

BRIEF COMMUNICATION

A HETEROPHYADIC MODIFICATION IN *EQUISETUM FLUVIATILE* L.

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Some Floras as well as other publications mention the occurrence of the forma *serotinum* or *campestre* in species of the section *heterophyadica* of *Equisetum* subgenus *Equisetum* or *Eu-equisetum*, e.g. in *E. arvense* (PAULIN, 1911: f. *campestre*; HEGI, 1935: f. *campestre*; VAN OOSTSTROOM, 1948: f. *serotinum*; STEFANSSON, 1948: f. *campestre*). The opposite case, viz. the appearance in early spring of fertile stems not containing chlorophyll, in normally homophyadic species has, as far as is known from literature, never been observed. This phenomenon, which presented itself in *E. fluviatile*, is described.

Rhizomes of the latter species were transferred in late summer of 1972 from Ewijk, province of Gelderland, Netherlands, to the Botanical Garden of the University of Nijmegen and planted in the swampy bank of a pond. The water level in this pond is regulated artificially, whereby fluctuations of 10–15 cm are possible. During the winter of 1972–1973 the level had been above average and the stand of the rhizome was flooded. The bank became dry at the beginning of April. On April 25 many green stems had developed, which reached a height of 2–5 cm and up to 4 mm in diameter. Amongst them, on a short distance of one another, two little fertile stems were observed with already fully developed cones, which were opening; one of them was shedding spores. On April 26 one internode of the latter was cracked, which revealed that the tissue was disintegrating. Both stems were then collected and dried (fig. 1). They showed much resemblance with the fertile stems of *E. arvense*, the most striking difference being their smaller dimensions. They were about 8 cm in height including the cones, which were 8–10 mm in length with 6–7 whorls of sporangiophores. The internodes of the stems were scarcely 2 mm in diameter. The number of ridges and sheath segments was 5–6. Another difference of the stems with those of *E. arvense* was the more glass-like appearance of the internodes. Stems and sporophylls contained no chlorophyll, only the segments of some sheaths were greenish in the median parts. The spores showed the normal spherical form, green colour, and well-developed elaters. Sown on tap water and on Knop-medium, both solidified with 1 per cent of agar, the spores showed a high germination percentage of 98–99 per cent within 48 hours, which is common for mature spores of *E. fluviatile*.

It may be supposed that the transplantation of the rhizome of *E. fluviatile* has induced the above phenomenon. Fluctuations of the water level often occur



Fig. 1. Fertile stems of *Equisetum fluviatile* L. \times 1.

in the natural habitats of this plant without causing this aberration from the homophyadic form.

As early as 1889 LUERSSSEN stated that there is no sharp distinction between the taxa *homophyadica* and *heterophyadica*, suggesting the doubtful value of this difference from a phylogenetical point of view. The finding described in this paper is in agreement with this opinion. Furthermore, it is supported by the fact that *E. arvense* and *E. maximum*, which might be called extremely heterophyadic (*vernal*ia), do not hybridize mutually, whilst *E. maximum* does hybridize with *E. palustre* (*homophyadica*), and *E. arvense* with *E. fluviatile* and with *E. palustre* as well as with *E. pratense* (*heterophyadica subvernal*ia).

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