

BIOLOGY OF SPANISH FIR

Arista Palmero, M., Herrera Maliani, F. J. & Talavera S. 1997: *Biología del Pinsapo* [Biology of the Spanish fir]. Junta del Andalucía, Sevilla., 162 pp., ISBN 84-89650-10-1 [in Spanish].

This monograph is primarily based on the PhD thesis of the senior author (Universidad de Sevilla, 1993) and concerned with one of the Mediterranean conifers having very limited natural range. The present range of the *Abies pinsapo* stands covers only approximately 2,500 hectares occurring primarily in three localities Sierra de Grazalema (300 ha), Siera de las Nieves (2,000 ha) and Siera Bermeja (50 ha) and some additional smaller occurrences in the South of Spain.

Apart from the vegetation characteristics of the fir stands the authors deal with the taxonomical status of this species and discuss its relatedness to the *Abies marocana* and *A. tazaotana*, both occurring in northern Morocco.

The largest part of the monograph is aimed at floral ontogeny, the development of male and female flowers and the fecundation. The results are also compared with those of the other fir species.

Flowering has been studied in two subsequent years with the aim to determine the variation within individual localities and among them with regard to the ecological conditions.

Pollination aspects were studied in field experiment. The amount of pollen has been estimated based on pollen catching

method in different stand densities of the largest occurrence of Spanish fir.

Fructification and germination were studied in the field experiments in subsequent years 1991–1992 and they were related to stand characteristics. Seed crops occur in Spanish fir almost regularly each second year. Natural regeneration occurs only in gaps.

Since the genetic structure is not very well known in this species, the reader would expect to get information on gene diversity, genetic differentiation and mating system of this relict species as well as the information on the genetic relationship of this species with another two Moroccan firs *Abies marocana* and *A. tazaotana* based on molecular markers.

The monograph is well-written and illustrated with numerous colour photographs showing the developmental phases of flower ontogeny and embryology.

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