SUMMARIES OF DOCTOR'S THESES

and of other Dutch papers which might escape attention because of their mode of publication.

SINA J. TER BORG: *Variability of Rhinanthus serotinus (Schönh.) Oborny in relation to the environment.* 158 pages. Groningen 1972.

Summary

Rhinanthus serotinus (Schönh.) Oborny is an annual hemiparasite occurring in Eurasia in various habitats such as grasslands, dunes, and road verges. This paper reports a study of the pattern of intraspecific variation and its relation to the habitat, mainly carried out in the northern Netherlands.

Wettstein (1899) and Sterneck (1901) both used the theory of seasonal dimorphism as a basis when classifying and interpreting the intraspecific variation, and have been much criticised. The more detailed descriptions by Zinger (1922), a Russian author, are hardly known in the W. European literature. In the recent literature a variety of classifications are presented.

Cultivation experiments confirmed the genetic basis of the variation. Several characters, which vary clinally, are correlated: flowering time, node number, leaf index, size of generative parts, length, number of branches. Further variation concerns the growth habit.

Ecotypes from various habitats could be distinguished, although intermediates are common; five were studied in more detail:

- Aestivals: early flowering, mean node number 9, few branches; in moderately exploited grasslands, mown in June, and grazed or mown later in the year; seed production before hay-making.
- Drente autumnals: intermediate to late flowering, mean node number over 11, several branches; in irregularly disturbed habitats such as road verges and along ditches, often rather poor edaphic conditions.
- Doornspijk autumnals: late flowering, many branches, small generative parts, dark red colour in upper parts of plants; along ditches and edge of reed vegetation; grassland area of N. Veluwe.
- Meppel autumnals: intermediate flowering time, short lower internodes, and extending branches; in grasslands mown twice, seed production between first and second mowing; in Meppel area only.
- Dune ecotype: morphologically intermediate between aestivals and autumnals; in sheltered habitats in inner dunes of "Duin district".

The ecotypes studied and the total Dutch herbarium material can be reckoned to belong to three subspecies described in the literature.

The species occurs in grasslands or in habitats with many characteristic grassland species; almost all sites are disturbed at more or less regular intervals. It occurs neither in a dense vegetation, nor on very poor and dry soils, nor in marshy habitats, where flooding induces dormancy of seeds and mortality.

The differentiation of the grassland ecotypes is primarily related to the mowing and grazing regime. Aestivals are adapted to it because they set seed before hay-making, whilst Meppel autumnals have a good regenerative capacity due to their particular growth habit. All other ecotypes are restricted to sites which are less intensively exploited.

Other environmental factors interact with the effects of the mowing regime, moreover they differentiate between the non-grassland ecotypes. Too little is known yet, particularly about the role of the host plants, to allow definite conclusions about ecotypic differentiation due to these "habitat factors s.s.".

A main morphological factor appears to be node number, which is narrowly correlated with number of branches and hence seed production. Despite the different seed output per individual plant the seed production per unit area is at a similar level in aestival and autumnal populations. The life cycle strategies differ. The aestivals usually form large populations of rather small uniform plants; they are able to complete the life cycle within an extremely short period without having mechanisms which increase the rate of development, except for a slightly earlier germination. For a sufficient yearly seed production they require more favourable growth conditions than the autumnals. The autumnal populations are usually smaller, and consist of a heterogeneous set of plants in a heterogeneous habitat where a few large individuals compensate for the lower seed production of the smaller individuals.

The number of populations is declining nowadays, due to disturbance of the habitat. Mechanical damage, which prevents seed production, and possibly disturbance of the genetic balance are involved. The decline is not counteracted by immigration since seed transport is restricted, nor by a stock of seeds buried in the soil, as very few seeds survive for more than one year.

The complete thesis is available on request at the author's address: Miss Sina J. ter Borg, Laboratorium voor Plantenoecologie, Rijksuniversiteit te Groningen, Kerklaan 30, Haren (Gr.).

L. DE LANGE: *An ecological study of ditch vegetation in the Netherlands.* 112 pages. Amsterdam 1972.

Summary

Two independent sets of relevés of stands of ditch vegetation in the Netherlands were made. The first (consisting of 191 relevés) was evaluated by means of tabulation, and subsequently by means of a modified system of association analysis of species pairs. The second set (comprising 924 relevés) was studied by means of the same method of association analysis and also according to the method of group analysis of Crawford & Wishart.

The association analysis used consists of a test of independence, followed by the calculation of a measure of association. The main segregation of the species was accomplished with the aid of a sociogram on the basis of the respective positive and negative associations, the secondary subdivision was made according to the number of positive links per species.

The results of these methods were compared, the association analysis showing the clearest classification and the best correlation with ecological parameters. On the basis of these results the comprehensive table of the second set of relevés and a proposal for the synsystematic classification of ditch vegetation were drawn up.

Some special attention was paid to the ecological parameters used in the investigation, and to the autecological characteristics of a number of prominent species.

The complete thesis is available on request at the author's address: Mr. L. de Lange, Hugo de Vries-laboratorium, Sarphatistraat 221, Amsterdam.