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Javier Loidi
Editor

The Vegetation of the Iberian Peninsula

Volume 1

 Springer

Editor

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Preface

The Introduction of Geobotany in the Iberian Countries

A book about the vegetation of the Iberian Peninsula is of great interest and importance to all of Europe, due to the importance of this territory in terms of its plants and habitat diversity. When the opportunity of writing such a book presented itself, instead of writing it alone, using the abundant bibliographic sources at hand and my own experience, I decided to make it a collaborative project in which a large number of skilled and experienced colleagues from Spain and Portugal, representing the majority of the vegetation scientists currently active in these countries, could participate. This book tries to summarise the knowledge and experience that a complete generation of Spanish and Portuguese geobotanists have accumulated during their lives in their research done during the last quarter of the twentieth century and the dawn of the twenty-first. The book is divided into three main parts: the first deals with general issues which influence vegetation distribution, such as the relief and the geology of the area, as well as its climate. This part includes one chapter about the Iberian flora and another on the biogeographical division of the Iberian Peninsula. In another chapter, the conceptual framework, supported by the general theory of vegetation dynamics and by the theory of dynamic-catenal phytosociology which has been developed under the basic concept of potential natural vegetation (i.e. vegetation series, geoserries and geopermaseries), is commented upon in order to better interpret the landscape from an ecological and dynamic point of view. The second part of the book consists of the systematic description of the vegetation of Iberia and the Balearic Islands. For that the territory has been divided into 14 regions following geographic-biogeographic criteria (Fig. 1). Each of these regions is described by authors having extensive experience in the area; the phytosociological system (or Braun-Blanquet approach) is applied to give structure to the description. The third part is formed by a number of chapters dealing with specific aspects of Iberian vegetation which deserve in-depth treatment, because some of them deal with particular habitat



Fig. 1 The Iberian Peninsula and Balearic Islands divided into 14 regions described in the chapters of this book: (1) the lowlands and midlands of northwestern Atlantic Iberia; (2) the high mountain area of northwestern Spain, the Cantabrian range, the Galician-Leonese mountains and the Bierzo trench; (3) the Pyrenees; (4) Trás-os-Montes and Beira Alta; (5) the Duero Basin; (6) the Iberian ranges and highlands; (7) the Ebro Basin; (8) the Sistema Central (Central Range); (9) the Coastal Levantine area; (10) the Balearic Islands; (11) Lusitania; (12) La Mancha; (13) Bética and Southwest Andalusia; and (14) the arid southeast

groups (coasts, wetlands, high mountains or gypsum and dolomite vegetation) or with particular issues related to management (forests) or to biodiversity (alien flora). The final chapter about vegetation-plot databanks might be useful for completing the information provided.

In many of the chapters, and particularly in the descriptive part of the book, the phytosociological classification has been taken as the common system to formalise the information concerning plant communities. This is due to the common usage of the Braun-Blanquet approach in the Iberian countries and the fact that most of the authors have been trained in this approach. Hence, by using the same units for communities, as well as for bioclimatic and for biogeographic terms, the highest degree of coherence within the different chapters and parts of the book has been achieved. This hopefully will bestow a high consistency to the book as it will make the different chapters and parts easy to understand, making it also easily applicable to the adopted habitat typology of the EU for conservation policy. The typology and authorship adopted is that of Rivas-Martínez et al. (2011) for the Iberian Peninsula, enabling to refer authorship citation to that work and avoiding the explicit mentioning of authorship.

The information contained in this book is meant to be useful for vegetation scientists and ecologists throughout the world who want to have a source of updated and accurate information on Iberian ecosystems. Travellers and visitors of the country will find useful information for interpretation of the landscapes and the vegetation formations they find on their trips.

The Initial Steps of Geobotany in the Iberian Peninsula

Surveys on the vegetation and landscape of Iberia have been continuous throughout the twentieth century, but they were initiated by important earlier contributions, some by foreign researchers, that set the cornerstones of the subsequent development in this field in the Iberian Peninsula.

The first clear geobotanical observations done in the area date from the nineteenth century and originate from the Swiss botanist Pierre Edmond Boissier in his famous *Voyage Botanique dans le Midi de l'Espagne pendant l'année 1837* (1839–1845). He included a chapter describing the landscape (*géographie botanique*) and a famous diagram with the altitudinal belts of the Sierra Nevada and surrounding mountains (Fig. 2). Another remarkable attempt to improve the geobotanical

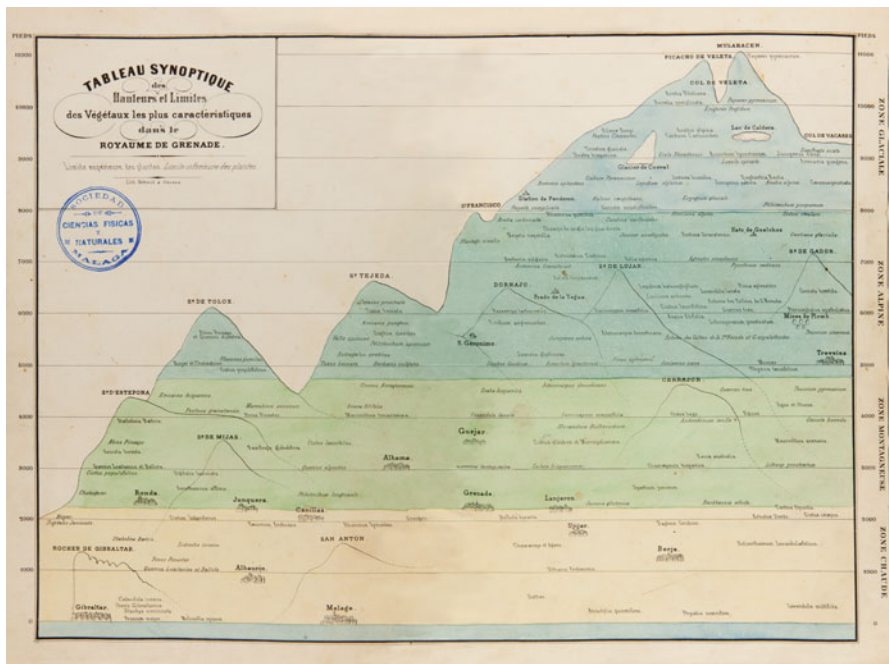


Fig. 2 Diagram by E. Boissier (1839) of the altitudinal belts of the Sierra Nevada and surrounding mountains



Fig. 3 Map by M. Willkomm (1852) of the steppe areas of the Iberian Peninsula

knowledge on the Andalusian mountains was done by Simón de Rojas Clemente (1864) describing the species composition of lichens in the vegetation belts of the Baetic mountains. These initial contributions were focused in the Sierra Nevada area of southern Spain, which is a very attractive territory for botanists due to its singularity and high concentration of endemic taxa, but these studies had limited influence on the development of geobotany in Spain.

A much more influential author in the subsequent development of the basic geobotanical conceptual framework for Iberia was the German botanist Mauritius Willkomm, who wrote two works on this topic, one (1852) about the supposed Iberian steppes (Fig. 3) and another with a more general treatment of the peninsular vegetation, which was published 1 year after his death (1896). In both works, an extensive description of the vegetation of the Iberian Peninsula is provided, and they can be considered the starting point of the development of geobotany at the scale of the entire peninsula. For a considerable period of time, Willkomm's description and ideas were entirely accepted by the local scientists and his influence endured for a long time after these publications. Nonetheless, in the early twentieth century, a remarkable author appeared: Emilio Huguet del Villar, a geographer and naturalist who was deeply influenced by Clements, was critical of the Willkommian



Fig. 4 The SIGMA excursion in Catalonia, Easter 1934. Among other participants, there are J. Susplugas, R. Tüxen, W. Koch, M. Klika, J. Cuatrecasas, R. Molinier, J. Braun-Blanquet, P. Font Quer and W. Rothmaler

tradition and denied the existence of true steppes in Iberia, an idea that had rooted deeply in the thinking of many naturalists in Spain as well as in the Germanic tradition until recently (Jäger 1971). Huguet worked extensively in edaphology and wrote a noteworthy textbook entitled *Geobotánica* (1929).

A turning point in the Iberian geobotanical history was the excursion of the SIGMA (Station Internationale de Géobotanique Méditerranéenne-Alpine) led by Braun-Blanquet at Easter of 1934 through Catalonia (Díaz González 2004). It was organised by a prominent Catalan botanist, Pius Font Quer, who had earlier contacted Braun-Blanquet and was interested in the new discipline of phytosociology. The excursion was attended by many Spanish and European colleagues and was the first important demonstration in the field of the methods and procedures of this school in the Iberian Peninsula (Fig. 4). As a result of those contacts, a Spanish student, J González-Albo, was sent to the SIGMA in Montpellier to be trained by Braun-Blanquet and soon started his research in the area of Madrid. Unfortunately, he was prevented from completing his research as a consequence of the Spanish Civil War, but still wrote two meritorious works (1934, 1940).

After the war, contacts were re-established in two ways. One was by means of Braun-Blanquet himself, who had been working intensively in the eastern Pyrenees and published an extraordinary monograph about its vegetation in 1948. Shortly after that, Font Quer recruited a young botanist in Barcelona, Oriol de Bolòs, who was committed to be trained by him by making a survey of a substantial area. The selected territory was the Ebro Valley and several field campaigns took place in the early 1950s (Fig. 5). The monograph appeared in 1958, and it is one of the most important contributions ever done on the Iberian vegetation, being still constantly



Fig. 5 Seeing the Ebro steppe: J. Braun-Blanquet, Prof. P. Font Quer, Mrs. Braun-Blanquet and P. Montserrat

consulted and cited. This is the starting point of the Catalan school of vegetation science which has been working mainly in the eastern Iberian Peninsula and the Balearic Islands and currently is mostly located in Barcelona.

Another important event that happened in the 1950s was the contact established at the International Botanical Congress in Stockholm by Salvador Rivas Goday, a professor of the University of Madrid, who attended that meeting and attracted the attention of Braun-Blanquet and Tüxen. As a result of this, the 10th IPE (Internationale Pflanzengeographische Exkursion) excursion in the summer of 1953 across a large part of Spain (Fig. 6) was organised, with the participation of several prominent scientists from the Germanic area, particularly Tüxen, Oberdorfer, Lüdi, Gams, Kubiena, etc., and local organisers Rivas Goday, Bolós and Fernández Galiano. The results of this excursion were published in two volumes at the Institute Stiftung Rübel in Zürich in 1956 and 1958, and they are, as the aforesaid monographs by Braun-Blanquet, milestones in the subsequent development of research on vegetation. These presented some of the first synthetic summaries for the Iberian vegetation with a vegetation map by Rivas Goday (1956) (Fig. 7) and the large monograph by Tüxen and Oberdorfer (1958) establishing the basic units and patterns of the temperate Iberian vegetation.

In Portugal the beginnings were also led by Braun-Blanquet, who made contact with a skilled and enthusiastic engineer, António Rodrigo Pinto da Silva, who, together with Arnaldo Rozeira, established a working group which explored the entire country in three long excursions in the 1950s (Fig. 8). The results were published in four papers over several years (Braun-Blanquet et al. 1952, 1956, 1965 and 1972). This dedication of Braun-Blanquet to Iberia was completed with a later monograph on the Basque Country (1967) and reveals his commitment and devotion to the introduction of his method in the Iberian countries.



Fig. 6 Map of the itinerary of the IPE excursion through Spain in 1953 (This figure is largely commented in the text and is from the report: Rivas Goday 1956)

Undoubtedly, such efforts bore fruit. From the original centres of Barcelona, Madrid and Lisbon, the exploration of Iberia has grown intensively from the 1960s until the beginning of this century, resulting in a huge amount of published data (over 145,000 relevés in SIVIM, Font et al. 2009) in a countless number of publications. Two persons have been particularly relevant in this development, as they have guided most of the scientists who have done the fieldwork and analyses: Salvador Rivas-Martínez and Oriol de Bolòs. Rivas-Martínez was intensively trained in learning the Iberian flora by his father during his early childhood and youth and later, when he was a student, spent up to three summer stays with Tüxen in Stolzenau (Zentralstelle für Vegetationskartierung), but without having also direct contact with Braun-Blanquet (Loidi 1996). For that reason Rivas-Martínez was intensely influenced by Tüxen, while Bolòs was purely a Braun-Blanquet pupil. We safely can say that the current state of knowledge of the Iberian vegetation is due to their influence and constant supervision. In the following generation, the development was explosive, initially in Spain but somewhat later also in Portugal. Led by these authorities, a group of people, such as Manuel Costa, Jesús Izco,

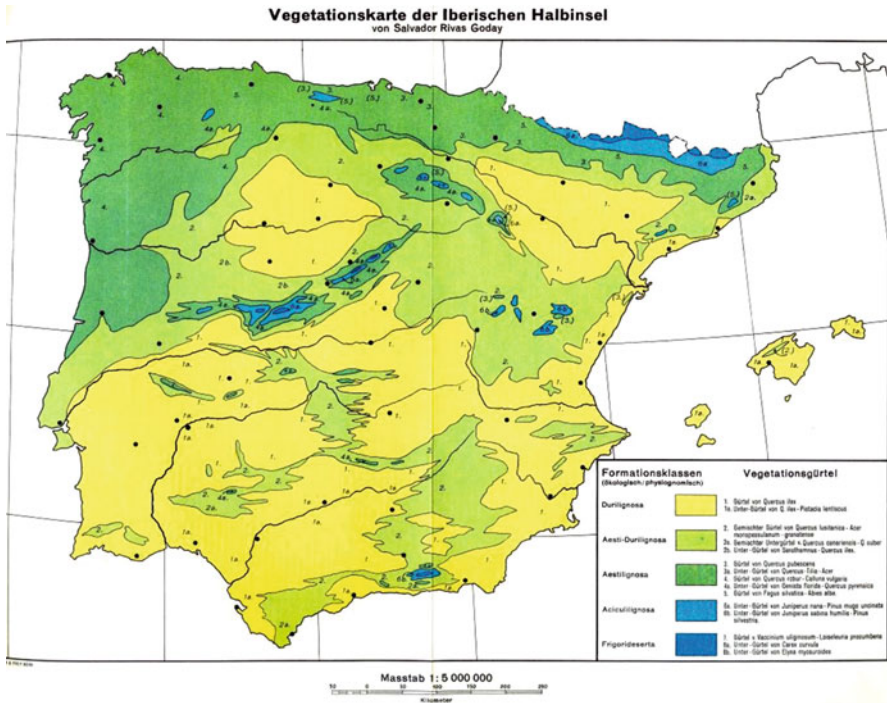


Fig. 7 Rivas Goday's map of the Iberian vegetation of 1956 (This figure is also commented in the text and is from Rivas Goday 1956)



Photo 23. De droite à gauche: Mme et M. A. R. PINTO DA SILVA, Prof. A. ROZEIRA, BR.-BL., chauffeur, assistant M. FONTES, Mme BR.-BL., J. MALATO-BELIZ dans la pineraie près de Tomar.

Fig. 8 Braun-Blanquet in Portugal. In a pine woodland near Tomar, from *right to left*: M. A. R. Pinto da Silva, Prof. A. Rozeira, J. Braun-Blanquet, M. Fontes, Mrs. Braun-Blanquet and J. Malato Beliz, among other persons

Miguel Ladero and Wolfredo Wildpret, started to work intensely in phytosociology under the leadership of the Rivas family in Madrid, while Josep Vigo was trained in Barcelona. In Portugal, the flame was temporarily put out as the original masters got many duties in the forest and agronomic service of their country, but a new and enthusiastic researcher, Mario Fernandes Lousã, restarted the Lusitanian tradition and developed the current flourishing Portuguese vegetation scientist group.

The development during the last decades has been documented sufficiently by other authors (Rivas-Martínez 1996) and it is unnecessary to repeat it in detail. In any case, it can be said that after the intensive, descriptive activity of the period between the 1970s and the 2010s, many researchers have tended to diverge into different fields in which their expertise has been advantageously used, particularly in the field of conservation biology, with the inventory and management of terrestrial habitats, endangered populations and species as well as community ecology.

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Contents

Part I General Conditions

1	Introduction to the Iberian Peninsula, General Features: Geography, Geology, Name, Brief History, Land Use and Conservation	3
	Javier Loidi	
2	Bioclimatology of the Iberian Peninsula and the Balearic Islands	29
	Salvador Rivas-Martínez, Ángel Penas, Sara del Río, Tomás Emilio Díaz González, and Salvador Rivas-Sáenz	
3	Dynamism in Vegetation. Vegetation Changes on a Short Time Scale	81
	Javier Loidi	
4	The Iberian Vascular Flora: Richness, Endemicity and Distribution Patterns	101
	Carlos Aedo, Antoni Buirra, Leopoldo Medina, and Marta Fernández-Albert	
5	Biogeographic Units of the Iberian Peninsula and Balearic Islands to District Level. A Concise Synopsis	131
	Salvador Rivas-Martínez, Ángel Penas, Tomás Emilio Díaz González, Paloma Cantó, Sara del Río, José Carlos Costa, Luis Herrero, and Joaquín Molero	

Part II Description of the Vegetation of the Territories

6	The Lowlands and Midlands of Northwestern Atlantic Iberia	191
	Javier Amigo, Manuel Antonio Rodríguez-Guitián, João Jose Pradinho Honrado, and Paulo Alves	

7 The High Mountain Area of Northwestern Spain: The Cantabrian Range, the Galician-Leonese Mountains and the Bierzo Trench . . . 251
Tomás Emilio Díaz González and Ángel Penas

8 The Pyrenees 323
Josep M. Ninot, Empar Carrillo, and Albert Ferré

9 Trás-os-Montes and Beira Alta 367
Carlos Aguiar and Carlos Vila-Viçosa

10 The Duero Basin 395
Ángel Penas, Sara del Río, Luis Herrero, and Miguel Ladero

11 The Iberian Ranges and Highlands 439
Manuel Peinado, Juan Luis Aguirre, and Alejandro Aparicio

12 The Ebro Basin 513
Javier Loidi

13 The Sistema Central (Central Range) 549
Daniel Sánchez-Mata, Rosario G. Gavilán, and Vicenta de la Fuente

14 The Coastal Levantine Area 589
Pilar Soriano and Manuel Costa

Index of Geographic Names 627

Index of Plant Taxa 637

Index of Syntaxa 663

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