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Abstract

Effects of fire on tree survival and regeneration in a Mediterranean ecosystem

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Portugal is the only European Mediterranean country where the annual average burnt area has increased in the last two decades. Although forest fires at national level annually represent very important losses, few studies evaluated the mortality and the capacity of auto-regeneration of the different tree species in burnt areas. After a wildfire that occurred in September 2003, we started a research project in a public protected area in central west Portugal. The main goal of this study, still ongoing, is to evaluate the post-fire regeneration capacity of different tree species occurring in the country. We expect to quantify the survival/mortality rates of selected tree species in relation to variables such as fire severity, tree height and diameter, and evaluate species regeneration strategies as well as their growth rates after fire disturbance. In this study 667 trees from 11 species were selected for monitoring, namely: *Castanea sativa*, *Crataegus monogyna*, *Eucalyptus globulus*, *Fraxinus angustifolia*, *Olea europaea* var. *sylvestris*, *Pinus pinaster*, *Pinus pinea*, *Pistacia lentiscus*, *Quercus coccifera*, *Quercus faginea* and *Quercus suber*. Results obtained two springs after fire, show that almost all broadleaved trees (9 species) survived to the fire. Contrarily, the majority of coniferous trees died after the fire. Despite the very low mortality observed in broadleaved trees, most of them did not regenerate from the crown, but only from the base, trunk or roots, which means that the recovering process will be much slower. Exceptions to this were cork oak and eucalyptus. Within native species, *Quercus suber* is by far the most resilient to fire. For most part of the monitored tree species, which resprouted from the base of the trunk, *Eucalyptus globulus* was the one that recovered faster, followed by *Fraxinus angustifolia* and *Quercus faginea*.

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