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[10] Reed-bed decline phenomenon in central Italy: the case of Montepulciano lake

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Our contribute is part of a more comprehensive study about the die-back syndrome of *Phragmites australis* (Cav.) Steud. in central Italy (Gigante et al., 2011; Gigante et al., 2014). The lacustrine ecosystem of Montepulciano lake, designed as a Site of Community Importance (SCI) according to the European 92/43/EEC 'Habitats' Directive, has been investigated performing a diachronic analysis of reed vegetation maps. Moreover analyses of macromorphological traits of common reed beds together with selected sediments and interstitial water chemical parameters and flooding were done. Main aim is to check the regression of reed-bed and its relations with these factors. Our results highlighted that, in some areas of the reed-beds, macromorphological traits of reed decline are the typical ones of the die-back syndrome reported for other sites: clumped habit, dead buds, higher stem density and reduced height. These data together with the retreat of reed-beds from the water surface during the last decades confirm that this phenomenon occurs in central Italy and its distribution area should be probably enlarged to encompass all the Mediterranean basin. As it can be found in literature, the symptoms of reed die-back are strongest in individuals (ramets) of permanently flooded areas. Some chemical parameters of the sediment, like availability of arsenic, chromium, cobalt and sulphate, seem to be correlated to this process. The results of the investigations in Montepulciano lake confirm that stressing conditions (e.g. flooding) co-occurring with the presence of some chemical elements (e.g. heavy metals) in the soil may have an effect on the decline of common reed.

References

Gigante D., Angiolini C., et al., 2014. New occurrence of reed bed decline in S-Europe: do permanent flooding and chemical parameters play a role? *Comptes rendus Biologies*, 337 (7-8): 487-498.

Gigante D., Venanzoni R., Zuccarello V., 2011. Reed dieback in southern Europe? A case study from Central Italy. *Comptes rendus Biologies*, 334 (4): 327-336.