A FIRST RECORD OF
MARENZELLERIA VIRIDIS (VERRILL, 1873)
(POLYCHAETA, SPIONIDAE)
IN THE SCHELDE ESTUARY (BELGIUM)

by

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SUMMARY. — In the Schelde estuary a first record (two specimens) of the spionid Marenzelleria viridis (Polychaeta, Spionidae) was made on 23th October 1996 at Doel, near the Dutch-Belgian border. M. viridis originates from the east coast of North America. In Europe, first observations of this species date from the 1980s. Nowadays, the species is proliferating rapidly and in some areas it is the dominating macrobenthic species (e.g. Ems estuary, Baltic Sea). The new observation of M. viridis in the Schelde estuary is the most southern limit reported for this species in Europe.

INTRODUCTION

Several marine, estuarine and freshwater macroinvertebrate species have been introduced or immigrated to European waters during the past 100 years (e.g. the bivalves Ensis directus, Petricola pholadiformis, Corbicula fluminalis and C. fluminea, and the crustaceans Eriocheir sinensis, Rhithropanopeus harrisi, Corophium curvispinum, Gammarus tigrinus).

A recent immigrant in European brackish waters is the spionid Marenzelleria viridis (Verrill, 1873). This spionid originates from estuaries along the east coast of North America, where it is found

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from Newfoundland to South Carolina (GEORGE, 1966; MACIOLEK, 1984). The first observation of *M. viridis* in Europe dates from 1982 in the Forth Estuary (Scotland, McLUSKY et al., 1993). On the European mainland the first observation was done in 1983 in the Ems estuary (The Netherlands, ESSINK & KLEEF, 1988), after which the species spread to several estuaries around the North Sea and Wadden Sea (see ESSINK & KLEEF, 1988, 1993). In the Baltic Sea the species was first observed in Germany in 1985 by BICK & BURCKHARDT (1989), and also here a rapid spread over the whole Baltic Sea was observed (see ESSINK & KLEEF, 1993; ZETTLER et al., 1995; ZETTLER, 1996).

*M. viridis* is a typically spionid like worm, with a bell-shaped prostomium, and with branchiae beginning on the first setiger, being absent from the last half or third of body. It is a very robust species with size reported up to 140 mm long (GEORGE, 1966). For more details see MACIOLEK (1984), and ATKINS et al. (1987). *M. viridis* typically inhabits the meso- and oligohaline stretches of estuaries, lagoons and coastal basins, and it can be considered to be a genuine brackish water species, extremely tolerant to lowered salinities (GEORGE, 1966; ESSINK & KLEEF, 1993; ZETTLER et al., 1995; BOCHERT et al., 1996a, 1996b; ZMUDZINSKI, 1996). The worms live in vertical, mucus-lined burrows up to 35 cm deep, predominating in sandy sediments (ATKINS et al., 1987; ESSINK & KLEEF, 1993; ZETTLER et al., 1995), but also found in muddy sediments (GRUZSKA, 1991).

This short note reports the first observation of *M. viridis* in the Schelde estuary near the Dutch/Belgian border, being the most southern observation of this species in Europe.

**MATERIAL AND METHODS**

The Schelde estuary, a macrotidal coastal plain estuary, is situated at the border between the Netherlands and Belgium. It measures 160 km between the mouth in Vlissingen and Gent, where it is artificially stemmed by a weir. The study area is situated in the Belgian part of the estuary, near the Dutch-Belgian border (Fig. 1). In this part of the estuary a mean tidal amplitude of ± 5.0 m is observed.

On 16 and 23 October 1996 53 locations were sampled in the study area. All locations were situated subtidally, and samples were taken from a ship with a ‘Van Veen’ grab sampler (0.105 m²). One grab was taken at each location, and directly sieved on a sieve with mesh size 1 mm. One sediment core (Ø 2 cm) was collected for granulometry
analysis. Position and depth were noticed at each location. At the time of sampling, the salinity of the surface water was approximately 11-12.5 p.s.u., the temperature ±15°C, and oxygen content 4-5 mg/l.

In the laboratory, all samples were stained with Rose Bengal and all individuals were identified to species or genus level (except Oligochaeta) and counted.

RESULTS AND DISCUSSION

Two spionid worms were discovered in the Van Veen grab of location 48 (5118 N; 416 W; Fig. 1) and were identified as belonging to the genus *Marenzelleria*. By using the detailed description of the genus *Marenzelleria* by Maciolek (1984) and Atkins et al. (1987) and by comparing with specimens sent by K. Essink from the Ems estuary, the two specimens were further identified as *Marenzelleria viridis* (Verrill, 1873). The two specimens found were broken, being approximately 40 and 25 mm long.

Other macrobenthic species found at this location were *Boccardia redeki, Heteromastus filiformis* and *Oligochaeta*. The sampling location 48 was situated at a depth of ±5 m and was characterized by very fine sand (median grain size 74 μm; fraction < 63 μm = 44%).
In recent sampling programs in the Schelde estuary, no other observations on the occurrence of *M. viridis* were done (personal observations; J. Craeymeersch, pers. comm.). However, already in October 1995 two specimens and in March 1996 four specimens were observed at the Hinderplaat, a sandflat in the southwestern part of the Netherlands, in front of the coast of Voorne, south of the ‘Maasvlakte’ (harbour of Rotterdam) (J. Craeymeersch, pers. comm.).

As *M. viridis* is colonizing large areas in many European marine and estuarine habitats, it has become a well studied species. Several studies deal with the question of how this species is colonizing Europe, and recent work, based on population genetic analysis, strongly supports the hypothesis that the Baltic Sea and the North Sea were colonized more or less at the same time by sibling species of the genus *Marenzelleria* found on the Atlantic coast of North America (Bastrop et al., 1995; Röhnert et al., 1996). Based on the spread at its present rate, a further colonization of *M. viridis* in European brackish waters can be expected within the near future. The observation in the Schelde estuary seems to be a proof of that. At present, the observation of *M. viridis* in the Schelde estuary is geographically the most southern observation in Europe.

The introduction of ‘alien’ species into an ecosystem can have a serious impact on the indigenous community. In the Baltic *M. viridis* is in many areas the most common macrozoobenthos representative (Norkko, 1993; Zettler et al., 1995), and often has displaced the indigenous chironomids and oligochaetes in the oligohaline regions (Zettler et al., 1995; Zmudzinski, 1996). In the Dollard region of the Ems estuary *M. viridis* has become one of the dominating macrobenthic species (Essink & Kleef, 1993). In our study area in the Schelde estuary, which is the upstream mesohaline part of the estuary, the intertidal benthic macrofauna is at present dominated by *Corophium volutator*, *Nereis diversicolor* and oligochaetes (Ysebaert et al., 1993). Subtidally, the study area is dominated by *Buccardia redeki*, *Heteromastus filiformis* and oligochaetes. Towards the oligohaline part of the estuary, the benthic macrofauna gets totally dominated by oligochaetes (Ysebaert et al., 1993). These benthic communities of the meso/oligohaline zone are very much alike as in the other estuaries along the NW-European coast and the Baltic, and the future will learn if *M. viridis* succeeds in colonizing the Schelde estuary as well.
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REFERENCES


