



## FAUNA AND ECOLOGICAL GROUPS OF HYDROBIONTS OF THE MIRZACHOL CANAL

**Boymurodov K.**

Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology

E-mail [boymurodov1971@mail.ru](mailto:boymurodov1971@mail.ru)

**Toynazarova I. A. Dzhizaksky**

Polytechnic Institute

E-mail: [irodatuynazarova@gmail.com](mailto:irodatuynazarova@gmail.com)

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<b>Received:</b> 8 <sup>th</sup> January 2023 <b>Accepted:</b> 8 <sup>th</sup> February 2023 <b>Published:</b> 14 <sup>th</sup> March 2023	Hydrobiological research in the world is paying special attention to determining the biological diversity of natural and artificial water bodies, evaluating the level of transformation of hydrobionts in areas with strong anthropogenic influence and their use. Hydrobionts are the main component of organisms in freshwater ecosystems. Their population has a high ecological plasticity, due to which they have the ability to spread over a wide range even in permanent hydrotopes of different anthropogenic levels. In the last 10 years, anthropogenic factors have largely determined the structure of groups of hydrobiont populations. Today, the depletion and pollution of fresh water resources on land require obtaining information about the populations of hydrobionts in freshwater basins.

**Keywords:** hydrobionts, freshwater ecosystems, hydrobiont populations

**ANALYSIS OF LITERATURE ON THE TOPIC.** James H. Thorp, (2011), Alan Covich (1991), D.C. Aldridge (1999), P. Bouchet (2017), Huber Marcus (2010), A.F. Bogan (2010), Annabelle Cuttelod et al. (2011) conducted research [1,2,3]. Among the scientists of the Commonwealth of Independent States (CIS), V.V. Bogatov, Ya.I. Starobogatov (2004), V.V. Bogatov (2014), N.I. Andreev, G.P. Alyokhina and others (2007), V.F. Panov et al. al. (2009), M.O. Son (2009), L.N. Yanovich (2013) conducted scientific research[4,5,6]. N.A. Stepanova, (1951, 1961) to study the fauna and flora of Central Asian reservoirs; A. M. Muhammadiev (1967); Z.I. Izzatullaev (2016, 2018, 2021); I.M. Mirabdullaev (2014, 2019, 2021); A. Kuzmetov (2017); H.T. Boymurodov (2004, 2017); A.N. Egamkulov (2020) ; B.N. Otakulov (2021) studied.

**RESEARCH METHODS.** We conducted our research in 2016-2022 in different parts of the Mirzachol channel. More than 82 samples were taken from the channel, in which more than 278 specimens of hydrabionts were found. These hydrabionts have been studied using techniques used in hydrabiology and zoological research.

**RESEARCH AND RESULTS.** The Mirzachol canal receives water from the Syrdarya river and is used for irrigation of the Mirzachol region. The total length of the channel is more than 135 km and the water consumption is 200 sec/m<sup>3</sup>. irrigated area is more than 276 thousand ha. The spread, reproduction, and formation of populations of hydrobionts are mainly related to water. Water is an important factor for the growth, reproduction and development of organisms in any environment. Water participates in the life activities and biological processes of living organisms. Until our research, the fauna, populations and ecology of hydrobionts of the Mirzachol channel have not been specifically studied. As a result of our research in the channel, we found that 18 species and 1 subspecies of hydrobionts belonging to 4 classes and 8 families are distributed. There are 7 species of bivalves and 1 subspecies, 9 species of gastropods. distribution of 1 species of shrimp and 1 species of leeches was studied (Table 1). We determined the presence of 1.8, 1.5 *S. orbicularis*, and 1.6 *S. puerorum* populations of Sinanodonta family Sinanodonta family Unionidae in the water ecosystems of the head, middle and lower part of the Mirzachol channel. Water is the limiting environmental factor for organisms living in the aquatic environment.

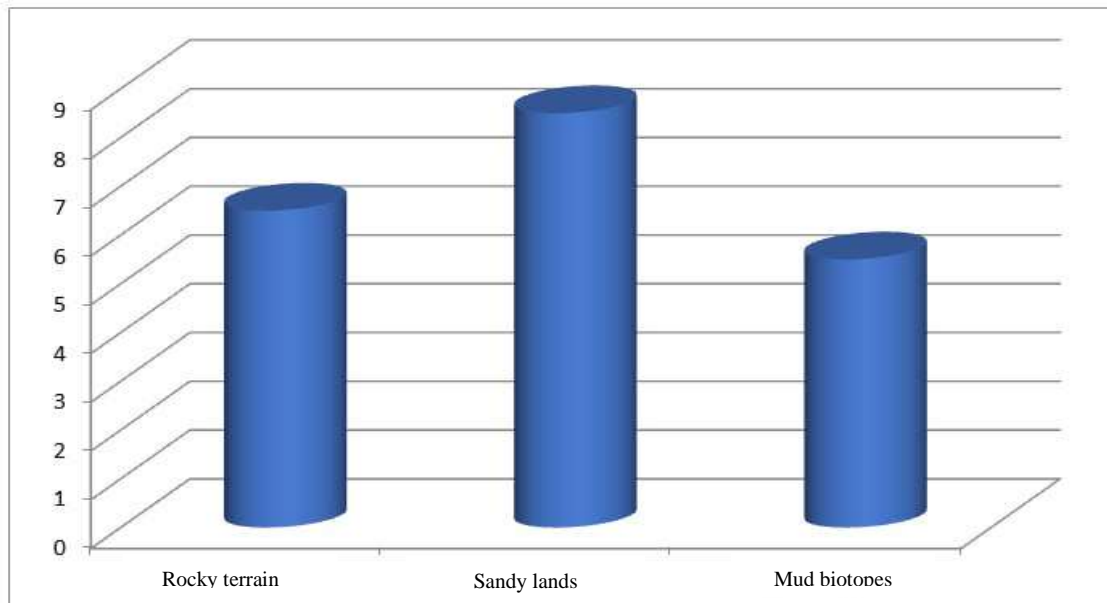
**Table 1**  
**Distribution and ecological groups of hydrobionts in the Mirzachol channel (n= 10, m2/piece)**

№	Types	Mirzachol channel	Biotopes			Ecological groups
			rocky terrain	sandy lands	clays	
	Bivalve molluscs (Bivalvia) class Family unionidae					
1	<i>Sinanodonta gibba</i>	1,8±0,2	-	-	+	Peloreophil
2	<i>Sinanodonta puerorum</i>	1,6±0,2	-	-	+	Peloreophil
3	<i>Sinanodonta orbicularis</i>	1,5±0,1	-	-	+	Peloreophil
4	<i>Colletopterum bactrianum</i>	0,6±0,1	-	-	+	Rheophile
5	<i>Colletopterum cyreum sogdianum</i>	0,7±0,1	-	-	+	Rheophile
	Family Corbiculidae					
6	<i>Corbicula cor</i>	0,9±0,1	-	+	-	Peloreophil
7	<i>Corbiculina tibetensis</i>	1,1±0,1	+	-	-	Peloreophil
8	<i>Corbiculina ferghanensis</i>	1,0±0,1	-	+	-	Peloreophil
	Gastropod molluscs (Gastropoda) class Family Beelgrandiellidae					
9	<i>Martensamnicola brevicula</i>	1,0±0,1	+	-	-	Phytophil
10	<i>Martensamnicola hissarica</i>	1,3±0,2	+	-	-	Peloreophil
	Family Lymnaeidae					
11	<i>Lymnaea stagnalis</i>	1,1±0,2	+	-	-	Phytophil
12	<i>Lymnaea truncatula</i>	1,6±0,2	+	-	-	Telmatophile
13	<i>Lymnaea thiessea</i>	1,1±0,2	-	+	-	Rheophile
14	<i>Lymnaea auricularia</i>	1,8±0,4	-	+	-	Phytorheophilic
15	<i>Lymnaea bactriana</i>	0,8±0,1	-	+	-	Phytophil
	Family physidae					
16	<i>Costatella acuta</i>	1,3±0,1	+	-	-	Phytophil
	Family planorbidae					
17	<i>Anisus ladacensis</i>	1,1±0,1	-	+	-	Phytophil
	Class Crustacea Pontastacus family					
18	<i>Pontastacus leptodactylus</i>	1,4±0,2	-	+	-	Phytophil
	Class Leeches (Hirudinidae). Family Hirudinidae Whitman, 1896 Genus Hirudo Linnaeus,1758					
19	<i>Hirudo orientalis</i>	1,0±0,1	-	+	-	Phytophil
		<b>19</b>	<b>6</b>	<b>8</b>	<b>5</b>	

Canal waters have a number of unique chemical and biological properties, and the family of *Onionidae* plays an important role in the structure of hydrobionts and their vital activity. It was found that *Colletopterum bactrianum* 0.6, *C. cyreum sogdianum* 0.7 of *Colletopterum* seeds were spread in the biotopes of the middle stream of the canal.

*Colletopterum ponderosum volgensis* and *S.* in canal waters. *cocandicum* species were not found. *Sinanodonta* and *Colletopterum* genera species are distributed in the Syrdarya and are distributed in canal biotopes with white carp (*Ctenopharyngodon idella*), white carp (*Hypophthalmichthys molitrix*) fish (Fig. 1). The sandy biotopes of the canal contain populations of species belonging to the *Sorbiculidae* family. From *Corbicul* genus *Corbicula cor* 0.9, from *Corbiculina* genus *Corbiculina tibetensis* 1.1, *Corbiculina ferghanensis* 1.0 scattered populations were found. We found

out that the species *Corbicula fluminalis* and *C. purpurea* are not distributed in the water basin, because these species are included in the Red Book of Uzbekistan and are rarely distributed in water ecosystems.

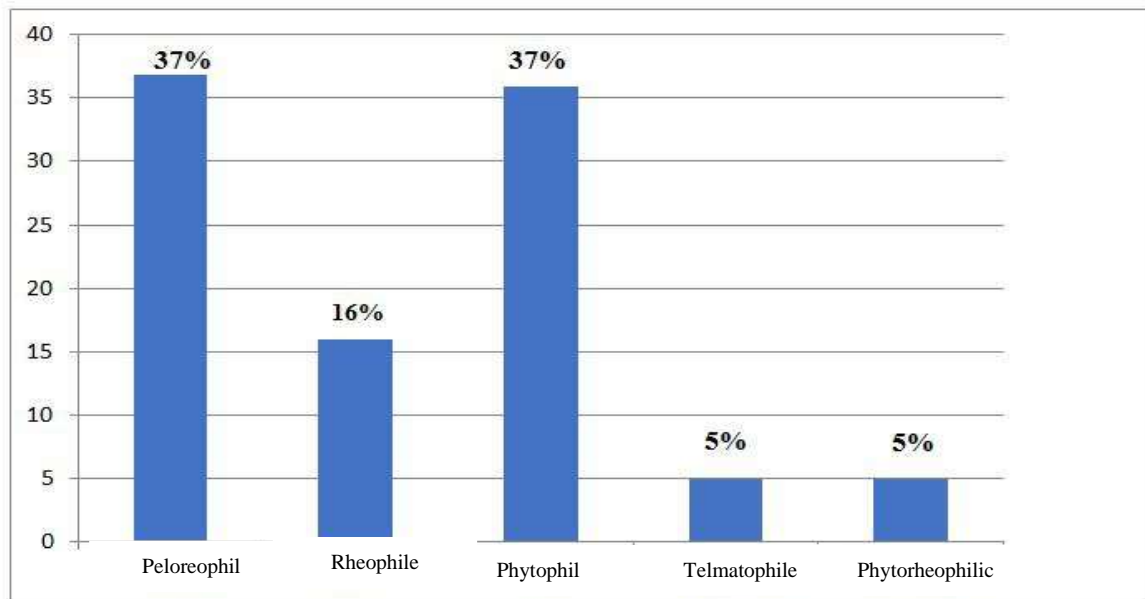


**Figure 1. Distribution of hydrobionts in the biotopes of the Mirzachol channel**

On the banks of the right and left banks of the channel, in 1 m<sup>2</sup> of the average gastropod aquatic molluscs, *Martensamnicola brevicula* belonging to the genus *Martensamnicola* of the family *Beelgrandiellidae* 1.0, *M. hissarica* 1.3, *Lymnaea stagnalis* from the genus *Lymnaea* of the family *Lymnaeidae* 1.1, *L. truncatula* 1.6, *L. Thiessea* 1.1, *L. auricularia* 1.8, *L. bactriana* 0.8 were studied. *Lymnaea oblonga*, *Lymnaea subangulata* species were not found in water ecosystems.

*Costatella acuta* from the *Physidae* family is distributed in the channel and its surrounding ditches, and its average density is 1.3. *Anisus ladacensis* from the genus *Anisus* of the family *Planorbidae* was found in 1.1. It was found that 1.4 biotopes of the shrimp *Pontastacus leptodactylus* were found in the vertical channels of the channel. From leeches, *Hirudo orientalis* from the family *Hirudinidae* is distributed from 1.0. From an ecological point of view, water is a unique and irreplaceable liquid, it is the main source of gaseous oxygen released during photosynthesis, and it plays an important role in the life of organisms.

Ecological groups of hydrobionts distributed in the channel were studied, 7 types of peloreophiles 37% (*Sinanodonta gibba*, *S. ruerorum*, *S. orbicularis*, *Corbicula cor*, *Corbiculina tibetensis*, *C. ferghanensis*, *Martensamnicola hissarica*), 3 types of rheophiles 16% (*Solletopterum bactrianum*, *C. cureum sogdianum*, *Lymnaea thiessea*), 7 types of phytophiles 37% (*Lymnaea stagnalis*, *L. bactriana*, *Costatella acuta*, *Anisus ladacensis*, *Pontastacus leptodactylus*, *Hirudo orientalis*, *Martensamnicola brevicula*), 1 type of telmotophiles 5% (*Lymnaea truncatula*) and 1 type of fetoreophiles 5% (*Lymnaea auricularia*) (Fig. 2).



**Figure 2. Ecological groups of hydrobionts distributed in the Mirzachol channel**

Species belonging to the peloreophilic and phytophilic ecological groups are dominant in the aquatic ecosystems of the region, and the species belonging to the other ecological groups are considered to be sub-dominant species.

**SUMMARY.** As a result of our research in the Mirzachol canal, we studied the distribution of 18 species and 1 subspecies of hydrobionts belonging to 4 classes and 8 families. There are 7 species of bivalves and 1 subspecies, 9 species of gastropods, 1 species of shrimps and 1 species of leeches were found to be distributed. There are 3 types of biotopes in the Mirzachol channel, 6 species 31% (*Corbiculina tibetensis*, *Martensamnicola brevicula*, *Martensamnicola hissarica*, *Lymnaea stagnalis*, *Lymnaea truncatula*, *Costatella acuta*) in rocky biotopes, 8 species 42% (*Corbicula cor*, *Corbiculina ferghanensis*, *Lymnaea thiessea*, *Lymnaea auricularia*, *Lymnaea bactriana*, *Anisus ladacensis*, *Pontastacus leptodactylus*, *Hirudo orientalis*) in sandy biotopes and 5 species (*Sinanodonta gibba*, *Sinanodonta orbicularis*, *Sinanodonta puerorum*, *Colletopterum bactrianum*, *Colletopterum cyreum sogdianum*) were found to be distributed in muddy biotopes.

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