BIOLOGIE, 72-SUPPL.: 73-78, 2002

First records and fast spread of five new (1995-2000) alien species in the River Meuse in Belgium: *Hypania invalida*, *Corbicula fluminea*, *Hemimysis anomala*, *Dikerogammarus villosus* and *Crangonyx pseudogracilis*

J.-P. VANDEN BOSSCHE

Summary

Macrozoobenthos sampling is part of a routine monitoring network for the study of the biodiversity and for the assessment of the biological quality of water courses in Wallonia (Belgium) (VANDEN BOSSCHE 1990 & 2001). In the River Meuse, this monitoring started in 1991 and revealed the arrival of five new alien species.

The recent opening of the canal Danube-Main in 1992 and the subsequent navigation allowed several Ponto-caspian species belonging to the macrozoobenthos to escape from the Danube basin and to invade successively the Main, the Rhine (TITIZER *et al.* 2000) and now the River Meuse basin. From 1998 to 2000, the monitoring network recorded three new alien species in the River Meuse in Belgium: one Polychaeta (*Hypania invalida*) and two Crustacea (*Hemimysis anomala* and *Dikerogammarus villosus).*

Earlier, in 1995, the Asian Bivalvia *Corbicula fluminea* and the North American Amphipoda *Crangonyx pseudogracilis* were also recorded for the first time.

The distribution of *Corophium curvispinum* and *Orchestia cavimana*, two well known Ponto-Caspian amphipods now strongly settled, is also discussed.

Material and methods

Location of the sampling sites

Eleven sampling sites (table 1) are reported here, from upstream to downstream:

- upstream Namur: Heer (French border), Dinant (upstream the Lesse stream confluence), Yvoir, Godinne and Lustin;
- between Namur and Liège: Namèche, Gives (lateral channel not disturbed by navigation) and Chokier;
- downstream Liège: ''Vieille Meuse'' (in Lanaye, natural blind side arm open to the main channel), ''Nouvelle Gravière'' (in Lanaye, artificial blind side arm created in 1987 and open to the main channel) and Petit-Lanaye. These three sites face the Dutch border.

Table 1 — Sampling locations.

Downstreamward	Longitude E	Latitude N
HEER (French border)	4°49'37.49	50°10'32.89
DINANT	4°53'24.08	50°14'05.21
YVOIR	4°53'47.08	50°17'33.22
GODINNE	4°51'20.62	50°20'55.02
LUSTIN	4°52'30.61	50°22'47.50
NAMUR		
NAMECHE	5°00'59.26	50°28'56.21
GIVES	5°08'56.59	50°30'29.08
CHOKIER	5°26'00.28	50°35'21.31
LIEGE		
VIEILLE MEUSE	5°41'33.27	50°47'44.94
NOUV. GRAVIERE	5°41'43.46	50°47'26.06
PETIT-LANAYE	5°41'43.01	50°48'40.50

Sampling methodology

From 1991 to 2001, in order to meet the requirements of various objectives (routine biological monitoring, intensive biological monitoring for international monitoring programmes and biodiversity studies), several methods have been used:

- bank handnet (500 µm mesh size) sampling (substrates: stones, gravel, sand, soft sediments, vegetation; maximum depth about 0.8 m) in all sampling sites in 1991 and 1995; in five sites in 1998;
- intensive sampling, adding to bank handnet three artificial substrates (netbags filled with 5 litres stones, immersion 28 to 30 days, depth about 1 m) and deep bottom dredging (triangular dredge, side size 0.3 m, fitted with 500 µm mesh size net) in four sites in 1998 and all sites in 2000-2001;
- scuba diving (in addition to intensive sampling; 10 litres material collected 4 to 5 m deep with a small spade in a 500 µm mesh size handnet) in Heer, Lustin and Gives in 2000;
- hand sampling (restricted to Bivalvia) on the riverbed bottom (river level lowered for technical maintenance) upstream Namur in 2001.

A special typography is used in the tables to quote the methodology.

Results and discussion

Hypania invalida (GRUBE, 1860) (Polychaeta: Ampharetidae)
Origin: Ponto-Caspian, river Danube.
First record in the River Meuse in Belgium: 2000 (VANDEN BOSSCHE *et al.* 2001).

Distribution and spread: table 2. In 2000, collected mainly by scuba diving (artificial substrates poorly effective in 2000) in Heer, Gives (largest population) and Chokier. In 2001 in artificial substrates in Gives (increased population) and the Nouvelle Gravière (only one specimen).

Expected population development: already present from the French border to the Netherlands border, co-occurring with *Corophium curvispinum*. The population increase from 2000 to 2001 in Gives and the fast colonization of the artificial substrates tend to demonstrate its ability of booming.

Table 2 — *Hypania invalida*

LOCATION	1991	1995	1998	2000	2001
HEER	0	0	**0**	**1**	–
DINANT	0	0	0	–	–
YVOIR	0	0	0	–	–
GODINNE	–	–	0	–	–
LUSTIN	0	0	**0**	**0**	**0**
NAMECHE	–	0	**0**	–	–
GIVES	–	–	–	**250**	**587**
CHOKIER	–	–	**0**	**1**	–
VIEILLE MEUSE	–	–	0	–	**0**
NOUV. GRAVIERE	–	–	–	–	**1**
PETIT-LANAYE	–	0	0	–	–

Number of individuals in the sample
(31 = 10 to 99; 301=>100)
Sampling method: thin numbers: bank handnet sampling; thick numbers: intensive sampling: bank handnet + artificial substrates + bottom dredging;
thick numbers underlined: intensive sampling + scuba diving
italics numbers: hand sampling, bottom dried up, river level lowered
–: no sampling

Corbicula fluminea (MÜLLER, 1774) (Mollusca: Corbiculidae)
Origin: Asian.
First record in the River Meuse in Belgium: 1995, in Seraing (SWINNEN *et al.* 1998) and Petit-Lanaye (VANDEN BOSSCHE 1999 & 2000).

Distribution and spread: table 3. Collected in 1995 and 1998 only in Petit-Lanaye, than in Chokier in 2000. In 2001, hand sampling on dried-up bottom in the river from Heer to Namur and bank handnet sampling downstream Namur delivered numerous specimens. *C. fluminea* was already present in the cooling water system of the nuclear power station at Chooz (France, close to the Belgian border) in 1994 (SWINNEN *et al.* 1998).

Expected population development: present from France to The Netherlands. Its expansion is not disturbed by navigation. The ecological needs required for the species, as described in (BACHMAN *et al.* 1997), are met in the River Meuse. Although the species seemed to require a temperature superior to 20°C most of the year (SWINNEN *et al.* 1998), the recent observations demonstrate that it can also survive and develop in the open channel with a mean annual temperature inferior to 20°C. However, cold waters occurring during very cold winters could be a limiting factor in the open channel but not in cooling water systems. A very fast expansion is expected in Belgium.

Table 3 — *Corbicula fluminea*

LOCATION	1991	1995	1998	2000	2001
HEER	0	0	**0**	**1**	*6*
DINANT	0	0	0	–	*6*
YVOIR	0	0	0	–	*31*
GODINNE	–	–	0	–	*31*
LUSTIN	0	0	**0**	**0**	*31*
NAMECHE	–	0	**0**	–	–
GIVES	–	–	–	**0**	**126**
CHOKIER	–	–	**0**	**27**	–
VIEILLE MEUSE	–	–	0	–	**49**
NOUV. GRAVIERE	–	–	–	–	**4**
PETIT-LANAYE	–	20	31	–	–

Number of individuals in the sample
(31 = 10 to 99; 301=>100)
Sampling method: thin numbers: bank handnet sampling; thick numbers: intensive sampling: bank handnet + artificial substrates + bottom dredging;
thick numbers underlined: intensive sampling + scuba diving
italics numbers: hand sampling, bottom dried up, river level lowered
–: no sampling

Hemimysis anomala (SARS, 1907) (Crustacea: Mysidae)
Origin: Ponto-Caspian.
First record in the River Meuse in Belgium: 2000 (VANDEN BOSSCHE *et al.* 2001).

Distribution and spread: table 4. In 2000, collected upstream Namur (Heer, Lustin) and between Namur and Liège (Gives). In 2001, collected downstream Namur (Gives) and downstream Liège (Lanaye: Nouvelle gravière, Vieille Meuse). *H. anomala* was collected mainly in bank vegetation and in the artificial substrates and, to a lesser extend, by dredging. Handnet stone and gravel sampling did not provide any specimens (probably due to a fast escape behaviour).

Expected population development: the first occurrence in Belgium was quoted in 1999 in the Scheldt River basin (VERSLYCKE *et al.* 2000). In The Netherlands, the species was first noticed in 1997-1998 in a small water body near Amsterdam and in Dutch Rhine branches (FAASSE 1998,

KELLEHER *et al.* 1999). As the ecological requirements of *H. anomala* (FAASSE 1998, KELLEHER *et al.* 1999) are seemingly met in the River Meuse and as the species needed only three years to invade the whole Belgian Meuse course since the first record in the Dutch waters, a rapid increase of the mysid population can be expected.

Table 4 — *Hemimysis anomala*

LOCATION	1991	1995	1998	2000	2001
HEER	0	0	**0**	**13**	–
DINANT	0	0	0	–	–
YVOIR	0	0	0	–	–
GODINNE	–	–	0	–	–
LUSTIN	0	0	**0**	**1**	**0**
NAMECHE	–	0	**0**	–	–
GIVES	–	–	–	**20**	**1**
CHOKIER	–	–	**0**	**0**	–
VIEILLE MEUSE	–	–	0	–	**27**
NOUV. GRAVIERE	–	–	–	–	**19**
PETIT-LANAYE	–	0	0	–	–

Number of individuals in the sample
(31 = 10 to 99; 301=>100)
Sampling method: thin numbers: bank handnet sampling; thick numbers: intensive sampling: bank handnet + artificial substrates + bottom dredging;
thick numbers underlined: intensive sampling + scuba diving
italics numbers: hand sampling, bottom dried up, river level lowered
–: no sampling

Crangonyx pseudogracilis (BOUSFIELD, 1958) (Crustacea: Crangonyctidae)
Origin: North American (TITIZER *et al.* 2000).
First record in the River Meuse in Belgium: 1995 in Yvoir, Lustin and Petit-Lanaye.

Distribution and spread: table 5. In Yvoir and Vieille Meuse in 1998: the amphipods population was very varied in Yvoir (*C. pseudogracilis, Gammarus* spp., *Echinogammarus berilloni, Corophium curvispinum*), while *C. pseudogracilis* was the only amphipod present, in large amounts, in Vieille Meuse. In 1998, 2000 and 2001, *C. pseudogracilis* disappeared from the catches in Lustin, despite the intensive sampling method used. In 2001, the remaining populations of *C. pseudogracilis* were found in Vieille Meuse (in the vegetation and in the artificial substrates) and in Nouvelle-Gravière (in the vegetation only), sharing their biotope with *Dikerogammarus villosus*, the latter being dominant (89.8 % *D. villosus* in Vieille Meuse).

Expected population development: *C. pseudogracilis* is likely to vanish completely from the River Meuse before long, under the increasing pressure of *D. villosus*.

Table 5 — *Crangonyx pseudogracilis*

LOCATION	1991	1995	1998	2000	2001
HEER	0	0	**0**	**0**	–
DINANT	0	0	0	–	–
YVOIR	0	9	3	–	–
GODINNE	–	–	0	–	–
LUSTIN	0	12	**0**	**0**	**0**
NAMECHE	–	0	**0**	–	–
GIVES	–	–	–	**0**	**0**
CHOKIER	–	–	**0**	**0**	–
VIEILLE MEUSE	–	–	301	–	**57**
NOUV. GRAVIERE	–	–	–	–	**24**
PETIT-LANAYE	–	1	0	–	–

Number of individuals in the sample
(31 = 10 to 99; 301=>100)
Sampling method: thin numbers: bank handnet sampling; thick numbers: intensive sampling: bank handnet + artificial substrates + bottom dredging;
thick numbers underlined: intensive sampling + scuba diving
italics numbers: hand sampling, bottom dried up, river level lowered
–: no sampling

Dikerogammarus villosus (SOWINSKY, 1874) (Crustacea: Gammaridae)
Origin: Ponto-Caspian.
First record in the River Meuse in Belgium: 1998. First report as *Dikerogammarus sp.*: 2001 (VANDEN BOSSCHE *et al.* 2001).

Distribution and spread: tables 6, 7. Absent from all samples in 1991 and 1995. Already abundant in 1998 from Dinant to Chokier. Since 1998, *D. villosus* has represented 100 % of the population of Gammaridae (i.e. *Gammarus* spp. + *Echinogammarus berilloni* + *D. villosus*) + Crangonyctidae between Namur and Liège. The explosive increase extended upstream Namur in 2000.

Expected population development: since the first specimen was recorded in the Lower Rhine in The Netherlands in 1994 (BIJ DE VAATE & KLINK 1995), *D. villosus* seems to have developed dramatically and to have become a kind of "killer species", as regards the other Gammaridae and the Crangonyctidae, vanishing very quickly from the River Meuse in Belgium. *D. villosus* does not seem to be detrimental to *Corophium curvispinum* populations.

Corophium curvispinum (SARS, 1895) (Crustacea: Corophiidae)
Origin: Ponto-Caspian.
First record in the River Meuse in Belgium: 1981 in Huy (D'UDEKEM D'ACOZ & STROOT 1988). First report in 1983 in Jambes (WOUTERS 1985).

Distribution and spread: table 8. This exotic amphipod species started invading the River Meuse in Belgium probably in the late 1970's. It is now strongly settled and widely distributed. In 1991, *C. curvispinum* is present

Table 6 — *Dikerogammarus villosus*

LOCATION	1991	1995	1998	2000	2001
HEER	0	0	**0**	**15**	–
DINANT	0	0	6	–	–
YVOIR	0	0	36	–	–
GODINNE	–	–	51	–	–
LUSTIN	0	0	**3**	**1033**	**1943**
NAMECHE	–	0	**124**	–	–
GIVES	–	–	–	**721**	**1181**
CHOKIER	–	–	**148**	**765**	–
VIEILLE MEUSE	–	–	0	–	**503**
NOUV. GRAVIERE	–	–	–	–	**32**
PETIT-LANAYE	–	0	0	–	–

Number of individuals in the sample
(31 = 10 to 99; 301=>100)
Sampling method: thin numbers: bank handnet sampling; thick numbers: intensive sampling: bank handnet + artificial substrates + bottom dredging;
thick numbers underlined: intensive sampling + scuba diving
italics numbers: hand sampling, bottom dried up, river level lowered
–: no sampling

Table 7 — *Dikerogammarus* / Gammaridae + Crangonyctidae (% total number individuals)

LOCATION	1991	1995	1998	2000	2001
HEER	0	0	**0**	**24,6**	–
DINANT	0	0	21,4	–	–
YVOIR	0	0	51,4	–	–
GODINNE	–	–	68	–	–
LUSTIN	0	0	**2,1**	**99,8**	**99**
NAMECHE	–	0	**100**	–	–
GIVES	–	–	–	**100**	**99,7**
CHOKIER	–	–	**100**	**100**	–
VIEILLE MEUSE	–	–	0	–	**89,8**
NOUV. GRAVIERE	–	–	–	–	**57,1**
PETIT-LANAYE	–	0	–	–	–

Number of individuals in the sample
(31= 10 to 99; 301=>100)
Sampling method: thin numbers: bank handnet sampling; thick numbers: intensivesampling: bank handnet +
artificial substrates + bottom dredging;
thick numbers underlined: intensive sampling + scuba diving
italics numbers: hand sampling, bottom dried up, river level lowered
–: no sampling

from the French border to Namur (no sampling downstream Namur). In 1995 and 1998, its occurrence extended to Namèche (absent downstream). In 2000 and 2001, the amphipod continues its expansion: near Liège in 2000 and further downstream in 2001 to the two side blind arms facing the Dutch border (only three individuals caught despite the intensive sampling methods). The use of artificial substrates increases the catches to a large extent.

Expected population development: upstream Namur, *C. curvispinum* population seems to have stabilized. It looks like the invasion of *C. curvispinum* downstream Namur is recent and that the species is still expanding downstream. That situation could be explained by the recent improvement of the water quality of the River Meuse from Namur to Liège. As said above, *C. curvispinum* does not seem to be threatened by *D. villosus.*

Table 8 — *Corophium curvispinum*

LOCATION	1991	1995	1998	2000	2001
HEER	12	7	**637**	**1296**	–
DINANT	32	31	31	–	–
YVOIR	3	31	31	–	–
GODINNE	–	–	31	–	–
LUSTIN	1	9	**697**	**372**	**478**
NAMECHE	–	3	**62**	–	–
GIVES	–	–	–	**387**	**2067**
CHOKIER	–	–	**0**	**9**	–
VIEILLE MEUSE	–	–	0	–	**2**
NOUV. GRAVIERE	–	–	–	–	**1**
PETIT-LANAYE	–	0	0	–	–

Number of individuals in the sample
(31 = 10 to 99; 301=>100)
Sampling method: thin numbers: bank handnet sampling; thick numbers: intensive sampling: bank handnet + artificial substrates + bottom dredging;
thick numbers underlined: intensive sampling + scuba diving
italics numbers: hand sampling, bottom dried up, river level lowered
–: no sampling

Orchestia cavimana (HELLER, 1865) (Crustacea: Talitridae)
Origin: Ponto-Caspian, East Mediterranean (TITIZER *et al.* 2000).
First record in the River Meuse in Belgium: in 1983 in Jambes (WOUTERS 1985).

Distribution and spread: table 9. In 1991, 2 individuals in Yvoir. One specimen in Petit-Lanaye in 1995 and 1998. Numerous specimens in Gives and Nouvelle Gravière in 2001. This semi-terrestrial species was caught mainly while sampling the vegetation of the banks near the surface. It was noticed at Nouvelle Gravière that some land specimens jumped into the net during the sampling.

Expected population development: due to its semi-terrestrial behaviour, *O. cavimana* may escape most of the usual aquatic sampling methods and be more widely distributed than the catches may suggest. All natural banks of the river could therefore be (or are already?) invaded with this amphipod. A special shore-oriented sampling method should be used to assess the actual distribution of *O. cavimana.*

Table 9 — *Orchestia cavimana*

LOCATION	1991	1995	1998	2000	2001
HEER	0	0	**0**	**0**	–
DINANT	0	0	0	–	–
YVOIR	2	0	0	–	–
GODINNE	–	–	0	–	–
LUSTIN	0	0	**0**	**0**	**0**
NAMECHE	–	0	**0**	–	–
GIVES	–	–	–	**0**	**43**
CHOKIER	–	–	**0**	**0**	–
VIEILLE MEUSE	–	–	0	–	**0**
NOUV. GRAVIERE	–	–	–	–	**22**
PETIT-LANAYE	–	1	1	–	–

Number of individuals in the sample
(31 = 10 to 99; 301=>100)
Sampling method: thin numbers: bank handnet sampling; thick numbers: intensive sampling: bank handnet + artificial substrates + bottom dredging;
thick numbers underlined: intensive sampling + scuba diving
italics numbers: hand sampling, bottom dried up, river level lowered
–: no sampling

Jaera istri (VEUILLE, 1979) (Crustacea: Janiridae)
Origin: Ponto-Caspian.
First record in the River Meuse in Belgium: coming soon. This isopod has been present in the Dutch lower Rhine since 1997 (KELLEHER *et al.* 2000).

Conclusion

Earlier alien species (a.o. *Dreissena polymorpha, Viviparus viviparus, Orconectes limosus, Atyaephyra desmaresti, Echinogammarus berilloni,...*) are so well established in the River Meuse in Belgium that they are practically accepted as being part of the local fauna. None of these species seems to have endangered the native species.

The situation has drastically changed with the arrival of the large *D. villosus* whose explosive expansion is directly threatening the other Gammaridae (*Gammarus* spp., *Echinogammarus berilloni*) and *Crangonyx pseudogracilis.*

It took less than ten years from the opening of the canal Danube-Main to record numerous new Ponto-Caspian macro-invertebrates. One can expect additional newcomers in the short term. To what extent the alien species will affect the native biodiversity is not yet clear but the example cited above suggests that (big?) changes in the river biodiversity are already under way.

Acknowledgements

For sampling and identification, the author was assisted by the Université Libre de Bruxelles, Service de Systématique et d'Ecologie animales (JOSENS G., CHÉROT F., DELOOZ E., GRISEZ F.). The monitoring network and biodiversity studies are directed and financed by the Centre de Recherche de la Nature, des Forêts et du Bois, Ministry of the Walloon Region.

References

BACHMAN, V., USSEGLIO-POLATERA, P., CEGIELKA, E., WAGNER, P., POINSAINT, J.F. & MORETEAU, J.-C., 1997. Premières observations sur la coexistence de *Dreissena polymorpha, Corophium curvispinum* et *Corbicula* spp. dans la rivière Moselle. *Bull. Fr. Pêche Piscic.*, 344/345: 373-384.

BIJ DE VAATE, A. & KLINK, A.G., 1995. *Dikerogammarus villosus* SOWINSKY (Crustacea: Gammaridae) a new immigrant in the Dutch part of the Lower Rhine. *Lauterbornia*, 20: 51-54.

D'UDEKEM D'ACOZ, C. & STROOT, Ph., 1988. Note sur l'expansion de *Corophium curvispinum* SARS, 1895 en Meuse (Crustacea, Amphipoda: Corophiidae). *Annales de la Société royale de Belgique*, 118: 171-175.

FAASSE, M.A., 1998. The Pontocaspian Mysid *Hemimysis anomala* SARS, 1907, new to the fauna of The Netherlands. *Bull. Zool. Mus. Univ. Amsterdam*, 16 (10): 73-76.

KELLEHER, B., BIJ DE VAATE, A., SWARTE, M., KLINK, A.G. & van der Velde, G., 2000. Identification, invasion and population development of the Ponto-Caspian Isopod *Jaera istri* VEUILLE (Janiridae) in the lower Rhine, The Netherlands. *Beaufortia,* 50 (4): 89-94.

KELLEHER, B. , VAN DER VELDE, G., WITTMANN, K.J., FAASSE, M.A. & BIJ DE VAATE, A., 1999. Current status of the freshwater Mysidae in The Netherlands, with records of Limnomysis benedeni CZERNIAVSKY, 1882, a Pontocaspian species in Dutch Rhine branches. *Bull. Zool. Mus. Univ. Amsterdam*, 16 (13): 89-96.

SWINNEN, F., LEYNEN, M., SABLON, R., DUVIVIER, L. & VANMAELE, R., 1998. The asiatic clam *Corbicula* (Bivalvia: Corbiculidae) in Belgium. *Bull. Inst. r. Sc. nat. Belg., Biologie*, 68: 47-53.

TITIZER, T., SCHÖLL, F., BANNING, M., HAYBACH, A. & SCHLEUTER, M., 2000. Aquatische Neozoen im Makrozoobenthos der Binnenwasserstrassen Deutschlands. *Lauterbornia*, 39: 1-72.

VANDEN BOSSCHE, J.-P., 1990. Réseau hydrobiologique 1990-1991. Zones de protection des eaux de surface (Arrêté de l'Exécutif régional wallon du 20/7/89). Coordonnées Lambert des points de prélèvement du réseau hydrobiologique de la Division de l'Eau. Rapport. Politique générale de l'Eau, DGRNE, Ministère de la Région wallonne, Namur: 64 pp.

VANDEN BOSSCHE, J.-P., 1999. Résultats hydrobiologiques: premières observations de *Corbicula fluminea* MÜLLER, 1774 (Mollusca, Bivalvia) à Petit-Lanaye (Belgique) sur la Meuse. Rapport du Centre de Recherche de la Nature, des Forêts et du Bois, DGRNE, Ministère de la Région wallonne, Gembloux.

VANDEN BOSSCHE, J.-P., 2000. Qualité biologique des cours d'eau en Région wallonne. *In:* Etat de l'environnement wallon 2000: L'environnement wallon à l'aube du XXIe siècle. DGRNE et coll. Ministère de la Région wallonne, Namur: 156-160.

VANDEN BOSSCHE, J.-P., 2001. Carte de la qualité biologique et de la biodiversité des cours d'eau de Wallonie. Résultats 1996 à 1999 (Poster). Ministère de la Région wallonne, DGRNE, Centre de Recherche de la Nature, des Forêts et du Bois, septembre 2001.

VANDEN BOSSCHE, J.-P., CHÉROT, F., DELOOZ, E., GRISEZ, F. & JOSENS, G., 2001. First record of the Pontocaspian invader *Hypania invalida* (GRUBE, 1860) (Polychaeta: Ampharetidae) in the River Meuse (Belgium). *Belg. J. Zool.*, 131 (2): 183-185.

VERSLYCKE, T., JANSSEN, C., LOCK, K. & MEES, J., 2000. First occurrence of the Pontocaspian invader *Hemimysis anomala* (SARS, 1907) in Belgium (Crustacea: Mysidacea). *Belg. J. Zool.*, 130 (2): 157-158.

WOUTERS, K.A., 1985. *Corophium curvispinum* SARS, 1895 (Amphipoda) in the River Meuse, Belgium. *Crustaceana*, 48 (2): 218-220.

Jean-Pierre VANDEN BOSSCHE
Centre de Recherche de la Nature,
des Forêts et du Bois
DGRNE - Ministère de la Région wallonne
Avenue Maréchal Juin 23
B-5030 Gembloux