

Outstanding accumulation of *Sphagnum palustre* in central-southern Italy

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Lake Fibreno is a site where some outstanding anomalies for the flora and vegetation of the wetlands of peninsular Italy are concentrated. Here one the southernmost European population of *Sphagnum palustre* occurs, and is restricted on the surface of a free-floating island, *i.e.*, a round-shaped portion of fen (with a core of *Sphagnum*), erratically floating on the surface of a submerged sinkhole.

Geological evidences point out the existence in the area of a large lacustrine basin since Late Pleistocene. The progressive filling of the lake, caused by changing in climatic conditions and neotectonic events, resulted in the formation of peat deposits in the area, following different depositional cycles in a swampy environment. So that, the studied free-floating island, probably originated around lake margins in the waterlogged area, was somehow isolated from the bank and started to float. Once the separation occurred, sedge peat stopped to accumulate, thus enhancing the role of *S. palustre* as the main peat-forming plant.

The vegetation occurring at the moment of the isolation of the island was a coverage of *Salix cinerea/Populus tremula* stands below which cushions of moss and, in a lower extent, *Thelypteris palustris/Equisetum palustre* accumulated resulting in the formation of 2-3 meters of peat dominated by reeds and sedges. This vegetation has been partially degraded by grazing until 1970s, while in 1980s the lake became a nature reserve.

Since then, the succession could resume in a spontaneous and natural way and it was possible for the vegetation to recover to natural dynamics and growing rate. The *Sphagnum* tussocks were measured in an empirical way at a distance of about 60 years after the last signaling and the result was a measurement of an accretion open to about 70 cm thick. Moreover, in a recent study, a 4-m deep peat core was collected from the centre of the island and results were surprising. In fact, ^{14}C age dating, confirmed using ^{210}Pb and ^{137}Cs , showed that the top 2 m of ombrotrophic *Sphagnum*-peat has accumulated in only ~ 100 years (growth rate: ~ 2 cm/yr).

These values are extremely important in the evaluation scenario of the importance of these habitats especially considering that the site is currently circumscribed in a Sub-Mediterranean climate area (deciduous species-rich oak forests dominate the slopes of the catchment, and Mediterranean evergreen woody species are scattered on topographical discontinuities).