

BIODIVERSITY (ANNELIDA, OLIGOCHAETA) IN DIFFERENT AQUATIC ECOSYSTEMS OF THE REPUBLIC OF MOLDOVA

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Abstract: Our study presents the qualitative structure of the benthic fauna (Annelida, Oligochaeta) of some aquatic ecosystems in the Republic of Moldova. There were studied the catchment basins of the Danube (the bank of the Republic of Moldova), Dniester and Prut rivers, as well as the lakes and rivers contained within this area. The results envision a higher prevalence of the aquatic oligochaetes in the ecosystem of ecotone contained by the area ranging from the Prut river and the region conterminous with the Danube Delta.

Keywords: Annelida, benthic fauna, Oligochaeta, Republic of Moldova

Introduction

Within the catchment basins of the Republic of Moldova, the most spread taxonomic group of benthic hydrofauna is represented by Oligochaeta (Hrabe 1952).

Following the pollution of the aquatic ecosystems with various chemical, physical and biological agents, in the past few years the structure of the aquatic fauna has undergone both qualitative and quantitative changes.

The hydrobionic organisms, which also comprise the aquatic oligochaetes, have seriously been affected by the result of spillage of various polluting substances in the hydrographic network through industrial, agricultural or household users (Hrabe 1952; Toderaş 1999).

Materials and methods

For reveal the quality-quantity indicators of aquatic Oligochaeta in terms of distribution according to types of aquatic ecosystems, there were used well-known and frequently hydrobiological methods (Jadin et al. 1959; Mordihai-Boltovskoi 1960). In the collection quality tests, as a hydrobiologic instrument was used the dredge (a dredge for different substrates has been used for the qualitative aspect) (Diaconu 1986).

The lentometer was used for the quantity tests. The quantitative samples were collected with the Petersen grab, in the area of capture of 1/40 m. Tests were conserved on platform in formalin and were sorted in laboratory under the microscope and placed in alcohol. In change of quantity analysis, number of individuals was distributed on m² of benthos surface. Identification of species of Oligochaeta fauna was seen under the microscope in laboratory conditions (Iaroshenko 1966).

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Results and discussions:

In the present investigation it was studied the fauna of aquatic Oligochaeta from the whole hydrographic basin network of Republic Moldova territory (Tab. 1, Annexes).

There have been undergone observations within the area of the rivers Dniester and Prut, of the Moldavian stretch and of the Danube river, in the lakes, the rivers and ponds as well as within the hydrographic network of the forest ecosystems.

Our studies revealed in the Dniester river - 49 species of Oligochaeta, Prut - 37 sp., Danube - stretch of R. Moldova and adjacent frontier - 45 sp., lakes - 27 sp., small rivers - 7 sp., small lakes - 11 sp., hydrographic network of forest ecosystems - 31 sp., compared with the data of Iaroshenko (1966), where for the Dniester river were registered Oligochaeta - 91 species, Danube - 118 sp., lakes - 60 sp., small rivers - 16 sp., small lakes - 28 species.

The qualitative study of the sample species conjunction with other recent studies (Vition 2011a, 2011b, 2013a, 2013b, 2013c) are indicative of a dwindling of the Oligochaetes fauna in the area under scrutiny compared to the results obtained in the second half of the past century (Fig. 1, Annexes).

Conclusions:

The structure of consists aquatic Oligochaeta fauna of one order, one suborder, one superfamily, 7 families, 6 subfamilies, 44 kinds, 97 species in hydrographic network of whole territory of the Republic of Moldova.

Within the area ranging in-between the Prut river and the region conterminous with the Danube Delta, the recorded aquatic oligochaetes have been more numerous as a consequence of the presence of an ecosystem of ecotone formed through the influences engendered by two huge catchment basins.

Rezumat:

BIODIVERSITATEA (ANNELIDA, OLIGOCHETA) ÎN DIFERITE ECOSISTEME ACVATICE DIN REPUBLICA MOLDOVA

Studiul nostru prezintă structura calitativă a hidrofaunei bentonice (Annelida, Oligochaeta) din câteva ecosisteme acvatice din Republica Moldova. Au fost studiate bazinele hidrografice ale râurilor Nistru, Prut, Dunărea (malul Republicii Moldova), precum și lacurile și râurile interioare din acest areal. Rezultatele relevă o abundență mai mare a oligochetelor acvatice în ecosistemul de ecoton cuprins între râul Prut și zona de demarcație cu Delta Dunării.

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Annexes:

Figure no. 1 The dynamic fauna of Oligochaeta from the whole hydrographic basin network of Republic Moldova territory

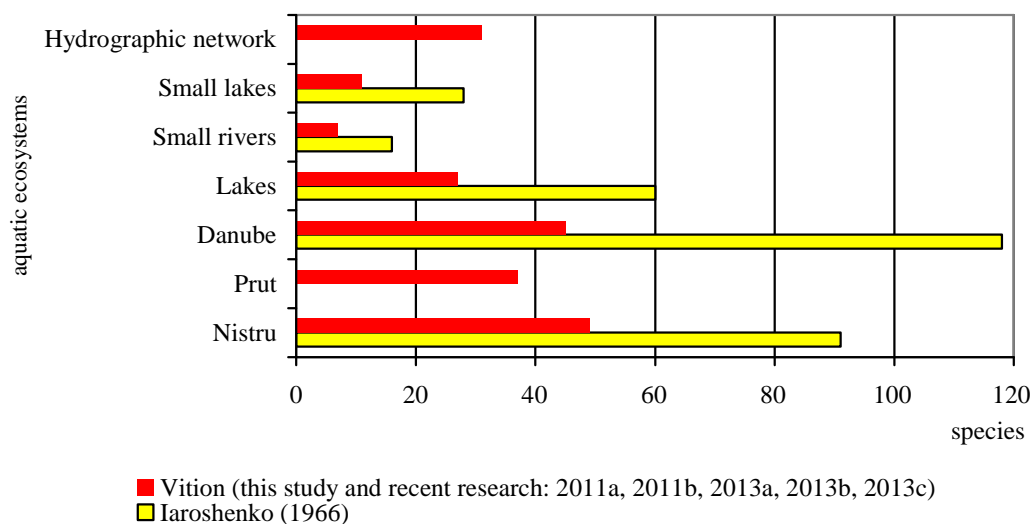


Table no. 1 Distribution of Oligochaeta according to different types of aquatic ecosystems of Republic of Moldova

Taxons	River Nistru	River Prut	Danube (Moldavian part)	Lakes	Small rivers	Small lakes	Hydrographic network
Order Haplotaxida							
Suborder Haplotaxina							
Superfamily Tubificoidea							
Family Tubificidae							
Subfamily Tubifinae							
<i>Tubifex tubifex</i> (Lamarck, 1773)	+	+	+	+	+	+	+
<i>T. ignotus</i> (Stole, 1886)	+	+	+	-	-	-	-
<i>T. filum</i> (Mich, 1889)	+	-	+	-	-	-	-
<i>T. templetoni</i> (Sorth)	+	-	-	-	-	-	-
<i>T. nevaensis</i> (Last, 1924)	+	+	+	+	-	-	-
<i>Limnodrilus hoffmeisteri</i> (Laparede, 1862)	+	+	+	+	+	+	
<i>L. helveticus</i> (Piguet, 1913)	+	+	+	+	-	-	-
<i>L. profundicola</i> (Verrill / Brinkhurst, 1871)	-	+	+	-	-	-	-
<i>L. claparedeianus</i> (Ratzel, 1868)	+	+	+	+	+	+	+
<i>L. udekemianus</i> (Claparede, 1862)	+	+	+	+	+	+	-
<i>L. newaensis</i> (Michaelsen, 1902)	+	+	+	-	-	-	-
<i>Isochaeta virulenta</i> (Piguet, 1913)	-	+	+	-	-	-	-
<i>Ilyodrilus hammoniensis</i> (Michaelsen, 1901)	+	+	+	+	-	-	-
<i>I. vej dovskyi</i> (Hrabe, 1941)	+	+	+	-	-	-	-
<i>I. moldaviensis moldaviensis</i> (Vejdovsky et Mrazek, 1902)	+	+	+	+	-	-	-
<i>Aulodrilus limnobius</i> (Bratscher, 1899)	+	-	-	+	-	-	-
<i>A. pluriset</i> a (Piguet, 1906)	+	-	-	+	-	-	-
<i>Rhyacodrilus coccineus</i> (Vejdovsky, 1875)	-	-	-	-	-	+	-
<i>Psammoryctides albicola</i> (Michaelsen, 1901)	+	+	+	-	-	-	-
<i>P. moravicus</i> (Hrabe, 1934)	-	-	-	+	-	-	-
<i>P. barbatus</i> (Grube, 1861)	+	+	+	+	-	-	-
<i>Potamothrix bavaricus</i> (Oschmann / Brinkhurst, 1913)	+	-	-	-	-	-	-
<i>P. isochaetus</i> (Hrabe, 1934)	-	+	-	-	-	-	-
<i>P. vej dovskyi</i> (Hrabe / Brinkhurst, 1941)	+	-	-	-	-	-	-
<i>Peloscolex velutina</i> (Grube / Ude, 1873)	-	-	-	+	-	-	-
<i>P. speciosus</i> (Hrabe, 1931)	+	-	-	-	-	-	-
Subfamily Rhyacodrilinae (Hrabe, 1963)							
<i>Rhyacodrilus falciformis</i> (Bretscher, 1901)	+	-	-	+	-	-	-
Subfamily Branchiurinae (Hrabe, 1966)							
<i>Branchiura soverbyi</i> (Beddard, 1892)	-	-	+	-	-	-	-
Family Naididae							
Subfamily Chetogastrinae							
<i>Chetogaster diastrophus</i> (Gruithuesen, 1828)	+	+	+	+	-	+	-
<i>Ch. setosus</i> (Vetlor, 1925 / Vej dovskyi, 1828)	-	+	-	-	-	-	-
<i>Ch. langi</i> (Bretscher, 1896)	-	+	+	+	-	-	-
<i>Ch. diaphanus</i> (Gruithuesen / Orsted, 1828)	+	+	-	-	-	-	-
<i>Ch. limnaei</i> (Baer, 1827)	+	+	+	+	-	-	-

<i>Amphichaeta leydidii</i> (Tauber, 1879)	-	+	-	-	-	-	+
Subfamily Naidinae (Lastockin, 1924)							
<i>Spercaria josinae</i> (Vejdovskii / Sperber, 1883)	+	+	+	+	-	-	-
<i>Uncinais uncinata</i> (Levinsen, 1842)	+	+	+	-	-	-	-
<i>Nais communis</i> (Piguet, 1906)	+	+	+	+	-	-	-
<i>N. simplex</i> (Piguet, 1906)	+	+	+	-	-	-	-
<i>N. bretscheri</i> (Michaelsen, 1899)	+	+	+	-	-	-	-
<i>N. barbata</i> (Muller, 1773)	+	+	+	-	-	-	+
<i>N. pseudotusa</i> (Piguet, 1906)	+	-	+	-	-	-	-
<i>N. behningi</i> (Michaelsen, 1923)	+	+	+	-	-	-	-
<i>Slavina appendiculata</i> (d'Udekem / Vejdovsky)	-	-	+	-	-	-	-
<i>Vejdovskyella comata</i> (Vejdovsky / Michaelsen, 1883)	+	-	+	-	-	-	-
<i>Stylaria lacustris</i> (Linne / Johnston, 1767)	+	+	+	+	+	+	+
<i>Piguetiella blanci</i> (Piguet / Sperber, 1906)	-	-	-	-	+	+	-
<i>Dero digitata</i> (Muller / Grube, 1773)	+	+	+	-	-	-	-
<i>D. obtusa</i> (d'Udekem, 1855)	+	+	+	-	-	-	-
Subfamily Pristininae (Lastockin, 1924)							
<i>Pristina rosea</i> (Piguet / Michaelsen, 1906)	+	+	+	-	-	-	+
<i>P. bilobata</i> (Bretscher / Michaelsen, 1903)	+	+	+	-	-	-	-
<i>P. aeguiseta</i> (Bourne, 1891)	-	+	-	-	-	-	-
<i>P. longiseta</i> (Ehrenberg, 1828)	-	-	+	-	-	-	-
Family Aeolosomatidae							
<i>Aeolosoma hemprichi</i> (Ehrenberg, 1828)	+	-	+	-	-	-	+
<i>A. heableyi</i> (Beddard, 1888)	+	-	-	+	-	-	-
<i>A. tenebrarum</i> (Vejdovsky, 1884)	-	-	+	-	-	-	-
<i>Rheomorpha neisvestnovae</i> (Lastockin, 1953)	+	-	-	-	-	-	-
<i>Hystricosoma chappuisi</i> (Michaelsen, 1926)	-	-	+	-	-	-	-
Subfamily Paranaidinae							
<i>Paranais litoralis</i> (Muller, 1784)	-	-	+	-	-	-	-
<i>P. frici</i> (Hrabe, 1941)	+	-	+	-	-	-	-
Family Enchytraeidae							
<i>Proppapus volki</i> (Michaelsen, 1915)	+	+	-	+	-	-	+
<i>Henlea ventriculosa</i> (Udekem, 1854)	-	-	-	-	-	-	+
<i>H. stollii</i> (Bretscher, 1900)	-	-	-	-	-	-	+
<i>Fridericia callosa</i> (Eisen, 1878)	-	-	-	-	-	-	+
<i>F. bulbosa</i> (Rosa, 1887)	-	-	-	-	-	-	+
<i>F. zykofoi</i> (Vejdovsky, 1903)	-	-	-	-	-	-	+
<i>Enchytraeus albidus</i> (Henle, 1837)	-	-	-	-	-	-	+
<i>E. buchholzi</i> (Vejdovsky, 1879)	-	-	-	-	-	-	+
<i>Lumbricillus lineatus</i> (Muller, 1771)	-	-	-	-	+	+	+
<i>Marionina argentea</i> (Michaelsen, 1889)	-	-	-	-	-	-	+
<i>M. riparia</i> (Bretscher, 1899)	-	-	-	-	-	-	+
<i>M. lobata</i> (Bretscher, 1899)	-	-	-	-	-	-	+
<i>M. sphagnetorum</i> (Vejdovsky, 1877)	-	-	-	-	-	-	+
<i>M. glandulosa</i> (Michaelsen, 1888)	-	-	-	-	-	-	+
Family Lumbriculidae							
<i>Lumbriculus variegatus</i> (Muller, 1773)	+	+	-	+	-	-	+
<i>Lamprodrilus pygmaeus</i> (Michaelsen, 1901)	-	-	-	+	-	-	-
<i>L. isoporus</i> (Michaelsen, 1901)	-	-	-	+	-	-	-
<i>L. nigrescens</i> (Michaelsen, 1903)	+	-	-	-	-	-	-
<i>L. semenkewichi</i> (Michaelsen, 1901)	+	-	-	-	-	-	-
<i>L. pallidus</i> (Michaelsen, 1905)	-	-	-	-	-	-	+
<i>Teleuscolex korotneffi</i> (Michaelsen, 1901)	+	-	-	-	-	-	-
<i>Agriodrillus vermivorus</i> (Michaelsen, 1905)	-	-	-	+	-	-	-
<i>Trichodrillus pragensis</i> (Vejdovsky)	+	-	-	-	-	-	-

<i>Bythonomus subcarpaticus</i> (Hrabe, 1929)	-	+	-	-	-	-	-
<i>Rhynchelmis limosella</i> (Hoffmeister, 1843)	+	-	-	-	-	-	-
<i>R. vejdosky</i> (Hrabe et Cernosvitov, 1925)	-	-	+	-	-	-	-
Family Branchiobdellidae							
<i>Branchiobdella parasita</i> (Henle, 1835)	-	-	+	-	-	-	-
<i>B. astaci</i> (Odier, 1823)	-	-	+	-	-	-	-
<i>B. pentodonata</i> (Whitman, 1882)	-	-	+	-	-	-	-
Family Lumbricidae							
<i>Eiseniella tetraedra f. typica</i> (Savigny, 1826)	-	-	+	+	-	-	+
<i>Allolobophora chlorotica</i> (Savigny, 1826)	-	-	-	-	-	-	+
<i>A. dubiosa</i> (Orley, 1880)	-	-	-	-	-	-	+
<i>A. antipai</i> (Mich., 1891)	-	-	-	-	-	-	+
<i>A. oculatus</i> (Hoffmeister, 1843)	-	-	-	-	-	-	+
<i>A. rosea</i> (Savigny, 1826)	-	-	-	-	+	+	+
<i>Dendrobaena octaedra</i> (Savigny, 1826)	-	-	-	-	-	+	+
<i>Octodrilus transpadanus</i> (Rosa, 1884)	-	-	-	-	-	+	+
<i>Octolasion lacteum</i> (Orly, 1885 / Savigny, 1826)	-	-	-	-	-	-	+