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Past, Present and Future.**

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## ECOLOGICAL INDICATORS OF LAND DEGRADATION DUE TO FREQUENT FIRES: THE CASE OF PENTELI MT, ATTICA, GREECE

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Mediterranean Aleppo pine forests of Greece develop at areas of low altitude, where most human activities take place. As a result, these forests are frequently burned either accidentally or by purpose. Aleppo pine (*Pinus halepensis*) forests are resilient to fire, as long as fire interval does not exceed those time thresholds that prevent plant species from regenerating. In the latter case vegetation structure and composition change and land degradation may occur. The aim of this study was to identify ecological indicators of land degradation as a result of fire and project them at the landscape level with the use of GIS. Mountain Penteli was chosen as a study site. This mountain is near to Athens metropolitan area and it is dominated by Aleppo pine forest formations. A large number of fires have occurred in the area during the last decades. In the summer of 1995 and 1998 large surfaces of the mountain were burned, each fire affecting sites with different time intervals since the last fire. In addition, a large part of the area burned in 1995 was re-burned during the 1998 fire. The ecological parameters chosen as indicators of potential land degradation were vegetation cover, Aleppo pine density and species richness of the annual taxa of Gramineae and Compositae. Vegetation cover is expected to indicate the probability of site erosion. Pine density presents the ability of the regenerating community to restore its forest physiognomy. Species richness of annual taxa of Gramineae and Compositae indicate the vulnerability of the site to invasion by colonizing anemochorous species. Field data were collected in spring of 1999 from a grid of plots spread over an area of 5800 ha according to a specific sampling design. The plots sampled were representing either young regenerating communities (1" year after fire; fire burst 1998 - field campaign 1999) or regenerated communities at their early successional stages (4" year after fire; fire burst 1995 - field campaign 1999). For each of the ecological parameters, indicators and for each post-fire age (1 and 4 years respectively), classes of values were formed and knowledge rules relating each of the classes to a value of the relevant index were applied, based on expert opinion. The indices of risk for degradation were calculated with the use of GIS and they were represented in a series of maps.