



ABSTRACTS

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<http://www.burgenland.at/natur-umwelt-agrar/natur/biologische-station-neusiedler-see/>

**"Limnological research in and around the
European Alps –
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Historical colonization patterns of Nostocales (Cyanobacteria) in a deep lake south of the Alps

Since the beginning of the 1990s, Lake Garda showed the appearance of surface water blooms of *Dolichospermum lemmermannii* (Nostocales). In the successive years, the blooms appeared also in other large lakes south of the Alps (Iseo, Como and Maggiore). Nevertheless, the identification of the time of establishment of the populations of *Dolichospermum* in the southern subalpine lake district remained unclear. Recently, the first establishment of the populations of *D. lemmermannii* in Lake Garda has been evaluated by the counting of sub-fossil akinetes conserved in the core sediments, and by estimating the abundance of filaments germinated from sub-fossil, viable akinetes. These techniques indicated the beginning of the colonization of *Dolichospermum* in the middle of the 1960s. Strains of *D. lemmermannii* germinated from akinetes isolated from the core sediments between the 1989 and 2012, and from environmental samples, did not show any mutation or recombination signal in the *rpoB* gene. In Lake Garda, the establishment of *Dolichospermum* in the middle of the 1960s coincided with the beginning of the increase of TP as inferred from the sub-fossil diatoms in the core sediment layers. These results supported the hypothesis of a strong link between the eutrophication of the lake and the development of Nostocales. Possibly, the spread was reinforced by the increase in the water temperatures observed in the last three decades. The development of *Dolichospermum* in Lake Garda will be discussed also in the light of the appearance of other cyanobacteria that, apparently, could contribute to reduce the dominance of *Planktothrix rubescens*