

APPENDIX A

Part I: THE CARABID SPECIES

In the following short descriptions are given of the habitat, reproductive cycle, wing development and distributional area of the 74 species the data of which were analysed in this paper (cf. 4.1). These descriptions only concern the situation in our area of investigation (Drenthe), unless otherwise mentioned. When the habitat in Drenthe appears to be quite different from that in Fennoscandia this is indicated by: compare: LINDROTH, 1945. For the data on the distributional area we mainly used: HORION (1941), LINDROTH (1945) and TURIN, HAECK & HENGEVELD (1977); compare 8.2.

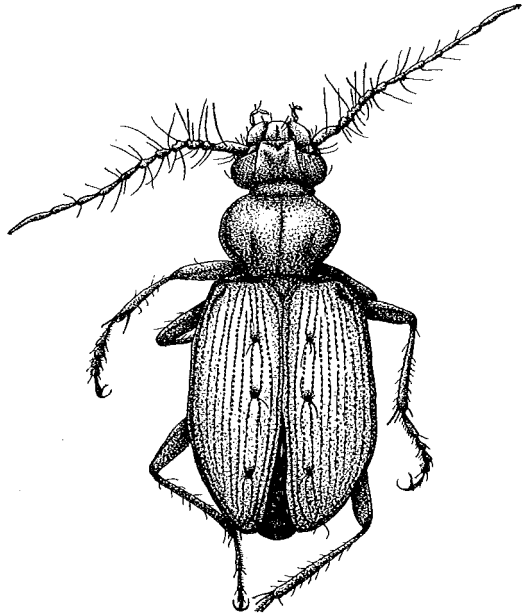
1. *Abax parallelepipedus* P & M (= *ater* Vill.): Moist, deciduous forests and other moist, shaded localities. Reproduction in summer; cycle not clear, possibly biennial and adults reproducing during several seasons. Brachypterous. European species (not far to the North: hardly found in S-Scandinavia).
6. *Agonum assimile* Payk.: Moist, shady localities with deciduous trees (also hedgerows). Spring reproducer with part of the adults reproducing during several years. Macropterous but the wings are small, probably hardly suitable for flying. Palearctic species.
8. *Agonum ericeti* Panz.: *Erica*-heath, peat-bogs and floating *Sphagnum*-vegetations. Spring reproducer. Brachypterous. North-palearctic species (in Europe boreo-montane).
9. *Agonum fuliginosum* Panz.: Moist-wet sites shaded by deciduous trees or tall grasses. Spring reproducer. Dimorphic (fullwinged ind. more frequent than in Scandinavia). Palearctic species.
17. *Agonum obscurum* Hbst.: Moist-wet localities with a dense vegetation (e.g. *Erica*, grasses, mosses), no preference for woodland (compare: LINDROTH, 1945). Spring reproducer. Dimorphic but fullwinged ind. are very rare. Circumpolar species, distributed in Europe as far as the northern Mediterranean.
18. *Agonum sexpunctatum* L.: Unshaded, moist-wet, sparsely vegetated sites, preferably on bar spots (often originating from recent disturbances). Spring reproducer. Macropterous. Palearctic species.
22. *Amara apricaria* Payk.: Unshaded, dry sites, often with a more or less weedy vegetation (recent disturbances); highly favoured by human activities. Reproduction in late summer. Macropterous. Circumpolar species, distributed throughout Europe.
25. *Amara brunnea* Gyll.: Light, dry forests (mainly birches). Reproduction usually in August. Macropterous. Circumpolar species; in Europe in the northern diluvial areas and in the mountains of Central Europe (not in the British Isles, and hardly in France).
26. *Amara communis* Panz.: Mainly grass (often more or less weedy) vegetations, on the one hand in wet, meadow-like localities (*communis* s.s. ?), on the other hand in moist-dry, heathy localities (*pulpani* Kult ?). Spring reproducer. Macropterous. Palearctic species.
29. *Amara equestris* Dfts.: Mosaicly structured heath vegetations. Reproduction in autumn. Macropterous but the wings are small, probably hardly suitable for flying. Palearctic species.
30. *Amara famelica* Zimm.: Moist *Calluna*-heath, preferably at more exposed sites (e.g. with sparse, short grasses). Spring reproducer. Macropterous. Palearctic species, in Europe mainly eastern: in Eastern Fennoscandia, not in France, only at a few sites (rare) in S-England.

31. *Amara familiaris* Dfts.: All kinds of (usually) unshaded localities with preference for waste sites with a dense, weedy vegetation. Spring reproducer. Macropterous. Palearctic species.
33. *Amara infima* Dfts.: Blown sand localities with a sparse mosaic vegetation. Reproduction in winter (interrupted by periods of frost). Dimorphic with a low frequency of fullwinged ind. Palearctic species, in Europe mainly central.
34. *Amara lunicollis* Schiödte: Grass vegetations; especially abundant in grassy sites in heath and peat moor. Spring reproducer. Macropterous. Palearctic species.
35. *Amara plebeja* Gyll.: Weedy grass vegetations, and therefore highly favoured by human activities. Spring reproducer; hibernation in woodland. Macropterous. Palearctic species.
37. *Amara pseudo-communis* Burak: Light, dry forests (mainly birches). Reproduction in late spring or summer. Macropterous. Continental Europe (as far as known).
38. *Amara quenseli* Schönh.: Blown sand areas with a sparse mosaic vegetation. Reproduction in autumn. Macropterous. North-Palearctic species (probably about boreo-alpine).
54. *Bembidion lampros* Hbst.: Moist (-dry) exposed soil with a sparse vegetation, agricultural fields inclusive. Spring reproducer. Dimorphic. Palearctic species.
56. *Bembidion nigricorne* Gyll.: *Calluna*-vegetations, with preference for the dryer parts (blown sand). Reproduction apparently in winter (interrupted by periods of frost); young adults in spring. Brachypterous. Northwestern Europe (around the North Sea and Baltic Sea).
60. *Bembidion tetracolum* Say (= *ustulatum* L.): Moist, weedy vegetations (on wet loam also where the vegetation is sparse). Highly favoured by human activities. Spring reproducer. Dimorphic. Palearctic species.
62. *Bradycellus collaris* Payk.: Heath vegetations, with preference for mosaically structured ones. Reproduction apparently in winter. Dimorphic with a rather low frequency of fullwinged ind. Palearctic species.
64. *Bradycellus harpalinus* Serv.: Mainly heath vegetations, with more preference for the dryer sites than in *collaris*, also in disturbed (heathy) sites. Reproduction apparently in winter; young adults in summer. Dimorphic with a high frequency of fullwinged ind. West-Palearctic species (not far to the North).
65. *Bradycellus ruficollis* Steph. (= *similis* Dej.): Moist (-dry) heath and peat moor with preference for *Calluna*-vegetations. Reproduction in winter, young adults in spring. Macropterous. Euromediterranean species.
66. *Brosicus cephalotes* L.: Blown sand without or with only sparse vegetation (where it makes deep burrows). Reproduction in summer. Macropterous (but the elytra are joined at the suture). Palearctic species.
68. *Calathus erratus* Sahlb.: Sandy localities, also moist-dry parts of the heath (especially where the vegetation is not closed). Reproduction in autumn, with part of the adults reproducing during more than one season; larvae surface-active in winter. Dimorphic but fullwinged ind. are very rare. Palearctic species.
69. *Calathus fuscipes* Goeze: Dense (often weedy) vegetations, also meadows, and light forest (e.g. birches). Reproduction in autumn. Dimorphic with a very low frequency of fullwinged ind. West-Palearctic species.
70. *Calathus melanocephalus* L.; Moist (-dry) areas with an about closed vegetation, with some preference for grassy sites; very abundant in mosaically structured heath vegetations. Reproduction in autumn, with part of the adults reproducing during a second season. Dimorphic but fullwinged ind. are very rare. Palearctic species.
73. *Calathus piceus* Mrsh.: Borders of deciduous forest and small groups of deciduous trees. Reproduction in summer, with part of the ind. reproducing during a second season. Dimorphic, with a low frequency of brachypterous ind. Amphi-atlantic species, in Europe extremely western, only a century ago the species also immigrated into Northwestern-Germany (HORION, 1941).
75. *Carabus arvensis* Hbst.: Moist-dry fields, with a preference for mosaically structured heath

- vegetations. Spring reproducer with surface-active larvae in summer. Brachypterous. Palearctic species.
76. *Carabus cancellatus* Illig.: All kinds of unshaded localities varying from floating *Sphagnum* up to blown sand; probably not on cultivated soil, and only infrequently in waste sites (compare: LINDROTH, 1945). Reproductive period not clear (spring or summer, or both?). Brachypterous. Palearctic species, not established in the British Isles (only occasionally introduced).
 78. *Carabus nemoralis* Müll.: Moist localities shaded by deciduous trees and/or tall weeds, e.g. hedgerows, gardens, orchards, farmyards, small forests, waste sites. Spring reproducer; larvae surface-active in summer. Brachypterous. European species.
 79. *Carabus nitens* L.: In different kinds of unshaded (heathy) habitat with a short vegetation, both in very wet and in rather dry sites. Spring reproducer? (Larvae also in spring). Brachypterous. European species, mainly in the eastern parts of Europe.
 80. *Carabus problematicus* Hbst.: Dry forests, also in coniferous plantations (compare: LINDROTH, 1945). Reproduction in autumn: larvae surface-active during winter and early spring. Brachypterous. European species, mainly in the western parts of Europe.
 82. *Cicindela campestris* L.: In different kinds of unshaded localities with a short and/or mosaically structured vegetation. Spring reproducer. Macropterous and often flying. Palearctic species.
 84. *Cicindela hybrida* L.: Blown sand localities with a sparse vegetation. Spring reproducer. Macropterous and often flying. Palearctic species.
 86. *Clivina fossor* L.: In different kinds of (usually heathlike) localities, and in agricultural fields; it digs burrows. Spring reproducer. Dimorphic with a high frequency of fullwinged ind. Circumpolar species.
 88. *Cymindis macularis* Dej.: Sandy localities with a mosaically structured vegetation. Reproduction in spring and summer (two groups?). Brachypterous. Palearctic species, in Europe mainly northeastern, not in the British Isles.
 89. *Cymindis vaporariorum* L.: Moist (-dry) heath and peat moor. Reproduction in summer. Dimorphic with a low frequency of fullwinged ind. Palearctic species, in Europe about boreo-montane.
 94. *Dyschirius thoracicus* Rossi (= *arenosus* Steph.): Moist, sandy sites without or with only sparse vegetation (not necessarily near open water). Spring reproducer. Macropterous. Palearctic species.
 95. *Dyschirius globosus* Hbst.: All kinds of unshaded, moist localities; especially abundant in heath and peat moor. Spring reproducer. Dimorphic but fullwinged ind. are very rare. Palearctic species.
 102. *Harpalus fuliginosus* Dfts.: Mosaically structured vegetations in the heath, especially those parts where the vegetation is not closed. Reproduction in June, July. Macropterous. Palearctic species, in Europe mainly eastern, not in the British Isles.
 103. *Harpalus latus* L.: Grass vegetations (also those with a more or less weedy character), sometimes in sites shaded by deciduous trees; especially abundant in mosaically structured heath vegetations in which many grass patches. Reproduction late in spring; young adults in autumn. Macropterous but the wings are small, probably hardly suitable for flying. Palearctic species.
 104. *Harpalus rufipes* de Geer (= *pubescens* Müll.): Waste and other disturbed sites, agricultural fields; highly favoured by human activities. Reproduction in summer. Macropterous. Palearctic species.
 105. *Harpalus quadripunctatus* Dej.: Moist, deciduous forests (more at the borders than in the centre). Spring reproducer. Macropterous. Palearctic species, in Europe about boreo-montane.
 106. *Harpalus rufitarsis* Dfts.: Mainly grass (often more or less weedy) vegetations, also in grassy (moist-dry) parts of the heath. Reproduction in summer. Macropterous. West-Palearctic species (not far to the North: hardly found in S-Scandinavia).
 109. *Leistus rufescens* F.: All kinds of more or less vegetated sites (not especially moist sites), no

- clear preference for woodland (compare: LINDROTH, 1945). Reproduction in autumn; larvae surface-active in winter. Macropterous but the wings are rather small, it may be doubted whether they can be used for flying. North-Palaearctic species, in central Europe mainly in the mountains.
110. *Leistus rufomarginatus* Dfts.: Dry (-moist), deciduous forests. Reproduction in autumn; larvae surface-active in winter. Macropterous. North-Central Europe and Caucasus. Not farther to the North than S-Sweden; not farther to the West than the Netherlands, only recently immigrated into S-England.
 112. *Loricera pilicornis* F.: All kinds of moist to wet sites with at least some vegetation (no relation with open water, compare: LINDROTH, 1945), also – and sometimes even abundant – in man-made sites; in natural localities with a clear preference for sites shaded by deciduous trees. Spring reproducer. Macropterous. Circumpolar species, distributed throughout Europe.
 114. *Metabletus foveatus* Fourcr.: Mainly in the dryer parts of heathlike vegetations, especially when the vegetation is not dense and/or mosaicly structured. Spring reproducer. Dimorphic but full-winged ind. are very rare. Palaearctic species.
 115. *Metabletus truncatellus* L.: Dense and weedy grass vegetations. In the coastal dunes of the Netherlands also in rather stable semi-natural grass vegetations and in light forests. Spring reproducer. Dimorphic but fullwinged ind. are very rare. Palaearctic species.
 117. *Nebria brevicollis* F.: Especially abundant in localities shaded by deciduous trees, but sometimes also (more sparse) in more open sites; somewhat favoured by human activities. Reproduction late in autumn; the larvae show a very high surface-activity during winter and early spring. Macropterous. West-Palaearctic species.
 118. *Nebria salina* Fairm.: Moist heathlike vegetations and recently disturbed peat moor. Reproduction in autumn. Macropterous. Western Europe.
 119. *Notiophilus aquaticus* L.: Especially abundant in all kinds of moist (-dry) heathlike vegetations. Reproductive cycle apparently very irregular (young adults throughout the whole year). Dimorphic with a low frequency of fullwinged ind. Circumpolar species, distributed throughout Europe.
 120. *Notiophilus biguttatus* F.: All kinds of forest (also in coniferous plantations), with preference for the borders and for small groups of deciduous trees (often birches). Probably spring reproducer with a somewhat irregular cycle (young adults both in spring and in autumn). Dimorphic with a rather high frequency of fullwinged ind. European species (also in the Caucasus).
 121. *Notiophilus germinyi* Fauv. (= *hypocrita* Curt.): Dry sites in heath and blown sand localities with a vegetation of *Calluna*; also in sandy sites slightly shaded by birches. Reproduction in August, September. Dimorphic with a low frequency of fullwinged ind. European species.
 122. *Notiophilus palustris* Dfts.: Moist-dry sites shaded by deciduous trees or tall grasses. Spring reproducer. Dimorphic with a rather low frequency of fullwinged ind. Palaearctic species.
 124. *Notiophilus rufipes* Curt.: Dry (-moist), deciduous forests. Spring reproducer (?). Macropterous. West-Palaearctic species. In Europe mainly western and not far to the North: hardly found in Denmark, not known from Scandinavia.
 125. *Olisthopus rotundatus* Payk.: Moist (-dry) localities with a heathlike vegetation. Reproduction in autumn. Dimorphic. West-Palaearctic species.
 130. *Pterostichus angustatus* Dfts.: Sites where wood has been burned. Spring reproducer. Macropterous. European species, mainly in Central Europe (not far to the North).
 132. *Pterostichus versicolor* Sturm (= *coerulescens* L.): Especially abundant in moist-dry heathlike vegetations, but also in some kinds of weedy grass vegetations. Reproduction in spring with part of the adults reproducing during several years; young adults in autumn. Macropterous but the wings are small, probably hardly suitable for flying. Palaearctic species.
 133. *Pterostichus diligens* Sturm: Moist (-dry) grass vegetations in heath and peat moor; also in wet (grassy) moor vegetations. Spring reproducer; young adults in autumn. Dimorphic with a

- low frequency of fullwinged ind. Palearctic species.
134. *Pterostichus lepidus* Leske: Dry-moist parts of the heath, with some preference for mosaicly structured vegetations. Reproduction in June, July; young adults in autumn. Brachypterous. Palearctic species.
 135. *Pterostichus minor* Gyll.: Floating moor vegetations and other wet sites with a dense vegetation. Spring reproducer. Dimorphic with a low frequency of brachypterous ind. Palearctic species.
 136. *Pterostichus niger* Schall.: All kinds of localities, also more or less weedy ones, with some preference for shaded, transitional sites. Reproduction in summer and autumn; larvae surface-active in winter. Macropterous but the wings are small, probably hardly suitable for flying. Palearctic species.
 137. *Pterostichus nigrita* F.: Wet localities with a dense vegetation (e.g. moor vegetations, whether floating or not); hibernation in dryer sites. Spring reproducer. Macropterous. Palearctic species.
 138. *Pterostichus oblongopunctatus* F.: All kinds of forests, also in coniferous plantations. Reproduction in spring, with part of the adults reproducing during several years; young adults in autumn. Macropterous but the wings are small, probably hardly suitable for flying. Palearctic species.
 139. *Pterostichus strenuus* Panz.: Moist localities shaded by deciduous trees, and in dense (often weedy) grass vegetations. Spring reproducer. Dimorphic. Palearctic species.
 140. *Pterostichus vernalis* Panz.: Many kinds of moist-wet sites; favoured by human activities (e.g. in meadows and farmyards). Spring reproducer. Macropterous. Palearctic species.
 141. *Pterostichus melanarius* Illig. (= *vulgaris* L.): Moist, man-made localities with a (usually) dense vegetations (e.g. meadows, farmyards, orchards, many kinds of agricultural fields, disturbed natural sites). Reproduction in late summer; larvae surface-active in winter. Dimorphic with a low frequency of fullwinged ind. Palearctic species.
 146. *Trechus obtusus* Er.: Moist sites shaded by deciduous trees; often in dense (usually weedy) vegetations. Reproduction in autumn. Dimorphic with low frequency of fullwinged ind. Euromediterranean species.
 148. *Trechus secalis* Payk.: Moist, deciduous forests. Reproduction in autumn. Brachypterous. Palearctic species, in Europe mainly central.
 149. *Trichocellus cognatus* Gyll.: Moist-dry *Calluna*-vegetations. Reproduction apparently in winter (interrupted by periods of frost) and early spring; young adults late in spring. Macropterous. Circumpolar species, only in the northern parts of Europe: not in France, only in North-Germany, along the Baltic coasts.
 150. *Trichocellus placidus* Gyll.: Moist, deciduous forests (also in small groups of deciduous trees). Reproduction apparently in winter (interrupted by periods of frost) and early spring; Young adults late in spring. Macropterous. Palearctic species, not in the southern and southwestern parts of Europe, in the central parts of Europe rare (HORION, 1941).



A: *Loricera pilicornis*, a species that inhabits many kinds of moist places (8 times natural size).

For the sake of completeness, below we also give some information on the 74 species the data of which were not involved in the analyses of this paper (cf. 4.1). Given are:

N: the number of specimens caught in standard-sets of pitfalls covering 175 year-samples taken from 73 natural sites during 9 years (1959 up to and including 1967).

j: the number of year-samples in which ind. of the pertinent species were present.

Habitat group (compare: 4.3, Tables 1 and 4): Apart from the habitat groups defined in the Glossary (D, E, F, G and H) the following abbreviations are used:

G (D), very wet (instable) sites in woodlike habitats;

G (F), very wet (instable) sites in peat moor, or floating *Sphagnum*-vegetations;

H (agr.), species highly favoured by human activities, i.e. also occupying agricultural fields, and/or waste sites, farmyards, etc.;

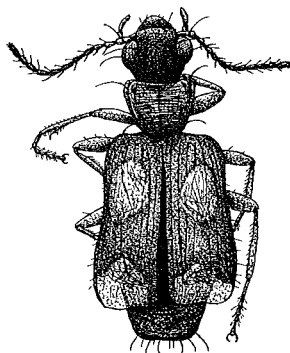
(agr.?), habitat not clear, but probably inhabiting dry sites disturbed by human activities.

Dispersal group (compare: 4.2 and Table 3): A-, B- and C-species as defined in the Glossary (macr. = macropterous, dim. = dimorphic and brach. = brachypterous wings).

Distributional area (compare: 8.2 and Table 13): definitions as above; Centr. = not living here near the fringes of geographical distribution.

species	N	j	Habitat group	Dispersal group	Distributional area
2 <i>Acupalpus dorsalis</i> F	57	12	G	macr. B	Palaearctic: Centr.
3 <i>Acupalpus dubius</i> Schilsky	27	5	F	macr. C	W-Europe: N-fringe
4 <i>Acupalpus exiguus</i> Dej.	2	2	G (D)	macr. B	Palaearctic: Centr.
5 <i>Acupalpus flavicollis</i> Sturm	2	2	G	macr. B	W-Palaearctic: Centr.
7 <i>Agonum dorsale</i> Pontopp.	43	27	H (agr.)	macr. B	Palaearctic: Centr.
10 <i>Agonum gracile</i> Sturm	13	5	G (F)	macr. B	Palaearctic: Centr.
11 <i>Agonum krynickii</i> Sperk.	8	5	F	macr. C	E-Palaearctic: W-fringe
12 <i>Agonum livens</i> Gyll.	1	1	D	macr. C	Palaearctic: Centr.?
13 <i>Agonum marginatum</i> L.	25	11	G	macr. C	W-Palaearctic: Centr.
14 <i>Agonum moestum</i> Dfts.	64	24	D	macr. B	Palaearctic: Centr.
15 <i>Agonum muelleri</i> Hbst.	41	27	H	macr. B	Palaearctic: Centr.
16 <i>Agonum munsteri</i> Hellén	1	1	G (F)	macr. C	N-Europe: S-fringe
19 <i>Agonum versutum</i> Sturm	16	4	G	macr. B	Palaearctic: Centr.
20 <i>Agonum viduum</i> Panz.	3	1	G	macr. C	Palaearctic: Centr.
21 <i>Amara aenea</i> de Geer	40	27	H (agr.)	macr. B	Palaearctic: Centr.
23 <i>Amara aulica</i> Panz.	1	1	?	macr. B	Palaearctic: Centr.
24 <i>Amara bifrons</i> Gyll.	9	5	(agr. ?)	macr. B	W-Palaearctic: Centr.
27 <i>Amara consularis</i> Dfts.	18	8	(agr. ?)	macr. B	Palaearctic: Centr.
28 <i>Amara convexior</i> Steph.	11	11	H	macr. B	Palaearctic: Centr.
32 <i>Amara fulva</i> Müll.	65	23	E	macr. B	Palaearctic: Centr.
36 <i>Amara praetermissa</i> Sahlb.	23	13	E	macr. C	Palaearctic: Centr.
39 <i>Amara similata</i> Gyll.	16	13	H (agr.)	macr. B	Palaearctic: Centr.
40 <i>Amara spreta</i> Dej.	1	1	E+agr.	macr. C	Palaearctic: Centr.?
41 <i>Amara tibialis</i> Payk.	3	3	E	macr. C	Palaearctic: Centr.
42 <i>Anisodactylus binotatus</i> F.	48	22	H (agr.)	macr. B	Palaearctic: Centr.
43 <i>Anisodactylus nemorivagus</i> Dfts.	6	3	F	macr. C	W-Palaearctic: N-fringe
44 <i>Asaphidion flavipes</i> L.	23	17	H (agr.)	macr. B	Palaearctic: Centr.
45 <i>Asaphidion pallipes</i> Dfts.	9	3	E	macr. C	Palaearctic: Centr.
46 <i>Badister bipustulatus</i> F.	12	9	D	(m)? A?	Circumpolar: Centr.
47 <i>Badister dilatatus</i> Chaud.	2	1	G (D)	macr. C	Palaearctic: N-fringe
48 <i>Badister unipustulatus</i> Bon.	2	1	G (D)	macr. C	W-Palaearctic: N-fringe
49 <i>Bembidion assimile</i> Gyll.	1	1	G	dim. C	Palaearctic: Centr.
50 <i>Bembidion doris</i> Gyll.	2	2	G (D)	macr. C	Palaearctic: Centr.
51 <i>Bembidion femoratum</i> Sturm	4	3	E	macr. C	Palaearctic: Centr.
52 <i>Bembidion guttula</i> F.	13	11	G (D)	dim. C	Palaearctic: Centr.
53 <i>Bembidion humerale</i> St.	6	2	G (F)	macr. C	Europe: W-fringe
55 <i>Bembidion minimum</i> F.	1	1	G	macr. C	Palaearctic: Centr.
57 <i>Bembidion quadrimaculatum</i> L.	9	5	G	macr. B	Circumpolar: Centr.
58 <i>Bembidion bruxellense</i> Wesm. (= <i>rupestre</i> L.)	13	4	G	macr. B	Palaearctic: Centr.
59 <i>Bembidion unicolor</i> Chaud.	27	1	D	brach. A	Palaearctic: Centr.
61 <i>Blethisa multipunctata</i> L.	7	4	G	macr. C	Circumpolar: Centr.
67 <i>Calathus ambiguus</i> Payk.	21	7	E	dim. C	Palaearctic: Centr.
71 <i>Calathus micropterus</i> Dfts.	1	1	D?	brach. A	Palaearctic: Centr.
72 <i>Calathus mollis</i> Mrsh.	1	1	E	dim. C	W-Palaearctic: N-fringe
74 <i>Calosoma inquisitor</i> L.	1	1	D	macr. C	Palaearctic: Centr.
77 <i>Carabus granulatus</i> L.	68	23	D	dim.? A	Palaearctic: Centr.

species	N	j	Habitat group	Dispersal group	Distributional area
81 <i>Chlaenius nigricornis</i> F.	23	20	G (D)	macr. C	Palearctic: Centr.
83 <i>Cicindela germanica</i> L.	1	1	?	macr. C	Palearctic: N-fringe
85 <i>Cicindela sylvatica</i> L.	11	7	E	macr. C	Palearctic: Centr.
87 <i>Cychrus caraboides</i> L.	8	1	D?	brach. A	Europe: Centr.
90 <i>Dromius agilis</i> L.	11	9	D	macr. C	Palearctic: Centr.
91 <i>Dromius melanocephalus</i> Dej.	27	21	H?	macr. C	W-Europe: NE-fringe
92 <i>Dromius quadrimaculatus</i> L.	6	6	D	macr. B	Europe: Centr.
93 <i>Dromius quadrimaculatus</i> Panz.	5	5	D	macr. B	Euromedit.: Centr.
96 <i>Dyschirius politus</i> Dej.	20	4	E	macr. C	Palearctic: Centr.
97 <i>Elaphrus cupreus</i> Dfts	9	8	G	macr. B	Palearctic: Centr.
98 <i>Elaphrus riparius</i> L.	3	3	G	macr. B	Circumpolar: Centr.
99 <i>Harpalus aeneus</i> F.	26	24	H (agr.)	macr. B	Palearctic: Centr.
100 <i>Harpalus anxius</i> Dfts.	30	13	E	macr. C	Palearctic: Centr.?
101 <i>Harpalus distinguendus</i> Dfts.	2	2	E	macr. B	Palearctic: NW-fringe
107 <i>Harpalus smaragdinus</i> Dfts.	1	1	E	macr. C	Palearctic: Centr.
108 <i>Harpalus tardus</i> Panz.	32	9	H?	macr. C	Palearctic: Centr.
111 <i>Leistus spinibarbus</i> F.	3	3	D	macr. C	Euromedit.: N-fringe
113 <i>Masoreus wetterhalli</i> Gyll.	11	7	E	dim. A	Palearctic: N-fringe
116 <i>Miscodera arctica</i> Payk.	16	9	E	macr. C	Circumpolar: S-fringe (nearly boreo-alpine)
126 <i>Oodes helopioides</i> F.	23	1	G (D)	macr. C	Palearctic: Centr.
127 <i>Panageus cruxmajor</i> L.	7	4	G	macr. C	Palearctic: Centr.
128 <i>Patrobus atrorufus</i> Ström.	5	3	D	brach. A	Palearctic: Centr.
129 <i>Pristonychus terricola</i> Hbst.	1	1	mamma- lian burrows	brach. A	Amphi-atlantic: Centr.
131 <i>Pterostichus anthracinus</i> Illig.	4	4	D	dim. C	W-Palearctic: Centr.
142 <i>Stenolophus mixtus</i> Hbst.	1	1	G	macr. B	Palearctic: N-fringe
143 <i>Stenolophus teutonius</i> Schrk.	1	1	G	macr. B	Euromedit.: N-fringe
145 <i>Synuchus nivalis</i> Panz.	53	22	H	dim. C	Palearctic: Centr.
147 <i>Trechus quadristriatus</i> Schrk.	4	3	(agr.?)	macr.? B	W-Palearctic: Centr.



B: *Dromius quadrimaculatus*, a species that lives on trees (8 times natural size).

Part II: THE SAMPLING SITES

Short descriptions of the localities that were sampled during the years 1959 up to and including 1967. Between brackets: number of sampling years. Each sampling site is indicated by one (or more) capital(s) and the name of a village (see map at p. 118). Photographs of 24 of the sites are given on the pages 123–134.

1959:

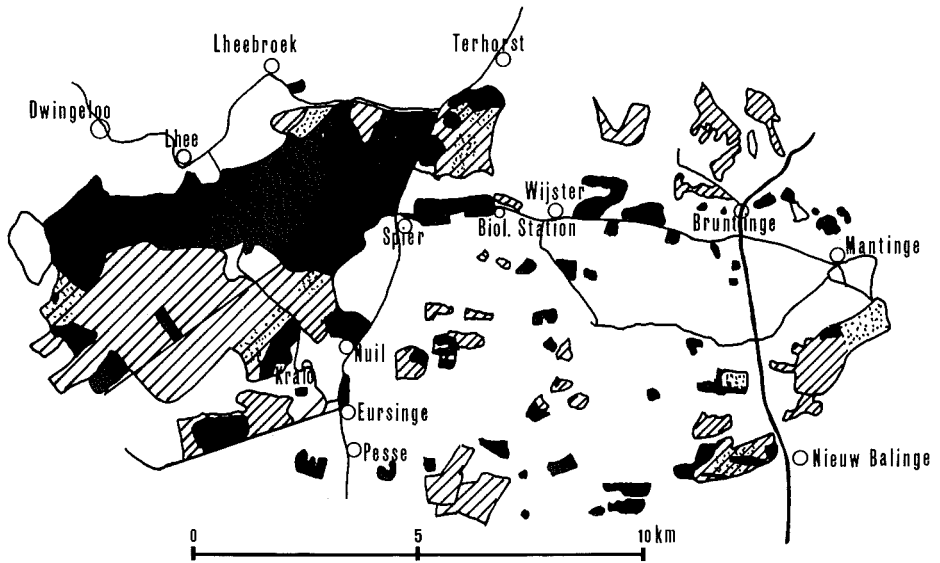
- A: Mantinge: remnant of old, moist forest (oaks, birches) with a closed layer of old holly (*Ilex*) trees (1).
- B: Mantinge: other site in the same forest – similar to A – (8). Photo 1.
- C: Mantinge: 'Thijn's bosje'; remnant of moist forest (oaks, birches, aspen, etc.) with a nearly closed herb layer (8). Photo 2.
- D: Spier: mixed plantation of *Pseudotsuga*, *Picea abies* and *Larix* (1).
- E: Spier: light, dry plantation of poor pine trees with a sparse herb layer of *Calluna* and lichens(1). Photo 3.
- F: Spier: plantation of *Larix* with a vegetation of mosses covering the soil (1). Photo 4.
- G: Spier: small remnant of dry, poor oak forest on blown sand with a thick layer of litter (3). Photo 5.
- H: Wijster: wood of planted (old) oaks on sandy soil (1).
- I: Lheebroek: dense and closed vegetation of *Juniperus*-shrubs on blown sand (very dry); with little other vegetation (1). Photo 6.
- K: Lheebroek: closed vegetation of *Empetrum* on blown sand (1). Photo 7.
- L: Lhee: heath of Dwingeloo; mosaicly structured, rather dry heath vegetation (on sandy soil) with scattered, individual *Juniperus*-shrubs (2).
- M: Kralo: heath of Kralo; extensive, wet-moist, dense vegetation of high *Molinia*-tussocks (8).
- N: Kralo: heath of Kralo; extensive, moist and rather dense vegetation of *Erica* and *Calluna* (8). Photo 8.
- O: Terhorst: moist deepening in the heath, with an old *Calluna*-vegetation, which is inundated in some winters (4).
- P: Terhorst: wet deepening in the heath, with a sparse and short vegetation of *Molinia* and *Gentiana pneumonanthe*, which is inundated every winter and spring (5).
- Q: Wijster: partly floating vegetation of *Sphagnum*, *Eriophorum*, *Oxycoccus*, *Andromeda*, etc. (3). Photo 9.
- RST: Wijster: gradient in a floating vegetation, similar to that of Q, from the firm soil to the open water (1).

17 year-samples in 1959.

1960:

B, C, G, L, M, N, O, P and Q as in 1959.

- U: Mantinge: central part of the remnant of old, moist forest (in which A and B); without holly trees and with a nearly closed herb layer (1).
- V: Mantinge: other site – with a high and dense vegetation of *Pteridium* – in the same forest (1).
- W: Eursinge: dry wood of planted (50 years old) oaks with a closed herb layer of *Vaccinium* (1).
- X: Spier: dry wood of planted (old) oaks and naturally established birches on blown sand, with a thick layer of litter (7). Photo 10.
- Y: Lheebroek: wet (partly inundated in winter), mesotrophic moor with a high and very dense herb vegetation shaded by scattered willows (1).
- Z: Kralo: heath of Kralo; extensive, moist heath of old *Calluna*, which is burned in 1961 (7).



The study area

Black: woodland.

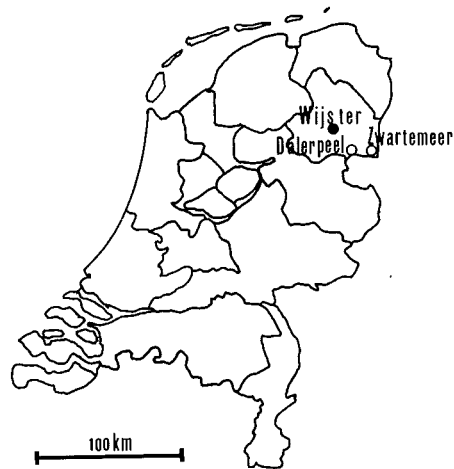
Hatched: heathland.

Stippled: blown sand.

At the left: the Heath of Krato and Dwingeloo.

Note: the extensive woodland area between Spier and Lhee (above the Heath of Krato and Dwingeloo) is a former blowing sand, nowadays nearly completely planted with conifers (also about half of the smaller woodland localities is planted with conifers).

Besides the area around Wijster (above) we sampled two peat moors in the southern parts of Drenthe (Dalerpeel, Zwarte Meer); see map below.



- AA: Lhee: heath of Dwingeloo; wet *Erica*-heath with a closed *Sphagnum*-vegetation covering the sandy soil (1). Photo 11.
- AB: Spier: floating vegetation of *Sphagnum*, *Eriophorum*, *Oxycoccus*, *Andromeda*, etc. (1). 17 year-samples in 1960.

1961:

- B, C, G, M, N, O, P and Q as in 1959; X and Z as in 1960.
- AC: Mantinge: coppice part in the remnant of old moist forest (in which A, B and U) with a dense growth of e.g. *Rhamnus* (1).
- AD: Lheebroek: wood of planted *Quercus rubra* (40 years old) on sandy soil with a thick layer of litter (1).
- AE: Spier: small group of (planted) birches on blown sand, i.e. a dry, hardly shaded, transitional habitat (6). Photo 12.
- AF: Terhorst: part of a *Calluna-Erica* heath that becomes gradually overgrown by some naturally establishing willows and birches, i.e. partly shaded and a dense vegetation of mosses between and underneath the heather plants (1).
- AG: Kralo: heath of Kralo; mosaically structured, moist heath vegetation; in 1961 rather open (i.e. scattered patches of heathlike vegetation with lichens between), but in the course of years gradually closing up (7). Photo 13.
- AH: Terhorst: mosaically structured, dry (blown sand) heath vegetation, with many grass patches, recovering from a heavy attack by *Lochmaea suturalis* (1). Photo 14.
- AJ: Lhee: partly floating vegetation of *Sphagnum*, *Eriophorum*, *Oxycoccus*, *Andromeda*, *Narthecium*, etc. (2). Photo 15.
- TA: Zwarte Meer: remnant of old peat moor covered with a dense vegetation of *Sphagnum* and *Erica*; very wet (1).
- TB: Zwarte Meer: 'Blänke' with a completely floating *Sphagnum*-vegetation (1).
- TC: Dalerpeel: remnant of old peat moor covered with a dense vegetation of *Sphagnum* and *Erica* (1).
- TD: Dalerpeel: other site – similar to TC – in the same peat moor (2). Photo 16. 21 year-samples in 1961.

1962:

- B, C, M, N, O and P as in 1959; X and Z as in 1960; AE, AG, AJ and TD as in 1961.
- AK: Mantinge: 'Noordlagen bos'; remnant of moist forest (dense growth of birches, oaks, etc.); central part with young trees and a herb layer of *Vaccinium* (1).
- AL: Bruntinge: remnant of wet-moist forest (dense growth of birches, willows, etc.) on loam (5).
- AM: Kralo: moist coppice-forest (oaks, birches etc., with a local herb layer of *Trientalis* and *Maianthemum*), which is cut in December 1963 (5). Photo 17.
- AN: Kralo: part of the heath of Kralo that becomes gradually overgrown by naturally establishing pine-trees, i.e. partly shaded and a dense moss-vegetation between and underneath the heather plants (1).
- AO: Terhorst: dry blown sand with a very sparse vegetation (e.g. *Corynephorus*); exposed site (1). Photo 18.
- AP: Spier: dry blown sand with a very sparse vegetation (e.g. *Corynephorus*); site bordered by oak wood at the one side and pine wood at the other (1).
- TE: Dalerpeel: remnants of peat with many tree stubs that have been burned down in 1959; now covered with a weedy vegetation (e.g. *Epilobium angustifolium*) and a dense growth of mosses (1). Photo 19.
- TF: Dalerpeel: remnants of formerly burned peat; now covered with a dense vegetation of *Eriophorum* and *Molinia*; very wet (1).

TG: Dalerpeel: vegetation of old *Calluna* on moist-wet peat (1).
21 year-samples in 1962.

1963:

- B, C, M, N and P as in 1959; X and Z as in 1960; AE and AG as in 1961; AL and AM as in 1962.
AQ: Mantinge: 'Noordlagen bos' (compare AK, 1962); North border, composed of young birches and aspen with a dense herb layer (ivy, brambles, etc.) (1). Photo 20.
AR: Lheebroek: forest of birches on sandy soil with a herb layer of *Molinia* (1).
AS: Bruntinge: transitional habitat near the moist forest (mainly birches; compare AL, 1962), composed of patches of heather and of grasses, with scattered birches between (1).
AT: Kralo: heath of Kralo; flat and higher situated part of the heath, covered with a vegetation that is dominated by grasses (*Festuca*, *Nardus*, etc.), and is studded with patches of *Empetrum* (5). Photo 21.
AU: Nieuw-Balinge: 'Hullen Zand'; blown sand locality with a dry, heathlike vegetation (mainly *Calluna*) (5). Photo 22.
AV: Nieuw-Balinge: 'Hullen Zand': other – and similar – lower situated site in the same locality as AU (5). Photo 23.
17 year-samples in 1963.

1964:

- B, C, M and N as in 1959; X and Z as in 1960; AE and AG as in 1961; AL and AM as in 1962; AT, AU and AV as in 1963.
AW: Mantinge: 'Noordlagen bos' (compare AK, 1962, and AQ, 1963); North border of forest, composed of young birches and aspen with an only local herb layer (1).
AX: Nuil: heath of Kralo; wet deepening in the heath with a sparse and short vegetation of *Molinia*, *Erica* and *Gentiana pneumonanthe*; inundated in winter (1).
AY: Kralo: heath of Kralo; mosaically structured, dry, heathlike vegetation on blown sand (e.g. with *Nardus*, *Empetrum*, *Calluna*, *Festuca*, *Deschampsia*, etc.) (3). Photo 24.
AZ: Nieuw-Balinge: 'Hullen Zand' (compare AU and AV, 1963); low situated site in this blown sand locality with an only sparse vegetation (4).
17 year-samples in 1964.

1965:

- B, C, M and N as in 1959; X and Z as in 1960; AE and AG as in 1961; AL and AM as in 1962; AT, AU and AV as in 1963; AY and AZ as in 1964.
BA: Mantinge: 'Noordlagen bos'; oldest part of this moist forest (mainly big, old oaks) with a locally dense growth of *Pteridium* (1).
BB: Nuil: *Calluna*, died from a heavy attack by *Lochmaea suturalis* (in 1962), on blown sand; the vegetation just starts recovering and will in the following years gradually develop into a mosaically structured one (3).
BC: Mantinge: dense and closed vegetation of *Juniperus*-shrubs on blown sand (very dry); with little other vegetation (1).
BD: Kralo: wood of densely planted (rather young) conifers without herb layer (1).
BE: Kralo: more open wood of rather old pines; locally some herbs covering the (sandy) soil (1).
BF: Kralo: heath of Kralo; mosaically structured, moist heath vegetation, similar to AG (compare 1961), but close to young, naturally establishing pine wood (3).
BG: Kralo: heath of Kralo; other site similar to BF and AG (compare 1961), farther from wood than BF (3).
BH: Kralo: heath of Kralo; other site in the same locality as AT (compare 1963) and with a similar



Photo 1: Sampling site B (Mantinge); April 1962.



Photo 2: Sampling site C (Mantinge); March 1962.



Photo 3: Sampling site E (Spier); March 1962.

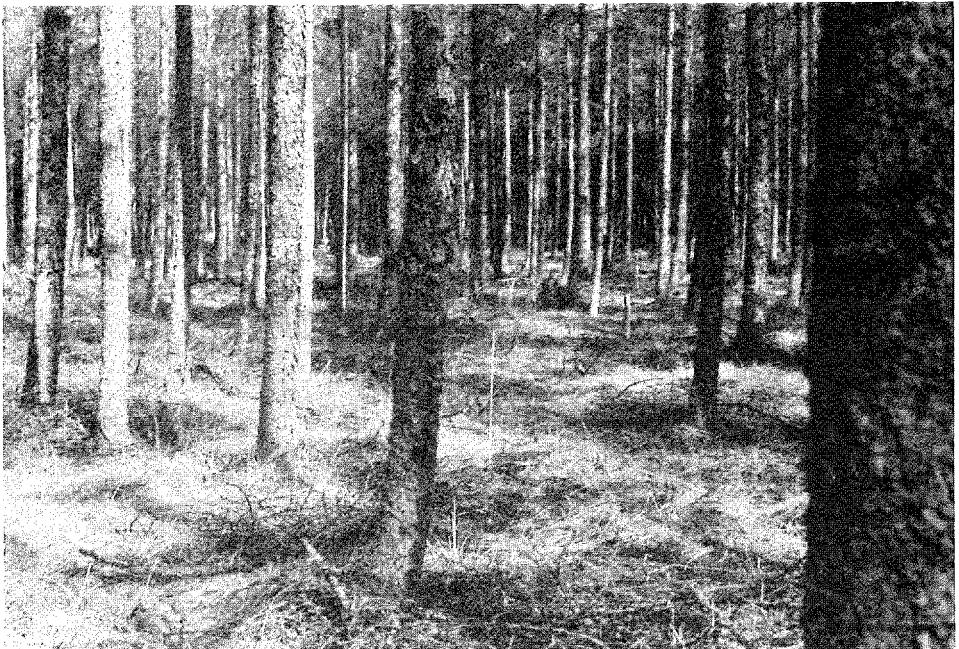


Photo 4: Sampling site F (Spier); March 1962.



Photo 5: Sampling site G (Spir); March 1962.



Photo 6: Sampling site I (Lheebroek); March 1962.



Photo 7: Sampling site K (Lheebroek); March 1962.

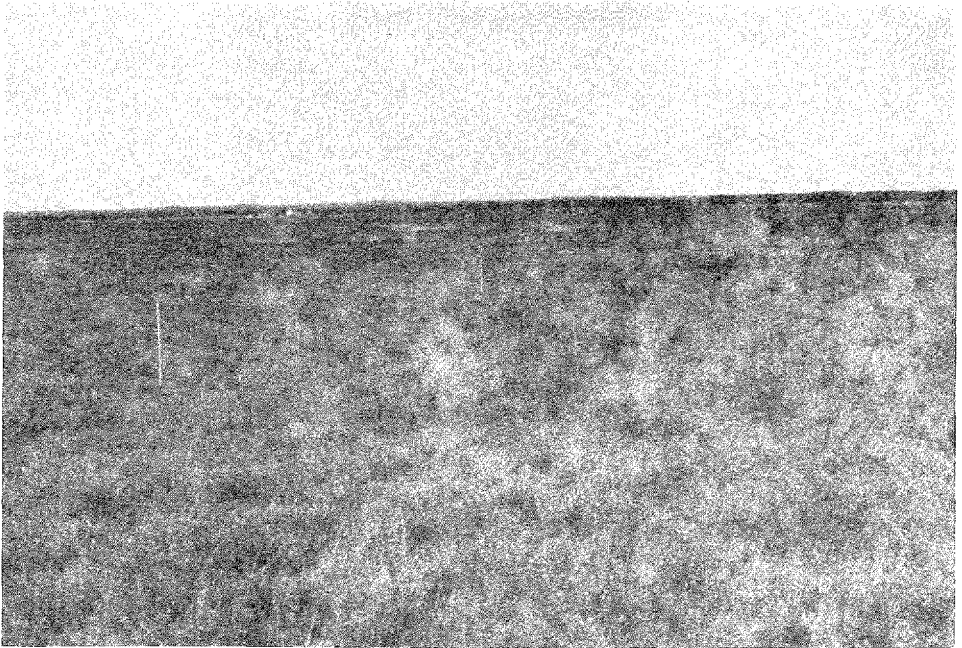


Photo 8: Sampling site N (Kralo); March 1962.



Photo 9: Sampling site Q (Wijster); March 1962.



Photo 10: Sampling site X (Spier); March 1962.



Photo 11: Sampling site AA (Lhee); March 1962.



Photo 12: Sampling site AE (Spier); March 1962.



Photo 13: Sampling site AG (Kralo); March 1962.



Photo 14: Sampling site AH (Terhorst); April 1962.



Photo 15: Sampling site AJ (Lhee); March 1962.



Photo 16: Sampling site TD (Dalerpeel); April 1963.



Photo 17: Sampling site AM (Kralo); August 1962.



Photo 18: Sampling site AO (Terhorst); March 1962.



Photo 19: Sampling site TE (Dalerpeel); April 1963.



Photo 20: Sampling site AQ (Manange); Juli 1964.



Photo 21: Sampling site AT (Kralo); April 1964.



Photo 22: Sampling site AU (Nieuw Balinge); August 1967.



Photo 23: Sampling site AV (Nieuw Balinge); August 1967.

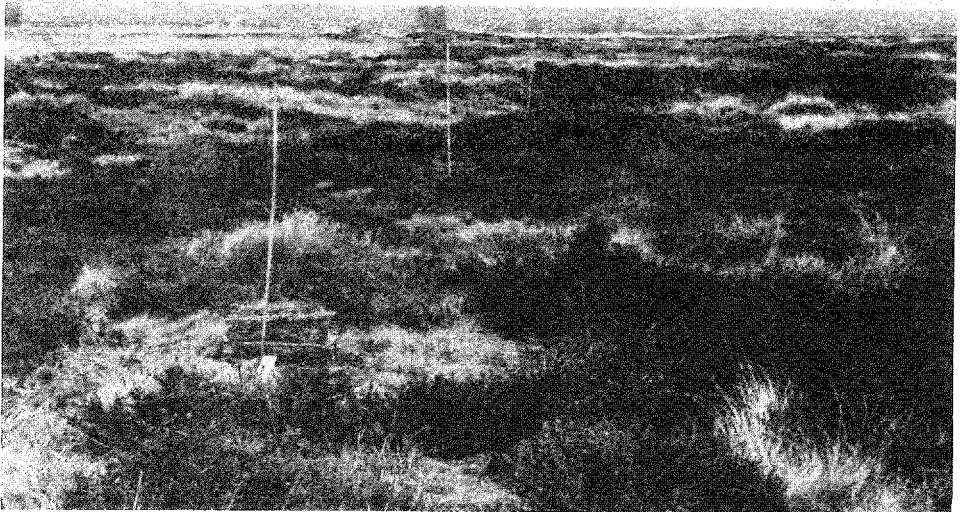


Photo 24: Sampling site AY (Kralo); April 1964.

Part III. THE CARABID SPECIES IN THE SAMPLING SITES

In the following for each of the 74 test species (shortly described in Part I) the catches in the year-samples (taken from the sampling sites shortly described in Part II) are given for each of the nine years of our sampling program. Year-samples without catches are omitted.

We also mention: the total number of specimens caught (N). The number of year-samples with catches (j), the dispersal type (A, B, or C), and the habitat preference, with % of N (cf. Table 4), i.e. D, E, F or G and in the case of eurytopic (H) species between brackets the preference in decreasing order.

species	year	woodland (D)	sand (E)	heath and peat moor (F)	instable (G)	total	
8. <i>Agonum ericeti</i> Panz.	'59			N	Q RST	M	
				2	44 2	5	53
	'60			N Z AA	Q	M	
				9 35 12	40	1	97
	A-species	'61		N Z TA TC TD O	Q AJ TB	M	
	N = 962			24 117 48 12 11 1	2 16 1	1	233
	j = 50	'62		N Z	TD	AJ	
	F (87.2%)			15 96	14	6	131
	'63			AG	N Z		
				1	2 78		81
	'64		AY		N Z	AX	M
			1		10 81	30	2
	'65		BB	BH	BF N Z		M
		3	1	1 38 113		3	
'66		BB AY	AT AG BG N Z			M	
		6 2	1 1 1 12 41			3	
'67		BB	BH AG BG BF				
		12	1 2 1 1				
							17
9. <i>Agonum fuliginosum</i> Panz.	'59	C G H			Q RST		
		1 8 1			1 2		13
	'60	C W G X				P	Y
		1 2 4 2				1	4
	B-species	'61	G AD X AE	AH		M	
	N = 286		9 1 12 1	1		4	28
	j = 71	'62	AK AL AM	AP	O	AN	TF TE
	D (73.1%)		1 1 2 7	1	1	5	2 2 2
	'63	B AQ AL AM		AT AG	Z		M
		2 2 3 2		2 1 1			5
	'64	B AW C AM		AT			M
		1 9 1 7		2			9
	'65	BA AL AM		AG			M
	16 2 5		2			11	
'66	B BK AL	BP BO X BQ AE		BM		M BL BN	
	2 1 4	8 4 13 14 3		2		9 1 3	
'67		BS BO	BB			BR BN	
		3 2	1			2 4	
							12

species	year	woodland (D)	sand (E)		heath and peat moor (F)								instable (G)			total	
22. <i>Amara apricaria</i> Payk.	'59												RST			1	
	'61					AH							AG			3	
						1							2				
B-species N = 178 j = 49 H (E-F)	'62												AG	M	TE	6	
	'63				AE	AU							1	1	4		
					1	1							N			5	
													1	2			
no catches in 1960	'64	AM					AV	AZ		AT			N	AG			
		2					1	5		7			1	5			
	'65					BE	AY	AU	AV	BB	AT	BH	BJ	BG	AG	BF	
						1	1	2	1	7	6	7	9	4	3	2	
	'66									AZ	BB	AT	BH	BJ	BG	AG	BF
										1	11	3	4	5	2	1	2
	'67					BO	BS	AU	AV	AZ	BB	AT	BH	BJ	BG	AG	
						1	2	3	1	2	46	2	1	1	2	3	
																	BR
																	2
																	66
25. <i>Amara brunnea</i> Gyll.	'60		C	V	X												
			1	6	103												
	'61	AC	C		X	AE											
		1	2		170	822											
B-species N = 2926 j = 42 D (98.2%)	'62		B	C	AM	X	AE	AP	AO								
			1	5	2	152	374	6	1								
	'63	AQ	C		AL	X	AR	AE									
		8	28		1	70	4	273									
no catches in 1959	'64	AW	C		AL	X	AE										
		3	8		1	50		173									
	'65		C			X	AE										
			7			76		307									
	'66	BK	C	BP	X	BO	BQ	AE			AZ						
		1	7	16	33	9	1	99			2						
	'67					BO	BS	AV	AZ								
						45	15	1	1								
																	BN
																	BR
																	3
																	38
																	103

species	year	woodland (D)	sand (E)		heath and peat moor (F)					instable (G)				total	
26. <i>Amara communis</i> Panz.	'59		I	L							RST	M	P		
	'60		1	1					Z		1	10	15		
B-species N = 546 j = 62 H (grass)	'61	AD 2			AH 4		N	Z	AG			5	7	Y	
	'62			AE 1			1	1	12			6		71	
	'63							Z	AG			M			
	'64	AM 2	X 1					1	1			2	3		
	'65	AM 3		AE 1	AY 3	AZ 1	AT 27	BH 3	BJ 6		AG 5	BG 4			
	'66	BK 1	AM 1	AE 1			AT 54	BH 20	BJ 20	Z 1	AG 2	BG 2	BF 2	BL 1	BN 8
	'67			BO 3		BB 1	AZ 1	AT 65	BH 27	BJ 15		AG 4	BG 1	BF 2	BN 28
29. <i>Amara equestris</i> Dfts.	'59			L 1				N 3				M 2			
	'60			L 3				N 5				M 2		10	
	'61					AH 25		N 1	AG 45			M 2		73	
	'62				AO 1			N 1	Z 4	AG 66		O 1		73	
	'63						AT 1	N 1	Z 6	AG 81				89	
	'64				AY 17		AT 4	N 1	Z 5	AG 80		AX 1	M 1	109	
	'65				AY 10	BB 3	AT 5	BH 2	BJ 2	N 1	Z 2	AG 41	BF 19	BG 30	115
'66				AY 14	BB 24	AT 10	BH 34	BJ 41			AG 31	BF 73	BG 57	284	
'67			BS 1		BB 32	AT 9	BH 12	BJ 52			AG 38	BF 100	BG 79	323	

species	year	woodland (D)				sand (E)				heath and peat moor (F)				instable (G)				total
30. <i>Amara famelica</i> Zimm.	'59																	
	'60																	
B-species N = 425 j = 57 H (F-G)	'61																	
	'62																	
	'63																	
	'64																	
	'65																	
	'66																	
	'67																	
31. <i>Amara familiaris</i> Dfts.	'59																	
	'60																	
B-species N = 119 j = 48 H (G-D-E)	'61																	
	'62																	
	'63																	
	'64																	
	'65																	
	'66																	
	'67																	

species	year	woodland (D)										sand (E)			heath and peat moor (F)						instable (G)			total		
38. <i>Amara quenseli</i> Schönh.	'63											AU												7		
	'64											AU	AV	AZ										45		
C-species N = 79 j = 10 E (100%)	'65											AU	AZ										10			
	'66											AU	AZ										13			
no catches in 1959, 1960, 1961 and 1962	'67											AU	AZ										4			
54. <i>Bembidion lampros</i> Hbst.	'59	H										E									O				16	
	'60	6										2			Z						O	P			3	
B-species N = 882 j = 63 G (70.8%)	'61	X										AE			Z						O	1			20	
	'62	AK										X	1			N	Z	TD	O	M			TF	TE	289	
	'63	1										1			AU	AV			Z	AS			M			57
	'64	C	AM								AE	AV	AZ			N	Z			1	1			18		
	'65	C	AM								AY	AU	AZ	BB			AG				M			28		
	'66	2	11								1	1	1	6			4				2			104		
	'67		AM	X	BP	BO	AE			AU	AV	AZ	BB	BH	N	Z			BG	BN			104			
			9	1	2	1	2			1	3	1	8	4	1	6			1	64			104			
					BS	BO			AU	AV	AZ	BB			AG	BF	BG				BR	BN	347			
					19	1			2	3	2	17			2	1	1				274	25	347			

species	year	woodland (D)	sand (E)		heath and peat moor (F)			instable (G)			total		
56. <i>Bembidion nigricorne</i> Gyll.	'59	A					N		O		P		
		1					72		9		1	83	
	'60						N		O				
							70		18			88	
A-species N = 3528 j = 45 E (76.7%)	'61	AC					N		O				
		1					97		2			100	
	'62					AO	N	Z	O				
						5	358	4	1			368	
	'63		AE	AU	AV		N	Z					
			1	63	94		102	4				264	
	'64		AY	AU	AV	AZ	N	Z		AX			
			24	34	100	9	19	24		7		217	
	'65		AY	AU	AV	AZ	N	Z	AG				
			44	48	391	82	1	11	1			578	
	'66		AY	AU	AV	AZ	BB	N	Z				
			76	81	287	91	1	5	14			555	
	'67			AU	AV	AZ	BB			AG	BG		
				108	722	424	19			1	1	1275	
60. <i>Bembidion tetracolum</i> Say	'59									Q	RST		
										1	1	2	
	'60		L								AB	P	
			1								1	1	
B-species N = 124 j = 20 G (63.7%) no catches in 1961 and 1965	'62								O			TE	
									1			3	
	'63				AV					AS			
					1					2		3	
	'64				AV	AZ							
					1	1						2	
	'66		BP	BO	AU						BL	BN	
			2	9	2						1	20	
	'67		BS	BO								BR	BN
			22	6								42	6
													76

species	year	woodland (D)	sand (E)										heath and peat moor (F)							instable (G)			total																										
68. <i>Calathus erratus</i> Sahlb.	'59		E	I	K										N							O			RST																								
			10	1	4										205							10			1			231																					
	'60		X												N							Z			O			P																					
			5												110							6			9			2			132																		
	A-species	'61		X		AE					AH					N							Z			AG			O																				
	N = 10,882		37		196					92					32							22			12			5			396																		
	j = 90	'62		X		AE					AP					AO					N							Z			AG			O			AN			TE									
	E (80.9%)		52		165					646					352					33							16			58			21			2			46										
	'63		X		AE					AU					AV					N							Z			AG						P													
			16		132					512					543					1							13			31			128			2			1378										
	'64		X		AE					AY					AU					AV					AZ					N							Z			AG			AX						
			6		138					217					483					636					177					3			23				47			222			7			1959			
	'65				BC		AE					AY					AU					AV					AZ					BB		AT		BH		BJ		N		Z		AG		BF		BG	
		11		48		106					289					350					119					37		1		4		2		3		10		82		183		18							
'66				AE					AY					AU					AV					AZ					BB		AT		BH		BJ		Z		AG		BF		BG		BN				
		55		98					372					420					306					114		6		7		22		9		36		269		20		21									
'67				BS		AU					AV					AZ					BB		AT		BH		BJ		N		Z		AG		BF		BG		BR			BN							
		8		630		855					525					178		2		3		12														38			7			2377							
69. <i>Calathus fuscipes</i> Goeze	'59		H		K																																												
			1		1																							2																					
	'60		X		L																																												
			3		2																							5																					
	A-species	'61		X		AE																																											
	N = 453		3		107																							111																					
	j = 32	'62		X		AE					AP																		TE																				
	E (73.4%)		9		68					13																		13																					
	'63		X		AE										AT												AG																						
			3		78										1												2						84																
'64				AE					AY																																								
				31					1																		32																						
'65				BC		AE																		BF																									
		2		14																				2																									
'66				BQ		AE																		BF			BN																						
		1		1		16																		2			7																						
'67				BS		BO												BB										BF			BR			BN															
		2		5														1										2			20			40			70												

species	year	woodland (D)							sand (E)				heath and peat moor (F)								instable (G)				total			
70. <i>Calathus melamocephalus</i> L.	'59								E	K	L					N					O	RST	M	P				
									3	4	34				129					64	1	156	20			411		
	'60										L				N	Z	AA			O		M	P					
											60				517	196	6			73		145	19			1017		
	A-species	'61							X	AE				AH	N	Z	AG	TA		O	AF	M	P					
	N = 30,887								20	137				222	360	384	652	1		97	5	76	6			1960		
	j = 115	'62							X	AE		AP	AO		N	Z	AG	TD		O	AN	M	P	TE				
	F (78.4%)								33	116		11	307		1131	606	2591	1		227	54	155	8			5249		
		'63							AM	X	AE	AU	AV		N	Z	AG					M	P					
									2	15	147	146	52	2408	661	569	2445					322	7			6774		
	'64							AM	X	AE	AY	AU	AV	AZ	AT					N	Z	AG		AX				
								5	3	189	813	87	32	22	926	177	257	758		64			M		143	3476		
	'65							BE	X	BD	BC	AE	AY	AU	AV	AZ	BB	AT	BH	BJ	N	Z	AG	BF	BG			
								1	2	3	19	58	518	55	36	11	155	238	222	310	61	43	317	143	269	M	9	2470
	'66							X		BO	AE	AY	AU	AV	AZ	BB	AT	BH	BJ	N	Z	AG	BF	BG	M	BN		
								2		1	27	509	60	29	13	481	138	660	560	63	45	352	259	485	9	2	3695	
	'67								BS	BO			AU	AV	AZ	BB	AT	BH	BJ			AG	BF	BG	BR	BN		
								6	2				104	27	13	2125	685	772	824			457	309	485	23	3	5835	
73. <i>Calathus piceus</i> Marsh.	'59	A	B	C		H																						
		3	28	38		9																						78
	'60		B	C	U	V	G	X																				
		34	19	2	1	1	5																					62
	C-species	'61	AC	B	C		AD	X			AE																	
	N = 1264		1	37	35		1	20			5																	99
	j = 56	'62	AK	B	C	AL	AM	X			AE																	
	D (99.4%)		4	38	14	1	4	40			4																	105
		'63		B	C	AL	AM	AR	X			AE																
			64	33	1	3	10	30			5																	146
	'64	AW	B	C	AL		X			AE																		
		8	61	26	2		11			7																		115
	'65	BA	B	C			X	BE		AE																		
		1	38	28			7	4		3																		81
	'66	BK	B	C		AM	BP	X	BO	BQ	AE															BN		
		11	89	64		1	58	6	94	1	4														3	331		
	'67								BO	BS															BR	BN		
									220	22															1	4	247	

species	year	woodland (D)	sand (E)		heath and peat moor (F)						instable (G)				total
84. <i>Cicindela hybrida</i> L.	'62			AP	AO										
				1	9										10
	'64			AV	AZ										
	C-species			2	34										36
	N = 100			AU	AV	AZ									
j = 13	'65		2	16	8									26	
E (100%)	'66		AU	AV	AZ										
no catches			1	3	15									19	
in 1959, 1960, 1961 and 1963	'67		AU	AV	AZ										
			1	1	7									9	
86. <i>Clivina fossor</i> L.	'59		K	L							O				
			1	2							1				
	'60	C		L				Z			O				
	B-species		1					1			2			5	
	N = 208	'61			AH			Z	AG		O		P		
	j = 65				1			1	2		5		1	10	
	F (68.2%)	'62	B	AL	AP			Z			O	AN		TF	TE
			1	4	1			1			6	1		1	2
	'63		AL			AT		Z	AG				P		
			5			2		3	4				1		15
	'64		AL	AY	AU	AZ	AT		N	AG		AX			
		4	1	1	2	4		1	3		1			17	
'65		AL		AU	AV	AZ	BB	AT	BH	BJ	Z	AG	BG		
		1		1	1	1	3	1	12	9	5	9	11	54	
'66	BK		AY		AZ	AT	BH	BJ	Z	AG	BF			BN	
	1		1		1	11	7		5	2	1			8	
'67				AV	AZ	BB	AT	BH	BJ	AG	BG			BR	BN
				1	4	1	1	16	5	2	4			2	11
														47	
88. <i>Cymindis macularis</i> Dej.	'62				AO										
					7										7
	'63			AU	AV					AG					
				5	17					2					24
	A-species	'64		AY	AU	AV	AZ			AG					
	N = 308			3	14	10	11			1				39	
	j = 29	'65	BC	AY	AU	AV	AZ	BB		AG	BF	BG			
	E (93.5%)		1	9	12	12	10	2		8	3	2		59	
no catches	'66		AY	AU	AV	AZ	BB								
in 1959, 1960, and 1961	'67		5	13	11	15	9				BF	BG		53	
				AU	AV	AZ	BB				2	1		126	
				23	24	16	60								

species	year	woodland (D)							sand (E)		heath and peat moor (F)				instable (G)		total
105. <i>Harpalus quadripunctatus</i> Dej.	'59	A	B	C													
		1	3	5													9
	'60		B	C	U	V		X								Y	
		7	9	2	9			1								2	30
	'61	AC	B	C					AE								
		9	6	7					1								23
	C-species																
	N = 325	'62	AK	B	C	AL	AM		X	AE				AN			
	j = 48		1	9	12	4	34		1	3				1			65
	D (99.1%)	'63	AQ	B	C	AL	AM		X	AR	AE		AG				
			5	13	14	2	22		1	3	1		1				62
	'64	AW	B	C	AL	AM		X			AE						
		14	19	27	4	22		1			1						88
'65	BA		C		AM				BD								
	8		4		4				2							18	
'66	BK	B	C	AL	AM				BQ								
	2	1	7	2	16				1							29	
'67															BN		
															1	1	
<hr/>																	
106. <i>Harpalus rufitarsis</i> Dfts.	'59								K								
									1								1
'60												Z			P		
												1			1		2
B-species	'61												AG				
N = 124													2				2
j = 32	'63										AT						
H (grass)											1						1
no catches	'64								AE	AU			AT		AG		
in 1962									1	1		1		1			4
'65		B			AM					AU	BB		BJ		AG		
		1			1					1	2		2		2		9
'66										AU	AV	BB	AT	BH	BJ		BG
										1	1	4	6	35	11		2
'67										AU		BB	AT	BH	BJ		BN
										1		8	5	11	13		1
																BF	BG
																1	1
																BR	BN
																2	2
																	44

species	year	woodland (D)								sand (E)				heath and peat moor (F)				instable (G)				total									
115. <i>Metabletus</i>	'66									BO												BN									
<i>truncatellus</i>										1												36									
L.	'67																					BR BN									
																						4 31 35									
A-species																															
N = 72																															
j = 4																															
G (100%)																															
no catches in																															
1959, 1960,																															
1961, 1962,																															
1963 and 1964																															
117. <i>Nebria</i>	'59	A	B	C	D		G	H	E	I					N				O				P								
<i>brevicollis</i>		7	6	28	1		1	6	2	1					1				1				5								
F.	'60	B C		C V										N				O													
		10 11		1										4				1													
C-species	'61	B C		AD		X						AE																			
N = 907		22 115		11		2						5																			
j = 74	'62	AK	B	C	AL	AM	X						AE				AP				N				TE						
D (87.0%)		1	25	65	26	1	3						20				2				2				11 156						
	'63	B C		AL		X						AE																			
		22 66		28		1						6																			
	'64	B C		AL		AM		X						AE				AV													
		9 60		16 2		1		3						2																	
	'65	BA	B	C	AL	X						AE				AV															
		1	11	15	3	3						3				1								37							
	'66	B C		AL		BQ		X		BP	BO	AE						AV				BH BJ				AG BF				BM	
		4 26		7		41 2		13 7		6						2				1 1				1 1				1			
	'67							BS		BO						AV AZ				BH				AG				BL BN			
								43 22								1 4				1				1				BR BN			
																												30 19 121			

species	year	woodland (D)	sand (E)		heath and peat moor (F)					instable (G)			total							
118. <i>Nebria salina</i>	'59								N		RST	P								
Fairm.	'60								41	Z	1	2	44							
C-species	'61		X						23	2		5	30							
N = 376			5						N	Z										
j = 41	'62	C	X		AP				29	17			51							
H (F-G)		1	1		14				N	Z	AG	O	TE							
	'63			AE	AV				38	7	5	1	143							
				1	2		AT		N	Z	AG		210							
	'64		X		AY	AV		AT	6	2	1		13							
			1		1	2		1	N			AX								
	'65		X					BH					7							
			1					1		Z										
	'66							1					3							
								AT	BH		AG	BF								
	'67							3	2		1	3	9							
								BB	AT		AG	BF	BG							
								2	1		1	4	1							
119. <i>Notio-philus aquaticus</i>	'59	A		E		L			N				M	P						
L.	'60	1		1		13			100				18							
C-species	'61		X			L			N	Z	AA		O	M	P					
N = 9491			1			39			216	48	8		194	3	6					
j = 110	'62		X		AE			AH	TA	N	Z	AG	TC	TD	O	AF	TB			
F (70.9%)			3		42			43	14	178	495	53	48	22	43	1	2			
	'63		X		AE	AU	AV		AT	N	Z	AG								
			2		40	3	12			589	499	126	7	152	88	1				
	'64		X		AE	AY	AU	AV	AZ	AT										
			2		16	182	112		4	457	314	66								
	'65		X		AE	AY	AU	AV	AZ	BB	AT	BH	BJ	N	Z	AG	BF	BG		
			2		29	137	31	27	1	6	189	217	77				AX			
	'66		X		AE	AY	AU	AV	AZ	BB	AT	BH	BJ	N	Z	AG	BF	BG		
			3		19	167	176	315	75	59	20	15	4	302	112	73	30	487		
	'67		X		AE	AY	AU	AV	AZ	BB	AT	BH	BJ	N	Z	AG	BF	BG		
			2		3	9	117	256	151	130	99	35	40	68	130	54	27	235		
				BS	BO		AU	AV	AZ	BB	AT	BH	BJ			AG	BF	BG		
				3	3		138	51	42	283	16	32	14			121	60	275		
																		BR	BN	
																		32	69	1139

species	year woodland (D)									sand (E)		heath and peat moor (F)							instable (G)				total												
136. <i>Pterostichus niger</i> Schall.	'59	A	B	C	F	G	H	E	I	K	L										N				O	Q	RST	M	P						
		5	2	5		2	2	5	2	1	6	28										7				1	33	28	11	6		144			
	'60		B	C	U	V	W	X			L										N	Z	AA		O	Q		M	P	Y					
		5	6	6	3		2	27			20										3	24	6		7	1		11	1	30	152				
	'61	AC	B	C		G	AD	X		AE											N	Z	AG	TA	TD	O	Q	AJ	AF	M	P				
A-species		6	3	2		9	95	34		12											8					6	1	35	7	3		250			
N = 2569	'62	AK	B	C	AL	AM		X		AE		AP	AO								N	Z	AG		TD	O		AJ	AN	M	P	TF	TE		
j = 164		4	2	7	50	60		24		35		42	6								7	20	4		5	6		5	149	17	4	11	130	588	
H (D-G-F)	'63	AQ	B	C	AL	AM		X	AR	AE		AU	AV		AT						N	Z	AG					AS	M	P					
		17	8	5	117	102		63	57	65		14	3		11						29	19	21					134	48	9		722			
	'64	AW	B	C	AL	AM		X		AE	AY	AU		AZ	AT						N	Z	AG				AX								
		11	3	15	37	40		31		21	15	4		4	7						28	29	5				11				32				293
	'65	BA	B	C	AL	AM	BD	BE	X	BC	AE	AY	AU		AZ	BB	AT	BH	BJ	N	Z	AG	BF	BG											
		4	4	2	11	9	7	3	5	4	18	4	4		2	11	3	2	3	20	19	10	1	1						9				156	
	'66	BK	B	C	AL	AM	BQ	BP	X	BO	AE	AY	AU	AV	AZ	BB	AT	BH	BJ	N	Z	AG	BF	BG	BM										
		1	3	3	1	3	3	6	11	1	16	1	1	1	3	6	3	4	5	19	15	11	6	3	15					7	24			206	
	'67						BS			BO						BB	AT	BH	BJ			AG	BF	BG				BR	BN						
							1			1						9	1	3	1			3	8	2				9	20	58					
137. <i>Pterostichus nigrita</i> Payk.	'59	A	B	C	F	G	H	E	I	K	L										N				O	Q	RST	M			273				
		1	2	1		22	4	3	7	2	21	2										4				24	67	106	7						
	'60		B	C	U	V	G	W	X		L										N	Z	AA		O	Q	AB	M	P	Y					
		7	4	10	8	5	2	4			3										13	8	8		20	116	30	8	6	131	383				
	'61	AC	B	C		G	AD	X		AE											N	Z	AG	TA	TD	O	Q	AJ	TB	M	P				
B-species		3	1	1		2	7	3		1						6					3	5	5	3	18	3	3	67	255	35	8	3			432
N = 1799	'62	AK	B	C	AL	AM		X		AE		AP	AO								N	Z	AG	TG	TD			AJ	AN	M	P	TF	TE		
j = 166		2	2	3	15	1		1		1		3	9								6	5	6	2	32			78	4	4	4	7	4	189	
G (60.9%)	'63	AQ	B	C	AL	AM		X	AR	AE		AU	AV		AT						N	Z	AG					AS	M	P					
		10	7	5	3	4		1	2	3		3	2		4						5	4	7					4	10	6		80			
	'64	AW	B	C	AL	AM		X		AE	AY	AU	AV	AZ	AT						N	Z	AG				AX								
		19	5	11	14	7		7		6	18	5	1	1	6						16	11	10				11				10				158
	'65	BA	B	C	AL	AM	BD	BE	X	BC	AE	AY	AU	AV							N	Z	AG	BF	BG										
		10	6	6	4	3	5	2	9	2	6	9	3	3							1	4	6	8	13	7	13				5				125
	'66	BK	B	C	AL	AM	BQ	BP	X	BO	AE	AY	AU	AV		BB	AT	BH	BJ	N	Z	AG	BF	BG	BM										
		7	5	2	1	7	1	2	3	10	7	5	5	1	4	2	1	2	1	9		13	15	12	1					8	1			120	
	'67						BS			BO		AU	AV	AZ	AT	BH	BJ					AG	BF	BG				BR	BN						
							5			2		3	3	1	2	3	1					5	4	5				2	3	39					

species	year woodland (D)							sand (E)		heath and peat moor (F)			instable (G)				total						
150. <i>Trichocellus placidus</i> Gyll.	'59	A	B	C			H																
	67	22	80				1													170			
	'60		B	C	U	V	W	G												Y			
		9	53	3	9	1	1													5	81		
	'61	AC	B	C			AD		AE														
B-species	83	40	102				1		8												234		
N = 2390	'62	AK	B	C	AL	AM			AE		AG		O						M				
j = 66		79	10	24	56	39			1		1		1						1		212		
D (95.3%)	'63	AQ	B	C	AL	AM		X	AR	AE				AS									
		58	39	221	85	49		1	19	8				27							507		
	'64	AW	B	C	AL	AM		X		AE	AU								M				
		99	47	175	125	24		2		4	1								5		482		
	'65	BA	B	C	AL	AM				AE													
		22	15	27	15	20				7											106		
	'66	BK	B	C	AL	AM		BQ	BO	BP	AE		BM						M	BL	BN		
		12	37	25	58	35		17	110	67	5		14						1	19	27	427	
	'67								BO	BS											BR	BN	
									82	74											8	7	171