

## MEETINGS OF THE ROYAL BOTANICAL SOCIETY OF THE NETHERLANDS

### MEETING OF THE SECTION FOR VEGETATION RESEARCH ON MARCH 28, 1980

G. VAN WIRDUM (*Rijksinstituut voor Natuurbeheer, Broekhuizerweg 2, 3956 NS Leersum*)

#### Hydrology of the poikilotrophic zone in the paludisphere

M. C. GROENHART (*Hugo de Vries-Laboratorium, Universiteit van Amsterdam, Sarphatistraat 221, 1018 BX Amsterdam*)

#### Some ecological aspects of *Stratiotes aloides* L. in relation to its decline in Dutch ecosystems

H. M. VAN DE STEEG (*Katholieke Universiteit, Toernooiveld, 6525 ED Nijmegen*)

#### The influence of hydrological dynamics on vegetations belonging to the Phragmitetea in the eastern part of The Netherlands

M. C. SCHOUTEN (*Katholieke Universiteit, Toernooiveld, 6525 ED Nijmegen*)

#### Some aspects of the east-west gradient in the ombrotrophic bogs of Ireland

J. WIEGERS (*Hugo de Vries-Laboratorium, Universiteit van Amsterdam, Sarphatistraat 221, 1018 BX Amsterdam*)

#### Micro-patterns in peat-bog vegetation near Huis ter Heide (Dr)

In the dry *Calluna-Mollinia* heathland vegetation of the nature reserve Huis ter Heide (Dr.) are situated a number of depressions filled up with peat. In these depressions *Sphagnum rubellum* and *S. magellanicum* are locally abundant (SLUYS 1979).

Five types of peat-bog vegetation could be discerned in hollows and six types on hummocks. Floristic similarities between these types seemed to justify the combination of the separate vegetation tables into a single one comprising five types of vegetation with a hollows- and a hummock-variant, whilst one, the *Leucobryum-Parmelia physodes*-type was confined to the hummocks. The *Sphagnum cuspidatum-Oxycoccus macrocarpos*-type belongs to the *Scheuchzerietalia*. The remaining types represent vegetations intermediate between the *Ericetum tetralicis* and the *Sphagnetalia magellanicum*. The *Sphagnum rubellum-S. tenellum*-type corresponds to the *Empetro-Sphagnetum rubelli*, the others resemble more the *Erico-Sphagnetum magellanicum*. However the *Dicranum scoparium-Lophozia ventricosa*-type seems to be intermediate between these two types.

A number of hummocks were mapped on a scale of 1:5 using a frame containing 25 quadrates of 1 dm<sup>2</sup>. The significance of co-occurrence of species in these small quadrates was evaluated by means of chi-square and association analysis. This was also performed for all the species pairs in the relevé's from the hummocks.

This operation united nearly all the species from the relevé's in one cluster. Only the species pair *Hynum cupressiforme-Sphagnum rubellum* was separated from the others. The analysis of the small quadrates revealed two species groups. One comprised mainly the species prevailing in more humid conditions (e.g. *Odontoschisma sphagni*, *Cephaloziella hampeana*, *Erica tetralix*, *Eriophorum vaginatum*, and *E. angustifolium*). The other consisted of the more drought resistant species *Dicranum scoparium*, *Calluna vulgaris*, *Hynum cupressiforme*, and *Aulacomnium palustre*, but also *Oxycoccus palustris*.

This separation corresponds weakly to the distinction of the two peat-bog associations in the relevé-table.

SLUYS, R., (1979): Onderzoek naar mikropatronen in de vegetatie van de veenkommen bij Huis ter Heide (Dr.). Intern rapport. Hugo de Vries-Laboratorium, Universiteit van Amsterdam, no. 71.

## MEETING OF THE SECTION FOR PLANT MORPHOLOGY AND -ANATOMY ON JUNE 6, 1980

L. GOOSEN-DE ROO (*Vakgroep Botanische Morfogenese, Botanisch Laboratorium, Nonnensteeg 3 2311 VJ Leiden*)

### Plasmodesmata in the cambial zone of *Fraxinus excelsior* L.

To study how neighbouring cells in the actively dividing cambial zone of *Fraxinus excelsior* L., the ash, can influence one another, the density of plasmodesmata was determined in ultrathin sections.

Under the electron microscope a plasmodesma in the cambial zone has the following characteristics:

- a. It is either more electron-transparent or more electron-dense than the cell wall and often of a finer texture.
- b. It is surrounded by an electron-transparent zone of cell wall material.
- c. It has a collar at both ends.
- d. The plasmalemma passes through the plasmodesma.
- e. Connections with endoplasmic reticulum or with multivesicular bodies are often discernable.

In the cambial zone 8 cell wall types were distinguished: walls between fusiform cells in the three different planes (1. tangential, 2. radial, and 3. transverse), walls between fusiform and ray cells (4. transverse, and 5. radial), and walls between ray cells (6. transverse, 7. tangential, and 8. radial). The number of plasmodesmata per 10 µm cell wall length were respectively: 0, 3.4, 9.1, 8.8, 5.4, 7.9, 14.5, and 3.7.

This indicates that in radial direction through plasmodesmata transport is only possible in the rays. From the rays there is a transport in tangential direction through the radial cell walls of the fusiform cells and then in vertical direction through the transverse walls of the fusiform cells. Transport in radial direction between fusiform cells has to take place via the rays.

S. M. C. TOPPER (*Instituut voor Systematische Plantkunde, Heidelberglaan 2, 3584 CS Utrecht*)

### Wood anatomy of Moraceae

L. VAN DEN OEVER, P. BAAS and M. ZANDEE (*Rijksherbarium, Postbus 9514, 2300 RA Leiden, and Vakgroep Systematiek en Evolutiebiologie, Schelpenkade 14a, 2313 ZT Leiden*)

### Wood anatomy of *Symplocos* in relation to provenance

In mature secondary xylem of the widely distributed genus *Symplocos* (Symplocaceae) vessel diameter, vessel member length, vessel wall thickness, fibre length, fibre wall thickness and ray size decrease with increasing latitude of provenance, whilst vessel frequency and incidence of spiral thickenings increase. Similar but weaker trends exist for increasing altitude, except for the characters wall thickness and incidence of spiral thickenings. Number of bars per perforation is independent of altitude or latitude. These data are in agreement with data on other taxa, and can be hypothetically interpreted in terms of biological significance of evolutionary specialization. However, none of the possible explanations is entirely satisfactory in terms of safety or efficiency of water conduction and of mechanical strength requirements.

The residual variation in quantitative wood anatomical characters does not show any pattern of

taxonomic interest. Many of the characters analyzed show a high degree of mutual dependency in addition to the dependency of abiotic factors (as represented by latitude and altitude of provenance).

Detailed results and discussions will be published elsewhere.

P. BAAS and D. W. F. VAN VEEN (*Rijksherbarium, Postbus 9514, 2300 RA Leiden*)

#### A comparison of the epidermides of assimilating cotyledons and later formed foliage leaves in some woody Dicotyledons

The epidermal characters of cotyledons, first formed foliage leaves and leaves of adult plants belonging to 25 different species and 16 different families chiefly from the tropics have been compared. In characters such as cuticular ornamentation, indumentum, outline of epidermal cells, and stomatal type there are no universally valid trends going from cotyledons to adult foliage leaves, but the following tendencies have been noted: 1. cuticular ornamentation is often less well developed in cotyledons and first formed foliage leaves than in leaves of adult trees or shrubs; 2. cotyledons are more often glabrous than foliage leaves; 3. anticlinal walls of unspecialized epidermal cells mostly show a decrease in undulation from cotyledons to later formed foliage leaves; 4. stomatal types, if not constant, tend to be of a greater complexity (more well-differentiated subsidiary cells) in later formed foliage leaves or are more stable than in cotyledons or first formed foliage leaves.

Part of these trends can be accounted for by considering the more mesic micro-environment of seedlings as compared to leaves in the more exposed or water-stressed crown. Part of the trends (especially in stomatal type) may be of phylogenetic or taxonomic significance if interpreted as reflecting a partial recapitulation in ontogeny of evolutionary specialization.

L. H. BATENBURG (*Afdeling Plantensystematiek, Biologisch Centrum, Postbus 14, 9750 AA Haren (Gn)*)

#### On the morphology and vascular anatomy of *Mollugo nudicaulis* Lam. (Molluginaceae)

The morphological and vascular-anatomical study of Centrosperms, a.o. Mesembryanthemaceae, has become one of the main projects of our Groningen working-group. Within this framework I have addressed myself to the study of the Molluginaceae, this family probably being the link between Aizoaceae-Mesembryanthemaceae and other Centrosperms: Phytolaccaceae, Caryophyllaceae, Portulacaceae. *Mollugo* L. was chosen because it does not stand too far away from the Aizoaceae. The present study deals with *M. nudicaulis*, an apparently primitive species within the genus, which has hardly attracted attention so far.

Some trends in the Molluginaceae (HOFMANN 1973) are the suppression of the second or, in addition, the first internodes of the branches, the fixing of the number of leaves per branch, usually at three, and the formation of sympodia. By its pseudoverticillate leaves and three-leaved sympodial members in several species, *Mollugo* may thus be considered derived in its vegetative parts. Contrary to the other Molluginaceae, *M. nudicaulis* lacks stretched vegetative internodes. Here too the shoots bear three leaves at most; the upper shoot slightly pushes aside the terminal inflorescence, suggesting a (reduced) tendency to the formation of sympodia in this species as well.

The inflorescence of *M. nudicaulis* is essentially dichasial, usually with a trichasial base and more or less monochasial extremities. It may be considered primitive since, in contrast to the inflorescences of other *Mollugo* species, it does not share in any of the following four trends in this family: 1) suppression of the stalk; 2) suppression of the first internode of the branches; 3) reduction of the number of successive ramifications; 4) further suppression of the weaker of the two side branches of a ramification.

Despite the whorled condition of the mature perianth members, the ontogeny and the presence of inter-tepal vascular internodes indicate an acyclic arrangement in a 2/5 spiral. The vascular internodes are suppressed in e.g. *M. cerviana* (L.) Ser. (SHARMA 1963); in this respect *Mollugo* contains primitive and more derived species, and *M. nudicaulis* belongs to the primitive ones. In *Mollugo* the adjacent marginals of neighbour tepals arise from the receptacular stele as commissural bundles; the

commissural marginals are basally conjoint with dorsals. These appear to be derived characters within the family (SHARMA 1963).

With regard to *Mollugo* flowers with a tri- to pentamere androecium, one may start from one original whorl of five alternitepalous stamens. Reduction of this number, and the presence of epitepalous ones, are caused by fusion of alternitepalous stamens rather than abortion, as is illustrated by the vascular anatomy of *M. nudicaulis*.

The venation of the gynoecial wall in *Mollugo* represents a derived type within the family; in this respect *M. nudicaulis* is more primitive than e.g. *M. cerviana*.

It is concluded that *Mollugo* takes a derived position within the Molluginaceae; *M. nudicaulis* is one of the primitive members of the genus.

HOFMANN, U. (1973): Morphologische Untersuchungen zur Umgrenzung und Gliederung der Aizoaceen. *Bot. Jahrb. Syst.* 93:(2): 247-324.

SHARMA, H. P. (1963): Studies in the order Centrospermales II: Vascular anatomy of the flower of certain species of the Molluginaceae. *J. Indian Bot. Soc.* 42: 19-32.

K. GROOTJEN (*Hugo de Vries-Laboratorium, Plantage Middenlaan 2A, 1018 DD Amsterdam*)

Ovule and seed-coat anatomy of *Costus* (Zingiberaceae)