

CORRELATION BETWEEN SEXUAL REPRODUCTION IN *PHRAGMITES AUSTRALIS* AND DIE-BACK SYNDROME

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The common reed *Phragmites australis* (Cav.) Trin. ex Steud. (syn. *P. communis* Trin.) is a member of *Poaceae* with a widespread distribution in both hemispheres, in different habitat types from river/lake shores, wetlands, coastlands and estuarine habitats, to ruderal, disturbed and even urban areas, hence it is considered a subcosmopolite species.

In the last decades, reeds are dying back at a fast rate in sizeable areas of Europe, with significant impacts on important wetland functions (biodiversity, stability of river and lake margins, water quality) and local economy. Similar symptoms have been detected even in central Italy.

Besides ecological, morphological or anatomical parameters, studies concerning some reproductive aspects might also be interesting in order to detect the health condition of reed-dominated ecosystems. In all the plant species, traits related to the flower biology, as the seed production and the seed viability, can be a good indicator of the health condition. In plants exhibiting both vegetative and sexual reproduction, the energy allocation can be shifted from one to the other strategy in response to environmental stress; it is well known that sexual reproduction decreases the vulnerability of a population to disturbances and biotic stresses by increasing the genetic variability.

On this ground, we took into account the reproductive features of a declining reed stand in central Italy, where the die-back syndrome was recently detected (Gigante *et al.*, 2011), with the aim both to extend knowledge on sexual reproduction in *P. australis* and to highlight links between sexual reproduction and die-back symptoms.

In this frame, cyto-histological analyses of inflorescences at different developmental stages were carried out in permanent plots where morphological investigations were also performed. Histochemical analyses were also carried out to verify pollen and seed viability.

An interesting link between decline symptoms and reproductive aspects was pointed out, showing that higher rates of viable seeds are recorded in the dying-back reed stands.

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

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