Introduction

Since the first meeting on carabid ecology at the Biological Station Wijster (Drenthe, The Netherlands) carabids probably have become the most actively studied group of arthropods. At first this mainly resulted from the growing popularity of the use of pitfalls. Carabid beetles not only appeared to be surprisingly well captured with the help of soil-traps, but gradually it also became clear that these catches – provided that they are continued for at least some months – can give us valuable information on changes in numbers and/or activities, on reproductive cycles, and on habitat-binding. Together with the fascinating phenomenon of wing-dimorphism, that was effectively brought to the scientific notice by Carl Lindroth, and the highly interesting relations with abiotic factors, which were step by step unraveled by Hans Ulrich Thiele, it could hardly be surprising that these appealing insects became favoured objects of study.

Like the four preceding meetings (in 1969, 1973, 1978 and 1981 respectively) also this Fifth Symposium of European Carabidologists at the Biological Station in Stara Brda Pilska (Niedźwiady, Poland) was a trial to bring together our knowledge on a special topic of carabid ecology. After having dealt with dispersal and dispersal power (1969), the evolution of behaviour (1978), and the synthesis of field study and laboratory experiment (1981), we felt that it was getting time to tell each other what we know or should like to know about food and feeding of carabid beetles. We thought this topic especially interesting, because it is still unclear whether or not polyphagous predators do favour the stability of nature. On the one hand it is shown several times that carabid beetles can significantly reduce the numbers of a particular prey population, but on the other hand do the more generally avowed views on the dynamics of populations not give a sound theoretical base to suppose a stabilizing influence of polyphagous predators. Another question that is at least as difficult to answer, is: do polyphagous predators show any prey preferences, and if so, how do these arise? This question is again connected with the nowadays much favoured topic of "optimal foraging". Can we imagine carabid beetles to forage optimally, or even rather efficiently? And what should be considered efficient feeding, if we know that there are unexpectedly great differences in the quality for egg production between different kinds of potential prey?

Apart from the possible – but hardly studied so far – preferences of polyphagous carabids there are also more general restrictions to prey choice. Small carabids will be unable to overpower big prey, whereas big carabids can be expected to have a lot of trouble with getting hold of small prey. As each habitat is occupied by some tens of carabid species which grow up and are active in different times of the year hardly any element of the soil macro- and mesofauna can be expected to escape completely from predation by carabid beetles or their larvae. Therefore the composition of a local carabid fauna as far as the predominant sizes of individual carabids are concerned

may give us some hints about the possible size-distribution of that part of the macro- and mesofauna that is potential prey: if a habitat is mainly occupied by big carabids potential prey will generally be big too, or the other way round. In this sense carabid beetles could even be indicators for a certain kind of biomass conversion among the macro- and mesofauna: either the energy is mainly flowing through many small biomasses, or more through fewer big biomasses. Whether the latter kind of biomass conversion will be more economical than the former will not only depend on the overall size of the biomass units, but on many other factors too, e.g. on the mean survival time of the individuals, both prey and predator. If we should also know more about other restrictions to prey choice (including preferences) of the different carabid species one could even dream of carabid beetles giving us still more detailed information about the composition of the macro- and mesofauna as considered from the point of view of predators, which may have to do again with the stability of nature.

None of the above problems were solved to any extent in the papers read at this meeting and presented in this volume. We just started to find the right words to formulate our problems, and we are still highly involved in the development of methods and techniques which will have to enable us to study the food and feeding of carabid beetles quantitatively. Therefore, it is not surprising that many papers are mainly concerned with metodological questions. The answers to these questions will bring us into the right corner of our field of research from which it will be possible to break it up step by step.

In the name of all participants I like to thank our Polish colleagues to have invited us to meet for the fifth time at such an appropriate place as Stara Brda Pilska (where carabid beetles are valued objects of study) and which could be realized because of the willingness and cooperation of the Department of Forest Protection and Ecology of the Warsaw Agricultural University (SGGW-AR). We were much impressed by the excellent organization and hospitality we met at the Biological Station of the SGGW-AR in the midst of the forests of Niedźwiady, and not in the least by the offer also to take care of the publication of the articles of this fifth meeting of European Carabidologists.

P. J. den Boer

Reports of the meetings of the European Carabidologists:

P. J. den BOER (ed.): Dispersal and dispersal power of carabid beetles. Miscell. Papers 8, Agric. Univ. Wageningen, The Netherlands, 1971, 151 pp. (published by: H. Veenman and Zonen N. V., Wageningen).

P. J. den BOER, H. U. THIELE and F. WEBER (eds): On the evolution of behaviour in Carabid beetles. Miscell. Papers 18, Agric. Univ. Wageningen, The Netherlands, 1979, 222 pp. (published by: H. Veenman and Zonen N. V., Wageningen).

P. BRANDMAYR, P. J. den BOER and F. WEBER (eds): The synthesis of field study and laboratory experiment. Published by the Centre for Agric. Publ. and Documentation (PUDOC), Wageningen, The Netherlands, 1983, 196 pp. (can be obtained from the Biological Station, Kampsweg 27, 9418 PD Wijster, The Netherlands).

P. J. den BOER, L. GRÜM and J. SZYSZKO (eds): Feeding behaviour and accessibility of food for carabid beetles. Vth Meeting of European Carabidologists at Stara Brda Pilska, September, 13-15, 1982; 167 pp. (published by: Warsaw Agricultural University Press, Warsaw).