

Check-list of the Chironomidae (Diptera) of the river Meuse and two of its tributaries

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Keywords : Diptera, Chironomidae, Belgium, France, faunistic, river, Meuse.

A study of the Chironomidae (Diptera) of the river Meuse and two of its tributaries (Sambre and Samson) during the period 1991 to 1992 resulted in a list of one hundred and twenty species. Thirty one of these (*) are new records to the Belgian fauna. A taxonomic list of the species with locations is given.

Inventaire des Chironomidés (Diptera) de la Meuse et de deux de ses affluents.

Mots Clés : Diptera, Chironomidés, Belgique, France, faunistique, rivière, Meuse.

Des récoltes d'exuvies nymphale de Chironomidés effectuées en 1991 et 1992 dans la Meuse et deux de ses affluents (la Sambre et le Samson) ont permis de dénombrer 120 espèces de Chironomidés. Il s'agit, pour 31 espèces (*), de premières citations pour la faune belge. L'inventaire taxonomique des espèces et la localisation des sites d'échantillonnage sont fournis.

1. Introduction

The Chironomidae is a family of non-biting midges of the order Diptera. So far studies on the Belgian Chironomidae yielded about three hundred species (Goddeeris & Behen 1991). However, most of the earliest studies were concentrated on ponds and temporary pools located mostly in Flanders. The present study was to understand the species diversity of chironomids in the river Meuse (and two of its tributaries) to be used as water quality indicators of the river.

During several centuries, the river Meuse has been used for different human activities. Consequently habitats and water quality have been heavily modified. In Belgium, the main impacts on the biocenoses are due to the equipment of the river for navigation, but many other kinds of pollution (thermal, chemical) also have some effects on these biocenoses (Meurisse-Genin et al. 1987).

Previous work by Frantzen (1992) has shown that collections of Chironomidae pupal exuviae may be related to the water quality of the river Meuse. The predominant taxa collected in the Belgian Meuse show the difference of water quality between Hastière and the Liège area. Hastière, the most upstream Belgian site, is the least polluted with rheophilic species as *Rheotanytarsus rhenanus*, *R. photophilus*, *Tanytarsus eminulus* and *T. ejuncidus*. In the Liège area, the dominant species (*Procladius* spp., *Dicrotendipes nervosus*, *Glyptotendipes pallens*, *Parachironomus arcuatus*) are indicative for slowing and eutrophic waters.

2. Materiel and methods

The Meuse rises near the Plateau of Langres in France. The it flows through France, Belgium and the Netherlands, where it enters the North Sea by forming with the Rhine and Schelt a complex system of channels, nowadays entirely dammed for flood control (delta plan). Its total catchment area extends through 5 countries : France, Belgium (42 % of the Meuse watershed), the Netherlands, Germany and Luxembourg (Fig. 1).

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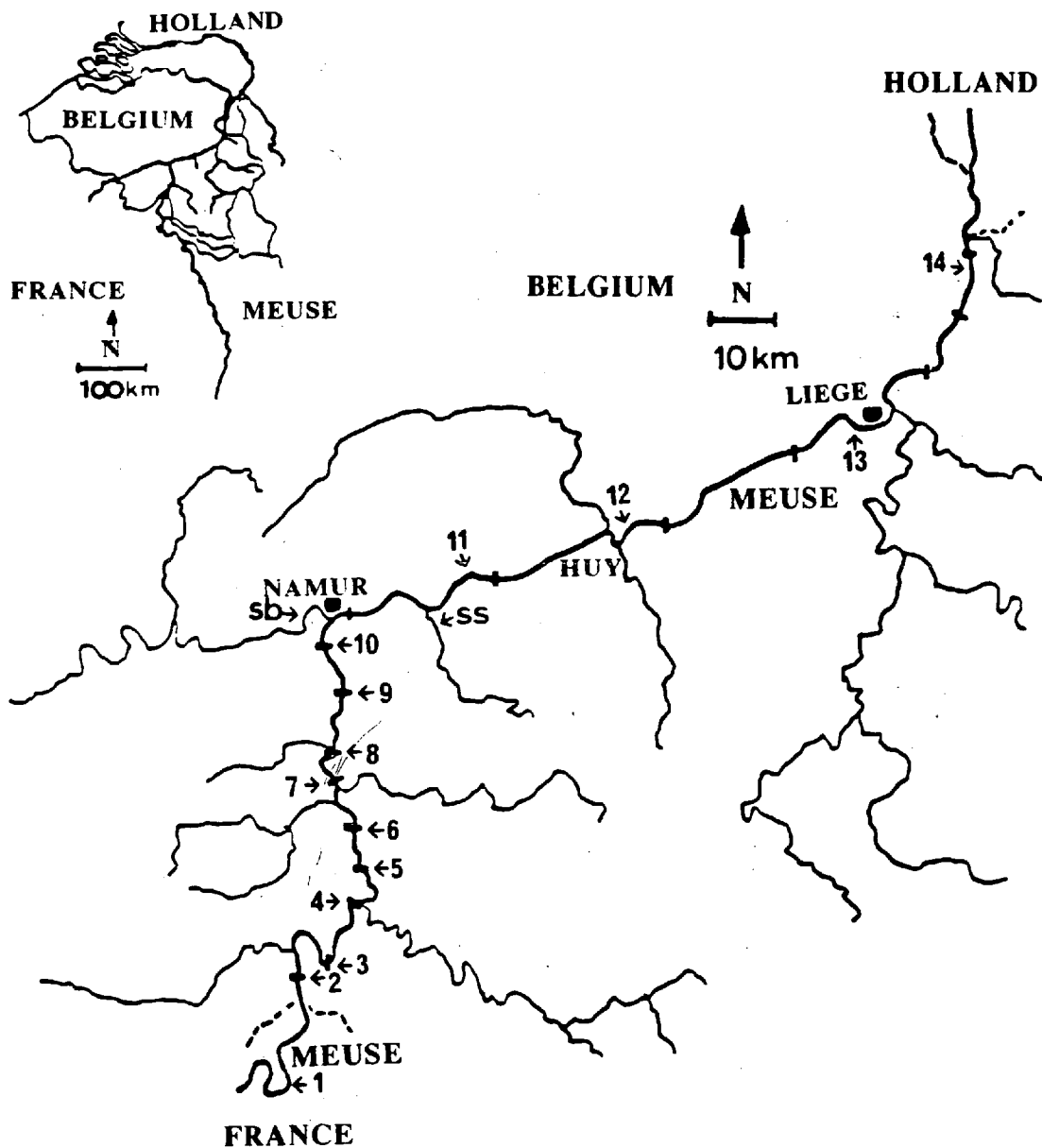


Fig. 1. Map showing the sampling sites (1 to 14) in the river Meuse and two of its tributaries (sb = Sambre ; ss = Samson). The site 1 only is situated in France.

Fig. 1. Emplacement des stations (1 à 14) de la rivière Meuse et de deux affluents (sb = Sambre ; ss = Samson). Seule la station 1 est située en France.

Table 1. List of the Diptera Chironomidae in the river Meuse and two of its tributaries.

* = new record for Belgium ;

1 to 14 = stations in the river Meuse (Fig. 1) ; sb = Sambre ; ss = Samson.

Tableau 1. Liste des Chironomidés de la rivière Meuse et deux de ses affluents.

* = nouvelle récolte pour la Belgique ;

1 à 14 = stations de la rivière Meuse (Fig. 1) ; sb = Sambre ; ss = Samson.

Chironomidae**Tanypodinae****Stations**

<u>Ablabesmyia monilis</u> (Linnaeus)	1 to 10,ss
<u>Apsectrotanypus trifascipennis</u> (Zetterstedt)	2 to 12,ss
<u>Conchapelopia melanops</u> Wiedemann (in Meigen)	2,6,10,ss
<u>Conchapelopia pallidula</u> (Meigen)	2 to 10
<u>Guttipelopia guttipennis</u> (van der Wulp)	2
<u>Macropelopia nebulosa</u> (Meigen)	12,ss
<u>Nilotanypus dubius</u> (Meigen)	1,6,9,10
<u>Procladius (Holotanypus) choreus</u> (Meigen)	1 to 14,sb,ss
<u>Procladius (Holotanypus) sagittalis</u> (Kieffer)	2 to 14,sb
<u>Rheopelopia ornata</u> (Meigen)	1 to 10
<u>Thienemannimyia carnea</u> (Fabricius)	1,9,10,ss
* <u>Thienemannimyia vitellina</u> (Kieffer)	2 to 11
<u>Zavrelimyia melanura</u> (Meigen)	ss

Diamesinae

<u>Diamesa cinerella</u> Meigen	ss
* <u>Diamesa permacra</u> (Walker)	2
<u>Pothastia longimanus</u> Kieffer	1 to 12,ss
<u>Prodiamesa olivacea</u> (Meigen)	2 to 13,sb,ss

Orthoclaadiinae

* <u>Brillia flavifrons</u> Johannsen	10,11,12,sb,ss
<u>Brillia modesta</u> (Meigen)	1 to 12,sb,ss
* <u>Bryophaenocladus furcatus</u> (Kieffer)	1 to 12,sb
<u>Cardiocladus fuscus</u> Kieffer	1 to 11,sb
<u>Chaetocladus melaleucus</u> (Meigen)	2
<u>Chaetocladus perennis</u> (Meigen)	9,12,13
<u>Cricotopus (Cricotopus) albiforceps</u> (Kieffer)	12

Table 1. (continuation).

Tableau 1. (suite).

<u>Cricotopus (Cricotopus) annulator</u> Goetghebuer	1 to 12
<u>Cricotopus (Cricotopus) bicinctus</u> (Meigen)	1 to 14,sb,ss
<u>Cricotopus (Cricotopus) similis</u> Goetghebuer	1,2,9,ss
<u>Cricotopus (Cricotopus) tremulus</u> (Linnaeus)	1 to 12,ss
<u>Cricotopus (Cricotopus) triannulatus</u> (Macquart)	1 to 12,sb,ss
<u>Cricotopus (Cricotopus) trifascia</u> Edwards	1 to 12,ss
<u>Cricotopus (Cricotopus) vierriensis</u> Goetghebuer	1,5,9
<u>Cricotopus (Isocladius) intersectus</u> (Staeger)	1 to 14,sb
<u>Cricotopus (Isocladius) sylvestris</u> (Fabricius)	1 to 14,sb
<u>Diplocladius cultriger</u> Kieffer	11
* <u>Eukiefferiella brevicar</u> (Kieffer)	ss
<u>Eukiefferiella claripennis</u> (Lundbeck)	1 to 14,sb,ss
* <u>Eukiefferiella clypeata</u> (Kieffer)	1 to 12,ss
* <u>Eukiefferiella coerulea</u> (Kieffer)	ss
<u>Eukiefferiella devonica</u> (Edwards)	ss
<u>Heterotrissocladius marcidus</u> (Walker)	2 to 12,ss
* <u>Limnophyes pumilio</u> (Holmgren)	1 to 12,sb
<u>Nanocladius bicolor</u> (Zetterstedt)	1 to 14,sb,ss
* <u>Nanocladius distinctus</u> (Malloch)	1 to 13,sb,ss
* <u>Nanocladius rectinervis</u> (Kieffer)	1 to 14,sb,ss
<u>Orthocladius (Eudactylocladius) fuscimanus</u> (Kieffer)	1 to 13,sb
* <u>Orthocladius (Euorthocladius) ashei</u> Sopenis	1 to 12,ss
* <u>Orthocladius (Euorthocladius) rivulorum</u> Kieffer	2,6,12,ss
<u>Orthocladius (Orthocladius) glabripennis</u> (Goetghebuer)	1 to 12,ss
* <u>Orthocladius (Orthocladius) oblidens</u> (Walker)	1 to 13,sb,ss
* <u>Orthocladius (Orthocladius) obumbratus</u> Johannsen	1 to 14,ss
* <u>Orthocladius (Orthocladius) pedestris</u> Kieffer	2,6,11
<u>Orthocladius (Orthocladius) rubicundus</u> (Meigen)	1 to 14,sb,ss
* <u>Orthocladius (Orthocladius) wetterensis</u> Brundin	ss
<u>Paracladius conversus</u> (Walker)	5,9,10,11,ss
<u>Paracricotopus niger</u> (Kieffer)	3,8,9,10,12,ss
* <u>Parakiefferiella bathophila</u> (Kieffer)	12,ss
* <u>Parakiefferiella</u> Pe1 Langton 1991	1,ss
* <u>Parametriocnemus stylatus</u> (Kieffer)	1 to 12,sb,ss
<u>Paratrichocladius rufiventris</u> (Meigen)	1 to 14,sb,ss

Table 1. (continuation).

Tableau 1. (suite).

<u>Paratendipes albimanus</u> (Meigen)	1 to 12
<u>Phaenopsectra flavipes</u> (Meigen)	2 to 14
<u>Polypedilum (Pentapedilum) sordens</u> (van der Wulp)	ss
<u>Polypedilum (Pentapedilum) uncinatum</u> (Goetghebuer)	7
<u>Polypedilum (Polypedilum) albicorne</u> (Meigen)	6,ss
<u>Polypedilum (Polypedilum) convictum</u> (Walker)	1 to 14,ss
<u>Polypedilum (Polypedilum) cultellatum</u> Goetghebuer	1 to 14,sb,ss
<u>Polypedilum (Polypedilum) lactum</u> (Meigen)	2 to 14,ss
<u>Polypedilum (Polypedilum) nubeculosum</u> (Meigen)	1 to 14
<u>Polypedilum (Tripodura) pullum</u> (Zetterstedt)	1 to 10,ss
<u>Polypedilum (Tripodura) scalaenum</u> (Schrank)	1 to 14
<u>Xenochironomus xenolabis</u> (Kieffer)	1,2,3,6,7,12

Chironominae**Tanytarsini****Stations**

<u>Cladotanytarsus mancus</u> (Walker)	1 to 10
<u>Micropsectra atrofasciata</u> (Kieffer)	2 to 14,sb,ss
<u>Micropsectra notescens</u> (Walker)	12,ss
* <u>Paratanytarsus dissimilis</u> Johannsen	1 to 12,sb,ss
<u>Rheotanytarsus curtistylus</u> (Goetghebuer)	2
* <u>Rheotanytarsus pentapoda</u> Kieffer	1 to 10,sb
<u>Rheotanytarsus photophilus</u> (Goetghebuer)	1 to 10
<u>Rheotanytarsus rhenanus</u> Klink	1 to 12,sb,ss
* <u>Stempellina almi</u> Brundin	8
* <u>Tanytarsus brundini</u> Lindeberg	1 to 13,ss
* <u>Tanytarsus curticomis</u> Kieffer	2,11
<u>Tanytarsus ejuncidus</u> (Walker)	1 to 12,ss
<u>Tanytarsus eminulus</u> (Walker)	1 to 14,ss
* <u>Tanytarsus fimbriatus</u> Reiss & Fittkau	5
<u>Tanytarsus heusdensis</u> Goetghebuer	1 to 14,sb
* <u>Tanytarsus palletaris</u> Verneaux	ss
<u>Tanytarsus pallidicornis</u> (Walker)	4,6,7,8

Table 1. (continuation).

Tableau 1. (suite).

<u>Psectrocladius</u> (<u>Psectrocladius</u>) <u>sordidellus</u> (Zetterstedt)	1,2
<u>Rheocricotopus</u> (<u>Psilocricotopus</u>) <u>chalybeatus</u> (Edwards)	1 to 12,sb,ss
<u>Rheocricotopus</u> (<u>Rheocricotopus</u>) <u>fuscipes</u> (Kieffer)	1 to 14,sb,ss
* <u>Rheorthocladius</u> sp. A Thienemann	6,9,ss
<u>Smittia</u> sp.	2,5,9,ss
* <u>Synorthocladius</u> <u>semivirens</u> (Kieffer)	1 to 14,sb
<u>Thienemanniella</u> <u>clavicornis</u> (Kieffer)	1,3,ss
<u>Tvetenia</u> <u>calvescens</u> (Edwards)	1 to 12,ss
* <u>Tvetenia</u> <u>discoloripes</u> (Goetghebuer)	1 to 11
<u>Tvetenia</u> <u>verralli</u> (Edwards)	1 to 12,sb,ss

Chironominae**Chironomini****Stations**

* <u>Chironomus</u> (<u>Chironomus</u>) <u>anthracinus</u> Zetterstedt	1,6,9,10,11,12
<u>Chironomus</u> (<u>Chironomus</u>) <u>aprilinus</u> Meigen	12,13,14,sb,ss
<u>Chironomus</u> (<u>Chironomus</u>) <u>plumosus</u> (Linnaeus)	1 to 14
<u>Chironomus</u> (<u>Chironomus</u>) <u>riparius</u> Meigen	13,sb
<u>Cladopelma</u> <u>virescens</u> (Meigen)	1 to 10
<u>Cryptochironomus</u> <u>rostratus</u> Kieffer	2 to 10
<u>Cryptochironomus</u> <u>supplicans</u> (Meigen)	1 to 12
<u>Cryptotendipes</u> <u>pseudotener</u> (Goetghebuer)	12
<u>Dicrotendipes</u> <u>nervosus</u> (Staeger)	1 to 14,sb
<u>Endochironomus</u> <u>albipennis</u> (Meigen)	1
<u>Glyptotendipes</u> <u>pallens</u> (Meigen)	1 to 14,sb
<u>Glyptotendipes</u> <u>paripes</u> Edwards	1 to 14,sb
* <u>Glyptotendipes</u> <u>signatus</u> Kieffer	3
<u>Harnischia</u> <u>curtilamellata</u> (Malloch)	1 to 12
<u>Kiefferulus</u> <u>tendipediformis</u> (Goetghebuer)	3
<u>Microchironomus</u> <u>tener</u> (Kieffer)	1 to 12
<u>Microtendipes</u> <u>chloris</u> (Meigen)	1 to 12,ss
<u>Microtendipes</u> <u>pedellus</u> (De Geer)	12,sb
<u>Nilothauma</u> <u>brayi</u> (Goetghebuer)	3,7,10
<u>Parachironomus</u> <u>arcuatus</u> (Goetghebuer)	1 to 14,sb,ss
<u>Parachironomus</u> <u>frequens</u> (Johannsen)	1 to 14
<u>Parachironomus</u> <u>vitiotus</u> (Goetghebuer)	11

A set of 8 samples were taken between the French border and Namur (In fact at each dam) with 10 to 15 km intervals. One sample was taken in France and four samples downstream Namur. Two samples were also taken in two tributaries of the river Meuse : the Sambre (a polluted river) and the Samson (a clean stream). Monthly sampling of chironomid exuviae was done and samples were fixed in 95 % alcohol and were sorted in the laboratory. All the sites on the river Meuse were visited during the same day. Pupal exuviae of chironomids were sorted in the samples and identified to species level with the Wilson & Mc Gill 1982 and Langton 1991 keys. For identification exuviae were mounted in Euparal in permanent slides.

3. Results

Monthly samples collected from the river Meuse and its tributaries for a two years period yielded a total of 120 species of Chironomidae ; their list is given in the Table 1.

4. Conclusion

Of the one hundred and twenty species recorded during this survey, thirty one are new to the fauna of Belgium (see Goddeeris & Behen (1991), for details). All the new records are being prepared for a detailed taxonomic description.

Acknowledgments

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References

- Frantzen N. 1992. — Water quality changes of the river Meuse assessed by Chironomid pupal exuviae. *Netherlands Journal of Aquatic Ecology*, 26 (2-4) : 543-549.
- Goddeeris B. & Behen F. 1991. — Chironomidae. In « Catalogue of the Diptera of Belgium » by Grootaert P., De Bruyn L. & De Meyer M. Documents de travail 70 de l'Institut Royal des Sciences Naturelles de Belgique, Bruxelles : 46-56.
- Langton P.H. 1991. — *A key to pupal exuviae of West Palaearctic Chironomidae* P.H. Langton ed. Huntington, Cambridge, England : 386 p.
- Meurisse-Genin M., Reydams-Detollenaere A., Stroot Ph. & Michal J.C. 1987. — Les macroinvertébrés benthiques de la Meuse belge : bilan de cinq années de recherche, (1980 à 1985). *Arch. Hydrobiol.*, 109 : 67-88.
- Wilson R.S. & Mc Gill J.D. 1982. — *A practical key to the genera of pupal exuviae of the British Chironomidae (Diptera, Insecta)*. Univ. Bristol Publ. U.K. : 62 p.