

THE ASILIDAE (DIPETRA) OF BELGIUM AND THEIR DISTRIBUTION IN THIS COUNTRY*

by L. VERLINDEN**

Introduction

As far as I know no catalogue of Belgian Asilidae has ever been drawn up, and anyway very little has been published about these predatory flies in this country. The translation from the Russian of Richter's keys (1969) by Drs. V.S. van der Goot (Amsterdam), who kindly sent me a copy of his manuscript, supplied me with the most up-to-date literature on this subject, which helped me considerably in identifying the available material.

In all I saw about 3,000 specimens from more than 1,700 localities. This may not seem much, but the Asilidae are a small family and none of its members is really common. Most important was the collection in I.R.S.N.B. (Brussels); however, most of the material is old. The fairly large collection kept at the Faculté des Sciences Agronomiques de l'Etat at Gembloux on the other hand is made up of recent captures. Besides my own collection I also saw a number of small private collections: Bastin (Antwerpen), Marnef (Hoboken) and Michiels (Brussels). Though Belgium has been very unevenly explored, comparison with Dutch and British data suggests that all Belgian species are included in these collections.

44 out of 45 species in the list are represented in the I.R.S.N.B. collection. The remaining one, *Dasygogon diadema* (F.) has only been mentioned in literature. As it is virtually unmistakable I have included it. On the other hand I saw specimens labelled *Machimus atripes* Loew, *M. lacilunulatus* Loew, *Dysmachus fuscipennis* (Meigen), *D. praemorsus* (Loew), *Neomochtherus schineri* Egger, *Dioctria gagatea* Wiedemann, *D. gracilis* Wiedemann, *D. humeralis* Zeller and *Holopogon fumipennis* Meigen, which were wrongly

* Accepted March 3rd 1982.

** Tulpenlaan 29, B-3008 Velten-Beisem.

TABLE I

<i>Andrenosoma atrum</i> (L.)	1	June	r (e)
<i>Antipalus varipes</i> (Meigen)	7	May 3 - August 2	r
<i>Asilus crabroniformis</i> (L.)	39	July 1 - August 3	l
<i>Ce-distus geniculatus</i> (Meigen)	30	May 3 - September 2	l
<i>Choerades</i> (= <i>Laphria</i>) <i>fulvus</i> (Meigen)	1	?	r (e)
<i>C. gilvus</i> (L.)	45	June 1 - September 1	l
<i>C. Marginatus</i> (L.)	50	May 3 - August 3	l/f
<i>Cyrtopogon lateralis</i> (Loew)	6	June 1 - July 3	c/f
<i>Dasyopogon</i> (= <i>Selidopogon</i>) <i>diadema</i> (F.)	1	?	r (e)
<i>Dioctria atricapilla</i> (Meigen)	126	May 1 - July 3	c/f
<i>D. bicincta</i> (Meigen)	1	July	r (e ?)
<i>D. cothurnata</i> (Meigen)	97	May 3 - September 3	f
<i>D. engelii</i> Noskiewitz	1	July	r (e ?)
<i>D. hyalipennis</i> (F.)	127	May 2 - September 2	c
<i>D. lateralis</i> (Meigen)	12	June 2 - August 1	r
<i>D. linearis</i> (F.)	62	May 2 - August 3	f
<i>D. longicornis</i> (Meigen)	5	April 3 - June 3	r
<i>D. oelandica</i> (L.)	40	May 2 - August 1	f/l
<i>D. rufipes</i> (DeGeer)	141	May 1 - July 2	c/f
<i>Dysmachus picipes</i> (Meigen)	32	May 2 - July 1	l
<i>D. trigonus</i> (Meigen)	80	May 1 - August 1	f
<i>Epiptus arthriticus</i> (Zeller)	3	June	r
<i>Erax punctatus</i> (Meigen)	5	March 3 - May 2	r
<i>Eutolmus rufibarbis</i> (Meigen)	67	June 3 - September 2	f
<i>Holopogon nigripennis</i> (Meigen)	5	June 1 - July 2	r
<i>Laphria ephippium</i> (F.)	2	June	r (e)
<i>L. flava</i> (L.)	43	May 1 - August 3	f/l
<i>L. gibbosa</i> (L.)	2	July	r (e)
<i>Lasopogon cinctus</i> (F.)	40	April 2 - July 1	f/l
<i>Leptarthrus</i> (= <i>Isopogon</i>) <i>brevirostris</i> (Meigen)	6	June 2 - August 1	r
<i>Leptogaster cylindrica</i> (DeGeer)	54	May 3 - August 2	f
<i>L. guttiventris</i> Zetterstedt	29	May 1 - August 3	l
<i>Machimus atricapillus</i> (Fallen)	115	May 3 - October 3	c
<i>M. cingulatus</i> (F.)	26	July 2 - October 1	l
<i>M. rusticus</i> (Meigen)	8	June 2 - August 3	r
<i>M. setibarbis</i> (Loew)	8	June 2 - September 1	r
<i>M. setosulus</i> (Zeller)	5	July 2 - October 1	r
<i>Molobratia</i> (= <i>Dasyopogon</i>) <i>teutonius</i> (L.)	11	June 1 - August 1	r
<i>Neotamus cothurnatus</i> (Meigen)	19	May 3 - July 2	f/r
<i>N. cyanurus</i> Loew	85	May 2 - August 3	f
<i>N. socius</i> Loew	50	May 2 - August 3	f/l
<i>Neomochtherus pallipes</i> (Meigen)	2	July and August	r
<i>Pamponerus germanicus</i> (L.)	38	May 2 - June 1	l
<i>Philonicus albiceps</i> (Meigen)	62	June 1 - October 3	f
<i>Rhadiurgus variabilis</i> Zetterstedt	8	June 1 - July 3	r

Column 1 : name of species (in alphabetical order). Column 2 : number of records.
 Column 3 : flight period in decades of 10 days (e.g. May 3 = May 21 - May 31).
 Column 4 : frequency (c = common ; f = frequent ; l = local ; r = rare ;
 (e) = believed extinct in Belgium).

identified. *Dioctria baumbaueri* (Meigen) is now generally considered a synonym of *D. hyalipennis* (F.).

Discussion

a) Frequency :

1. Out of the 45 species in the list, no fewer than six (*Andrenosoma atrum*, *Choerades fulvus*, *Dasyopogon diadema*, *Laphria ephippium*, *L. gibbosa* and *Dioctria engelii*) have not been recorded in Belgium since 1900. As the first five are large conspicuous flies, coveted collectors' pieces, it is not probable that they have been overlooked. It may therefore be assumed that these five are probably extinct in Belgium, the more so because similar cases are known from neighbouring countries. *Dasyopogon diadema* is known from South England before 1900 only. Van der Goot (1981) mentions the disappearance from the Netherlands since 1900 of three species, two of which (*Erax punctatus* and *Machimus setosulus*) were still recorded in 1939 in Belgium.

In addition to the six species named above three small *Dioctria* species have apparently not been caught for a long time : *D. bicincta*, *D. lateralis* and *D. longicornis*. They still seem to persist in the South of the Netherlands, however. Relatively few dipterologists have been active in the field in Belgium these last thirty years.

2. Dutch field workers, more numerous than their Belgian colleagues, have noticed that three large Asilidae have become noticeably rarer for the last twenty years : *Asilus crabroniformis*, *Choerades gilvus* and *Molobratia teutonius*. This is fully borne out by our findings. Moreover, *Pamponerus germanicus*, which was frequently caught in Belgium last century, seems to have become progressively rarer ; since 1950 it has been recorded only twice. It is also strange that this species, which is frequently caught in British and Dutch coastal dunes, has never been caught at the seaside here, not even last century, when most of our dunes were still largely intact.

3. The other rare species (see table 1, col. 2) do not appear endangered, except *Erax punctatus*, which depends for its survival in Belgium on the conservation of the Montagne St. Pierre, the only locality it is known from. Another special case is *Epi-*

TABLE II

<i>Andrenosoma atrum</i>	—	—	C	—	—	—	—	—	—	1 rec. (La Houssière 1894)
<i>Antipalus varipes</i>	—	B	C	—	—	—	—	NL	psammophilous	
<i>Asilus crabroniformis</i>	A	B	C	D	—	F	GB	NL	few recent records	
<i>Cerdistus geniculatus</i>	—	—	C	D	—	F	—	NL-SE		
<i>Choerades fulvus</i>	—	—	C	—	—	—	—	—	1 rec. (env. Mons 1900)	
<i>C. gilvus</i>	—	B	C	D	E	F	GB	NL	no records since 1950	
<i>C. ma ginatus</i>	—	B	C	D	E	F	GB	NL		
<i>Cyrtopogon lateralis</i>	—	—	—	—	E	F	—	—	boreo-montane species	
<i>Dasypogon diadema</i>	—	—	C	—	—	—	GB	—	Montagne St. Pierre only < 1900	
<i>Dioctria atricapilla</i>	A	B	C	D	—	F	GB	NL		
<i>D. bicincta</i>	—	—	—	D	—	—	—	NL-S	1 rec. Falaën 1916	
<i>D. cothurnata</i>	—	B	C	D	E	F	GB	NL		
<i>D. engelii</i>	—	—	—	—	—	F	—	—	1 rec. Bouillon 1897	
<i>D. hyalipennis</i>	—	B	C	D	E	F	GB	NL		
<i>D. lateralis</i>	—	—	C	D	E	—	—	NL-S	no records since 1935	
<i>D. linearis</i>	—	B	C	D	E	F	GB	NL		
<i>D. longicornis</i>	—	—	C	—	—	—	—	NL-S	no records since 1921	
<i>D. oelandica</i>	—	B	C	D	E	F	GB	NL		
<i>D. rufipes</i>	—	B	C	D	E	F	GB	NL		
<i>Dysmachus picipes</i>	—	—	C	D	E	F	—	NL-S	most records from C	
<i>D. trigonus</i>	A	B	C	D	E	F	GB	NL	psammophilous ; rare in E	
<i>Epitriptus arthriticus</i>	—	—	C	D	E	—	—	GB	NL	
<i>Erax punctatus</i>	—	—	C	—	—	—	—	NL-S	rare in all N.W. Europe	
<i>Eulomus rufibarbis</i>	—	B	C	D	E	F	GB	NL	now only Mont. St. Pierre	
<i>Holopogon nigripennis</i>	—	—	—	D	—	—	—	—	psammophilous ; rare in E	
<i>Laphia ephippium</i>	—	—	—	D	—	—	—	—	xerophilous sp. ?	
<i>L. flava</i>	—	B	C	D	E	F	GB-N	NL	caught twice 1900 near Liège	
<i>L. gibbosa</i>	—	—	C	—	E	—	—	—	in B only locally	
<i>Lasiopogon cinctus</i>	—	B	C	—	—	F	GB	NL	caught twice before 1880	
<i>Leptarthrus brevirostris</i>	—	—	—	D	E	F	GB-S	—	in woods on sandy soil	
<i>Leptogaster cylindrica</i>	—	B	C	D	E	F	GB	NL	xerophilous sp. ?	
<i>L. guttiventris</i>	—	B	C	D	E	F	GB	NL	rarest in E	
<i>Machimus atricapillus</i>	A	B	C	D	E	F	GB	NL	<i>idem</i>	
									psammophilous : rare in E	

<i>M. cingulatus</i>	—	B	—	—	E	—	GB	NL	mainly on heaths
<i>M. rusticus</i>	—	—	C	—	—	F	GB-S	NL-S	on chalk grassland ; in C
									only Mont. St. Pierre
<i>M. setibarbis</i>	—	—	C	D	E	F	—	—	
<i>M. selosulus</i>	—	—	C	—	—	—	—	NL-S	only Mont. St. Pierre
<i>Molobratia teutonius</i>	—	—	C	D	E	—	—	NL-SE	only 1 rec. since 1950
<i>Neotamus cothurnatus</i>	—	B	C	—	E	F	GB	NL	
<i>N. cyanurus</i>	—	B	C	D	E	F	GB	NL	in woods on sandy soil
<i>N. socius</i>	—	—	C	D	E	F	?	—	rare in C
<i>Neomochtherus pallipes</i>	—	—	—	D	—	—	—	NL	
<i>Pamponerus germanicus</i>	—	B	C	D	—	F	GB	NL	mainly old records ; psamm.
<i>Philonicus albiceps</i>	A	B	C	D	E	F	GB	NL	psammophilous ; rare in E
<i>Rhadiurgus variabilis</i>	—	B	—	D	E	—	gb-N	NL	psammophilous ; mainly on heaths

Column 1 : name of species. Column 2 : regions where the species has been caught in Belgium ; A : coastal dunes, B : the northern plain from sea level up to the 50 m contour, C : the low plateaux between B and the Sambre et Meuse valleys, D : the plateaux between C and the High Ardennes, E : the High Ardennes (for this purpose the country between the 300 m contour in the north and the Semois valley in the south, F : the cuestas south of the Semois. Column 3 : occurrence of the species in Great-Britain (GB) and the Netherlands (NL) ; S = in the South only ; N = only in the North ; SE = in South and East.

triptus arthriticus. This seems to be an extremely rare species in all neighbouring countries, as in each only a very small number of records are known. It was caught three times in Belgium, twice before 1900, but also in 1970. *Neoitamus socius* used to be considered a rare boreo-montane species whose occurrence in Belgium was restricted to the highest plateaux and other specially cold habitats. It is, however, fairly frequent south of Sambre and Meuse.

Two species, *Neomochtherus pallipes* and *Machimus cingulatus* seem to be much rarer here than in the Netherlands, especially the first. I am unable to offer an explanation.

Holopogon nigripennis and *Leptarthrus brevirostris* are known from a small number of localities only. Nearly all of these are recent captures. Because of their small size and dark colouring they may easily be missed. *L. brevirostris* may locally be fairly numerous: I have seen a few large series from the same locality.

4. Summing up it may be said that of the 45 species of Asilidae ever recorded in this country, five or even more are feared to be extinct in Belgium now, while several others have recently become much rarer. For some of these, e.g. *Asilus crabroniformis* Van der Goot (1981) suggests the reason may be a change in agriculture and husbandry affecting its reproduction. For others the destruction of their habitat (e.g. large parts of the Montagne St. Pierre) may have been responsible. In my experience Asilidae, though very good flyers, lack mobility, i.e. they are slow to colonise new habitats. For seven years I explored the newly created sandy habitats near Antwerp (many square miles of polders were covered with thick layers of sand to make them suitable for building purposes). Parts of these seemed suitable for psammophilous and woodland species. In all, however, I caught a very small number of specimens of two species only: *Philonicus albiceps* and *Dysmachus trigonus*, and these only in the oldest parts, which were covered with sand 40 years ago and where the insect fauna has reached a high degree of development.

b) Distribution:

Though to a foreign observer it may seem rather ridiculous to subdivide a small country like Belgium into six regions. I think there are good reasons to do so. It shows how unevenly even the most common species are distributed according to the nature of

the soil and differences in climate. It also shows where some species reach the limit of their distribution area. Finally these detailed records may have some importance for future use, as the area of some species seems to shrink or recede to the south and east.

1. Only five species, three of them psammophilous, are recorded from the coastal region. This is mainly because of the degradation of our coastal dunes which have been virtually destroyed by urbanisation and excessive recreation. However, in the period 1890-1910, when so many Belgian dipterologists were active, relatively little damage had been done. Even so, a number of species which occur in the dunes of Great-Britain and Holland, were not caught here, whereas they were regularly taken in sandy sites inland. So the scarcity of Asilidae here must be partly caused by climatological factors.

2. The northern plains, especially the western half, are relatively poor in Robber Flies, though even in Flanders there are stretches of sandy country favoured by so many species. But even in the Kempen, with their dry heaths and conifer plantations (though the former have shrunk considerably this century) no more than 23 species have ever been recorded. With the exception of *Neomochtherus pallipes*, these are exactly the same species as occur in the Netherlands outside the extreme south and south-east.

A number of species seem to be more abundant here than in any of the other regions: *Dioctria atricapilla*, *Leptogaster cylindrica*, *Machimus atricapillus*, *Lasiopogon cinctus* and *Neoitamus cyanurus*.

3. In the low plateaux between the northern plain and the Sambre-Meuse valleys 36 species of Asilidae — i.e. 80% of the total number — have been collected. This is rather surprising, as this region contains very few natural or semi-natural habitats. With the exception of the industrialised south-west and the heavily urbanised Brussels district, it is largely agricultural. Most of the region is very fertile loam and loess country, but there are patches of sandy soil and chalk. These sandy patches are often wooded; robber flies that hunt from trees and shrubs also find suitable habitats in the hedgerows that separate fields and orchards and that line the numerous sunken roads.

A special place is occupied by the Montagne St. Pierre, a chalk hill in the south-east of the region. This site, which is under heavy pressure from the cement industry, is essential for the survival in Belgium of several species. *Dasygogon diadema* and *Machimus setosulus* have never been recorded anywhere else in Belgium. One of the two specimens of *Laphria gibbosa* ever taken in this country came from here. *Erax punctatus* was collected in other places near Liège last century, but the numerous records of this century were from the Montagne St. Pierre. Finally, *Machimus rusticus* is known from this chalk hill and two localities in the extreme south of Belgium, Torgny and Lamorteau. This means that five species have, or used to have a colony outside their main area. The site is rich in less rare species, too. On a few square miles 23 species of Asilidae, i.e. more than half the total number, have been taken.

4. The low plateaux between the Sambre-Meuse valleys and the High Ardennes contain several important entomological sites, especially in the valleys of the limestone region. Thirty-one species of Asilidae are known from this district, four of which were never taken anywhere else. One of these is *Holopogon nigripennis*, which seems to reach its northern limit here.

5. The high plateaux of the Ardennes are a well explored region. Its cold and wet climate and the scarcity of sandy sites makes it less suitable for many Asilidae. Though still 27 species were caught, a number of them are much rarer here than in the rest of the country. A typical disjunctive distribution pattern is shown by a number of common Asilidae. They occur all over the country up to approximately the 300 m contour; beyond this they are much rarer or are lacking altogether. They then reappear towards the Semois valley. This is the case for: *Asilus crabroniformis*, *Cerdistus geniculatus*, *Dioctria atricapilla*, *Dysmachus trigonus*, *Eutolmus rufibarbis*, *Leptogaster cylindrica*, *L. guttiventris*, *Machimus atricapillus*, *Pamponerus germanicus*. No species is known from this part exclusively, not even a boreo-montane species like *Cyrtopogon lateralis*.

6. Though the district south of the Semois valley is well-known among Belgian entomologists, mainly for the chalk slopes near Torgny, where a few Mediterranean species penetrate into Belgium, it is not especially rich in Asilidae. The total number of species

(27) is not very high, but of course the region is very small. The only exclusive species is *Dioctria engeli*, but this concerns one single old record. The repeated captures of *Machimus rusticus* must be mentioned, however.

Acknowledgements

My thanks are due to Drs Van der Goot for helping me throughout this task, to MM. Demoulin and Verstraeten who gave me access to the collections of I.R.S.N.B. and the Faculté des Sciences Agronomiques de l'Etat at Gembloux, to MM. Michiels and Marnef, who put their private collections to my disposal and to Dr. M. Leclercq, who kindly sent me his data.

Abstract

This paper contains a list of 45 Asilidae (Dipt.) collected in Belgium: period of flight, frequency and distribution are added. Records suggest that seven species may have become extinct here since last century, while several others have become noticeable rarer in recent times. Comparison with Dutch and British Asilidae faunas show that many species reach their northern and/or western limit in Belgium.

Samenvatting

Dit artikel omvat een lijst van de 45 Belgische Asilidae, hun vliegtijd, talrijkheid en voorkomen binnen het land. In de loop van de laatste honderd jaar zijn zeven soorten waarschijnlijk uit België verdwenen en andere zijn de laatste decennia opmerkelijk zeldzamer geworden. Vergelijking met de Nederlandse en Britse Asilidae fauna toont aan dat talrijke soorten in België de noord- en/of westgrens van hun verspreidingsgebied bereiken.

Bibliography

- ENGEL E.O., 1932. — *Raubfliegen, Asilidae*. Tierwelt Deutschlands 26(5): 127-204. G. Fischer, Jena.
- GOOT V.S. VAN DER, 1977. — *Roofvliegen (Asilidae)*. Roof- en Blaaskopvliegental (4th ed.) 1-18. Jeugdbondsuitgeverij, 's-Graveland.
- GOOT V.S. VAN DER & AARTSEN B. VAN, 1981. — De jachtgewoonten van een aantal roofvliegen in Nederland (Diptera: Asilidae). *Ent. Ber.*, 41: 97-101.
- RICHTER V.A., 1969. — *Keys for the Determination of Insects of the European Part of the U.S.S.R.* (100), pt. V, Book 1: 504-531. Leningrad. (translated from the Russian by V.S. van der Goot, 1980 (manuscript)).