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MEETING OF THE ROYAL BOTANICAL SOCIETY OF THE NETHERLANDS

MEETING OF SECTION FOR VEGETATION RESEARCH ON APRIL 7, 1978

R. M. MOOY *(Hugo de Vries-Laboratorium, Amsterdam)*

Investigations into vegetation succession in the Molenven (Overijssel, The Netherlands)

J. T. C. M. SPRANGERS *(Afdeling Geobotanie, Nijmegen)*

Composition and structure of the dry evergreen forest of SE- India

A phytosociological study of the "dry evergreen forest" or Marakkanam (South-East India) and the thickets near Maduranthakam and Ulundurpet, using the Zürich-Montpellier method of vegetation survey, has resulted in a delimitation of six plant communities with three subtypes. These are:

1. *Basella alba* community, a well developed thicket, corresponding to the scrub woodland stage of the *Albizia amara – Acacia* series (Legris 1963), with a dominance of *Albizia amara* in the tree layer. The community occurs on the more sheltered sides of monsoon gullies and in a more degraded form on flats. Most characteristic species are deciduous.
2. *Gyrocarpus jacquinii-Cardiospermum halicacabum* community, a parallel community of the *Basella alba* cummunity on skeletal slopes of hillocks, characterized by rocky outcrops and charnockite boulders.
3. *Clausena willdenovii* community, being thicket remnants of the *Basella alba* type.
4. *Pterospermum suberifolium-Garcinia spicata* community on the sides of not so deep monsoon gullies, on sandy soils with a relatively high percentage of clay and loam. The characteristic species are evergreen.

4a Subtype with *Syzygium cumini* and *Walsura trifoliata*, occuring in monsoon streambeds and on their levees.

5. *Erythroxylum monogynum-Chloroxylon swietenia* community, occurring on flat eroded soils with large quantities of gravel.
6. *Borreria articularis-Lepidagathis cristata* community of open places and footpaths comprising two subtypes:
   (a) a subtype with *Vernonia cinerea*, a highly disturbed bushclump thicket;
   (b) a subtype with *Dodonaea viscosa* and *Indigofera glabra*, an open pioneer vegetation occurring along footpaths and in open sites in the thickets.

These communites can be grouped in two main types, the *Pterolobium hexapetalum-Melothria maderaspatana* type, presenting community 1, 2 and 3, and the *Manilkara hexandra-Canthium dicoccum* type, including community 4 and 5. Both types possibly have the status of an alliance in syntaxonomical classification. The former type occurs in the drier habitats of the coastal and interior regions of the eastern half of Peninsular India, and is probably identical to the *Pterolobium hexapetalum-Erythroxylum monogynum* facies distinguished by Meher-Homji (1973) and to the scrub woodland stage of the *Albizia amara – Acacia* series distinguished by Legris (1963) and Gaussen *et al.* (1962). It is a deciduous thicket with many spiny straggler lianas. The latter type corresponds to the *Manilkara hexandra*, etc. facies distinguished by Meher-Homji (1973, 1974b) and is limited to the coastal tracts of Coromandel and Circar. In Marakkanam it is a dense, mainly evergreen vegetation with a few spiny straggler lianas and a less patchy character than the *Pterolobium hexapetalum-Melothria maderaspatana* type. It occurs on fine, deep soils in a relatively moist habitat.

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Effects of five years grazing on the salt-marsh vegetation of a part of the Oosterkwelder, Schiermonnikoog, The Netherlands

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Agricultural weeds on a biodynamic farm

The 50 years old Biodynamic farm "Loverendale" on the peninsula of Walcheren, covering about 100 hectares on a sandy clay soil, uses organic fertilizers and mechanical weeding in preference to chemical fertilizers, pesticides and herbicides.
The objective of this study, carried out in the summer of 1976, was:
- to compare the weed flora on a Biodynamic farm with that on the adjacent non-Biodynamic farm.
- to relate the weed flora to ecological factors.

For this purpose some 300 relevés were made according to the Braun-Blanquet method (each relevé 4 m^2). Part of the relevés were established in fields with crops, planted at distances of 30–40 cm (potatoes, beets etc.), where weeds are regularly removed. Other relevés were made in denser planted fields (cereals, flax etc.) where weeds were removed only in the beginning of the growing season. A third group of observations was made on the adjacent farm.

The number of weed species at "Loverendale" is much higher than at the adjacent farm (75 against 10), the abundance is low on both farms. Some rare species were found at "Loverendale" (for example: *Melandrium noctiflorum* and *Linaria spuria*).

The weed communities in the two first mentioned types of relevés are remarkably similar, which is not in accordance with the syntaxonomical literature on this subject (SISSINGH 1950). Whereas two different weed communities were generally distinguished in the two types of crop, it was now observed that most species belong to those mentioned for the first type.

The similarity of the weed communities in the two types of crop may be attributed to the increasing mechanisation, especially in the second type of crop. This causes an increasing uniformity in agricultural treatments in both types of crop.

The differential groups of species correspond to ecological groups described by ELLENBERG (1955) and BANNINK et al. (1974). These groups are indicative of ecological factors as pH-values and water management of the soil. For this reason these groups might be used as a biological instrument for measuring the agricultural quality of the fields. The groups of weed species can be related to the height of the crops, and appear to be characteristic as concerns to life-form, seed production and flowering period of the species.

BANNINK, J. F., H. N. LEIJS and J. S. ZONNEVELD (1974): Akkeronkruidvegetaties als indicator van het milieu, in het bijzonder de bodemgesteldheid. *Verslagen van landbouwkundige onderzoekingen* **807**.

ELLENBERG, G. (1955): Ackerunkräuter als Zeiger für Klima und Boden. *Landwirtschaftliche Pflanzensoziologie* **I**.

SISSINGH, G. (1950); Onkruidassociaties in Nederland. *Verslagen landbouwkundige onderzoekingen* **5615**.

M. J. A. WERGER *(Afdeling Geobotanie, Nijmegen)*

Vegetation structure and substrate of the northern part of the Great Dyke, Rhodesia.

In the northern part of the Great Dyke, Rhodesia, the physiognomic and floristic differences between the vegetation types on serpentine and on non-serpentine substrates are very striking and the boundaries between these types are generally sharp. On either of the substrates there are also

differences in the vegetation which correspond to differences in habitat. A number of plots, laid out in transects across the Great Dyke, were sampled according to the Braun-Blanquet approach. Six plant communities are distinguished: one occurring on granite, two on pyroxenite and three on serpentine. A riverine forest community which strongly differs from all these vegetation types is also distinguished.

Principal components analysis and reciprocal averaging are used to carry out a gradient analysis of the vegetation. The variation in the vegetation of the study area is interpreted in terms of one complex gradient representing a series from relatively favourable to unfavourable for plant growth. Toxic effects of the substrates and water conditions are the main variables in this interpretation; the latter factor has a reversed effect on serpentine as compared to the non-serpentine substrates, and is less important than the toxicity factor.

The relatively favourable substrates were generally richer in species, but highest and lowest species numbers did not occur at the extremes of the interpreted gradient. The trend in the number of families per stand is similar to that in species numbers for the non-serpentine substrates, but is lowest in the badly-drained serpentine habitat interpreted as most unfavourable to plant growth. The species/family ratio per stand does not show much variation between any of the communities.

The percentage of monocotyledonous species is strikingly higher in the communities on serpentine as compared to those in non-serpentine habitats. The total number of dominant species is not markedly different in the communities, but this means that dominant species are relatively more common in the floristically poorer communities of the serpentine, especially those with relatively high total cover values. Values for eveness and Simpson's index of heterogeneity calculated per stand largely confirm this. Again the number of monocotyledonous species amongst the dominants is surprisingly high in the communities on serpentine.

WERGER, M. J. A., H. WILD & B. R. DRUMMOND (1978a): Vegetation structure and substrate of the northern part of the Great Dyke, Rhodesia: Environment and plant communities. *Vegetatio* **37**: 79–89.

—, — & — (1978b): Vegetation structure and substrate of the northern part of the Great Dyke, Rhodesia: Gradient analysis and dominance-diversity relationships. *Vegetatio* **37**: 151–161.