to past climate changes.
- *Evaluation* of possible consequences of future climate changes and suggestions of conservation strategies.
- *Analysis* of human influences (deforestation, fire, agriculture, etc.) on biotic communities and landscape through history.
- *Contribution* to knowledge on present biodiversity's origin and biogeographical patterns.
- *Contribution* to understand processes responsible for current community's configurations.
- *Promotion* of the usage of Palynology and Paleoecology in botanical and ecological studies, as well as in conservation biology.
- *Analysis* of the relations between science and society.

## History of Botany and Analysis of Collections

This research group studies the various herbaria of the Botanical Institute of Barcelona (IBB) from the following perspectives:

- *Taxonomical*: search for types and sheets of taxonomic and / or nomenclatural interest.
- *Historical*: study of the history of the collections and the botanists and correspondents who worked in their construction through their documentation and correspondence.
- *Geographical*: quantitative study of the regions where specimens were collected.
- *Conservation*: study of the specimens collected in places where they are currently extinct or in decline and review the representativeness in the herbarium of endemic and threatened taxa; we include the contribution of new chorological, altitudinal, chronological, phenological dating and taxa with risks of over collection.
- *Gardening*: study of plants cultivated in ancient times and follow-up of the introduction of alien species still preserved in the herbaria.
- *Biodiversity*: assessment of the representativeness of certain families in the herbarium, characterizing them from geographical, chronological, ecological and taxonomic points of view, studying their floristic richness at different geographic levels.

Our primary objective is to promote the value of IBB herbaria as witness for comparison and classification of taxa, to verify examples of possible extinction due to climate change, and to date the introduction of alien plants in our country.

We also seek to demonstrate the importance of herbaria for the development of floristic, taxonomic and biodiversity studies while highlighting herbaria as repositories of information concerning the distribution, ecology, phenology and variability of taxa.

Currently we are working on three main themes:

- Study of the Trèmols herbarium and *Hieracium* collection
- Study of the Salvador Cabinet
- Analyses of Collections

## PROJECTS

### Internal

Elementos transponibles y evolución de plantas. Una aproximación multidisciplinar en especies no modelo (CGL2013-49097-C2-2-P). *Secretaría de Estado de Investigación, Desarrollo e Innovación. Ministerio de Economía y Competitividad*. 2014 – 2016. Principal Investigator: **T. Garnatje**, G. Nieto (project coordinator). IBB participants: **T. Garnatje, J. Vallès, D. Vitales, J. Martín & S. Garcia**.

¿Es el gen del ADN ribosómico 5S, parte esencial de los ribosomas, un antiguo retrotransposón? Primeras aproximaciones en plantas. *Ministerio de Ciencia e Innovación (MICINN)*. Program EXPLORA. Modality (BFU2011-14035-E). 2013-2014. Principal Investigator: **T. Garnatje**. IBB participants: **S. Garcia**

### External

Biogeografía de los sabinares de *Juniperus turbinata* Guss en la reserva de la biosfera de El Hierro y en el parque nacional de Doñana. *Ministerio de Ciencia e Innovación, Plan Nacional I+D+I (CSO2011-24425)*. 2012-2014. Principal Investigator: Montserrat Salvà (University of Barcelona). IBB participants: **A. Romo**.

Conservación de la flora vascular neotropical. Región de Guayana. (GUAYANA). Project 201430E007. CSIC. 2014. Principal Investigator: **V. Rull**.

Críteris i propostes de gestió a partir de l'estudi de biologia reproductiva de la població de *Delphinium bolosii* al Parc Natural de Sant Llorenç del Munt i l'Obac (FBG307801). *Servei d'Espais Naturals de la Diputació de Barcelona*. 2014. Principal Investigator: C Blanché & M. Bosch. IBB participants: **S. Massó & J. López**.

Cross-disciplinary Palaeo-Environment Research Training (XPERT) network. League of European Research Universities. 2014-2015. Principal Investigator: William Gossling (Univ. Amsterdam). IBB participant (University of Barcelona coordinator): **T. Vegas**.

Eje Biodiversidad del Observatorio Pirenaico del cambio climático. Project: "Atlas florístico del Pirineo y seguimiento de neveros con *Salix herbacea*" (EFA 235/11 OPCC). European Union. Program of interterritorial cooperation Spain-France-Andorra (POCTEFA). 2012-2014.

Principal Investigator: Iñaki Aizpuru (IHOBE) and Gerard Largier (CBNPMP). IBB participants: **N. Ibáñez, N. Nualart, N. Montes & D. Pérez.**

Evaluation of Tropical Forests Sensitivity to Past Climate Change (FORSENS) NE/J018562/1. Natural Environmental Research Council (Ministry of Research and Environment, United Kingdom). *The Open University*. 2012-2015. Principal Investigator: E. Montoya. IBB participant: **T. Vegas.**

Factores socioculturales en la recolección y consumo de plantas silvestres alimentarias y cultivos menores. Estudios de caso en la Península Ibérica y las Islas Baleares. *Ministerio de Economía y Competitividad, Plan Nacional I+D+I (CSO2011-27565)*. 2012-2014. Principal Investigator: Victòria Reyes-García (ICTA- Autonomous University of Barcelona). IBB participants: **T. Garnatje & J. Vallès.**

High-resolution paleoecology of varved sediments from lake Montcortès during the last 500 years: from the Little Ice Age to the Global Warming. (MONTCORTÈS-500) (CGL2012-33665). Principal Investigator: Teresa Vegas (University of Barcelona.). 2013-2016. IBB participant: **V. Rull.**

Molecular analysis of evolutionary processes in a group of alpine willow *Salix retusa* agg. in the taxonomical, biogeographical and population context. *The National Science Centre (NCN)*, Poland (N N303 798240). 2011-2014. Principal Investigator: Piotr Kosiński (Poznań University, Poland). IBB participant: **R. Vilatersana.**

Reconstruyendo la historia de los bosques pirenaicos para mejorar su manejo y predecir su respuesta al cambio clim. *Ministerio de Medio Ambiente y Medio Rural y Marino, Organismo Autónomo de Parques Nacionales (OPAN-387/2011)*. Principal Investigator: Jesús Julio Camarero (*Instituto Pirenaico de Ecología, CSIC*). 2012-2014. IBB participants: **T. Vegas & V. Rull.**

Tetraether membrane and alkyl lipids in Iberian lakes as proxies for continental climate reconstruction (TETRACLIM). CGL2010-15000-BTE. *Ministerio de Economía y Competitividad*. Autonomous University of Barcelona. 2012-2015. Principal Investigator: Antoni Rosell Melé (ICREA, UAB). IBB participant: **T. Vegas.**

## Contracts with companies

Desarrollo de marcadores moleculares para identificación mediante *DNA fingerprinting* de las razas cromosómicas de *Achillea millefolium*. "Uriach-Achillea Laboratories (Uriach Group)". Principal Investigator: **A. Susanna**. IBB participants: **N. Garcia Jacas, S. López & R. Vilatersana**.

Estudis moleculars amb marcadors AFLP. Funding agency: University of Barcelona. Duration: 2013-2014. Participant IBB participant and responsible researcher: **R. Vilatersana**.

## CONSOLIDATED RESEARCH GROUPS

During 2014, IBB researchers were part of three consolidated research groups, recognized by the Agency for Administration of University and Research Grants (AGAUR) of the Generalitat of Catalonia. These groups are: the "Plant Biodiversity and Biosystematics Group" (GReB), the "Mediterranean Mountains' Landscapes and Paleoenvironments Group", and the "Paleoecology and Evolutionary Ecology Group".

### *Biodiversity and Plant Biosystematics Group (GReB)*

#### Composition

The *Biodiversity and Plant Biosystematics Group* (GReB) consists of researchers from three institutions:

#### *Autonomous University of Barcelona*

- Botany Unit from the Department of Animal Biology, Plant Biology and Ecology at the Faculty of Biosciences

#### *University of Barcelona*

- Botany Unit from the Department of Natural Products, Plant Biology and Edaphology at the Faculty of Pharmacy
- Botany Section from the Department of Plant Biology at the Faculty of Biology
- Department of Physical Geography at the Faculty of Geography and History
- Department of Ecology at the Faculty of Biology

#### Botanical Institute of Barcelona

## Objectives

- *To study the floristic biodiversity in the Western Mediterranean region, aiming to define and catalogue plant biodiversity, as well as to establish the scientific bases to the adequate management of natural resources.*
- *To analyse the evolutionary mechanisms at the root of current plant diversity, through cytogenetic studies, biosystematics, systematics, molecular phylogeny and population biology.*
- *To undertake studies on Conservation Biology applied to threatened species, endangered, endemic or rare in Catalonia and Western Mediterranean.*
- *To study the causes for the current biodiversity in the Neotropical region, origin, evolution and conservation.*

Principal Investigator: **J. Vallès** (University of Barcelona). IBB participants: **M. Alarcón, J.J. Aldasoro, N. Garcia-Jacas, S. Garcia, T. Garnatje, N. Ibáñez, J. López** (technician), **S. López, J. Martín, G. Mas de Xaxars, S. Massó, N. Montes** (technician), **N. Nualart, A. Susanna & R. Vilatersana**.

## *Mediterranean Mountains' Landscapes and Paleoenvironments Group*

### Composition

The Mediterranean Mountains' Landscapes and Paleoenvironments Research Group is constituted by researchers from the following institutions:

University of Barcelona

- Department of Physical Geography
- Service for Landscape Management

Complutense University of Madrid

- Department of Physical Geography

University of Extremadura

- Department of Graphical Expression

University of León

- Department of Physical Geography

University of Lisbon

- Centre of Geographical Studies

Botanical Institute of Barcelona

### Objectives

Analysis and explanation of landscape evolutionary changes throughout the Quaternary and recent times, along with current dynamics, with special emphasis on the Eastern Pyrenees, Sierra Nevada and El Hierro island. These objectives are organized around the following core study areas:

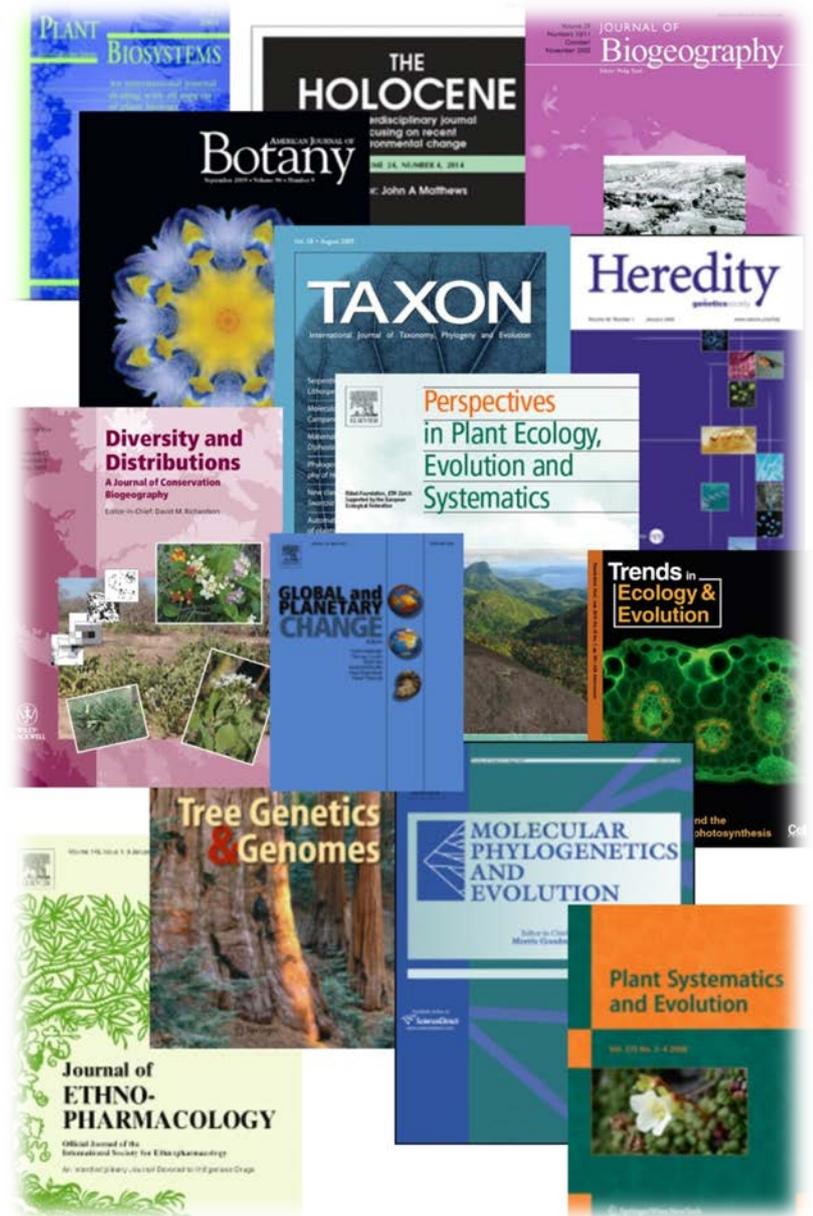
- Geomorphology of cold environments (glaciarism and periglaciarism)
- Geomorphological cartography
- Paleoenvironmental reconstruction of landscape
- Quaternary and Holocene chronology of events
- Historical glaciarism: Little Ice Age
- Current morphogenetic dynamics and processes in cold environments
- Current climate behaviour in natural systems
- Historical evolution of landscape from documentary and natural records
- Landscape and plant dynamics. Biodiversity
- Heritage value of landscape

Principal Investigator: A. Gómez (University of Barcelona). IBB Participant: **A. Romo**.

### *Paleoecology and Evolutionary Ecology*

Consolidated Research Group recognized by the Generalitat of Catalonia. 2014-1016. SGR 1207. Responsible Researcher: Meike Kohler, ICREA Researcher. Adscription centre: Catalan Institute of Palaeontology (ICP), ICP Building, UAB Campus. IBB Participants: **V. Rull & T. Vegas.**

# SCIENTIFIC PRODUCTION





## SCIENTIFIC ARTICLES

### SCI Publications

**Ballesteros, T., Vegas-Vilarrúbia, T.,** Montoya, E., Abbott, M.B., Giralt, S., Stansell, N. & **Rull, V.** 2014. An 8700-year record of the interplay of environmental and human drivers in the development of the southern Gran Sabana landscape, SE Venezuela. *The Holocene*, 24: 1757–1770.

Boratyński, A., Wachowiak, W., Dering, M., Boratyńska, K., Skiewicz, K., Sobierajska, K., Jasińska, A. K., Klimko, M., **Montserrat, J. M., Romo, A.,** Ok, T. & Didukh, Y. 2014. The biogeography and genetic relationships of *Juniperus oxycedrus* and related taxa from the Mediterranean and Macaronesian regions. *Botanical Journal of the Linnean Society* 174: 637–653.

**Cañellas-Boltà, N., Rull, V.,** Sáez, A., Prebble, M. & Margalef, O. 2014. First records and potential paleoecological significance of *Dianella* (Xanthorrhoeaceae), an extinct representative of the native flora of Easter Island. *Vegetation History and Archaeobotany*, 23: 331–338.

Chung, M. Y., **López-Pujol, J.** & Chung, M. G. 2014. Comparative biogeography of the congener lilies *Lilium distichum* and *Lilium tsingtauense* in Korea. *Flora* 209: 435–445.

Chung, M. Y., **López-Pujol, J.,** Chung, J. M., Kim, K.-J. & Chung, M. G. 2014. Contrasting levels of clonal and within-population genetic diversity between the 2 ecologically different herbs *Polygonatum stenophyllum* and *Polygonatum inflatum* (Liliaceae). *Journal of Heredity* 105: 690–701.

Dering, M., Sekiewicz, K., Boratyńska, K., Litkowiec, M., Iszkuło, G., **Romo, A.** & Boratyński, A. 2014. Genetic diversity and inter-specific relations of western Mediterranean relic *Abies* taxa as compared to the Iberian *A. alba*. *Flora* 209: 367–374.

Ferrer-Gallego, P. P., **Susanna, A.,** Laguna, E. & Guara, M. 2014. Lectotypification of *Centaurea alpina* L. (Compositae) and the identity of *Centaurea linaresii* Lázaro Ibiza. *Taxon* 63: 671–674.

Filigheddu, R., Farris, E., Pisanu, S., Urbani, M. & **Susanna, A.** 2014. Validation of *Centaurea x forsythiana* Levier (nomen in sched.). *Phytotaxa* 166: 297–300.

Galbany-Casals, M., Unwin, M., **Garcia-Jacas, N.**, Smissen, R. D., Susanna, A. & Bayer, R. J. 2014. Phylogenetic relationships in *Helichrysum* (Compositae, Gnaphalieae) and related genera: incongruence between nuclear and plastid phylogenies, biogeographic and morphological patterns, and implications for generic delimitation. *Taxon* 63: 606–624.



*Helichrysum confertifolium* Klatt, a South African species. Photo: M. Galbany

**Garcia, S.**, Gálvez, F., Gras, A., Kovarik, A. & **Garnatje, T.** 2014. Plant rDNA database: update and new features. *Database: The Journal of Biological Databases and Curation* 2014: bau063. <http://dx.doi.org/10.1093/database/bau063>

**Garcia, S.**, Leitch, I. J., Anadon-Rosell, A., Canela, M. A., Gálvez, F., **Garnatje, T.**, Gras, A., Hidalgo, O., Johnston, E., **Mas de Xaxars, G.**, Pellicer, J., Siljak-Yakovlev, S., **Vallès, J.**, **Vitales, D.** & Bennett, M. D. 2014. Recent updates and developments to plant genome size databases. *Nucleic Acids Research D1*: D1159–D1166.

Hilpold, A., **Vilatersana, R.**, **Susanna, A.**, Sánchez-Meseguer, A., Boršić, I., Constantinidis, T., Filigheddu, R., Romaschenko, K., Suárez-Santiago, V. N., Tugay, O., Uysal, T., Pfeil, B. E. & **Garcia-Jacas, N.** 2014. Phylogeny of the *Centaurea* group (*Centaurea*, Compositae) –

geography is a better predictor than morphology. *Molecular Phylogenetics and Evolution* 77: 195–215.



*Centaurea princeps* Boiss. & Heldr., endemism from Greece. Photo: A. Susanna

Jasińska, A. K., Boratyńska, K., Dering, M., Sobierajska, K. I., Ok, T., **Romo, A.** & Boratyński, A. 2014. Distance between south-European and south-west Asiatic refugial areas involved morphological differentiation: *Pinus sylvestris* case study. *Plant Systematics and Evolution* 300: 1487–1502.

Khaldi, S., Hidalgo, O., **Garnatje, T.** & El Gazzah, M. 2014. Karyological and genome size insights into cardoon (*Cynara cardunculus* L., Asteraceae) in Tunisia. *Caryologia* 67: 57–62.

López-Alvarado, J., Sáez, L., Filigheddu, R., **Garcia-Jacas, N.** & **Susanna, A.** 2014. The limitations of molecular markers in phylogenetic reconstruction: the case of *Centaurea* section *Phrygia* (Compositae). *Taxon* 63: 1079–1091.

López-Vila, J., Montoya, E., **Cañellas-Boltà, N.** & **Rull, V.** 2014. Modern non-pollen palynomorphs sedimentation along an elevational gradient in the south-central Pyrenees (southwestern Europe) as a tool for Holocene paleoecological reconstruction. *The Holocene*, 24: 327–345.

Mameli, G., López-Alvarado, J., Farris, E., **Susanna, A.**, Filigheddu, R. & **Garcia-Jacas, N.** 2014. The role of parental and hybrid species in multiple introgression events: evidence of homoploid hybrid speciation in *Centaurea* L. (Cardueae, Compositae). *Botanical Journal of the Linnean Society* 175: 453–467.



*Centaurea horrida* Bad., endemism from Sardinia. Photo: S. Pisanu

Reyes-García, V., Aceituno-Mata, L., Calvet-Mir, L., **Garnatje, T.**, Gómez-Baggethun, E., Lastra, J. J., Parada, M., Rigat, M., **Vallès, J.**, Vila, S. & Pardo-de-Santayana, M. 2014. Resilience of traditional knowledge systems: The case of agricultural knowledge in home gardens of the Iberian Peninsula. *Global Environmental Change-Human and Policy Dimensions* 24: 223–231.

Romaschenko, K., **Garcia-Jacas, N.**, Peterson, P. M., Soreng, R. J., **Vilatersana, R.** & **Susanna, A.** 2014. Miocene-Pliocene speciation, introgression, and migration of *Patis* and *Ptilagrostis* (Poaceae: Stipeae). *Molecular Phylogenetics and Evolution* 70: 244–259.

**Romo, A.** & Boratyński, A. 2014. The genus *Cotoneaster* (Rosaceae) in NW Africa. *Willdenowia* 44: 229–239.

**Rull, V.** 2014. Macrorefugia and microrefugia. *Trends in Ecology and Evolution*, 29: 243–244.

**Rull, V.** & Montoya, E. *Mauritia flexuosa* palm swamp communities: natural or human-made? A palynological study of the Gran Sabana region (northern South America) within a neotropical context. *Quaternary Science Reviews*, 99: 17–33.

**Rull, V.** & Vegas-Vilarrúbia, T. 2014. Preliminary report on a mid-19th century Cannabis pollen peak in NE Spain: historical context and potential chronological significance. *The Holocene*, 24: 1378–1383.

**Rull, V.** 2014. The most important application of science. *EMBO Reports*, 15: 919-922.

**Rull, V.** 2014. Conservation, human values and democracy. *EMBO Reports*, 15: 17–20.

Safont, E., **Rull, V.**, Vegas-Vilarrúbia, T., Holst, B.K., Huber, O., Nozawa, S., Vivas, Y. & Silva, A. 2014. Establishing a baseline of plant diversity and endemism in a neotropical mountain summit for future comparative studies assessing upward migration: an approach from biogeography and nature conservation. *Systematics and Biodiversity*, 12: 292–314.

Sanz, M., Schönswetter, P., **Vallès, J.**, Schneeweiss, G. M. & **Vilatersana, R.** 2014. Southern isolation and northern long-distance dispersal shaped the phylogeography of the widespread, but highly disjunct European high mountain plant *Artemisia eriantha* (Asteraceae). *Botanical Journal of Linnean Society* 174: 214–226.

Sekiewicz, K., Sekiewicz, M., **Romo, A.**, Didukh, Y., Fennane, M. & Boratyński, A. 2014. Chorological and conservation status of the endemic cypress, *Cupressus atlantica* Gaussen, in the High Atlas (Morocco). *Dendrobiology* 71: 3–13.

Teillier, S., Macaya, J., **Susanna, A.** & Calleja, J. A. 2014. *Volutaria tubuliflora* (Murb.) Sennen (Asteraceae), a new alien species in Chile. *Gayana Botanica* 71 (2): 276-279.

**Vitales, D., Garnatje, T.**, Pellicer, J., **Vallès, J.**, Santos-Guerra, A. & Sanmartín, I. 2014. The explosive radiation of *Cheirolophus* (Asteraceae, Cardueae) in Macaronesia. *BMC Evolutionary Biology* 14: 118. <http://dx.doi.org/10.1186/1471-2148-14-118>

**Vitales, D.**, García-Fernández, A., Pellicer, J., **Vallès, J.**, Santos-Guerra, A., S Cowan, R., F Fay, M., Hidalgo, O., **Garnatje, T.** 2014. Key Processes for *Cheirolophus* (Asteraceae) Diversification on Oceanic Islands Inferred from AFLP Data. *PLoS one* 9 (11): e113207.

### Non-SCI Publications

Gouja, H., García-Fernández, A., **Garnatje, T.**, Raies, A. & Neffati, M. 2014. Genome size and phylogenetic relationships between the Tunisian species of the genus *Calligonum* (Polygonaceae). *Turkish Journal of Botany* 38 (1): 13–21.

Guillot, D., Laguna, E. & **López-Pujol, J.** 2014. First observations of *Opuntia* ‘Papiki’ as allochthonous in Iberian Peninsula. *Acta Succulenta* 2: 329–342.

Guillot, D., Laguna, E. & **López-Pujol, J.** 2014. *Opuntia ficus-indica* ‘Anacantha’ and ‘Vertex’, first references as cultivated plants in Spain and Europe. *Bouteloua* 19: 129–140.

Guillot, D., Laguna, E., **López-Pujol, J.**, Sáez, L. & Puche, C. 2014. *Kalanchoe x houghtonii* ‘Garbí’. *Bouteloua* 19: 99–128.

Hilpold, A., **García-Jacas, N.**, Vilatersana, R. & **Susanna, A.** 2014. Taxonomical and nomenclatural notes on *Centaurea*: A proposal of classification, a description of new sections and subsections, and a species list of the redefined section *Centaurea*. *Collectanea Botanica* 33: e001.

**López-Pujol, J.** & Guillot, D. 2014. Primeras citas de *Yucca recurvifolia* Salisb. en Cataluña, y una nueva cita de *Yucca gloriosa* L. *Bouteloua* 19: 95–98.

**López-Pujol, J.** & Guillot, D. 2014. *Yucca gigantea* Lem., primeras citas en Cataluña, y área potencial de naturalización en la Península Ibérica e Islas Baleares. *Bouteloua* 19: 212–220.

**Mas de Xaxars, G., Vallès, J., Garnatje, T.,** Mercadé, A., Martín, J., Barnola, P. & Vigo, J. 2014. Relacions entre diverses espècies de *Saxifraga* dels Pirineus i de les muntanyes Catalanídiques. *Butlletí de la Institució Catalana d'Història Natural* 78: 51-61.

**Massó, S. & López-Pujol, J.** 2014. Nuevos datos acerca de la población ilicitana de *Populus euphratica* Oliv. *Flora Montiberica*: 58: 96–98.

Pellicer, J., Hidalgo, O., **Garnatje, T.,** Kondo, K. & **Vallès, J.** 2014. Life cycle versus systematic placement: phylogenetic and cytogenetic studies in annual *Artemisia* (Asteraceae, Anthemideae). *Turkish Journal of Botany* 38: 1112–1122.

Pérez, M., Muñoz, O., **Hervás, N., Ibáñez, N., Aurell-Garrido, J.** & Garcia-Franquesa, E. 2014 El Gabinete de Historia Natural Salvador: intervenciones de conservación preventiva y curativa e inventario preliminar. *Boletín de la Real Sociedad Española de Historia Natural* 2: 87–99.

Rigat, M., **Garnatje, T.,** Moré, E. & **Vallès, J.** 2014. Un receptari medicinal del Ripollès de principis del segle XX. Facsímil, edició crítica i comentaris. *Annals del Centre d'Estudis Comarcals del Ripollès 2011-2012*: 73–128.

**Rull, V.** 2014. The social utility of science. *Collectanea Botanica*, 33: e008.

**Rull, V.** 2014. Biodiversity, mountains and climate change. *Collectanea Botanica*, 33: e006.

**Rull, V.** 2014. Ecological palaeoecology: a missing link between ecology and evolution. *Collectanea Botanica*, 33: e005.

**Rull, V.** 2014. Time continuum and the true long-term ecology: from theory to practice. *Frontiers in Ecology and Evolution*, 2: 75.

Sánchez-Bou, C. & **López-Pujol, J.** 2014. The coming revolution: the use of drones in plant conservation. *Collectanea Botanica* 33: e007.

**Vallès, J.,** Baši, N., Boguni, F., Bourge, M., Brown, S. C., **Garnatje, T.,** Hajrudinovi, A., Muratovi, E., Pustahija, F., Šoli, E. M. & Siljak-Yakovlev, S. 2014. Contribution to plant genome size knowledge: first assessments in five genera and 30 species of angiosperms from western Balkans. *Botanica Serbica* 38: 25–33.

Vivas, Y., Nozawa, S., Holst, B. & **Safont, E.** 2014. Roraima: Expediciones para desentrañar un jardín en las alturas. *Ambitus*, 4: 18-21.

### Book chapters and other publications

**Alarcón, M.**, Aldasoro, J. J., Roquet, C. & Olesen, J. M. 2014. The evolution and pollination of oceanic bellflowers (Campanulaceae). In: P. Pontarotti (Ed.) *Evolutionary Biology: Genome Evolution, Speciation, Coevolution and Origin of Life*. Springer International Publishing. Pp. 301-322

**Alarcón, M. & Aldasoro, J.J.** 2014. Genetic diversity of plants used for food in the Mediterranean. In: Preedy V.R & Watson, R. (Eds.) *The Mediterranean Diet: An Evidence-Based Approach To Disease Prevention*. Academic Press, London, UK. Pp. 601-610.

Bejarano, R., **Romo, A.** & Salvá, M. 2014. Fitodiversidad del sabinar de *Juniperus turbinata* Guss. del Parque Nacional de Doñana. In: Cámara R., Rodríguez B. & Muriel J.L. (Eds.), *Biogeografía de Sistemas Litorales. Dinámica y Conservación*. Pp: 193-196.

Gutiérrez, D. G. & **López-Vinyallonga, S.** 2014. *Arctium* L. In: Zuloaga, F. O, Rugolo, Z. E. & Anton, A. M. (Eds.), *Flora Argentina 7*. Instituto Multidisciplinario de Biología Vegetal (CONICET-UNC), Argentina. Pp: 272–274.

Gutiérrez, D. G. & **Vilatersana, R.** 2014. *Carthamus* L. In: Zuloaga, F. O, Rugolo, Z. E. & Anton, A. M. (Eds.), *Flora Argentina 7*. Instituto Multidisciplinario de Biología Vegetal (CONICET-UNC), Argentina. Pp: 277–279.

Gutiérrez, D. G., **García-Jacas N. & Susanna, A.** 2014. *Plectocephalus* D. Don. In: Zuloaga, F. O, Rugolo, Z. E. & Anton, A. M. (Eds.), *Flora Argentina 7*. Instituto Multidisciplinario de Biología Vegetal (CONICET-UNC), Argentina. Pp: 293–294.

Gutiérrez, D. G., **García-Jacas N. & Susanna, A.** 2014. *Centaurea* L. In: Zuloaga, F.O, Rugolo, Z.E. & Anton, A.M. (Eds.), *Flora Argentina 7*. Instituto Multidisciplinario de Biología Vegetal (CONICET-UNC), Argentina. Pp: 279–288.

Gutiérrez, D. G., **García-Jacas N. & Susanna, A.** 2014. *Rhaponticum* Vaill. In: Zuloaga, F. O, Rugolo, Z. E. & Anton, A. M. (Eds.), *Flora Argentina 7*. Instituto Multidisciplinario de Biología Vegetal (CONICET-UNC), Argentina. Pp: 294–295.

**López-Pujol, J.**, Bosch, M., **Massó, S.**, Molero, J., Simon, J., Rovira, A. M. & Blanché, C. 2014. Estudi preliminar de variabilitat isoenzimàtica de *Delphinium bolosii* al Parc Natural de Sant Llorenç del Munt i l'Obac. In: *VIII Monografies de Sant Llorenç del Munt i l'Obac*. Diputació de Barcelona, Barcelona. Pp: 208-218.

Martinell, M. C. & **López-Pujol, J.** 2014. *Seguiment de Seseli farrenyi. Seguiment i estudi demogràfic: Resultats 2012-2013*. Commissioned by the Cap de Creus Natural Park (Departament d'Agricultura, Ramaderia, Pesca, Alimentació i Medi Natural de la Generalitat de Catalunya), Barcelona (unpublished), 161 pp.

Molero, J., Blanché, C., Rovira, A., Simon, J., Bosch, M., **López-Pujol, J.** & **Massó, S.** 2014. *Criteris i propostes de gestió a partir de l'estudi de biologia reproductiva de la població de Delphinium bolosii al Parc Natural de Sant Llorenç del Munt i l'Obac – Metodologia*. Commissioned by the Servei d'Espais Naturals de la Diputació de Barcelona, Barcelona (unpublished), 23 pp.

Molero, J., Blanché, C., Rovira, A., Simon, J., Bosch, M., **López-Pujol, J.** & **Massó, S.** 2014. *Criteris i propostes de gestió a partir de l'estudi de biologia reproductiva de la població de Delphinium bolosii al Parc Natural de Sant Llorenç del Munt i l'Obac – Informe final*. Commissioned by Servei d'Espais Naturals de la Diputació de Barcelona, Barcelona (unpublished), 95 pp.

Nuet, J., **Romo, A. M.**, Salvà, M. & Salvador, F. 2014. *Les fagedes de la Calma (Montseny, Catalunya). Descripció, fitodiversitat i caracterització fitosociològica / Los hayedos de La Calma (Montseny, Cataluña). Descripción, fitodiversidad y caracterización fitosociológica / Beech forests of La Calma (Montseny, Catalonia). Description, phytodiversity and phytosociological characterization*. In: Duran, C, Hernández, J., Grau, J. & Melero, J. (Eds.), *VIII Monografies del Montseny* (Col·lecció Documents de Treball. Sèrie Territori, 25). Diputació de Barcelona, Barcelona. Pp: 159–185.

Pérez J., **Romo A.**, Nuet J., Salvà M. & Salvador F. 2014. *La vegetación del glaciar rocoso relicto de la Coma de l'Embut (macizo del Puigmal, Pirineos Orientales). Datos preliminares*. In: Gómez A., Salvador F., Oliva, M. & Salvà M. (Eds.). *Avances, métodos y técnicas en el estudio del periglaciario/Avanços, métodos e tècniques para o estudo do periglaciario*. Publicacions i Edicions de la Universitat de Barcelona. Barcelona. Pp: 189-201.

**Romo, A.**, Boratyński, A. & Salvà-Catarineu, M. 2014. *Diversidad funcional de los sabinares en una isla oceánica: el hierro, islas canarias*. In: Cámara R., Rodríguez B. & Muriel J.L. (Eds.), *Biogeografía de Sistemas Litorales. Dinámica y Conservación*. Pp: 197-201.

Salvà, M., **Romo, A.**, Salvador, F., Cortés, Padrón, P.A, Boratyński, A., Rodríguez A. & López J.A. 2014. *Estructura y características ambientales de los sabinares de *Juniperus turbinata* Guss. en la Isla de El Hierro (Islas Canarias)*. In: Vieira, A. & Pedro Julião, R. (Coord.), *Ajangada de Pedra– Geografias Ibero-Afro-Americanas. Actas do Colóquio Ibérico de Geografia. Associação Portuguesa de Geógrafos e Departamento de Geografia da Universidade do Minho*. Pp: 1904-1909.

## COMUNICACIONES IN CONGRESSES AND SEMINARS

### Oral presentations

**Alarcón, M.** 2014. Diversification and migrations in the Afro-Macaronesian bellflowers. *Seminars of the Botanical Institute of Barcelona, Barcelona, Spain.*

**Alarcón, M.**, Roquet, C. Vargas, P. Saéz, L. Molero, J., & **Aldasoro, J.J.** 2014. Diversification and migrations in the Afro-Macaronesian Bellflowers. *XI Reunión de ECOFLOR, Grupo de Trabajo de la AEET. Puerto Real, Cádiz, Spain.*

**Aldasoro, J.J.** 2014. The evolution and pollination of oceanic bellflowers (Campanulaceae). *Seminars of the Botanical Institute of Barcelona, Barcelona, Spain.*

Bejarano, R., **Romo, A.** & Salvà, M. 2014. Fitodiversidad del sabinar de *Juniperus turbinata* Guss. del Parque Nacional de Doñana. *VIII Congreso Español de Biogeografía, Sevilla, Spain.*

**D'Ambrosio, U., Gras, A.,** Castells, P., **Garnatje, T., Vallès, J.,** Vila, M. 2014. Classification of plant and fungal culinary products: an attempt of compromise between folk and scientific approaches and its educational implications. *International Congress of Ethnobotany (ICEB 2014). Córdoba, Spain.*

García-Aloy, S., **Alarcón, M.**, Roquet, C. & **Aldasoro, J.J.** 2014. Evolución del hábito y del sistema reproductivo en *Monsonia* (Geraniaceae). *XI Reunión de ECOFLOR, Grupo de Trabajo de la AEET. Puerto Real, Cádiz, Spain.*

**Gras, A,** Carrió, E., Font, X, **Garnatje, T.,** Mayans, M., Muntané, J., Parada, J., Parada, M., Reyes-García, V., Rigat, M., **Serrasolsas, G.,** Sobrequés, X. & **Vallès, J.** 2014. El Banc de Dades de Biodiversitat de Catalunya i l'etnobotànica catalana. *VII Jornades d'Etnobotànica en Llengua Catalana. Llívia, Spain.*

**Guerrero-López, C., Garnatje, T., Vallès, J & Vitales, D.** 2014. Radiació, ma non troppo: el cas de les artemísies macaronèsiques. *XIV Jornada de Biologia Evolutiva. Barcelona, Spain.*

Moré, E., **Garnatje, T.,** Rigat, M. & **Vallès, J.** 2014. Un receptari medicinal del Ripollès de principis del segle XX. Edició crítica i comentaris. *VII Jornades d'Etnobotànica en Llengua Catalana. Llívia, Spain.*

Parada, M., Carrió, E., **Gras, A., Guerrero-López, C., Serrasolsas, G., Vallès, J. & Garnatje, T.** 2014. Una forma inusual de difusió del patrimoni etnobotànic: la credibilitat en un mitjà increïble. *VII Jornades d'Etnobotànica en Llengua Catalana. Llívia, Spain.*

Reyes-García, V., Aceituno-Mata, L., Acosta, R., Calvet-Mir, L., Carrió, E., Domínguez, P., **Garnatje, T.**, Gómez-Bagetthun, E., Lastra, J.J., Martínez, X., Menendez, G., Parada, M., Pardo de Santayana, M., Tardío, J. & **Vallès, J.** 2014. Famine food or delicatessen? Trends in the consumption of wild food plants in the Iberian Peninsula and Balearic Islands. *International Congress of Ethnobotany (ICEB 2014). Córdoba, Spain.*

Rigat, M., **Gras, A.**, Iglésias, J., **Vallès, J. & Garnatje, T.** 2014. Estudis etnobotànics a la comarca del Ripollès: les plantes amb usos tòpics. *VII Jornades d'Etnobotànica en Llengua Catalana. Llívia, Spain.*

**Romo, A.**, Seghir M. & Boratyński, A. 2014. The Yew (*Taxus baccata*) in Morocco: a tree in regression in its southern extreme. *IV International Yew Workshop. Monestir de Poblet, Spain.*

**Romo, A.**, Boratyński A. & Salvà M. 2014. Diversidad funcional de los sabinares en una isla oceánica: El Hierro, Islas Canarias. *VIII Congreso Español de Biogeografía, Sevilla, Spain.*

**Rull, V.** 2014. *Mauritia flexuosa* palm swamps of the neotropical Gran Sabana: Natural or human-made? *Seminars of the Botanical Institute of Barcelona. Barcelona, Spain. Invited.*

**Rull, V.** 2014. Lake Montcortès: Landscape evolution over the last millennium. *Associació Cultural "Lo Vent de Port", Peramea, Spain. Invited.*

**Rull, V.** 2014. Paleopalynology in Catalonia: current status, mythes and perspectives. *Institut d'Estudis Catalans (IEC), Barcelona, Spain. Invited.*

**Rull, V.** 2014. The origin of extant neotropical biodiversity: some persisting problems and a potential solution. *ESF Exploratory Workshop Tracking Changes in Plant Diversity over the last 400 Million Years, Cardiff, Scotland, United Kingdom. Invited.*

**Rull, V., Cañellas-Boltà, N.**, Sáez, A., Giralt, S., Pla-Rabes, S. & Margalef, O. 2014. Paleocology and human history of Easter Island (southern Pacific Ocean): some problems and potential solutions. *Proceedings of the Workshop "Palaeoenvironment and the development of Early Societies", German Archaeological Institute, Sanliurfa, 2012. Invited.*

Salvà, M., **Romo, A.**, Salvador, F., Cortés, Padrón, P.A, Boratyński, A., Rodríguez A. & López, J.A. 2014. Estructura y características ambientales de los sabinars de *Juniperus turbinata* Guss. en la Isla de El Hierro (Islas Canarias). *XIV Colóquio Ibérico de Geografía, Guimarães, Portugal*.

**Serrasolsas, G.**, Calvet-Mir, L., Carrió, E., **Garnatje, T.**, Reyes-Garcia V. & **Vallès, J.** 2014. Sociocultural factors explaining the consumption of edible wild plants and minor crops. Case studies from Catalan Pyrenees and Balearic Islands. *International Congress of Ethnobotany (ICEB 2014). Córdoba, Spain*.

**Serrasolsas, G.**, **Garnatje, T.** & **Vallès, J.** 2014. Contribució a l'etnobotànica del Gironès occidental. *VII Jornades d'Etnobotànica en Llengua Catalana. Llívia, Spain*.

**Vallès, J.**, Carrió, E., **Garnatje, T.**, **Gras, A.**, Mayans, M., Parada, M., Rigat, M. & **Serrasolsas, G.** 2014. "Herba de les orenetes", "flor de Sant Joan", "octubre", "col d'hivern": diversos aspectes del temps en el saber popular sobre les plantes detectats a través de recerques etnobotàniques en territoris de llengua catalana. *Mirades de la ciència sobre el temps, Barcelona, Spain*.

**Vallès, J.**, **D'Ambrosio, U.**, **Gras, A.**, Parada, M., Rigat, M., **Serrasolsas, G.** & **Garnatje, T.** 2014. In the interface of ethnopharmacology and food ethnobotany. Popular functional foods in Catalonia (Iberian Peninsula). *International Congress of Ethnobotany (ICEB 2014). Córdoba, Spain. Invited*.

**Vegas, T.** 2014. El passat del llac de Montcortès ens ajuda a entendre el canvi climàtic. Multi-purpose center of Montcortès. *Ajuntament del Baix Pallars. Montcortès*.

## Posters

**Ballesteros, T.**, Montoya, E., Vegas-Vilarrúbia, T., Giralt, S., Abbott, M.B. & **Rull, V.** 2014. Interplay of environmental and human drivers in the development of Southern Gran Sabana (SE Venezuela) landscape during the last 2000 years: Lake Encantada record. LOTRED-SA 3rd Symposium, *Climate change and human impact in Central and South America over the last 2000 years: Observations and models, Medellín, Colombia*.

Cao, M., Huguet, C., **Rull, V.**, Corella, J.P., Valero-Garcés, B. & Rosell-Melé, A. 2014. Distribution of branched and isoprenoid tetraeter lipids in Lake Montcortès, Spain. *European Geosciences Union, General Assembly, Vienna, Austria*.

**D'Ambrosio, U., Garnatje, T. & Vallès, J.** 2014. Food plants and transculturation in specialised stores at the metropolitan area of Barcelona, Catalonia, Spain. *International Congress of Ethnobotany (ICEB 2014). Córdoba, Spain.*

López-Vila, J., **Montoya, E. & Rull, V.** 2014. Non-pollen palynomorphs analysis of the last two millennia in the Bassa Nera peat bog record (South-Central Pyrenees, SW Europe). *VI Workshop on Non-Pollen Palynomorphs, Tallinn, Estonia.*

Rigat, M., Gras, A., **D'Ambrosio, U., Iglésias, J., Vallès, J. & Garnatje, T.** 2014. Phytosynergy: when the whole is more than the addition of the parts. A case study in the Ripollès district (Catalonia, Iberian Peninsula). *International Congress of Ethnobotany (ICEB 2014). Córdoba, Spain.*

**Safont, E., Rull, V. & Vegas-Vilarrúbia, T.** 2014. Paleoecological trends of the last 2000 yrs in the Guayana Highlands: preliminary analysis of the Uei-tepui record. LOTRED-SA 3rd Symposium, *Climate change and human impact in Central and South America over the last 2000 years: Observations and models, Medellín, Colombia.*

**Vitales, D.,** García-Fernández, A., Hidalgo, O., Pellicer, J., Sanmartín, I., **Vallès, J.,** Cowan, R., Fay, M., **Garnatje, T.,** Santos-Guerra, A. & Siljak-Yakovlev, S. 2014. The explosive radiation of Cheilolophus (Asteraceae) in Macaronesia: consequences and evolutionary implications. *Island Biology. An International Conference on Island Evolution, Ecology, and Conservation. Honolulu, Hawaii, United States of America.*

# EDUCATION AND KNOWLEDGE TRANSFER





## SERVICE UNITS

With the aim to maximize technological transfer to businesses, to other research and teaching institutions, as well as society in general, IBB has created two service units (PALAB Analytic and CERTIBB). These units offer IBB's personnel, know-how and physical facilities for applied purposes according to the needs of such businesses, institutions and citizens.

### PALAB Analytic

This Service Unit, created in 2012, began operations in 2013.

The Unit offers services both, scientific and public, interested in the distinct and varied applications of Palynology (Paleoecology, Archaeology, Biostratigraphy, Taxonomy, Melisopalynology, etc.). PALAB Analytic services have initiated with the analysis of honey (Melisopalynology) and are targeted for any commercial sector (apiarists, associations, cooperatives, packers, distributors, consumers, etc.) or individual person interested in honey composition, its botanical origin, its organoleptic properties and recommended use according to such characteristics.

#### Types of analyses

- Basic physicochemical analyses (pH, conductivity, % water, HMF, glucose-oxidase, diastase)
- Melisopalynology (regular, detailed)
- Pollen analysis in royal jelly, corbicular pollen, pollen bread, waxes, propolis, bees...
- Sensory analysis (colour, aroma, flavour, smell, consumption recommendations)
- Botanical and biogeographic consulting (honey origin, apiary localization)

### CERTIBB

Its mission is to provide to businesses and society a series of tools based in molecular techniques with the objective to offer the following services:

**Identification service and species certification**, using DNA bar coding techniques that allow us to detect and identify the ingredients that compose a food or medicine with a vegetal origin, and their proportions in various preparations. In a similar way, these techniques allow to identify any sample with a forestry, agrarian or environmental interest.

**Analysis of species, varieties and populations using genotyping techniques**, in order to direct prospections for lineages rich in health-promoting compounds, as well as to value the genetic characteristics of populations, races, varieties, and lineages of plants.

**Consulting** in identifications uses and properties of plants in aspects related with conservation and the environment (invasive species impact, population viability of endemic and/or endangered species, conservation strategies and environmental impact analyses).

**Training** in the different genetic analysis techniques with basic research orientations (systematics, taxonomy, population biology, cytogenetics, ethnobotany, conservation...) and applied (sectors such as alimentary, pharmaceutical, industrial) for company workers and research centers.

#### Types of essays

- DNA extraction, amplification and sequencing.
- Identification of amplified DNA fragments using barcoding techniques.
- Research and development of molecular markers for genotyping, e.g., SSR and AFLPs.
- Data base creation with DNA profiles.

#### Main applications

- Identification of plants with medicinal, alimentary, industrial, agrarian or conservation purposes.
- Characterization of potentially more productive cytotypes/genotypes (agriculture, forestry) or more appropriate for industrial applications.
- Research on species or populations suitable for medicine-oriented bioprospection.



IBB laboratory. Photo: IBB

## IBB'S OWN JOURNAL

### *Collectanea Botanica*

The IBB publishes the scientific journal *Collectanea Botanica*, with a yearly periodicity, which accepts articles on taxonomy and systematics of all plant groups and fungi. It also includes related fields such as biogeography, bioinformatics, cytogenetics, conservation, ecophysiology, phylogeny, phylogeography, floristics, functional morphology, nomenclature and plant-animal relations, as well as reviews and summary works. In 2013, *Collectanea Botanica* was officially included in the SCOPUS/Elsevier data base.

During the year 2014, the Editorial Board of the journal was formed by:

**Director:** Alfonso Susanna de la Serna

**Chief Editor:** Jordi López Pujol

**Secretary:** Àngel María Romo Díez

#### **Editors:**

- María Luisa Alarcón Cavero (IBB)
- Juan José Aldasoro Martín (IBB)
- Mercè Galbany Casals (Autonomous University of Barcelona)
- Sònia Garcia Giménez (University of Barcelona)
- Núria Garcia Jacas (IBB)
- Teresa Garnatje Roca (IBB)
- Neus Ibáñez Cortina (IBB)
- Julià Molero Briones (University of Barcelona)
- Josep Maria Montserrat Martí (Botanical Garden of Barcelona)
- Valentí Rull del Castillo (IBB)
- Llorenç Sáez Goñalons (Autonomous University of Barcelona)
- Roser Vilatersana Lluch (IBB)

The journal also has an Advisory Board, with international focus, constituted by:

- Carlos Aedo Pérez (Royal Botanical Garden of Madrid-CSIC)
- Gabriel Blanca López (University of Granada)
- César Blanché Vergés (University of Barcelona)

- Adam Boratyński (*Institute of Dendrology, Kórnik, Poland*)
- Sílvia Castro (*University of Coimbra, Coimbra, Portugal*)
- Manuel Benito Crespo Villalba (*University of Alacant*)
- Antonio Galán de Mera (*University San Pablo-CEU*)
- Norbert Kilian (*Free University of Berlin, Berlin, Germany*)
- João Loureiro (*University of Coimbra, Coimbra, Portugal*)
- Santiago Ortiz Núñez (*University of Santiago*)
- Joan Pedrol Solanes (*University of Lleida*)
- Toby Pennington (*Royal Botanical Garden Edinburgh, UK*)
- Ernesto Pérez-Collazos (*University of Zaragoza*)
- Santiago Riera Mora (*University of Barcelona*)
- Rob D. Smissen (*Landcare Research, Lincoln, New Zealand*)
- Ignasi Soriano Tomàs (*University of Barcelona*)
- Salvador Talavera Lozano (*University of Sevilla*)
- Joan Vallès Xirau (*University of Barcelona*)

Contents of the journal's volume 33, corresponding to 2014, were the following:

Articles:

- Taxonomical and nomenclatural notes on *Centaurea*: A proposal of classification, a description of new sections and subsections, and a species list of the redefined section *Centaurea*  
*A. Hilpold, N. Garcia-Jacas, R. Vilatersana, A. Susanna*
- *Gutierrezia mendocina* (Asteraceae, Astereae), a new South American species  
*F. Ratto, A. Bartoli*
- Precisiones nomenclaturales en *Phlomis x composita* Pau (*Lamiaceae*)  
*P. P. Ferrer-Gallego, M. Guara, E. Laguna*
- Palynological characteristics of the heterostylous subspecies of *Linum mucronatum* Bertol.  
*S. M. Talebi, F. Farahani, M. Sheidai, Z. Noormohammadi*
- Ecological palaeoecology: a missing link between ecology and evolution  
*V. Rull*

- Biodiversity, mountains and climate change  
*V. Rull*

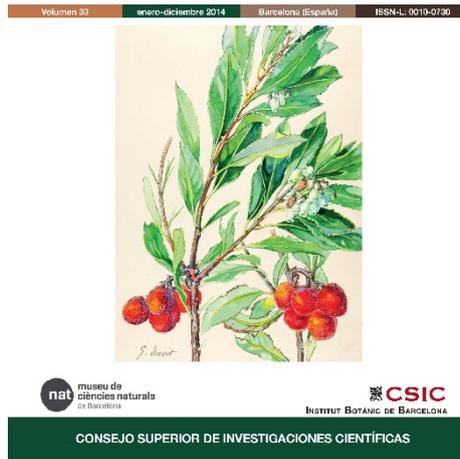
Letters to the Editor:

- The coming revolution: the use of drones in plant conservation  
*C. Sánchez-Bou, J. López-Pujol*
- The social utility of science  
*V. Rull*

News and novelties:

- Inauguració de l'exposició *Salvadoriana*  
*N. Ibañez*

# Collectanea Botanica



*Collectanea Botanica* journal cover, volume 33. Photo: IBB

## TUTORING AND TEACHING

### PhD dissertations

**Cañellas, N.** 2014. Paleoeological study of the Rano Raraku sediments (Easter Island, Chile) during the last 37,000 years. Faculty of Geology, University of Barcelona. Directors: **V. Rull** & A. Sáez.

### Master's theses

Guerrero, C. 2014. Especiación en el complejo d'*Artemisia arborescens* (Asteraceae) en els arxipèlags macaronèsics. Faculty of Biology, University of Barcelona. Directors: **T. Garnatje, J. Vallès & D. Vitales.**

Herrando, S. 2014. Filogeografia del complex d'*Helichrysum pendulum* i implicacions en la taxonomia del grup. Universitat Autònoma de Barcelona. Master's in Land Ecology and Biodiversity Management, Land Ecology specialization. Directors: **R. Vilatersana** & M. Galbany.

Pomar, M. 2014. Conservació d'espècies vegetals en perill crític en les Illes Salvatges. University of Barcelona. Master in Biodiversity. Director: **R. Vilatersana.**

Serrasolsas, G. 2014. Etnobotànica del Gironès. Faculty of Biology, University of Barcelona Directors: **T. Garnatje & J. Vallès.**

Lara, A. 2014. Palynology and paleoecology for the Azores islands during the last millennia. Faculty of Biology, University of Barcelona (UB). Director: **V. Rull.**

### Undergraduate Final Projects

Zani, D. 2014. Phylogeographic and conservational studies of an Iberian endemism, *Carduncellus dianius* (Compositae). *University of Pavia (Italy) – Department of Biology and Biotechnology "L. Spallanzani"*. Tutors: **R. Vilatersana** & A. Balestrazzi.

## Postgraduate Courses

Paleoecology (CSIC's official postgraduate course), 150 hours, 6 ECTS credits. Coordinator: **V. Rull**. Professors: **N. Cañellas Boltà**, **T. Vegas Vilarrúbia**, Santiago Giralt (Earth Sciences Institute Jaume Almera-CSIC) & **V. Rull**. May 2014.

## High School Mentoring

Aldea, C. & Almeida, B. from IES Vielha. 2014. High School Thesis. Tutors: **T. Garnatje** & **J. Vallès**.

Pajares, J., Martínez, M & Espino, V. from IES Pere Calders de Bellaterra. 2014. High School Thesis. Tutor: **T. Garnatje**.

## Classes, presentations and participation in tribunals

Botany class to primary school students. CEIP Tomàs Raguer, Ripoll. 2014. Professor: **T. Garnatje**.

Botany class to continuing education students. 2014. Professor: **T. Garnatje**.

Botany classes to High School students of the IES Pius Font i Quer. Manresa, 2014. Professor: **T. Garnatje**.

Classes in the *Gaudir UB* course: Culinary and gastronomic botany. Badalona, 2014. Professors: **U. D'Ambrosio**, **T. Garnatje**, **A. Mas**, **J. Vallès** & **D. Vitales**.



Gastronomic and Culinary Botany within the *Gaudir UB* program. Photo: IBB.

Class to students of the Fine Arts Faculty about the Salvador Cabinet. October 1, 2014. Professor: **N. Ibáñez.**

Technical Seminar for *Santiveri's* Phytotherapy students. *Research at the Botanical Institute of Barcelona.* May 6, 2014. Professor: **A. Romo.**

Member (Secretary) of the thesis tribunal for Juan Viruel. University of Zaragoza (High Polytechnic School of Huesca). March 2014. Member of the tribunal: **T. Garnatje.**

## DISSEMINATION

### Scientific seminars

- *The evolution and pollination of oceanic bellflowers (Campanulaceae)*. **Juan José Aldasoro**. 28/01/2014. 39 assistants.
- *Història de la vegetació i colonització humana de les Illes Açores*. **Arantzazu Lara**. 25/02/2014. 39 assistants.
- *Mauritia flexuosa palm swamps of the neotropical Gran Sabana: Natural or human-made?* **Valentí Rull**. 25/03/2014. 38 assistants.
- *Diversification and migrations in the Afro-Macaronesian bellflowers*. **Marisa Alarcón**. 29/04/2014. 30 assistants.
- *Key processes for the rapid diversification of Cheirolophus (Asteraceae) on Macaronesian archipelagos*. **Daniel Vitales**. 27/05/2014. 25 assistants.
- *Pius Font i Quer a l'Institut Botànic de Barcelona*. Josep M. Montserrat. 17/06/2014. 42 assistants.
- *Structure, evolution and expression of ribosomal RNA genes in plant genomes*. **Sònia Garcia**. 1/07/2014. 22 assistants.
- *Montocortès. Un estudi del poblament vegetal*. Josep Vigo. 30/09/2014. 20 assistens.
- *Al pot petit hi ha la bona confitura: Gastrobotànica Ngäbe de Costa Rica*. **Ugo d'Ambrosio**. 28/10/2014. 21 assistants.
- *Avaluant la dominància de les angiospermes en paisatges finicretacis dels Pirineus*. Josep Marmi. 25/11/2014. 18 assistants.
- *Tracing changes in genetic pathways underlying reproductive architecture in Papaveraceae (basal eudicots, Ranunculales)*. Oriane Hidalgo. 16/12/2014. 16 assistants.



Seminar at the Botanical Institute of Barcelona about Pius Font i Quer. Photo: IBB. Speaker: J. M. Montserrat

## Library and archive

- Signing of a collaborative agreement with the Cartographic and Geological Institute of Catalonia (ICGC) in order to digitalize a factitious atlas from the Salvador Library, which has been disseminated through ICGC's digital map collection.
- Signing of a collaborative agreement with the Catalan Studies Institute (IEC) in order to disseminate digitalized images from the Rivière de Caralt photographic repository.
- Presentation of the digitalization projects of two documents within the EBCN program / Open Challenge to the Institute for Culture of Barcelona's city hall (ICUB): 1) The correspondence between P. Font Quer and Carlos Pau (1914-1927); and 2) Manuscript documents and books of the Salvador collection (16<sup>th</sup>-19<sup>th</sup> centuries). June 2014.
- Setting up a cork board with the latest articles published by IBB researchers. Library personnel is in charge of updating the board as new articles are published.

- Presentation of IBB's Library at the CSIC's Library Network in "*Las bibliotecas hablan*" section.
- Participation in the International Day of Archives. Dissemination of photography and texts: "Correspondence between botanists Pius Font i Quer and Carlos Pau Español, 1927".
- Elaboration of a reading guide about the Salvador Family in conjunction with the Centre for Documentation of the Natural Sciences Museum of Barcelona on the occasion of the inauguration of the *Salvadoriana* exhibit.

## Exhibitions

### In collaboration

- "Pius Font i Quer (1988-1964). Un nou paradigma de la botànica catalana". Lobby at the historical building of the University of Barcelona, 15 October- 5 November 2014. Faculty of Pharmacy, Faculty of Biology, Centre for Plant Biodiversity Documentation (CeDocBiV). Botanical Institute of Barcelona.
- Pius Font i Quer High School in Manresa. June 2014.

### Co-produced

#### ***Salvadoriana* exhibit**

On 19 May 2014, the *Salvadoriana* exhibit was inaugurated at the Botanical Institute. This exhibit explains what is the Salvador cabinet (17th and 18th centuries), contextualizing its origins, its conservation and its arrival to this day.

It is an exhibit coproduced between the IBB and the Museum of Natural Sciences of Barcelona, and will be open until April 2016. The commissaries have been Dr. José Pardo Tomás (Institució Milà i Fontanals, CSIC) and Dr. **Neus Ibáñez Cortina** (IBB).

During 2014 the exhibit was visited by 10,248 people: 268 in groups of students, 9,655 individual visitors and 325 in other groups.

The catalog "**Salvadoriana. El Gabinet de Curiositats de Barcelona**" published to inform about the exhibit, was written by José Pardo Tomás and edited by the Consortium of the Museum of Natural Sciences of Barcelona and the IBB (ISBN : 978-84-9850-551-1).



Inauguration of the *Salvadoriana* exhibit at the Botanical Institute. Photo: IBB

## Social networks

Since April 23, IBB is present in Facebook, aiming to disseminate IBB's activities, publications and other information of botanical interest.

- Number of total Facebook page followers: 303
- Number of posts: 261

Posts with more repercussion include:

- *Information about the homage ceremony to Dr. Ramon Margalef in the University of Barcelona web portal.* 25 April 2014, outreach: 1,289 people

- *Link to the BTV video “L’Institut Botànic redescobreix un dels tresors científics de la ciutat”.* 20 May 2014, outreach: 764 people
- *Announcement of guided visits to the Salvadoriana exhibit, on the occasion of the Science Week.* 6 September 2014, outreach: 753 people

## Youtube

On 27 May, the Youtube institutional account was created to broadcast the scientific seminars and other audiovisual material related with the IBB. It includes four playlists:

### Tribute to Ramón Margalef at the IBB

- *Part I: Presentation by Valentí Rull, IBB’s Director.* Published on 31 May 2014, 116 views
- *Part II: Conference by Josep M. Camarasa.* Published on 3 June 2014, 45 views
- *Part III: Conferència d’Enric Ballesteros.* Published on 3 June 2014, 48 views
- *Part IV: Round table «Els primers anys de Margalef com a científic i l’aplicació de la fitosociologia als poblaments algals».* Published on 3 June 2014, 34 views

### Scientific seminars

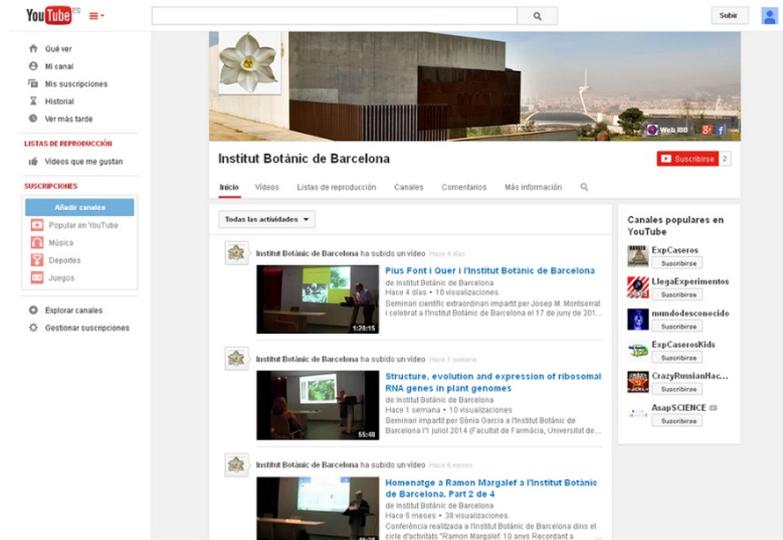
- *“Structure, evolution and expression of ribosomal RNA genes in plant genomes”* conducted by Sònia Garcia. Published on 10 December 2014, 77 views
- *“Pius Font i Quer i l’Institut Botànic de Barcelona”*, conducted by Josep M. Montserrat to commemorate the 50<sup>th</sup> Anniversary of Pius Font i Quer death. Published on 18 December 2014, 34 views

### Salvador Cabinet

- *L’Ajuntament completa la col·lecció Gabinet Salvador amb noves adquisicions.* Published on 18 July 2013 in *Barcelona.cat*, 77 views
- *Barcelona recupera el primer museu de la ciutat.* Published on 23 May 2014 in *Barcelona.cat*, 499 views

### The Institute

- *CSIC: Instituto Botánico de Barcelona.* Published on 4 de febrer de 2008 a vídeos CSIC, 201 views
- *Barcelona Botanical Institute.* Published on 15 January 2010 in *msafielddtripfilms*, 362 views



Youtube channel of the Botanical Institute of Barcelona

## Citizen science

Botanical hikes for families. 25 May 2014. Field trip to the Vall de Pomar. Badalona. Organizer: Parc de la Serralada de Marina. Professor: **A. Romo**

Botanical hikes for families. 21 September 2014. Let's discover the natural environment of Tiana. El Rocar itinerary. Organizer: Parc de la Serralada de Marina. Professor: **A. Romo**.

Involvement in the *BioblitzBcn*, 30 & 31 May 2014 at the Parc de Laberint d'Horta. Participants: **N. Nualart, C. Gómez & N. Montes**.



Identification of plants in *BioblitzBcn*. Photo: IBB

Involvement in the *Science Week* with 4 visits to the herbarium and the *Salvadoriana* exhibit, and 2 workshops of plant identification, from the 14<sup>th</sup> to the 23<sup>rd</sup> November 2014. Participants: **N. Nualart, N. Montes & N. Ibáñez.**



Participation in the Science Week with visits to the herbarium. Photo: IBB

Participation in *Planta't* 2014, organized by the Botanical Garden of Barcelona, November 16, with guided tours to the herbarium, library and laboratories. Participants: **T. Garnatje, N. Nualart & K. Barros.**

Ethnobotanical prospection of food plants from ethnic stores at El Fondo within the Cuisines of the World program. September to December 2014. Sta. Coloma de Gramenet. Participants: **J. Vallès, T. Garnatje, U. D'Ambrosio & C. Pozo.**

Ethnobotanical fieldtrips with civic centres. Christmas markets and their plants. December 2014. Sta. Lúcia Market (Barcelona). Participants: **U. D'Ambrosio & S. Garcia.**

## Other scientific dissemination activities

Participation in the *Talent Lab*, 2014 edition. 12 March 2014. CSIC Delegation in Catalonia. Participant: **T. Garnatje**.

Visit to the herbarium by a group from the University of Sassari. 1 April 2014. Participants: **N. Nualart, N. Montes, D. Muñiz & J. Pallàs**.

Participation in *Exporecerca* as a member of the Jury, 10-12 April 2014. La Salle, Barcelona. Participant: **T. Garnatje**.

Participation in the 4th edition of *Pyrenades* with the oral presentation *Les plantes i els seus usos*. Introducció a l'etnobotànica pirinenca. Salardú, 12-19 April 2014. Professors: **T. Garnatje & J. Vallès**.

Visit to the herbarium by the Friends of the Botanical Garden of Barcelona. 15 May 2014. Participant: **N. Nualart**.

Visit to the herbarium and *Salvadoriana* exhibit by postgraduate students of the Paleocology course. 5 June 2014. Participants: **N. Montes & K. Barros**.

Visit to the *Salvadoriana* exhibit by the Friends of the Museum of Furniture. 5 June 2014. Participant: **N. Ibáñez**.

Visit to the *Salvadoriana* exhibit by the Professional Association of Pharmacists. 3 July 2014. Participant: **N. Ibáñez**.

Institutional visit to the *Salvadoriana* exhibit by the CSIC Delegation in Catalonia. 3 July 2014. Participant: **N. Ibáñez**.

Visit to the herbarium and library by a group of curators from Italian museums. 28 August 2014. Participants: **N. Nualart & K. Barros**.

Visit to the Salvador herbarium by the Professional Association of Pharmacists. 25 September 2014. Participant: **N. Montes**.

Guided tour to the herbarium and *Salvadoriana* exhibit by university extension students from the Autonomous University of Barcelona. 28 November 2014. Participants: **N. Nualart & N. Ibáñez**.

## Press releases

### Regarding the Project “Atlas florístico del Pirineo y seguimiento de neveros con *Salix herbacea*”

- 28/11/2014. El País. *4500 plantas para unir los Pirineos.*
- 10/12/2014. Journal Berria. *Klima aldaketaren landaregrafia*
- 17/12/2014. Bulletins electroniques.com. *Un atlas de la flore des Pyrénées, fruit d'une collaboration franco-espagnole*

### Regarding collections

- 16/02/2014. Supplement of the journal ARA tu. *La cara oculta del Museu.*

### Regarding the SALVADORIANA exhibit

- 20/05/2014. La Vanguardia. *Quan la ciència era curiositat.*
- 20/05/2014. El Periódico de Catalunya. *BCN reviu el seu primer museu, el Gabinet de Curiositats*
- 20/05/2014. El Punt Avui. *Malalts de la Natura*
- 20/05/2014. El País. *“Renace” el primer museo de Barcelona.*
- 20/05/2014. ARA. *El gabinet dels Salvador surt de les golfes.*
- 20/05/2014. La Razón. *El gabinete de las maravillas.*

# LIBRARY AND ARCHIVE





## LIBRARY AND ARCHIVE

### Introduction

During 2014, most efforts from the Library and Archive unit centered in dissemination activities due to the celebration of events such as the inauguration of the Salvadoriana exhibit and the commemoration of the 50th anniversary of Pius Font i Quer's death.

During this year, usual tasks such as new acquisitions, technical treatment, information and reference, loans, and others were also partaken. Worth mentioning within the acquisitions was the donation by the Royal Botanical Garden of Madrid of 23 volumes of the facsimile of the work *Flora of the Royal Botanical Expedition to the New Kingdom of Granada: (1783-1816)* with a high artistic value.

Regarding the archive, there is been a continuation of identification, classification and description of documents pertaining to Pius Font i Quer collection, dated between 1914 and 1942. In addition, there has been a coordination of tasks to describe the documents from the Salvador collecton acquired by the Barcelona City Hall in 2013.

Further usual activities of the archive have continued included dissemination of documents, collaboration with other institutions, attending users' consultations and preserving and restoring documents.

### Acquisitions

Mode of reception	Number
Purchased	54
Exchanged	14
Donations	42
<b>TOTAL</b>	<b>110</b>

### Loans and on-site consultation

Type of loan	Number
Personal loan	147
On-site consultation	1,152

Interlibrary loans requested by IBB's researchers	116
Interlibrary loans sent to other research centres	69

## New users

During 2014, the library registered 14 **new users**.

## Technical process

### Library

- Cataloging (new registries incorporated to CIRBIC):

Type of material	Number
Books	127
Microforms	0
Maps	0
Digital resources	0
<b>TOTAL</b>	<b>127</b>

### Archive

- Inventory of 5 boxes of the botanist Pius Font i Quer collection.
- Onset of the inventory of stereoscopic photographic plates pertaining to the Pius Font i Quer collection.
- Completion of the inventory and relocation of slides in normalized sheaths and boxes from the Botanical Garden of Barcelona collection.

## Digital CSIC

**104 new registries** were included in the repository, corresponding to articles published by IBB's researchers.

## Reference services and information searches

- Individualized consultations which required producing specific information, and in the necessary cases, scanning documents:
  - o Library: 19
  - o Archive: 13
- WIFI installation for users at the library's reading room.

## Conservation and restauration

- Relocation of stereoscopic photographic plates pertaining to the Pius Font i Quer collection in normalized sheaths and boxes to ensure their conservation.
- Relocation of slides from the Botanical Garden of Barcelona collection in normalized sheaths and boxes to ensure their conservation.

## Exchanges

Notice in writing of the cessation of the printed edition of IBB's journal *Collectanea Botanica* to the centres with whom exchange is maintained.

## Image digitalizations

- Digitalization of 2 book engravings from the Salvador Library requested by José Pardo Tomás.
- Digitalization of 2 glass plates with images of Can Pau Torres pertaining to Albert Hill.
- Digitalization of 66 photographs and documents for the Font Quer exhibit in Manresa.
- Digitalization of 41 photographs pertaining to the Rivière de Caralt collection by the Institute for Catalan Studies (IEC).

## Participation in courses

- On-line course on Excel 2010 basic. Conducted from 11 June to 16 July 2014 by CSIC's Training Office.
- On-line course on Excel 2010 advanced. Conducted from 6 October to 7 November 2014 by CSIC's Training Office.

- On-line full course on Photoshop CS5. Conducted from 29 September to 14 November 2014 by CSIC's Training Office.
- Industrial and intellectual property management and of knowledge transfer. Conducted from 27 to 29 May 2014 by CSIC's Training Office.



Library of the Botanical Institute. Photo: IBB

# COLLECTIONS





## SALVADOR'S CABINET

### Introduction

During 2014 we highlight the restauration and inventory of all materials acquired in 2013, when the Salvador Collection was bought by the City Hall of Barcelona. In addition, the Collection's data base has been completed and materials have been revised by 19 specialists. Besides, all documents from the Collection have been relocated, as well as a massive deacidification of 1,445 volumes pertaining to the Salvador Library.

### Tasks

- Cleaning, disinfection and elaboration of a diagnostic report on the books and documents derived from the acquisition of the Salvador Collection in 2013.
  - Processed books: 291 volumes.
  - Documents: 224 documental groupings.Participants: Núria Berenguer, Raquel Garcia Quiroga, Natalia Hervàs.
- Implementation of a first inventory and relocation of normalized sheaths and boxes from documents of the Salvador Collection acquired in 2013. Documents are inventoried in a spreadsheet with a total of 486 registries.  
Participants: Josep Aurell, Natalia Hervàs, Álvaro Meléndez.
- Restauration of 1,703 documents.  
Participants: Estudi B2
- Massive deacidification of 1,445 volumes pertaining to the Salvador Library.  
Participants: Preservation Technologies, Ibèrica SL.
- Installation of a new biometric access system to the Salvador Cabinet.
- Inventory and restauration 509 pieces received during 2013 coming from the Bleda farmhouse, purchased from the descendants of the Salvador family.
- Digitalization and restauration of the Salvador Collection, including taking pictures, marking of all material and implementation of preventive conservation improvements, with definitive packagings.

- Computerization of zoological collections at *Museum Plus* (1,168 registries from the malacological collection).
- Loan of 356 elements for the *Salvadoriana* exhibit on 20/05/2014.

## Scientific use of the collection

### Consultations

	Consultations	Elements consulted
On-site scientific consultations	19	1,944
Scientific consultations (data petitions via email)	11	11
Cultural consultations	100	100

### On-site scientific consultations

The collection has been revised by 19 specialists of different organismic groups, reviewing a total of 1,944 registries.

Name of researcher	Research Centre / University	Name of research project	Number of elements
Montserrat Brugués & M. Elena Ruiz	Autonomous University of Barcelona	Revision of mosses	102
Josep Maria Gili, Teresa Madurell, Mikel Zabala & Ramon Maria Busquets	Institute of Marine Sciences. CSIC	Revision of cnidarians and bryozoans	152
Esteve Llop	University of Barcelona	Revision of lichens	18
Amelia Gómez & Jordi Rull	University of Barcelona	Revision of algae	13
Yael Diaz	Museum of Natural Sciences, Barcelona	Revision of petrology	220

Carles Curto	Museum of Natural Sciences, Barcelona	Revision of minerals	462
Xavier Pascual	Collaborator of the Museum of Natural Sciences	Revision of reptiles	29
Anna Gras	Superior College of Agriculture	Revision of fruit replicas	99
Iosine Iruz	University of Barcelona	Revision of porifera	2
Anna Carmona	University of Barcelona	Revision of apothecary containers	358
Jordi Cadevall & Elisabeth Fernández	University of Barcelona	Revision of molluscs	348
Eulàlia Garcia	Museum of Natural Sciences, Barcelona	Revision of vertebrates	140
Benigno Elvira	Complutense University of Madrid	Revision of sturgeons	1

### Scientific exchanges

There have been 4 scientific exchanges, sending a total of 285 elements. Such loans are detailed as follows:

Name of researcher	Research Centre / University	Name of research project	Number of elements
Montserrat Brugués & M. Elena Ruiz	Autonomous University of Barcelona	Revision of mosses	102
Josep Maria Gili, Teresa Madurell, Mikel Zabala & Ramon Maria Busquets	Institute of Marine Sciences (ICM). CSIC	Revision of cnidarians and bryozoans	152
Esteve Llop	University of Barcelona	Revision of lichens	18
Amelia Gómez & Jordi Rull	University of Barcelona	Revision of algae	13



Salvador's collection at the Botanical Institute. Photo: IBB

## HERBARIUM

### Introduction

The objective of the herbarium's documentation task force has been to computerize the specimens using HERBAR software (with 15,288 registries computerized). These documentation tasks for the herbarium have been carried out by the companies Nubilum S.L. and Casal & Badosa S.L., subcontracted by Barcelona's City Hall (Natural Sciences Museum Consortium). This year, after the end of a 3 year contract for giving support with technical staff, this endeavour has been able to continue thanks to the incorporation of a new documentalist included in the consotrium budget.

In relation to the collection basic tasks, mounting of herbarium sheets has continued, computerization of the taxonomic data files, and intercalation of sheets in the main herbarium. In addition, type specimens were searched for cataloguing and scanned to obtain high resolution images. These images are available at the portals of GBIF (*Global Biodiversity Information Facility*) and AHIM (*Asociación de Herbarios Ibero-Macaronésicos*).

### Acquisitions

Origin	Mode of reception	Description	RU	Elements
Adriana Bartoli	Donation	Vascular plants of Argentina (1 lot)	5	5
Jardín Botánico Canario Viera y Clavijo	Donation	Vascular plants of the Canary Islands (1 lot)	7	7
Alfonso Susanna	Donation	Vascular plant of Iran (1 lot)	1	1
Carlos Gómez	Donation	Vascular plants of Catalonia (6 lots)	32	32
Esteve Llop	Donation	Lichens (1 lot)	650	299**
Eva Castells (UAB)	Donation	Vascular plants (1 lot)	21	21
Francisco Gómez	Donation	Vascular plants (1 lot)	10	10
Hilari Álvarez	Donation	Vascular plants of Catalonia (2 lots)	12	12
Jordi Pallàs	Donation	Vascular plant of Italy (1 lot)	1	1

Julià Molero (UB)	Donation	Vascular plants of the Canary Islands (1 lot)	3	3
<i>Herbario Nacional de Venezuela</i>	Donation	Vascular plants of Venezuela (1 lot)	49	49
Llorenç Sáez (UAB)	Donation	Vascular plants (1 lot)	-*	13
<i>Jardin Botanique Paris</i>	Exchange	Vascular plants (1 lot)	66	66
Mercè Dufort (UB)	Exchange	Vascular plants of AHIM <i>exsiccata</i> (1 lot)	120	120
Mercè Galbany (UAB)	Donation	Vascular plants (2 lots)	3	3
Noemí Montes	Donation	Vascular plants of Catalonia and Alacant (1 lot)	3	3
Pau Carnicero (UAB)	Donation	Vascular plants (1 lot)	-*	18
Pedro Pablo Ferrer (CIEF)	Donation	Vascular plants of the Valencian Country	8	8
Roser Vilatersana	Donation	Vascular plants of Madeira (1 lot)	25	25
Samuel Pyke	Donation	Vascular plants (3 lots)	196	196
Samuel Pyke	Donation	Seeds for the seed collection (1 lot)	-*	1
Sara López	Donation	Vascular plants (1 lot)	36	36
Sergi Massó	Donation	Vascular plant (1 lot)	1	1
Valentí Rull	Donation	Vascular plants of Montcortès (1 lot)	-*	205
<b>TOTAL</b>			<b>1,250</b>	<b>1.135</b>

\* Lots arrived by the end of December were not registered.

\*\* For lichens, a same simple can have more than one taxon, therefore more than one registration unit (RU).

## Documentation

Group	Collection	Registered units in 2014	Total registered units	Total volume	Percentage
Main	Main herbarium	13,355	73,292	?	?
Historical	Bernades	-	814	814	100 %
	Cadevall	-	8,242	8,242	100 %
	Costa	5	7	15,000	0.00 %
	F.X. Bolòs	-	-	6,000	-
	<i>Hieracium</i> collection	-	2,091	2,091	100 %
	ICHN	-	1,202	1,202	100 %
	R. Bolòs	-	-	6,000	-
	Ruiz & Pavón	-	695	695	100 %
	Salvador	226	4,917	4,692	100 %
	SBB	-	1,211	1,211	100 %
	Sennen	298	1,067	85,000	1.29 %
	Trèmols	633	4,367	9,000	48.52 %
	Vayreda	2	13	30,000	0.04 %
	Others	Cuatrecasas	1	416	3,900
Seed collection		-	510	510	100 %
Reference herbarium		-	4	?	?
Botanical garden		48	2,307	2,307	100 %
Wood collection		-	145	145	100 %
Cryptogamy	Algae	1	40	1,000	4.00 %
	Mosses	1	7	7,000	0.10 %
	Fungi	3	3	3,000	-
	Lichens - Caliciales	-	199	199	100 %
	Lichen collection	715	2,511	5,000	50.22 %
	Werner's lichen collection	-	3	3,200	0.09 %
<b>TOTAL</b>		<b>15,288</b>	<b>104,064</b>	<b>800,000</b>	<b>aprox, 13%</b>

### Informatization of the taxonomic file

Collection	Number of records	
	Current year	Total
Main herbarium thesaurus	648	31,962

### Digitalization of images

Collection	Number of images	
	Current year	Total
Main herbarium	468	3,393
Historical collection	37	1,207
Cryptogamy (lichens, mosses and fungi)	-	157
<b>TOTAL</b>	<b>505</b>	<b>4,757</b>

### Data base publications in the Internet

Collection	Name of Web Portal	Number of published records
Main herbarium	GBIF ( <a href="http://www.gbif.org">http://www.gbif.org</a> )	59,580
Historical collection (Cadevall, Cuatrecasas, ICHN, Ruiz & Pavón, Trèmols, SBB, Sennen and Vayreda)	GBIF ( <a href="http://www.gbif.org">http://www.gbif.org</a> )	15,675
Lichen collection	GBIF ( <a href="http://www.gbif.org">http://www.gbif.org</a> )	1,998
Type specimens from Africa and America (from diferent collections)	JSTOR ( <a href="http://plants.jstor.org">http://plants.jstor.org</a> )	1,426
Digitalized herbarium sheets (from diferent collections)	GBIF- <i>imágenes</i> ( <a href="http://www.gbif.es/Imagenes.php">http://www.gbif.es/Imagenes.php</a> )	2,870
<b>TOTAL</b>		<b>81,549*</b>

\* Total values include repeated sheets, as a same sheet can be found in distinct web portals.

## Specimens' preparation

Type of preparation	Number of elements
Mounting of herbarium sheets	3,991
<b>TOTAL</b>	<b>3,991</b>

## Documentation projects

Project name	Herbarium documentation
Participants	One person, 37.5 hours/week. 10 months. Diana Muñiz (Nubilum S.L.)
Objectives	Computerization of herbarium sheets
Results	5,788 computerized sheets and 715 computerized lichens
Funding	CMCNB (64,800 €), including funding for the documentation of the historical archive

Project name	Font Quer collection's sheet computerization
Participants	One person, 37.5 hours/week. 3 months. Noemí Montes (CSIC)
Objectives	Computerization of sheets from the Font Quer collection
Results	515 computerized sheets
Funding	Cofunding project " <i>Subprograma de Personal Técnico de Apoyo (PTA)</i> " from the <i>Ministry of Economy and Competitivity</i> (16,380 €) / CMCNB

Project name	Documentation of sheets from the main herbarium
Participants	One person, 37.5 hours/week. 7.5 months. Noemí Montes (Casal & Badosa / self-employed)
Objectives	Computerization of sheets from the main herbarium and adjustment of data bases
Results	3,086 computerized sheets, error correction and adjustment of data bases
Funding	CMCNB (42,000 €)

Project name	Collaboration for the computerization and arrangement of the Trèmols collection
Participants	Laura Gavioli (collaborator)
Objectives	Computerization and arrangement of the Trèmols collection and <i>Hieracium</i> collection
Results	631 computerized sheets
Funding	-

Project name	Support service to the Registration Unit
Participants	One person during 3 months (378 hours). Laura Gavioli (Casal & Badosa)
Objectives	Label generation linked with the registry of collections. Inventory of material. Fill in the record book.
Results	631 computerized sheets
Funding	CMCNB (7,896,42 €)

## Scientific use of collections

### Email consultations

	Number of consultations	Name of requested elements
Data requests	25	Information given on 339 sheets
Image requests	18	57 images sent

### On-site scientific consultations

There have been 41 on-site scientific consultations, with approximately 2,000 herbarium sheets consulted:

Researcher	Centre / University	Consultation	Number of elements
Alfonso Susanna (3 visits)	Botanical Institute of Barcelona	<i>Centaurea</i>	200
Alicia Vicente	CIBIO (Biodiversity Institute)	<i>Biscutella</i>	300
Aranzazu Lara	Botanical Institute of Barcelona	Pollen extraction	16
Arianna Russu	University of Sassari	<i>Polygala</i>	-
Arvind S. Dhabe	University of Lleida	<i>Terminalia, Combretum</i>	-
Berta Gallego	Autonomous University of Barcelona		-
Eusebio López, Gloria Martínez (2 visits)	Faculty of Sciences. University of Córdoba	<i>Festuca</i>	-
Gabriel Mercadal	University of Girona	Aquatic plants	30
Ignasi Soriano (4 visits)	University of Barcelona	<i>Achillea, Tanacetum</i>	250
Javi López (2 visits)	Autonomous University of Barcelona	<i>Aira, Senecio</i>	5
Javier Marcos	Life Science Museum and Biodiversity Centre	<i>Crocus</i>	248
Joan Font	University of Vic	-	-
Joan Pedrol	University of Lleida	Plants from Monegros	50
Joan Vallès	University of Barcelona	<i>Artemisia</i>	10
Joel Calvo	Royal Botanical Garden of Madrid	<i>Senecio</i>	102
Josep Vicens	University of Barcelona	Exsiccatae AHIM	-

Juan José Aldasoro, Eloi Llenas	Botanical Institute of Barcelona	<i>Erodium</i>	20
Lidia Garrido	University of Girona	-	24
Llorenç Sáez (3 visits)	Autonomous University of Barcelona	Various genera	300
Malvina Urbani	University of Sassari	-	-
Milan Gavrilovic	University of Belgrade	<i>Asteraceae</i>	20
Noemi Montes	Botanical Institute of Barcelona	<i>Corrigiola</i>	50
Núria Garcia-Jacas, Sergi Massó	Botanical Institute of Barcelona	Moroccan sheets	-
Patricia Barberá		<i>Trisetum</i>	1
Pau Carnicero	Autonomous University of Barcelona	-	6
Pedja Janackovic	University of Belgrade	<i>Asteraceae</i>	20
Pere Aymerich	University of Lleida	Various genera	100
Pere Barnola	University of Lleida	<i>Lonicera, Myosotis</i>	20
Roser Vilatersana	Botanical Institute of Barcelona	Moroccan sheets	-
Sadia Malik	Botanical Institute of Barcelona	DNA extraction	-
Sergi Massó	University of Barcelona	<i>Nigella, Samolus, Theligonum, Drosophyllum</i>	40
Soledad Martos	Autonomous University of Barcelona	Thlaspi	-
Sònia Garcia	University of Barcelona	-	-
Vincent Manzanilla	Natural History Museum. University of Oslo	DNA analyses of <i>Anacyclus</i>	60



Herbarium at the Botanical Institute of Barcelona. Photo: IBB.

#### Requests for destructive sampling

Seven (7) destructive sampling petitions have been carried out in 11 herbarium sheets.

#### Scientific exchanges

Fifteen (15) scientific exchanges have been carried out, sending a total of 3,800 herbarium sheets. Such loans are detailed as follows:

Researcher	Centre / University	Project	Sheets	Loan-return dates
Mauricio Velayos	Royal Botanical Garden of Madrid	<i>Flora Iberica</i>	45	07/03/2014 -
Mauricio Velayos	Royal Botanical Garden of Madrid	<i>Flora Iberica</i>	34	07/03/2014 -
F. J. Salgueiro	Biology - University of Sevilla	<i>Flora Iberica</i>	739	17/04/2014 -
Jesús Riera	Botanical Garden of Valencia		30	17/04/2014 -
Emma Ortúñez	Faculty of Sciences- Autonomous University of Madrid	<i>Flora Iberica</i>	246	05/05/2014 -
Shahal Abbo	The Hebrew University of Jerusalem		46	12/05/2014 - 08/09/2014
Mercè Galbany	Autonomous University of Barcelona		4	20/05/2014 - 17/10/2014
Adele Smith	Royal Botanic Garden Edinburgh		13	22/05/2014 -
Mauricio Velayos	Royal Botanical Garden of Madrid	<i>Flora Iberica</i>	3	29/05/2014 -
F. J. Salgueiro	Biology - University of Sevilla	<i>Flora Iberica</i>	910	04/07/2014 -
Duilio Iamónico	Department PDTA, University of Rome Sapienza		12	08/07/2014 -
Gudrun Kadereit	Botanical Museum of University of Mainz		41	18/07/2014 -
Manuel Crespo	CIBIO (Institute for Biodiversity). University of Alicante	<i>Flora Iberica</i>	180	07/10/2014 -
F. J. Salgueiro	Biology - University of Sevilla	<i>Flora Iberica</i>	1.226	04/11/2014 -
F. J. Salgueiro	Biology - University of Sevilla	<i>Flora Iberica</i>	271	06/11/2014 -

### Participation in conferences and meetings

- Participation in the annual meeting of the AHIM (*Asociación de Herbarios Ibero-Macaronésicos*) at the Royal Botanical Garden of Madrid, 27 November 2014.
- Participation in the scientific session *Font i Quer, llavor de futur. Els reptes de la botànica catalana per al segle XXI*, Catalan Studies Institute (IEC), 2 December 2014.

- Participation in the *II Trobada de tècnics de col·leccions de ciències naturals de Catalunya*. Ter Museum, 18 November 2014.

### Participation in courses

- *Collections' data bases and GenBank*. Course offered by the Coordination Unit of GBIF (Global Biodiversity Information Facility) in Spain. Royal Botanical Garden of Madrid. 10 hours, 25-26 March 2014.
- *GBIF.ES workshop on tools for Cybertaxonomy*. Course offered by the Coordination Unit of GBIF (Global Biodiversity Information Facility) in Spain. Royal Botanical Garden of Madrid. 10 hours, 24-26 September 2014.
- *Course on agile methodologies for Project management*. Course offered by Javier Moreno. Natural Sciences Museum of Barcelona. 28 October - 14 November 2014.