

PST24 - Effect of fire on the vegetation of Mediterranean temporary ponds

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Fire is an important disturbance factor of ecosystems. Its impact on forest ecosystems has been well studied, but its effects on wetlands, notably temporary ponds, remain poorly documented. In Morocco, temporary ponds are numerous and mostly found in forested and agricultural environment. Forest fire has been increasingly frequent over the last years eventually spreading to the temporary pools. In addition some farmers light fire to get rid of the biomass of crop residues. No assessment of the impact of fire on the plant biodiversity of temporary ponds has been made.

The impact of fire on soil samples was tested in an experiment in controlled conditions. Soil samples were taken in August 2013 from 20 ponds in the province of Benslimane (Morocco). All samples were homogenized and from that homogenized two series of 20 replicates were taken. The first one served as control while those of the 2nd series were subjected to a blowtorch flame of approximately 15 cm of length sent for 30 seconds. All soil samples were put in germination conditions (from September 2013 until 30 April 2014) and watered daily.

The fire treatment resulted in significantly lower number of species that germinated from the soil samples as well as a lower number of both annual and perennial pond-characteristic species. For these same groups of species, a similar result was found on the number of germinated seeds. In contrast, no significant effect of fire was found on the number of species and on the number of seeds that germinated from opportunistic species.

These results highlighted the high sensitivity to fire of seeds of pond-characteristic species, contrary to the opportunistic. Wild fires and those set by farmers could lead to the loss of plant diversity in Mediterranean temporary ponds, particularly of those threatened and protected species that are characteristic to this habitat.

Fires in forests and agricultural land should be avoided and in the latter alternative management techniques should be considered to reduce the biomass of crop residues. Fire management should be replaced by more suitable techniques such as mechanical cutting of vegetation or the introduction of grazing to ensure the conservation of plant diversity in temporary ponds.