Short communication

A pseudoviviparous specimen of *Lobelia dortmanna* L. in Lake Haptatjørn (S.W. Norway)

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Abstract

In Lake Haptatjørn (S.W. Norway) a pseudoviviparous specimen of *Lobelia dortmanna* L. was found. The flowering stalk of the specimen bore a small rooting plant instead of flowers. No other reports of this way of vegetative propagation are known for this species.

1. Introduction

In the littoral zone of the oligotrophic lakes in S.W. Norway the isoetid Water Lobelia (*Lobelia dortmanna* L.) is often one of the dominant species. It displays a generative propagation by means of bisexual flowers. According to Faegri and van der Pijl (1979) fertilisation takes place before the flowers open above the water surface and, therefore, the species is strictly self-fertilizing. Farmer and Spence (1987), however, observed the initiation of flower buds above the water surface and, therefore, cross pollination cannot be excluded. Inflorescences that are not able to reach the water surface usually have cleistogamous flowers (Cook, 1974; Casper and Krausch, 1981). Until now vegetative propagation is assumed to occur exclusively by means of the growth of axillary buds at the base of the old flowering stalks (Moeller, 1978; Farmer and Spence, 1987). Generative propagation, however, is assumed to be far more important than vegetative propagation (Farmer and Spence, 1987; Szmeja, 1994). During the third week of July 1994 several Water Lobelia stands in southwestern Norwegian lakes were studied by means of SCUBA diving. At that time all these stands were flowering.

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Fig. 1. A pseudoviviparous specimen of *L. dortmanna* L. found in Lake Haptatjørn (S.W. Norway). The stalk that normally bears flowers ends in a small rooting plant. The total length (excluding the roots) is 13.4 cm.

2. Observations

On 22 July in the southeastern part of Lake Haptatjørn (county of Sokndal, 58°25'37" N, 6°13'45" W) a specimen was encountered of which the totally submerged stalk bore a small rooting plant instead of flowers (Fig. 1). The fresh weight of the specimen was 1.56 g. The total length (excluding the roots) was 13.4 cm. The stalk of this specimen was not different from that of normal flowering plants, except that it was relatively short. Other specimens with this aberration were not found.

3. Discussion

As far as we know our find illustrates a mode of vegetative propagation that has not been described before for the Water Lobelia. Vivipary i.e. early germination of seeds before they are shed from the plant does not seem very likely as the stalk very typically did not bear any other flowers, flower buds or fruits. Furthermore, the seeds of *L. dortmanna* need a cold stratification of 1 or 2 months before they are able to germinate (Farmer and Spence, 1987). Therefore, we conclude that the observed specimen displays pseudovivipary, i.e. the replacement of generative reproducing structures by vegetative propagules. This phenomenon is well known for many water plants. The replacement of flowers by turions or tubers, for instance, is described for species such as *Caldesia parnassiflora* (L.) Parlatore, *Myriophyllum verticillatum* L., *Luronium natans* (L.) Rafin. and *Nymphaea lotus* L. (Arber, 1920; Sculthorpe, 1967). Goebel (1879) already described the replacement of sporangia by young plantlets for *Isoetes lacustris* L. and *Isoetes echinospora* Durieu. The replacement
of flowers by entirely vegetative plantlets is described for continually submerged specimens of several *Echinodorus* species (Sculthorpe, 1967).

Normally seeds and vegetative shoots of *L. dortmanna* are not likely to be dispersed over a large distance because the seeds sink very rapidly (Casper and Krausch, 1981; Farmer and Spence, 1987) while the vegetative lateral shoots produced at the base of the old stalks root even more closely to the mother plant. The pseudoviviparous mode of propagation as encountered in Lake Haptatjørn, is likely to benefit the dispersal over a 'larger' distance.

At the moment it is still unclear whether pseudovivipary is indeed very rare or whether it occurs more frequently in *L. dortmanna* populations. The specimen encountered in Lake Haptatjørn is kept in the herbarium of the first author.

References