Chez les lampyres, la femelle aptère brille en permanence jusqu'à ce qu'elle soit trouvée par un mâle ailé.

L'activité photogène des femelles se déclenche dès que la luminosité atteint le seuil de 1,4 lux, indépendamment de toute autre condition météorologique (t°, vent, pluie). Les mâles, par contre, y sont très sensibles: ainsi leur activité est-elle fortement réduite quand il pleut, qu'il y a du vent et/ou lorsque la température est trop basse. En outre, leur activité photogène est conditionnée par un seuil de luminosité environ 40 fois plus faible que celui des femelles; aussi leur vol commence donc bien après que les femelles se soient mises à briller. Les périodes d'activité des mâles et des femelles sont donc asynchrones. Ces défauts de synchronisme sont compensés par le fait que les femelles cessent de briller dès qu'elles se sont accouplées. Au sein d'une population, l'activité photogène est liée par conséquent au nombre de femelles vierges présentes sur le site.

Chez les lucioles, où les deux sexes sont ailés, chaque espèce possède un ensemble "signal - réponse" caractéristique. Les mâles de *Photinus pyralis*, par exemple, émettent un bref éclair. Une femelle y répond, après trois secondes de délai, en produisant un signal plus long. Ainsi orienté, le mâle vole quelques mètres dans sa direction. Il répète son signal et s'oriente à nouveau en fonction de la réponse reçue et ainsi progressivement, jusqu'à ce qu'il rejoigne la femelle.

Muni d'une lampe de poche dont on atténue progressivement à la main la trop forte intensité et en respectant les indispensables trois secondes de délai, il est aisé, d'imiter les réponses de la femelle de ce *Photinus*. Ainsi leurré, le mâle ne tardera pas à venir se poser sur la lampe!

Cette expérience démontre aussi que la couleur de la lumière (sa longueur d'onde) n'intervient pas dans la réception et l'identification de ces signaux. Les seuls éléments déterminants du contact sont la durée et la fréquence des flashes individuels.

Un naturaliste américain, Jim LLOYD, qui a parcouru longtemps les Etats-Unis pour étudier le comportement des *Photuris*, genre de *Luciolini* remarquablement diversifié dans ce pays, a montré que certaines femelles, après avoir été normalement fécondées à l'occasion d'un ballet nuptial de type habituel, continuaient à clignoter mais cette fois en adoptant le rythme caractéristique de femelles du genre voisin *Photinus*. Lorsqu'un mâle de *Photinus*, trompé par cette émission, se pose à proximité de la femelle *Photuris*, celle-ci, avantagée par sa taille et poussée par sa voracité dévore aussitôt celui qui l'avait approchée.

Il faut tout de même préciser que les femelles de *Photuris* peuvent aussi dévorer leur propre mâle après l'avoir attiré par leurs appels lumineux.

Ce comportement tient probablement à ce que les femelles de *Photuris* sont sensibles à des signaux lumineux de rythme anormal et qu'elles y répondent en adaptant leur propre rythme d'émission sur l'émission d'appel.

Dans le Sud-Est asiatique, ainsi qu'à Bornéo et en Nouvelle-Guinée vivent des lucioles du genre *Pteroptyx*. Celle-ci s'assemblent en masses considérables sur les arbres et émettent leurs éclairs non seulement avec une régularité de métronome, mais encore avec une rigoureuse simultanéité.

Les *Pteroptyx malaccae* du Siam, par exemple, émettent leurs éclairs à raison d'un par seconde, -rythme dépendant d'ailleurs de la température ambiante- et la marge d'erreur du synchronisme ne dépasse pas trois millisecondes.

L'enregistrement des éclairs produits par deux individus a montré qu'il y a un ajustement constant du synchronisme. Ainsi, lorsqu'un individu accuse un léger retard par rapport à son voisin, il accélère son rythme d'émission jusqu'à dépasser légèrement la cadence du voisin avant de ralentir la sienne propre. Dès que le contact visuel entre les deux lucioles est interrompu, le synchronisme se détériore.

On est donc amené à considérer que chaque participant au "concert" lumineux synchrone est capable:

* de mémoriser les caractéristiques rythmiques de sa précédente émission ainsi que celles de la luciole voisine,
* de comparer ces deux données,
* de modifier en conséquence la prochaine émission.

On est certes en présence d'un admirable modèle de régulation. Si le résultat est la cohésion sociale d'une population, le bénéfice, lui, reste énigmatique.

6. A part of this note was presented at the meeting of 11 September 1994.

The dolichopodid fauna of coastal habitats in Belgium (Dolichopodidae, Diptera)

by Marc POLLET & Patrick GROOTAERT

Introduction

In regard of habitat conservation, two habitat types in the coastal region are of special interest: dunes and saltmarshes. Dunes are a unique landscape, by most people known as dry sandy areas with very little vegetation. The Belgian coastal dunes, however, offer much more different habitat types such as dune woodland, shrubby patches of *Hippophäe rhamnoides* L., dune slacks, bare sandy areas and dune grassland. The dune landscape in Belgium has been heavily deteriorated recently: from the original 5000 ha about 2700 ha are left nowadays. They face a permanent danger of destruction, not only by fragmentation but most of all by excessive sub-

straction of groundwater. Due to these uncontrolled operations, former wet dune areas dry up and are colonized by shrubs eliminating whole animal and plant communities. Saltmarshes are even more endangered in Belgium than dunes due to their rarity: the only two major ones are De Ijzermonding Nature Reserve at Nieuwpoort (west coast) and Het Zwin Nature Reserve at Knokke (extreme east coast). Due to the fact that they are subject to daily inundation by the sea, they depend strongly upon the sea water quality. Moreover, De Ijzermonding is situated nearby a harbor and might disappear by planned extensions of it. Het Zwin Nature Reserve, on the other hand, recently suffered greatly from digging activities near its mouth by which large areas of sea clay were temporarily covered with sand and thereby became much less attractive to many kinds of invertebrates.

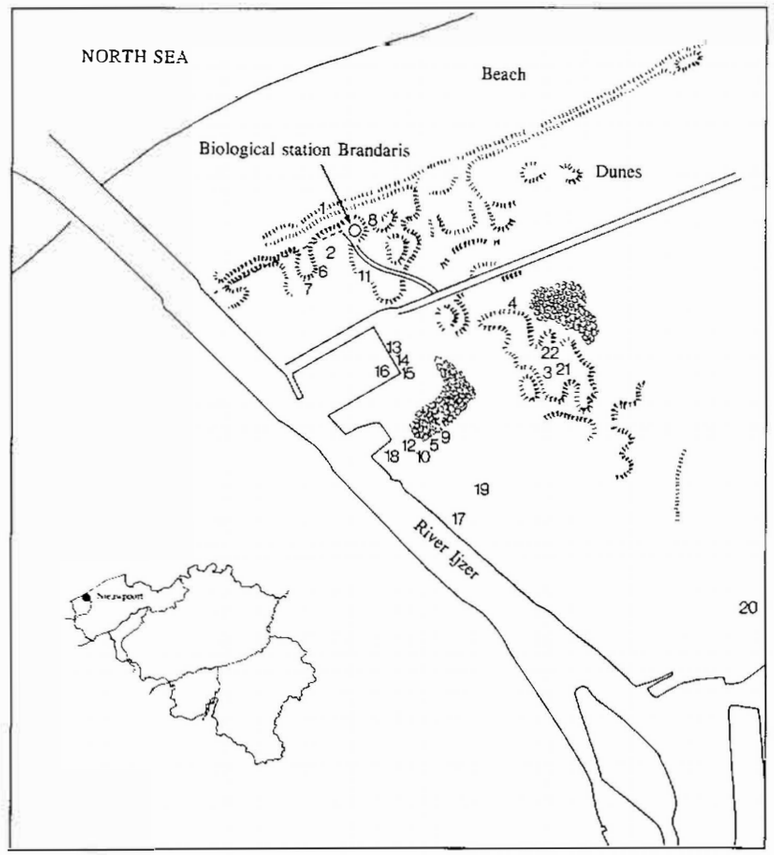
Relatively little is known about the invertebrate faunas of coastal dune habitats in Belgium. Only during the last decades some Belgian scientists started extensive inventories of carabid beetles (Desender *et al.*, 1991a,b) and grasshoppers (Decleer & Devriese, 1992) in this region. Species lists of Carabidae and Araneae from the Military Depot at Lombardsijde were published by Desender & Baert (1992) and Baert & Desender (1993) resp. Concerning Diptera and Dolichopodidae in particular, apart from occasional collections by e.g. Goetghebuer (1925, 1928, 1934), no systematic sampling was carried out until some years ago. Today, species lists of particular dune sites are present for e.g. Empididae (Grootaert & Pollet, 1988, 1989) and Pipunculidae (De Meyer *et al.*, 1989). Very recently, results of both ecological and methodological investigations were published (Pollet & Grootaert, 1993, 1994). Saltmarshes, on the contrary, seem to be well studied in other European countries in particular in respect of their diptera faunas (e.g. Brauns, 1959; Szadziewski, 1983; Meyer & Heydemann, 1990).

In order to establish the diptera fauna of the present dune landscape in Belgium, we started investigations in some areas from 1987 onwards. This was carried out in the frame of a major sampling campaign initiated by the Royal Belgian Institute of Natural Sciences in the early '80s. Its aim was to collect as much information as possible about the distribution and habitat affinity of flying insects and Diptera in particular in our country. During 1989-1992, we focused on the fauna of different habitats within the Military Domain of Lombardsijde (Nieuwpoort) at the west coast.

The main purpose of this paper is to present a list of species collected during this period of investigation and to discuss the ecology of the species characteristic for the coastal region.

Material and Methods

Nieuwpoort is a fishing-village at the west coast of Belgium (Fig. 1). Two aspects make this locality a worthwhile place to collect flies. In the first place, one of the two Belgian littoral saltmarshes is situated along the local fishing-harbor. Secondly, the Military Domain of Lombardsijde occupies the major part of unexploited dune landscape in this area. It includes some rather disturbed but various interesting dune habitats. Therefore, during three successive years (1989-1991), sampling campaigns were conducted in order to establish the Empidoidea fauna. In figure 1, the investigated sites are indicated. Sampling was mainly done in the dunes rather than the saltmarsh area but different dune habitats were investigated during these years as described here:



Map of Nieuwpoort

* 1989: from April till November, 5 habitats were sampled by means of rectangular white water traps (surface: ± 2 dm²) installed at soil surface level: primary marram dunes (1), dune grassland (2), a dune slack (3), dune willow woodland (4) and a sedge bed bordering a willow and poplar (*Populus alba* L.) woodland (5).

* 1990: from May till September, the following 4 habitats were investigated with small white water traps (surface: ± 70 cm²), dug into the soil: primary marram dunes (1), *H. rhamnoides* L. shrubs (6), a reed bed within the dunes (7) and dune grassland (8). During the same year, additionally 9 habitats were sampled during a three-weekly period in summer: the sedge bed (5), the willow-poplar woodland (9), a grassy edge of the former woodland (10), shrubs of *Rubus* sp. within dune grassland (11), 4 different types of short-grazed dune grassland (12-15) and a rocky dock wall (16).

* 1991: from April till September, we focused on the willow-poplar woodland (9), which was investigated with yellow, greenish blue and white water traps either put upon the soil surface or installed on a wooden support at about 60 cm height (see POLLET & GROOTAERT, 1994). Furthermore, from June until August, white water trap sampling was performed in another 4 sites: the saltmarsh of De Ijzermonding Nature Reserve (17), a Lichens dune grassland (18), a wasteland along the saltmarsh (19) and reedbeds along a ditch within the neighbouring polder area (20).

* 1992: from April till September, 4 habitats were sampled in an analogous way as in 1989 with a slightly different trap type (surface: ± 2 dm²): the dune slack (3), a willow edge along this habitat (21), a very dry and open spaced willow woodland (22) and the mature willow woodland (4) (see POLLET & GROOTAERT, 1993).

Besides these systematic sampling, dolichopodids were collected occasionally by sweepnetting during the summer periods of 1989-1991.

Results

In general

Table 1 presents the list of the species collected in the habitats investigated. Over the entire sampling period, 16,219 specimens were collected, belonging to at least 68 species as 23 *Medetera* females could not be identified to species level. One single *Medetera* male appears to belong to a new species, but has not yet been described.

Ecology

Species which made up more than 1% of the total sampling yields, are indicated. Besides eurytopic species such as *Campsicnemus curvipes, Dolichopus claviger, D. ungulatus, Medetera jacula, M. saxatilis, M. truncorum, Sympycnus desoutteri* and *Xanthochlorus tenellus*, other more uncommon species were found in large numbers suggesting that some of the sample sites might be favoured by them.

Table 1. Dolichopodidae collected in several habitat types at Nieuwpoort during 1989-1992.

	MM	FF	Total	%
Aphrosylus ferox HALIDAY, 1851	1	0	1	0,01
Campsicnemus armatus (ZETTERSTEDT, 1849)	5	5	10	0,06
Campsicnemus curvipes (FALLEN, 1823)	89	89	178	1,10
Campsicnemus picticornis (ZETTERSTEDT, 1843)	20	10	30	0,18
Campsicnemus scambus (FALLEN, 1823)	7	2	9	0,06
Chrysotimus molliculus (FALLEN, 1823)	2	2	4	0,02
Chrysotus femoratus ZETTERSTEDT, 1834	36	28	64	0,39
Chrysotus gramineus (FALLEN, 1823)	2	3	5	0,03
Chrysotus neglectus (WIEDEMANN, 1817)	1	1	2	0,01
Chrysotus palustris VERRALL, 1876	51	371	422	2,60
Chrysotus pulchellus KOWARZ, 1874	1099	1106	2205	13,60
Chrysotus suavis LOEW, 1857	3	5	8	0,05
Dolichopus acuticornis WIEDEMANN, 1817	91	201	292	1,80
Dolichopus brevipennis MEIGEN, 1824	4	5	9	0,06
Dolichopus claviger STANNIUS, 1831	1212	1047	2259	13,93
Dolichopus clavipes HALIDAY, 1831	27	29	56	0,35
Dolichopus diadema HALIDAY, 1831	6	4	10	0,06
Dolichopus discifer STANNIUS, 1831	2	0	2	0,01
Dolichopus festivus HALIDAY, 1832	1	0	1	0,01
Dolichopus griseipennis STANNIUS, 1831	4	3	7	0,04
Dolichopus latilimbatus MACQUART, 1827	1	0	1	0,01
Dolichopus longicornis STANNIUS, 1831	1	0	1	0,01
Dolichopus migrans ZETTERSTEDT, 1843	329	160	489	3,01
Dolichopus nubilus MEIGEN, 1824	2	8	10	0,06
Dolichopus plumipes (SCOPOLI, 1763)	5	9	14	0,09
Dolichopus popularis WIEDEMANN, 1817	8	0	8	0,05
Dolichopus signifer HALIDAY, 1831	3	2	5	0,03
Dolichopus strigipes VERRALL, 1875	1	0	1	0,01
Dolichopus ungulatus (LINNAEUS, 1758)	2920	1790	4710	29,04
Hercostomus assimilis (STAEGER, 1842)	1	0	1	0,01
Hercostomus gracilis (STANNIUS, 1831)	346	303	649	4,00
Hercostomus metallicus (STANNIUS, 1831)	2	0	2	0,01
Hercostomus nigriplantis (STANNIUS, 1831)	224	313	537	3,31
Hydrophorus oceanus (MACQUART, 1838)	10	8	18	0,11
Machaerium maritimae HALIDAY, 1832	0	1	1	0,01
Medetera abstrusa THUNEBERG, 1955	1	0	1	0,01

Table 1. (continuation)

	MM	FF	Total	%
Medetera flavipes MEIGEN, 1824	0	5	5	0,03
Medetera impigra COLLIN, 1941	4	0	4	0,02
Medetera jacula (FALLEN, 1823)	100	181	281	1,73
Medetera lorea (NEGROBOV, 1967)	1	0	1	0,01
Medetera micacea LOEW, 1857	305	94	399	2,46
Medetera muralis MEIGEN, 1824	1	0	1	0,01
Medetera petrophiloides PARENT, 1925	242	192	434	2,68
Medetera plumbella MEIGEN, 1824	14	22	36	0,22
Medetera saxatilis COLLIN, 1941	113	69	182	1,12
Medetera truncorum MEIGEN, 1824	458	557	1015	6,26
Medetera sp.	1	23	24	0,15
Micromorphus albipes (ZETTERSTEDT, 1845)	3	6	9	0,06
Muscidideicus praetextatus (HALIDAY, 1855)	5	0	5	0,03
Neurigona quadrifasciata (FABRICIUS, 1781)	56	80	80	0,49
Poecilobothrus nobilitatus (LINNAEUS, 1767)	0	1	1	0,01
Poecilobothrus principalis (LOEW, 1861)	8	8	16	0,10
Rhaphium discolor ZETTERSTEDT, 1838	2	0	2	0,01
Scellus notatus (FABRICIUS, 1781)	65	12	77	0,47
Sciapus laetus (MEIGEN, 1838)	1	20	21	0,13
Sciapus longulus (FALLEN, 1823)	2	1	3	0,02
Sciapus maritimus BECKER, 1918	17	12	29	0,18
Sciapus platypterus (FABRICIUS, 1805)	2	0	2	0,01
Sciapus wiedemanni (FALLEN, 1823)	38	115	153	0,94
Sciapus zonatulus (ZETTERSTEDT, 1843)	0	3	3	0,02
Sympycnus desoutteri PARENT, 1925	309	301	610	3,76
Syntormon denticulatus (ZETTERSTEDT, 1843)	0	3	3	0,02
Syntormon pallipes (FABRICIUS, 1794)	20	3	23	0,14
Systenus pallipes (VON ROSER, 1840)	1	0	1	0,01
Teuchophorus monacanthus LOEW, 1859	1	0	1	0,01
Teuchophorus spinigerellus (ZETTERSTEDT, 1843)	0	1	1	0,01
Thinophilus (S.) versutus (HALIDAY, 1851)	1	0	1	0,01
Xanthochlorus ornatus (HALIDAY, 1832)	34	125	159	0,98
Xanthochlorus tenellus (WIEDEMANN, 1817)	169	446	615	3,79
Total number of specimens	8490	7785	16219	100,00

The best represented genera proved to be *Campsicnemus, Chrysotus, Dolichopus, Hercostomus, Medetera* and *Sciapus*.

The 4 *Campsicnemus* species collected are among the most common species of the genus in Belgium, although only *C. curvipes* was found in large numbers. *C. armatus* seems to be the only *Campsicnemus* species which is characteristic for the coastal region, where it is found most abundantly in saltmarshes. In our investigations, *C. picticornis* was captured in large numbers only in the dune slack during the wet spring of 1992, when this habitat was flooded. In contrast to the previous species, *C. scambus* could only be detected in the woodland habitats. Although *C. curvipes* proved to be eurytopic, more than 90% of the specimens was found in the woodland sites.

Within the *Chrysotus genus, C. femoratus, C. palustris* and *C. pulchellus* proved to be the only abundant species, although they demonstrated distinct habitat affinities: *C. pulchellus, C. palustris* and the less abundant *C. suavis* were restricted to the dune slack site whereas *C. femoratus*, on the contrary, was exclusively encountered in the rather dry dune grasslands. The latter species was collected most numerously within *Rubus* shrubs, where the availability of large flat leaves seemed to be favourable for this frequently sunbasking species. *C. palustris, C. pulchellus* and *C. suavis* seem to prefer rather short-grazed grassy vegetation types. These species have been collected in similar dune slacks along the Belgian coast (POLLET, unpubl. data).

Dolichopus was the species richest genus with 17 species established, however, only 4 species were found in fair to extremely high numbers. *D. ungulatus* and *D. claviger* are distributed all over the country and although being rather eurytopic, they are most abundant within humid woodland habitats (POLLET & GROOTAERT, 1987, 1991). In the coastal dunes at Nieuwpoort, both species appeared to be dominant, making up more than 29% and 13% of all capture yields resp.. They were most numerously found in the moderately dry and dry woodland habitats. *D. acuticornis* is less common but is mainly found in the woodland sites as well. On the other hand, *D. migrans* mainly occurred in habitats with a well developed vegetation or shrub layer of Willow, Rubus, Phragmites or Hippophaë. This rather rare species was even dominant within a narrow (5m) willow shrub vegetation along the investigated dune slack. Its presence seems to be correlated with a moderately high light intensity as its numbers in the mature willow woodland are surprisingly low. The saltmarsh habitat showed a completely different but very characteristic fauna including *Dolichopus* species such as *D. diadema, D. clavipes* and *D. strigipes*. The distribution of the first two species seems to extend into the more inland polder region, south of the dunes, where specimens were found in reed beds on the banks of brackish ditches. *D. signifer* can be termed a rare species and has been collected mainly in marshland situations (POLLET *et al.*, 1992). It seems to show an atlantic distribution in our country.

Only four *Hercostomus* species were encountered, the two *H. Gymnopternus* species among which were purely occasional occurrences. *H. gracilis* and *H. nigriplantis*, on the other hand, were encountered in large numbers mainly in the wooded areas.

The 11 *Medetera* species can be divided in at least three ecological groups: a first group is completely restricted to tree-trunks (*M. abstrusa, M. impigra*). A second group includes predominantly soil-dwelling species (*M. micacea, M. plumbella*) whereas species of the third group can be found in both strata as well as on walls (e.g. *M. jacula, M. saxatilis, M. truncorum*). In general, species from group III are distinctly eurytopic. Nevertheless, they show distinct habitat affinities: *M. truncorum* is undoubtedly the most common species and was found in most of the investigated sites, however, with largest numbers in the dune slack. The very closely related *M. saxatilis* even proved to be nearly confined to this habitat. *M. jacula* is found in both dry and humid, warm and well-lit situations e.g. dune slack and open-spaced woodland, whereas *M. petrophiloides* seems to avoid to humid habitats. Fair numbers of this species were collected in the dry woodland site (22) in contrast to the dune slack during 1992 (wet year). However, during the relatively dry 1989, this species was found in large numbers in the latter site.

On the other hand, *M. micacea* and *M. plumbella* are true inhabitants of short-grazed dune habitats such as dune grassland and slacks, although they have both been collected at the edge of the saltmarsh too. The former species clearly prefers dry conditions.

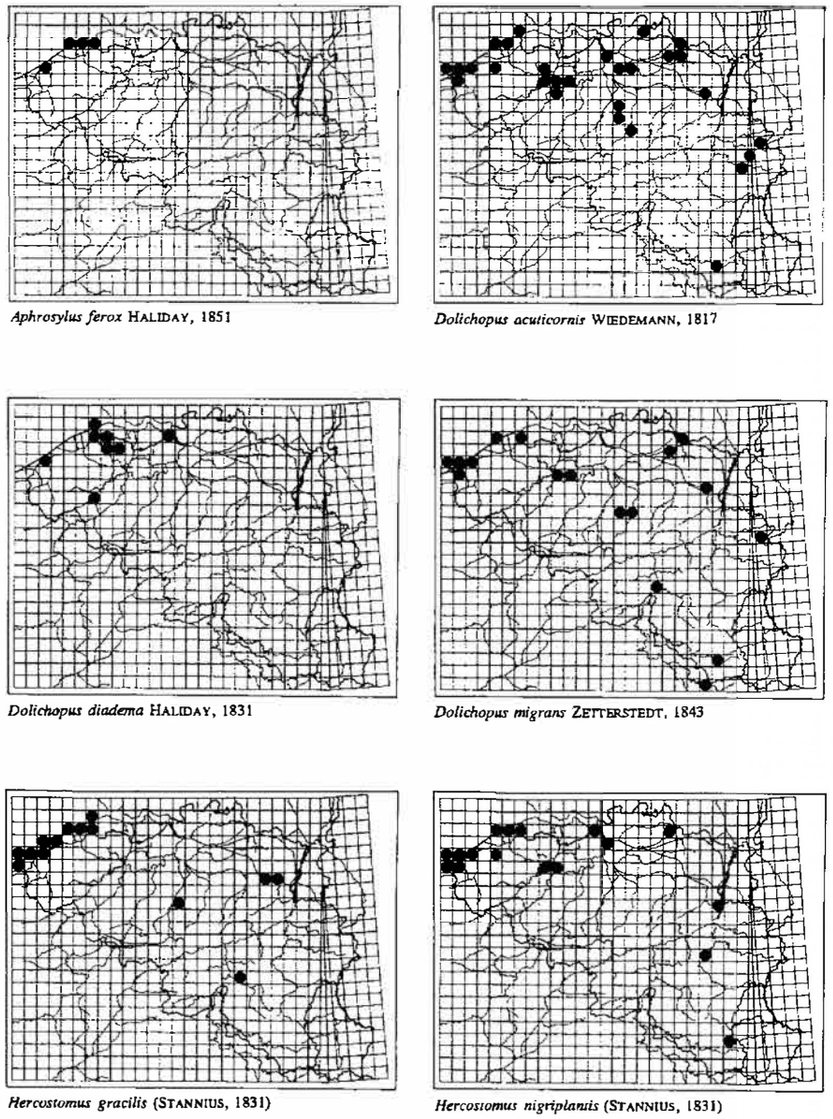
The capture of 1 male of *M. lorea* is the first record of this species in our country. It was collected in the mature willow woodland (4) with white water traps during 3.VII-1.VIII.1992.

Besides the eurytopic *Sciapus wiedemanni*, another 5 *Sciapus* species were recorded from the habitats sampled. The former species was collected in almost every site sampled but showed a distinct preference for the dry and open-spaced willow woodland. *S. laetus* was almost entirely confined to the willow shrub vegetation along the dune slack (21) (95% of total yields), whereas *S. maritimus* clearly preferred the saltmarsh habitat where nearly 90% of the specimens were collected. Numbers of the remaining species, *S. longulus, S. platypterus* and *S. zonatulus*, were too low to produce reliable conclusions.

Geographical distribution

Figure 2 shows the geographical distribution of a selection of stenotopic species which were collected during our sampling campaigns.

On the basis of their habitat affinity, 4 groups can be distinguished:



Aphrosylus ferox HALIDAY, 1851

Dolichopus acuticornis WIEDEMANN, 1817

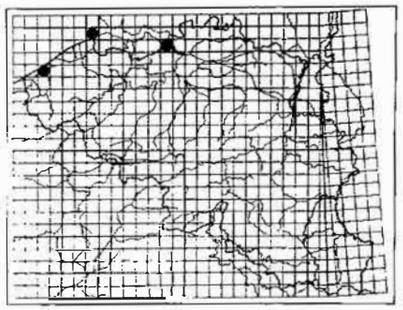
Dolichopus diadema HALIDAY, 1831

Dolichopus migrans ZETTERSTEDT, 1843

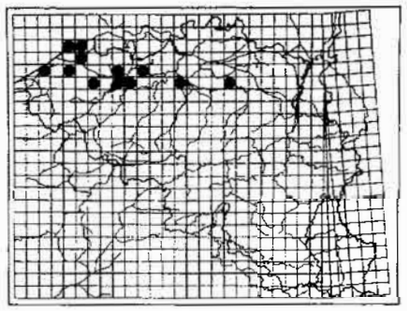
Hercostomus gracilis (STANNIUS, 1831)

Hercostomus nigriplantis (STANNIUS, 1831)

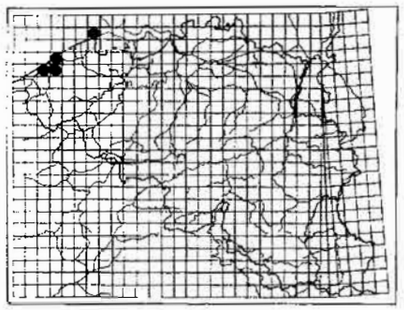
Fig. 2. Distribution maps of some selected stenotopic dolichopodids in Belgium.



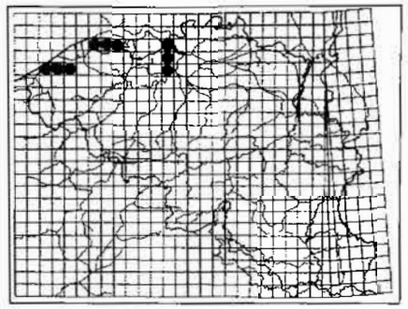
Machaerium maritimae HALIDAY, 1832



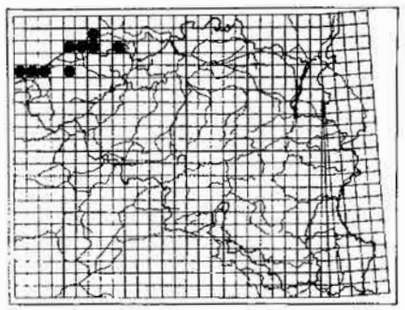
Medetera plumbella MEIGEN, 1824



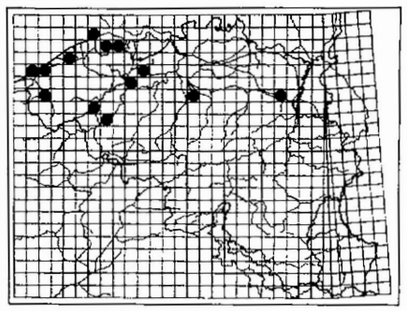
Poecilobothrus principalis (LOEW, 1861)



Rhaphium discolor ZETTERSTEDT, 1838

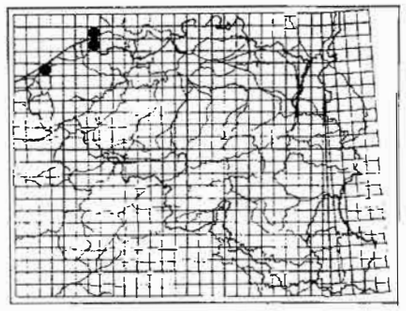


Sciapus maritimus BECKER, 1918

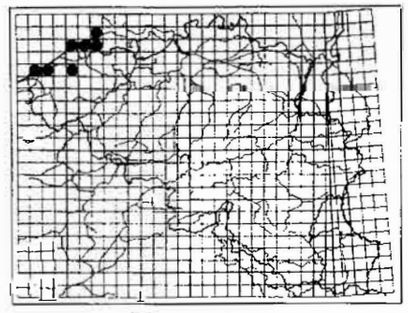


Thinophilus versutus (HALIDAY, 1851)

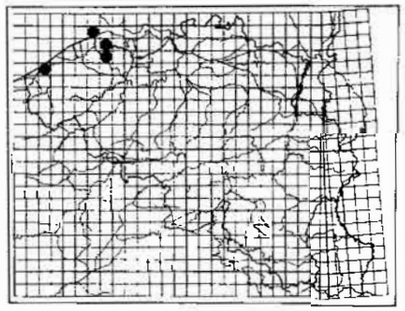
Fig. 2 (continuation)



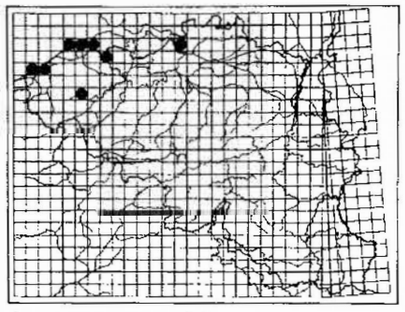
Dolichopus clavipes HALIDAY, 1831



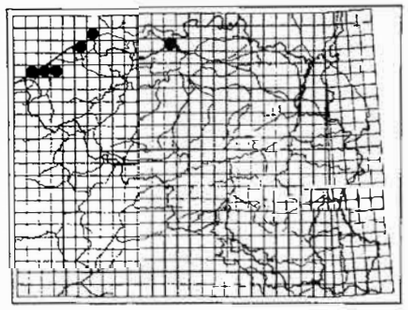
Medetera petrophiloides PARENT, 1925



Dolichopus strigipes VERRALL, 1875



Sciapus laetus (MEIGEN, 1838)



Hydrophorus oceanus (MACQUART, 1838)

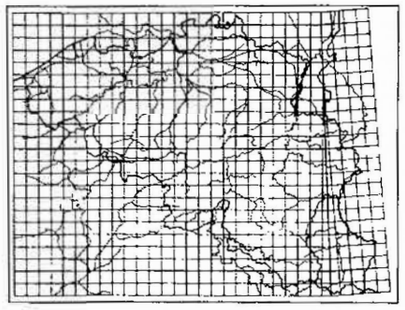


Fig. 2 (continuation)

(1) marine species, occurring exclusively on rocky shores: only one representative of this group, *Aphrosylus ferox,* was collected in our inventories. All *Aphrosylus* species, except for *A. mitis* (DYTE, 1992), are confined to the littoral zone where they occur exclusively on rocky formations. Only one male of *A. ferox* was detected during 24.VI-14.VII.1990 in a water trap installed between the stones of the dock wall near the water line. This species has been recorded from only 4 locations in Belgium.

(2) saltmarsh-inhabiting species: 8 species belong to this group namely *Dolichopus clavipes, D. diadema, D. strigipes, Hydrophorus oceanus, Machaerium maritimae, Muscidideicus praetextatus Poecilobothrus principalis, Rhaphium discolor* and *Sciapus maritimus*. These species all show a distribution which is entirely or nearly completely restricted to the coastal region. Moreover, *D. clavipes* is known only from the two major coastal saltmarshes in Belgium. Beyond these sites, *D. strigipes* has been collected recently (POLLET, 1992) in some inland reedmarshes bordering more or less brackish creeks, whereas *M. maritimae* has also been encountered in the Het Verdronken Land van Saeftinge Nature Reserve in the northeast of Belgium. *H. oceanus* shows a more or less similar distribution. *S. maritimus* is another species with a purely littoral distribution. This species occurs in humid situations within the dunes as well as along saltmarshes. It definitely prefers the edges of saltmarshes, where is can be found quite numerously on the sandy soil between marram grass. The distribution of *D. diadema* seems to be concentrated along the coast too, although it also occurs, sometimes in large numbers (POLLET, 1992) in inland halophilous habitats. The capture of 5 specimens of this species near an artificial lake at Harelbeke in the south of West Flanders is still enigmatic. At this site, the upper soil layer is purely sandy and at some sites, a typical dune vegetation is present. *R. discolor* demonstrates, as most Rhaphium species, a preference for the banks of rivulets and rivers. It is confined to the banks of ditches within saltmarsh areas or within the more inland polder region. *P. principalis* is distinctly halophilous and has thus far only been established in large numbers in the two major saltmarshes along the Belgian coast.

(3) species of wooded sites on purely sandy soil: *D. acuticornis, D. migrans, H. gracilis, H. nigriplantis* and *S. laetus*. Among these species, only the latter one seems to be more or less restricted to the coastal region whereas the other species seem to more widespread in the northern part of Belgium. Nevertheless, their distribution is still concentrated along the coast. Only *D. acuticornis* is somewhat more equally distributed in northern Belgium.

(4) species of open sandy habitats: *Chrysotus palustris, C. pulchellus, M. micacea, M. petrophiloides, M. plumbella* and *T. versutus*. In contrast to the other species, the two *Chrysotus* species and *T. versutus* are true hygrophilous species, inhabiting mainly the dune slack habitats. *M. petrophiloides* is the only species entirely confined to the coastal region. Within this region, this species occurs in various types of dry and humid open habitats but is most abundant in dry dune grassland. It has also been found in fair numbers on the walls of buildings. *M. micacea* and *M. plumbella* are characteristic for short-grazed vegetation on purely sandy soils. They have been found both along the coast and within the inland sandy region in the northern part of Belgium. *T. versutus* is the only representative of this genus, the distribution of which extends beyond saltmarsh habitats. As the former species, this species shows a northern distribution in Belgium which is concentrated towards the coast. It has been found in largest numbers near freshwater dune pools.

Conclusions

Due to the presence of a saltmarsh area and a dune area with a high habitat diversity, Nieuwpoort proved to be extremely interesting concerning its dolichopodid fauna.

In the first place, the saltmarshes within De Ijzermonding Nature Reserve include a large number of rare species. Most of these halophilous species have been recorded from only very few other locations in our country. Most probably only at De Ijzermonding N.R. and Het Zwin N.R. large populations of most of these species can still be found which stresses the importance of these nature reserves as refugia.

The dunes also show characteristic dolichopodid faunas. Both in open and canopied sites, species are found the distribution of which is concentrated in the coastal region. Moreover, thus far the largest populations of these species are found in dune habitats. Therefore, it is of major importance to protect these sites against destruction and over-exploitation as this would mean an irreversible loss of many rare invertebrates.

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Admissions / Toelatigen :

M. David MALEVE, rue Grégoire Bodart 5, 4500 Huy, est présenté en tant que membre assistant par MM. G. COULON et D. DRUGMAND et s'intéresse aux insectes comestibles.
Dhr. Theo GARREVOET, Kampioenstraat 14, 2020 Antwerpen, wordt voorgesteld als gewoon lid door Dhr. U. DALL'ASTA en W. DE PRINS. Dhr T. GARREVOET is geinteresserd in Lepidoptera Sessidae.
M. Michaël TERZO, Laboratoire de Zoologie, Université de Mons-Hainaut; avenue Maistriau 19, 7000 Mons, est présenté en tant que membre associé par MM. P. RASMONT et Y. BARBIER et étudie les Hyménoptères apoïdes Xylocopinae.

Démission / Ontslag :

M. Charles LIENHARD donne sa démission de membre correspondant.

Communications / Mededelingen :

1. M. G. MIESSEN présente la communication suivante.

Notes éthologiques sur *Amphimallon atrum* (HERBST, 1790) (Coleoptera, Scarabaeoidea, Melolonthidae)

par Geoffrey MIESSEN

route de Hottleux, 53, 4960 Arimont - Malmedy.

Résumé

*Rapport d'observations comportementales d'*Amphimallon atrum *(HERBST, 1790) lors de la période précédant l'accouplement et au cours de celui-ci.*

Le 26 juin 1994, à Ripsdorf, en Allemagne (Rheinland), j'observai de très nombreux vols d'*Amphimallon atrum* (HERBST, 1790) sur une pelouse