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Marine Gastrotricha from the Belgian coast: species list and distribution

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Abstract

A list of thirty seven species of marine gastrotrichs is given, together with their occurrences at seven collection sites along the Belgian coast. Of these, twenty three species belong to the order Macrodasyida and the other fourteen to the order Chaetonotida. Twenty species were recorded only from the four eulitoral sites, thirteen species only from the three sublitoral sites and four species from both zones.
Key words: Marine Gastrotricha, species list, distribution, Belgian coast.

Résumé

GASTROTRICHES MARINS DE LA COTE BELGE: LISTE D'ESPECES ET DISTRIBUTION.
Une liste de trente-sept espèces de gastrotriches marins est présentée, ensemble avec leurs occurences dans sept localités à la côte belge. Vingt-trois espèces appartiennent à l'ordre des Macrodasyida, les quatorze autres espèces appartiennent à l'ordre des Chaetonotida. Vingt espèces ont été trouvées seulement dans les quatre sites littoraux, treize espèces n'ont été trouvées que dans les trois sites sublittoraux et quatre espèces sont présentes dans les deux zones.
Mots-clés: Gastrotriches marins, liste d'espèces, distribution, côte belge.

Introduction

Marine gastrotrichs form one of the lesser known meiofaunal taxa. This study is the first one ever made on marine Gastrotricha from the Belgian coast, despite the group being one of the abundant meiofaunal taxa in this region (JOUK, own observations).
The species list we are presenting is probably not a complete representation of all gastrotrich species in this area. Our intention is simply to give a preliminary indication of both the species-richness and the distribution of these animals in the eulitoral and in the sublitoral zones from the Belgian coast. While the number of sites is few, the short length of this coastline (about 65 km) renders the Belgian coast bordering the North Sea the best known in the world today.

Methods and description of the localities

Four eulitoral (Oostduinkerke, Mariakerke, Bredene and Zwin) and three sublitoral (North Sea 1, 2 and 3) sites have been investigated. The eulitoral samples were either bulk samples (first three localities) or were obtained by hand coring (Zwin). All sublitoral samples have been taken by means of a grab. Samples were studied alive by narcotizing the fauna in a 6 - 7 % solution of $MgCl_2$ (HUMMON, 1974; MARTENS, 1984; HIGGINS & THIEL, 1988) and then extracting them by multiple decantation, using sea water chasers to facilitate recovery of the extracted animals. The animals were picked out at 20 - 25 × magnification under a dissecting microscope and were examined and identified at 600 - 1200 × magnification under a compound microscope that was equipped with Nomarski interference contrast optics.
Sediment analyses were carried out for the four eulitoral sites: Mariakerke sands were fine, very well sorted and almost symmetrical in skewness (Md Φ = 2.215; QD Φ = 0.269 and Sk Φ = –0.022), Bredene sands were slightly less fine, a bit more poorly sorted but still almost symmetrical in skewness (Md Φ = 2.065; QD Φ = 0.354 and Sk Φ = –0.065), Oostduinkerke sands were also fine, but more poorly sorted than those at Mariakerke and Bredene and with a clear negative skewness (Md Φ = 2.209; QD Φ = 0.683 and Sk Φ = –0.236) and Zwin sands were clearly less fine than at the other sites, mixed with shell debris, poorly sorted and negatively skewed (Md Φ = 1.528; QD Φ = 0.752 and Sk Φ = –0.241).
The sublitoral stations are stations 430 (51°32'N 02°40'E; 38 m deep), 535 (51°37'N 02°42'E; 34 m deep) and 630 (51°37'N 02°33'E; 36 m deep) of R. HUYS of the Laboratory of Morphology and Systematics of the State University of Ghent, who kindly provided the samples containing live animals for analysis. Sediments were medium sands, with medium sorting and a moderate negative skewness.

Species list

A detailed list of species, along with the sites at which they were found, is given in table 1. Where one species was clearly the most abundant species at a site, it is indicated by a "+" symbol; where another species was clearly the next most abundant, it is indicated by a "×" symbol. A total of thirty seven species was encountered, twenty three of them belonging to the order Macrodasyida and fourteen to the order Chaetonotida.

Most species seemed clearly restricted either to the eulitoral or the sublitoral zone. Twenty of the thirty seven species have been found thus far only in the eulitoral zone, while thirteen others have been found only in the sublitoral. Only four species occurred in both zones: *Acanthodasys aculeatus, Pseudostomella roscovita, Turbanella cornuta* and *Halichaetonotus aculifer.* The list of species occurrences is with few exceptions representative of the zones in which they typically occur; those exceptions are mostly cases where elsewhere species may occur in both of these zones, e.g. *Dactylopodola typhle,* both species of *Mesodasys, Pleurodasys helgolandicus* and *Macrodasys caudatus.*

The total of Belgian species represents approximately one-fifth of those known from all of northern Europe (the region extending down to a seaward extention of the western Pyrenees Mountains in Spain). including the British Isles. Within the macrodasyids, the three genera *Tetranchyroderma, Turbanella* and *Macrodasys* are the most species-rich genera in that order, making up some thirty percent of all species the world over. In our samples, only *Turbanella* shows proportionate richness of species. Within the marine chaetonotids, *Chaetonotus* and *Halichaetonotus* are the most species-rich genera in that order, making up nearly sixty percent of all species the world over. In our samples, only *Halichaetonotus* shows comparable richness of species, and here it represents twice the proportion of species that occur the world over. Two of the *Halichaetonotus* are new to science and are being described by the second author (WDH).

A small group of species, comprising only some sixteen percent of those we have found in Belgium (*Cephalodasys maximus, Dactylopodola cornuta, Lepidodasys martini, Pleurodasys helgolandicus, Tetranchyroderma tribolosum* and *Urodasys mirabilis*) are widely distributed (frequently encountered in some localities and occasionally abundant) throughout northern Europe. None thus far has been found in southern Europe (i.e. below the western Pyrenees of Spain). The remaining thirty one of thirty seven species all appear to have distributions that include both northern and southern Europe. Thus, most marine gastrotrichs, as we understand the group today, seem to show broad regional and often interregional cosmopolitanism.

Comparing our species list with the results of other surveys in the North Sea and Channel areas shows that a high number of species occur in common. BOADEN (1976) investigated the Dutch Delta region of the Rhine, Meuse and Scheldt rivers and encountered a total of sixteen gastrotrich species. If the localities with extremely low salinity (chlorinity below 3.0 Cl) are excluded, thirteen species remain. Of these, six species have also been found in Belgium. BOADEN cited *Turbanella hyalina* as being the most common gastrotrich that he encountered, even more abundant than *Neodasys chaetonotoideus,* both species occurring as well in the eulitoral as in the sublitoral. On the Belgian coast, these two species were only found in the eulitoral and were certainly not the most common gastrotrichs present. *Cephalodasys turbanelloides* and *Turbanella cornuta* were also common in the Delta region, the former species mainly being encountered in the sublitoral and the latter in the eulitoral. We found *Cephalodasys turbanelloides* only in the eulitoral sites, but *C. maximus* was found in two of the three sublitoral sites, being the dominant gastrotrich present in one of them. *Turbanella cornuta* occurred in all but one of our seven eulitoral and sublitoral Belgian sites, being subdominant in one of the three sublitoral sites in which it occurred. Also *Turbanella ambronensis* and *Paraturbanella teissieri* occured in both the Delta region and in Belgium, but they were much less common than the other four species.

D'HONDT (1968) reported on the eulitoral gastrotrich fauna of the coasts of northern France. A list of nineteen species was given (eleven macrodasyids and eight chaetonotids). Subsequently, two of the present authors (WDH and ER) have added eleven species (two macrodasyids and nine chaetonotids) to the list of this region. This brings the totals to thirty species (thirteen macrodasyids and seventeen chaetonotids). Of these, twenty one were also found by us in Belgium (twelve of the thirteen macrodasyids and nine of the seventeen chaetonotids). The majority of our Belgian species were also found in the eulitoral zone (eleven of our twelve macrodasyids and eight of our nine chaetonotids). In addition, six of the species found in the French eulitoral were found by us in the Belgian sublitoral, four of our species being found in both the eulitoral and the sublitoral and only two species (one macrodasyid and one chaetonotid) being found exclusively in the sublitoral. *Cephalodasys turbanelloides* (the *Paradasys turbanelloides* of D'HONDT) and *Turbanella cornuta,* the two most common macrodasyid species in the French study, were also common in our study as well as in the Dutch Delta region. *Xenotrichula intermedia* (the *X. beauchampi* of D'HONDT), the most common chaetonotid species in the French study, was also quite common at the Belgian coast, but was not among the species that BOADEN reported from the Dutch Delta region. Moreover, the second most common chaetonotid in the French study, *Halichaetonotus dubius* (the *Chaetonotus decipiens* of D'HONDT), was found neither by us in Belgium nor by BOADEN in the Netherlands.

Table 1
Species list and distribution of the marine Gastrotricha of the Belgian coast. OD: Oostduinkerke; Ma: Mariakerke; Br: Bredene; Zw: Zwin; NS1: North Sea 1; NS2: North Sea 2; NS3: North Sea 3.

	OD	Ma	Br	Zw	NS1	NS2	NS3
ORDER MACRODASYIDA 23 species							
DACTYLOPODOLIDAE							
Dactylopodola cornuta (Swedmark, 1956)				★			
Dactylopodola typhle (Remane, 1927)					★	+	★
LEPIDODASYIDAE							
Cephalodasys maximus Remane, 1926					★		+
Cephalodasys turbanelloides (Boaden, 1960)	★	★	★	★			
Dolichodasys elongatus Gagne, 1977		★					
Lepidodasys martini Remane, 1926							★
Mesodasys laticaudatus Remane, 1951					+		
Mesodasys litoralis Remane, 1951							★
Pleurodasys helgolandicus Remane, 1927							★
MACRODASYIDAE							
Macrodasys caudatus Remane, 1927				★			
Urodasys mirabilis Remane, 1926							★
THAUMASTODERMATIDAE							
Acanthodasys aculeatus Remane, 1927	★	×	★	★			★
Diplodasys ankeli Wilke, 1954					★	★	
Diplodasys minor Remane, 1936						★	
Pseudostomella roscovita Swedmark, 1956			★	★	★		
Tetranchyroderma megastomum (Remane, 1927)					★	★	★
Tetranchyroderma tribolosum Clausen, 1956					×		
TURBANELLIDAE							
Paraturbanella dohrni Remane, 1927		+	★	★			
Paraturbanella teissieri Swedmark, 1954	★						
Turbanella ambronensis Remane, 1943		★		★			
Turbanella bocqueti Kaplan, 1958		★	★	★			
Turbanella cornuta Remane, 1925	★	★		★	★	★	×
Turbanella hyalina Schultze, 1853		★		★			
ORDER CHAETONOTIDA 14 species							
SUBORDER MULTITUBULATINA							
NEODASYIDAE							
Neodasys chaetonotoideus Remane, 1927	★	★	★				
SUBORDER PAUCITUBULATINA							
XENOTRICHULIDAE							
Heteroxenotrichula affinis (Remane, 1934)		★		★			
Heteroxenotrichula squamosa Wilke, 1954		★		★			
Xenotrichula intermedia Remane, 1934	★		★	★			
Xenotrichula velox Remane, 1927		★					
CHAETONOTIDAE							
Chaetonotus neptuni Wilke, 1954					★		
Chaetonotus parthenopeius Wilke, 1954						★	
Halichaetonotus aculifer (Gerlach, 1953)			★	★		★	
Halichaetonotus arenarius (d'Hondt, 1971)			★				
Halichaetonotus batillifer (Luporini, Magagnini & Tongiorgi, 1972)			★	★			
Halichaetonotus jucundus (d'Hondt, 1971)	★	★		★			
Halichaetonotus sp. C of WDH				★			
Halichaetonotus sp. D of WDH		★					
Heterolepidoderma clipeatum Schrom, 1972	★						
	8	14	10	17	9	7	9

TAXONOMIC NOTES

— *Mesodasys laticaudatus* REMANE, 1951 is the senior synonym for *Mesodasys lobocercus* (BOADEN, 1960) BOADEN, 1963.
— *Pleurodasys helgolandicus* REMANE, 1927 (*sensu* BOADEN, 1963) is the senior synonym for *Pleurodasys megasoma* BOADEN, 1963.
— *Turbanella bocqueti* KAPLAN, 1958 (*sensu* BOADEN, 1974) is the senior synonym for *Turbanella thiophila* BOADEN, 1974.
— *Urodasys mirabilis* REMANE, 1926 (*sensu* KISIELEWSKI, 1987) is the senior synonym for *Urodasys roscoffiensis* KISIELEWSKI, 1974.
— *Heteroxenotrichula affinis* (REMANE, 1934) RUPPERT, 1979 is the senior synonym for *Xenotrichula variocirrata* D'HONDT, 1966.

Each of these cases, involving species that we have found on the Belgian coast, is one in which a species was described twice. In the three cases where the term *sensu* is used, the second description was in toto more accurate than the original description, and so should be considered to be a redescription of the older species rather than an initial description of a new species.

— *Halichaetonotus dubius* (REMANE, 1926).

This is the correct name for *Chaetonotus dubius* REMANE, 1926, which when found to have a senior synonym, was properly renamed *C. decipiens* REMANE, 1929. Now that the species has been included in a different genus, it reverts to its original specific epithet, since there is no senior synonym for it in the genus *Halichaetonotus*.
Authority for these taxonomic changes comes from extensive work by the second author along the coastlines of the British Isles and northern Europe. Supporting data, both morphological and geographical, have been amassed and are being published elsewhere. Any reference on the changes proposed here should be cited as: W.D. HUMMON in JOUK *et al.*, 1992.

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