Chapter 13

The Fire in the Mediterranean Region: A Case Study of Forest Fires in Portugal

Ana Cristina Gonçalves and Adélia M.O. Sousa

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Abstract

Forest fires are a common disturbance in many forest systems in the world and in particular in the Mediterranean region. Their origins can be either natural or anthropogenic. The effects in regard to the time trends, vegetation, and soil will be reflected in the species distribution, forest composition, and soil potential productivity. In general, it can be said that the larger the fire and the shorter the time between two consecutive occurrences, the higher the probability to originate shifts in vegetation and soil degradation. In the Mediterranean region, the number of fire ignitions does not reflect the burnt area due to the occurrence of very large fires. The latter occur in a very small proportion of the number of ignitions, but result in very large burnt areas. Also there seems to be an increasing trend toward larger fires in the Mediterranean region due mainly to climatic and land use changes. This case study highlights the importance of vegetation regrowth a short time after the fire to maintain both forest systems and soil conservation.

Keywords: Portugal, burnt area, number of fires, spatial dynamic, temporal dynamic, vegetation

1. Introduction

Mediterranean forest types can be characterized by their heterogeneity, whether climatic, edaphic, geomorphologic, floristic, biogeographic or historical, and instability and vulnerability, consequences of the former and due to genetic and ecological factors as well as to the anthropogenic actions [1]. The Mediterranean flora is composed of a wide variety of tree, shrub, and herbaceous species, and their distribution depends on the edaphoclimatic conditions and on human intervention [1, 2]. The climatic conditions that are most influential on the species distribution and growth are the temperature and the precipitation, as well as