Aquatic ecosystems of the lower reaches of the Zarafshan River. Diversity and ecological groups of molluscs

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Abstract. Aquatic ecosystems of the lower reaches of the Zarafshan River revealed the distribution of 49 species and 2 subspecies of molluscs. They are distributed over aquatic ecosystems as follows: in the lower reaches of the Zarafshan River, 32 species and 2 subspecies are distributed, in the Navbakhorsky fish farm - 22 species and in the Khatyrchinsky fish farm - 15 species, in the Nurbuloksaysky fish farm - 22 species and in the Maidonsoysky - 18 species of mollusks. Their belonging to pelolymnophilic, peloreophilic, rheophilic, crenophilic, phytophilic, madicol, limno-crenophilic and telmatophilic ecological groups was considered.

1 Topic relevance

The study of the fauna of aquatic ecosystems in the lower reaches of the Zarafshan River creates important prerequisites for a comprehensive solution of theoretical and practical problems [1,2,4]. The diversity of the environment in aquatic ecosystems has created conditions for the distribution of many rare, endemic and relic animals [3,5,6]. At present, one of the urgent problems is the study of the diversity of mollusks and ecological groups of aquatic ecosystems in the lower reaches of the Zarafshan River.

2 Research object and methods

Below is a comprehensive analysis of the distribution, ecological groups of mollusks, their habitat and the expansion of their ranges [7,8,9]. These mollusks were studied by V.I.Zhadin (1938, 1952), Ya.I. Starobogatov, Z.I. Izatullaev (1984), Z.I. Izatullaev, Kh.T. Baimurodov (2009) and we used the system developed by Z. Izatullaev for Central Asian molluscs.

3 Research results

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Aquatic ecosystems in the lower reaches of the Zarafshan River, hydrographic conditions are complex. There are such sources of water as large and small rivers, lakes, springs and reservoirs, ponds. They differ from each other in a variety of hydrological, physicochemical and hydrobiological regimes. Each type of water is inhabited by molluscs, and each of them has its own ecological groups. It was found that 51 species and 2 subspecies of mollusks inhabit the aquatic ecosystems of the lower Amu Darya (Table 1).

Table 1. Aquatic ecosystems of the lower reaches of the Zarafshan River. Diversity and ecological groups of molluscs

No	Family and species	Lower course of the Zarafshan river	Navbakhorsky fish farm	Khatyrchimsky fish farm	Sources	Springs	Ecological groups
	Bivalvia class						
	Unionidae family						
	Sinanodonta genus						
1	<i>Sinanodonta gibba</i>	+	+	-	-	-	Peloreophile
2	<i>Sinanodonta orbicularis</i>	+	-	+	-	-	Peloreophile
3	<i>Sinanodonta puerorum</i>	+	-	+	-	-	Peloreophile
	Colletopterum genus						
4	<i>Colletopterum bactrianum</i>	+	-	+	-	-	Rheophile
5	<i>Colletopterum cyreum sogdianum</i>	+	-	+	-	-	Rheophile
6	<i>Colletopterum ponderosum volgense</i>	+	-	+	-	-	Pelolimnophile
	Corbiculidae family Corbicula genus						
7	<i>Corbicula cor</i>	+	+	+	-	-	Peloreophile
8	<i>Corbicula fluminalis</i>	+	+	-	-	-	Peloreophile
9	<i>Corbicula purpurea</i>	+	-	+	-	-	Peloreophile
	Corbiculina sort						
10	<i>Corbiculina tibetensis</i>	+	-	+	-	-	Peloreophile
11	<i>Corbiculina ferghanensis</i>	-	+	+	-	-	Peloreophile
	Sphaeridae family Musculium genus						
12	<i>M.hungarica</i>	+	-	-	+	-	Pelolimnophile
	Euglesidae family Euglesa genus						
13	<i>Euglesa hissarica</i>	-	-	-	+	-	Pelolimnophile
14	<i>Euglesa heldreichi</i>	-	-	-	-	+	Peloreophile
15	<i>Euglesa turkestanica</i>	-	-	-	+	-	Pelolimnophile
16	<i>Euglesa obliquata</i>	-	-	-	-	+	Pelolimnophile
17	<i>Euglesa turanica</i>	-	-	-	-	+	Pelolimnophile
	Pisidiidae family Odhneripisidium genus						
18	<i>Odhneripisidium behningi</i>	-	-	-	+	+	Crenophile
	Kuiperipisidium genus						
19	<i>Kuiperipisidium terekense</i>	-	-	-	+	+	Crenophile
20	<i>Kuiperipisidium issykkulense</i>	-	-	-	+	-	Crenophile

21	<i>Kuiperipisidium sogdianum</i>	-	-	-	+	-	Crenophile
22	<i>Kuiperipisidium polytmeticum</i>	-	-	-	+	-	Crenophile
Gastopoda class Neritidae family Theodoxus genus							
23	<i>Theodoxus.pallasi</i>	+	-	-	+	-	Peloreophile
Valvatidae family Cincinna genus							
24	<i>Cincinna.pamirensis</i>	+	-	-	-	-	Pelolimnophile
25	<i>Cincinna.piscinalis</i>	+	-	-	-	-	Pelolimnophile
Belgrandellidae family Bucharamnicola genus							
26	<i>Bucharamnicola.vucharica</i>	+	+	-	+	-	Crenophile
Martensamnicola genus							
27	<i>Martensamnicola. Brevicula</i>		+	-	+	-	Crenophile
28	<i>Martensamnicola.hissarica</i>	+	+	-	+	-	Crenophile
Horatiidae family Sogdamnicola genus							
29	<i>Sogdamnicola. Pallida</i>		+	-	+	-	Crenophile
30	<i>Sogdamnicola.shadini</i>	+	-	-	+	-	Crenophile
Lymnaeidae family Lymnaea genus							
31	<i>Lymnaea. Stagnalis</i>	+	+	-	-	-	Phytophile
32	<i>Lymnaea.impura</i>	+		-	-	-	Phytophile
33	<i>Lymnaea.oblonga</i>	+	+	-	-	+	Madikol
34	<i>Lymnaea.goupili</i>		+	-	+	+	Madikol
35	<i>Lymnaea.thiesseae</i>	+	+	-	-	+	Madikol
36	<i>Lymnaea.truncatula</i>	+	+	+	+	+	Madikol
37	<i>Lymnaea.subangulata</i>		+	-	-	+	Madikol
38	<i>Lymnaea.almaatina</i>	+	+	-	+	-	Limno-crenophile
39	<i>Lymnaea.bowelli</i>	+	+	-	+	-	Limno-crenophile
40	<i>Lymnaea.tenera</i>	+	+	+	-	+	Phytophile
41	<i>Lymnaea.rectilabrum</i>	+	-	+	-	+	Phytophile
42	<i>Lymnaea.psilia</i>	+	+	+	-	+	Phytophile
43	<i>Lymnaea.fontinalis</i>	+	+	+	-	+	Phytophile
44	<i>Lymnaea.lagotis</i>	+	-	+	-	-	Telmatophile
Phisidae family Costatella genus							
45	<i>Costatella. Acuta</i>	+	+	-	+	-	Phytophile
Planorbidae family Planorbis genus							
46	<i>Planorbis. Planorbis</i>	+	+	-	-	+	Phytophile
47	<i>Planorbis.tangitarensis</i>	+	-	-	-	+	Phytophile
Anisus genus							
48	<i>Anisus. Acronicus</i>	-	+	-	+	+	Phytophile
49	<i>Anisus.albus</i>	-	-	-	-	+	Phytophile
50	<i>Anisus.centralis</i>	+	-	-	+	-	Pelolimnophile
51	<i>Anisus.albopersicus</i>	+	-	-	+	-	Phytophile
Total species		34	22	15	22	18	

Note: + species present, - species not present

In the middle of the XX century, the anthropogenic destruction of zoogeographic barriers on land caused the penetration of invasive species into the fauna of most territories, in particular, into the hydrofauna, which remained unchanged for a long time.

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The shell size of the mollusk species does not directly affect their distribution over the river sections. Representatives of the family Unionidae, which includes large species, and the family Corbiculidae, which includes small species, mean that the accumulation of rivers in the middle reaches is important for the hydrological regime of rivers in the distribution of bivalve molluscs along river beds.

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