Belg. J. Zool. — Volume 122 (1992) — issue 2 — pages 203-210 — Brussels 1992

(Manuscript received on 22 June 1992)

AQUATIC OLIGOCHAETES OF LAKE VIRELLES : FOUR NEW SPECIES FOR THE BELGIAN FAUN

by

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SUMMARY

Nais christinae, Nais simplex, Vejdovskyella intermedia and *Ilyodrilus templetoni,* four species of freshwater oligochaetes, are recorded for the first time from Belgium. The genera *Vejdovskyella* and *Ilyodrilus* are also new for the Belgian fauna. Identification criteria based on external characters are proposed as well as ways to avoid possible confusion with closely related species. Some notes on the ecology of these four species are given.

Key words : aquatic oligochaetes, *Nais, Vejdovskyella, Ilyodrilus.*

INTRODUCTION

Lake Virelles is the largest natural lake of Belgium (PHILIPPART, 1990). A few years ago, its management was entrusted to three associations for Nature preservation : AVES, the « Réserves Naturelles et Ornithologiques de Belgique » (RNOB) and the World Wildlife Fund (WWF). In the framework of the lake management, it was drained during the winter of 1986-1987, which resulted in a spectacular recovery of the water transparancy and of the flora (SCOHY *et al.*, 1987) during the following months. A broad survey of the invertebrate fauna of the lake was then conducted, and material was collected in 1987 and 1988 (MOUREAU *et al.*, 1992).

Specimens of different kinds of plants and algae present were collected from the lake and preserved in bottles with 4 % formalin. The bottom sediment was sampled with a tube corer (diameter 4.4 cm, surface 15.2 cm^2) and fixed with 4 % formalin. Samples were sorted out in the laboratory. The complete procedure of sampling is described in MOUREAU *et al.* (1992). Oligochaetes were mounted in polyvinyl lactophenol, and were examined with an interferential microscope (Reichert, Austria). All figures were drawn by means of a camera lucida.

I identified twelve species of oligochaetes in this material (Table 1 ; MOUREAU *et al.*, in press). Four species, three Naididae and one Tubificidae, are new for the Belgian fauna : *Nais christinae* KASPRZAK (1973), *Nais simplex* PIGUET (1906),

Vejdovskyella intermedia (BRETSCHER, 1896) and *Ilyodrilus templetoni* (SOUTHERN, 1909). The genera *Vejdovskyella* MICHAELSEN (1903) and *Ilyodrilus* EISEN 1879 are also found for the first time in Belgium.

These new records are not surprising because the oligochaete fauna of Belgium is still ill-known (MARTENS, 1989). A good example of this situation is given by the recent description of three species of the genus *Potamothrix,* mentioned for the first time in Belgium despite their holarctic distribution (MARTIN, 1991). This brings the total number of species of Belgian aquatic oligochaetes to 55. The four newly found species are kept in the collections of the Royal Belgian Institute of Natural Sciences (No I.G. 27.854).

IDENTIFICATION CHARACTERS AND ECOLOGICAL INFORMATION

Nais christinae (KASPRZAK, 1973)

This species is one of the most interesting new records because of its very recent description by KASPRZAK (1973). Actually, this species was already recognized

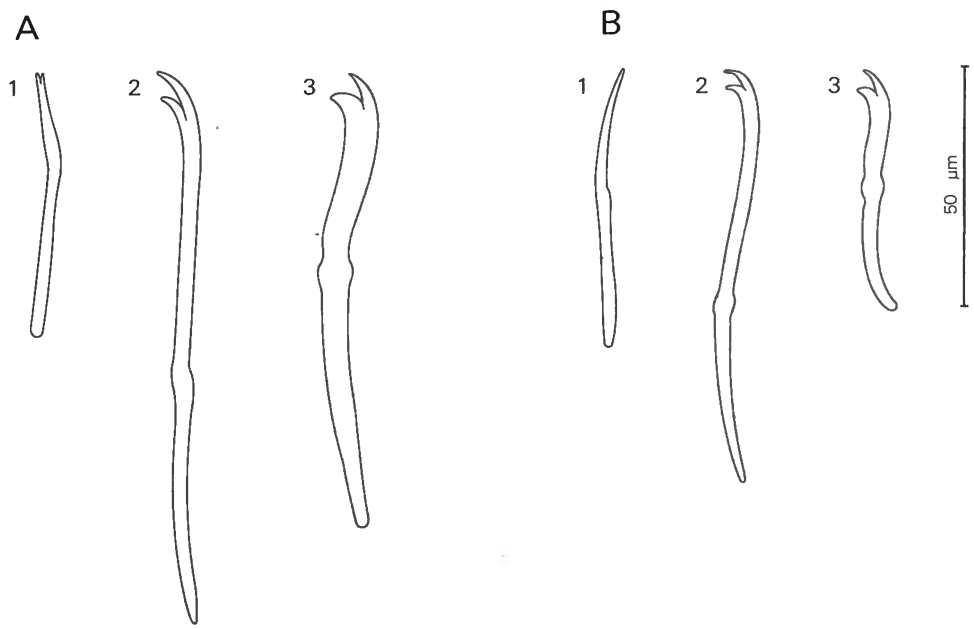

Fig. 1. — (A) *Nais christinae :* bifid dorsal crotchet (1) and ventral chaetae of segment II (2) and of segment VI (3). (B) *Nais simplex :* blunt dorsal crotchet (1) and ventral chaetae of segment II (2) and of segment VI (3).

without any doubt by PIGUET in 1906, but was considered as a variant of *Nais variabilis* PIGUET (1906), i.e. *N. variabilis* var. « des grands lacs ».

Within the genus *Nais,* the species is easily identifiable externally by its dorsal bifid crotchets and ventral chaetae (KASPRZAK, 1973 ; HRABĚ, 1979 ; Fig. 1A). On segments II to V, the latter are very characteristic, with a proximal tooth nearly twice as long as the distal one, and forming a very acute angle with it. Behind segment V, the ventral chaetae are very stout and have nearly equally-long teeth. These characters allow distinction from *N. variabilis* and *Nais pardalis* PIGUET (1906), respectively.

Nais christinae was found exclusively in the surroundings of various macrophytes, as its swimming mode of life would suggest : *Potamogeton pectinatus* L., *Utricularia australis* R. BR., *Alisma plantago* L., *Sparganium erectum* L. and *Myriophyllum* sp.

Due to its recent specific status, its distribution is ill known. HRABĚ (1979) mentioned it from Czechoslovakia, Switzerland, Sweden, Poland and USSR. It may seem strange that an apparently well-defined species was described only recently, whereas it was already mentioned as a variant by PIGUET in 1906. On the basis of the ventral chaetae, the author pointed out that there were numerous intermediate forms between *N. variabilis* and the variant « des grands lacs ». This could explain a possible confusion between both species. However, the recent examination of other characteristics by KASPRZAK (1973), such as structure, shape and size of parts of the genital organs, validated the specific status. Careful examination of material is therefore necessary, and it is quite probable that the species may be discovered in old collections.

Nais simplex PIGUET (1906)

Contrary to the situation of *N. christinae, N. simplex* has been known for a very long time (BRINKHURST and JAMIESON, 1971) and is well defined. Within the genus, it shares simple-pointed dorsal crotchets with *N. barbata, N. pseudobtusa* and *N. alpina (*BRINKHURST, 1971). However, the blunt tip of the dorsal crotchets (Fig. 1B) allows the distinction with the first two species (BRINKHURST, 1971 ; HRABĚ, 1979). *N. simplex* differs from *N. alpina* because the distal tooth on the ventral chaetae in segments II to V is perpendicular to the axis of the chaeta (HRABĚ, 1979) and the posterior ventral chaetae have equal teeth (unlike in *N. alpina,* where their proximal tooth is twice as long as the distal ; BRINKHURST, 1971).

Nais simplex is a swimming species as well as *N. christinae,* and was never found in the sediment but only periphytic on algae and on macrophytes : *Potamogeton lucens* L., *Potamogeton berchtoldii* FIEB., *Potamogeton natans* L. and *Rhizoclonium* sp. It was occasionally found in association with *N. christinae* on *Myriophyllum* sp.

Vejdovskyella intermedia (BRETSCHER, 1896)

Vejdovskyella is a very easy genus to identify because of its numerous thick hair chaetae, strongly serrated, giving a « hairy » look to the animal (Fig. 2A).

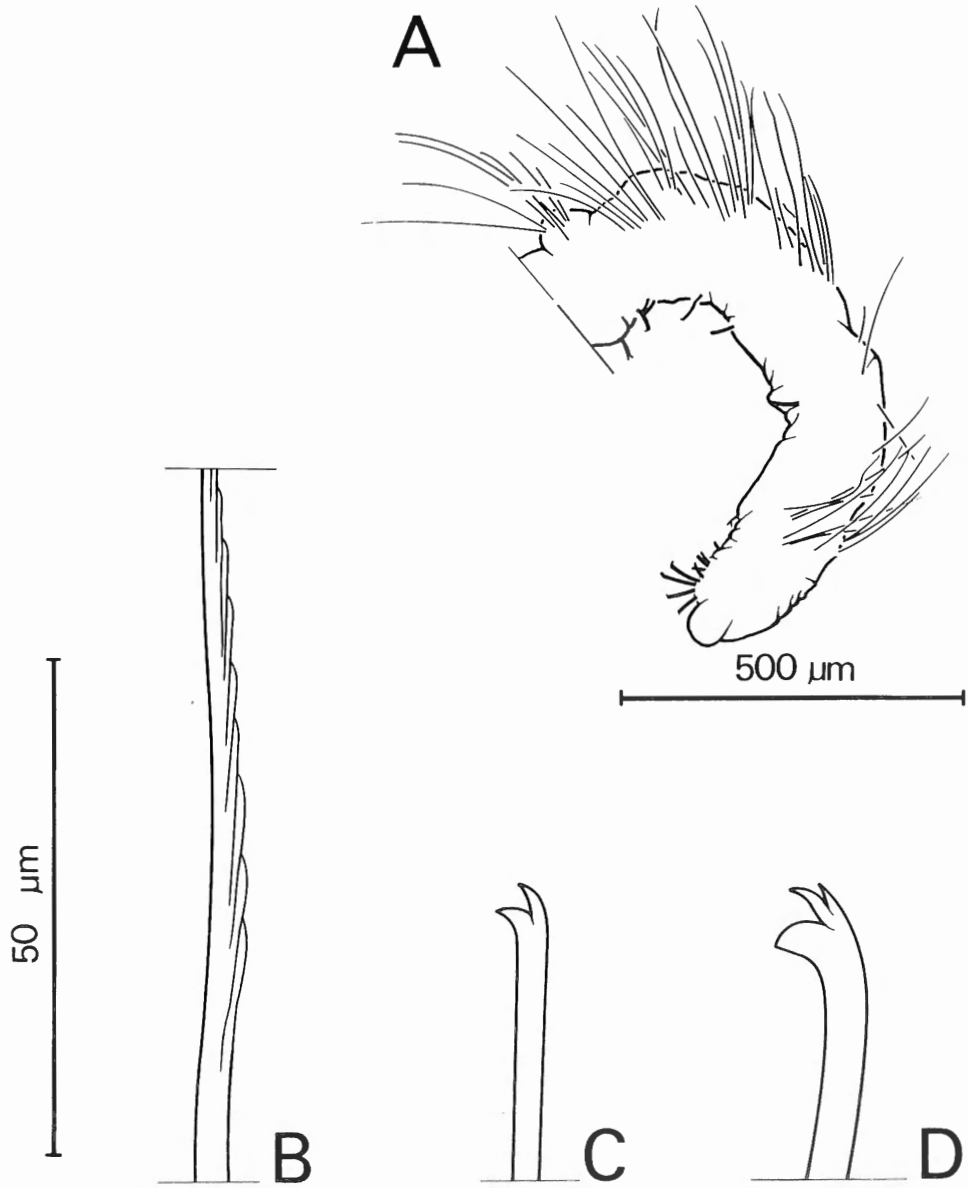

Fig. 2. — *Vejdovskyella intermedia* : general view of the first segments (hair chaetae are missing on a few segments) (A), hair chaeta (B), ventral chaetae of segment II (C) and of segment VI (D).

The genus includes two species, *V. comata* and *V. intermedia*. A third one, *V. hellei*, was transferred to the genus *Specaria* by BRINKHURST and KATHMAN (1983) but this transfer was later omitted (BRINKHURST and WETZEL, 1984) and the genus was suspected to require a careful revision. Actually, the situation of the genus has been thoroughly confused for a long time, which led BRINKHURST and JAMIESON (1971) to synonymize *V. comata* and *V. intermedia*. However, a recent examination of BRINKHURST and KATHMAN (1983) identified the source of confusion and both species are now again deemed valid.

Vejdovskyella intermedia differs from *V. comata* in the absence of eyes and the presence of a particularly large chaeta with a wide lower tooth and 2-3 thin upper teeth in ventral segment VI and often subsequent segments (SPERBER, 1950 ; HRABĚ, 1979 ; Fig. 2D). In *V. intermedia*, hair chaetae have large coarse lateral serrations, set close to shafts (Fig. 2B), but in *V. comata*, the serrations are often curled back over the main shaft (BRINKHURST and KATHMAN, 1983).

Vejdovskyella intermedia was found in the sediment of one station only. It is not a swimming animal (BRINKHURST and JAMIESON, 1971), and this can explain its absence in the surroundings of plants.

Ilyodrilus templetoni (SOUTHERN, 1909)

Ilyodrilus templetoni is a non-papillate tubificid with hair chaetae in dorsal bundles accompanied by pectinate chaetae, without modified genital chaetae but with a cuticular penis sheath (BRINKHURST, 1971). This penis sheath is longer than broad and often inconspicuous (Fig. 3A).

BRINKHURST (1986) points out that this species is often confused with *Tubifex tubifex* (MÜLLER, 1774) but that *I. templetoni* has the most anterior ventral chaetae with proximal teeth distinctly longer than the distal ones. As it can be seen in Fig. 3B, this difference is not always obvious. However, the short and typically granular penis sheath of *T. tubifex* allows an easy distinction between the two species.

The specimens sampled in Lake Virelles are often less than 10 mm long, which is in accordance with BRINKHURST and JAMIESON (1971) who mentioned a relatively small size for most specimens, and with HRABĚ (1979), who indicated a body length of 10 mm.

Most tubificids are burrowers (BRINKHURST, 1982), which probably explains the exclusively presence of *I. templetoni* in the sediments. It was found associated with other tubificids, such as *Limnodrilus claparedeianus*, *Limnodrilus hoffmeisteri*, *Branchiura sowerbyi*, and even with naidids like the non-swimming *Vejdovskyella intermedia* or *Dero digitata* which lives like tubificids in organic silts (BRINKHURST, 1982).

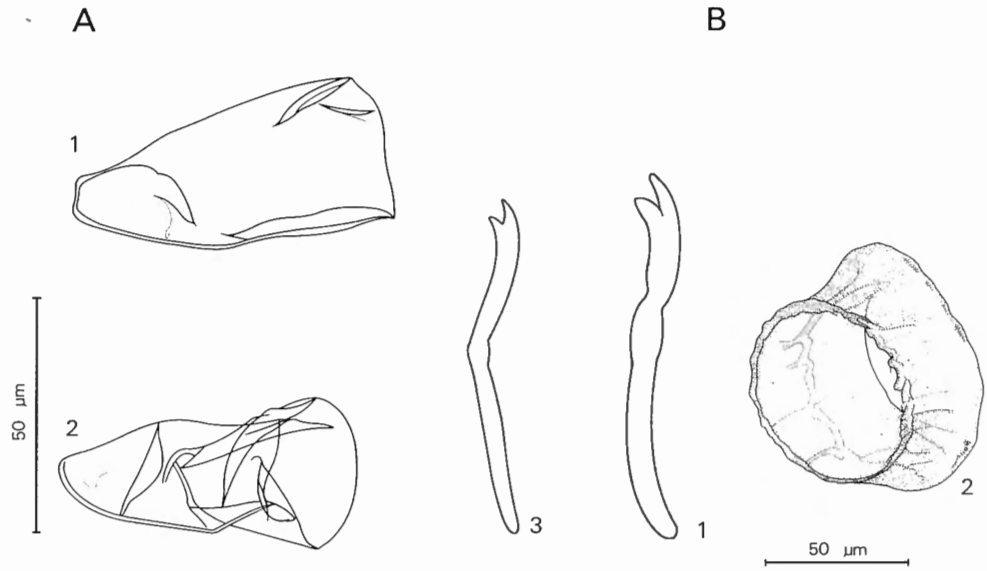

Fig. 3. — (A) *Ilyodrilus templetoni :* penis sheaths (1-2), ventral chaeta of segment II (3). (B) *Tubifex tubifex :* ventral chaeta of segment II (1) and penis sheath (2). The scale is the same for all drawings except for the penis sheath of *T. tubifex* (B2).

ACKNOWLEDGEMENTS

I wish to thank Dr. B. Goddeeris and Dr. Z. Moureau who sampled Lake Virelles and allowed me to study this collection. I acknowledge G. Petre sorting out the material and C. Devries-Duchène for her technical assistance in preparing the figures. I am most grateful to Dr. R. O. Brinkhurst who shared with me some of his stupendous knowledge of oligochaetes during a stay in his laboratory, and who checked the validity of identifications.

TABLE I

Faunistic list of oligochaetes of Lake Virelles (Belgium)

Fam. Naididae

Dero digitata (MÜLLER, 1773)
Nais christinae KASPRZAK, 1973
Nais simplex PIGUET, 1906
Ophidonais serpentina (MÜLLER, 1773)
Stylaria lacustris (LINNAEUS, 1767)
Vejdovskyella intermedia (BRETSCHER, 1896)

Fam. Tubificidae

Branchiura sowerbyi BEDDARD, 1892
Ilyodrilus templetoni (SOUTHERN, 1909)
Limnodrilus claparedeianus RATZEL, 1868
Limnodrilus hoffmeisteri CLAPARÈDE, 1862
Tubifex tubifex (MÜLLER, 1774)

Fam. Lumbriculidae

Stylodrilus heringianus CLAPARÈDE, 1862

Fam. Enchytraeidae

Spp. not identified.

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