# MANAGEMENT OF THE FORESTS OF *QUERCUS ROBUR* L. IN MOUNTAINOUS AREAS OF GALICIA (NW SPAIN) ACCORDING TO THE ENVIRONMENTAL FACTORS

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**Workshop *"The future of Mountains forests"***

## ABSTRACT

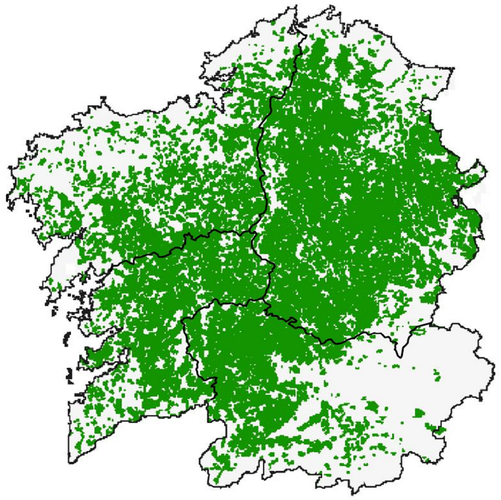
The aim was to study the management of common oak (*Quercus robur* L.) forests living in large areas of Galicia (NW Spain). To achieve it, we have described the site occupied by its natural stands. As some parameters have greater meaning regarding to the environmental description than others, a discriminant analysis of plots was performed to identify those with greater weight. For it, the Two Way Indicative Species Analysis (TWINSPAN) program was used. The analysis is based on the estimation of 25 parameters (topographic, climatic and edaphic) by the sampling of 39 plots. The results show that the distribution of common oak is mainly related to climate and topography, and to a lesser extent with soil factors. So it is necessary to find forestry alternatives to get a more profitable production instead of that obtained with traditional uses and the unsuitable forestry practices (cutting of the best trees and pollarding). Some alternatives could be the following: i) conversion to high forest, ii) maintenance of the coppice forest in areas where firewood is still used, iii) silvopastoral improvement where grazing is important, and iv) recovery of degraded stands by afforestation with other native broadleaves.

**Keywords:** Ecological factors; Northwestern Spain, TWINSPAN; Oak species

## INTRODUCTION: STUDY AREA

*Quercus* species cover a large part of the temperate forests (Pulido, 2002). The most of the more than 400 species of the genus are located in Mexico (Rangel *et al.*, 2002). The climax vegetation of Galicia would comprise different oak species belong of the *Querco-Fagetea* class. According to the IV National Forest Inventory (NFI), the forests of native broadleaves occupy a 31% of the forest area, 441,289 ha, standing out the area covered by *Quercus robur*, 246,446 ha (Galicia Government, 2018). The study area covers the Autonomous Community of Galicia (NW Spain) (Figure 1).

***Figure 1. Quercus robur L. forests in Galicia (IV NFI)***



***Natural Park "Fragas do Eume"***

## METHODOLOGY, RESULTS AND CONCLUSIONS

As a result of sampling, 39 plots of different sizes, depending on the stand density, so that the number of trees Ø ≥ 5 cm were not less than 50 were selected. In each plot, topographic and edaphic data were measured, which together with the climatic information and the results of the soil analyses allowed us to calculate a set of characteristic parameters of the site. Twenty-five parameters have been calculated (four topographical, five climatic and sixteen edaphic) (Diaz-Maroto *et al.*, 2005). The discriminant analysis by TWINSPAN has proven efficient to study the distribution of the *Quercus robur* stands in Galicia. Like principal conclusion, we can say that the distribution of the oak forests depends on the physiographic-climatic factors rather than edaphic conditions. So it is basic to look for other uses to obtain a more profitable production instead of the traditional ones.

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