

Effects of fire on structure, dynamics and regeneration of Quercus pyrenaica ecosystems.

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SUMMARY - Post-fire regeneration is studied in forty-three communities of Quercus pyrenaica in the province of Leon (Spain) burned by surface fires from a few weeks up to 60 years before the sampling, and is compared with four zones which have not been burned. A greater similarity in floristic composition is clearly to be seen in the different phases of one same community than between different communities with the same age of regeneration. The vegetation prior to the fire conditions, therefore, is to a great extent the one which will arise after it, the process constituting a compensatory autosuccession of the regression suffered. Specific diversity increases in the first years, due mainly to an increase in species richness, showing later values more in accordance with each specific zone than to the time which has elapsed since the fire. All the communities studied are very heterogeneous, but the action of the fire can be seen as an additional generating factor of heterogeneity a few weeks after the burning. From all this, it can be deduced that these communities have been adapted to fire for a very long time and that most of the species have developed selective mechanisms to regenerate themselves quite effectively after the fires.

KEYWORDS : post-fire regeneration, Quercus pyrenaica, autosuccession, diversity, heterogeneity.

INTRODUCTION

Due to the increment of the great number of fires detected in the last few years, above all in the Mediterranean zones, the theme of forest fires has acquired a considerable importance nowadays. Nevertheless, this phenomenon, although it has increased in the last few decades, does not constitute something exceptional, rather it is a normal ecological factor, which has influenced the dynamics of the ecosystems of these zones for a very long time. Even before the appearance of man, fires were produced by lightning. Fire frequency increased later on by the action of farmers and shepherds. This has conditioned the development of a vegetation adapted to resist fire, and which usually resprouts immediately after the burning. The shrubby formations proper to the Mediterranean climates which are adapted to more or less periodical fires, are numerous, e.g. the Californian chaparral (BISWELL 1974, PARSONS 1976, KEELEY & KEELEY 1981) and the maquia and garrigue in France (TRABAUD 1980, TRABAUD & LEPART 1980), Israel (NAVEH 1974) and Greece (PAPANASTASIS 1977, 1978).

The communities of Quercus pyrenaica discussed here cannot really be considered as bushes, but in most cases they cannot be considered as real woods either, because they are usually very much altered and the shrubby forms are predominant. In the zone studied, they are situated between the phytogeographic Mediterranean region and the Eurosiberian region (RIVAS *et al.* 1984). Their present state of degradation is due mostly to human activity, which includes the frequent fires, some of which must have been accidental, which would have extended from the neighbouring pasture grounds, and others ignited on purpose to make the area more practicable for cattle.

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