

Atlas of the carabid beetles of The Netherlands

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We wish to dedicate this book to C. H. Lindroth because of the enormous amount of work he has done with such great originality on so many aspects of carabid beetles.

1. Introduction

The maps presented in this Atlas summarize the present knowledge about the occurrence of carabid species in The Netherlands. The data are taken from the literature and from private and museum collections.

The resulting atlas contains, besides data on the distribution of all the carabid species occurring in The Netherlands, data on three biological characteristics: wing form and seasonal periodicity of the adults and larvae. Because the information might be useful, we have included a map showing the European distribution.

In this form, our atlas is an extension of Brakman's (1966) list of the carabids in The Netherlands, which was restricted to data on the presence or absence of each species in the eleven provinces.

During the preparatory work the first announcement was made of the European Invertebrate Survey (Heath, 1971), a publication intended to stimulate and coordinate the same type of project. Although our approach is different, this atlas may to some extent be considered one of the results of these activities.

Recently (1976), a manual prepared by the Dutch division of the E.I.S. was published giving many technical details for future participants in this project.

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2. Nomenclature and identification

During the collection of the data it soon became clear that not all of the source material was of equal quality. Some of the data from the literature had to be discarded because the identification could not be checked. Inclusion of data from the literature was therefore restricted to material reported by experienced Dutch carabidologists.

On the other hand, uncertain data could usually be checked in the still existing collections. Errors in nomenclature could be traced to the original author or to changes made in the classification during or since the period covered by a particular collection. Changes in classification were followed wherever possible, although difficulties remained here too. In the latter cases, for instance *Harpalus picipennis* versus *H. vernalis*, only reliable identifications were used and doubtful ones were dropped. Changes in nomenclature were taken from the literature cited at the end of this section; the numbers there refer to Table 1.

Table 1. List of 'difficult species' (relevant literature references at the end of section 2)

no.	species name	reference nos.	no.	species name	reference nos.
33	<i>Nebria brevicollis</i>	4,16	177	<i>Harpalus puncticeps</i>	9
34	<i>salina</i>	4,16	191	<i>winkleri</i>	1
69	<i>Miscodera arctica</i>	5	192	<i>latus</i>	1
91	<i>Bembidion monticola</i>	9	193	<i>luteicornis</i>	1
92	<i>nitidulum</i>	9	201	<i>picipennis</i>	9
93	<i>stephensi</i>	9	202	<i>vernalis</i>	9
94	<i>milleri</i>	9	241	<i>Amara kulti</i>	2
96	<i>rupestre</i>	4	246	<i>communis</i>	4
97	<i>concinnum</i>	4	247	<i>convexior</i>	4
98	<i>ustulatum</i>	4	248	<i>pseudocommunis</i>	4
99	<i>femoratum</i>	4	259	<i>ingenua</i>	2
158	<i>Badister bipustulatus</i>	4	267	<i>apricaria</i>	3
159	<i>lacertosus</i>	4	269	<i>majuscula</i>	3
169	<i>Harpalus rupicola</i>	9	270	<i>consularis</i>	3
170	<i>brevicollis</i>	9	329	<i>Agonum micans</i>	17
172	<i>cordatus</i>	9	330	<i>scitulum</i>	17
174	<i>puncticollis</i>	9	332	<i>gracile</i>	17
175	<i>melleti</i>	9	337	<i>krynickii</i>	3
176	<i>zigzag</i>	5			

Despite these precautions, some of the maps still have points which deviate too much from what might be expected from the position of the other points. These deviating points have been checked whenever possible in the collections. In the few instances where this could not be done, to remain on the safe side the point was discarded.

The nomenclature used on the maps follows Brakman (1966), from whom we also adopted the species numbers. During the preparation of the maps, Lindroth's 'Handbooks for the identification of British Insects: Carabidae' (1974) appeared, in which the author used a new nomenclature for a number of species. The new names are indicated in italics on the maps.

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3. Recording unit

To indicate the distribution of the species, we adopted the recording unit of the European Invertebrate Survey (see section 4). We chose the 10×10 km² grid, because a coarser system would have meant the loss of too much information and a finer one would have given excessive scatter due to the lack of sufficient information. Furthermore, the available reports on catch sites generally made the 10×10 km² grid the most suitable, for instance in cases where only the name of the municipality is mentioned.

We found that a species was often recorded more than once in a certain grid. There can be two reasons for this: 1. a collector included two or more specimens caught on a given day at the same site, or 2. the species was caught at different sites in the same grid or on different days at the same site. In the former case we counted the collected individuals as a single record, in the latter as separate records. As an extreme case of the former kind, we considered information from catches performed systematically at weekly or fortnightly intervals all year round over a varying number of years. Since the total number of catches per species in such programmes is often so large that it would disrupt or bias the distributional pattern of the particular species, all such catches were counted as one record without mention of the dates (see section 7).

On the maps, the number of records per grid is not indicated as in the computer-printed map (see Figure 2) but only the sum total of the records on which the species map is based. As explained in section 7, this latter number is not the same as the one used for the frequency diagram of the seasonal periodicity.

4. Grid system

To locate the data we used the u.t.m. (Universal Transverse Mercator projection) grid system (Anonymous, 1958, Figure 1). The definition of the grids was converted from an alpha-numeric system into a coordinate system to facilitate the processing of the data with a computer (Figure 2). To keep the sizes of the grids constant over the globe, in the u.t.m.-system wedges of variable grid sizes are inserted at regular intervals. Unfortunately, The Netherlands contains one of those wedges, as can be seen in Figure 1. The inserted grids are treated by us as indicated in this Figure.

Other grid systems were available besides the u.t.m. of the European Invertebrate Survey, for instance the national grid currently used by botanists and ornithologists in The Netherlands. For comparative purposes and international studies, however, the disadvantages of a national grid are obvious.

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Anonymous, Technical Manual 5-241-1: Grids and Grid references. Department of the Army, Washington 25, Washington DC, U.S.A., 1958.

Fig. 1. The u.r.m. grid system over The Netherlands. Our treatment of the 'wedge' in this system can be understood by comparison of this Figure with the transparent map of the underworked grids (in back pocket). In the latter the whole wedge is

is delineated, in the former the wedge is truncated at various points. The numbering of the $10 \times 10 \text{ km}^2$ square within each $100 \times 100 \text{ km}^2$ square is indicated in the lower left corner.

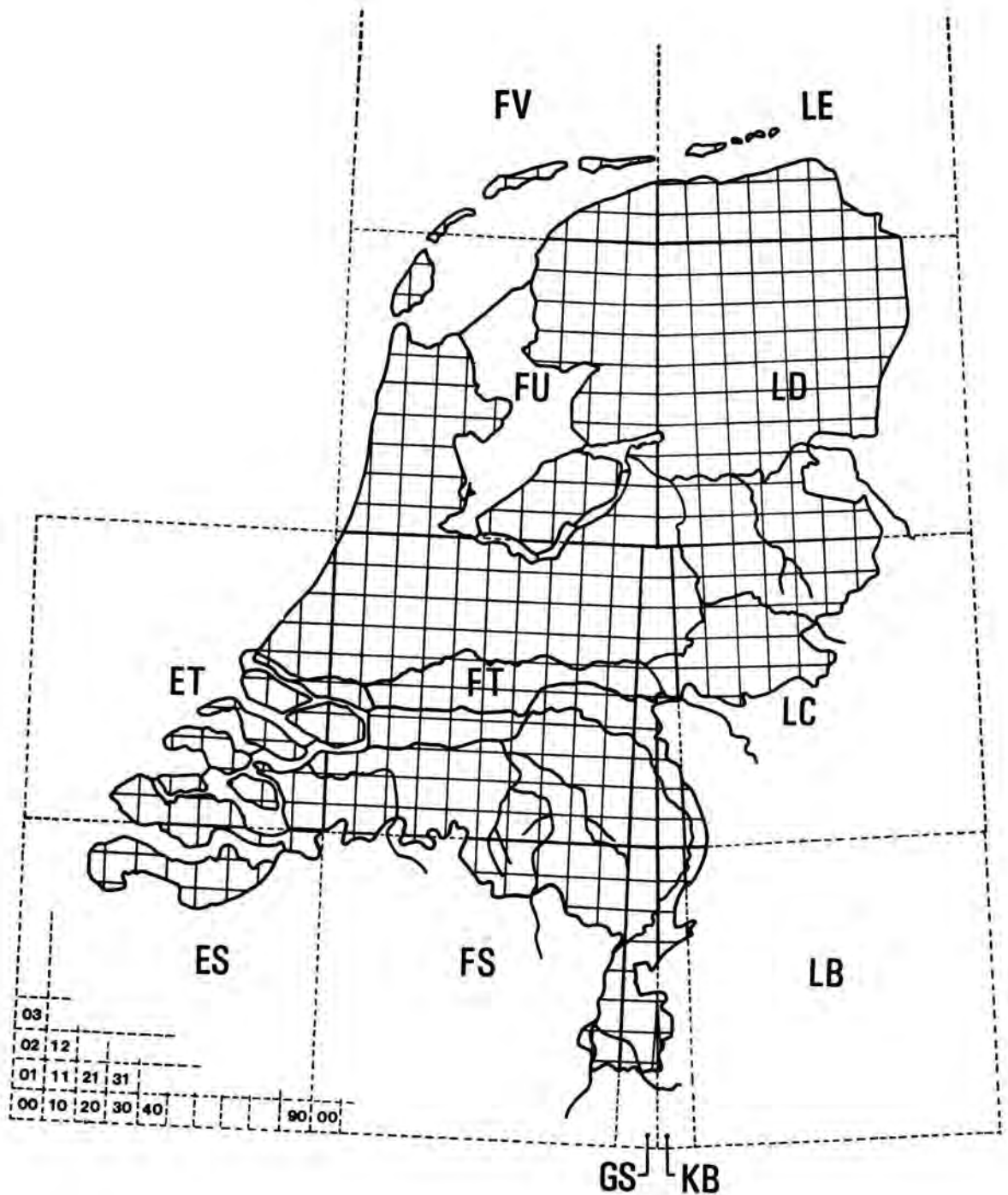
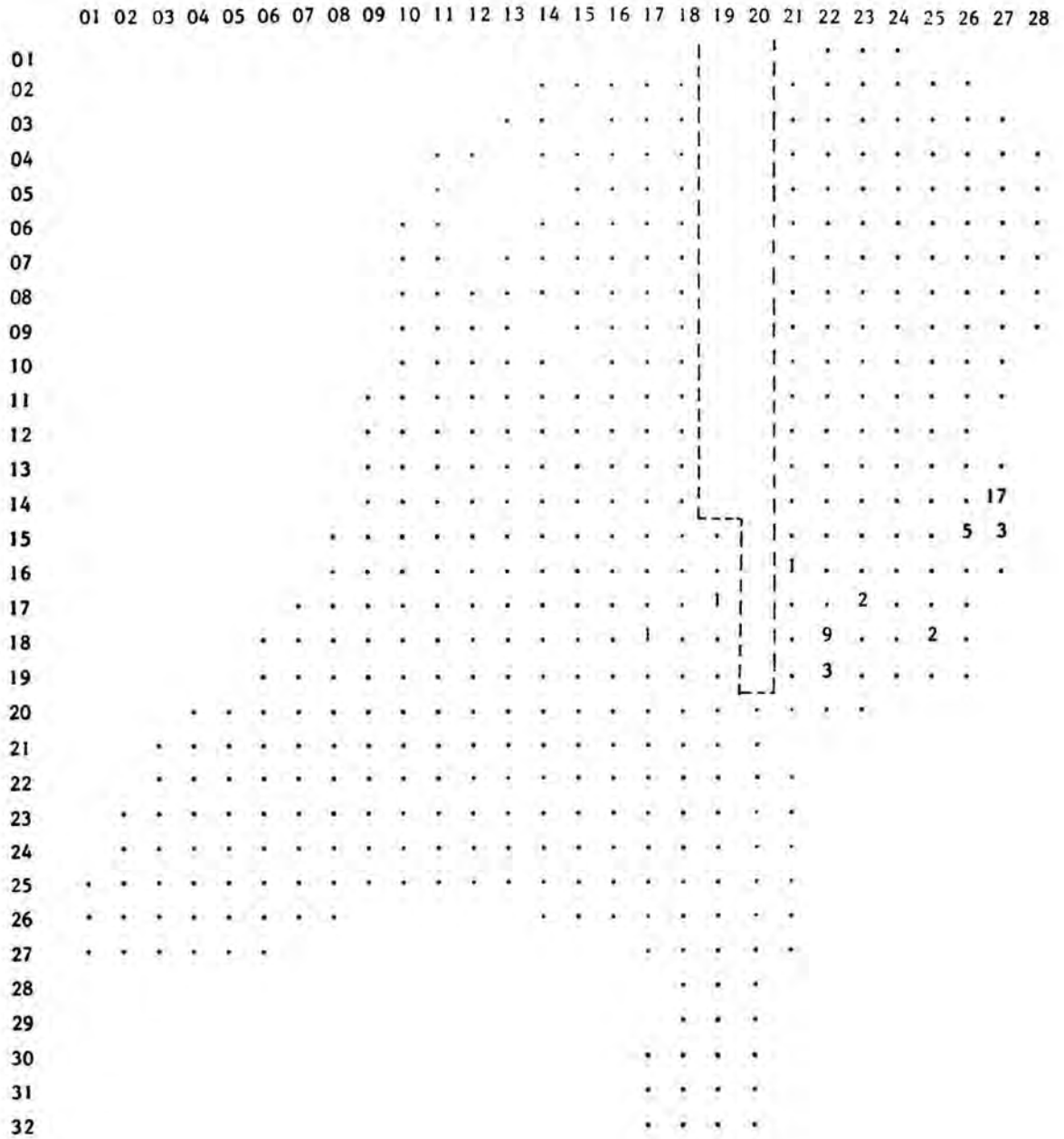


Fig. 2. Computer-printed map for *Elaphrus ullrichi*, illustrating the conversion from the alpha-numeric U.T.M. system to a coordinate system.



5. Representativity of the material

As a family, carabids are very well known to entomologists, which means that they have been thoroughly collected and identified. Therefore, we assume that the distributional pattern deduced from abundant material may represent the actual pattern, although criteria to evaluate this assumption must of course be developed. If the assumption does not hold, more material must be collected to improve the picture. However, this picture is not necessarily static: a number of species may at a given moment appear among the Dutch beetle fauna, and other species may have disappeared at some time.

We shall first describe the criteria for the representativity of the material in relation to the interpretation of the distributional pattern, and then deal with the dynamic aspects of these patterns with respect to this representativity.

As a measure of representativity we took the number of species recorded per grid, as shown in Figure 3. This Figure gives the bimodal distribution of two groups of data: a first set of roughly 19,000 records (dashed line) and our total set of 51,525 records (solid line).

We reasoned that two factors are involved in the genesis of these bimodal curves: 1. the conditions for a greater or smaller number of species to live in a certain area are not homogeneously distributed over The Netherlands, and 2. the collecting activities are unequally distributed; or both of these two factors combined. The heterogeneous distribution of the living conditions may result in, for instance, a normal frequency distribution of the logarithms of the number of species over the grids. Marked deviations from the latter distribution can result from uneven sampling. Of course, these two effects could be inseparable, in the first place because the heterogeneous distribution of living condition will enhance the unevenness of the collectors' activity.

To evaluate these possibilities, we used the material of our first set of data, originating from the large collection of the Institute of Taxonomical Zoology in Amsterdam together with some smaller collections covering an appreciable part of The Netherlands, to make a map showing the distribution of the numbers of species over the country (Figure 4). Although it is clear from Figure 3 (dashed line) that the two effects in question had certainly played a combined role, it is evident from Figure 4 that too many large parts of the country were underworked. We therefore added data from collections not yet drawn on, paying special attention to local material covering the 'white' parts of the map.

Fig. 3. Number of grids with a certain number of species, according to logarithmic classes. Only the upper limits of these classes are indicated on the abscissa. The arrow indicates the boundary between the underworked grids (on the left) and the well-represented grids (on the right).

Fig. 6. Scattergram showing per species the number of grids in which the given number of records occur.

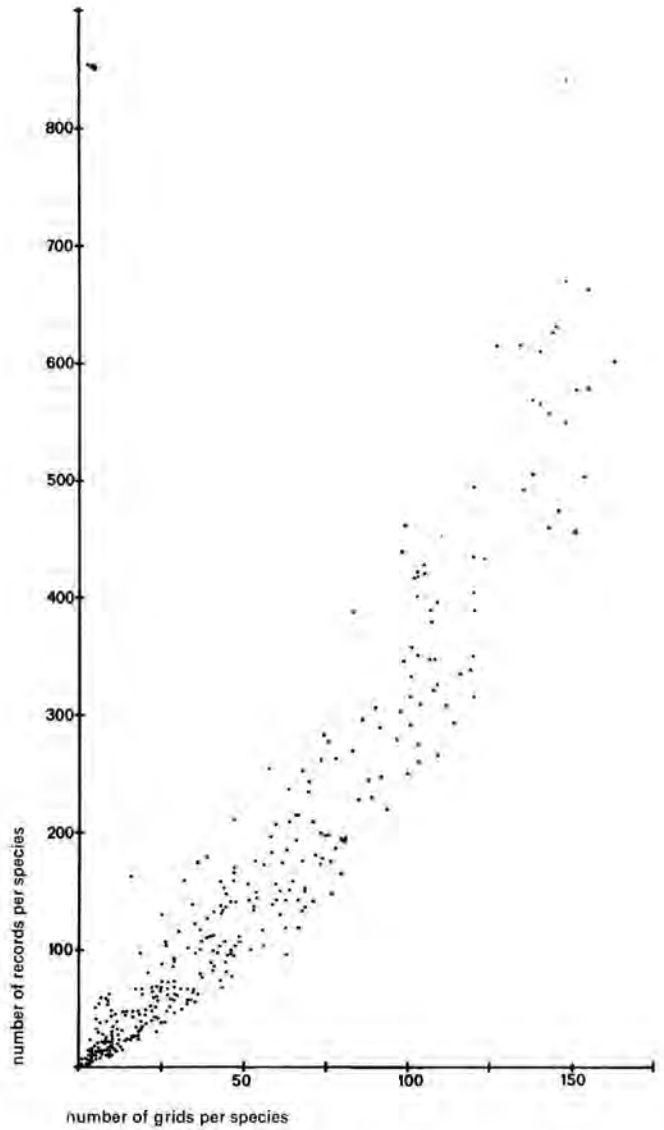
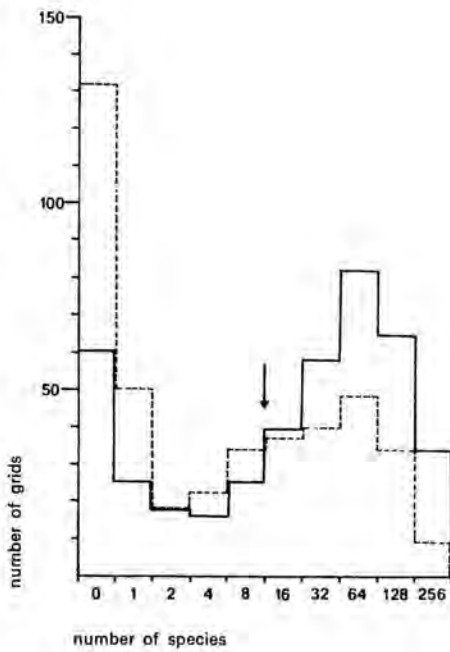


Fig. 4. Number of species per grid, classified in logarithmic classes on the basis of approximately 19,000 records.

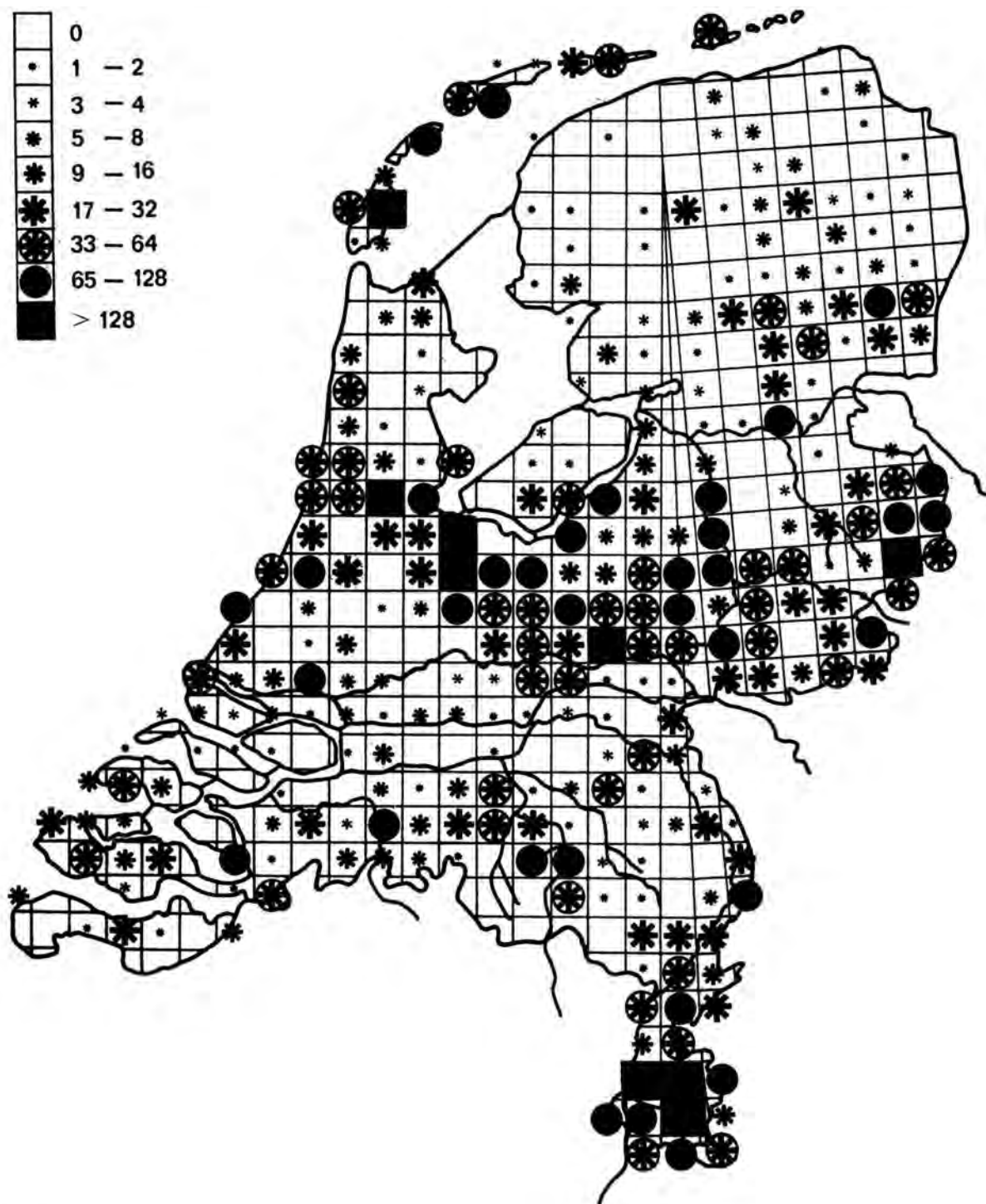
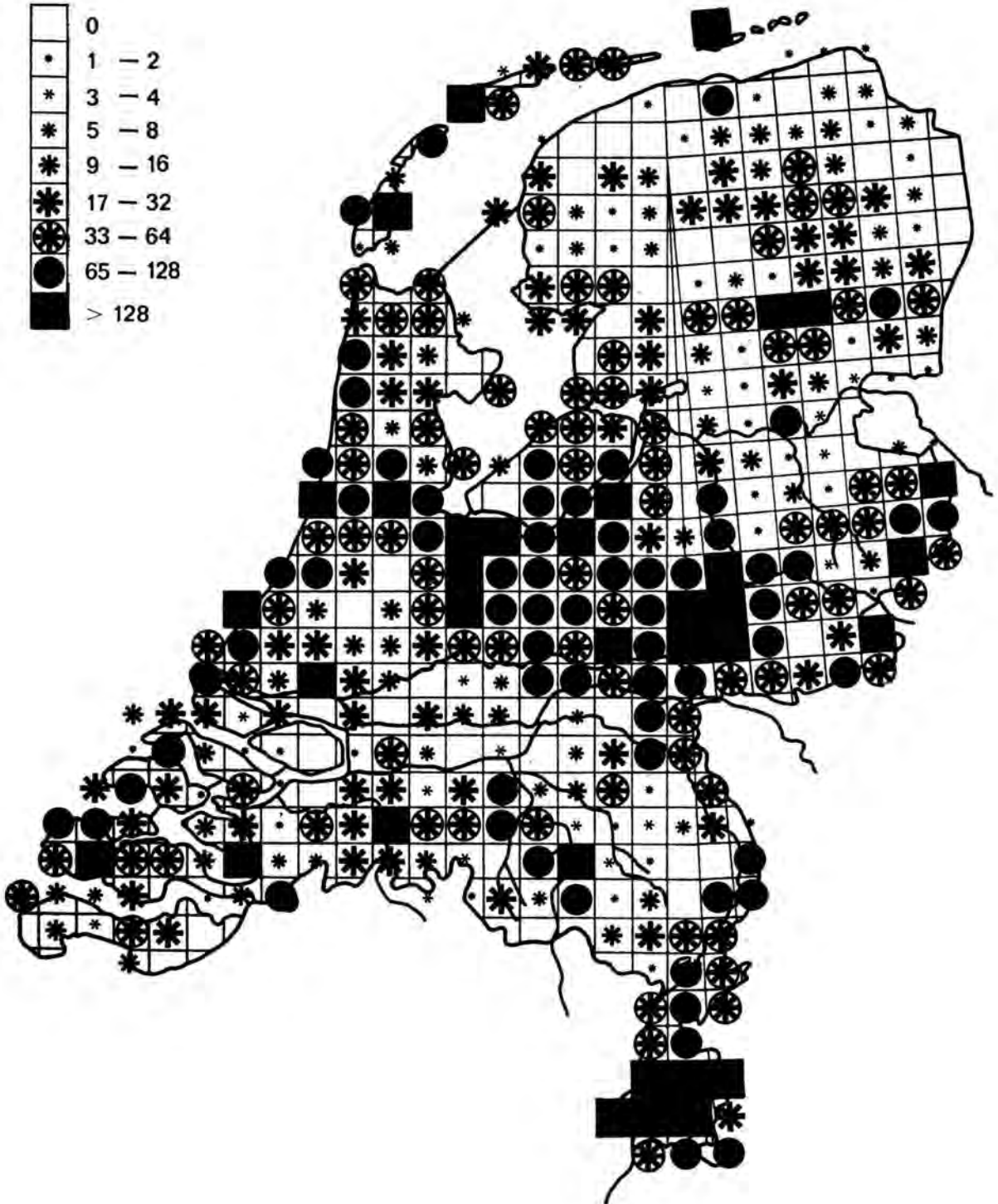


Fig. 5. Number of species per grid, classified in logarithmic classes on the basis of approximately 51,500 records.



The result is shown in Figure 5, and it gave the solid line in Figure 3. The map shows the more even distribution we expected, and the curve shows a relatively smaller bias toward the lower classes but none in the opposite direction, which means that Figure 5 still has too many underworked grids requiring better sampling by carabidologists. This should be borne in mind in the interpretation of the maps of the individual species; for convenience, we therefore included a transparent map on which the possibly underworked grids are indicated by hatching and which can be laid over the species maps. To determine which grids should be hatched, we divided the bimodal distribution of Figure 3 into two parts: a 'symmetrical' part (classes of 9 to >256 species) to the right of a 'bias' part. We realize that this is an arbitrary division.

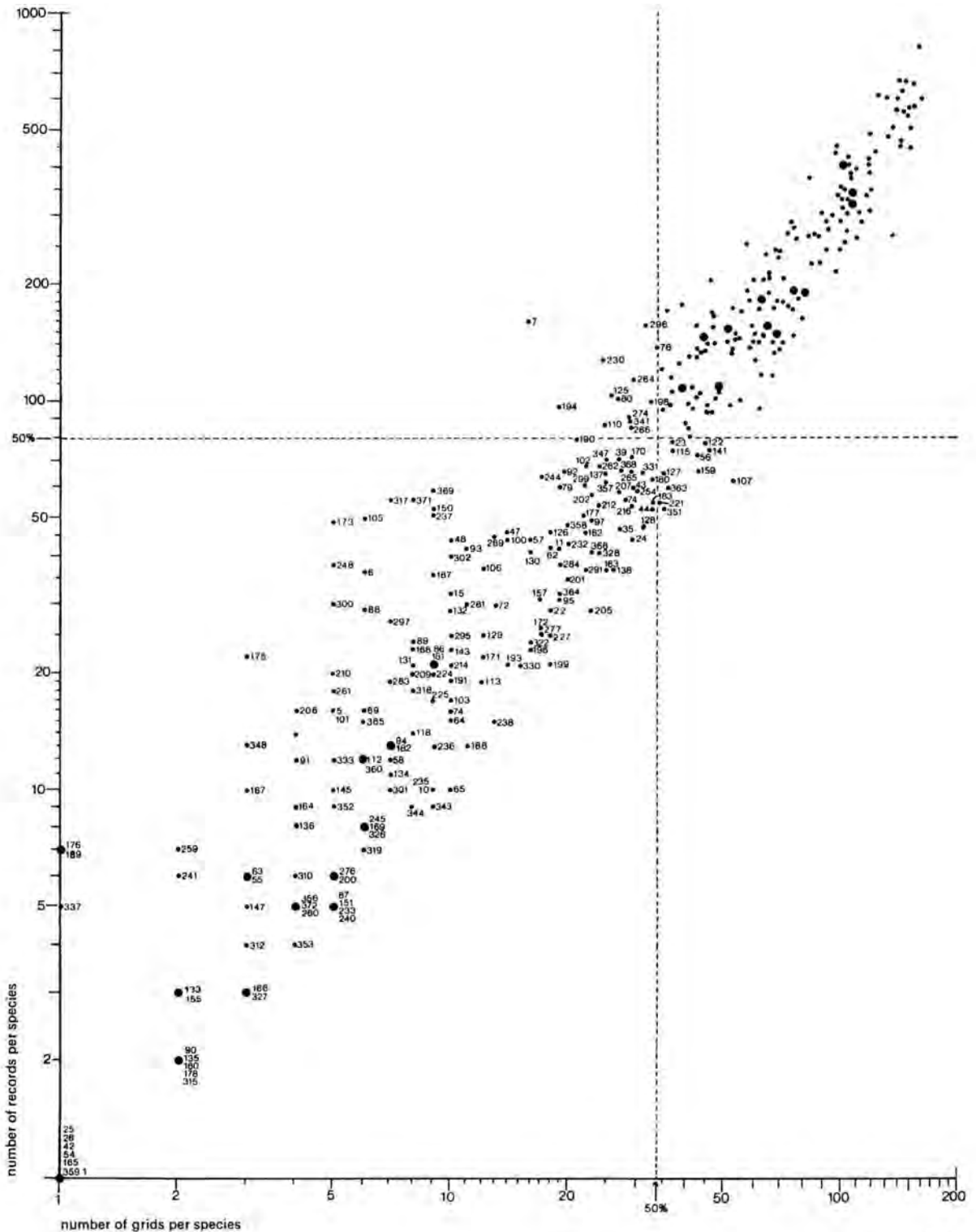
We took the number of species as a measure of evenness of the distribution of the collecting density. It could, of course, be argued that the number of records might have been a better measure. If this were true, plotting the number of occupied grids per species against the number of records per species could be expected to give either a curve with one or more points of inflection or a straight curve with a very broad scatter around it, or a combination of the two. In fact, we found a limited scatter around an almost straight line (see Figure 6), which means that the two measures may be used interchangeably.

Since the distributional patterns could be expected to be dynamic, it was necessary to identify not only underworked parts of the country but also changes occurring in the course of time. Table 2, which gives the total number of species per decade, shows a distinct increase in the number of species collected. This table also shows the great variation in the number of records per species.

Table 2. Total number of records and species, as well as the number of records per species, collected in successive decades.

period	decade no.	no. of records	no. of species	no. of records per species
1900	0	1,329	223	5.96
1900-1910	1	2,048	258	7.94
1910-1920	2	4,602	284	16.20
1920-1930	3	4,533	277	16.36
1930-1940	4	3,041	286	10.63
1940-1950	5	2,552	293	8.71
1950-1960	6	4,737	319	14.85
1960-1970	7	11,624	327	35.55
1970-1975	8	11,857	316	37.52
undated		5,202		

Fig. 7. As Fig. 5, but on logarithmic scale, making it possible to indicate the species-number of the rare species. We regard as rare 50% of the species in The Netherlands, i.e. those occurring in the area in the lower left part of the indicated 50% boundary lines.



6. Faunistic interpretation of the material: rare and threatened species

With respect to the distinction between rarity and commonness we can ask whether either one actually exists as a biological feature of a species. A biological distinction of this kind should be expressible in a statistical criterion serving to distinguish between the two groups. All discriminating criteria depend on the occurrence or non-occurrence of some kind of discontinuity. However, Figure 6 indicates a continuity with respect to abundance, which means that we cannot separate rare species from common ones on an objective basis. This implies that it is not possible to distinguish patterns in the relative frequencies of rare or abundant species. If, however, we prefer not to abandon these two concepts, we must define them arbitrarily. As a criterion for this we have taken the frequency of 50 per cent below and above a certain value on the basis of the number of records per species in combination with the frequencies of the number of grids occupied per species for a given area during a given period. Figure 7 shows the resulting dividing lines. Thus, according to this criterion, roughly half of the carabid species recorded so far in The Netherlands are defined as rare.

On the basis of this definition, the rarity of a species is dependent on the area covered by collectors as well as on the collecting period. With respect to time we must keep in mind that this definition is static: trends within any given period are not considered. The time factor may, however, be

Table 3. Records of threatened species in the course of time (columns 0-8) and undated records of these together with those of some very rare species (last column).

species	species no.	decade no. (see Table 2)								undated	
		0	1	2	3	4	5	6	7		8
<i>Calosoma sycophanta</i>	24	5	9	2	2	1	-	-	-	-	25
<i>Calosoma auro-punctatum</i>	25	-	-	-	-	-	-	-	-	-	1
<i>Calosoma reticulatum</i>	26	-	-	-	-	-	-	-	-	-	1
<i>Notiophilus quadripunctatus</i>	42	-	-	-	-	-	-	-	-	-	1
<i>Dyschirius neresheimeri</i>	54	-	-	-	-	-	-	-	-	-	1
<i>Bembidion striatum</i>	72	2	5	8	-	-	3	-	-	1	14
<i>Tachyta nana</i>	135	-	-	-	-	-	-	-	-	-	2
<i>Chlaenius nitidulus</i>	153	12	3	23	13	9	11	2	4	5	24
<i>Harpalus dimidiatus</i>	187	-	3	3	13	3	5	-	-	1	8
<i>Harpalus modestus</i>	205	5	2	3	2	-	2	-	-	-	15
<i>Dolichus halensis</i>	312	-	-	-	-	-	-	-	-	-	4
<i>Agonum impressum</i>	315	-	-	-	-	-	-	-	-	-	2
<i>Agonum dolens</i>	322	-	2	6	2	-	-	-	-	-	14
<i>Agonum piceum</i>	331	7	5	14	10	2	1	1	8	1	16
<i>Dromius longiceps</i>	348	2	1	1	3	-	-	-	1	-	5

important: for instance, formerly abundant but now rare species are nevertheless defined as abundant. This sometimes means an essential loss of information. Therefore, the definition only applies if there is no trend in the numbers observed during the period under consideration. Species with a negative trend, i.e., for which numbers in a certain area fall below a defined value during the latter part of the total period covered, must be considered threatened. As rare species (both threatened and not threatened) we consider those indicated by their number in Figure 7. Threatened species are listed in Table 3. For some very rare species no collecting date was available; the number of records of these species are also enumerated in Table 3 (last column).

7. Seasonal periodicity

Collecting dates obtained from the labels attached to specimens in collections were punched on cards, which could then be sorted according, for instance, to the month of capture. From these dates a frequency diagram was constructed for each species. This diagram is included on the map. Because the collecting date does not occur on some labels and is rarely mentioned in the literature, the total frequency in this diagram does not agree with the number of records mentioned in section 3. Furthermore, since the collecting dates of material obtained in research programs in some places in The Netherlands are also unknown to us (see section 3), these catches too were excluded from the determinations of the seasonal periodicity.

The catching of a beetle depends on three factors: its presence at a given place on a given day, the activity of the collector, and the sampling technique used. The degree to which collectors are active in certain parts of the year may influence the picture of the seasonal periodicity of a species (see Den Boer, 1967). Although the systematic catches made by means of pitfall traps in research projects on the ecology of carabid beetles give more adequate information than the data from museum records and from the literature, we used only the latter. We did so because these data originated from material covering a long period and were collected in all parts of The Netherlands. In this way, we arrived at a picture based on one type of collecting only.

The diagrams based on these data are restricted to adults, because only this information was extracted from the collections. To make the information on the seasonal periodicity of the larvae given by Larsson (1939) more accessible, it is given here as well, but because it is based on Danish material, which may differ from the Dutch, it is not shown quantitatively as a frequency diagram but qualitatively by bars. It remains possible that even this qualitative picture is biased in this or some other way.

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8. European distribution

Because the distribution of the carabid beetles over The Netherlands almost always forms only a very small part of the distribution for Europe as a whole, we thought it might be of interest to include the latter. These maps, which are based on the literature cited below, make it possible to classify a species as, for instance, a northern one or a purely coastal one, and show whether its occurrence in The Netherlands is near the outer limit of its range of distribution.

The survey of the literature gave us the impression that the amount of information provided by the records underlying the European distribution pattern decreases from west to east and from north to south. For practical reasons, we restricted this part of the study to the literature on the distribution as far eastward as the eastern border of European Russia. Since North Africa is considered to belong to the same zoogeographic region as Europe, we included data on the distribution north of the Sahara as well.

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9. Wing form

Because in our opinion information concerning the wings of carabids (i.e., whether all individuals of a species are macropterous or brachypterous) is very useful, it is given on the species maps. Most of this information is taken from Lindroth (1945, 1974). Where it concerns deviations from the Scandinavian situation and species not mentioned by Lindroth, we used information from Den Boer pers. comm. and from our own observations. In the cases in which information was completely lacking we omitted the wing indication instead of updating the Dutch material on this point.

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Amsterdam, Institute of Taxonomical Zoology; comprising the collections of: K. J. W. Bernet Kempers, J. Broerse, A. J. Buis, J. B. Corporaal, F. C. Drescher, D. van der Hoop, H. J. Klaassen, D. MacGillavry, A. C. Nonnekens, A. van de Post, P. van der Wiel and C. Willemse.

Enschede, Natural History Museum.

Leiden, National Museum of Natural History; comprising the collections of: P. J. Brakman, E. Everts, C. J. Ruurs, and F. T. Valek Lucassen.

Wageningen, Department of Entomology, Agricultural University; Uyttenboogaart collection.

Leeuwarden, Frisian Natural History Museum; collection of G. Stobbe.

b. Private collections

Blokland, A. (card index), Heerlen
Boer, P. J. den (card index), Wijster
Booy, K. (card index), Wageningen
Etten, J. van, Amsterdam
Gijzen, T. van, Arnhem
Heijnsbergen, S. van, Naarden
Heyerman, Th., Randwijk
Jongema, Y., Wijster
Littel, A., Amsterdam
Stuivenberg, F. van, Enschede
Teunissen, A., Eindhoven
Turin, H., Oosterbeek
Vester, K., Emmen
Veldkamp, W. J., Lichtenvoorde

2. SYSTEMATIC SAMPLING

a. Biological Station, Wijster (P. J. den Boer)

Benderseweg (woods), 1959–1961
Biological Station, 1966–1967
Bruntinge (woods), 1962–1966
Dalerpeel (peat marsh), 1962–1963
Dwingelo (heath), 1959–1960
Dwingelo (plantations), 1959
Eursinge (woods), 1960
Hullenzand (inland dunes), 1963–1967
Kampsweg (peat marsh), 1959–1961
Kampsweg (woods), 1959
Kibbelhoek (woods), 1962
Kibbelhoek (plantation), 1960–1966
Kralo (arable land), 1965
Kralo (coppice), 1962–1966
Kralo (heath), 1959–1967
Lheebroek (inland dunes), 1959
Mantinge (inland dunes), 1965
Mantinge (woods), 1959–1966
Meerstablok (peat marsh), 1961
Noordlagen (woods), 1962–1965
Onland Lheebroek (wet meadows), 1960
Poort II (peat marsh), 1960
Terhorsterzand (inland dunes), 1959/1963
Turfveen (peat marsh), 1963

b. Institute for Ecological Research, Arnhem

Noordoost Polder: two woods 1968, road verges 1972, 1973
Oostelijk Flevoland: reed stands, arable fields, plantations, and road verges 1968–1975
Zuidelijk Flevoland: various places in the reed swamps, arable fields, plantations, and road verges, 1968–1975
Markerwaard, dike, 1968, 1975
Islands in Veluwemeer, 1968, 1969
Islands in Grevelingen, 1973–1975
Border region of the IJsselmeer, road verges, 1973
Friesland, Noord-Holland, Zuid-Holland, road verges, 1974
Afsluitdijk, verges, 1974
Nijkerk, wood and meadow, 1968–1970

c. Institute of Phytopathological Research, Wageningen (W. C. Nijveldt)

Oostelijk and Zuidelijk Flevoland: arable fields, 1974, 1975

d. Research Institute for Nature Management (R.I.N.), Arnhem (J. van der Drift)

Grubbenvorst, 1953, 1958, 1960
Hackfort, 1957–1960

Hoge Veluwe, 1951–1953
Noordoost Polder, 1965

*e. IJsselmeer Polders Development Authority,
Lelystad (M. Zijlstra)*

Grevelingen, 1972–1975
Oosterschelde, 1974–1975

*f. Zoology Department, Free University, Amsterdam
(J. Meijer)*

Lauwerszee and surroundings, 1969–1975

*g. Zoology Department, University of Leiden
(G. J. de Bruijn)*

Meyendel: dune area, 31 sites, 1953–1960

3. DATA FROM THE LITERATURE

3.1. Card index of *P. van der Wiel* for the Frisian Islands

(Tx=Texel; V=Vlieland; T=Terschelling;
A=Ameland; S=Schiermonnikoog; R=Rottum;
G=Griend.

tve=Tijdschr. Ent.; EB=Ent. Ber., Amst.)

a. Published literature

Everts, E., 7e Wintervergadering. tve 17, 1874.

Everts, E., Suppl. lijst Ned. Col. tve 24, 1881

Everts, E., Nieuwe Naamlijst Ned. Schildvl. Ins.,
1887

Everts, E., 5e lijst van soorten etc. tve 51, 1908

Everts, E., 8e lijst van soorten etc. tve 55, 1912

Kempers, K. J. W., Bijdrage Col. Fauna van Texel.
tve 40, 1897

MacGillavry, D., Entom. Fauna eil. Terschelling.
tve 57, 1914

Reclaire, A., Meded. Kevers op Terschelling. EB 7,
1926

Reclaire, A., Meded. Kevers op Vlieland. EB 8, 1930

Reclaire, A., Twee korte meded. Vlieland. EB 8, 1932

Ritsema, C., Ann. Soc. Ent. Belg. 15, 1872

Ritsema, C., 27e Zomerbijeenk. tve 16. (Tx, V, T),
1873

Ritzema, J., Bijdr. Entomofauna Noordzeeëil.
tve 16, 1873

Veth, H. J., 12e Winterverg. tve 22. (T), 1879

b. Personal communications received by P. van der Wiel

Everts, E.: List of sampling localities for 1925–1932.

Booy, H. L., 1937. T

Broerse, J., 1924. Tx, A

Burger, F. W., 1917. Tx

Companjen, A., 1936. G

Doeksen, J., 1937. T

Evers, A. M. J., 1936. T

Gravestein, W. H., 1935–37, 39, 46, 47. Tx

Hoop, D. van der, 1901. S

Kabos, W. J., 1938. Tx

Kempers, K. J. W., 1896. Tx

Klynstra, D. H., 1939. Tx, T

Kruseman, G., 1938. G

Lieftinck, M., 1921. Tx

MacGillavry, D., 1912. T

MacGillavry, H. J., 1925. T

Nieuwenkamp, M., 1928. A

Nonnekens, A. C., 1922–24. Tx

Nonnekens, A. C., 1937. T

Ooststroom, S. J. van, 1935. A, Tx

Reclaire, A., 1929–31. V

Reclaire, A., 1925. T

Reclaire, A., 1946–48. Tx

Ritsema, C., 1872. Tx, V

Ritsema Bos, J., 1871. Tx, T, A, S, R

Uytenboogaart, D. L., 1939. Tx

Valek Lucassen, E. T., 1926. Tx, V, T

Valentin, A. C. van, 1935. Tx, T

Veth, H. J., 1878. T

Wiel, P. van der, 1921, 33, 39, 46–48. T

Wiel, P. van der, 1931. V

3.2. Inventory reports in the files of the Research Institute for Nature Management (R.I.N.), Leersum

Amstelveen, Amsterdamse Bos, Med. Centr. Inst.
v. Flor. Ond. 8, 195, 1948.

Bemelen, Bemelerberg, 1966: P. Poot

Boxtel, De Geelders, 1966: P. Aukema

Colmont, Wrakelberg, 1960–1965: P. Poot

De Wijk, De Reest, 1966: C. D. Kruizinga

Echt, De Doort, 1968–1970

Enschede, Aarnsveen, 1964: N.J.N. afd. Enschede

Ermelo, Speulder en Sprielder bossen, 1962:

W. Reijnders

Ginneken, De Goudberg, 1967: P. Aukema

Gorsseel, Gorsseelse Heide, 1969: C.J.N., contr.

C. van Houdt

- Gronsveld, 1966: P. Poot
 Meyel, De Grote Peel, 1965
 Millingen, Millinger Waard, 1956: C. J. Hogendijk
 Naarden, 1950: R. Tolman
 Neede, Needse Achterveld, 1965: P. Poot
 Ophemert, (woods) 1956: C. J. Hogendijk
 Rossum, Kil van Hurwenen, 1956: C. J. Hogendijk
 Soest, 1949, 1950: R. Tolman
 Tegelen, Holtmühle, 1967: N. P. Peerdeman
 Terschelling, Texel, Vlieland, 1937, 1938: Inventory
 State-owned nature reserves
 Ubbergen, Duivelsberg, 1964: E. Mols
 Valkenburg, Ravensbos, 1966: P. Poot
 Vianen, Bos van Vianen, 1956: C. J. Hogendijk
 Wijhe, Duursewaarden, 1956: C. J. Hogendijk
 Wijlre, (woods), 1966: P. Poot
- 3.3. Carabid inventories by youth societies for the study of nature, mostly unpublished*
- Drentse A, 1969, 1970, 1971: C.J.N., Anax
 Gorsse Heide, 1970: C.J.N., Anax 71
 Ratumse Beek, Winterswijk, 1971
 Schiermonnikoog, 1956: N.J.N.
 Schiermonnikoog, 1969, 1970: C.J.N.
 Terschelling, 1971, 1972: C.J.N. + N.J.N.
 Vlieland, 1971, 1972: N.J.N.
 Zutphen, wet meadows
- 3.4. Additional literature*
- Batten, R., Enkele notities over het voedsel van Cicindela en een nieuwe vindplaats. Ent. Ber., Amst. 14, 1953.
- Berger, C. G. M. and P. Poot, Nieuwe en zeldzame soorten voor de Nederlandse keverfauna I. Ent. Ber., Amst. 30, 213-214, 1970.
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- Boer, P. J. den, Activiteitsperioden van de loopkevers in Meyendel. Ent. Ber., Amst., 8, 80-88, 1958.
- Booy, K., Inventory of the outer marches of the Rhine near Wageningen, 1969-1972, 1972.
- Brakman, P. J., Bradycellus sharpi, een nieuwe carabide voor de Nederlandse fauna. Ent. Ber., Amst. 11 (260), 282, 1944.
- Brakman, P. J., Korte Coleopterologische notities. Ent. Ber., Amst. 13, 250, 1951.
- Brakman, P. J., Ent. Ber., Amst. 15, 181-182, 1954.
- Bruyn, H. de, Loopkevers in opgespoten land. Amoeba 43, 111-120, 1967.
- Doesburg, P. H. van, Carabidae and Staphylinidae from Terschelling 1950-1952 and Grubbenvorst 1953-1955. Internal report Zool. Dep. Univ. Utrecht, 1958.
- Eyndhoven, G. L. van, Verslag van de 116e zomerbijeenkomst van de Ned. Ent. Ver. Ent. Ber., Amst. 22 (7), 1962.
- Gijzen, T. van, Coleoptera inventory Linschoterbos. Internal report Zool. Dep. Univ. Utrecht, 1970.
- Heerdt, P. F. van, J. Isings and L. E. Nijenhuis, Temperature and humidity preferences of various Coleoptera from the duneland area of Terschelling. Proc. Kon. Ned. Akad. v. Wetensch. part 1, C 59 (5), 668-676; part 2, C 60 (1), 99-106, 1956-57.
- Hengst, J., Loopkevers in de duinen. Amoeba 32 (5), 1956.
- Heijnsbergen, S. van, Carabids from Het Noordhollands Duinreservaat from 1939-1955.
- Klynstra, B. H., Mededelingen over de Nederlandse Adephaga (Col.) III, Ent. Ber., Amst. 318, 369-372, 1951.
 Laboratory of Applied Entomology Amsterdam, 1963. Excursion to Voorno.
- Mooy, W. A. M., Zoologisch oecologische studie van de lopende keverfauna in het oostelijk deel van het Krommerijng gebied. Kromme Rijn Rapport 7, 1973.
- Nonnekens, A. C., Iets omtrent de keverfauna van het Amsterdamse Bos. Ent. Ber., Amst. 16 (7), 1956.
- Reimerink, H. G. A., Kolonisatie door Carabidae in het gebied van De Knar. Internal report Institute for Ecological Research, Arnhem, 1970.
- Terpstra, B., Keveronderzoek in het Krommerijng gebied. Kromme Rijn Rapport 15, 1974.
- Twentse Insekten Werkgroep, Carabids in Twickel, 1972.
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- Wiel, P. van der, Bijdrage tot de kennis der Nederlandse kevers, V, Ent. Ber., Amst. 22, 169-171, 1962.

3.5. Personal communications

a. Sites sampled with pitfall traps

site	year	collector	identification by				
Aalten, 5 sites	1973	T. Heyerman		3			
Achlum, various sites	1974/75	A. de Smidt	1		4		
Arnhem, southeast	1974/75	R. Dorré				5	
Arnhem, southwest	1974/75	T. van Gijzen			4		
Amsterdam, Bijlmer	1973/74	A. Littel					7
Braakmanpolder	1972	H. Kooman	1				
Doorwerth, wood	1971	H. Turin	1				6
Dwarsgracht	1974	J. Nip	1		4		
Ede, Planken Wambuis	1973	K. Alders	1	3			
Enschede, Hof Espelo	1970/71	H. Turin					6
Enschede, Lonnekerberg	1970/71	H. Turin					6
Follega,	1973/74	R. van de Ree	1		4		
Gorsseel, heath	1972/73	W. Verholt	1	2	3		6
Hemmen, wood	1974	T. Heyerman			3		
Hoge Veluwe	1972/74	T. Heyerman	1	3			
Den Haag, dunes	1973	G. Speek	1				
Kennemerduinen, many sites	1973/74	K. Alders	1				
Naardermeer, 5 sites	1974	W. van Wijngaarden	1				
Oostvoorne, dunes	1972/73	T. Heyerman + K. Alders	1	3			
Pannerden, outer marches	1972	K. Booy					8
Randwijk, garden	1974	T. Heyerman			3		
Schiermonnikoog	1973/74	A. Littel					7
De Steeg, outer marches	1973	T. Heyerman	1	3			
De Steeg, hedges	1972/73	T. Heyerman	1	3			
De Steeg, Faisantenbos	1974	T. Heyerman	1	3			
Stroe, many sites	1974/75	T. van Gijzen	1		4	5	
Terlet	1973/74	K. Alders	1				
Tynaarlo en Kogelbergerveen	1975	A. Rijnsdorp			3		
Westeinderplassen	1971	K. Bol					6
Wijhe, Duurserwaarden	1971/73	W. Gerritse	1	2	3		
Winterswijk, Bekkendelle	1973	T. Heyerman			3		
Winterswijk, Vlist	1973	T. Heyerman			3		
Zutphen, outer marches	1970/72	K. Booy					8
Deventer, Rande, forest	1971/73	W. Gerritse	1	2	3		

b. Sites sampled by hand

site	year	collector	site	year	collector
Aalten, arable land	1973	3	Nijmegen, ruderal site	1971	1, 14
Aalten, Heurne	1973	3	Ooypolder	1973	3
Arnhem, Inst. Ecol. Res.	1974	3, 5	Oostvoorne	1971	1
Bedum (Gr.)	1972/73	8	Oostvoorne, dunes	1972	1, 3, 6
Drentse A	1969/70	9	Ossendrecht	1973	1
Dijkwater Schouwen	1973	3	Otterlo, heath	1972	1, 3
Ede, Planken Wambuis	1972/73	1, 3	Schaarsbergen, wood	1971	1
Ermelo	1973	1, 3	Schaarsbergen, ruderal	1971/72	1, 6
Garderen, arable land	1974	1, 3	Schiermonnikoog	1971/72	13
Goeree, Punt	1973	1, 3	Staverden	1974	1, 3
Grevelingen, Hompelvoet	1973	1, 3	De Steeg, Havikerwaard	1973	3
Haarlem, many sites	1973/75	1	Terlet	1971/73	1, 3
Hellendoorn	1973	1, 3	Terschelling, Bosplaat	1972	1, 14
Heveadorp	1972	3	Texel	1971/72	11
Heteren, arable + dike	1973/74	1, 3	Wageningseberg	1972	1, 3
Hoge Veluwe	1972	1, 3	Weerribben	1972	12
Huissen	1971	3	Winterswijk, Bekkendelle	1973	3
Kennemerduinen	1973	1	IJsselmeerpolders	1971/72	1, 2, 10, 14
Linschoten	1969/70	4	Zeeuws Vlaanderen	1973	3
Nijkerk, Meerte	1973	3	Zuid-Limburg, many sites	1972	1, 3, 6

The numbers indicate:

1 = K. Alders

2 = H. Krols

3 = T. Heyerman

4 = T. van Gijzen

5 = R. Dorré

6 = H. Turin

7 = A. Littel

8 = K. Booy

9 = S. G. Dutmer

10 = H. Reimerink

11 = G. van Noort

12 = F. v. Stuivenberg

13 = J. A. Kooman

14 = K. Reinink

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We are greatly indebted to all those who contributed to this work by supplying us with data from their collections or by admitting us to the museum collections. In addition, we wish to thank a number of people for special assistance. A. Turin-van den Burg gave invaluable help with coding and punching and also drew parts of the maps. J. A. van Noort-Kooman, K. Booy, H. Krols, K. Reinink, and F. van Stuivenberg spent much time in collecting data from museums and private collections. P. J. den Boer, J. van der Drift, and G. J. de Bruyn supplied us with data from their extensive material collected by systematic sampling. K. Alders, R. Dorré, T. van Gijzen, and Th. Heyerman identified large numbers of specimens collected in our own systematic sampling in the IJsselmeerpolders and at a number of sites in underworked areas. L. D. B. van den Burg designed several sorting programs. T. Tjebbes added the grid characteristics to punch cards. B. J. Turin made a survey of the first 19,000 records and prepared a preliminary series of maps based on that part of the material. L. Lobach punched innumerable cards in a very short time without losing his enthusiasm for the work. J. H. H. Lochtenberg prepared most of the maps. Mrs. I. Seeger read the English text. F. C. Bos designed the dustjacket.

Explanation of the maps

Species names: according to Brakman (1966)

Species names between parentheses: according to Lindroth (1974)

Species numbers: according to Brakman (1966) (except number 359.1, indicating an additional species of the genus *Dromius*)

Wing form: according to Lindroth (1945), Lindroth (1974), Den Boer (pers. comm.), and our own observations

Bar for larvae: seasonal presence, according to Larsson (1939)

Number of records: total number of records on which the map is based (usually greater than the number of dots on the maps)

Frequencies in the histograms: number of specimens per month, as found in museum collections, private collections, or the literature (undated specimens and specimens from ecological investigations were not included)

Maps showing the European distribution in black: based on the literature

Symbols:

- ↘ indicates occurrence on very small islands or isolated sites outside the main area
- ? doubtful occurrence
- + extinct

Transparent maps

1. Underworked grids

Hatching: grids with less than 9 species (see page 15, Fig. 3).

2. Phytogeographical regions of The Netherlands according to J. L. van Soest, adopted from: Atlas van Nederland, plate VI-3, Den Haag, Staatsuitgeverij, 1976.

3. Land use in The Netherlands

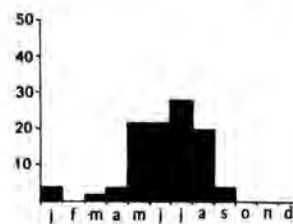
adapted from: Landbouwatlas van Nederland, Zwolle, Tjeenk Willink, 1959.

4. Soil map of The Netherlands

in very simplified form adapted from: Atlas van Nederland, plate IV-12, Den Haag, Staatsuitgeverij, 1964.

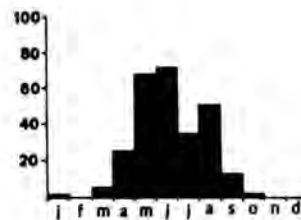
1 *Cicindela silvatica* L. *C. sylvatica* L.

macropterous 181 records



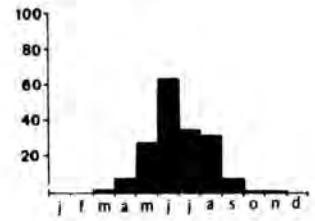
2 *Cicindela hybrida* L.

macropterous 350 records



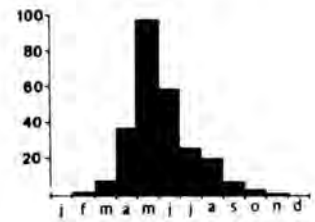
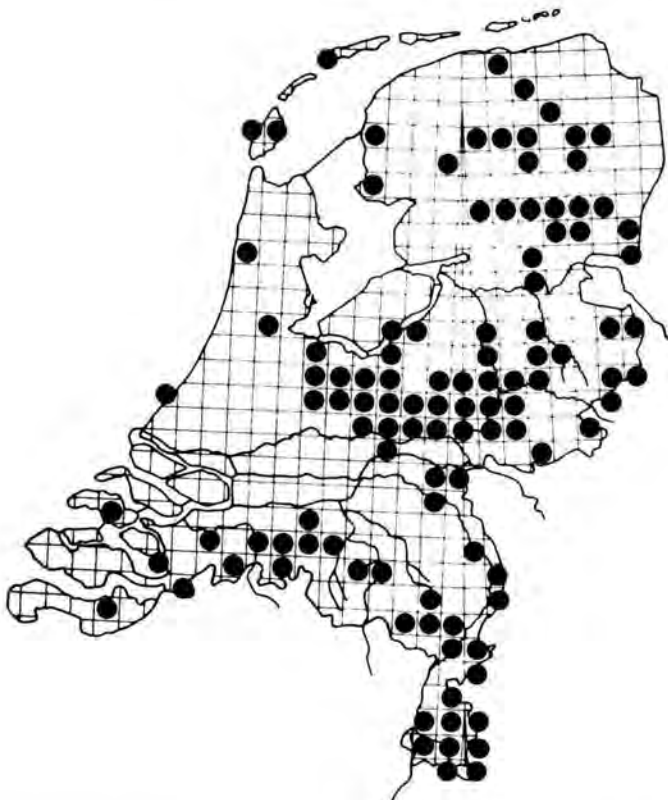
3 *Cicindela maritima* Dej.

macropterous 210 records



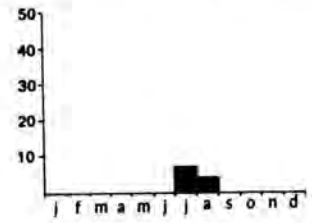
4 *Cicindela campestris* L.

macropterous 396 records



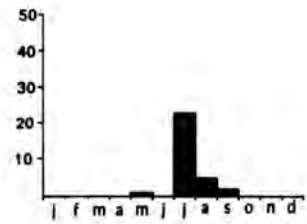
5 *Cicindela germanica* L.

macropterous 16 records



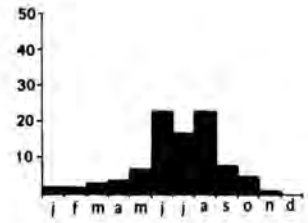
6 *Cicindela trisignata* Dej.

macropterous 37 records



7 *Cychrus caraboides* (L.)

brachypterous 162 records

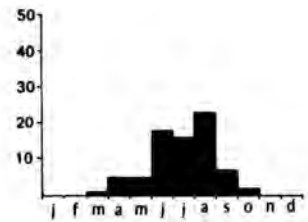


larvae
j f m a m j j a s o n d



8 *Carabus coriaceus* L.

brachypterous 115 records

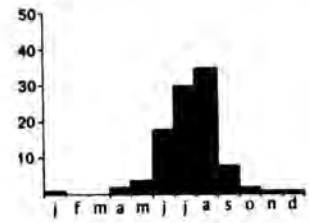
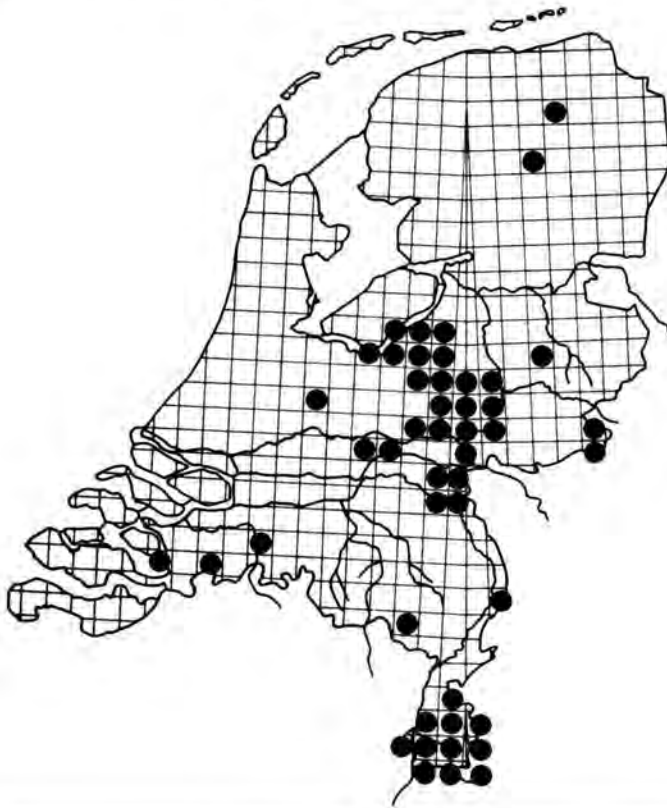


larvae
j f m a m j j a s o n d



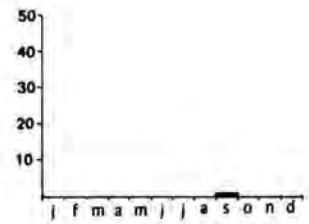
9 *Carabus purpurascens* F.

brachypterous 159 records



10 *Carabus intricatus* L.

brachypterous 10 records

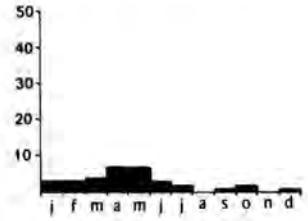


larvae
j f m a m j j a s o n d



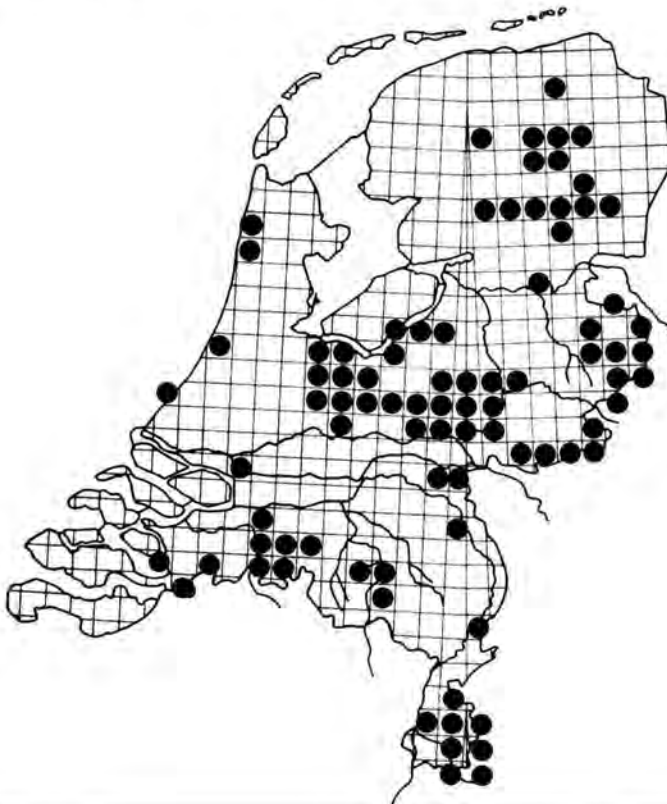
11 *Carabus auronitens* F.

brachypterous 42 records



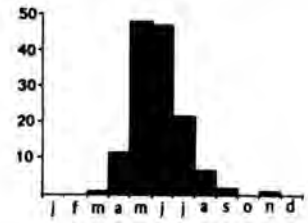
12 *Carabus problematicus* Hbst. *C. catenulatus* auct.

brachypterous 388 records



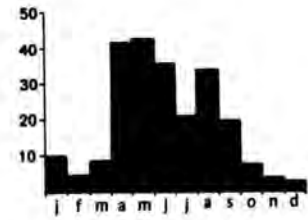
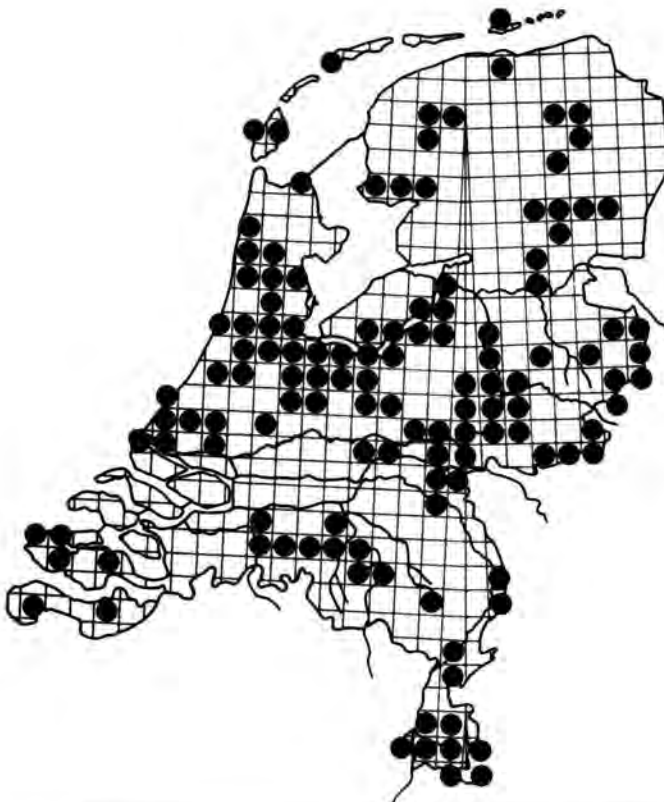
13 *Carabus auratus* L.

brachypterous 194 records



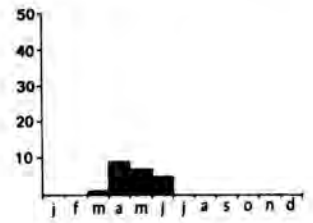
14 *Carabus granulatus* L.

dimorphic 434 records



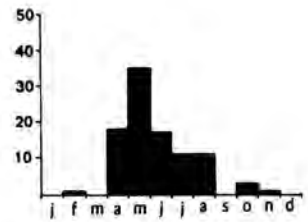
15 *Carabus convexus* F.

brachypterous 32 records



16 *Carabus nitens* L.

brachypterous 209 records

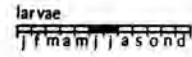
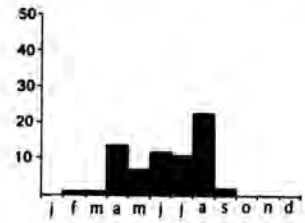
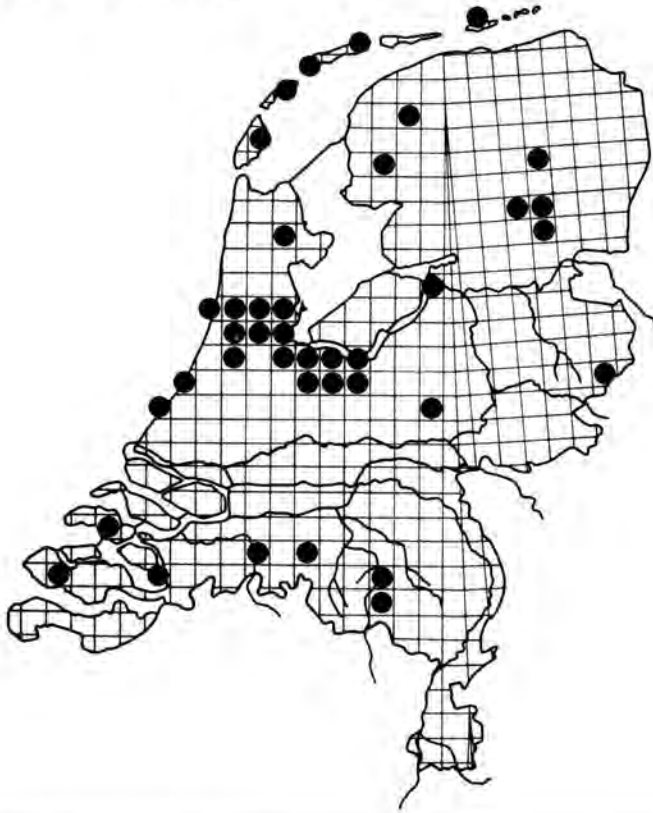


larvae
j f m a m j j a s o n d



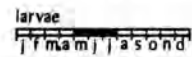
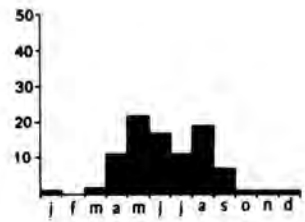
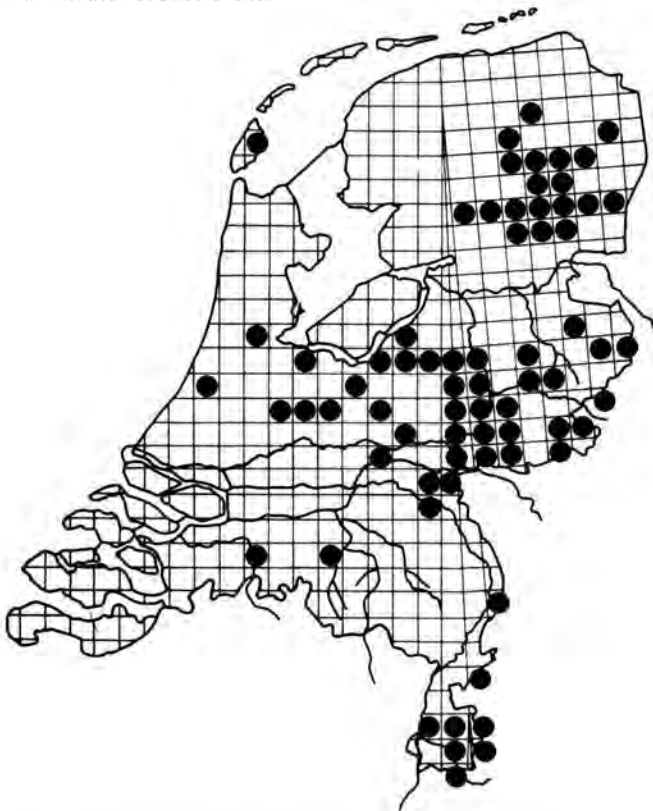
17 *Carabus clathratus* L.

dimorphic 110 records



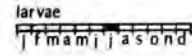
18 *Carabus cancellatus* Ill.

brachypterous 234 records



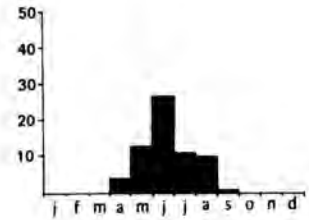
19 *Carabus arcensis* Hbst. *C. arcensis* Hbst.

brachypterous 239 records



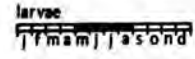
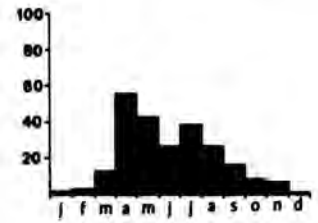
20 *Carabus monilis* F.

brachypterous 131 records



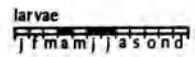
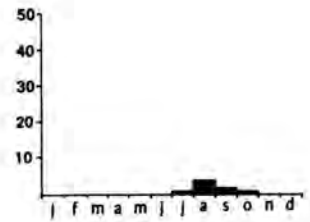
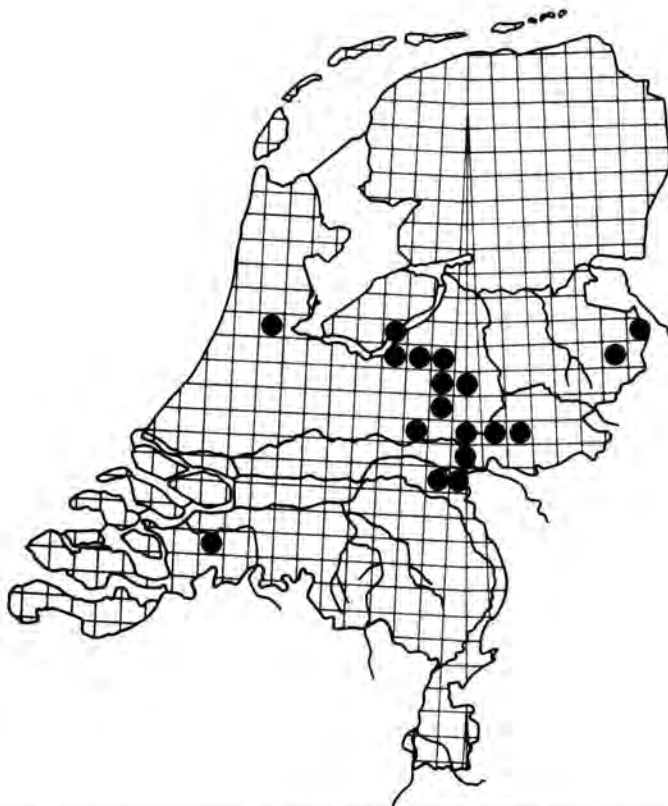
21 *Carabus nemoralis* Müll.

brachypterous 417 records



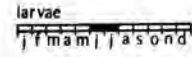
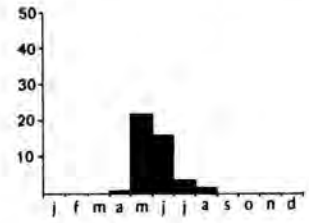
22 *Carabus glabratus* Payk.

brachypterous 29 records



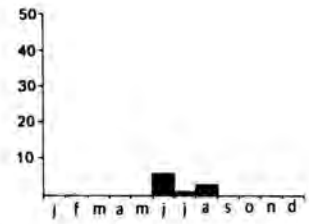
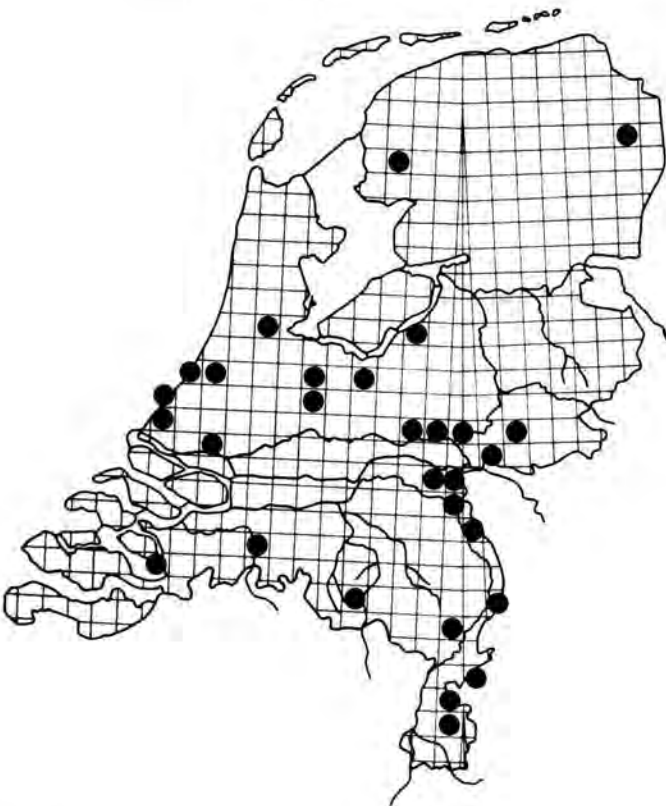
23 *Calosoma inquisitor* (L.)

macropterous 79 records



24 *Calosoma sycophantha* (L.)

macropterous 44 records



25 *Calosoma auropunctatum* (Hbst.)

macropterous 1 record



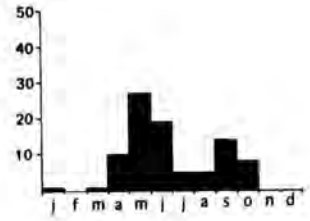
26 *Calosoma reticulatum* F.

macropterous 1 record



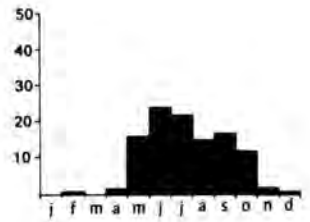
27 *Leistus spinibarbis* (F.)

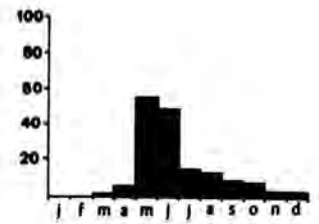
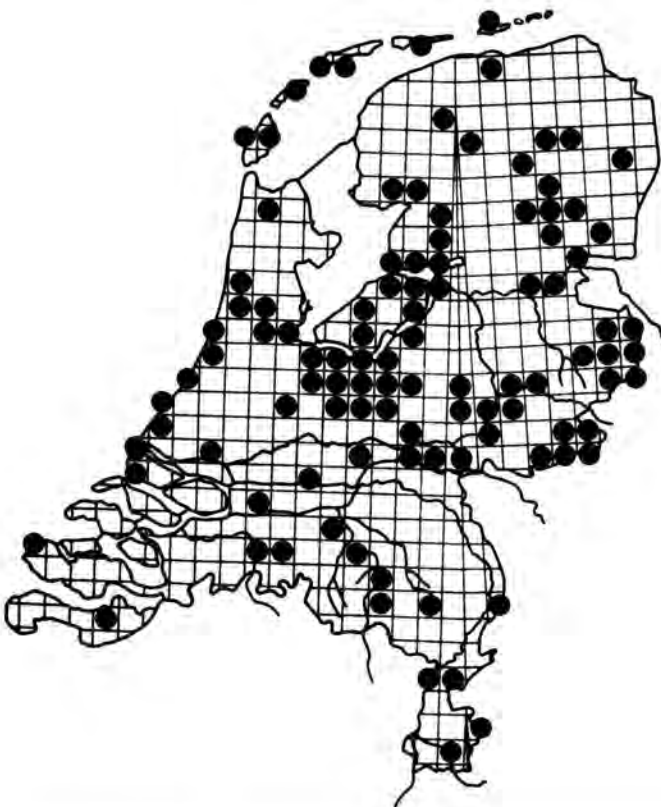
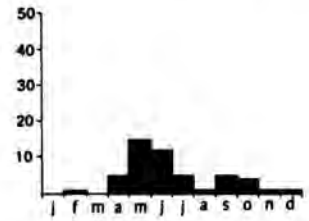
macropterous 133 records



28 *Leistus rufomarginatus* (Dft.)

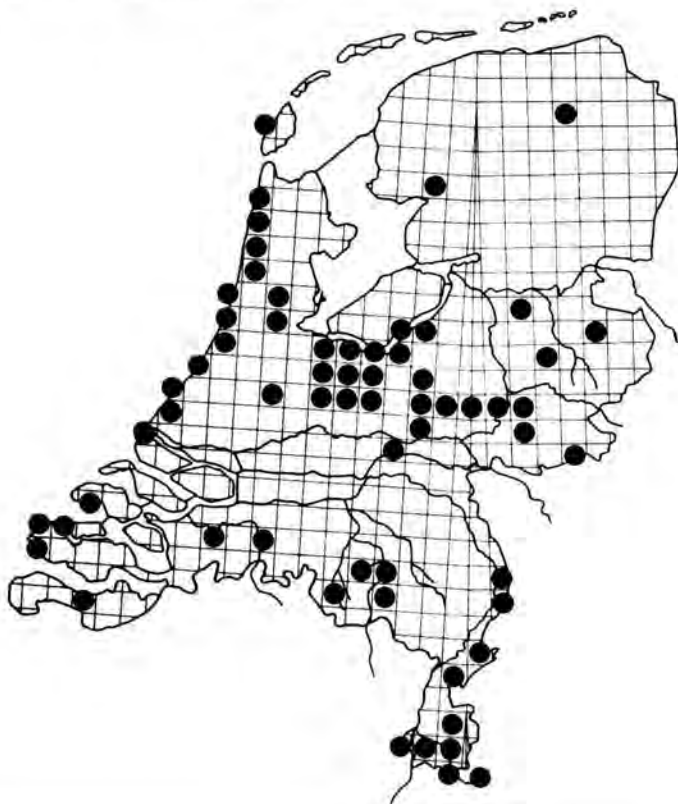
macropterous 206 records





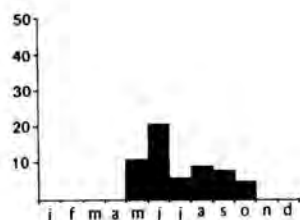
31 *Leistus ferrugineus* (L.)

brachypterous 184 records



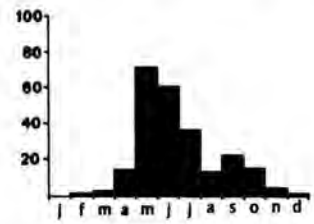
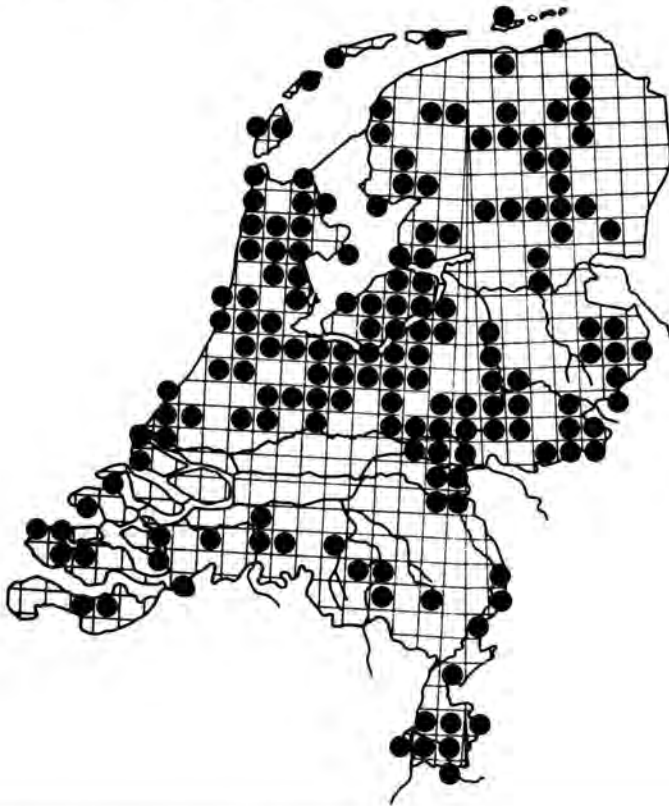
32 *Nebria livida* (L.)

macropterous 95 records



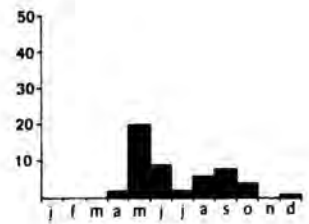
33 *Nebria brevicollis* (F.)

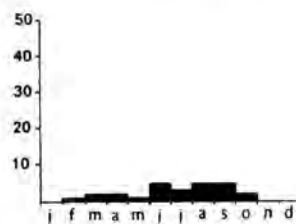
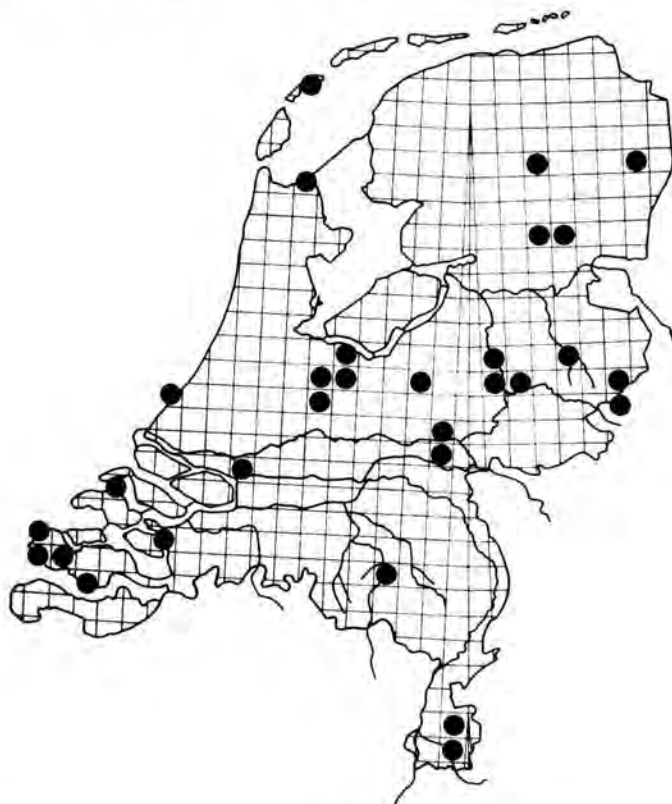
macropterous 601 records



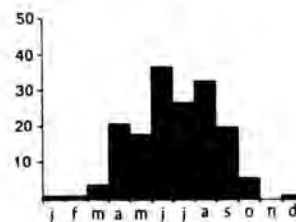
34 *Nebria salina* Fairm. *N. iberica* Oliv.

macropterous 99 records





larvae
j f m a m j j a s o n d



larvae
j f m a m j j a s o n d



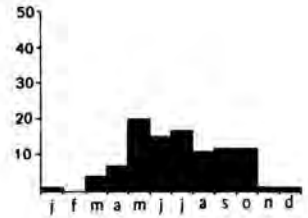
39 *Notiophilus substriatus* Wat.

macropterous 118 records



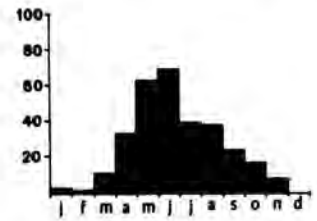
40 *Notiophilus rufipes* Curt.

macropterous 172 records



41 *Notiophilus biguttatus* (F.)

dimorphic 557 records



larvae
j f m a m j j a s o n d



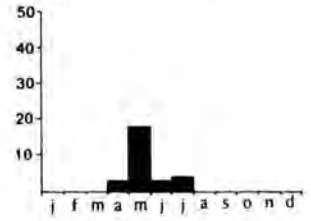
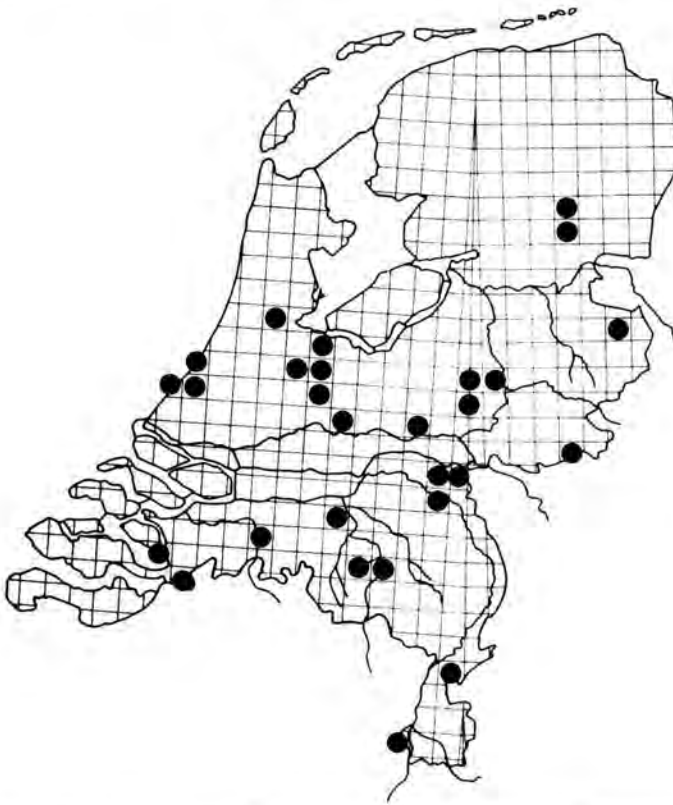
42 *Notiophilus quadripunctatus* Dej.

1 record



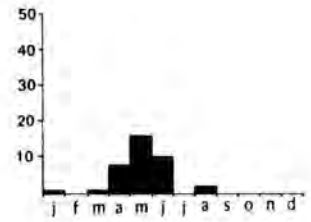
43 *Blethisa multipunctata* (L.)

macropterous 60 records



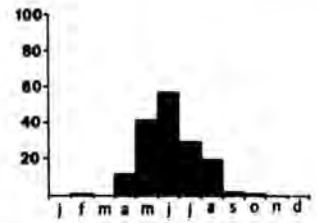
44 *Elaphrus uliginosus* F.

macropterous 53 records



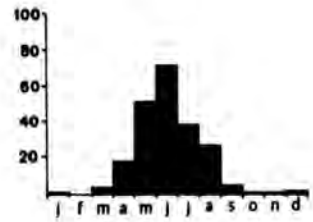
45 *Elaphrus cupreus* Dft.

macropterous 250 records



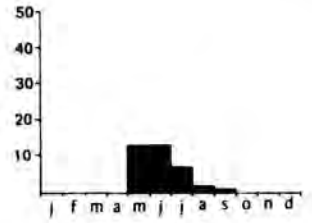
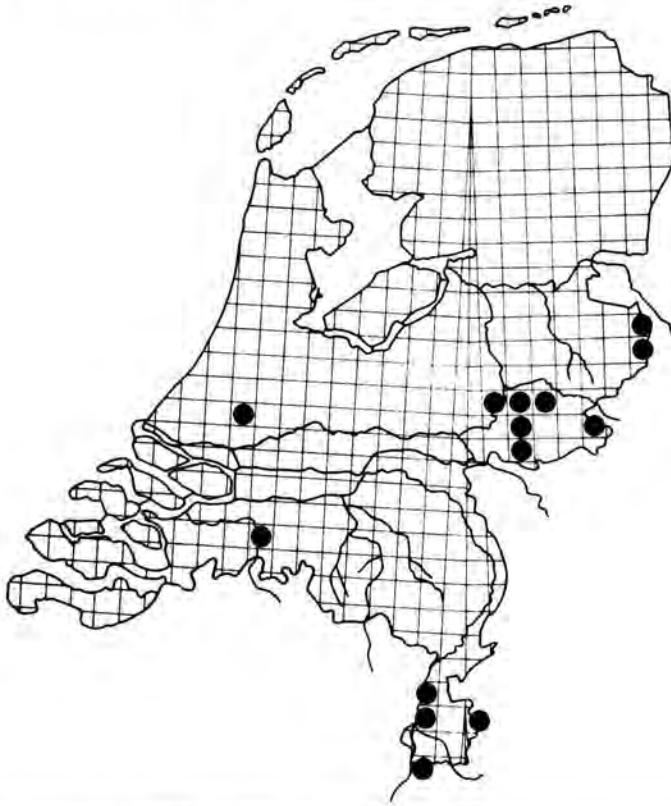
46 *Elaphrus riparius* (L.)

macropterous 335 records



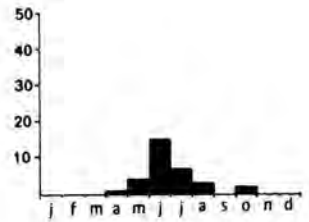
47 *Elaphrus aureus* Müll.

46 records



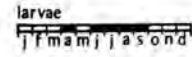
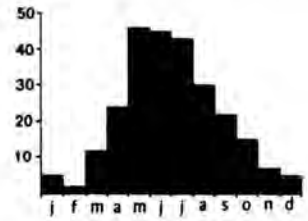
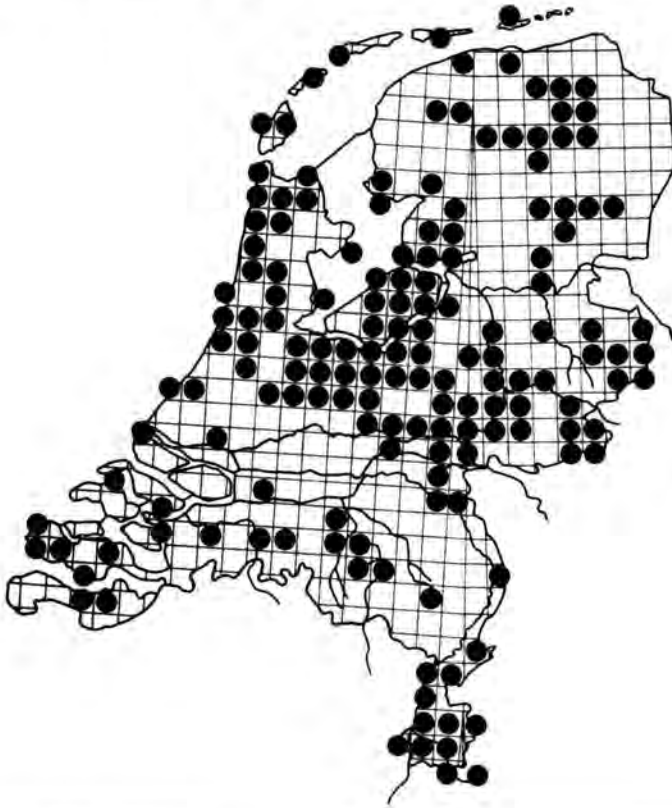
48 *Elaphrus ullrichi* Redt.

44 records



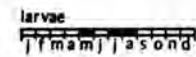
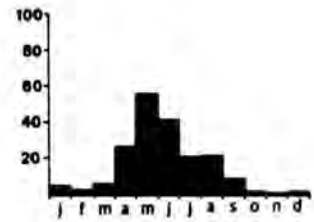
49 *Loricera pilicornis* (F.)

macropterous 663 records



50 *Clivina fossor* (L.)

dimorphic 503 records



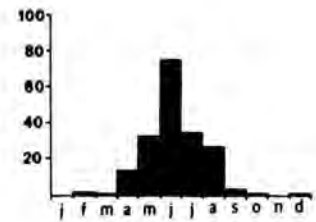
51 *Clivina collaris* (Hbst.) *C. contracta* (Fourcr.)

macropterous 174 records



52 *Dyschirius arenosus* Steph. *D. thoracicus* (Rossi)

macropterous 305 records

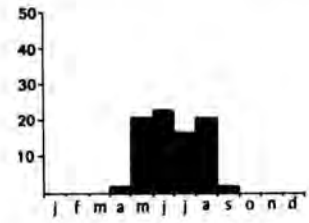


larvae
j f m a m j j a s o n d



53 *Dyschirius obscurus* (Gyll.)

macropterous 125 records



larvae
j f m a m j j a s o n d



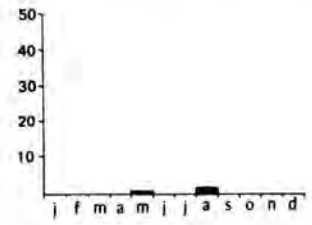
54 *Dyschirius neresheimeri* Wagn.

macropterous 1 record



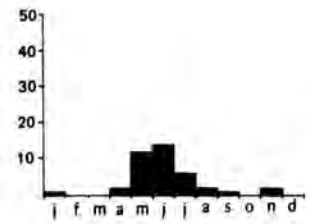
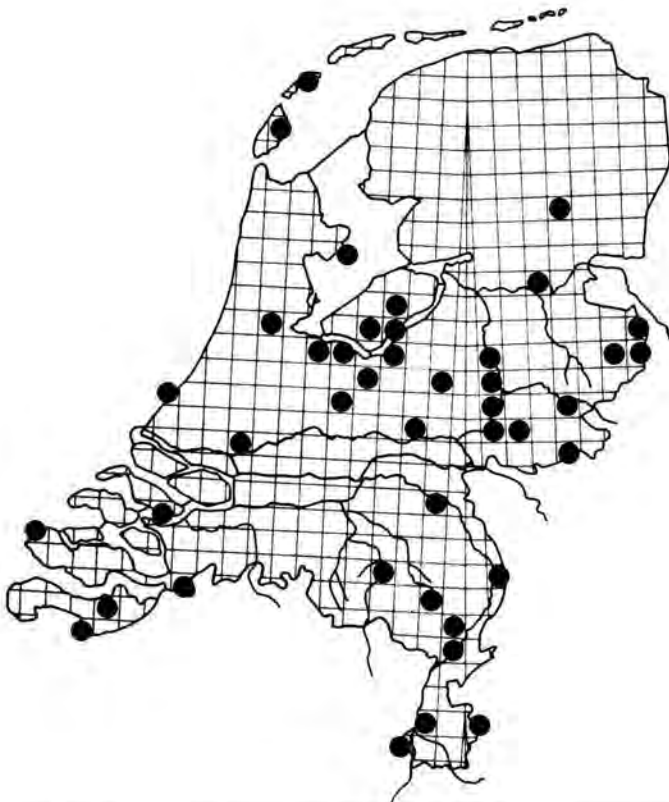
55 *Dyschirius nitidus* (Dej.)

macropterous 6 records



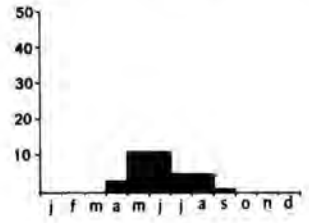
56 *Dyschirius politus* (Dej.)

macropterous 73 records



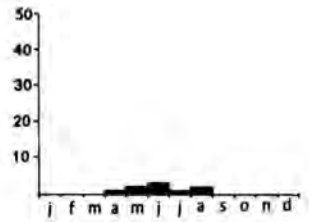
57 *Dyschirius impunctipennis* Daws.

macropterous 44 records



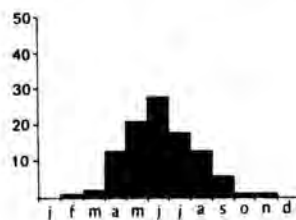
58 *Dyschirius chalceus* Er.

macropterous 12 records



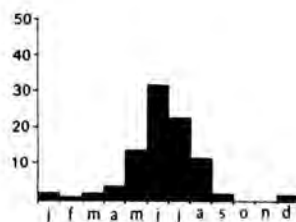
59 *Dyschirius salinus* Schaum.

macropterous 158 records



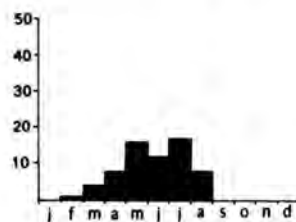
60 *Dyschirius aeneus* Dej.

macropterous 118 records



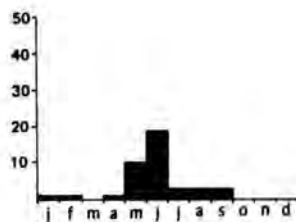
61 *Dyschirius luedersi* Wagn.

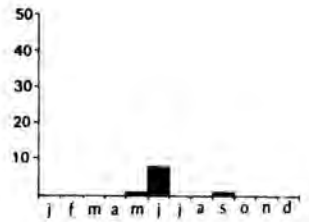
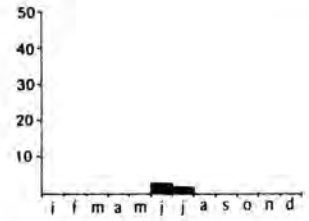
macropterous 81 records

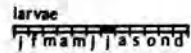
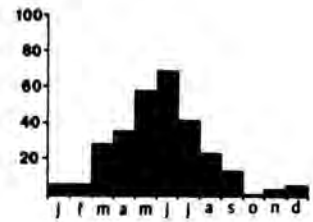
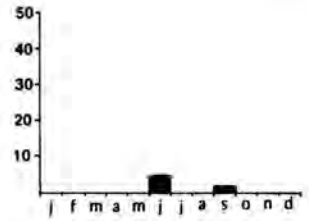
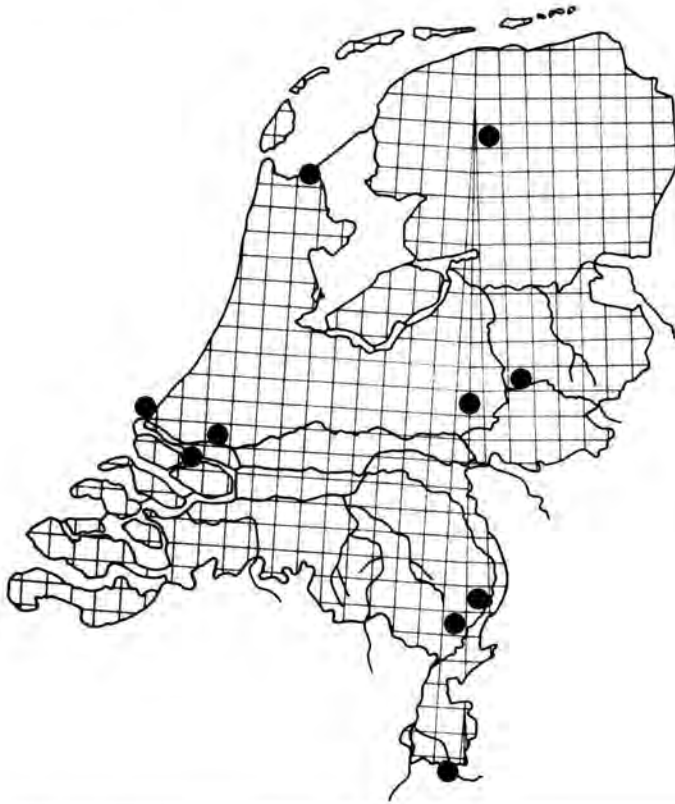


62 *Dyschirius intermedius* Putz.

macropterous 42 records







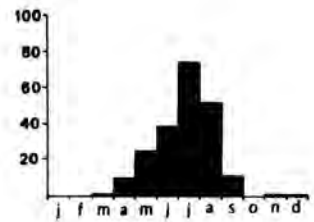
67 *Omophron limbatum* (F.)

macropterous 133 records



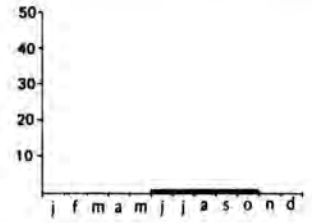
68 *Brosicus cephalotes* (L.)

macropterous 352 records



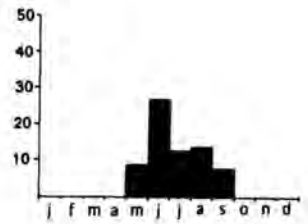
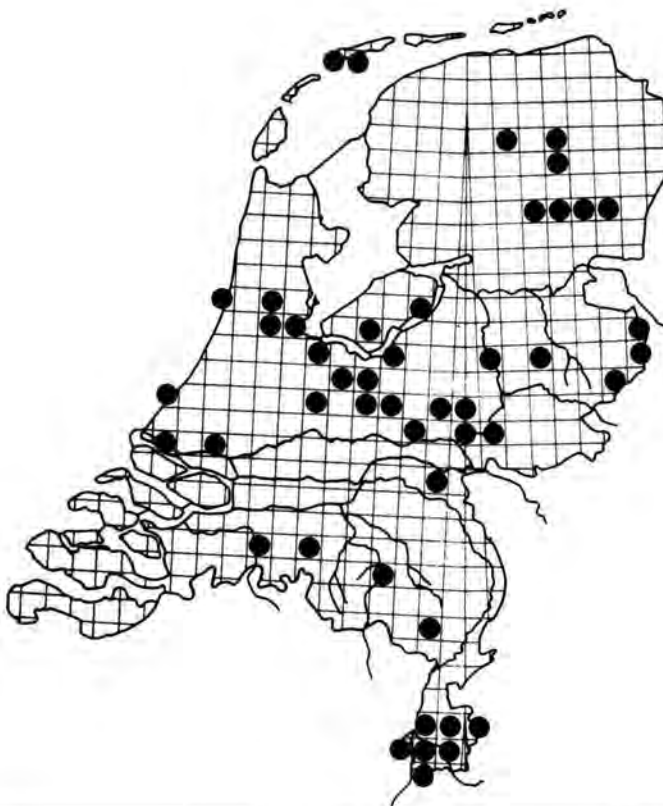
69 *Miscodera arctica* (Payk.)

macropterous 16 records



70 *Asaphidion pallipes* (Dft.)

macropterous 103 records



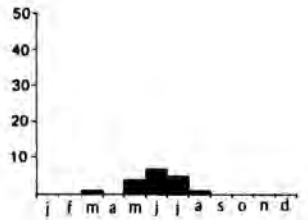
71 *Asaphidion flavipes* (L.)

macropterous 229 records



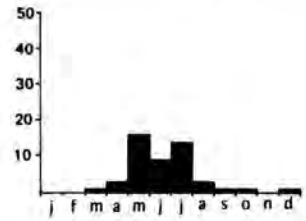
72 *Bembidion striatum* (F.)

macropterous 30 records



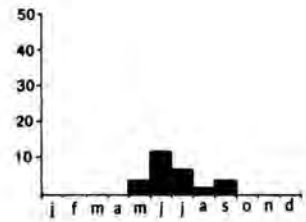
73 *Bembidion argenteolum* Ahr.

macropterous 95 records



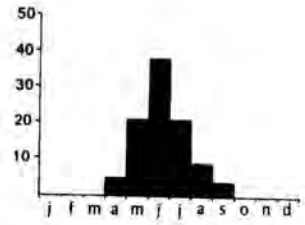
74 *Bembidion velox* (L.)

macropterous 56 records



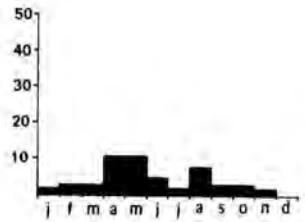
75 *Bembidion litorale* (Oliv.)

macropterous 110 records



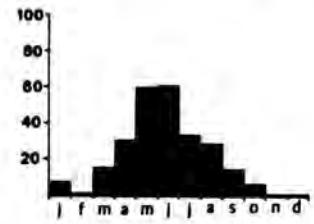
76 *Bembidion nigricorne* Gyll.

dimorphic 138 records



77 *Bembidion lampros* (Hbst.)

dimorphic 492 records

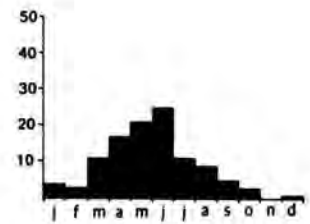
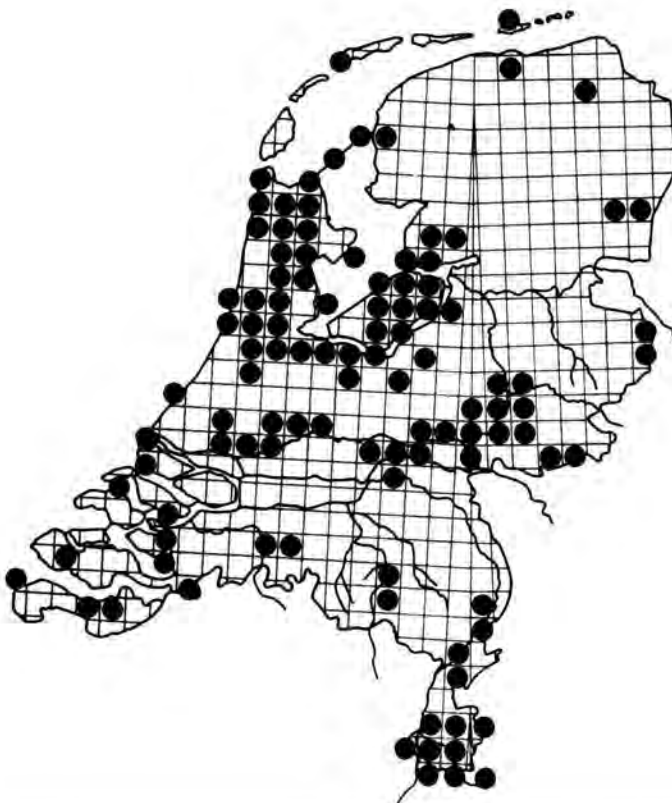


larvae
j f m a m j j a s o n d



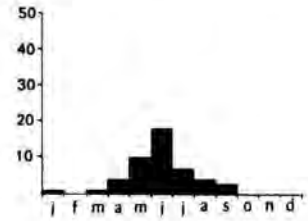
78 *Bembidion properans* Steph.

dimorphic 379 records



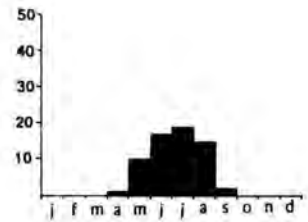
79 *Bembidion punctulatum* Drap.

macropterous 60 records



80 *Bembidion pallidipenne* Ill.

macropterous 103 records

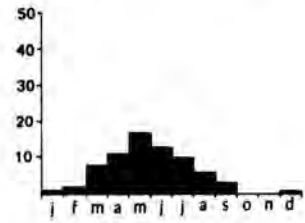
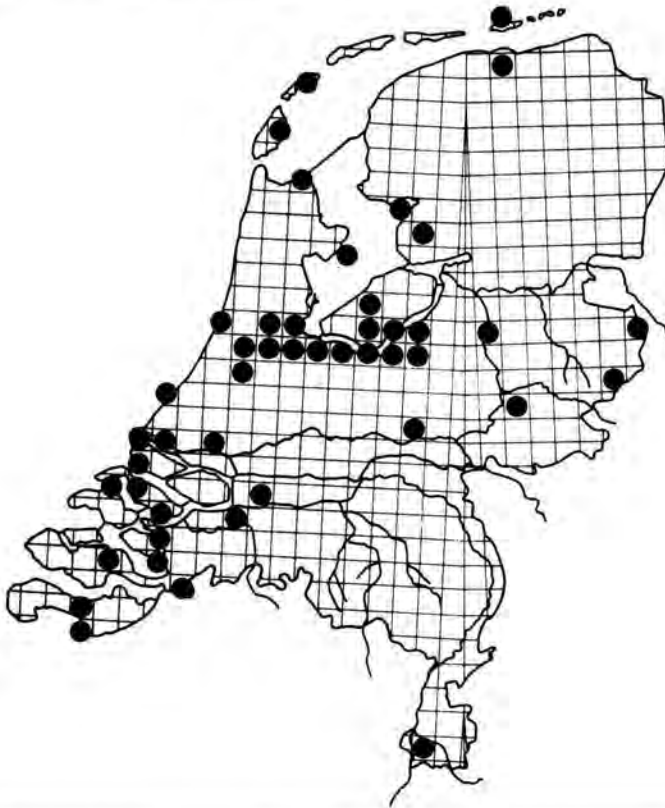


larvae
j f m a m j j a s o n d



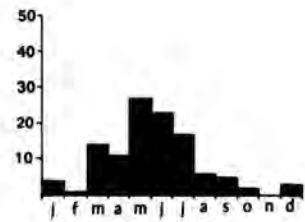
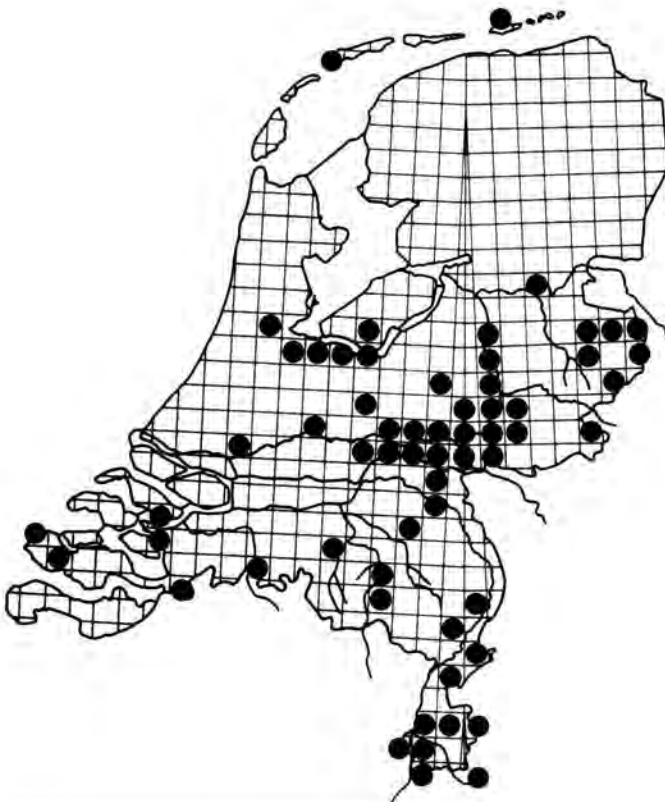
81 *Bembidion bipunctatum* (L.)

macropterous 148 records



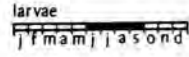
82 *Bembidion dentellum* (Thunb.)

macropterous 156 records



83 *Bembidion varium* (Oliv.)

macropterous 264 records



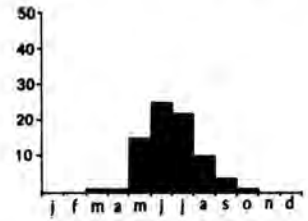
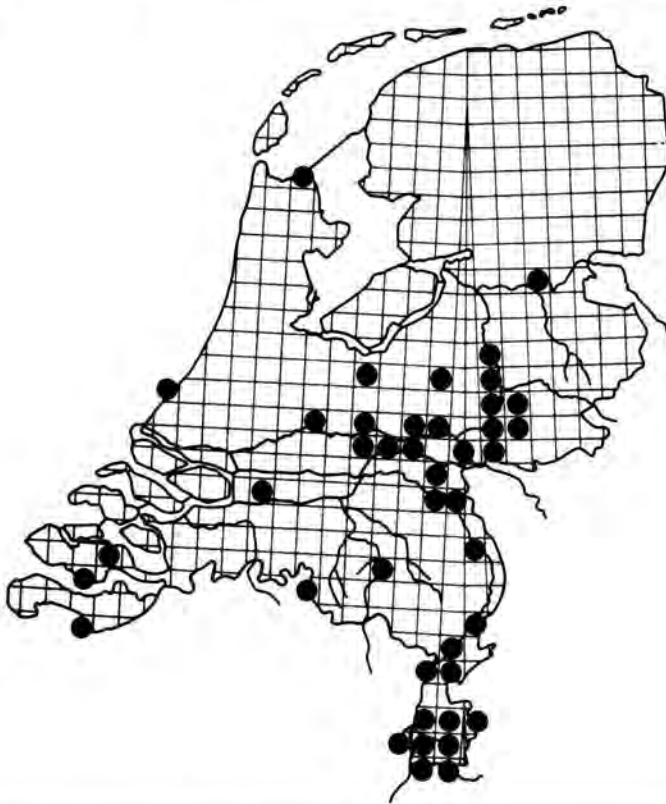
84 *Bembidion obliquum* Strm.

macropterous 151 records



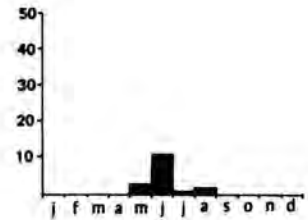
85 *Bembidion semipunctatum* Donovan. *B. adustum* Schaum.

macropterous 97 records



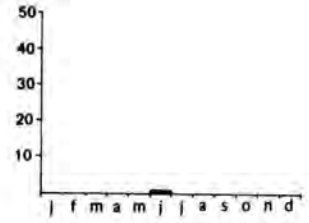
86 *Bembidion ephippium* (Mrsh.)

macropterous 21 records



87 *Bembidion prasinum* (Dft.)

macropterous 5 records



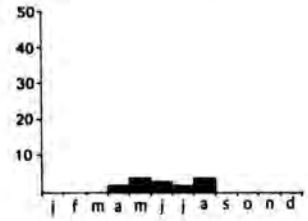
88 *Bembidion tibiale* (Dft.)

macropterous 29 records



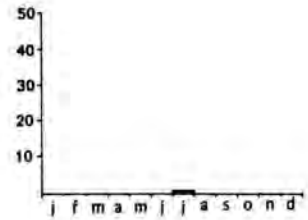
89 *Bembidion atrocoeruleum* Steph.

macropterous 24 records



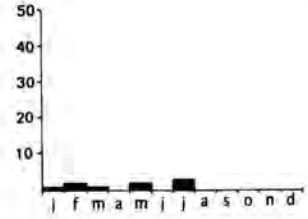
90 *Bembidion fasciolatum* (Dft.)

2 records



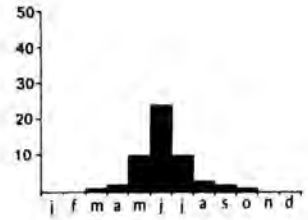
91 *Bembicium monticola* Strm.

macropterous 12 records



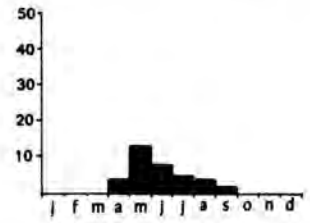
92 *Bembidion nitidulum* (Mrsh.)

macropterous 66 records



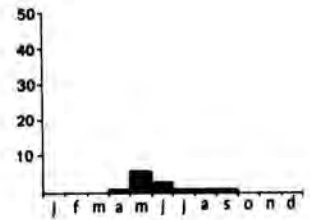
93 *Bembidion stephensi* Crotch

macropterous 42 records



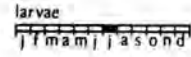
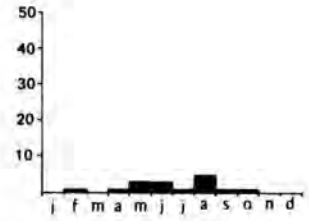
94 *Bembidion milleri* Duv.

13 records



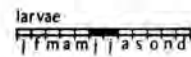
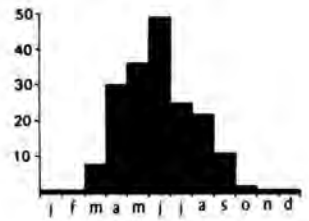
95 *Bembidion lunatum* (Dft.)

macropterous 31 records



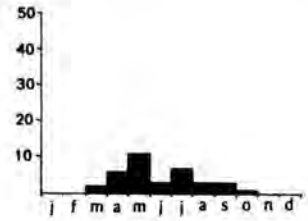
96 *Bembidion rupestre* (L.) *B. bruxellense* Wesmæl

macropterous 308 records



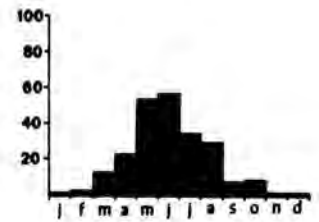
97 *Bembidion concinnum* Steph. *B. maritimum* Steph.

macropterous 50 records



98 *Bembidion ustulatum* (L.) *B. tetracolum* Say.

dimorphic 474 records

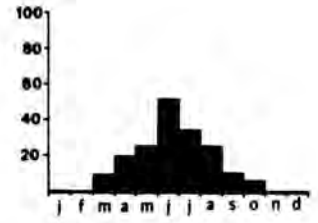


larvae
j f m a m j j a s o n d



99 *Bembidion femoratum* Strm.

macropterous 292 records



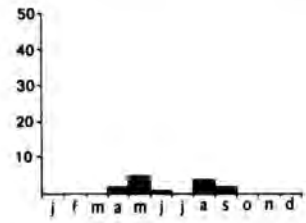
100 *Bembidion testaceum* (Dft.)

macropterous 44 records



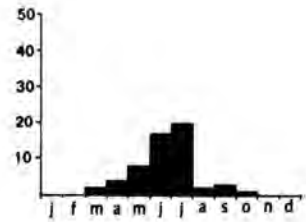
101 *Bembidion fluviatile* Dej.

macropterous 16 records



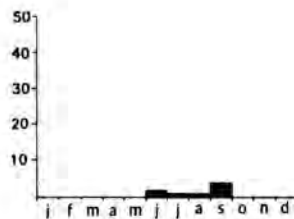
102 *Bembidion decorum* (Panz.)

macropterous 68 records



103 *Bembidion modestum* (F.)

17 records



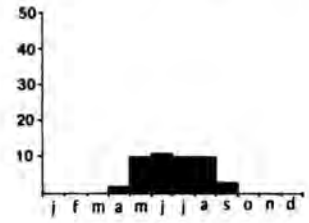
104 *Bembidion illigeri* Net.

macropterous 136 records



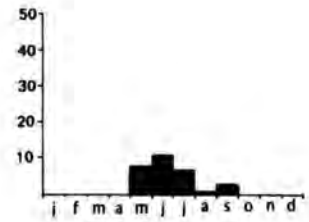
105 *Bembidion stomoides* Dej.

macropterous 50 records



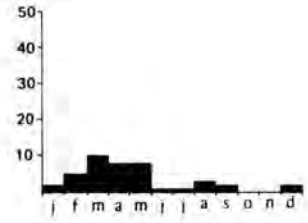
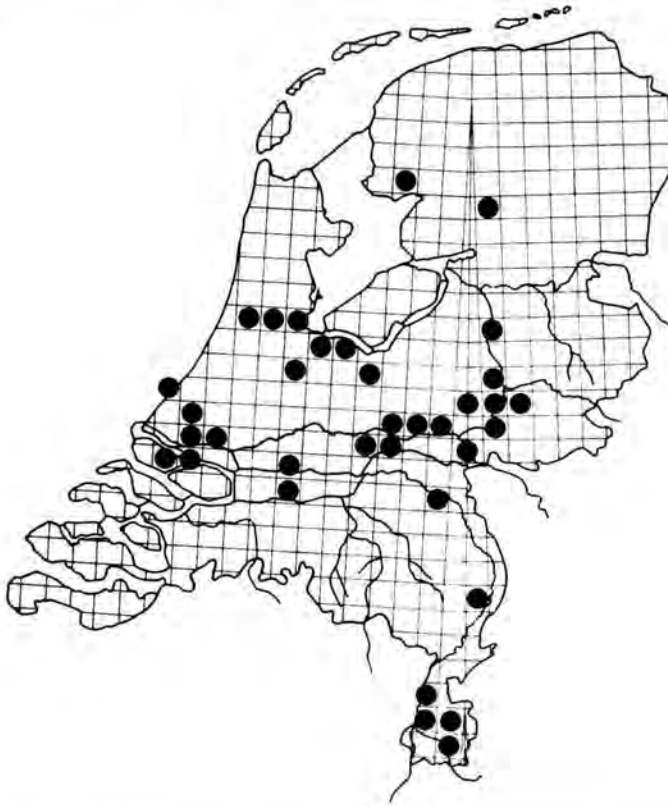
106 *Bembidion elongatum* Dej.

37 records



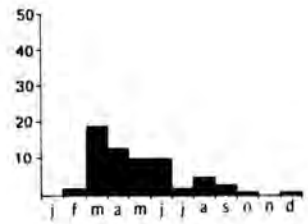
107 *Bembidion gilvipes* Strm.

dimorphic 62 records



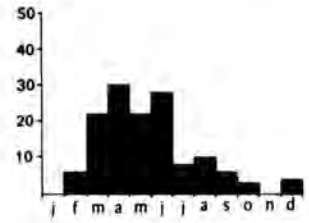
108 *Bembidion fumigatum* (Dft.)

macropterous 131 records



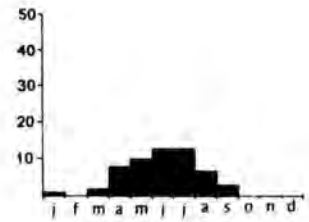
109 *Bembidion assimile* Gyll.

dimorphic 278 records



110 *Bembidion normannum* Dej.

macropterous 87 records



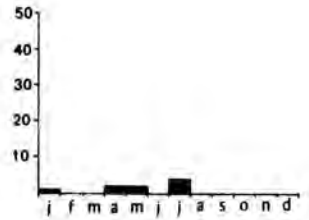
111 *Bembidion minimum* (F.)

macropterous 184 records



112 *Bembidion tenellum* Er.

macropterous 12 records



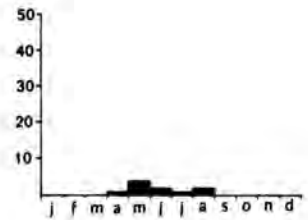
113 *Bembidion humerale* Strm.

macropterous 19 records



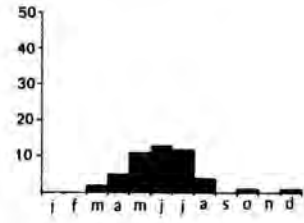
114 *Bembidion quadrimaculatum* (L.)

macropterous 279 records



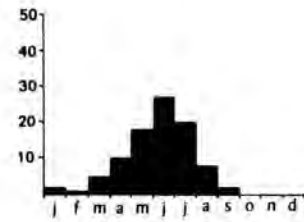
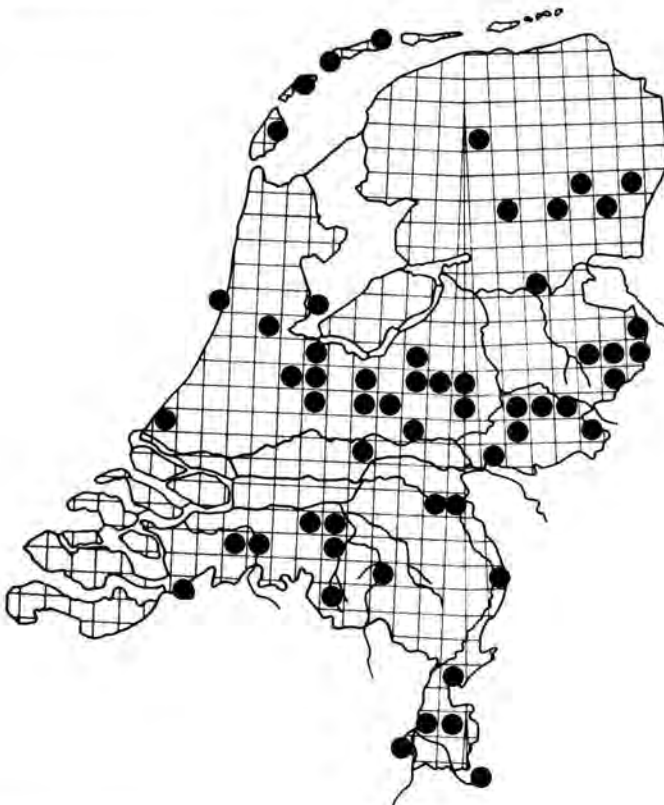
115 *Bembidion quadripustulatum* Serv. *B. quadriguttatum* (Oliv.)

macropterous 75 records



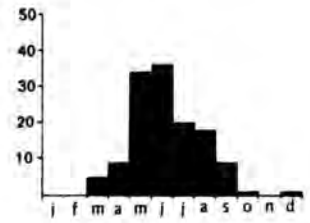
116 *Bembidion doris* (Panz.)

macropterous 116 records



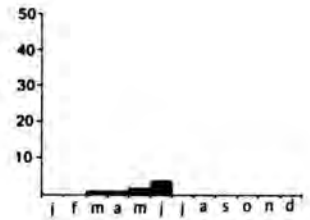
117 *Bembidion articulatum* (Panz.)

macropterous 150 records



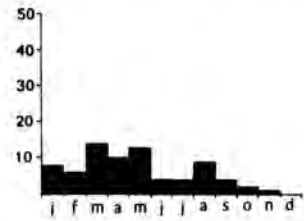
118 *Bembidion octomaculatum* Goeze

macropterous 14 records



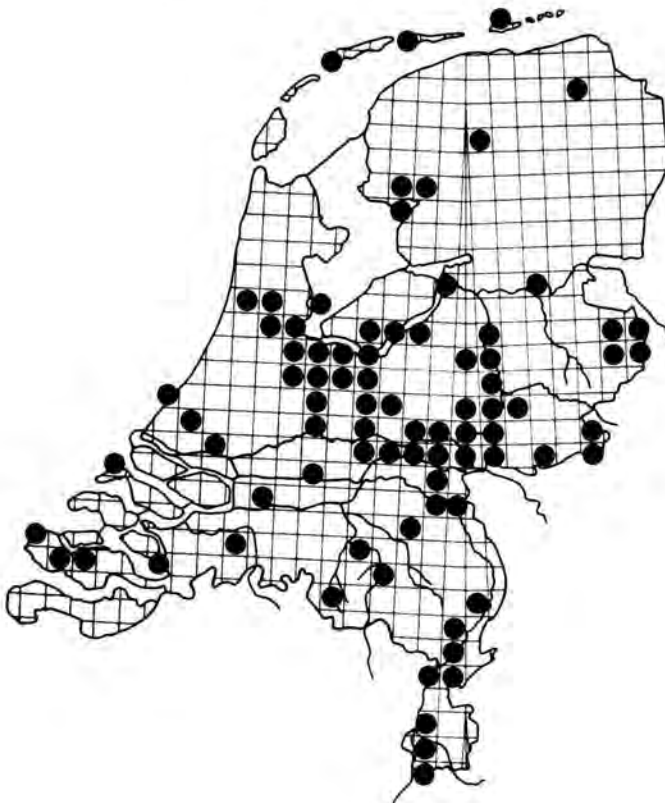
119 *Bembidion obtusum* Serv.

dimorphic 98 records



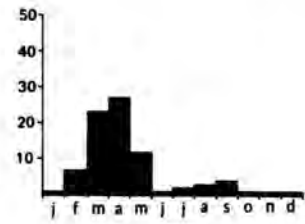
120 *Bembidion biguttatum* (F.)

macropterous 192 records



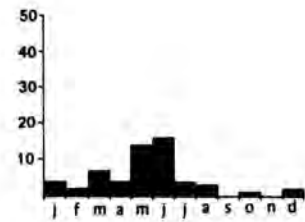
121 *Bembidion aeneum* Germ.

dimorphic 135 records



122 *Bembidion unicolor* Chd. *B. mannerheimi* auct.

brachypterous 79 records



123 *Bembidion guttula* (F.)

dimorphic 321 records

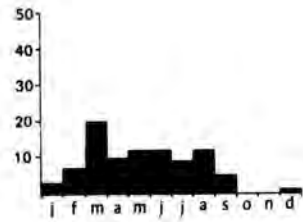


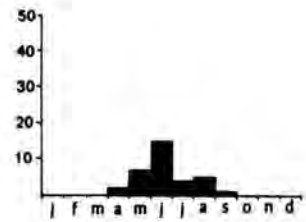
larvae
j f m a m j j a s o n d



124 *Bembidion lunulatum* (Fourcr.)

macropterous 158 records





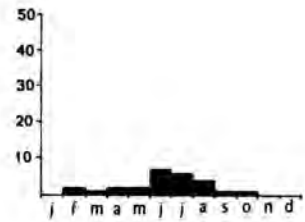
127 *Ocys harpaloides* Serv. *Bembidion harpaloides* Serv.

macropterous 65 records



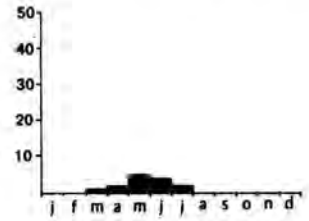
128 *Ocys quinquestriatus* (Gyll.) *Bembidion quinquestriatum* (Gyll.)

macropterous 48 records



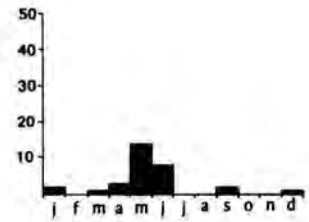
129 *Tachys bistrriatus* (Dft.)

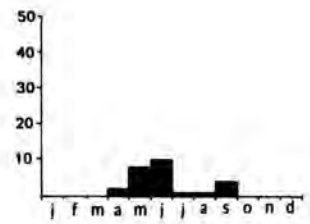
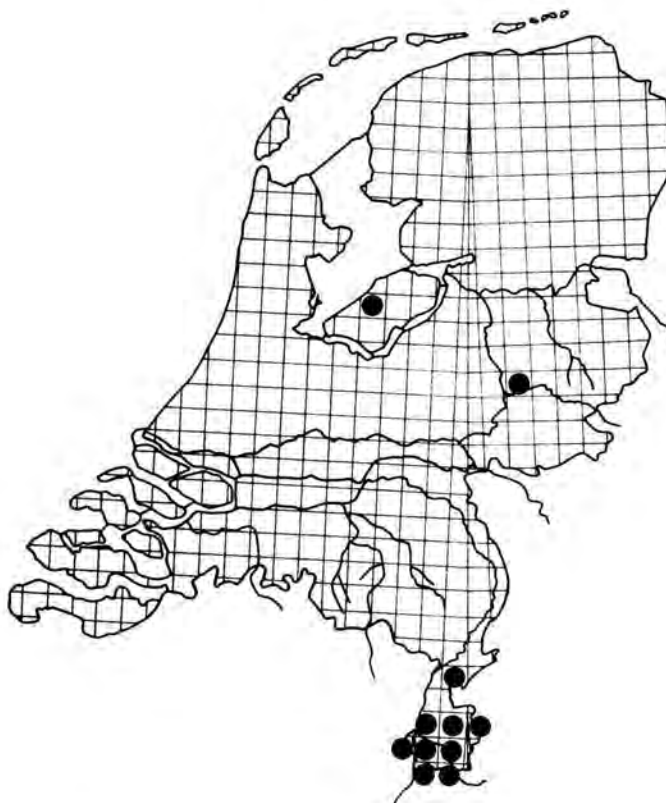
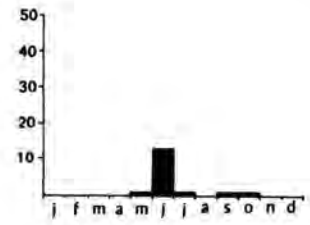
macropterous 25 records

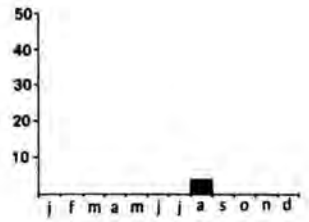
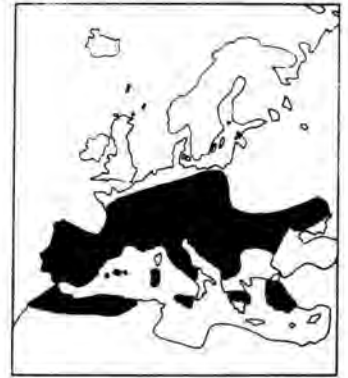
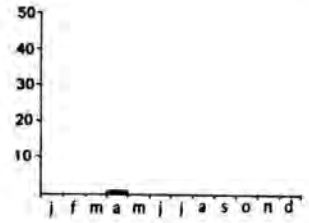


130 *Tachys micros* Fisch.-W. *T. gregarius* Chd.

41 records







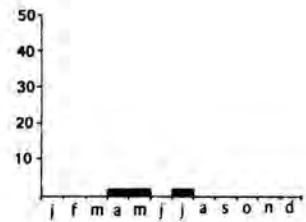
135 *Tachyta nana* (Gyll.)

macropterous 2 records



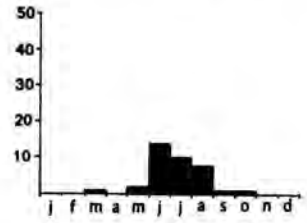
136 *Perileptus areolatus* (Creutz.)

macropterous 8 records



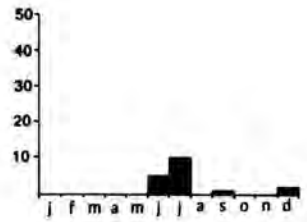
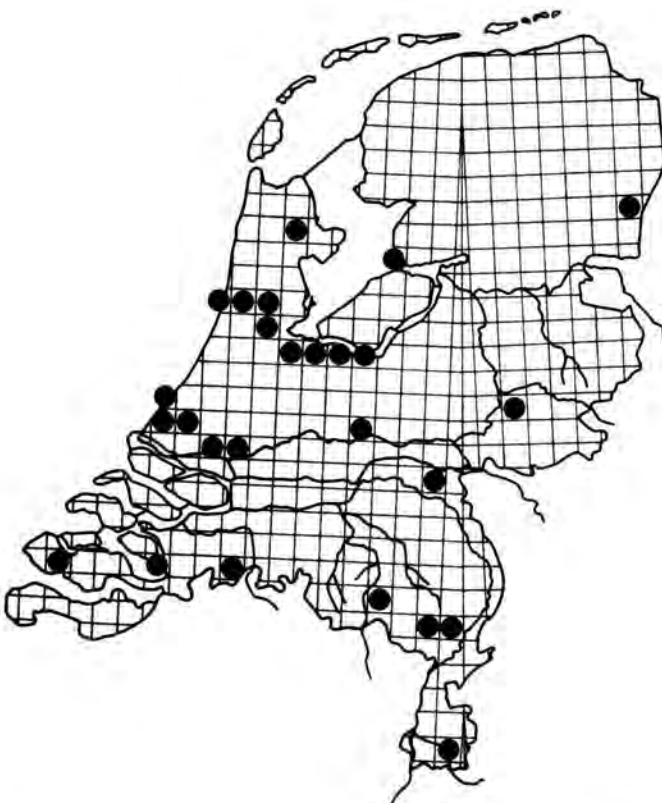
137 *Trechus secalis* (Payk.)

brachypterous 65 records



138 *Trechus rubens* (F.)

macropterous 37 records

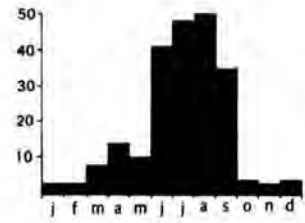


larvae
j f m a m j j a s o n d



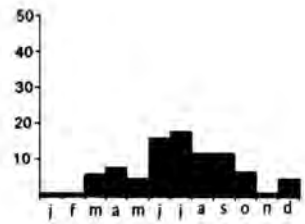
139 *Trechus quadristriatus* (Schrk.)

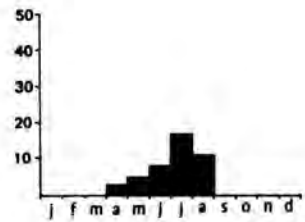
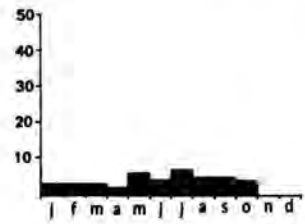
macropterous 406 records



140 *Trechus obtusus* Er.

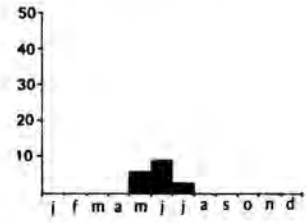
dimorphic 262 records





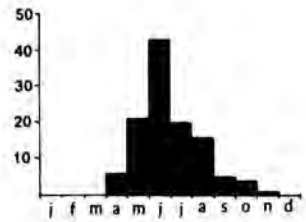
143 *Pogonus luridipennis* (Germ.)

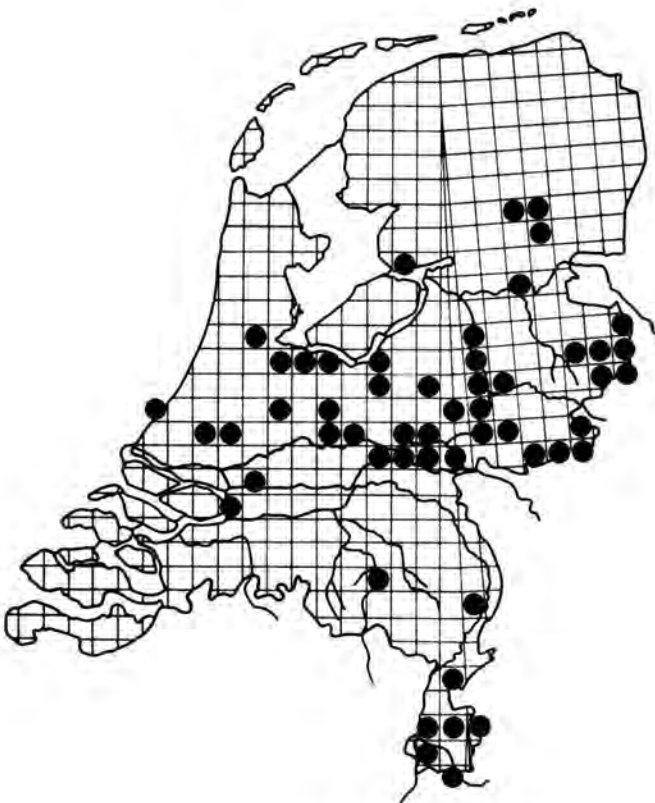
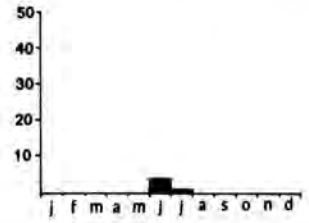
macropterous 23 records

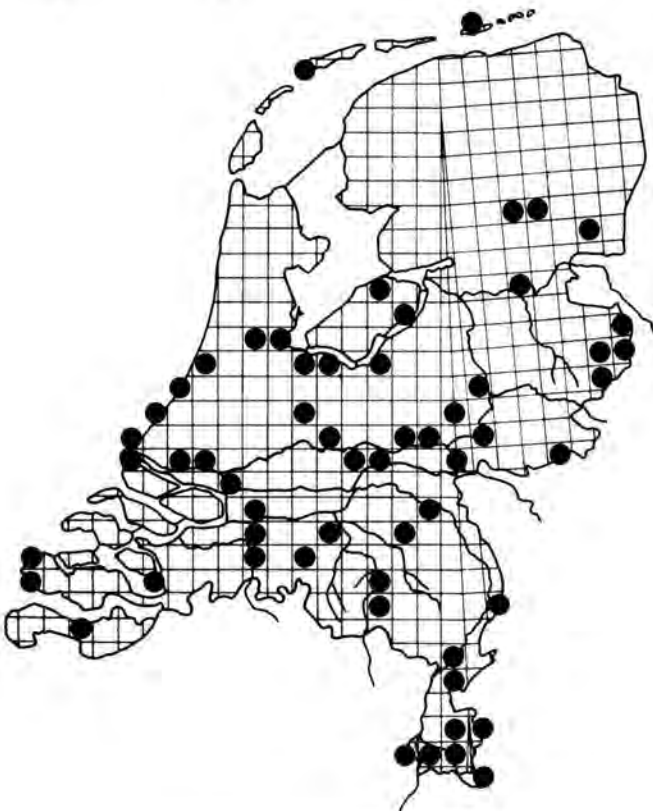
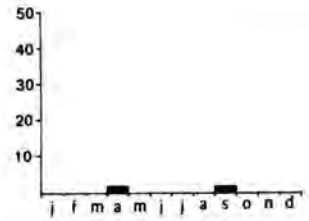


144 *Pogonus chalceus* (Mrsh.)

macropterous 141 records





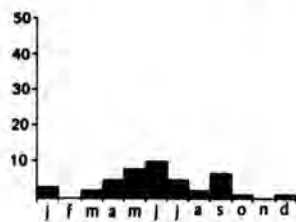
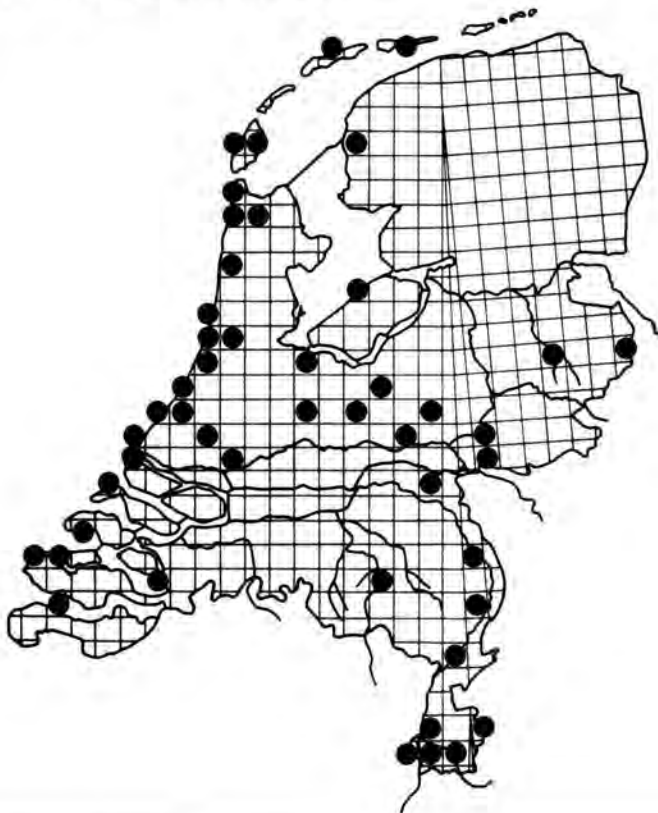


larvae
j f m a m j j a s o n d



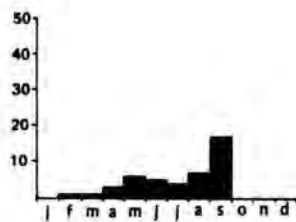
149 *Panagaeus bipustulatus* (F.)

macropterous 94 records



150 *Callistus lunatus* (F.)

53 records



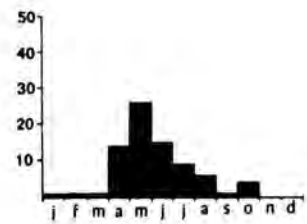
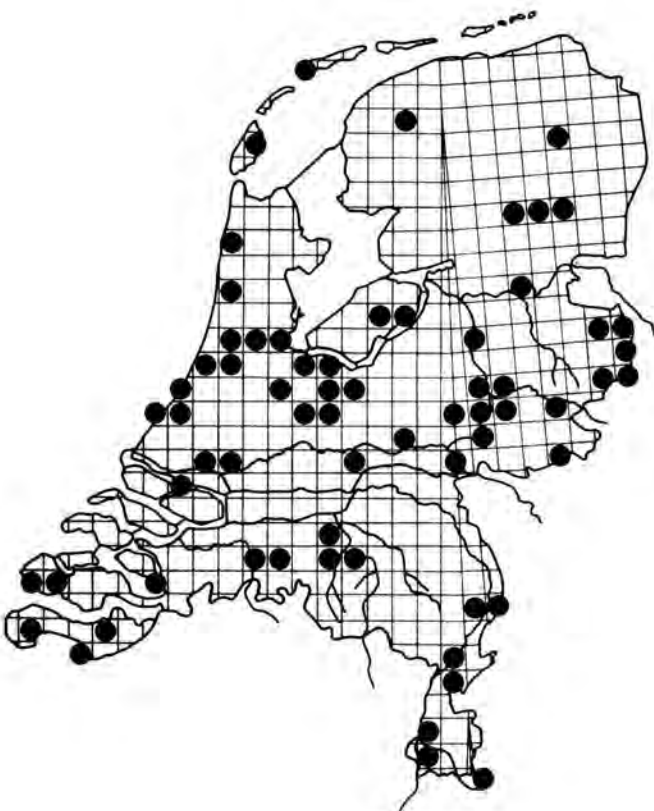
151 *Chlaenius tristis* (Schall.)

macropterous 5 records

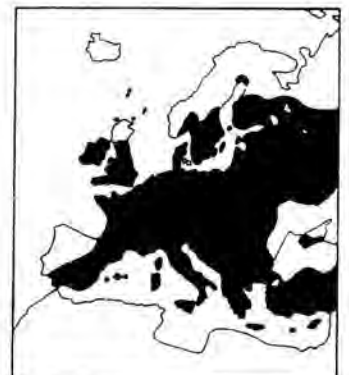


152 *Chlaenius nigricornis* (F.)

macropterous 175 records

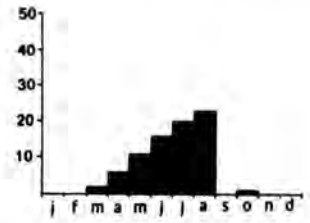
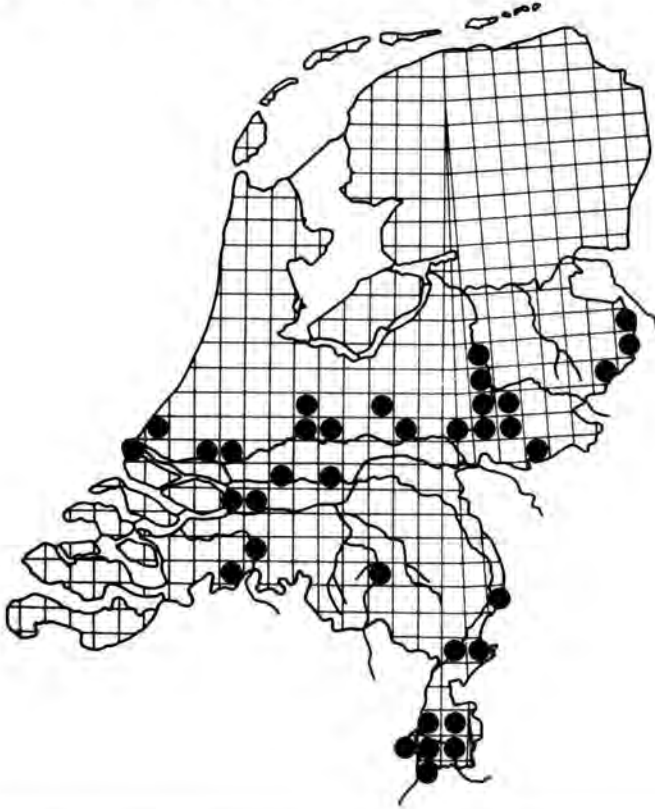


larvae
j f m a m j j a s o n d



153 *Chlaenius nitidulus* (Schrk.)

macropterous 106 records



154 *Chlaenius vestitus* (Payk.)

macropterous 112 records

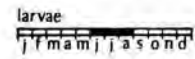
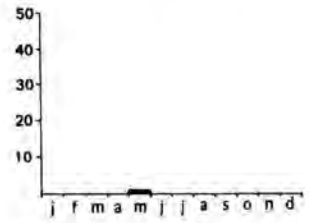
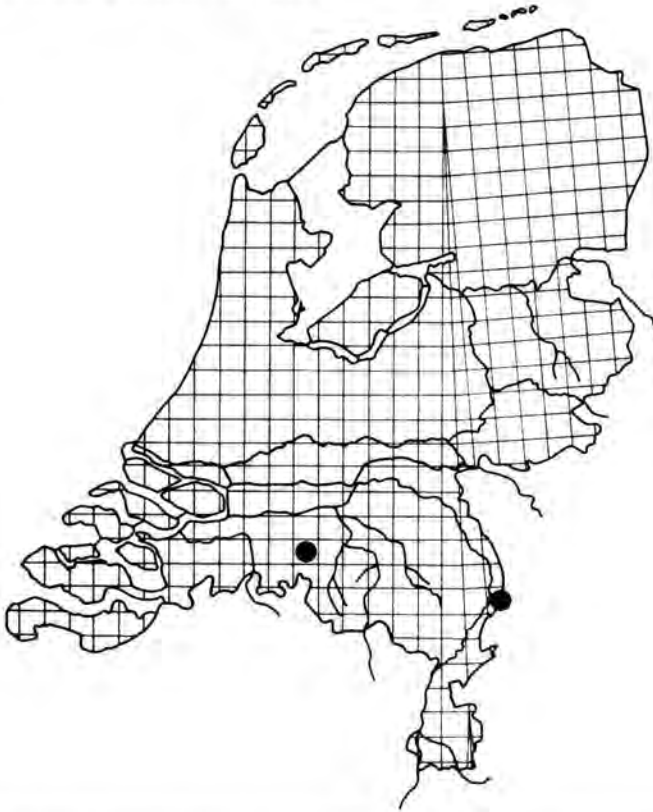


larvae
j f m a m j j a s o n d



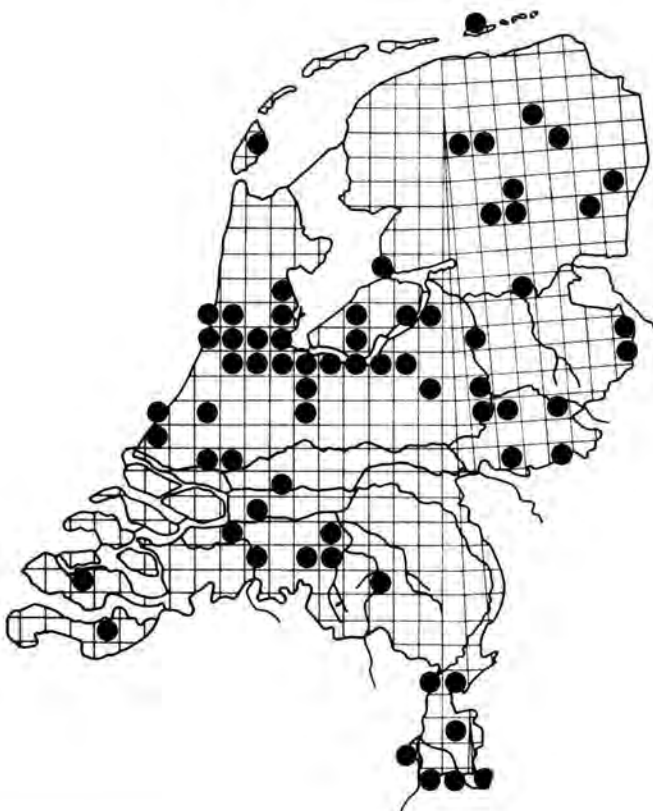
155 *Chlaenius sulcicollis* (Payk.)

macropterous 3 records



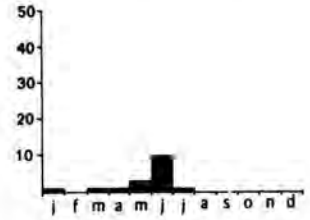
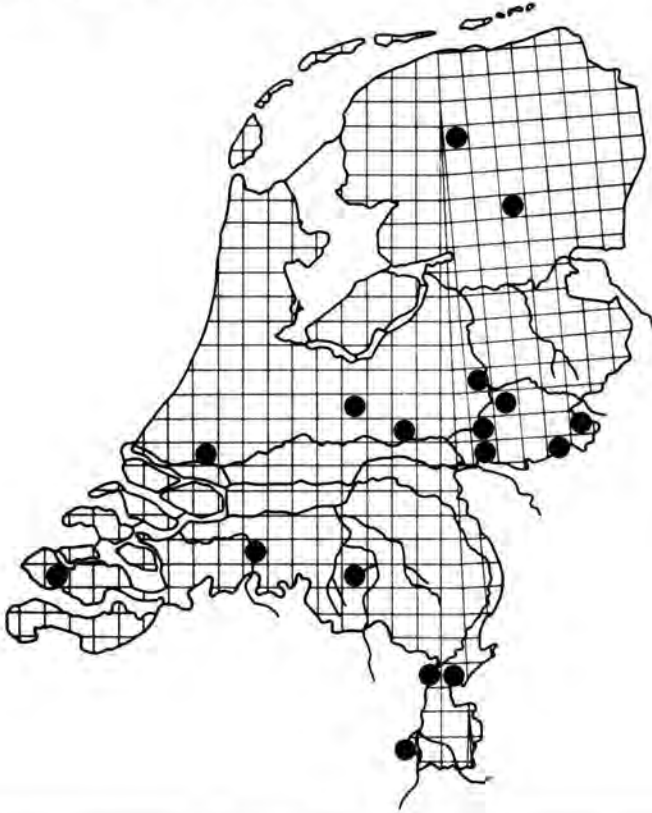
156 *Oodes helopioides* (F.)

macropterous 142 records



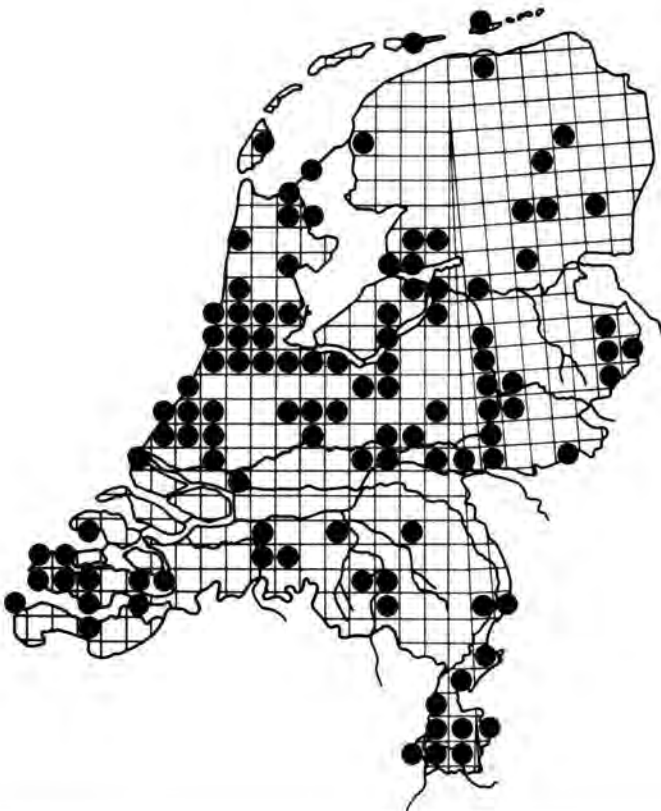
157 *Badister unipustulatus* Bon.

macropterus 31 records



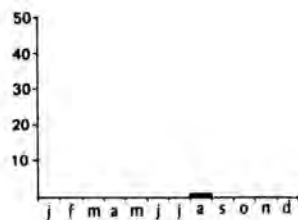
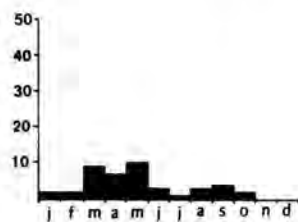
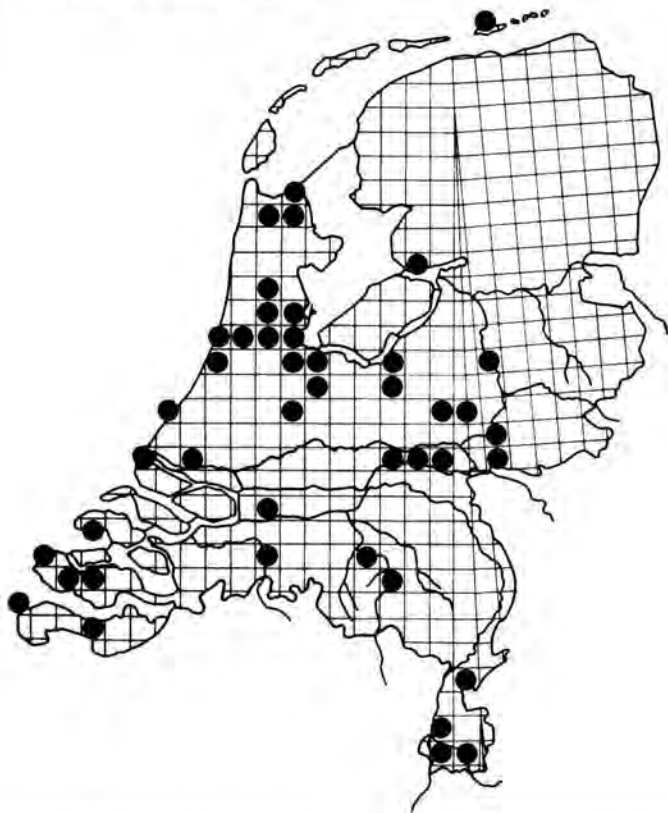
158 *Badister bipustulatus* (F.)

macropterus 265 records



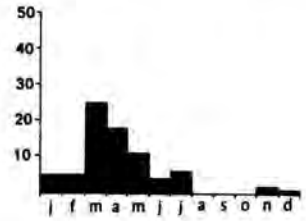
larvae
j f m a m j j a s o n d





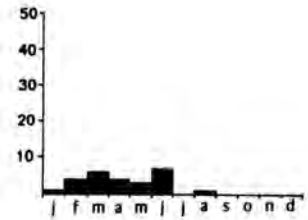
161 *Badister sodalis* (Dft.)

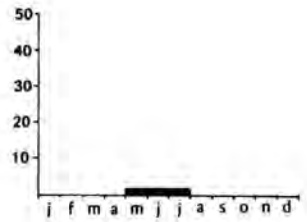
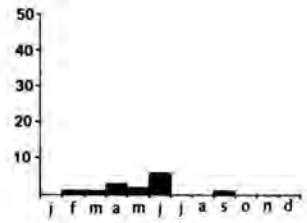
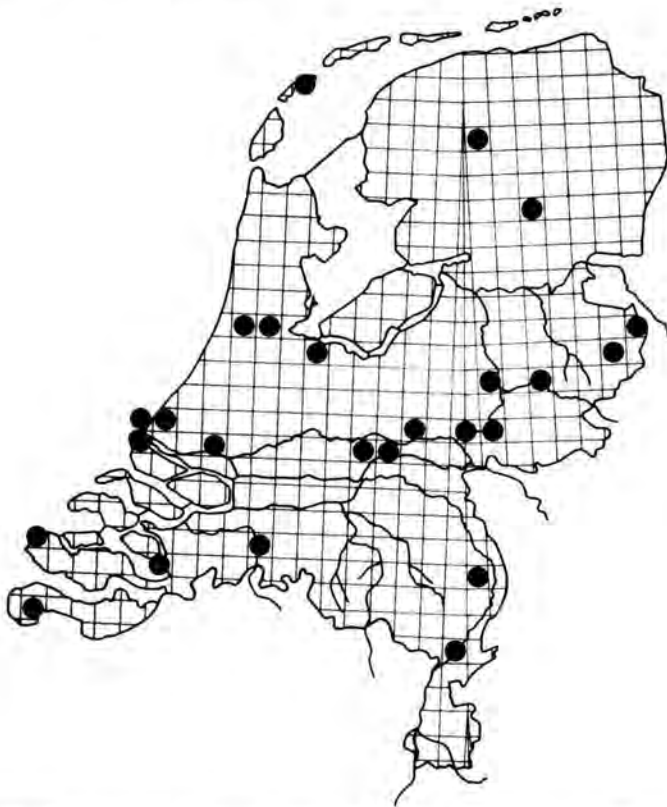
brachypterous? 142 records



162 *Badister peltatus* (Panz.)

macropterous 46 records





165 *Licinus depressus* (Payk.)

brachypterous 2 records



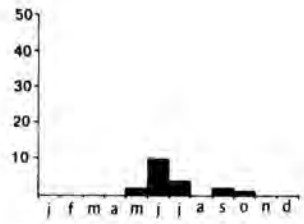
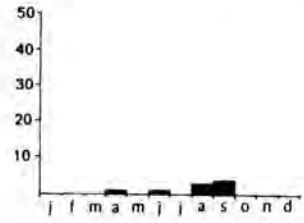
larvae
j f m a m j j a s o n d



166 *Harpalus obscurus* (F.)

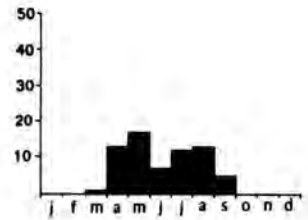
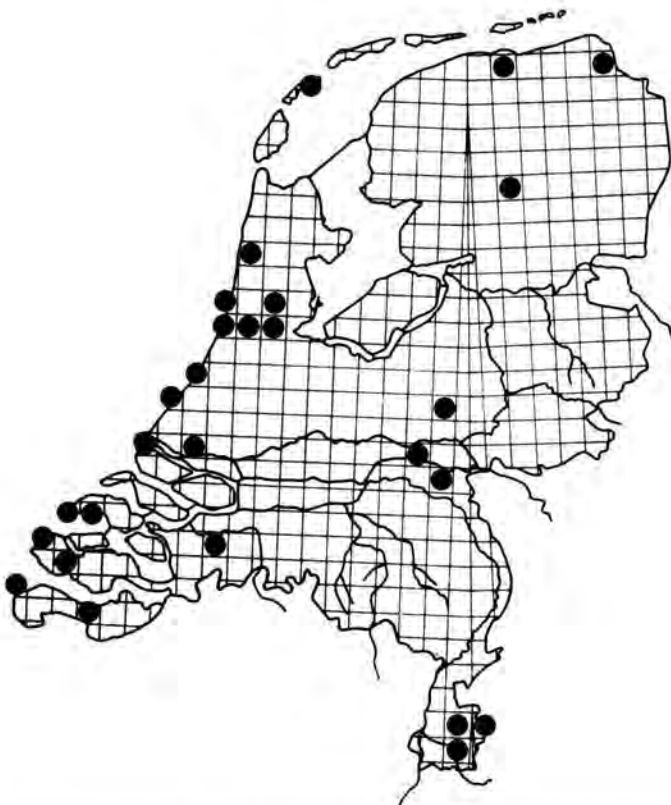
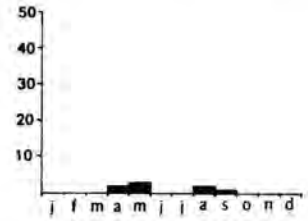
3 records

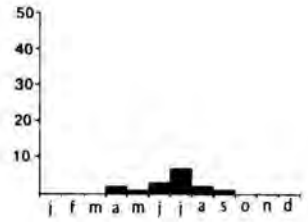
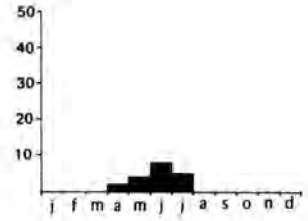


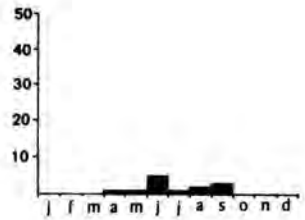
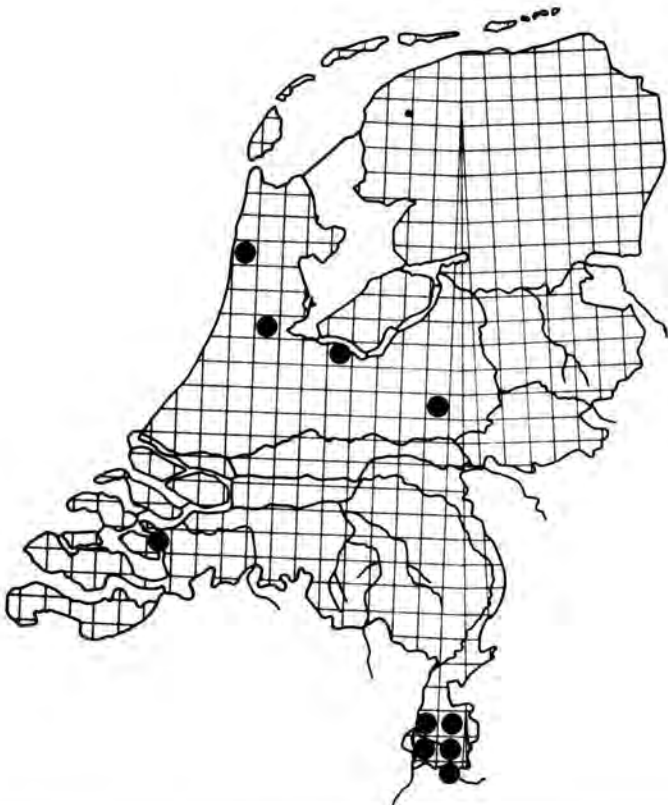
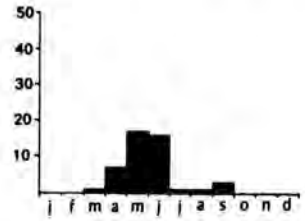


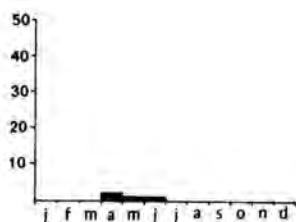
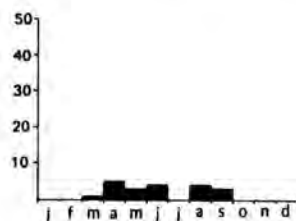
macropterous
larvae



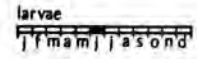
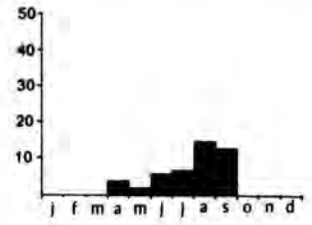
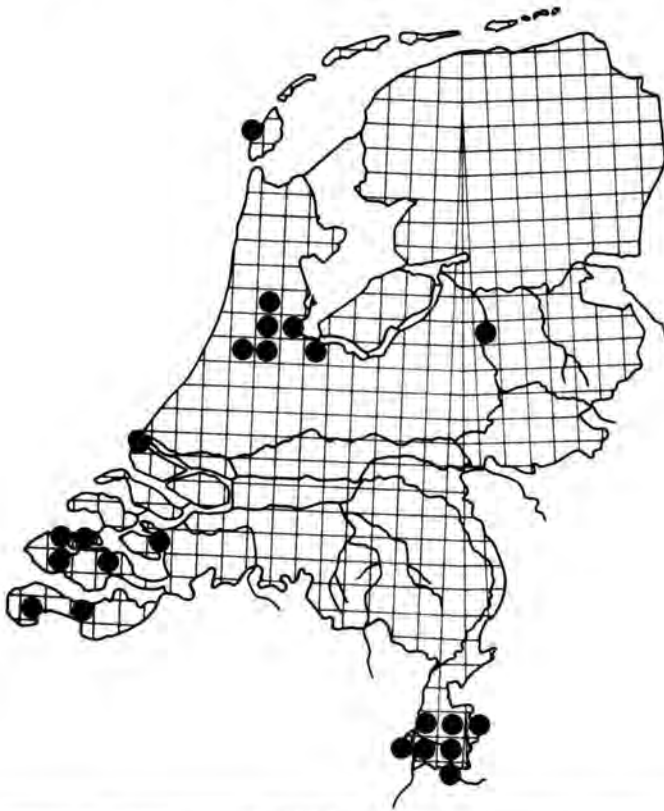






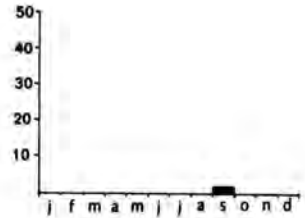


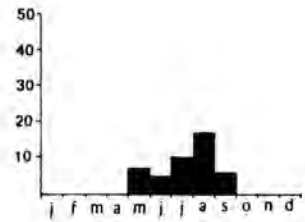
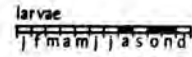
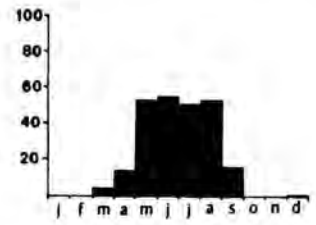
177 *Harpalus puncticeps* Steph. *H. angusticollis* Müll, *H. rectangularis* Sharp macropterous 51 records



178 *Harpalus signaticornis* (Dft.)

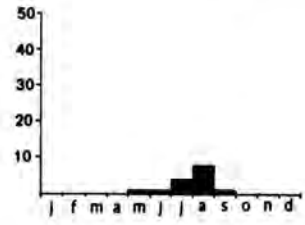
macropterous 2 records





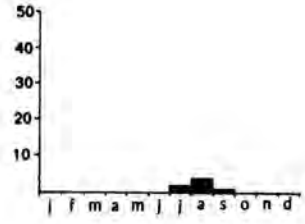
181 *Harpalus calceatus* (Dft.)

macropterous 21 records



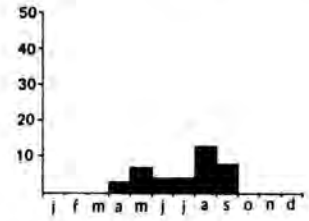
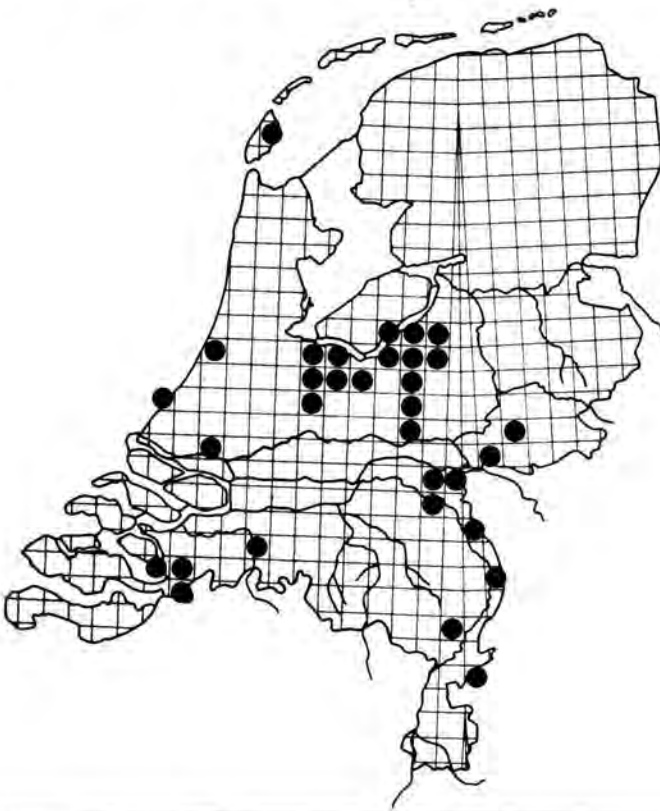
182 *Harpalus rufus* Brugg.

macropterous 13 records



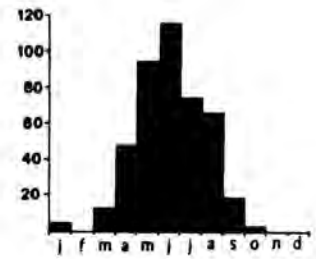
183 *Harpalus froehlichii* Strm.

macropterous 55 records



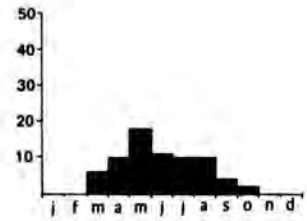
184 *Harpalus aeneus* (F.)

macropterous 672 records



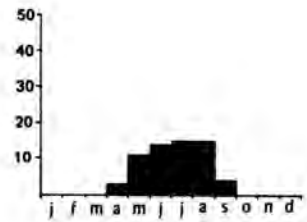
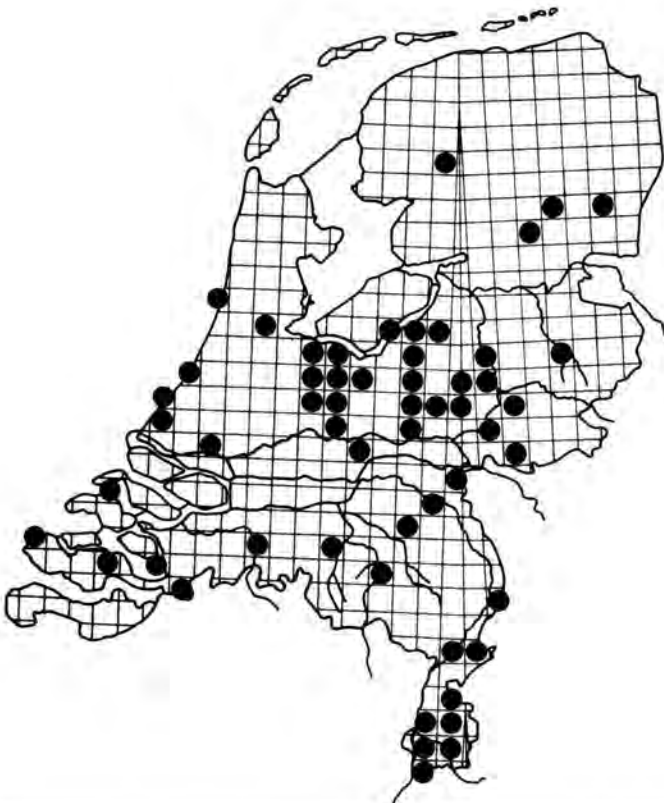
185 *Harpalus distinguendus* (Dft.)

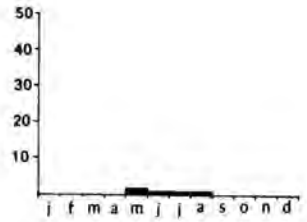
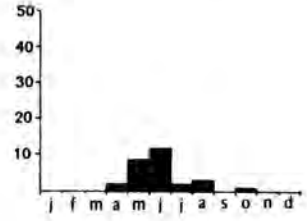
macropterous 105 records

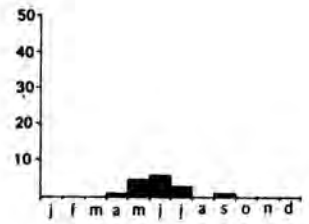
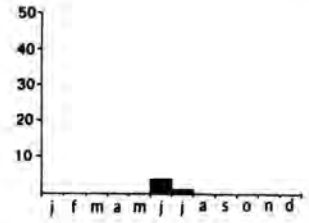


186 *Harpalus smaragdinus* (Dft.)

macropterous 102 records

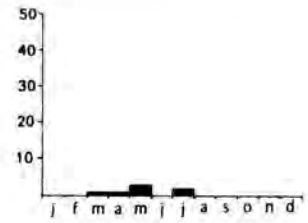






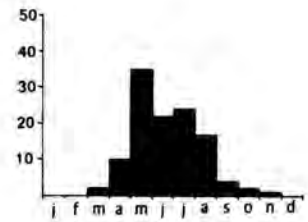
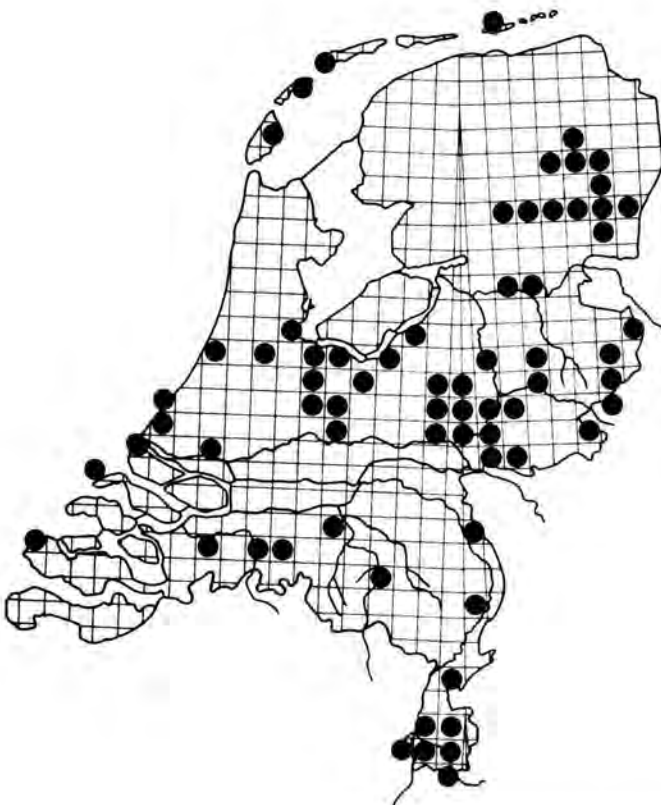
191 *Harpalus winkleri* Schaub.

macropterous 19 records



192 *Harpalus latus* (L.)

macropterous 243 records

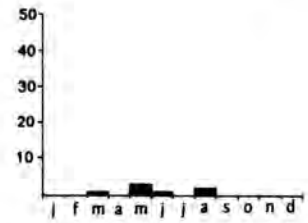
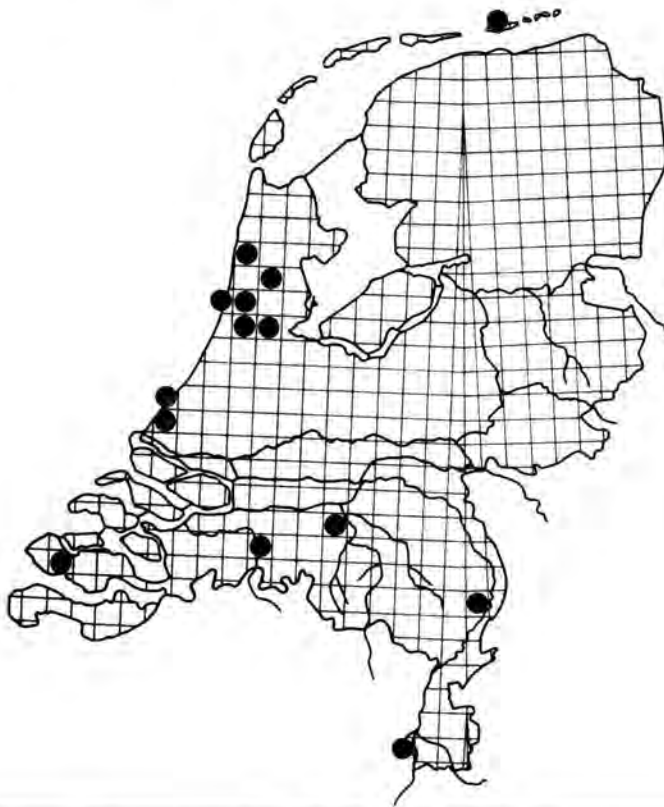


larvae
j f m a m j j a s o n d



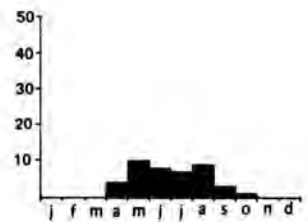
193 *Harpalus luteicornis* (Dft.)

macropterous 21 records



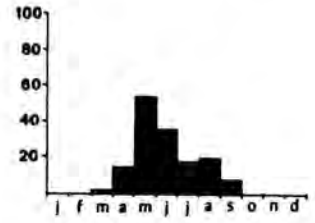
194 *Harpalus quadripunctatus* Dej.

macropterous 97 records



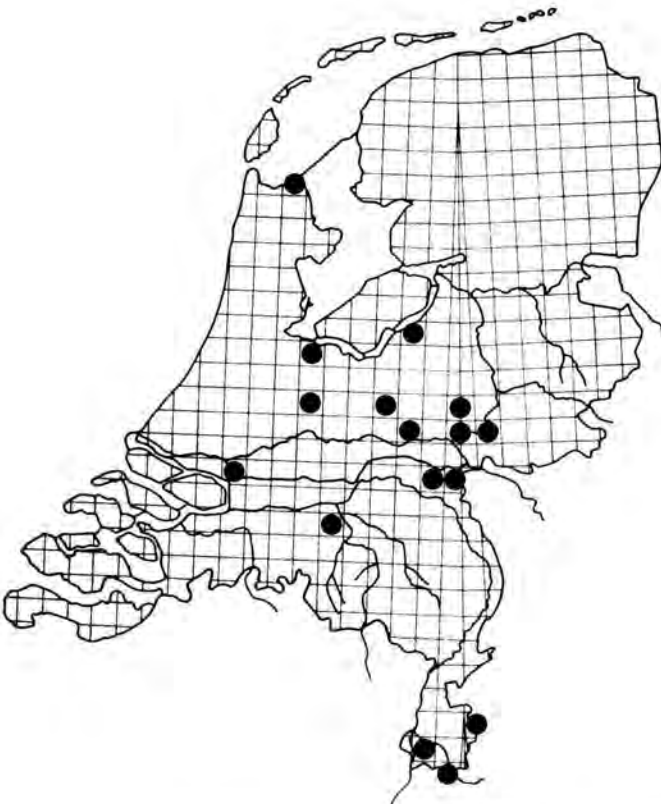
195 *Harpalus rubripes* (Dft.)

macropterous 183 records



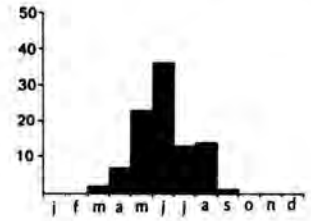
196 *Harpalus honestus* (Dft.)

23 records



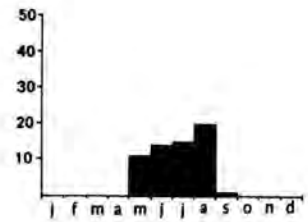
197 *Harpalus rufitarsis* (Dft.)

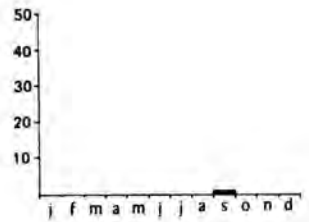
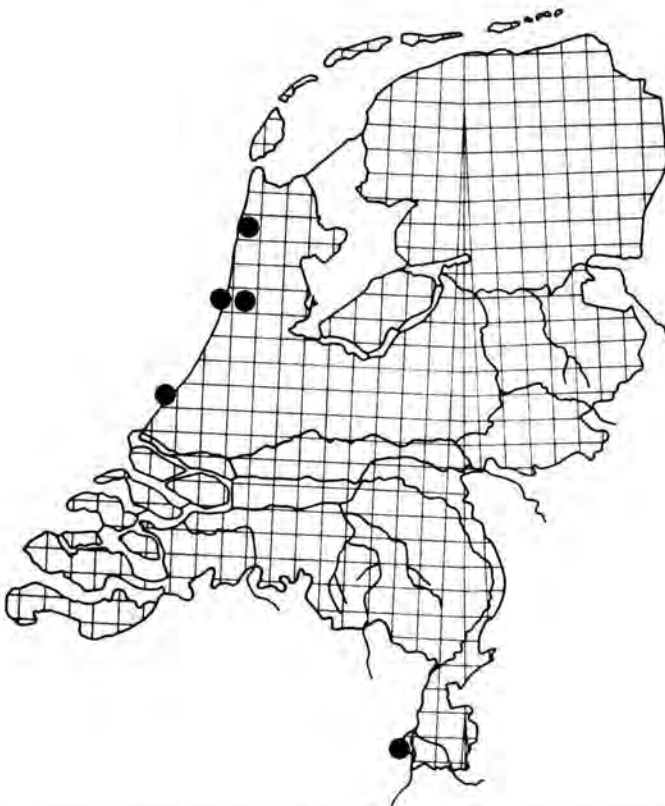
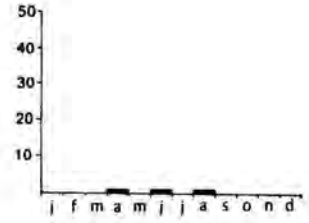
macropterous 141 records



198 *Harpalus neglectus* Serv. *H. neglectus* Dej.

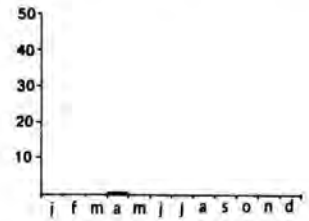
dimorphic 100 records





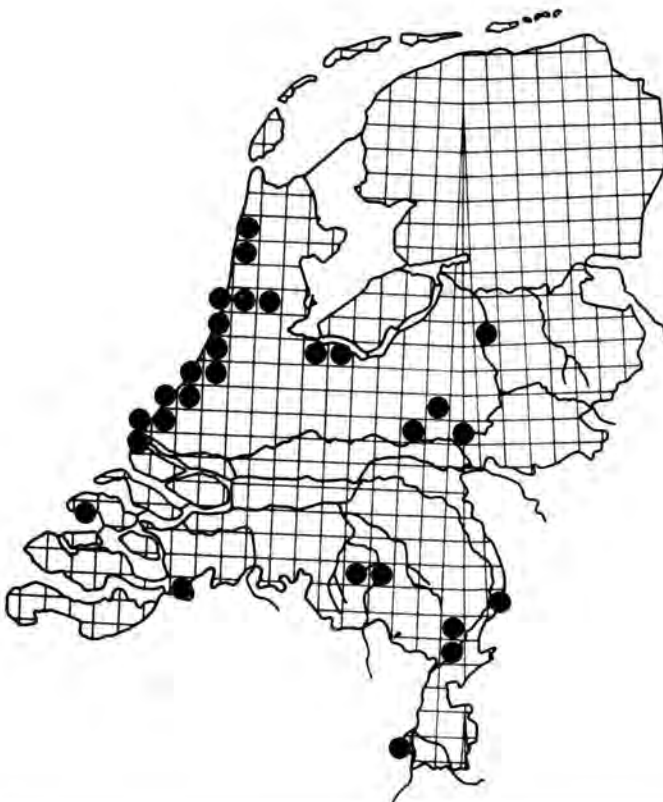
201 *Harpalus picipennis* (Dft.)

dimorphic 4 records



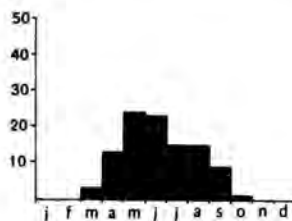
202 *Harpalus vernalis* (Dft.)

brachypterous 91 records



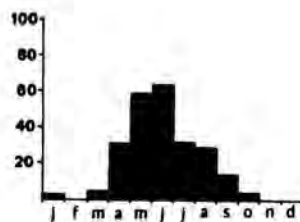
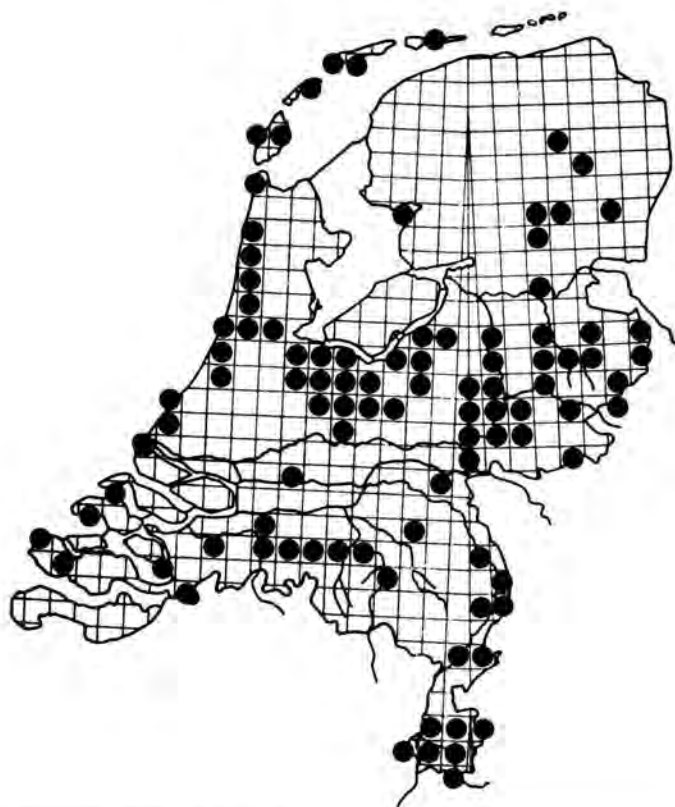
203 *Harpalus servus* (Dft.)

macropterous 174 records



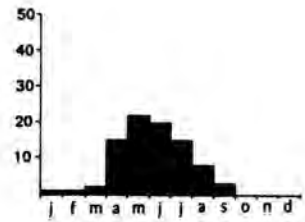
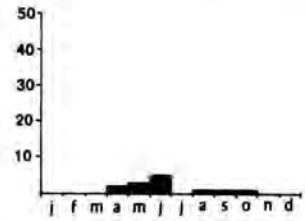
204 *Harpalus tardus* (Panz.)

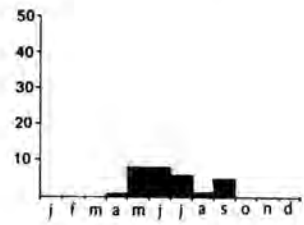
macropterous 315 records

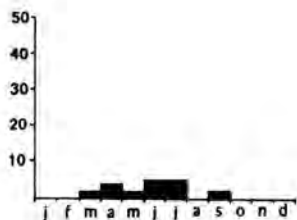
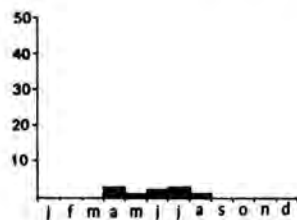


larvae
j f m a m j j a s o n d



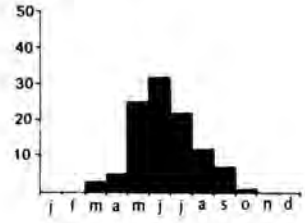






211 *Stenolophus teutonius* (Schrk.)

macropterous 152 records



larvae
j f m a m j j a s o n d



212 *Stenolophus skrimshiranus* Steph.

macropterous 54 records



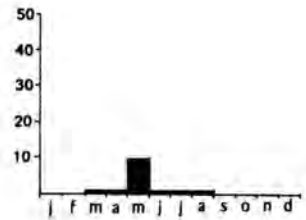
213 *Stenolophus mixtus* Hbst.

macropterous 348 records



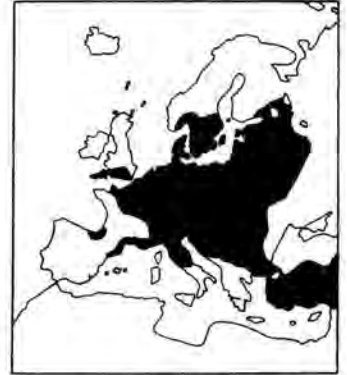
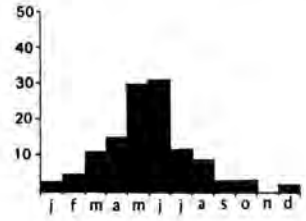
214 *Acupalpus elegans* Dej.

21 records



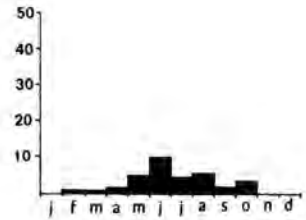
215 *Acupalpus flavicollis* (Strm.)

macropterous 165 records



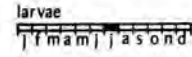
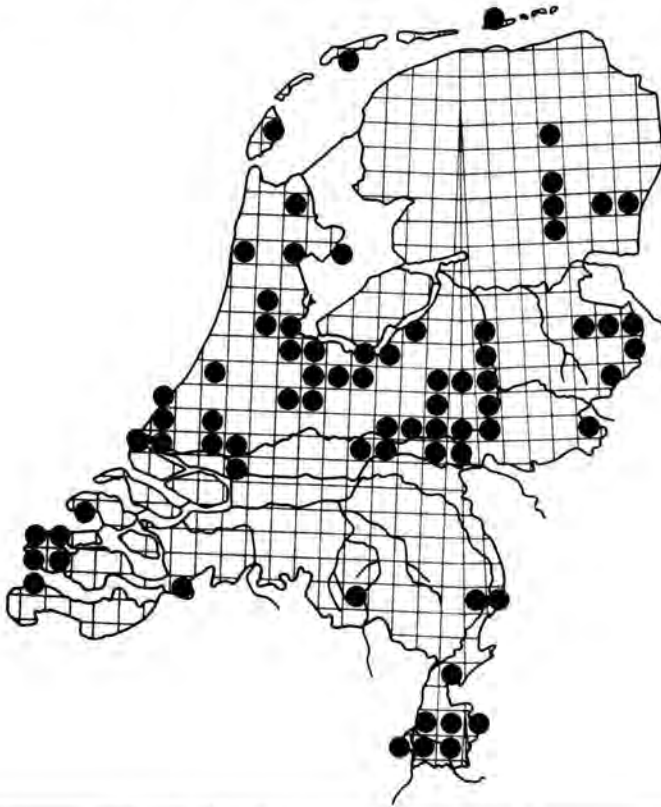
216 *Acupalpus brunnipes* (Strm.)

macropterous 54 records



217 *Acupalpus meridianus* (L.)

macropterous 178 records



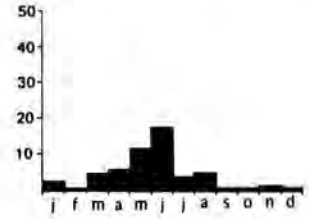
218 *Acupalpus dorsalis* (F.)

macropterous 247 records



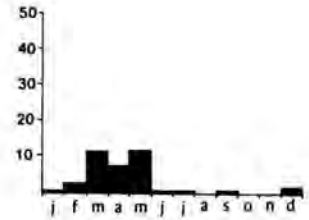
219 *Acupalpus dubius* Schilsky *A. luridus* auct.

macropterous 88 records



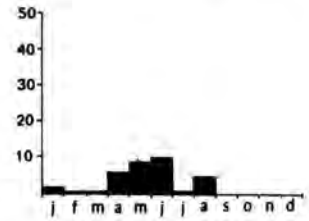
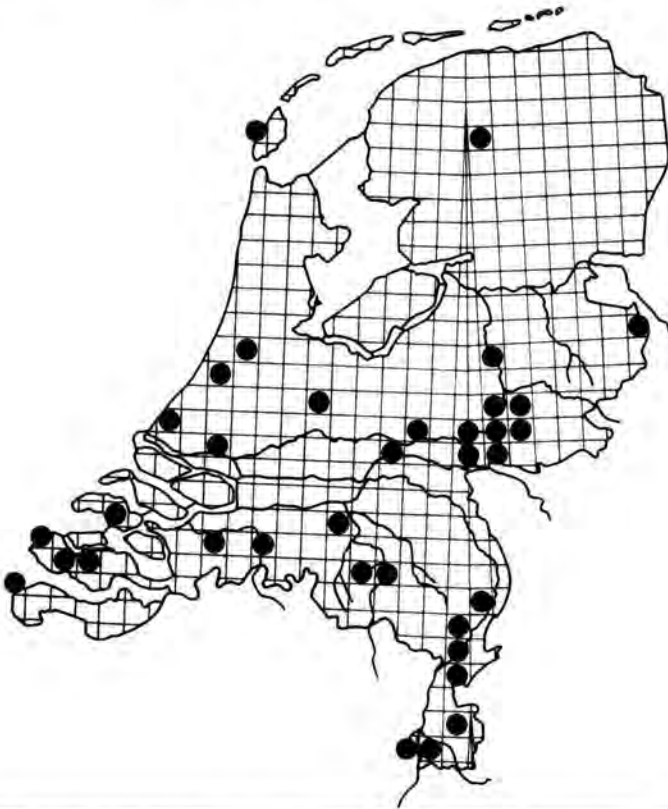
220 *Acupalpus exiguus* Dej.

macropterous 81 records



221 *Acupalpus consputus* (Dft.)

macropterous 55 records



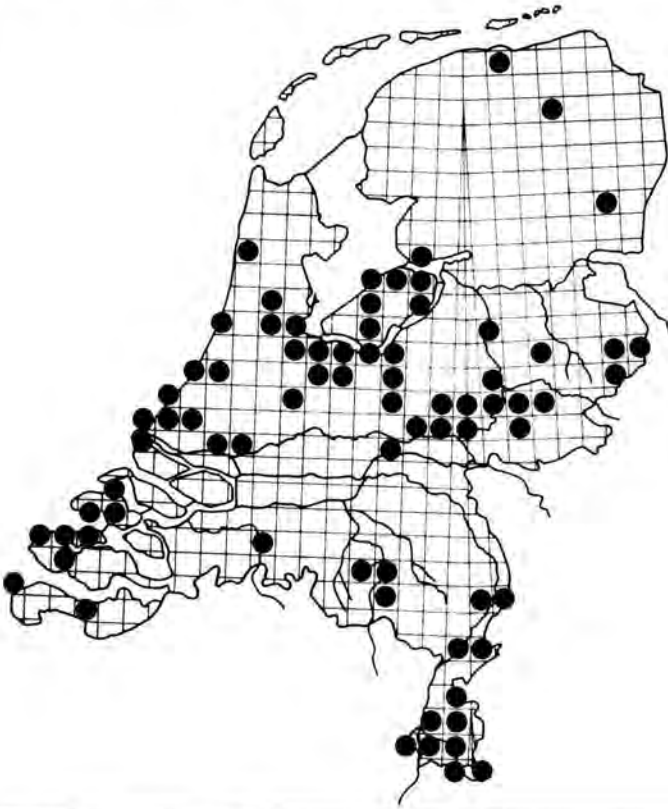
222 *Bradycellus similis* (Dej.) *B. ruficollis* Steph.

macropterous 254 records



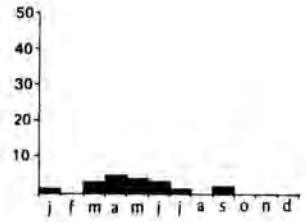
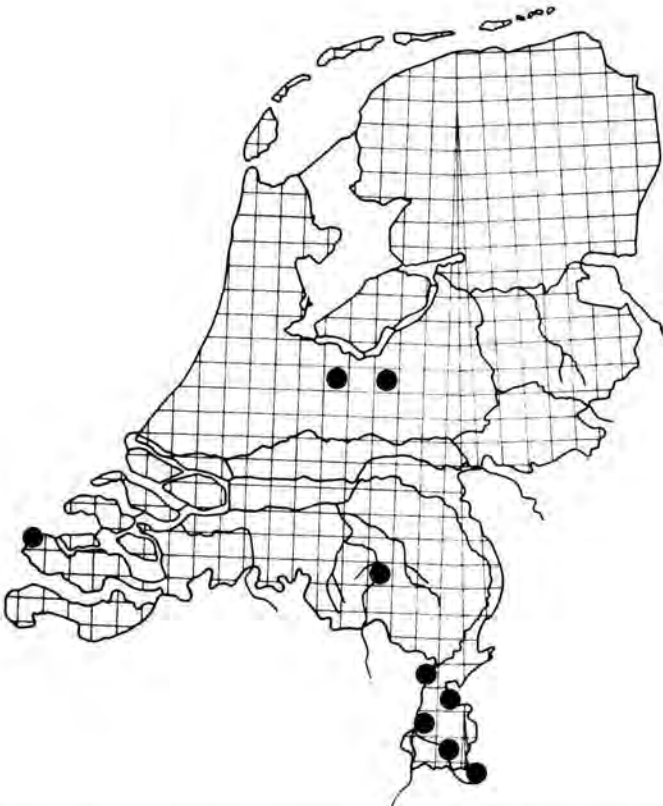
223 *Bradycellus verbasci* (Dft.)

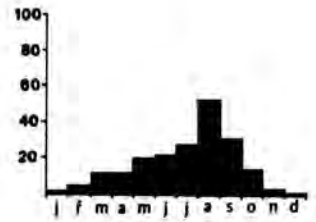
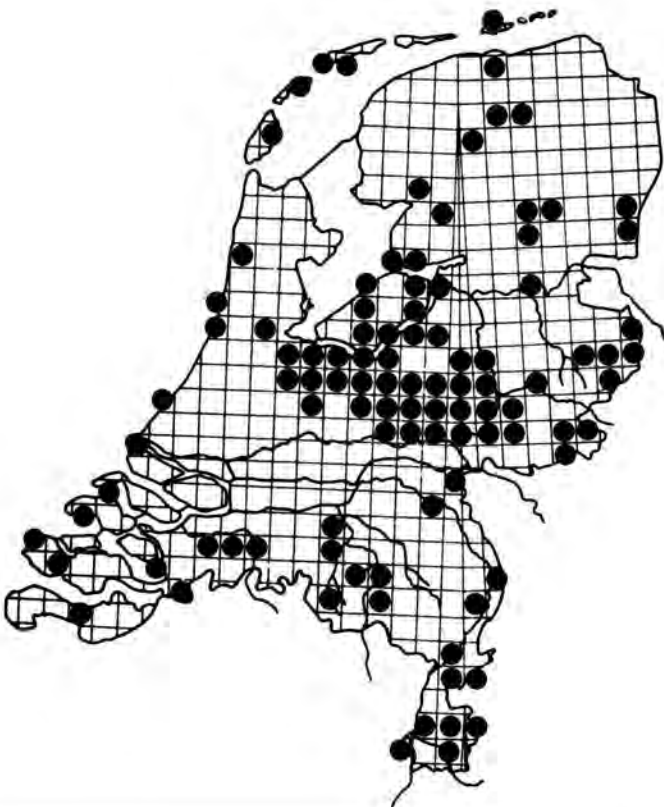
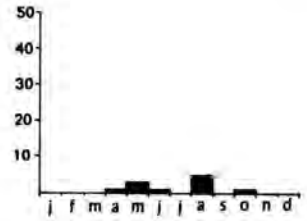
macropterous 261 records



224 *Bradycellus sharpi* Joy

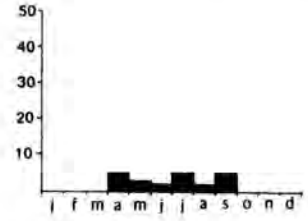
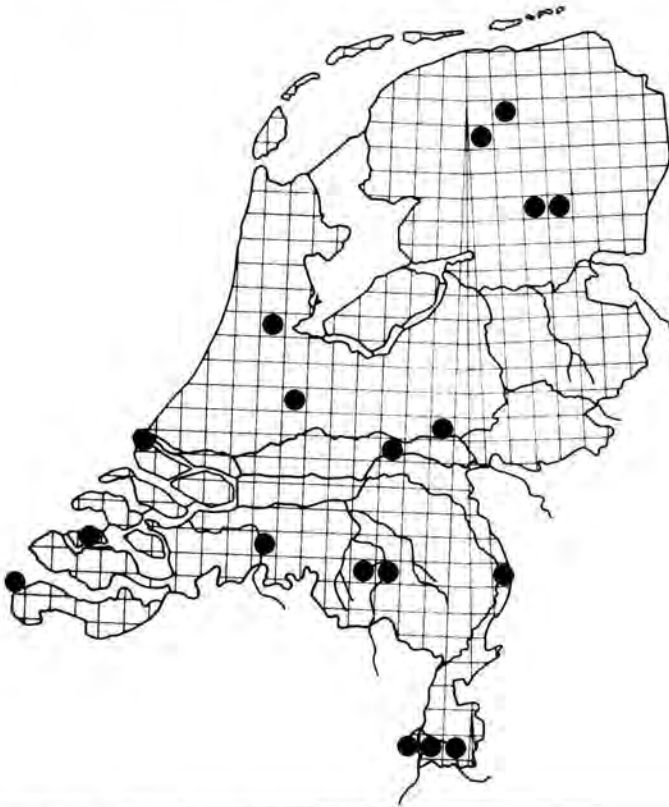
brachypterous 20 records





227 *Bradycellus csikii* Laczó.

macropterous 25 records



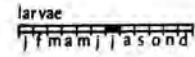
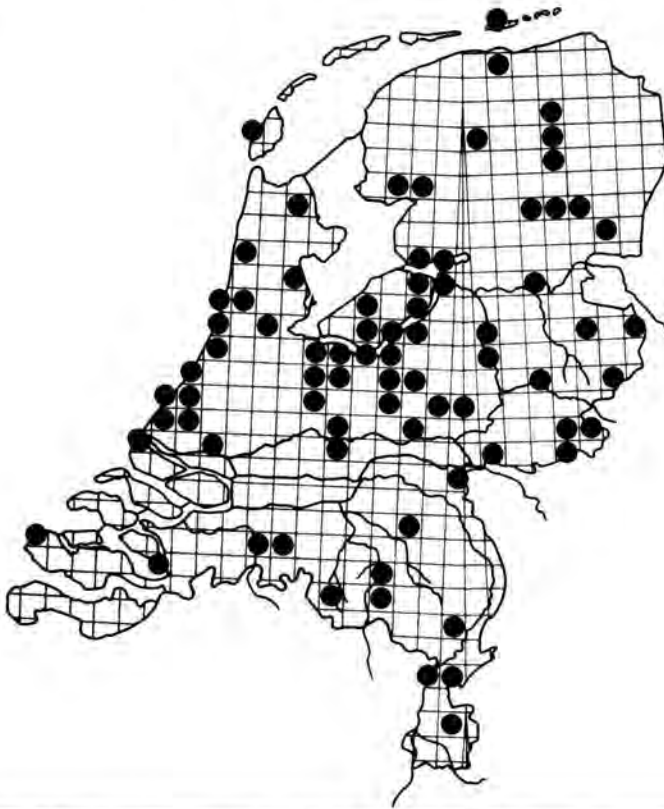
228 *Bradycellus collaris* (Payk.)

dimorphic 174 records



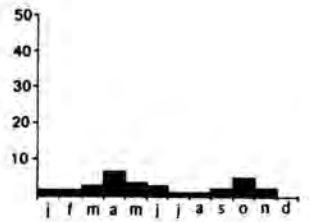
229 *Trichocellus placidus* (Gyll.)

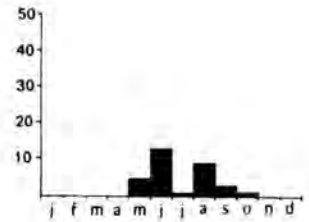
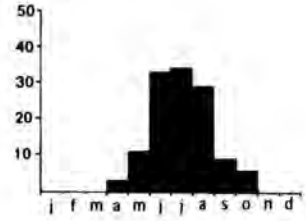
macropterous 283 records

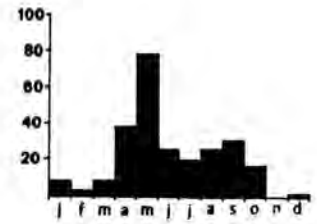
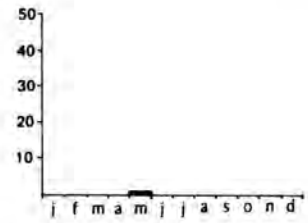


230 *Trichocellus cognatus* (Gyll.)

macropterous 129 records

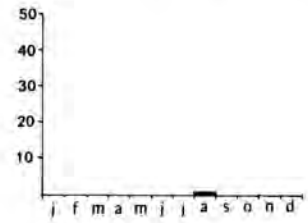






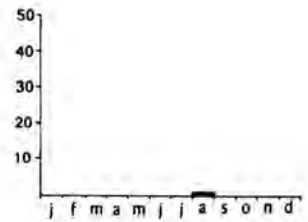
235 *Anisodactylus nemorivagus* (F.)

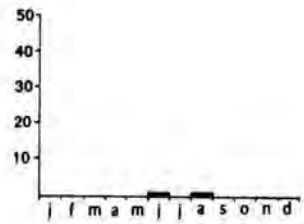
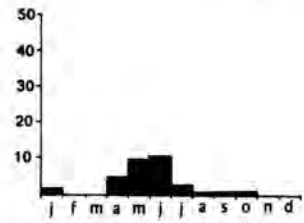
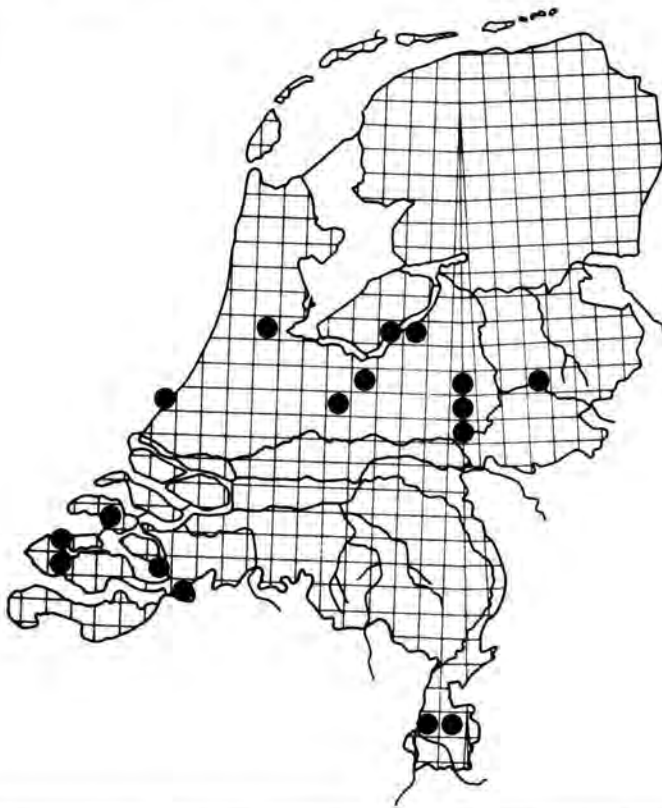
macropterous 10 records

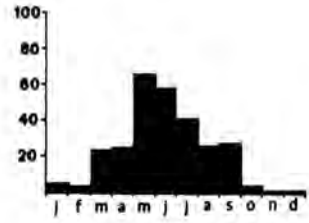
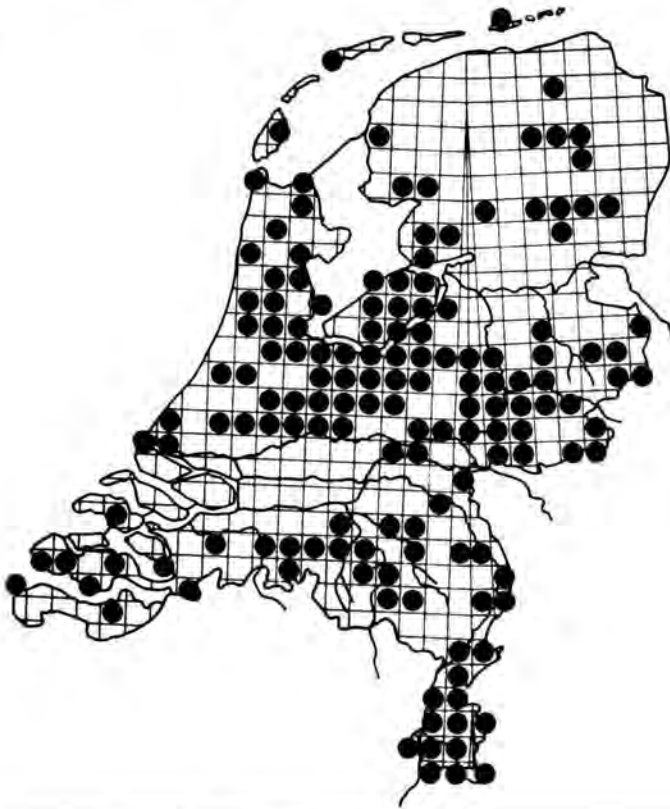


236 *Anisodactylus signatus* (Panz.)

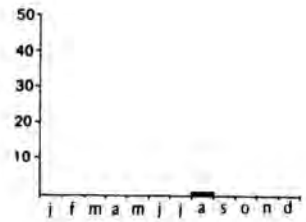
13 records

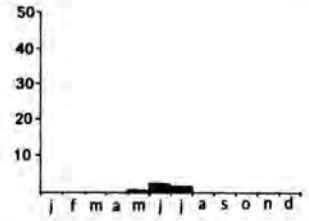






larvae
j f m a m j j a s o n d



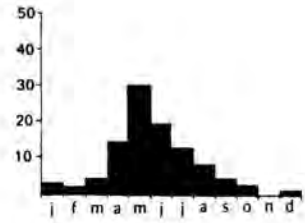


larvae
j f m a m j j a s o n d



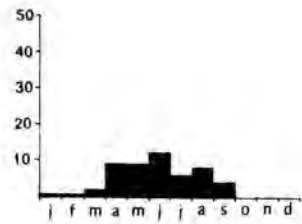
243 *Amara ovata* (F.)

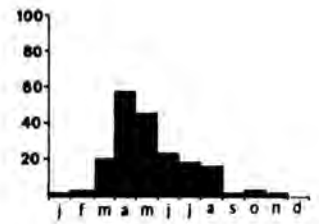
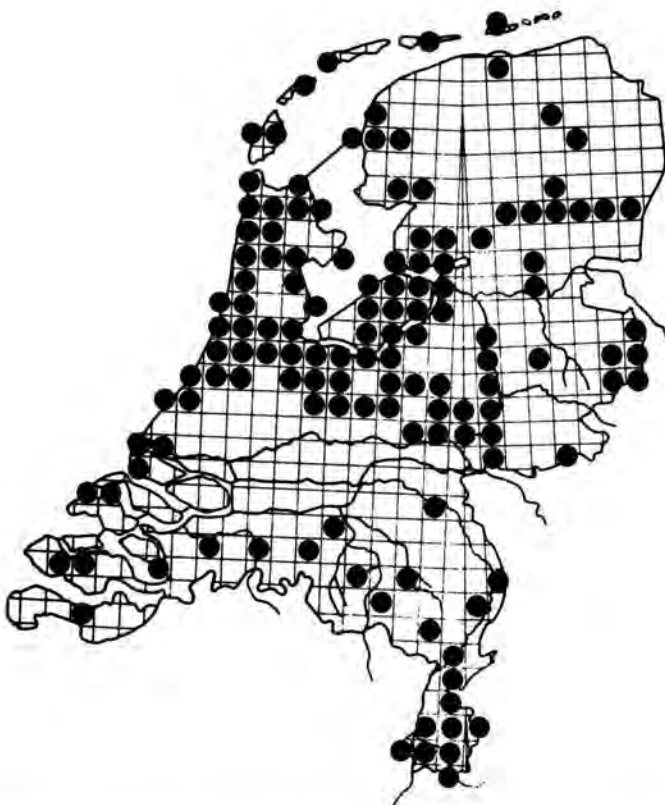
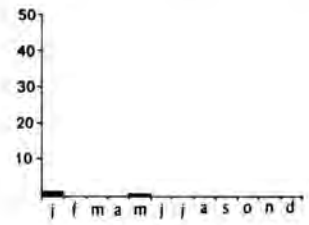
macropterous 136 records



244 *Amara montivaga* Strm.

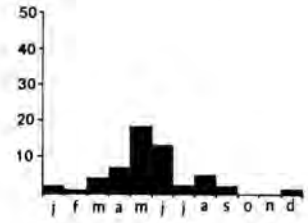
64 records





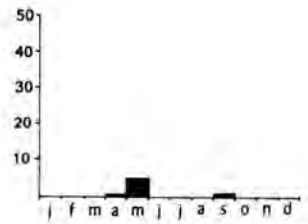
247 *Amara convexior* Steph.

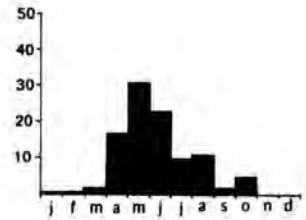
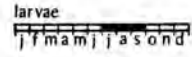
macropterous 94 records



248 *Amara pseudocommunis* Burak

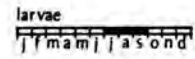
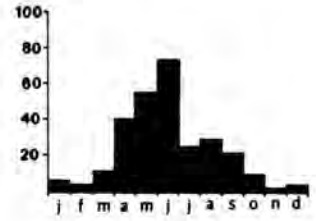
macropterous 38 records





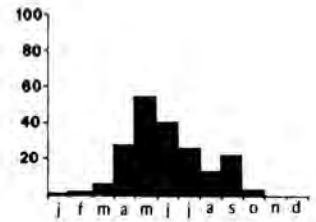
251 *Amara aenea* (Deg.)

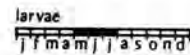
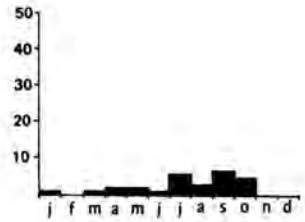
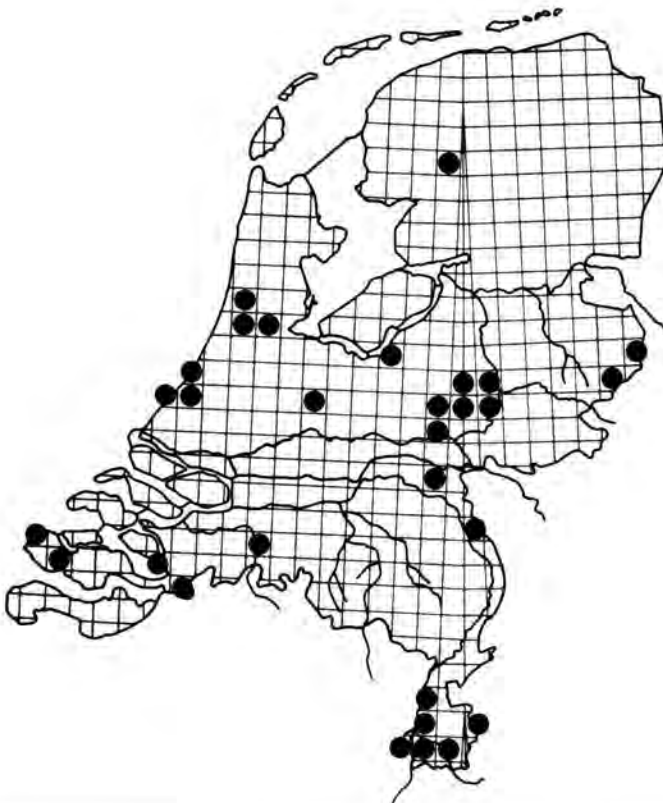
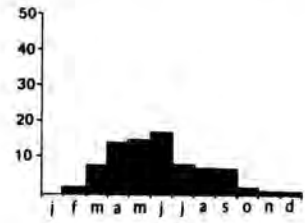
macropterous 580 records



252 *Amara spreta* Dej.

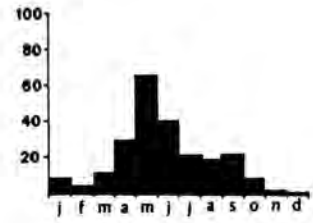
macropterous 389 records





255 *Amara familiaris* (Dft.)

macropterous 457 records

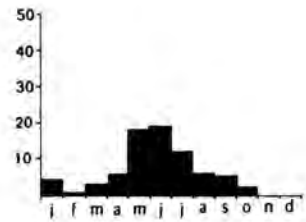


larvae
j f m a m j j a s o n d



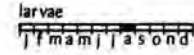
256 *Amara anthobia* Villa

99 records



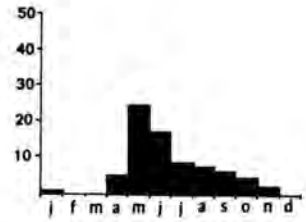
257 *Amara lucida* (Dft.)

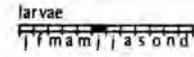
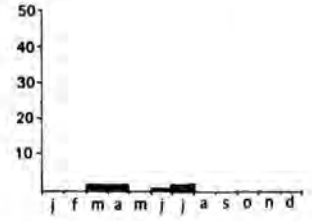
macropterous 170 records

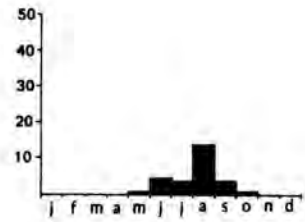
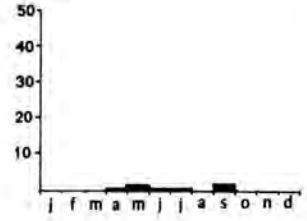


258 *Amara tibialis* (Payk.)

macropterous 110 records

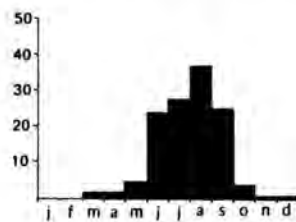






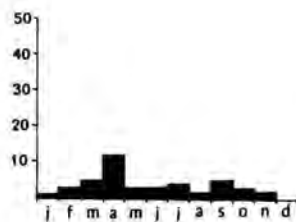
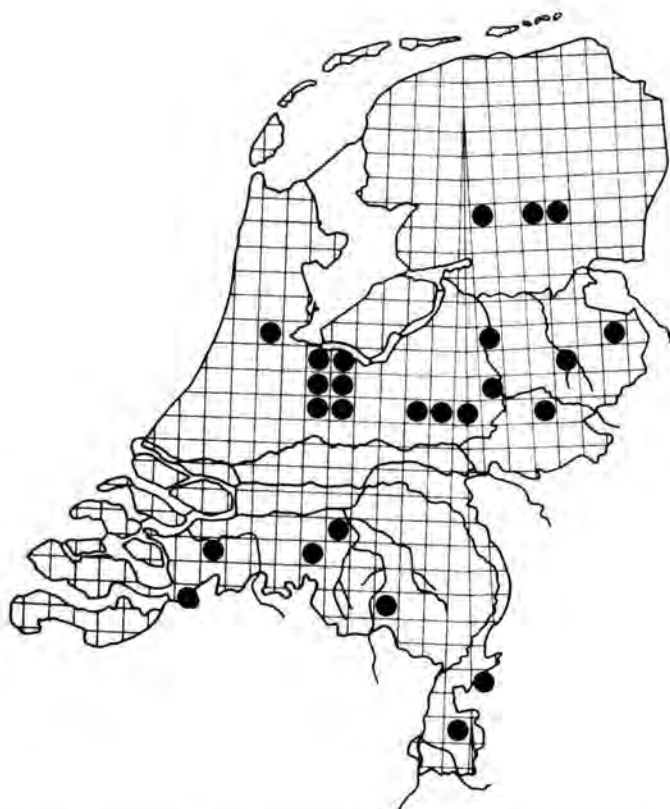
263 *Amara bifrons* (Gyll.)

macropterous 198 records



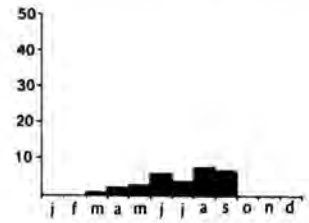
264 *Amara infima* (Dft.)

dimorphic 114 records



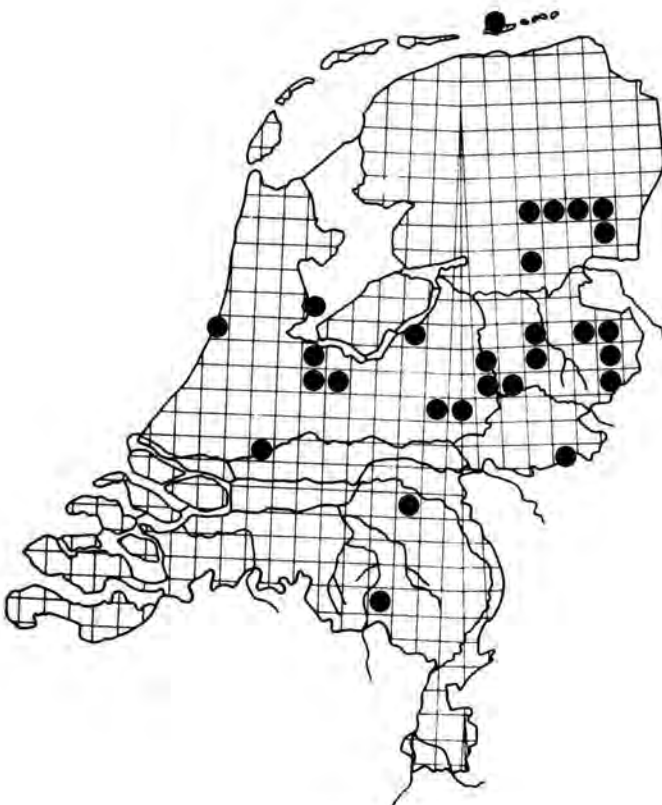
265 *Amara praetermissa* (Sahlb.)

macropterous 66 records



266 *Amara brunnea* (Gyll.)

macropterous 86 records

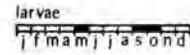
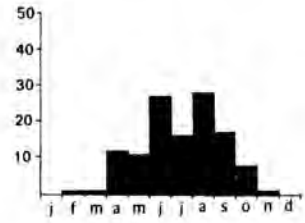


larvae
j f m a m j j a s o n d



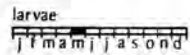
267 *Amara apricaria* (Payk.)

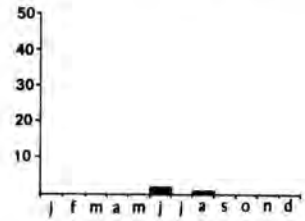
macropterous 198 records

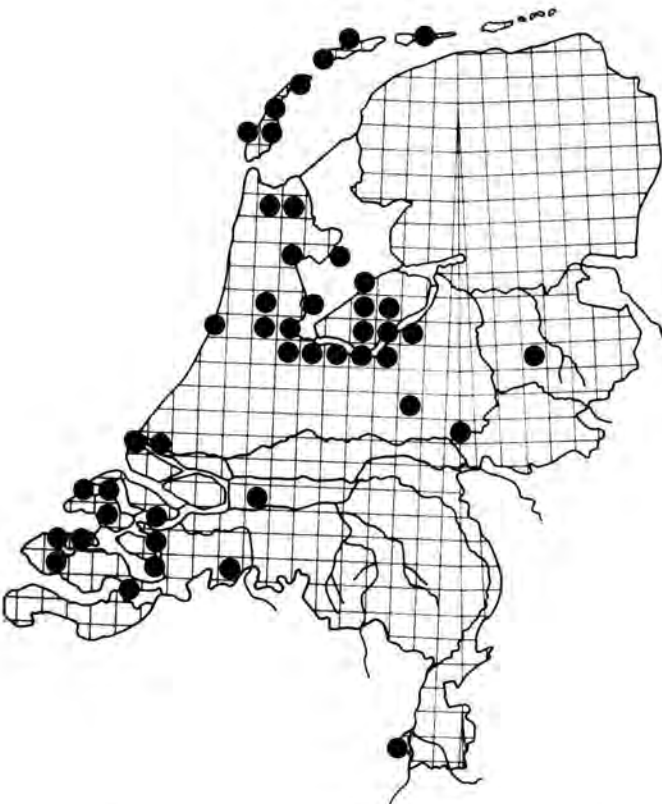
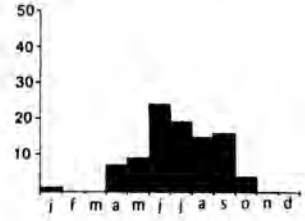


268 *Amara fulva* (Deg.)

macropterous 274 records

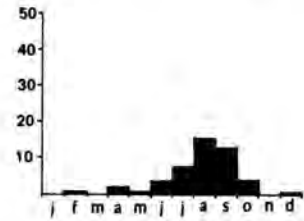






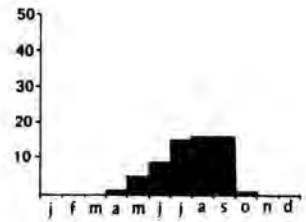
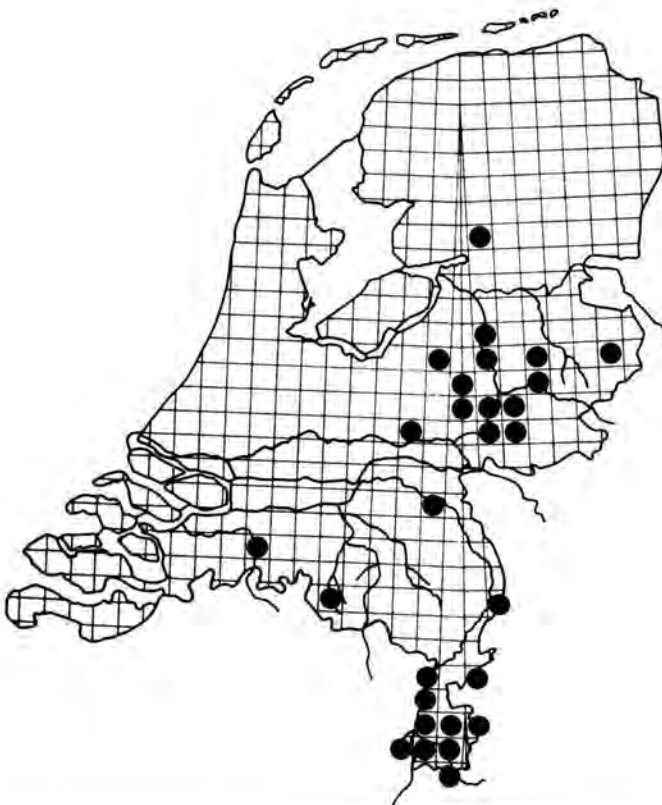
273 *Amara equestris* (Dft.)

macropterous 121 records



274 *Zabrus tenebrioides* Goeze

macropterous 91 records

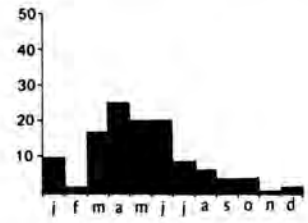
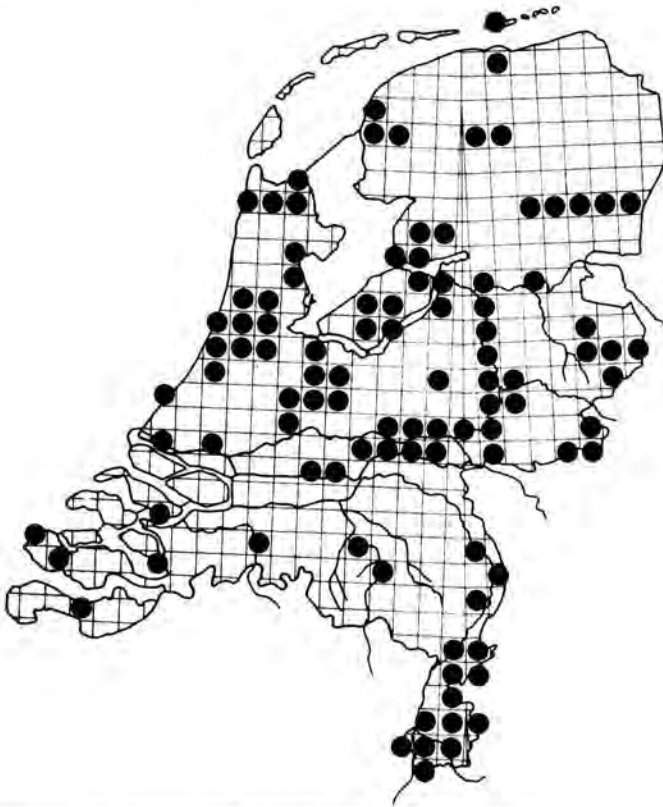


larvae
j f m a m j j a s o n d



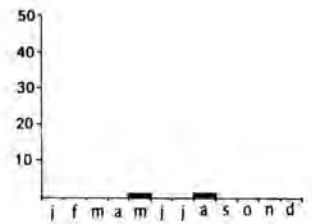
275 *Stomis pumicatus* (Panz.)

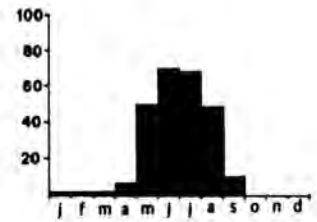
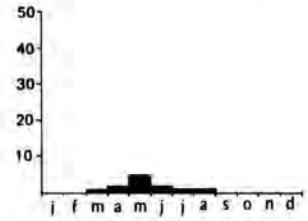
dimorphic 259 records

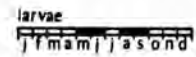
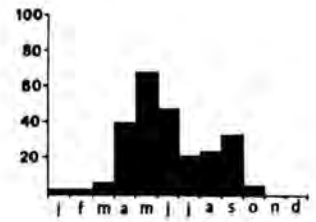
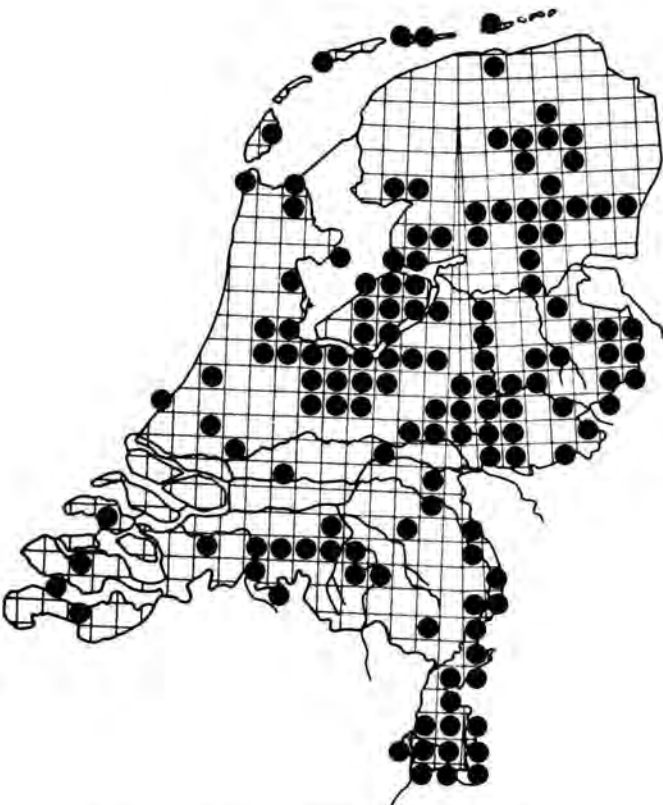
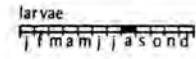
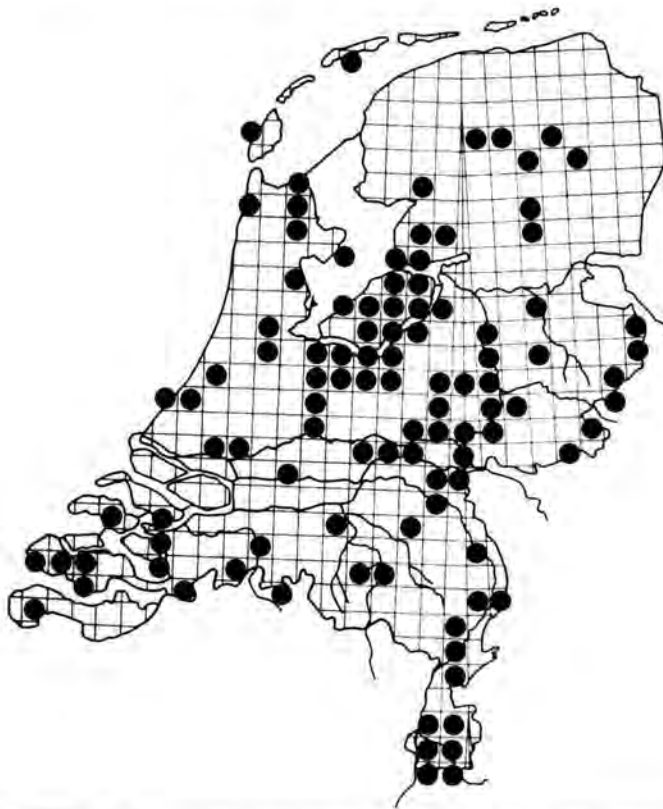


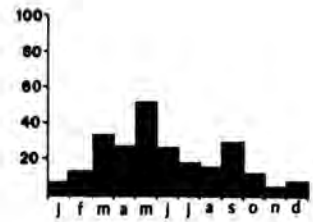
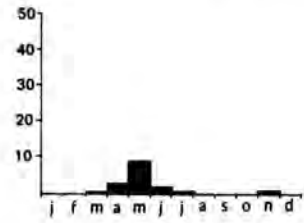
276 *Pterostichus punctulatus* (Schall.)

macropterous 6 records



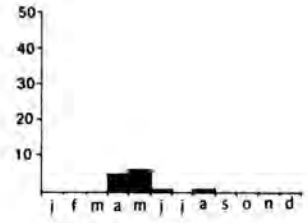






283 *Pterostichus macer* Mrsh.

macropterous 19 records



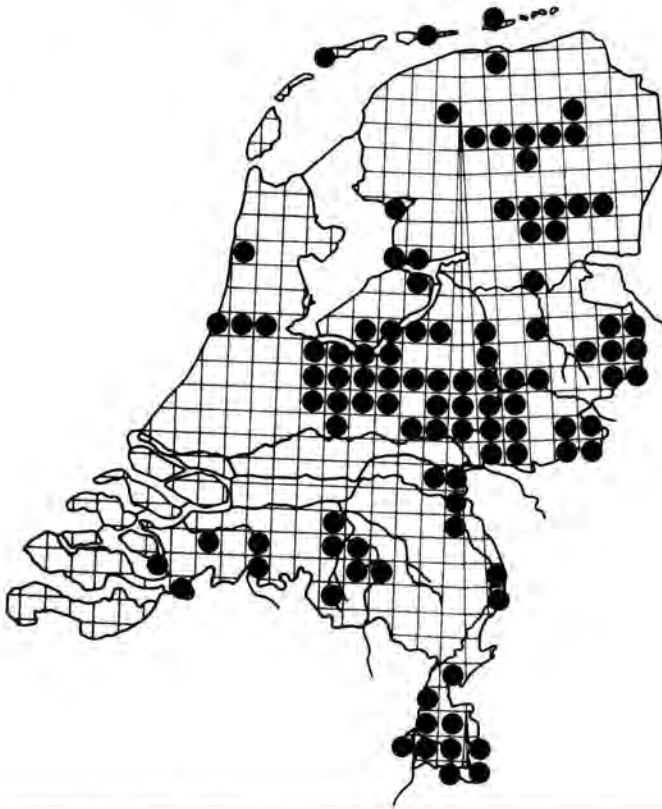
284 *Pterostichus aterrimus* (Hbst.)

macropterous 38 records



285 *Pterostichus oblongopunctatus* (F.)

macropterous 418 records

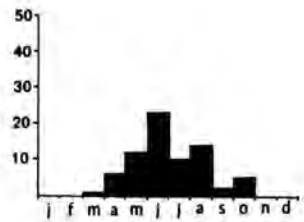


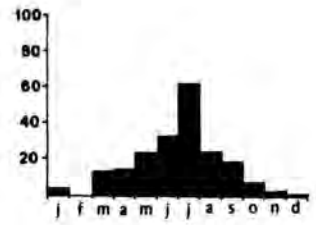
larvae
j f m a m j j a s o n d



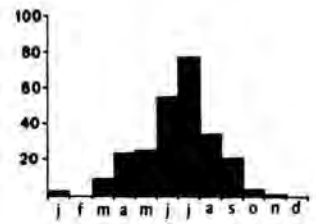
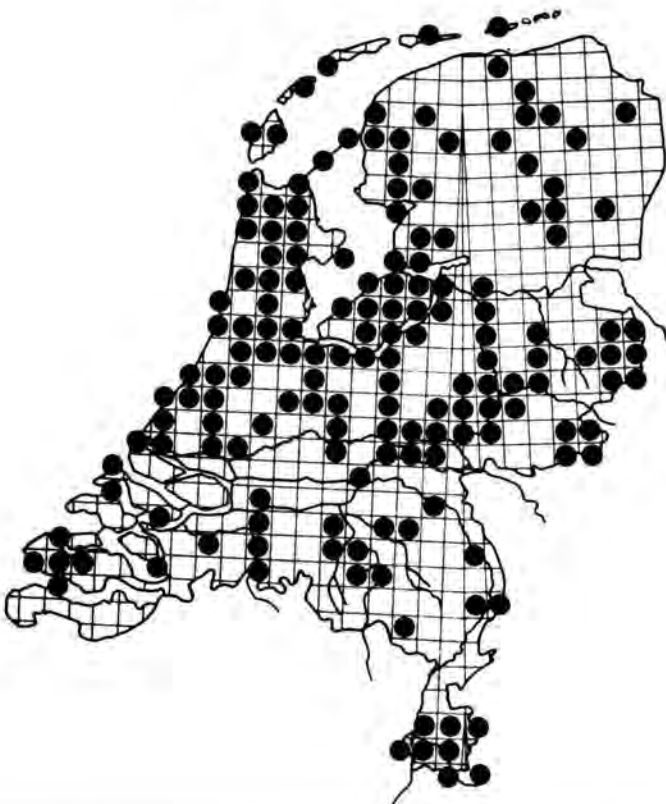
286 *Pterostichus angustatus* (Dft.)

macropterous 106 records





larvae
j f m a m j j a s o n d

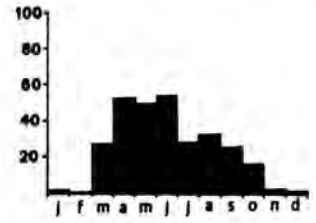
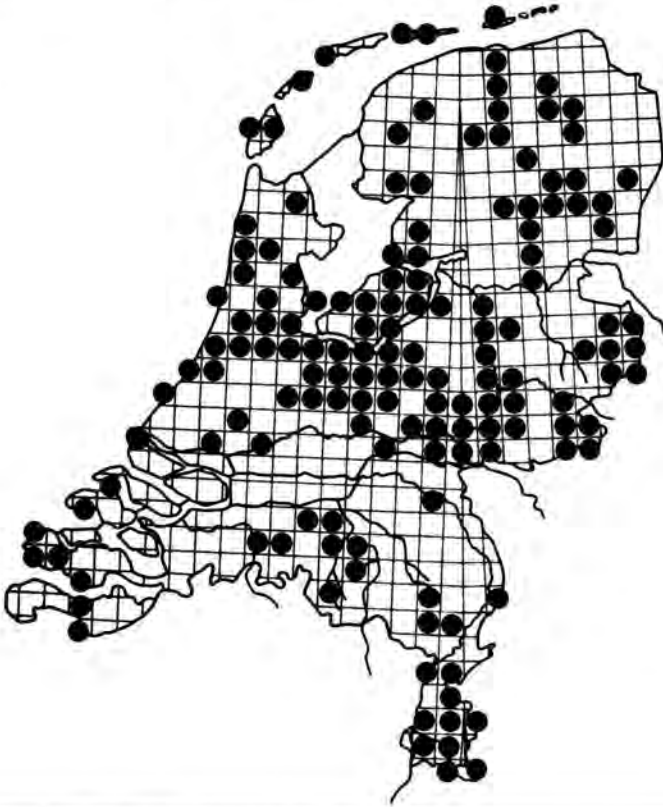


larvae
j f m a m j j a s o n d



289 *Pterostichus nigrita* (F.)

macropterous 631 records

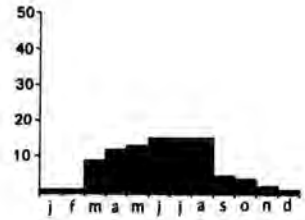


larvae
j f m a m j j a s o n d



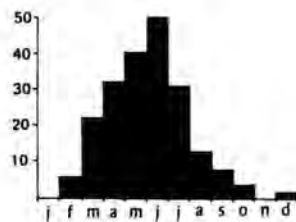
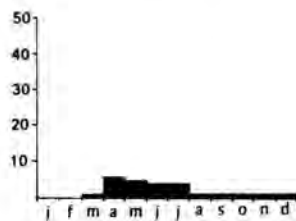
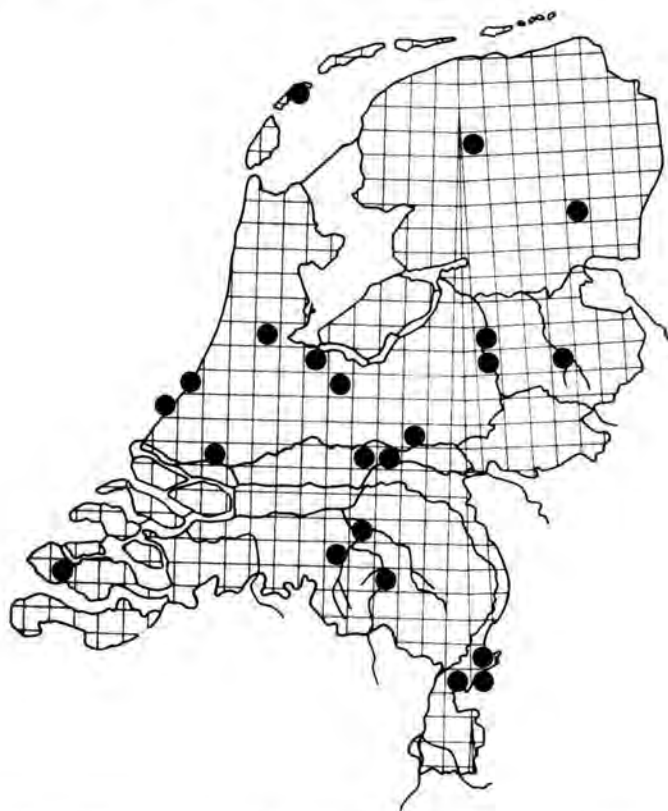
290 *Pterostichus anthracinus* (Ill.)

dimorphic 142 records



larvae
j f m a m j j a s o n d





larvae
j f m a m j j a s o n d



293 *Pterostichus strenuus* (Panz.)

dimorphic 670 records

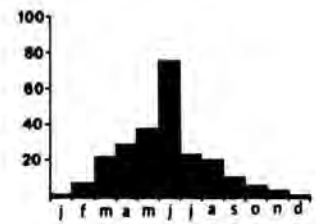


larvae
j f m a m j j a s o n d



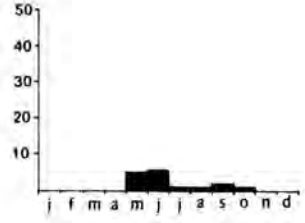
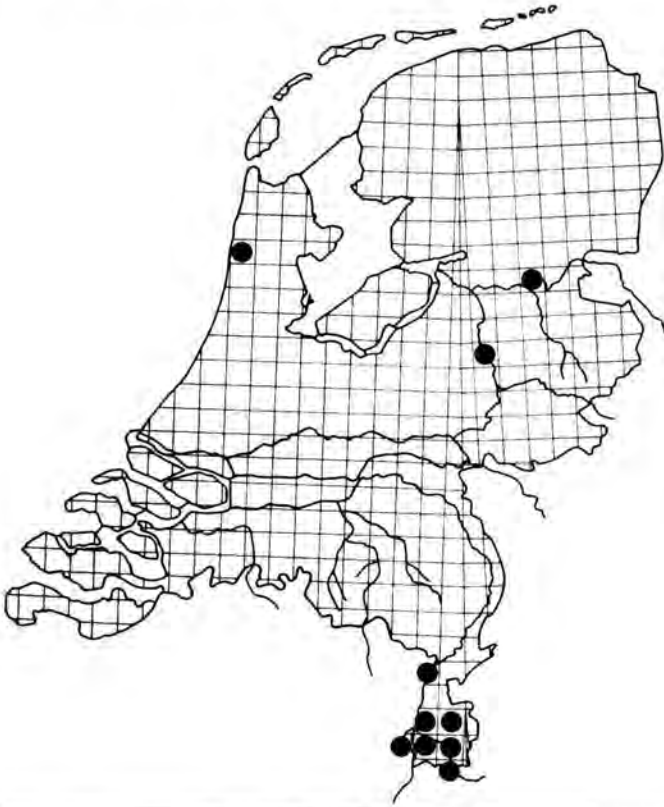
294 *Pterostichus diligens* Strm.

dimorphic 496 records



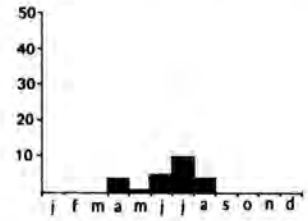
larvae
j f m a m j j a s o n d





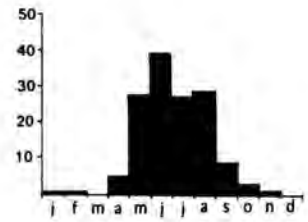
297 *Pterostichus cristatus* (Duf.)

brachypterous 27 records



298 *Abax ater* (Villers) *A. Parallelepipedus* (Pill. et Mitp.)

brachypterous 252 records

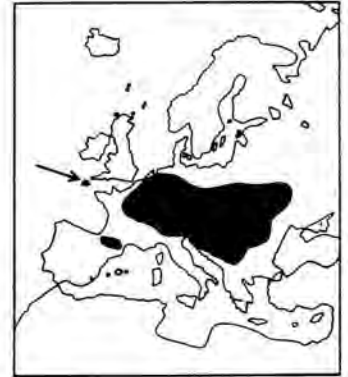
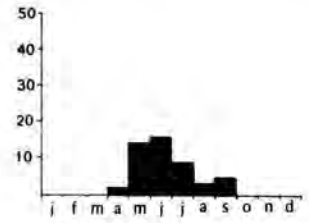
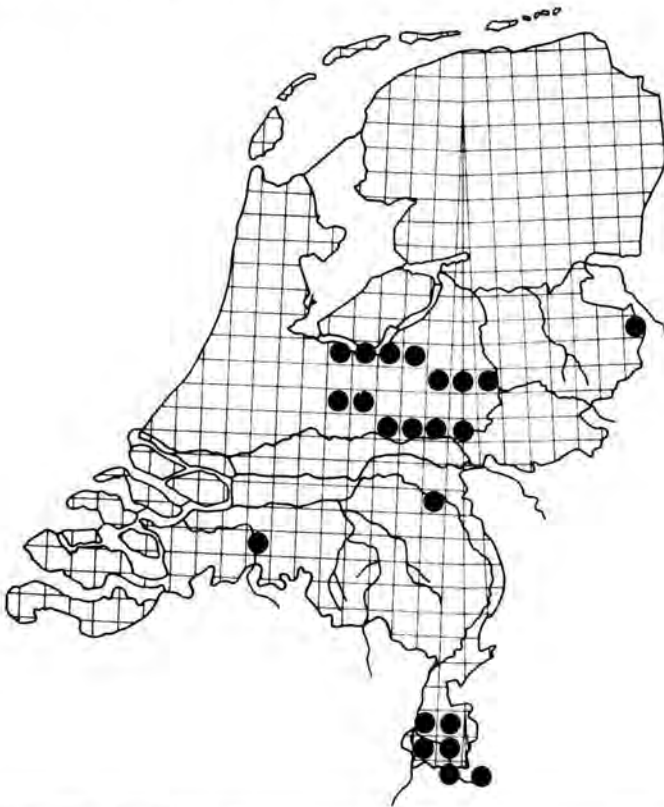


larvae
j f m a m j j a s o n d



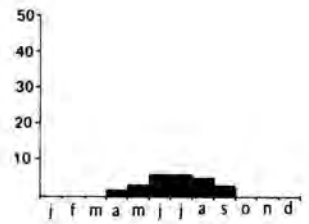
299 *Abax parallelus* (Dft.)

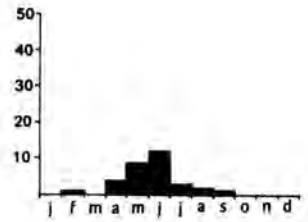
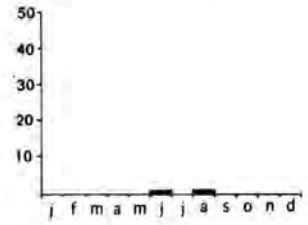
brachypterous 61 records



300 *Abax ovalis* (Dft.)

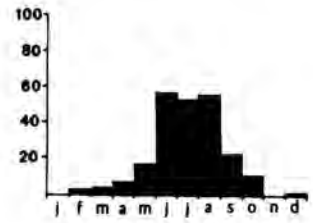
30 records





303 *Calathus fuscipes* (Goeze)

brachypterous 389 records

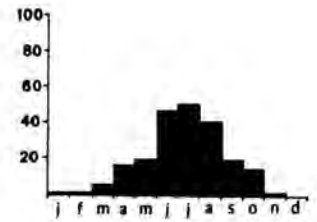


larvae
j f m a m j j a s o n d



304 *Calathus erratus* Sahlb.

dimorphic 461 records

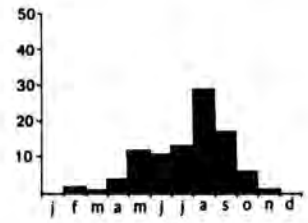


larvae
j f m a m j j a s o n d



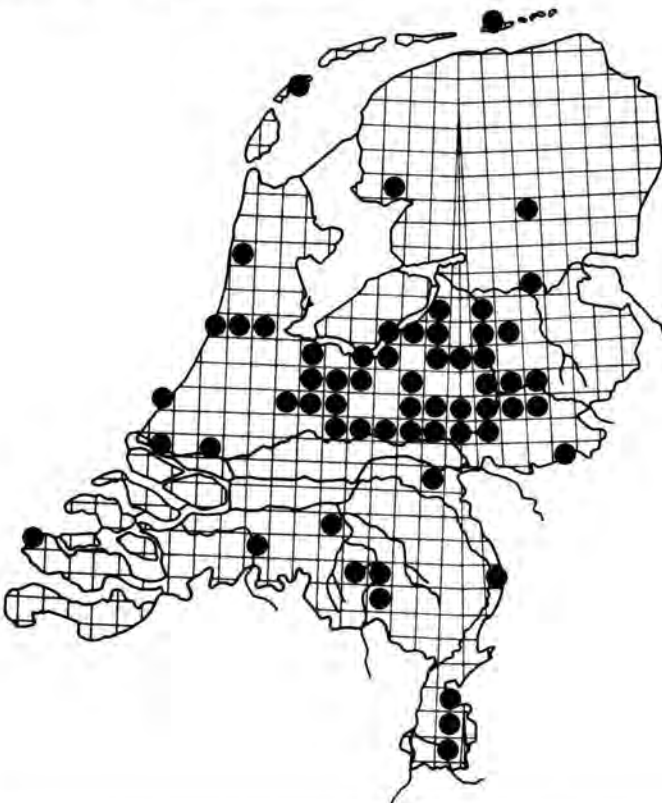
305 *Calathus ambiguus* (Payk.)

macropterous 150 records



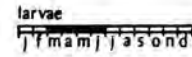
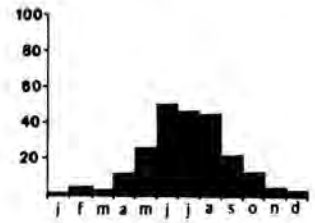
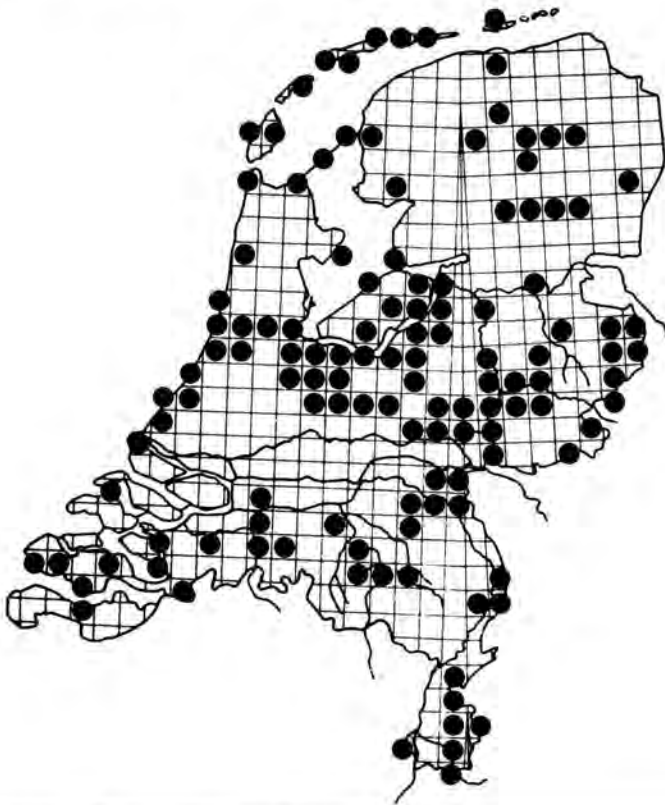
306 *Calathus micropterus* (Dft.)

brachypterous 150 records



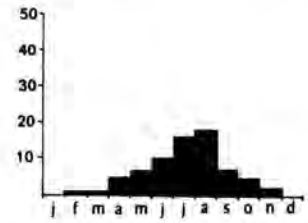
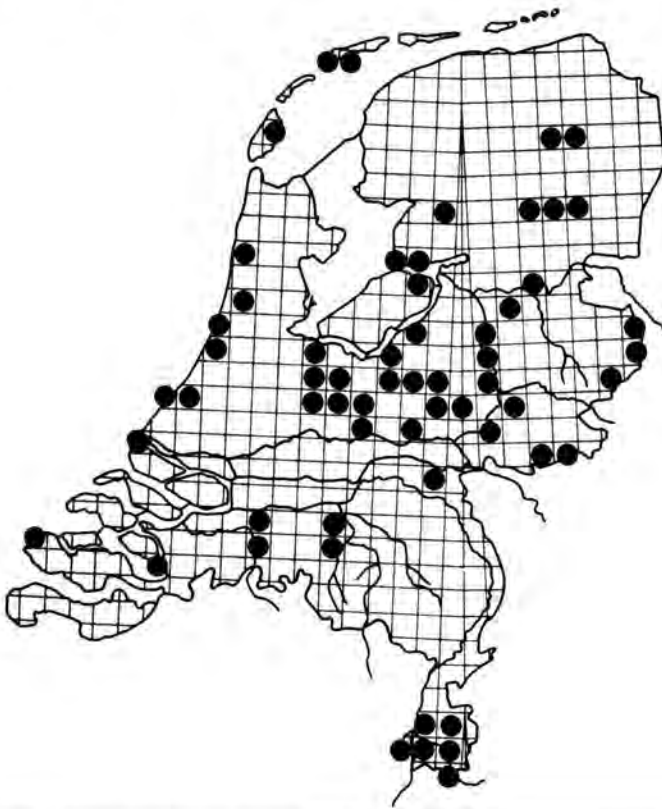
larvae
j f m a m j j a s o n d





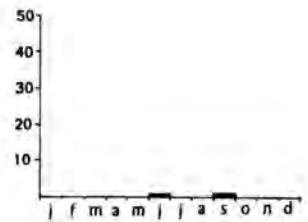
309 *Calathus piceus* (Mrsh.)

dimorphic 195 records



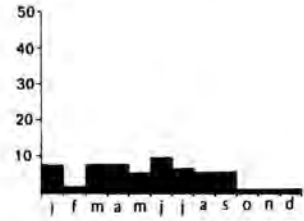
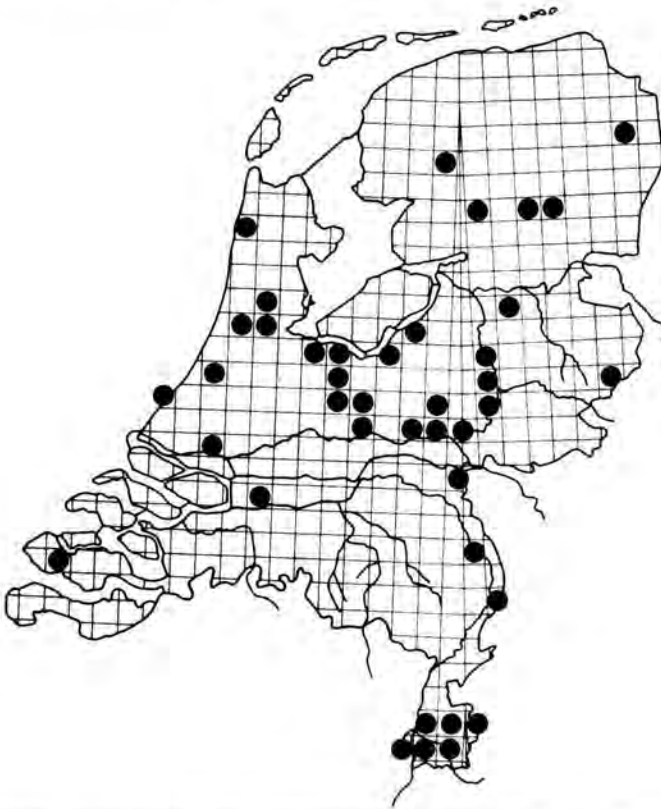
310 *Sphodrus leucophthalmus* (L.)

macropterous 6 records



311 *Pristonychus terricola* (Hbst.)

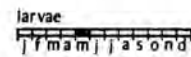
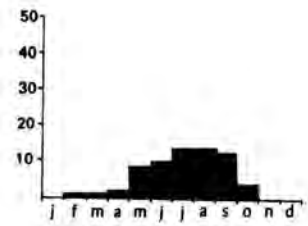
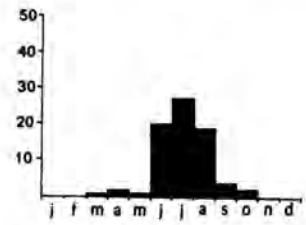
brachypterous 86 records

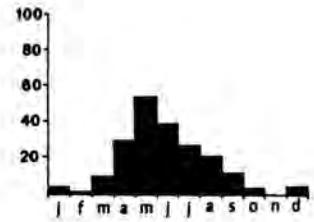
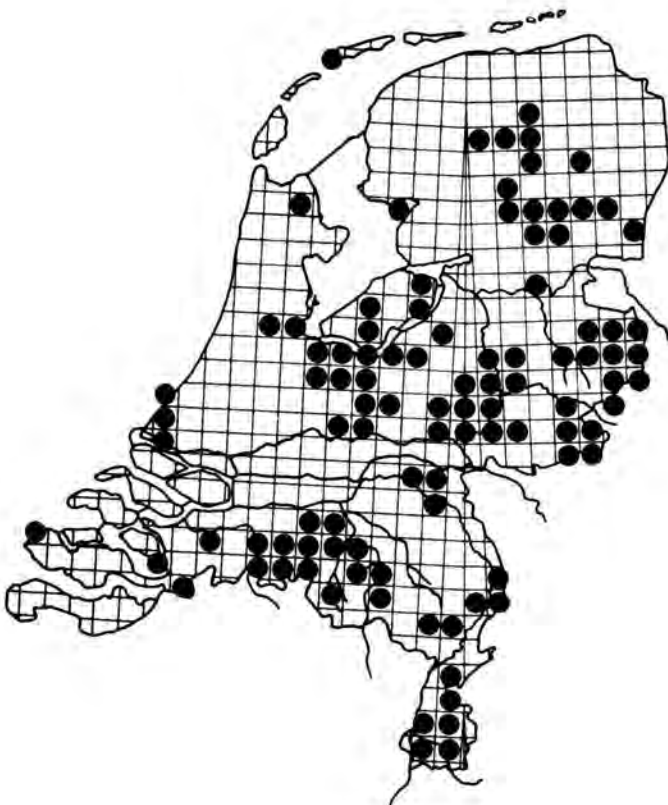
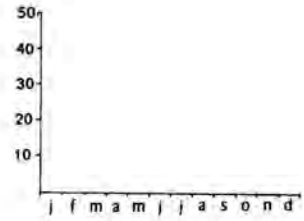


312 *Dolichus halensis* (Bon.)

macropterous 4 records





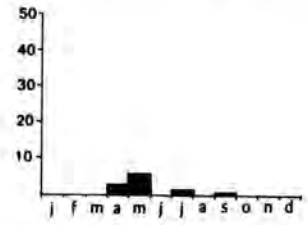


larvae
j f m a m j j a s o n d



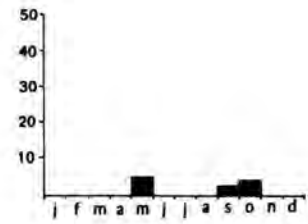
317 *Agonum ericeti* (Panz.)

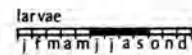
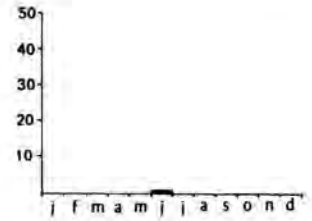
brachypterous 56 records



318 *Agonum viridicupreum* (Goeze)

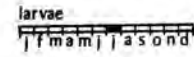
18 records





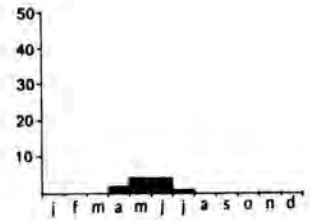
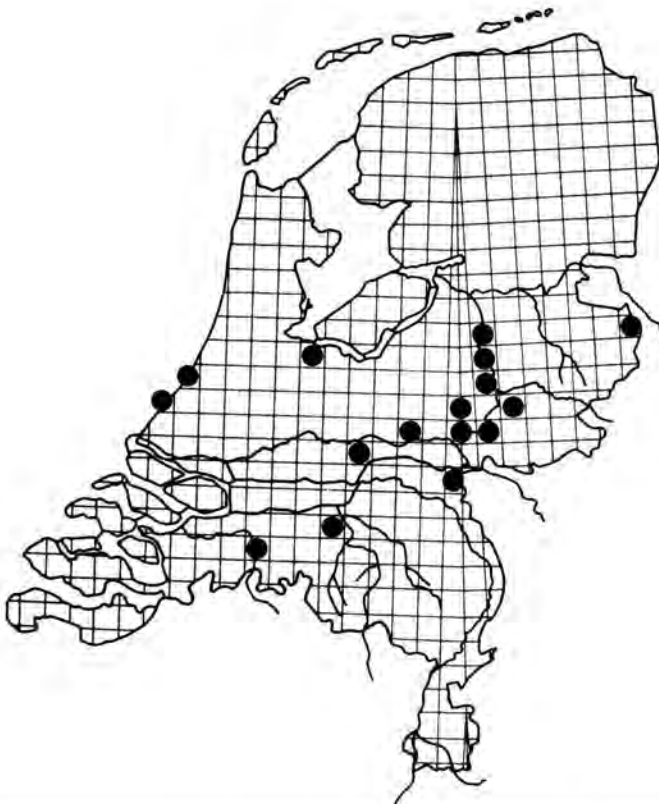
321 *Agonum muelleri* (Hbst.)

macropterous 339 records



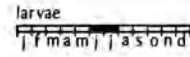
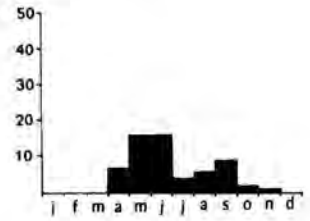
322 *Agonum dolens* (Sahlb.)

macropterous 24 records



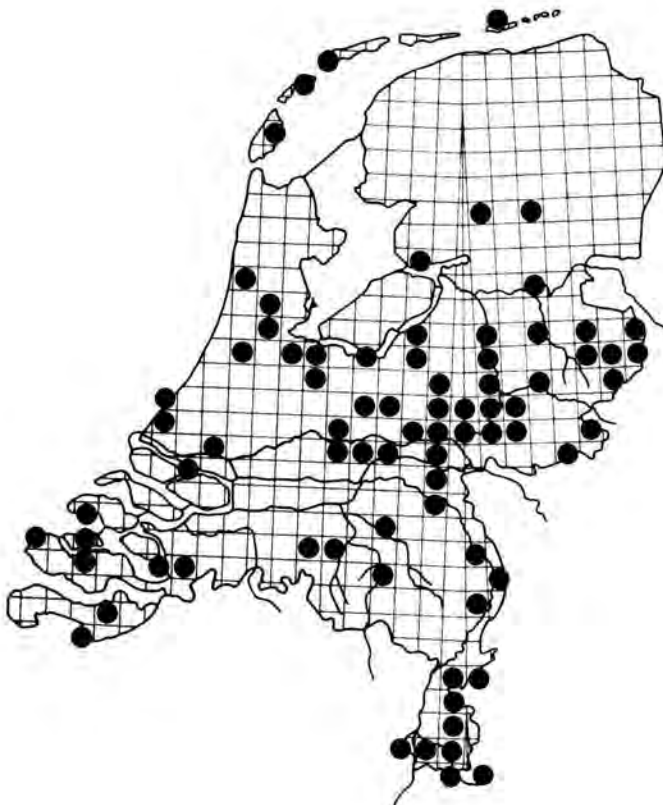
323 *Agonum versutum* (Gyll.)

macropterous 97 records



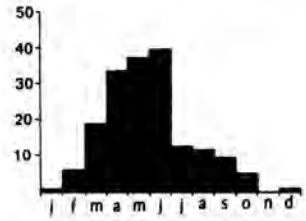
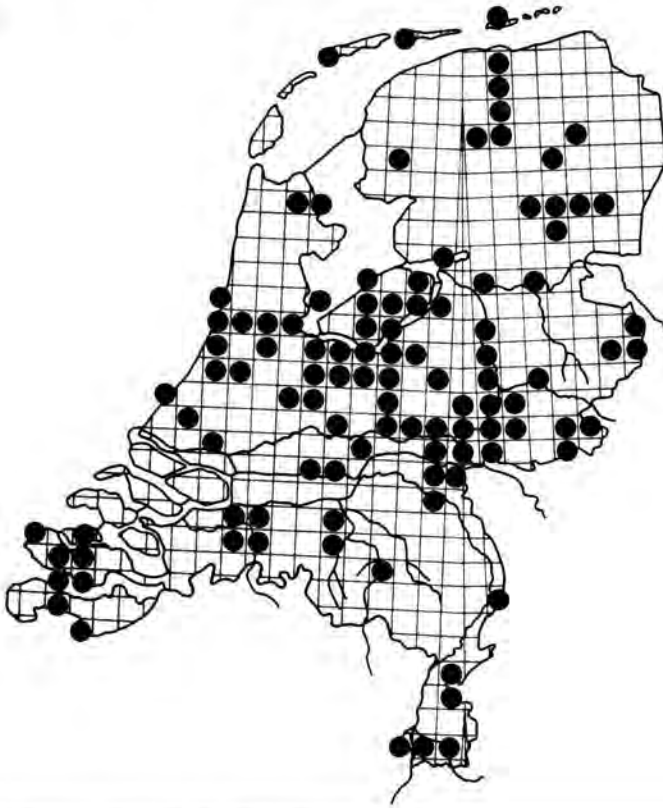
324 *Agonum viduum* (Panz.)

macropterous 149 records



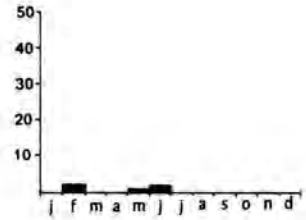
325 *Agonum moestum* (Dft.)

dimorphic 348 records



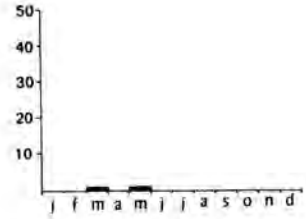
326 *Agonum dahli* Prdh. *A. nigrum* Dej.

8 records



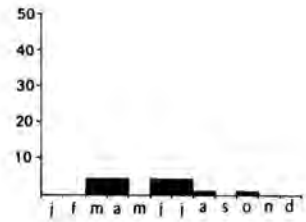
327 *Agonum lugens* (Dft.)

macropterous 3 records



328 *Agonum livens* (Gyll.)

macropterous 41 records



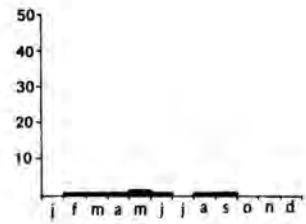
329 *Agonum micans* Nic.

macropterous 329 records



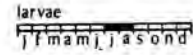
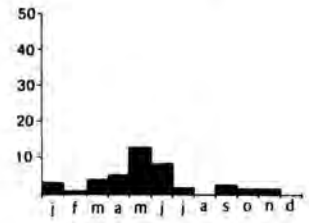
330 *Agonum scitulum* Dej.

21 records



331 *Agonum piceum* (L.)

macropterous 65 records



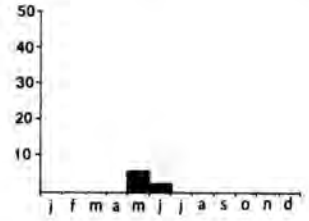
332 *Agonum gracile* (Gyll.)

macropterous 89 records



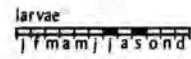
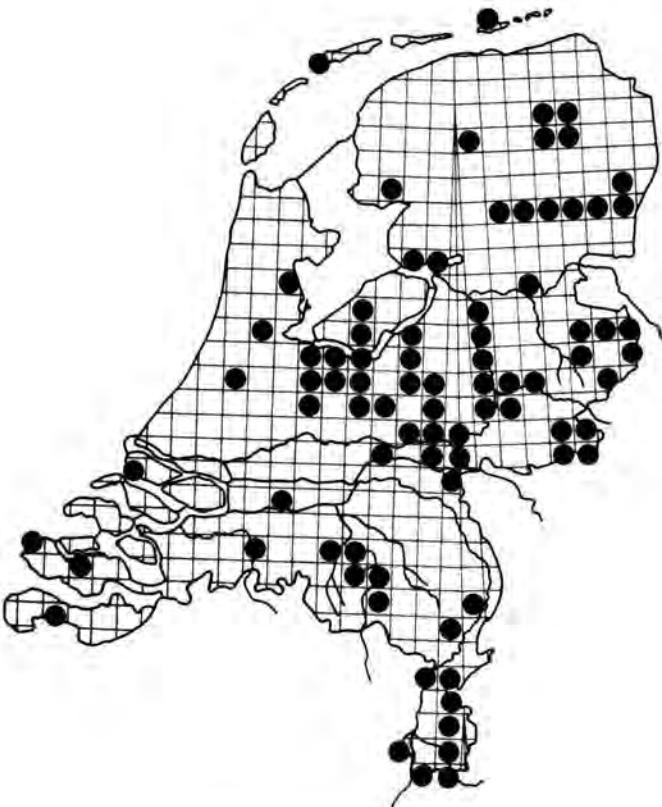
333 *Agonum munsteri* Hell.

macropterous 12 records



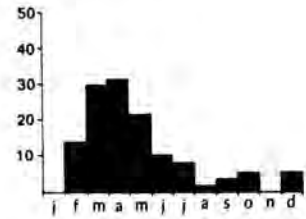
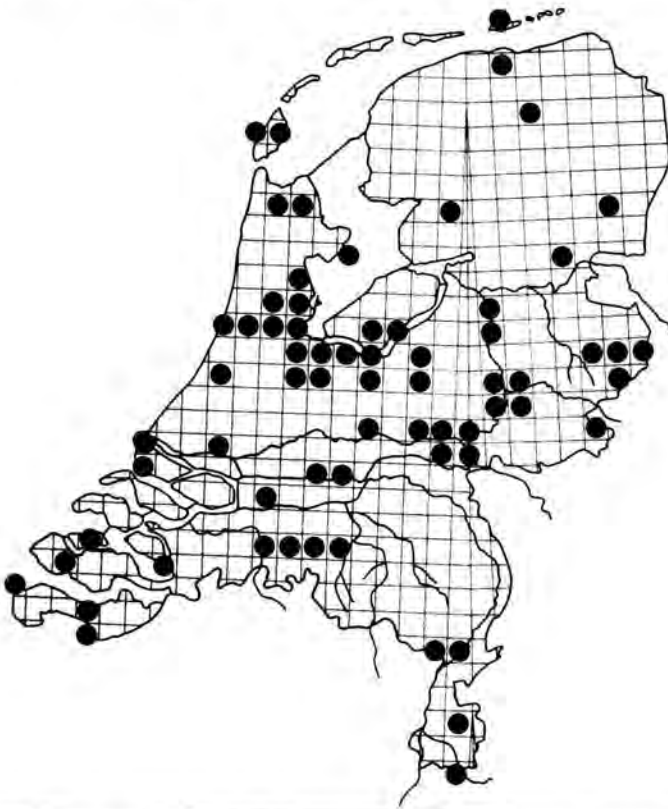
334 *Agonum fuliginosum* (Panz.)

dimorphic 269 records



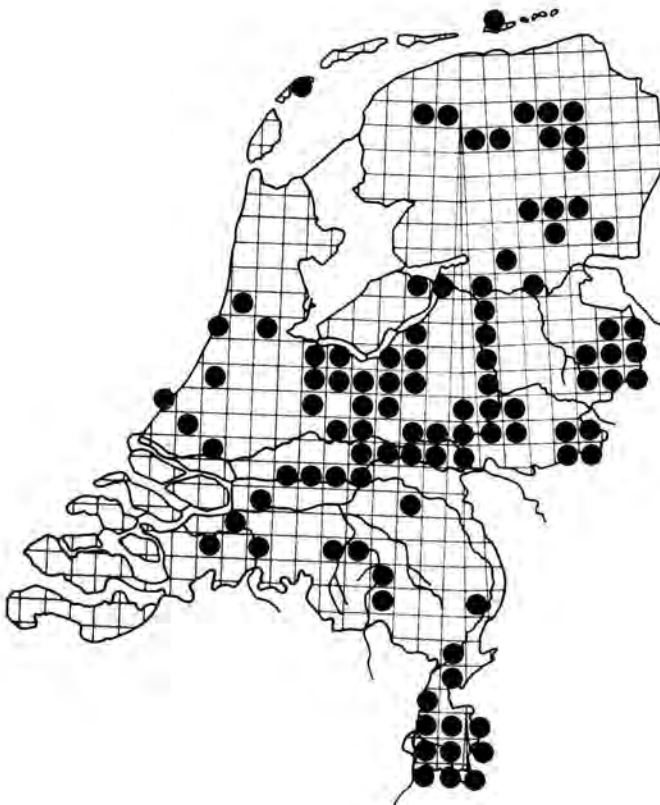
335 *Agonum thoreyi* Dej. *A. puellum* Dej.

macropterous 192 records



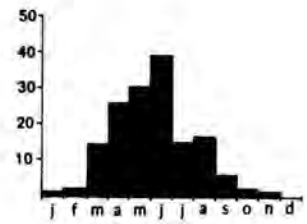
336 *Agonum assimile* (Payk.)

macropterous 303 records



larvae
j f m a m j j a s o n d



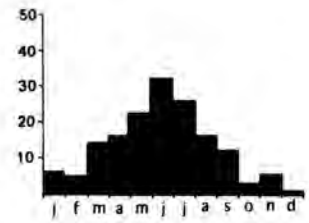
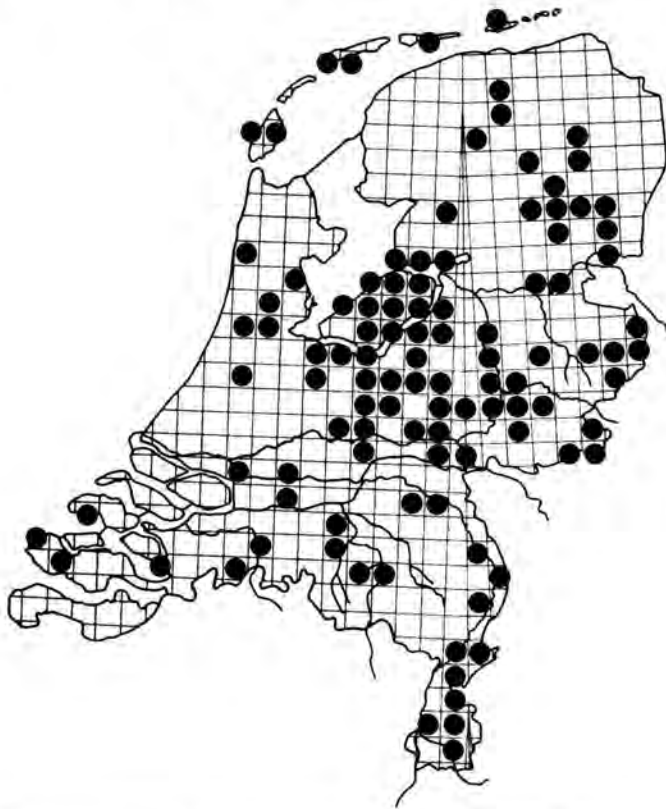


larvae
j f m a m j j a s o n d



339 *Agonum obscurum* Hbst.

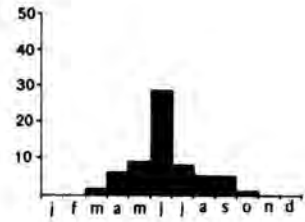
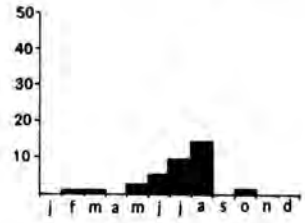
dimorphic 429 records



340 *Agonum dorsale* (Pont.)

macropterous 437 records



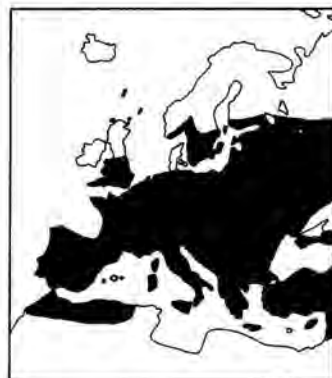
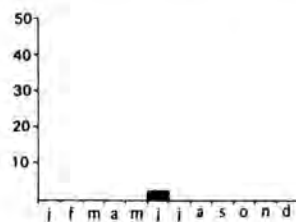


larvae
j f m a m j j a s o n d



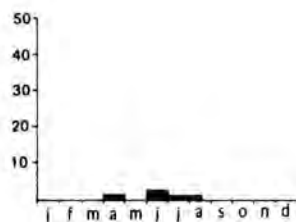
343 *Lebia cyanocephala* (L.)

macropterous 9 records



344 *Lebia cruxminor* (L.)

macropterous 9 records



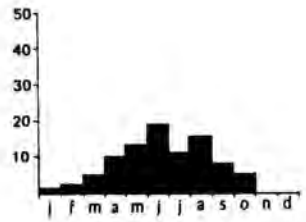
345 *Demetrias atricapillus* (L.)

macropterous 194 records



346 *Demetrias monostigma* Sam.

brachypterous 152 records

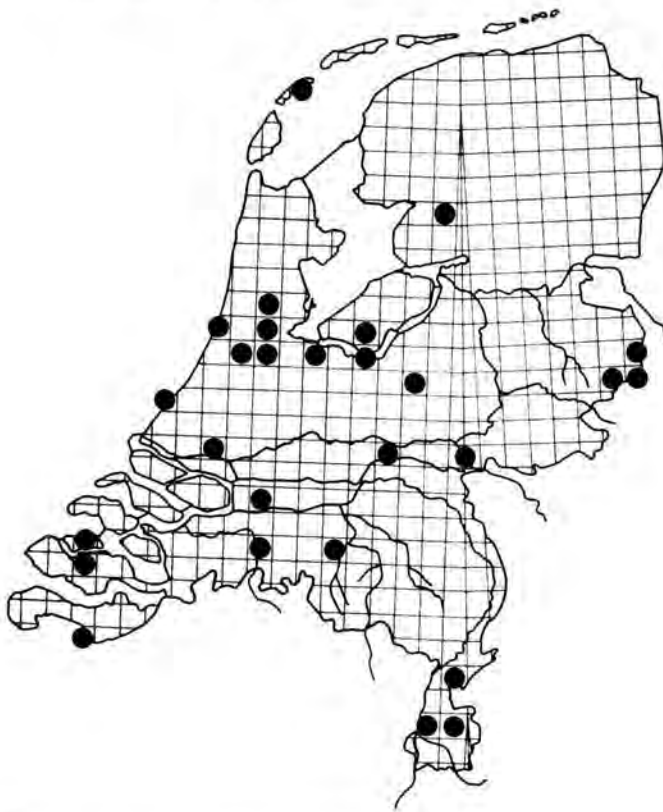


larvae
j f m a m j j a s o n d



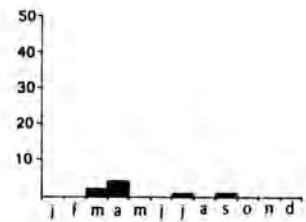
347 *Demetris imperialis* (Germ.)

macropterous 71 records



348 *Dromius longiceps* Dej.

macropterous 13 records



349 *Dromius linearis* (Oliv.)

dimorphic 269 records



larvae
j f m a m j j a s o n d



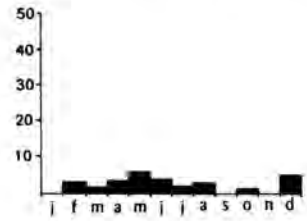
350 *Dromius agilis* (F.)

macropterous 141 records



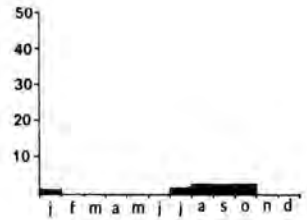
351 *Dromius angustus* Brulle

macropterous 53 records



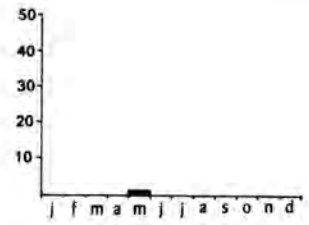
352 *Dromius meridionalis* Dej.

9 records



352.1 *Dromius marginellus* (F.)

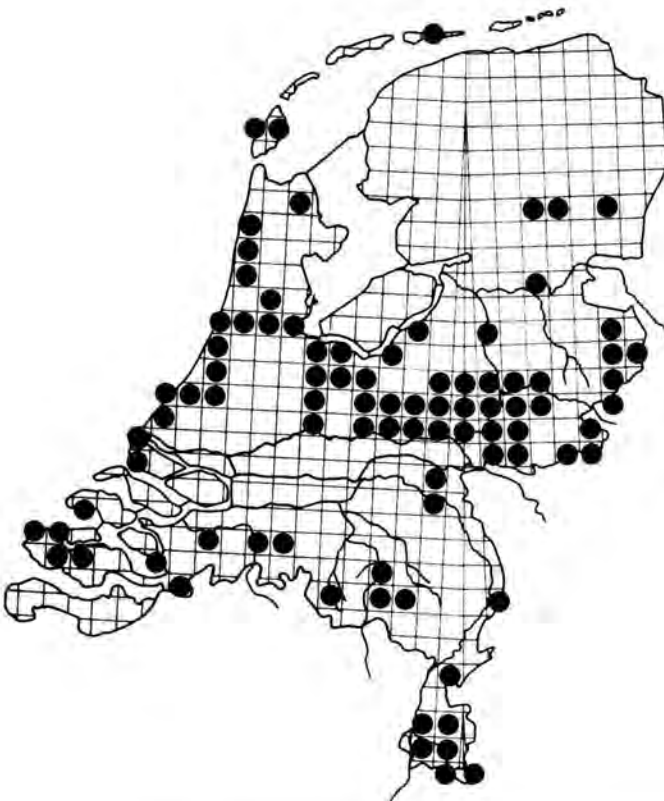
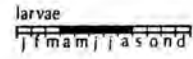
1 record

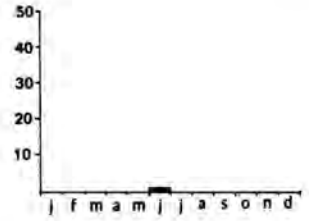


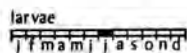
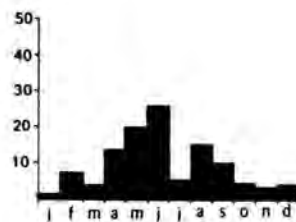
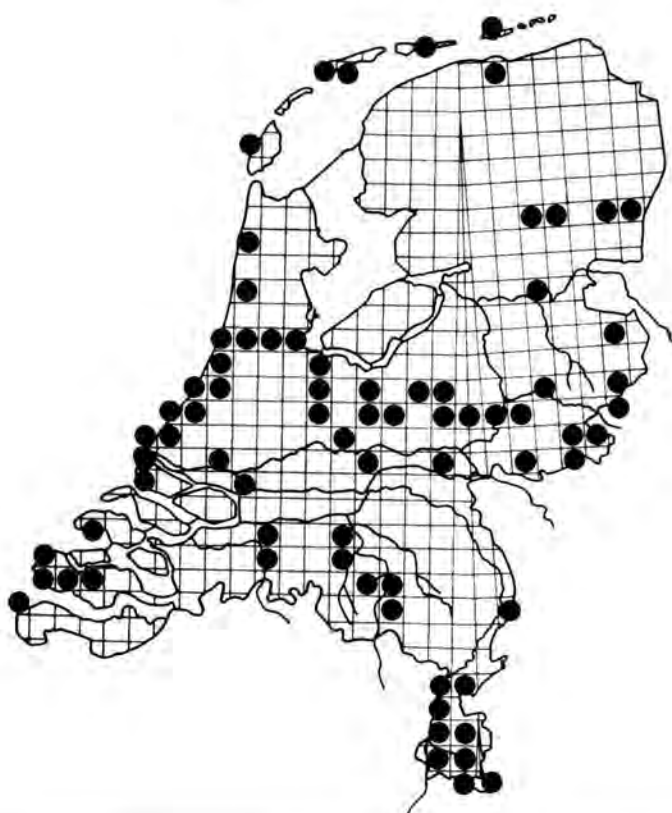
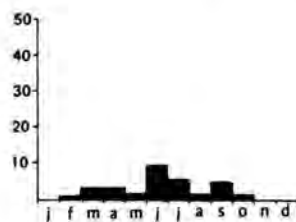
353 *Dromius fenestratus* (F.)

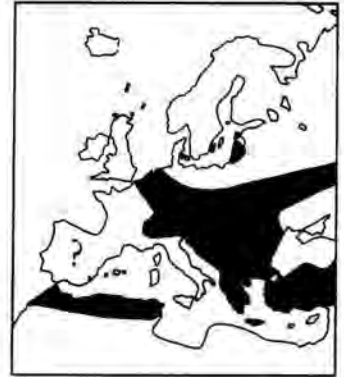
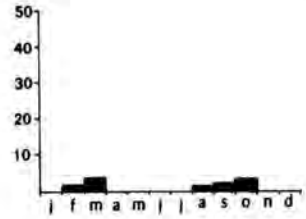
macropterous 4 records





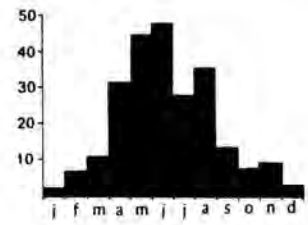






362 *Metabletus foveatus* (Fourcr.)

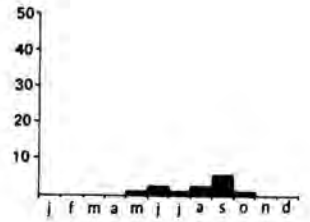
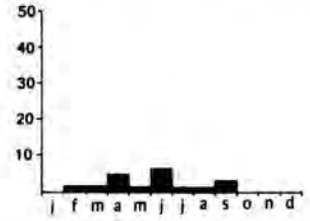
brachypterous 421 records



363 *Microlestes minutulus* (Goeze)

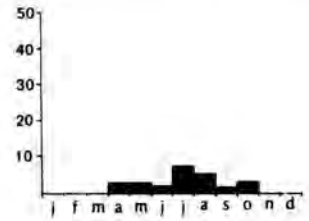
macropterous 60 records





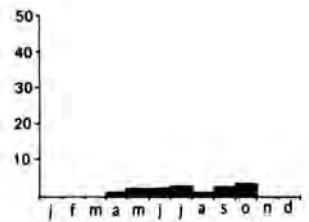
366 *Cymindis humeralis* (Fourcr.)

brachypterous 41 records



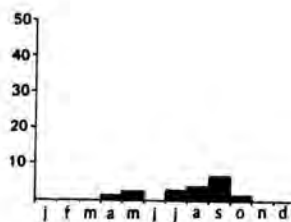
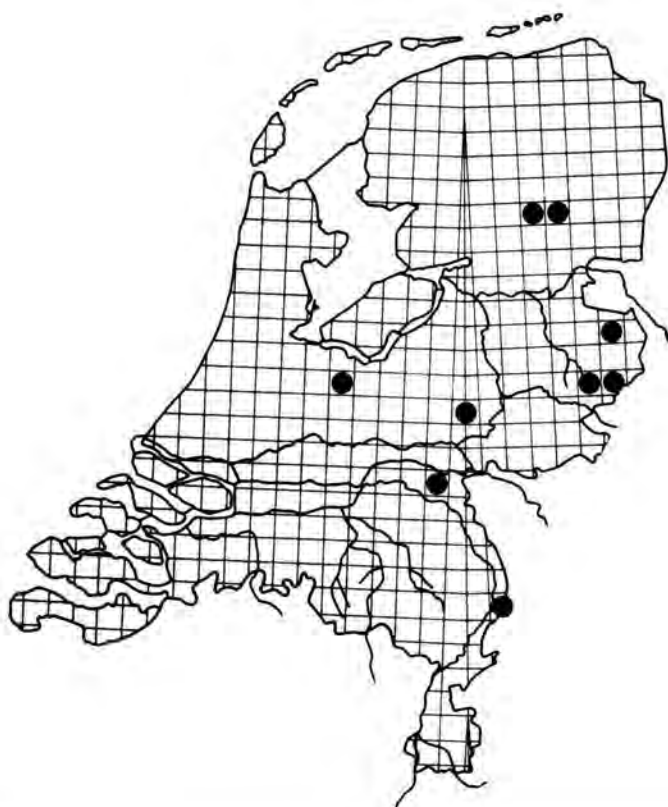
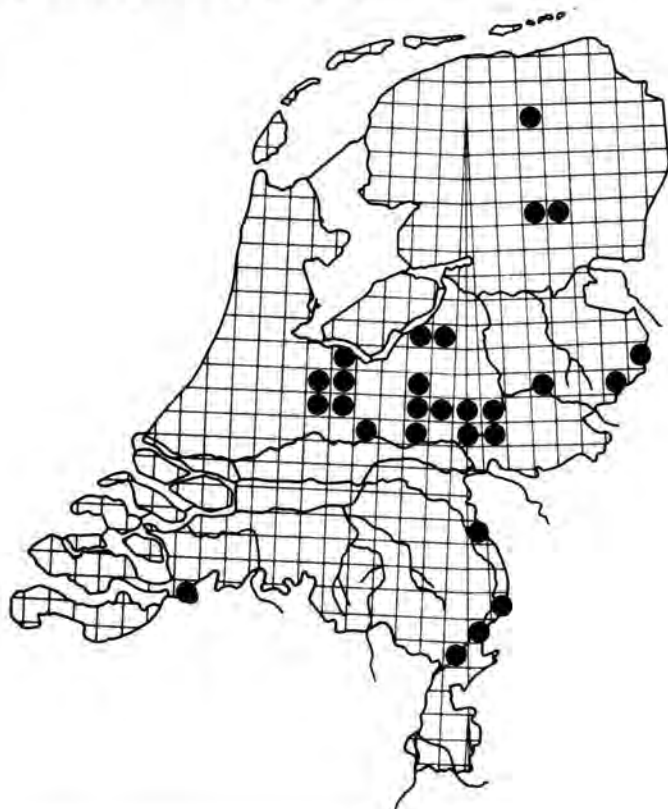
367 *Cymindis axillaris* F.

14 records



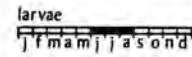
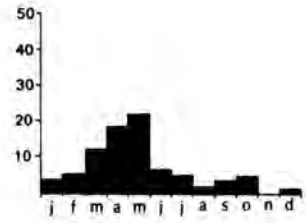
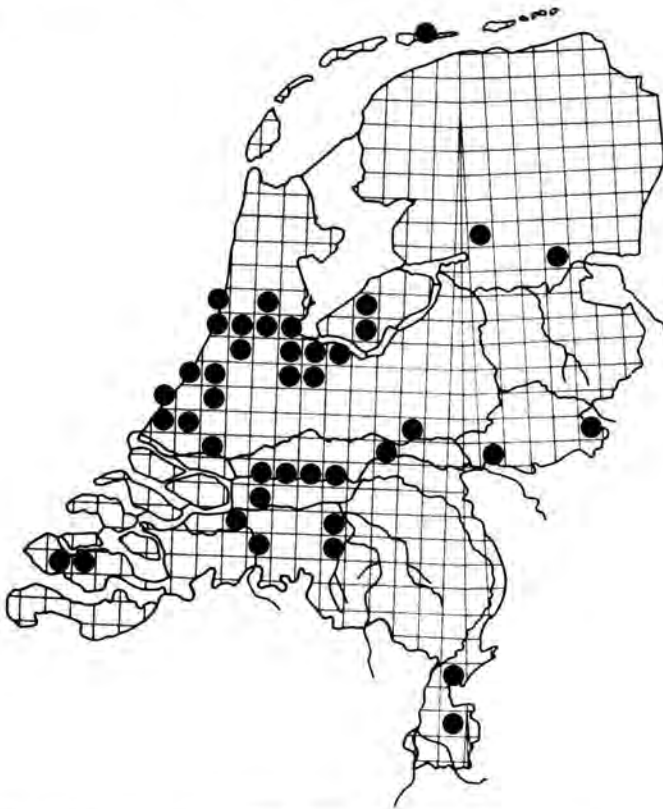
larvae
j f m a m j j a s o n d





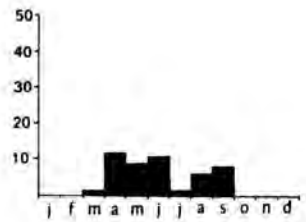
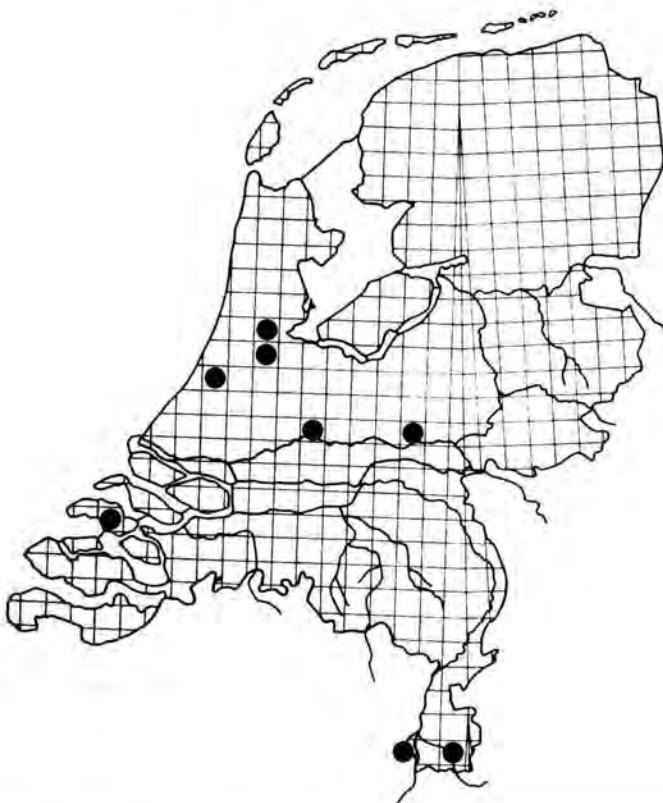
370 *Odacantha melanura* (L.)

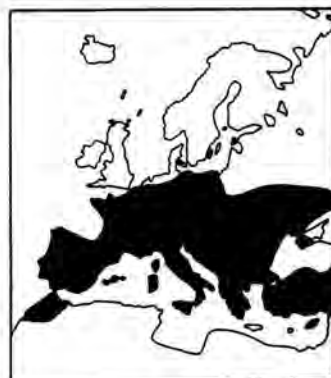
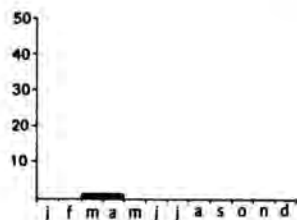
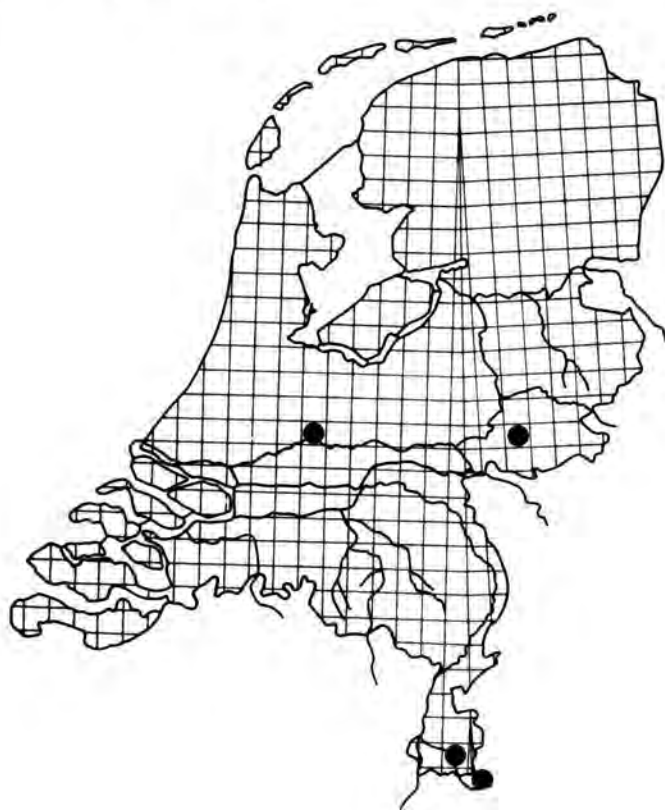
macropterous 103 records



371 *Brachynus crepitans* L.

56 records





A. Notes on the computer programme

The programme, which is in PL/I, makes it possible to produce, for any set of data and for any given area or country, a printed map showing the frequencies with which a particular species has been recorded (see Figure 2).

We used three types of cards, one of which (type 1) carries the individual data, the others being reserved for information of a general nature. *Card type 1* bears information derived from collections, the literature, or the field. The inclusion of part of this information is obligatory, the rest being optional. Insertion of the full name of the sampling site provides a useful check on punching errors concerning the row and column number of the grid. Information about the source is also helpful in the checking of doubtful records.

Card type 2 relates the species number on card type 1 to the species name and, if desired, to biological information on the species in question. *Card type 3* defines the area covered in the mapping investigation. Since we used a printer instead of a plotter, the output is in matrix form, and because the area covered is generally not rectangular, a matrix element outside the area under study must be suppressed. The total number of columns in the matrix should not exceed 33.

The IN data set comprises:

On card type 1

columns

1- 3	species number
4- 5	row number of the grid
6- 7	column number of the grid
8-11	internal (alpha-numeric) indication of the grid (optional)
12-26	name of the locality (optional)
27	decade -0: up to 1900, 1: 1900-1910,
	8: 1970-1980, 9: unknown.
28-29	month
30-31	source (optional)

The INHF3 data set comprises:

On card type 2

columns

1- 3	species number
4- 6	species number for internal use if different from the first one (e.g., number based on alphabetical order instead of the systematic one) (optional)
7-40	codes of biological information (optional)
41-60	genus name
61-80	species name

The INHF8 data set comprises:

On card type 3

Matrix constituted row by row (one card for each row)

0	in a location outside the area under consideration (with no possibility to record an item)
1	in a location inside this area

B. Computer programme

```

KRT1: PROC OPTIONS(MAIN);
DCL
  1 F BASED(S),
  SNB CHAR(3),
  CNR CHAR(2),
  CNK CHAR(2),
  GNR CHAR(4),
  PLW CHAR(15),
  DTY CHAR(1),
  DTM CHAR(2),
  BRN CHAR(2),
  1 HP3 BASED(P),
  SNB CHAR(3),
  SNP CHAR(3),
  RST CHAR(34),
  GEN CHAR(20),
  SON CHAR(20),
  SNP(374) CHAR(3),
  GEN(374) CHAR(20),
  SON(374) CHAR(20),
  T(32,28) FIXED BIN,
  TM(32,28) FIXED BIN,
  (TM1(12),TM2(12)) FIXED BIN,
  (DE=DL) FIXED BIN,
  (ISNB=ISNV+ISW+1+J+K) FIXED BIN,
  SNP,GEN,SON= ' ',
DO I=1 TO 321 DO J=1 TO 28; GET FILE(INHF8) LIST(TM(I+J)); ENDF; ENDF;
ON ENDFILE(INHF3) GO TO VERDER1;
LABA:
READ FILE(INHF3) SET(P);
GET STRING(HF3,SNB) EDIT(ISNB)(F(3));
SNP(ISNB)=HF3,SNP4;
GEN(ISNB)=HF3,GEN4;
SON(ISNB)=HF3,SON4;
GO TO LABA;
VERDER1:
T=0; TM1=0; TM2=0; ISW=0; ISNV=1; DE=0; DL=0;
ON ENDFILE(IN) BEGIN; ISW=1; GO TO PRINT; END;
LABB:
READ FILE(IN) SET(S);
GET STRING(F,SNB) EDIT(ISNB)(F(3));
IF ISNB=ISNV THEN GO TO PRINT;
LABC:
GET STRING(F,DTY) EDIT(I)(F(1));
IF I<DE THEN DE=I;
IF (I=9)&(I>DL) THEN DL=I;
GET STRING(F,DTM) EDIT(I)(F(2));
IF I=0 THEN DO;
GET STRING(F,BRN) EDIT(J)(F(2));
IF (J>7)&(J<14) THEN TM1(I)=TM1(I)+1;
ELSE TM2(I)=TM2(I)+1;
END;
GET STRING(F,CNR) EDIT(I)(F(2));
GET STRING(F,CNK) EDIT(J)(F(2));
T(I,J)=T(I,J)+1;
GO TO LABB;
PRINT:
PUT SKIP EDIT(' SPECIESNUMBER ACCORDING TO BRAKMAN : ',ISNV)
(A(40),F(3));
PUT SKIP EDIT(' GENUS AND SPECIESNAME : ',GEN(ISNV),SON(ISNV))
(A(40),A(20),A(20));
PUT SKIP(2) EDIT(' POOL JAN. FEBR MRT. APRL MAY. JUNE JULY AU
G SEPT OKT NOV. DEC.')(A);
PUT SKIP EDIT(' 1')(A(6));
DO I=1 TO 12; PUT EDIT(TM1(I))(F(6)); ENDF;
PUT SKIP EDIT(' 2')(A(6));
DO I=1 TO 12; PUT EDIT(TM2(I))(F(6)); ENDF;
DO I=1 TO 12; PUT EDIT(TM1(I)+TM2(I))(F(6)); ENDF;
DO I=1 TO 12; PUT EDIT(TM1(I))(F(6)); ENDF;
PUT SKIP(2) EDIT(' DECADE OF FIRST AND LAST RECORD : ',
DE, ' - ',DL)(A(40),A(11)+F(1),A(3)+F(1));
PUT SKIP EDIT(' TOTAL NUMBER OF RECORDS : ',SUM(T(%,%)))
(A(40),F(6));
K=0; DO I=1 TO 321 DO J=1 TO 28; IF T(I+J)=0 THEN K=K+1; ENDF; ENDF;
PUT SKIP EDIT(' NUMBER OF OCCUPIED GRIDS : ',K)
(A(40),F(6));
PUT SKIP(S);
ON ENDPAGE(SY$PRINT);
PUT SKIP EDIT('')(A); DO J=2 TO 28; PUT EDIT(J)(F(4)); ENDF;
DO I=1 TO 321; PUT SKIP(2) EDIT(I)(F(2)); DO J=1 TO 28;
IF TH(I+J)=0 THEN PUT EDIT('')(A(4));
ELSE IF T(I+J)=0 THEN PUT EDIT('')(A(4));
ELSE PUT EDIT(T(I,J))(F(4));
ENDF; ENDF;
ON ENDPAGE(SY$PRINT) PUT PAGE;
PUT PAGE;
T=0; TM1=0; TM2=0; DE=0; DL=0; ISNV=ISNB;
IF ISW=0 THEN GO TO LABC;
PUT SKIP LIST(' END OF THE JOB. ');
END KRT1;

```


Alphabetical index of the species

After each name the species number and, for the species, also the generic name is given. Subgenus names, infraspecific taxa, synonyms, and homonyms are printed in italics.

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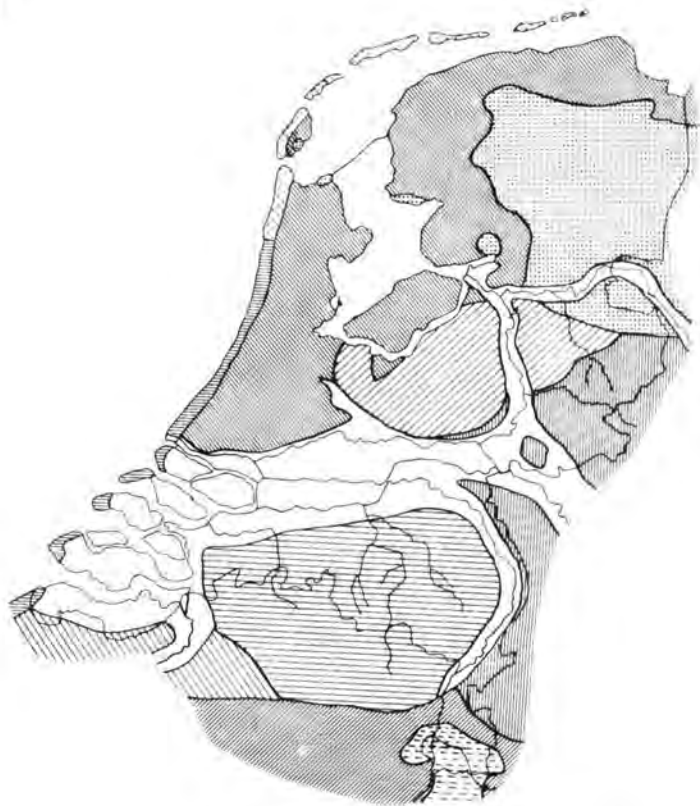
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Underworked grids



Phytogeographic regions

-  wadden region
-  dune region
-  lagoon region
-  Drenthe region
-  Gelderland region
-  Vlaanderen region
-  subcentroeupean region
-  loess region
-  cretaceous region
-  Kempen region
-  fluviatile region









Soil map of the Netherlands

-  peat soils
-  brook-valley soils
-  sand soils
-  clay soils
-  loess soils



Soil use in The Netherlands

-  arable land
-  predominantly arable
-  predominantly grassland
-  grassland
-  urban areas
-  woods, dunes, heath, marshes

