FES 2023

The Role of Dehesas in Fire Management in Extremadura, Spain: An Analysis of Forest Fire Evolution and Agroforestry Systems

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Abstract

The dehesas, traditional agroforestry systems characterized by a combination of pastures and scattered forests, play a crucial role in fire management in the Extremadura region of Spain. These systems act as natural barriers and reduce the spread of fire due to their diverse structure. The presence of dehesas in Extremadura has significantly influenced the evolution of fires in the region. The aim of this study was to analyse the evolution of forest fires in Extremadura and to deepen the role of dehesas as an agroforestry system against fires. The data from the European Forest Fire Information System and the Global Wildfire Information Systems (2002-2019) were used, along with cartographic information on fire risk areas and the surface area of pastures and dehesas in Extremadura. The results show that forest fires in Extremadura have decreased by around 26% in the last decade, and the number of hectares burned has been reduced by 94,514 ha. The dehesas act as a natural barrier against forest fires, and most of the large forest fires in Extremadura occur where dehesa spaces cease to exist, and the forest mass without proper management increases exponentially. Although the number of forest fires during the fire season (July to September) is only 1.5% higher than outside the fire season, the number of affected hectares is 60.30% higher. The results reflect that, despite the decrease in the number of forest fires, attention must be paid to the magnitude of existing fires. In summary, the dehesas in Extremadura act as natural barriers and reduce the spread of fire due to their diverse structure. The conservation and restoration of dehesas are essential to ensure the protection of the region against forest fires. The implementation of sustainable management practices and the strengthening of detection and response systems are fundamental to mitigate the effects of fires in Extremadura and preserve its valuable natural heritage.