

# SOME DATA ON THE KARYOTYPES OF *STELLARIA NEMORUM* L. SSP. *NEMORUM* AND *STELLARIA NEMORUM* L. SSP. *GLOCHIDISPERMA* MURB. IN THE NETHERLANDS

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## SUMMARY

Both *Stellaria nemorum* L. ssp. *nemorum* and *St. nemorum* L. ssp. *glochidisperma* Murb. occur in the Netherlands, mainly in two small niches: ssp. *nemorum* is found in the south of the province of Limburg whereas ssp. *glochidisperma* is growing in the neighbourhood of Norg (province of Drente).

The karyograms of both subspecies are the same (fig. 1); both have a diploid number of 26 chromosomes. These data are in agreement with those of PETERSON (1935, 1936). The morphology of the chromosomes is described.

As was first published by MURBECK (1890, 1891, 1899), two subspecies, mainly on morphological grounds, can be recognized in *Stellaria nemorum* L., viz. *S. nemorum* L. ssp. *nemorum* and *S. nemorum* L. ssp. *glochidisperma* Murb. These two subspecies can be found almost all over Europe (BLACKBURN & MORTON 1957, GREEN 1954, LAWALRÉE 1953, 1954a & b, PETERSON 1935, 1936, ROHWEDER 1939) and both are also known from the Netherlands (ANDREAS 1955, 1956). However, in the Netherlands they occur rarely and their distribution is limited to two niches: ssp. *nemorum* is mainly found in the south of the province of Limburg, whilst ssp. *glochidisperma* grows in the neighbourhood of the village of Norg (province of Drente).

In agreement with modern taxonomical conceptions, as many evidences as possible should be used for the delimitation of systematical units. In this respect preliminary karyological data on number and morphology of the chromosomes of these two subspecies are given in this paper, which may be of some use for taxonomists.

Seeds of ssp. *nemorum* were obtained from a population growing in the botanical garden "De Wolf" at Haren, near Groningen. These plants originated from South-Limburg. Seeds of ssp. *glochidisperma* were collected at their habitat near Norg.

Seeds of both subspecies were sown in Petri dishes and after germination their root tips were pretreated with 0.004 mol 8-hydroxyquinoline during 2–3 hours, after which fixation was performed in acetic alcohol (1:3). The root tips were stained with leucobasic fuchsin. To get satisfactory results, some modifications on the usual Feulgen technique were applied: acetic alcohol (1:3) : 45 minutes; absolute alcohol: 15 hours; hydrolysis (1 N.HCl at 58°C): 20 minutes; leucobasic fuchsin: 6–7 hours; tap water: 10 minutes.

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Squashes were performed in 45 % acetic acid. Pretreatment with  $\alpha$ -bromonaphthalene, colchicine, paradichlorobenzene and cold shock did not give satisfying results. Even with 8-hydroxyquinoline pretreatment the spreading of the chromosomes was rather poor.

Slides were made permanent by a freezing method and embedded in euparal.

Table 1.

chromosome number (2n)	frequencies in <i>ssp. nemorum</i>	frequencies in <i>ssp. glochidisperma</i>
24	2	1
25	4	4
26	58	47

The following chromosome numbers were counted (*table 1*). Owing to the pretreatment, by which not only a spreading but also a contraction is caused, no absolute data of the size can be given. The average relative length varies from  $2.5\mu$ – $4.5\mu$ , the diameter is about  $0.5\mu$ .

There are 5 metacentric, 6 submetacentric and 2 acrocentric chromosomes in a haploid set. The relative positions of these primary constrictions are given in a karyogram (*fig. 1*). As the chromosome sets of both subspecies are similar, only one karyogram is presented. No satellites and secondary constrictions can be detected.

There is some variability in chromosome number. But taking into account that the deviating numbers (24 and 25) occur especially in slides, where spreading is very poor and that the deviating numbers are less than 26, it seems quite justified to consider 26 as the right number, 24 and 25 may be considered as artefacts.

In two chromosomes no primary constriction can be found. It may be possible, however, that subterminal constrictions exist, which can not be demonstrated owing to the smallness of the chromosomes.

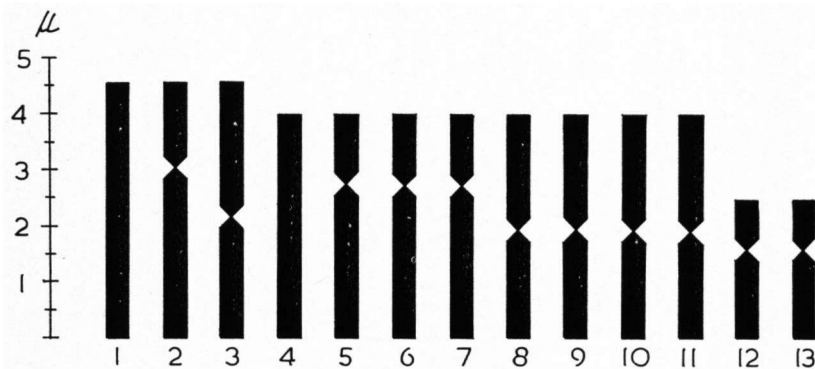


Fig. 1. Karyogram of *Stellaria nemorum* L. ssp. *nemorum* Murb. and *S. nemorum* L. ssp. *glochidisperma* Murb. ( $n = 13$ ).

In his study on these two subspecies in Sweden, PETERSON (1935, 1936) mentions the same chromosome number for both subspecies ( $2n = 26$ ), but does not give morphological details. BLACKBURN & MORTON (1957) investigated the chromosome number of ssp. *nemorum* in Great Britain and found likewise  $2n = 26$ .

From the results of this study it may be concluded that there does not exist any difference in chromosome number and karyotype between the two subspecies of *Stellaria nemorum* L. in the Netherlands.

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