

# BULLETIN

# ZOÖLOGISCH MUSEUM

U N I V E R S I T E I T   V A N   A M S T E R D A M

Vol. 11 No. 26 1989

## A NOTE ON THE IMMIGRATION OF *COROPHIUM CURVISPINUM* SARS, 1895 (CRUSTACEA : AMPHIPODA) INTO THE NETHERLANDS VIA THE RIVER RHINE

F.W.B. van den BRINK, G. van der VELDE & A. bij de VAATE

### ABSTRACT

*Corophium curvispinum* Sars, new to the Netherlands, has been recorded recently from two localities in the River Rhine, close to the Dutch-German border.

### INTRODUCTION

*Corophium curvispinum* Sars, 1895 is a new species for the Dutch fauna. This 'freshwater' amphipod originates from the Ponto-Caspic Area. It has expanded its distribution via the River Donau and connected rivers and canals up to Eastern Germany where it has been recorded in Berlin since 1912 (Schellenberg, 1942). Later, in 1956, the species was found in the Mittellandkanal and in 1977 in the Dortmund-Ems canal, indicating its dispersal in western direction (Wouters, 1985).

More recently, in 1981, the species was found for the first time in Belgium in the River Meuse where it is spreading in a southern direction towards France (Wouters, 1985; d'Udekem d'Acoz and Stroot, 1988). The occurrence of the species in the River Avon at Tewkesbury, England (Crawford, 1937) is somewhat isolated from this distribution pattern.

### METHODS, RESULTS AND DISCUSSION

In The Netherlands *Corophium curvispinum* was observed by us for the first time in 1987 (two specimens; leg. M. Klaas) when checking a series of benthic crustacean samples. These samples were taken on 13 Nov. 1987 from artificial substrates (marbles in a net) which were placed on the sediment of the River Rhine near Lobith. Further observations from the same locality are: 27 May 1988 (one specimen), 24 June 1988 (one specimen) and 18 Aug. 1988 (one specimen); all collected with artificial substrates. On 19 Aug. 1988 we found one specimen in the River Rhine at Lobith living on stones in the littoral zone. The occurrence of the species in the River Rhine is in so far not surprising as this river is connected with the Dortmund-Ems canal and the River Meuse, two water systems where the species had been recorded before (Wouters, 1985). However, despite intensive earlier

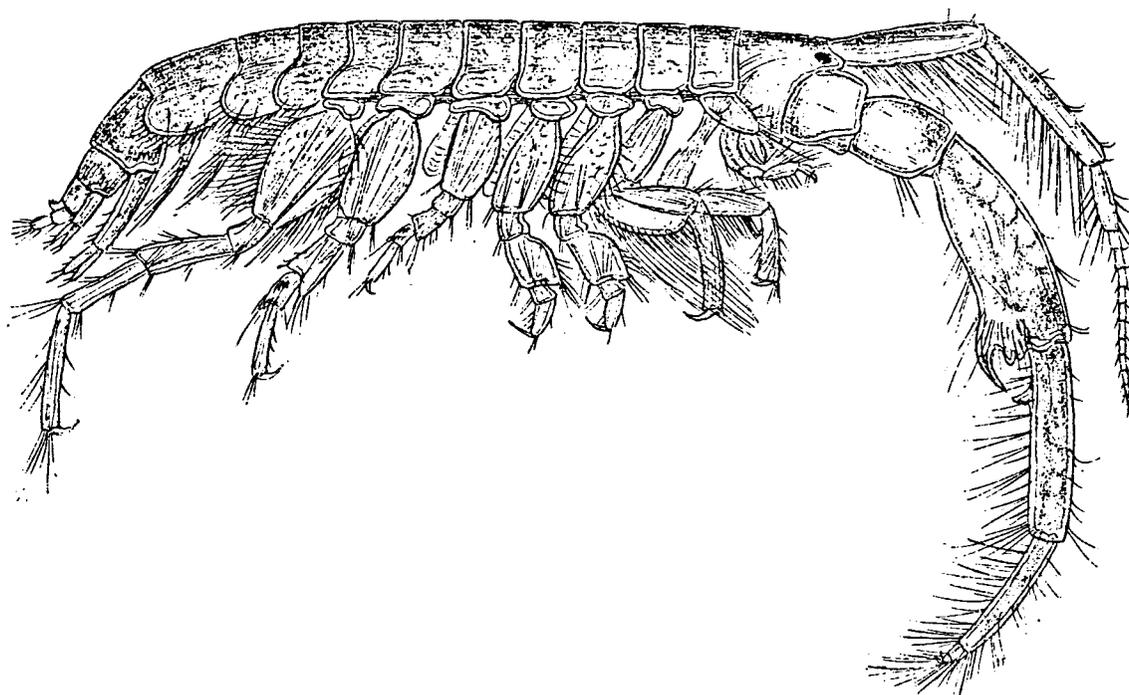


Fig. 1. *Corophium curvispinum* [from Sars, 1895, Bull. Acad. imp. Sci. St.-Petersburg, (5) 3 (2)].

investigations in the Rhine-system, it was not found there until 1987 (Van den Brink et al., in press).

In 1988 we found *C. curvispinum* in the main branch of the Rhine, the River Waal at Nijmegen, 20 km downstream of Lobith. The specimens were collected in the cooling-water filtering screens of a power plant, where the mobile fauna is continuously monitored since 1987 (Van der Velde et al., in press). The power plant is located at the mouth of the 'Maas-Waalkanaal', a canal which connects the rivers Rhine and Meuse. Specimens were collected on 13 Sep. 1988 (one specimen), 15 Nov. 1988 (one specimen) and on 29 Nov. 1988 (three specimens) (leg. P.J.M. Bergers and A.E.J. Hansen). Reference material has been deposited in the Zoölogisch Museum Amsterdam (Z.M.A.), The Netherlands.

Besides *C. curvispinum*, eight other exotic and four indigenous macrocrustaceans are currently known to occur in the freshwater section of the River Rhine in The Netherlands (Van den Brink et al., in press). Although the continuous monitoring project started in

January 1987, *C. curvispinum* was not found in the weekly samples until September 1988.

*Corophium curvispinum* can easily be distinguished from other species of the genus by the following characteristics (after Lincoln, 1979): (1) the urosome segments 1 to 3 are not fused; (2) the head has a triangular rostrum; (3) the fourth segment of the second antenna has a large curved process and one or two smaller processes; (4) dents are present on the inner margin of the dactylus of the second gnathopod. Living specimens are yellowish in colour with brown spots and stripes; their maximum length is 9 mm.

The species prefers large, slow-flowing and stagnant waters such as the lower reaches of large rivers and canals. It lives on the bottom and in the littoral zone on stones, wooden piles and aquatic macrophytes where it builds U-shaped tunnels made of grains of sand and excretion fluids. The amphipod also occurs between freshwater sponges; it feeds mainly on diatoms and on particulate organic matter (Schellenberg, 1942; d'Udekem d'Acoz and Stroot, 1988).

Although until now we have found the species in very low numbers, densities of several hundreds or even thousands of specimens per square metre have been recorded elsewhere (Schellenberg, 1942; d'Udekem d'Acoz and Stroot, 1988). Taking the ecological requirements of the species into consideration it can be expected that *Corophium curvispinum* will extend its distributional range over The Netherlands in the near future.

#### ACKNOWLEDGEMENTS

The authors sincerely thank Prof.Dr. J.H. Stock, Prof.Dr. L.B. Holthuis and Prof.Dr. C. den Hartog for critical remarks and Miss M. Klaas, Mr. P.J.M. Bergers and Mr. A.E.J. Hansen for collecting the material in the field.

#### REFERENCES

BRINK, F.W.B. VAN DEN, G. VAN DER VELDE & W.G.

CAZEMIER, in press. The faunistic composition of the freshwater section of the River Rhine in The Netherlands: present state and changes since 1900. -Arch. Hydrobiol. Beih.

CRAWFORD, G.I., 1937. A review of the amphipod genus *Corophium*, with notes on the British species. -J. mar. biol. Ass., 21: 589-630.

D'UDEKEM D'ACUZ, C. & P. STROOT, 1988. Note sur l'expansion de *Corophium curvispinum* Sars, 1895 en Meuse (Crustacea, Amphipoda: Corophiidae). -Annls. Soc. r. zool. Belg., 118: 171-175.

LINCOLN, R.J., 1979. British Marine Amphipoda: Gammaridea. British Museum of Natural History, i-iv, 658 pp.

SHELLENBERG, A., 1942. -Die Tierwelt Deutschlands, 40 (IV): Flohkrebse oder Amphipoda, Jena Verlag, 252 pp.

VELDE, G. VAN DER, F.W.B. VAN DEN BRINK, M. VAN DER GAAG & P.J.M. BERGERS, in press. Changes in numbers of mobile macro-invertebrates and fish in the River Waal in 1987, studied by sampling the cooling-water intakes of a power plant: first results of a Rhine biomonitoring project. -Arch. Hydrobiol. Beih.

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

Drs. F.W.B. van den Brink, Dr. G. van der Velde,  
Laboratory of Aquatic Ecology,  
Catholic University of Nijmegen,  
Toernooiveld, 6525 ED Nijmegen,  
The Netherlands.

Mr. A. bij de Vaate,  
Ministry of Transport and Public Works,  
Institute for Inland Water Management and Waste  
Water Treatment,  
P.O.Box 17,  
The Netherlands.

Received: 9 March 1989.

Distributed: 12 - V - 1989