

NEW DATA ABOUT POLYCHAETA COMMUNITIES FROM THE ST. GEORGE-VADU, ROMANIAN BLACK SEA LITTORAL ZONE

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Abstract

Based on a number of 449 collected samples, from a 0-28m-depth interval, from the St. George-Vadu Romanian segment of the Black Sea littoral, the main types of sedimentary habitats were identified and the characteristic Polychaeta associations. Dominant are the clay habitats, occasionally mixed with silt, in which populations of the following species can be found: *Melinna palmata* (from a depth of approx. 10m) *Euclymene collaris* and *Heteromastus filiformis* (from a depth of approx. 4m). The 1970s bibliography cites in these habitats, the *Nephtys hombergii* silt enclave.

Keywords: *Black Sea, Polychaeta, Sediments*

Introduction

The littoral segment St. George-Vadu represents an area of interest as it is directly influenced by the Danube and it includes dynamic sedimentary and erosion processes. The benthic communities are structured based on their affinities for one type of sedimentary habitat or another and based on the particular conditions of the life environment (hydrodynamic water mass, food resources). The Polychaeta group is well represented on all benthic biotopes on the NW Black Sea shelf, from the shallow water bottoms to the lower limit of benthic life (for Black Sea - the periazotic belt). This study was possible through the research program of the Project CERES 4-174/November 2004: The integrated geophysical-geoecological investigation of the St. George-Vadu littoral sector", accomplished by us in collaboration with INCD-GEOECOMAR, Bucharest.

Material and Methods

The quantitative samples collection started with August 2005 and 2006, at depth intervals of 0-28m, by means of Van Veen bodengreifer devices (surface 18x22cm). Based on the 449 quantitative samples, collected randomly, Polychaeta species were identified and a database set up. The ecological indexes for dominance and frequencies were calculated for different types of habitats. The granulometric analysis for fraction determination was realized according to the standard sedimentological method and the limits of the granulometric categories are: the sand/silt limit-0.063mm and the silt/clay limit-0.04mm (Wentworth method).

Results and Discussion

The structure of polychetes community from different habitats, after some authors it is considered to be an instrument that characterized local particularities linked to the benthic sub-layer habitats while other authors considered that the depth and the dynamic of water masses influenced this structure on a much larger scale than other factors. Keeping in mind the synergic action of these factors (benthic sub-layers and bathymetric) we have followed the structure of the Polychaeta community after particular habitats from our research area: the first, in front of Danube Delta (St. George branch-Sacalin), second Sacalin Island-Portita and third Portita-Vadu. The littoral segment St. George-Vadu is characterized by an almost continuous disposition of the sediments habitats for the studied depth interval (0-28m). Still, various types of habitats are signaled, according to the dominant granulometric fraction (sand, silt, clay). Nearby the flowing mouth of the Danube/St. George branch, the benthic domain is dominated by the silt/clay habitats starting with the shallow zones (down to 25m). These compacted sediments at the basis of the sediment column (down to 20-25cm deep) display at the surface a slightly fluid layer with a significant percentage of detritus (particulate organic matter). This type of habitat was also found further south (Portita and Vadu) and in the sheltered area between shore and Sacalin Island (depths of over 10m). The list we drew up on the basis of the taken samples comprises a 28 Polychaeta species, 20 of which belong to the Palpata group (50% Spionidae and 25% Phyllodocidae) and the rest belong to the Scolecidae; a first analysis of this community indicates the detritivorous and suspensivorous as dominant. Scolecidae dominates the community of Polychaeta populations from clay substratum (8 species) from which 6 are Capitellidae: *Capitella capitata* (Fabr.), *Capitella minima* (Langerh.), *Capitellides giardi* (Mesnil.), *Capitomastus minimus* (Langerh.), *Heteromastus filiformis* (Clap.), *Notomastus lineatus* (Clap.). In the littoral sector between Sacalin Island and Portita, affected by a strong littoral current, the benthic domain (depths between 4 and 25-28 m) is dominated by mixed sediments - type NISIAR, while the Polychaeta community is dominated by Phyllodocidae (among which, *Nephtys hombergii* and the Nereidae species: *Nenthes succinea* or

Hediste diversicolor. The Prisor-Vadu sector low depth shore (0-5m) is characterized by sandy sediments, that era generally compacted; the Polychaeta community is relatively poor (populated only by 5 species, Spionidae being dominant).

Conclusion

The qualitative and quantitative analysis of the polychetes communities reveal that important changes have occurred in the community in the last decades and we cannot help observing that the changes have been brought about by the proliferation of sedentary, detritivorous and/or deposit feeding species on the one hand and the reduction in predatory forms on the other hand. In this research area, St. George - Vadu littoral segment, the benthic zoocenosis suffered an important restructuration processes with the naturalization of the newly-penetrated bivalve *Mya arenaria*, and with the increase in the number of dams in the hydrographic basin of the Danube, which also affected the Polychaeta populations. In the 1970s, the Polychaeta community in the Delta Danube front was dominated by the species *Nephtys hombergii* - "Nephtys sediments enclave", [1]. The studies accomplished in the 1980s [2], [3], [4] signaled the expansion tendency of the sedimentary habitats with *Melina palmate* towards the shore, a tendency also confirmed by our studies. South to Portita, in the infralittoral layer corresponding to 3-6m depth interval, a biocenosis was cited (with fine sands) in which *Spio filicornis* was dominant. Our studies of the sandy sediments show that the population of *Spio* is limited to a narrow strip parallel to the shore, in the depth interval 1-4m. The sedimentary substratum with mixed sandy, silt and clay from south to Portita, the *Euclymene collaris* and *Heteromastus filiformis* populations registered a extension from depths lower then 10m in the '70 to the depth 4-6m in present.

References

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