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On the Distribution of Arenaria gothica Fries and the Significance of Postglacial Plant Migration

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Introduction

Arenaria gothica is a European boreal-montane plant element according to Hultén (1950) and thus must have survived the last glaciation anywhere in Europe. As discussed in previous papers, we are forced to assume several centres of glacial survival for European plants during the last glaciation (Tralau, 1958, 1959, more literature on the object is to be found here). These centres were chiefly located in Scandinavia, Iceland, in Britain, and of course in the Central European lowland. In the case of *Arenaria gothica* the glacial survival took place probably in Central Europe only.

Arenaria gothica Fries

(*Arenaria ciliata* ssp. *Gothica* [Fries] Rouy et Foucaud; *Arenaria Jurana* Genty; *Arenaria ciliata* var. *laxior* Gremli; *Arenaria ciliata* f. *jugensis* Genty)

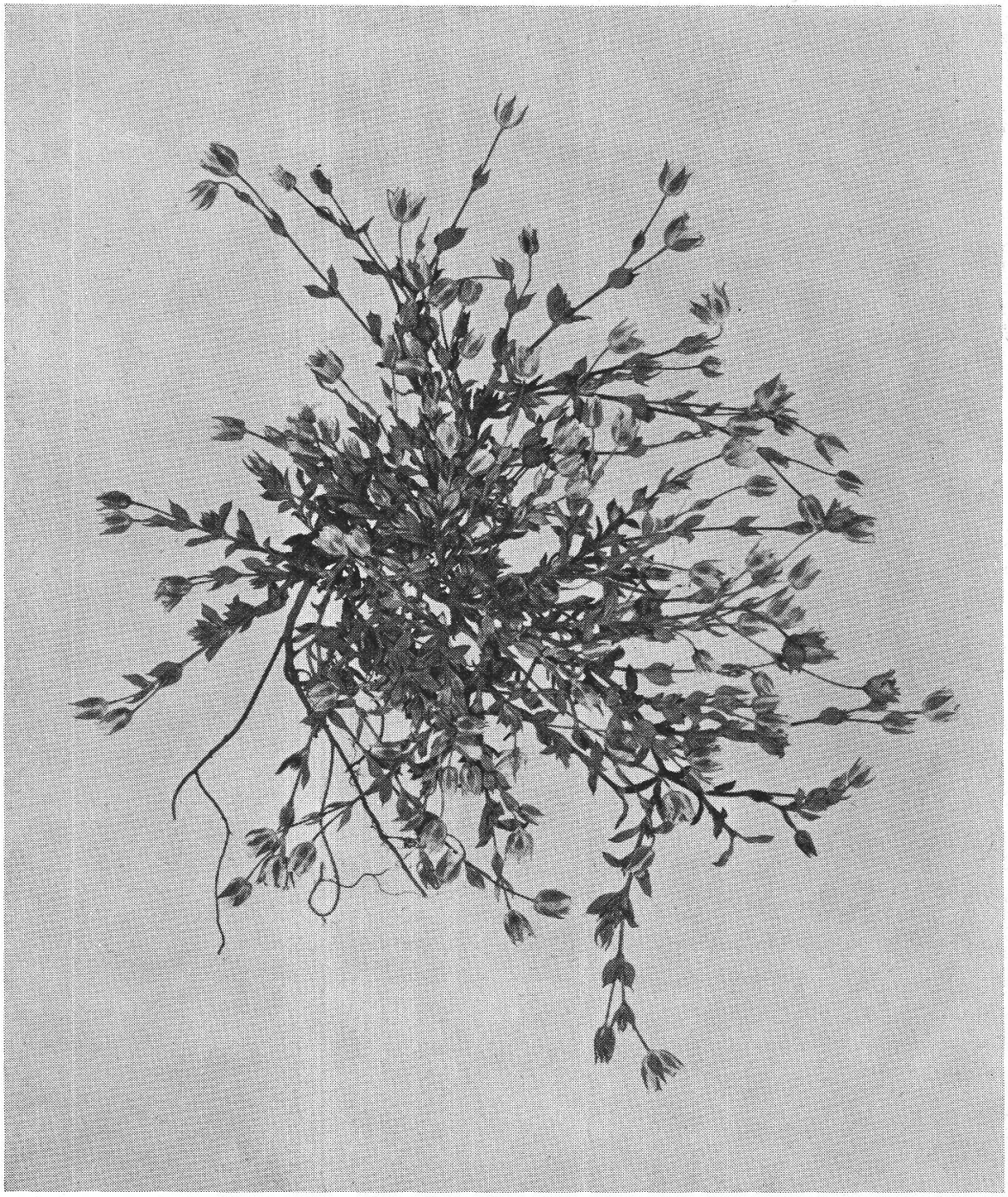
Arenaria gothica has an obvious disjunct distribution.

On the Swedish mainland it is found on the Kinnekulle in the province of Västergötland (cfr. Mathesius, 1854, and Rudberg, 1906) and besides this in a lot of places on the isle of Gotland (cfr. Lenström, 1888, Johansson, 1897 and 1910).

In England the recent occurrence of the species is known from the region of Ingleborough (at Ribblehead, Lister Rotheray, Journ. of Bot. 1889) according to Druce (1932).

In Central Europe the plant has been found in the Jura of Switzerland and France (Hegi III, Fournier, 1946).

Besides morphological differences *Arenaria gothica* is distinct from other closely related species of the *Arenaria ciliata*-complex by the chromosome number. *Arenaria gothica* counts $2n = 100$ and *Arenaria ciliata* $2n = 40$ chromosomes. So does also *Arenaria humifusa*. An intermediate stage is found in *Arenaria norvegica* which is known to have $2n = 80$ chromosomes. The cytological investigations leading to these results have been carried out and published by Horn (1948). Except *Arenaria gothica* all the other species mentioned were mapped by Hultén (1958).



Arenaria gothica Fries from Gotland, Sweden

In Sweden *Arenaria gothica* is to be found in typical open habitat vegetation. That is to say it occurs on chalk and limestone in so called "alvar" vegetation. Not very different features are to be seen in Switzerland where *Arenaria gothica* occurs on sandy shores of lakes. According to Hegi (op.c., p.410) the plant is spreading during dry and retaining during wet summers, that means in the later case when the other components of the vegetation are favoured by moisture. The survival of the species thus seems to be a question of concurrence.

The fossil finds in south-east England, which are referred to the Full-glacial period, when open habitat vegetation dominated, point into the same direction.

It is no doubt that *Arenaria gothica* originated from the *Arenaria ciliata*-complex as it has a higher chromosome number than this and is therefore no relic species. Probably it arose anywhere in Central Europe under glacial conditions, when chromosome doublings are frequent. From this unknown spot—if it arose during the Würm-glaciation—or from one or more centres of survival of the last glaciation it spread to the places where it is to be found at present but it has become extinct in all intermediate places.

The distribution of *Arenaria gothica* Fries: • = recent occurrence, o = Full-glacial (Würm) occurrence (according to Chandler, 1921, and Reid, 1949)

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