High mountain vegetation in the Pyrenees: Diversification into plant associations, main habitats, and Pyrenean sectors

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Abstract

Here, we present a catalogue of the plant associations reported from the Pyrenean high mountain, open to be used on-line through the Atlas of the Pyrenean flora. Each of the 180 plant associations considered is characterized in terms of main taxa, structure, ecological aspects, and geographic distribution, compiled from relevant papers containing phytosociological relevés. The search of further information is facilitated by a list of bibliographic references for any plant association.

Resumen

En esta contribución presentamos un catálogo de las asociaciones vegetales documentadas de la alta montaña pirenaica, accesible on-line a través del Atlas de la flora de los Pirineos. Cada una de las 180 asociaciones consideradas, se caracteriza a través de los principales taxones que la forman, su estructura, sus condicionantes ecológicos y su distribución geográfica, a partir de publicaciones que contengan inventarios fitosociológicos. El acceso a información complementaria se ve facilitado por la lista bibliográfica dada para cada asociación.
Introduction, materials and method

One of the objectives of the project POCTEFA FLORAPYR was to gather and synthesize the information of the Pyrenean high mountain vegetation, as an easy-to-read contribution to the knowledge of plant-community diversity in such a contrasting mountain area. Therefore, it was decided to produce one catalogue of the plant associations reported from the subalpine, alpine and subnival belts of the Pyrenees, taking into account the extant background built with the phytosociological method. The information sources were a wide array of papers based on relevés, from where to gather information on species composition, vegetation structure and distribution for each association. To do so, we have used 197 papers produced during the last 70 years, from territorial monographs to syntaxonomic revisions and to sparser studies. Most of this information was retrieved from the data bank SIVIM (http://www.sivim.info/sivi/), where relevés and distribution of each plant association are easily consulted, or from other data banks.

Results

The provisional catalogue —still being revised and refined— includes 180 plant associations. For each one, the Atlas of the Pyrenean Flora gives main information (http://www.florapyrenaea.org/FLORAPYR/src/home/index.php?idma=0, Fig. 1), standardized in the following terms:

- Authorship, alliance, and bibliographic source for its name and classification
- Geographic distribution, based on administrative units and vegetation belts
- Main plant species (these, linked to the flora in the same Atlas)
- Ecological and physiognomic description
- Bibliographic sources of relevés and diagnoses

Most of the plant associations correspond to vegetation of rocky or scree areas (56 associations) and to grassland (50), two habitat types that form most of the high mountain landscape. Water related habitats harbour a comparatively high vegetation variety (34), clearly more than forests and heaths (25), and than snowbed vegetation (11). When considering separately these categories for each belt, the proportions vary notably.

The subalpine belt harbours 147 associations, in front of 79 found in the alpine belt, and 10 in the subnival summits (Fig. 2). The higher diversification of the subalpine belt is partly due to main habitats vanishing towards the alpine (forests, tall-herb communities, water-related units, dense grasslands), and also to the occurrence of open habitats harbouring communities of alpine character. Thus, 48 associations are common to the subalpine and alpine belts.
Figure 1. Example of the information offered in the Atlas of the Pyrenean flora on the plant association Gentiano alpinae-Caricetum curvulae Nègre 1968.
Figure 2. Number of associations recorded for each vegetation belt and habitat class.