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## Lichen Mapping in Spain and Portugal

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With 2 figures

At present no official lichen mapping projects concerning the Iberian Peninsula and Northern Africa are existing. It may still take a long time of planning until such a project can be started seriously. Knowledge of lichen distribution in Spain is actually restricted to some areas close to research centres and almost half of our country still remains lichenologically unexplored. Moreover, this information refers only to a selection of substrates.

Data compiled in any available map in Spain are originating from taxonomic work or from floristic and phytosociological studies carried out on a regional scale. There is no attempt of mapping lichen distribution on a paniberian scale.

Until now the following maps are available compiled from data collected by the research team under my direction:

- (1) Distribution maps of 122 species plus 7 varieties growing on volcanic and other siliceous rock substrates at low altitude in SE Spain.
- (2) Maps showing the world wide distribution of a large number of species belonging to *Heppia* and *Peltula* have been designed in connection with taxonomic studies dealing with western European and northern African species of these two genera.
- (3) Distribution maps of all lichen species belonging to the families Opegraphaceae and Lichinaceae in SE Spain have resulted from two doctoral theses completed recently.
- (4) Furthermore, distribution maps of the characteristic species forming ombrophobous communities of seashores in Northern Africa and Western Europe are available, too (Fig. 1).

Unfortunately, methods of data collection applied in the different studies have not been uniform. Data resulting from regional studies are being presented in maps showing distribution at different levels of altitude whereas exact reconstruction of locations from larger scale distribution maps often fails.

On the other hand, verification of a majority of the bibliographical data proves to be rather difficult. We have therefore based our maps on our own data, collecting herbarium specimens if possible. Literature has been taken into consideration in the case of *Heppia* and *Peltula* only, using the recent revisions of these genera by WETMORE (1970) and SWINSCOW & KROG (1979).

Our group, in cooperation with my colleagues from Murcia and J. ROWE (Sevilla), has been starting a new project titled "Comparative biogeography of the seashore lichen flora of the Iberian Peninsula and Morocco", supported by the Spanish Government. This project continues preceeding studies on lichens of seashores situated between Cabo de Gata (Almeria) and Cabo de Creus (Barcelona) recently finished in collaboration with some investigators from Barcelona.

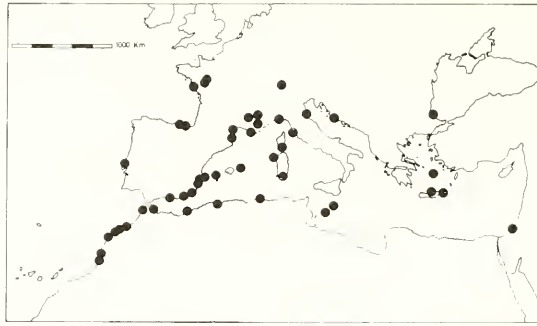


Fig. 1. Distribution of *Lecanactis grumulosa* (Duf.) Fr. var. *grumulosa* in the Mediterranean region.

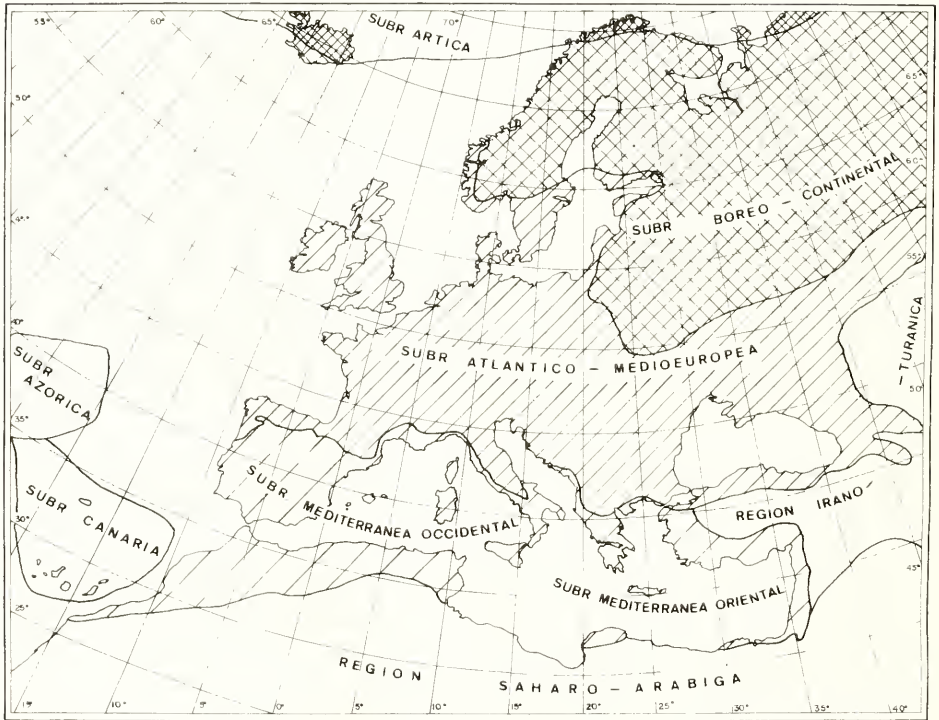


Fig. 2. Bioclimatical regions and subregions of Europe and Northern Africa.

The main objects of the new project are the mapping of the most interesting species, investigations on a correlation between lichen flora and biogeographic belts and a taxonomic revision of the *Pertusaria* species occurring in the described area.

We are using a biogeographical map (Fig. 2) subdivided into subregions. Terminology and limits of chorologic units follow MEUSEL et al. (1965), modified recently by RIVAS-MARTINEZ (1987). Main differences between the two cited schemes are:

- (1) Parts of the circumarctic and circumboreal regions are included in the Eurosiberian region.
- (2) The submediterranean subregion is subordinated to the atlantic-centroeuropean subregion and excluded from the mediterranean region.
- (3) The macaronetic-mediterranean region is divided into two independent regions, which themselves are subdivided into two subregions respectively.

In the studies of lichen distribution in Spain we are going to use a map which includes all of the different bioclimatic belts.

Finally, in my opinion, it would be of great interest to include biogeographic and bioclimatic maps of the whole of Europe in a future atlas of the European lichen flora. Main problems yet to be solved are general agreements on limits of chorological units and on the most useful indices necessary for a correct delimitation of bioclimatic units.

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