

Lichen Mapping in the German Democratic Republic – State and Problems

By Regine Stordeur, Halle

With 3 figures

Lichen mapping in the GDR is not very advanced, because it is not possible to refer to a continuous work ranging over decades like in higher plants. After the death of distinguished lichenologists as HILLMANN, SCHULTZ-KORTH, SCHADE and others (see contribution of MEINUNGER & SCHOLZ, this vol.) there were few activities in this field of research after World War II. From the older generation FLÖSSNER must be mentioned in the first place (additional names are given by MEINUNGER & SCHOLZ, this vol.), who collected lichens in the central and eastern parts of the Erzgebirge (Ore Mountains) for c. 20 years. His results were published in 1963.

Since about 1980, mainly younger persons began to study lichenological problems again. Although at that time several valuable keys for lichen identification already existed (e. g. POELT 1969, POELT & VĚZDA 1977, WIRTH 1980), initial problems were severe because there was no guidance by experienced teachers. Exchange of experience or literature with colleagues in foreign countries developed only slowly. At present c. 30 persons cooperate in the registration of lichens in the GDR. Mapping of lichens is carried out in accordance to that of higher plants. Both are based on topographical maps [1 : 25.000, so called “Meßtischblatt” (MTB)], published from c. 1900 to 1935, which are being subdivided into 4 quadrants (see figures in MEINUNGER & SCHOLZ, this vol.). This grid system allows comparison with results of the mapping of higher plants and, on the other hand, guarantees compatibility with the systems of neighbouring countries. The modern topographical maps, developed a few years ago, do not correspond to those of neighbouring countries as they are based on a different grid system. Furthermore, geological informations are only available for the earlier maps.

At present data storage is still performed manually on card files both for literature data and for actual field records. For every species the following data are registered: location (four digit number of MTB), authority or observer, date of record resp. year of publication, a short note on possibly existing herbarium specimens, and the substrate. Whereas recent locations can immediately be noted, a localization of old herbarium material and of literature data covering the whole country is yet impossible at the moment. At present this work is under progress in a few regions in the course of student's examination works, e. g. on the Isle of Rügen, the Harz Mountains, the Erzgebirge. The results allow statements on a decline of several species or their tendency to spread. For such special topics grids of lower scale are used in some cases, too. Fig. 1 and 2 (GEPPERT 1989) show two examples which resulted from a more detailed mapping of the central part of the Erzgebirge with 64 units per MTB. A comparison of historical data obtained from literature (empty circles: records before 1963) with recent data (filled circles: records from 1986–1988) shows a distinct expansion of the area of *Lecanora conizaeoides* (Fig. 1) caused by an increase in air pollution, especially by SO₂. The enhancement of *Lecanora dispersa* (Fig. 2) results

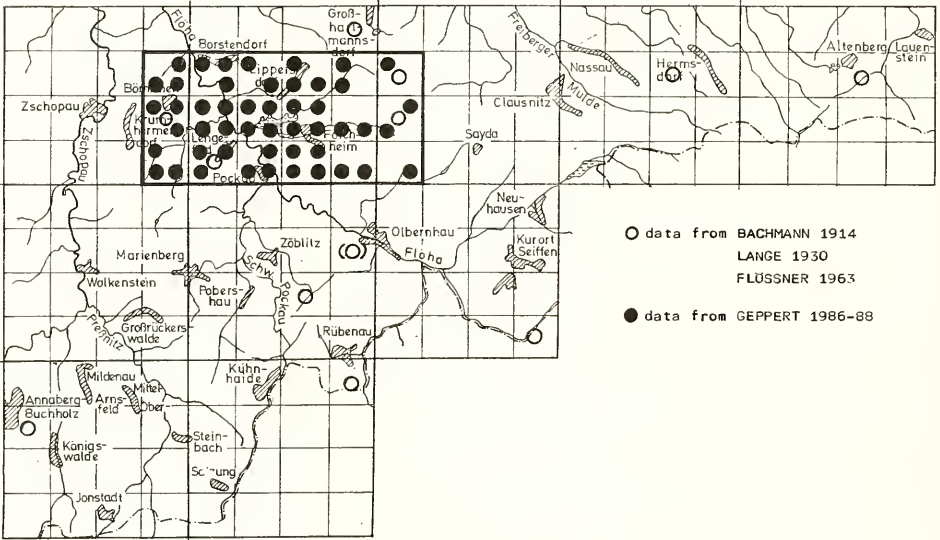
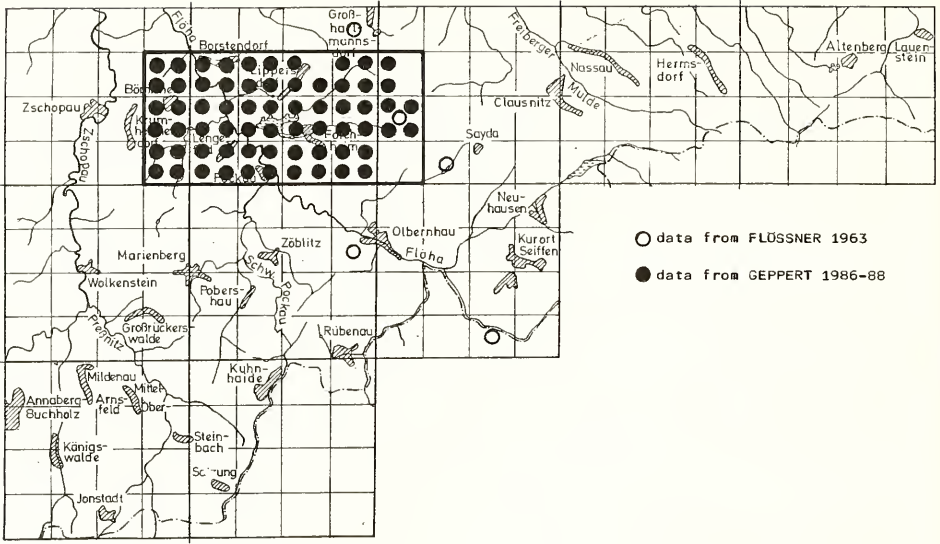


Fig. 1. (above) Expansion of the area of *Lecanora conizaeoides* in the central part of the Erzgebirge (after GEPPERT 1989).

Fig. 2. (below) Old and new records of *Lecanora dispersa* occurring on man-made substrate (after GEPPERT 1989).

from a growing use of manufactured concrete elements for fences, roadside posts etc. in forest areas where naturally acid siliceous rock dominates.

The methods of data management mentioned above will be used until free computer capacity and technical staff will be available after the completion of the Distribution Atlas of the Higher Plants of the GDR in 1990 or 1992. There already exist programs for databases, which allow to list all localities of a certain species as well as all recorded species of a certain locality. They also permit to process data and to print distribution maps.

We agree with the application of the UTM-grid system, proposed for the European lichen mapping project. It will reveal differences in the areas of Central European species with a sufficient degree of exactness and it allows comparison with distribution maps of higher plants. The territory of the GDR would be covered by c. 60 grid units of 50 km to 50 km. Considering that more than 40% of these grid units are not investigated at all at the moment, a total of 50–60% of the territory must be stated to be underinvestigated. At present research progress is limited by field work capacity. Most of the 30 co-workers mentioned above are non-professionals. Both professionals and non-professionals can spend only limited time on lichenological work. Only a part of the collaborators are capable to identify common species with certainty or under field conditions without assistance. All others confine their activities to the registration of easy identifiable species, collecting material only sporadically or send their material to the few experts in the GDR, who themselves have to consult foreign specialists for identification of critical specimens. Yet, this work is appreciated, because it contributes to a compilation of localities of several species. A disadvantage of this procedure is the possible decimation of rare or even threatened species.

In order to cope with the problems of research capacity mentioned above, several diploma or doctoral theses on lichenological investigations of certain areas have been initiated. In this way the number of persons who are able to identify species, to map lichens and to assist beginners shall rise. At Rostock University an active group (GIERSBERG, DIEMINGER) is working on lichen distribution around a fertilizer plant and on other ecological problems, on lichen mapping at the coastline and in parts of the Mecklenburg region as well as on phytosociological problems. At Halle University several lichenological projects have been carried out in the past, mainly on bio-indicative problems (BARTHOLOME, HEINS, WETTIG, SCHUBERT). At present floristical and phytosociological investigations of certain areas dominate (LITTERSKI: Isle of Rügen; GEPPERT: parts of the Erzgebirge; SCHOLZ: Harz Mountains; STORDEUR: Halle area). At Jena resp. Dresden University and at Halle Teacher Training College lichenological examination papers have been worked out, too.

Furthermore, professional training courses are held for all persons interested in lichenology during annual workshops. These workshops include excursions, identification courses and presentation of critical species and results. Numerous collaborators, working on floristics of higher plants, mosses or fungi or on problems of nature conservation until then, joined the lichen mapping after these courses. Fig. 3 shows areas of the GDR covered by lichenological investigations, but from numerous of these areas only sporadic collections or phytosociological data exist. Centres of research activities lie in the northern and in the southern parts of the GDR. At the moment some areas like Thuringia (MEINUNGER and collaborators) and the Harz Mountains (SCHOLZ, more than 300 species recorded until now) are quite well in-

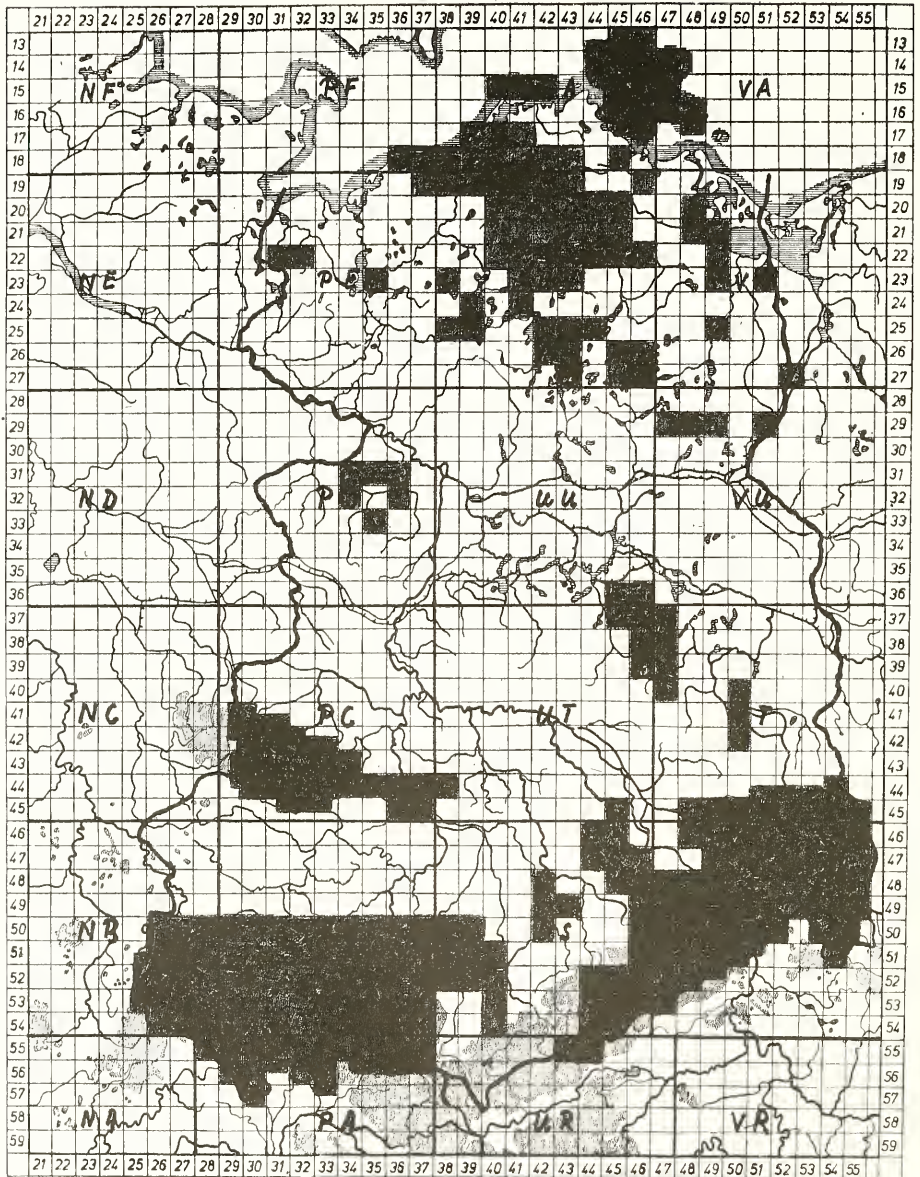


Fig. 3. Areas of the German Democratic Republic from which floristical and phytosociological data are available at present. — Collaborators: DOLL, R.; DIEMINGER, J.; FOITZIK, O.; FUNK, B.; GEITHNER, A.; GEPPERT, H.; GIERSBERG, M.; GNÜCHTEL, A.; HENNIG, S.; JEREMIES, M.; LITTERSKI, B.; MEINUNGER, L.; MÜLLER, F.; OBER, A.; RETTIG, J.; ROMMER, P.; SCHOLZ, P.; SCHULZ, U.; SCHWARZ, R.; SCHWARZ, U.; STORDEUR, R.; WOLF, A.

investigated. From the Oberlausitz, a landscape in the south-eastern part of the GDR, 150 species are recorded in a card index (JEREMIES). From parts of the Erzgebirge, of Saxony and of the Sächsische Schweiz (GEPPERT, GNÜCHTEL) a number of c. 100–150 species has been recorded. In spite of the severe decline in lichen vegetation, a higher species number must be expected. Also from the northern parts of the GDR (coast and parts of Mecklenburg) plenty of data exist, e. g. from the Isle of Rügen, where c. 320 species have been recorded (LITTERSKI).

Although MEINUNGER and SCHOLZ are able to present the first maps for the GDR (see this vol.), the whole central part of the territory must be regarded as incompletely or poorly investigated (Fig. 3). Therefore the future annual workshops and training courses of the cryptogam group of Halle University will predominantly be held in poorly investigated areas in order to promote the progress of lichen mapping. Field lists as used for mapping higher plants in GDR and in other countries also for mosses and lichens, are not considered because of the still rather poor knowledge of many of the collaborators on species identification. They easily tempt to underline species not identified with certainty. To avoid this mistake is of special importance in the case of species which are decreasing strongly.

An increasing degree of air pollution, an intensification in agriculture and forestry, expanding road-construction etc. have led to a drastic decrease mainly of epiphytic species in the last decades (see maps of *Parmelia acetabulum* and *Anaptychia ciliaris* in MEINUNGER & SCHOLZ, this vol.). Therefore an immediate documentation is urgently required. It is advisable, to start the European lichen mapping project with such sensitive species resp. genera as *Usnea*, *Alectoria*, *Ramalina*, *Parmelia*, *Calicium*.

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Author's address:

REGINE STORDEUR, Martin-Luther-Universität, Sektion Biowissenschaften, Neuwerk 21, O-4020 Halle, Germany.

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Autor(en)/Author(s): Stordeur [geb. Kirsten] Regine

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