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A DIFFICULT START IN SPIDER FAUNISTICS

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In the Netherlands the European Invertebrate Survey is developed not merely as a plotting-system or map-making society, which stores the exact position of a record of a certain species in the simple brains of a computer, but it is meant to further our knowledge on the autecology of the species and their occurrence in time, past and present as well. Every record is expected to go accompanied, beside the date of collecting, sample size, etc., by at least a minimum of information on collecting-site and habitat, for which purpose a whole set of codes has been developed. The more records one has or the data-bank holds, the better questions about certain correlations can be answered. At what kind of habitats a certain species can be found? What is the most likely habitat to meet this species? Which species can be found at a certain type of habitat? Or how much do certain habitats differ from others? How accurately, or badly, do distribution patterns of animals correspond with the distribution pattern of the plants they are thought to be associated with? Questions that can be answered only when the number of records is large and the country is investigated adequately. However, these are not the first questions one can ask. To begin with one wants to

establish distribution patterns, to investigate as many areas as possible, to use all available sources, old and new. One therefore has to work through the literature and collections.

The fauna of a country is a complex assemblage of species with their individual particularities. Species can be common or rare in the whole country or part of it, they can be locally common and rare in other places, or rare in very rare types of habitat. Species may have occurred here in the past, past records may be known, but the species has disappeared. There are cases of chance establishings, chance importations, occasional immigrations. A distribution limit may run through a country and shift in time. Species may get established in the course of time and become more abundant. In other words, when studying a fauna one must realize that the object is a changing fauna, that there are dynamic processes involved of migration, climatic influences, changes in densities, e.g. because of changes in the available habitats, biotic and abiotic factors. Especially in recent times, at least in Holland, we observe the impact of the high human population on the animal co-inhabitants of our country. But even before that, let us say in the first half of this century, things appeared to change. Probably more gradual and less dramati-

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cally than at present, but unmistakably.

For an analysis of the past one has to rely on what has been left of the early days: printed records such as articles in natural history journals and books, written records from archives, notes from collectors, collections in museums and taxonomic institutions. The last are the best, because they can be permanently checked, they stand proof for a record, published or not. A questionable early record can never be corrected with certainty if the specimen is not there to settle its identity once and for all. Well preserved and properly labeled specimens with exact data on collection-site, date of collecting and some general information on the habitat are an invaluable source of information, not only for faunistic purposes. I cannot emphasize enough the importance of maintaining large scientific collections with sufficient financial and technical support. They form the archives for future faunistic and taxonomic research. They are found in the Natural History museums and taxonomic institutions and should be guarded against outside threats as changing interests and lack of finances. They hold irreplaceable records of the past.

Spider faunistics

As a first step to introduce the historical knowledge of our Dutch spider fauna into the present E.I.S. system I had to make a survey of our faunistic spider literature and bring together all earlier records. The results were published in a catalogue (van Helsdingen 1980), giving all literature records and the distribution for each species. Many of these records concerned isolated published data without any existing collection to verify. They had to be taken for granted and could only be adjusted nomenclatorially.

In the second half of the last century the situation changed, when Dr. A.W.M. van Hasselt, a medical officer in the Dutch army with interests in spiders, started to collect these animals in the surroundings of his place of residence, The Hague, and during the many excursions of the Dutch Entomological Society. For forty years

he published general treatises on spiders, their habits, systematics and distribution. He maintained correspondence with other araneologists of his days, e.g. Thorell. He summarized his faunistic data in his 'Catalogus Aranearum hucusque in Hollandia inventarum' in 1885 and 1886, followed by supplements in 1890 and 1898. When he died he left behind a collection of Dutch spiders, which is now part of the spider collection of the Leiden Museum. It is, again, an invaluable source of information.

What he built up was in fact a reference collection. Probably because of shortage of space or not realizing the importance of keeping all specimens on which notes were published, he has discarded of old or 'superfluous' specimens and only maintained a collection with males and females of each species - often in equal numbers, without any data on their origin.

Therefore the value of the collection is slightly restricted, but nevertheless of importance. To begin with we can get an opinion about Van Hasselt's conception of the different species and see how it corresponds with our knowledge. In several cases two or more different species appear to have been mixed up, hardly surprising if one realizes the possibilities for identification about one hundred years ago as to optical equipment and available literature. In case of such a mixture we may find ourselves in difficulty if Van Hasselt recorded his 'species' from more than one locality. In such a case it is fairly impossible to relate one of the species with one or several of the recorded localities and our investigation results in uncertain and questionable records. Luckily these are exceptions rather than the rule and are mainly found in the 'difficult' families Linyphiidae and Erigonidae. Disadvantages of a reference collection also are the lack of certainty about the origin of the specimens in general. Specimens may have been added or replaced and the specimens present may have nothing to do with the published records. All we can hope for is that such cases are exceptional and do not distort the general picture. Van Hasselt did not often specify as to the number of specimens caught or received and the

sex involved, nor, as a rule, the date of collecting. Only if it concerned a rare species he had never seen before he gave more details and these are the more interesting records. Whatever the disadvantages are, thanks to this reference collection we are able to evaluate, to a certain extent, Van Hasselt's records.

The present situation

A comparison of the situation at the time of Van Hasselt with that of the present reveals several interesting developments. Van Hasselt could list about 420 species, to which since have been added the published occurrences of 127 species. About 20 species are awaiting publication and thus our fauna is now known to comprise about 570 species. But of these the amazing number of 58 species have never again been mentioned in the literature of our country after the days of Van Hasselt.

This high number may be the result of several phenomena. General collectors often do not find it worth while to publish on a species that already has been found before, but think completely different in the case of a first record for the country, a new species for the local fauna. Thus it appears that several of the 58 species referred to above have been found again but were not recorded in print. Also there are several species involved that were not actually seen by Van Hasselt, but references to earlier records by Six and, especially, Becker. The latter mentioned in 'Les Arachnides de Belgique' a number of species from our southern provinces (Noord-Brabant and Limburg), which we are unable to check. Several of these never have been rediscovered, e.g. *Nerienne radiata* (Walckenaer).

We should also realize that the chance of meeting a rare or cryptically living species is a function of the mode and intensity of collecting. Some species are much restricted in their choice of habitat and are found very locally, though they are often not rare at these localities. Some species are even known from one locality only, despite extensive exploration of comparable habitats. One wonders how they can maintain themselves and what kind of special

ecological requirements cause this special restriction.

Keeping all this in mind there still remain a number of species that have been mentioned by Van Hasselt and have not been found since, and the questions remains why. Why, for instance, has *Liocranum rupicola* (Walckenaer) been met with only near Hilversum (1876), and *Liocranum rutilans* (Thorell) at two localities (Naarden and Breda), both before 1885 but never again. Especially the latter is a conspicuous Clubionid species and the specimens have been preserved and stand proof for the correct identity. *Liocranum rutilans* was described by Thorell in 1875 after two specimens, male and female, from the above localities, sent to him by Van Hasselt. Later on the species has been found in other countries in Central and Southern Europe and it looks as if Holland forms -or formed I should say- the north-western limit of its distribution. Still the question remains why it has never been rediscovered. Is it extremely rare, or has it withdrawn from our country? I expect the latter is the case.

There are many examples of this kind, of conspicuous species of well-known and well-collected groups that were found only once, e.g. *Pirata knorrii* (Scopoli), belonging to the Lycosidae. *Alopecosa cursor* (Clerck) has not been seen for nearly one hundred years. Also several *Dipoena* species (Theridiidae) have not turned up since Van Hasselt. One wonders what has happened to these species in the neighbour countries. To counter-balance these negative results we may think of the many species, which have turned up since Van Hasselt or have become more common. We may mention *Pholcus phalangoides* (Fuesslin) as an example of the latter category. Van Hasselt considered it a very rare species and mentioned every individual find, while at present it lives in cellars, sheds, garages and houses nearly everywhere.

Evaluation

To me it is obvious that not much is gained from the mapping of species with one or two records for the whole country. They may complete the

overall picture of the fauna, but they do not betray a distribution pattern. Also the other parameters, e.g. time of collecting and habitat data, have only restricted value, based as they are on single observations. The very rare species are interesting because their records have the thrill of uniqueness, but otherwise they play a minor rôle. If the number of records grows, map and data become more important, and in my opinion there is no upper limit to it if one does not overestimate the commonest species.

Most work on the mapping of the spider fauna still has to be done, but the first steps have been set. We have had our share of historical legacy with all its drawbacks, but at the same time providing a stimulating start.

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