



**BIOLOGICAL AND ECOLOGICAL STATE OF OPEN WATER
BASINS IN THE TERRITORIES OF THE POPULATION OF EASTERN
ZIRABULAK**

Abdumuminova R.N¹, Xujakulov R. J., Xujakulova F.M.²

1 Samarkand State Medical University

2 Medical college of Public Health named after Kattakurgan Abu Ali ibn Sina

Abstract: *The article examines the quality of drinking water in open reservoirs (springs, lakes, streams) in the Zirabulak mountains, the results of organoleptic and helminthological studies of natural waters in this area, the ecology of gastropods (Gastropoda, Pulmonata) and the prevalence of mollusks. As well as the prevalence of certain types of helminths.*

Keywords: *Zirabulak, gastropods, groundwater, water quality, helminths, helminthiasis. Today, along with the development of science and technology, significant innovative changes in agriculture are taking place in our country. In this regard, it can be said that this creates a number of environmental problems in providing the population with clean drinking water. Our research focuses on the quality of drinking water in the settlements of Mount Zirabulak and in the foothills of the Samarkand region, as well as on the current water supply in the city of Ingichka.*

The Zirabulak Mountains are a mountain range in the Samarkand region (Republic of Uzbekistan), a geological continuation of the Zarafshan range. It is bordered by the Jam Desert to the east, the Ziyaviddin Mountains to the west, the Karno Desert to the south and the Zarafshan River Valley to the north. The highest point is 1120 m. The height of the northern part is 930-1100 m, the central part is 830-890 m. In the south are Ayribel, Koshdara, Jalkir, Alemi (1054 m), Piyoztag, Mahmudtog (962 m), in the north – Beshtog and other mountain ranges. There are deposits of gypsum raw materials for the production of building materials and lime in the Zirabulak mountains.

Tin and mercury deposits are in operation. The town of Ingichka is located in the eastern part of the foothills [1, p. 110].

Methods and research directions. *Scientific research (2020-2021) was conducted in the eastern territories of the Zirabulak Mountains.* During the research, the laboratory studied gastropod shells and their fixed, as well as live samples for helminthological studies, as well as water samples collected in the area. The samples were taken mainly in the spring (Fig. 1)

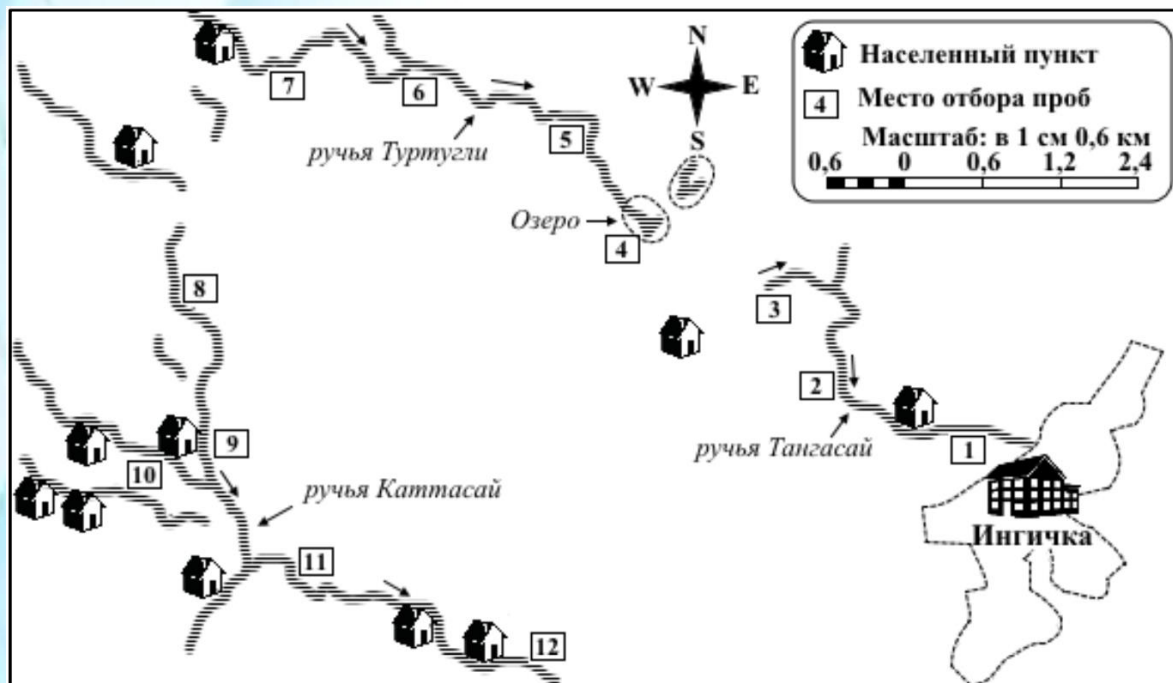


Figure 1 – Temporary groundwater sources in mountainous areas Vostochny Zirabulak and nearby settlements of the Stream in this territory consist mainly of groundwater saturated with rainwater and formed by spring and winter precipitation. The volume of water in the streams is very small, and this runoff occurs at certain times of the year (i.e., the water in these streams is temporary or semi-temporary).

Although the water in the stream is temporary, there are also springs where most of the time of the year there is always water (for example, in Fig. 1, at control point 3, coordinates: N39°45.17' E65°58.38'). Observations have shown that today (April-May 2021) due to technological problems with centralized water supply.

Ingichka the population of the city is not fully provided with centralized water. For the population, water is transported by tanker trucks ("water truck") from the

upper part (Fig. 1, indicated with numbers 4, coordinates: N39°45.54' E65°57.30') of a flowing mountain lake (Fig. 2).

The mountain lake is saturated with groundwater and precipitation, and its level varies depending on the time of year. Since the lake is located next to industrial mining waste (sand, etc.), this affects the chemical composition of the water. **The results obtained and their discussion.** It turned out that the spring water in this territory does not meet the requirements (according to the standard 0182-05 "For the water quality of non-centralized water supply and sanitary protection of sources in Uzbekistan) for organoleptic properties, i.e. transparency of spring water 30 cm, turbidity within the normal range (or slightly cloudy), odor and taste (swampy) 4 points on on a 5-point scale.

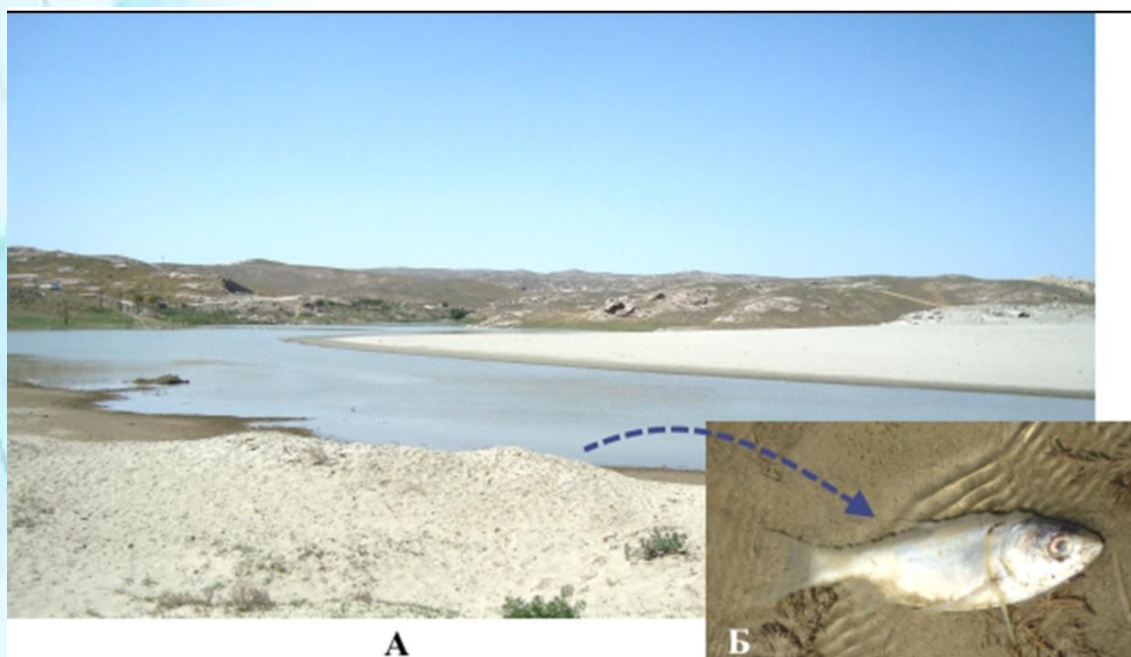


Figure 2 – Mountain lake: A- view of the lake from the east; B- dead fish on the shore

In the course of scientific research, it was found that 4 species of gastropods are widespread in this territory (Table 1) (Fig. 3). These species are being studied for the first time in this region.



Figure 3 – Freshwater gastropods: A: *Lymnaea bactriana*; Б: *Costatella acuta*; В: *Lymnaea subdisjuncta*; Г: *Planorbis planorbis*

Sizes of aquatic mollusc shells collected by us in the area:

1. *Lymnaea* (R.) *bactriana* (Hutton, 1850): BP 14-16; SR 13; CH 4.5-5.
2. *Costatella acuta* (Drap., 1805): BP 12-16; SR 8-7; CH 4.5.
3. *Lymnaea* (R.) *subdisjuncta* Nevill, 1878: BP 10-15; SR 8-10; CHO 5.
4. *Planorbis planorbis* (L.1758): VR 4; SR 4.5-5; CHO 5-5.5.

The gastropods common in this region are divided into the following different ecological groups depending on their living conditions (Table 1).

Table 1 – Belonging of gastropods to ecological groups [2, p. 20] and their participation as intermediate hosts in the development of helminths.

Types of shellfish	Ecological groups	Types of helminths
<i>Lymnaea bactriana</i> *	phytophile	<i>Fasciola gigantica</i>
<i>Lymnaea subdisjuncta</i> *	phytophile	<i>Fasciola gigantica</i>
<i>Costatella acuta</i> *	Evribiont	<i>Gigantobilharza acotylea</i>
<i>Planorbis planorbis</i> *	phytophile	<i>Telorchis assula</i>

* – Of these territories, we identified during the study, new to this area.

The above-mentioned species of mollusks are intermediate hosts in the development of parasitic worms that cause helminthiasis (for example, fasciolosis), which is widespread among agricultural herbivores and is considered dangerous to humans [3, p. 39].

These territories are mainly used as pastures (Fig. 4) and, thus, contribute to the spread of helminths across the territory through existing natural open water bodies.

Considering that trematodes develop and spread only through aquatic mollusks, they are characterized by a chain of development in the form of an aquatic environment - helminths - mollusks - herbivores.

Thus, when mollusks, which are considered intermediate hosts in the development of helminths, are found in water bodies, it can be assumed that helminthiasis has spread among herbivores (or, in some cases, people) in this area.

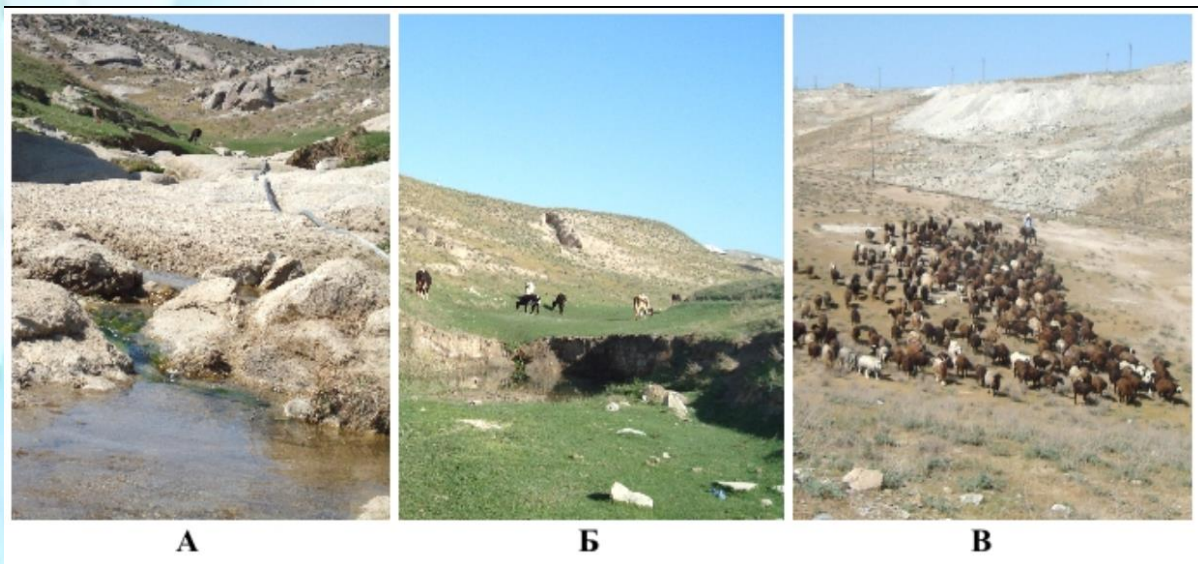


Figure 4 – Groundwater basins in mountainous areas and livestock grazing around them (A, B, C)

REFERENCES:

1. Ўзбекистон Миллий Энциклопедияси [Текст]. – Тошкент: ЎзМЭ Давлат илмий нашриёти, 2000-2005. 15-20 с.
2. Иззатуллаев З.И. Оқтоғ худуди қориноёқли (Gastropoda, Pulmonata) моллюскалари, экологик гуруҳлари ва уларнинг трематодозларни тарқатишдаги ўрни [Текст] / З.И. Иззатуллаев, А.С. Даминов, Каримов А.А., Уроков К.Х. // Ветеринария медицинаси СамВМИ – 2021. № 01-158-2021. Самарқанд 2021, 19-21 с.
- 3 Шакарбоев Э.Б. Трематоды – Паразиты позвоночных Узбекистана (структура, функционирование и биоэкологии) [Текст]. / Э.Б. Шакарбоев, Ф.Д. Акрамова,



- Д.А. Азимов. Под общей редакцией акад. АНРУз Д.А. Азимова, Ташкент – Chinor ENK 2012, 216 сг
- 4.Norbuvaevna A. R. et al. Ecological and hygienic application of the accumulation of toxic substances in soil and food products under the influence of agricultural factors //ACADEMICIA: An International Multidisciplinary Research Journal. – 2021. –Т. 11. –No. 11. –С. 836-
- 5.Norbuvaevna A. R., Nurmuminovna G. G., Rukhsora M. HYGIENIC ASSESSMENT OF THE EFFECT OF NITRATES ON HUMAN HEALTH //Archive of Conferences. –2021. –С. 24-26.
- 6.Botirov, X. F., & Abdumuminova, R. N. (2013). Winter green manures and peach yields./The text of the materials of the scientific-practical conference" of UzBU and Veterinarian Research Institute factors of development, yield and quality improvement of intensive garden vineyards in the Republic"(12-13 may 2013).).
- 7.Abdumuminova, R. N. (2013). Environmental factors and peach yield./Materials of the scientific-practical conference devoted to the" Year of prosperity" of professors and teachers on the topic" science achievements and prospects of agrarian sphere"(10-11 April 2013).)-Part I. Samarkand, Samarkand State Agricultural Institute, 57-53.
- 8.Narbuvaevna, A. R. N., Murodulloyevna, Q. L., & Abduraxmanovna, U. N. (2022). Environmentally friendly product is a Pledge of our health!. Web of Scientist: International Scientific Research Journal, 3(02), 254-258.
- 9.Norbuvaevna, A. R., Ergashevna, K. D., Baxramovna, M. M., & Shomuratovna, B. R. (2021). Ecological and hygienic application of the accumulation of toxic substances in soil and food products under the influence of agricultural factors. "PEDAGOGS"international research journal ISSN: 2181-4027_SJIF: 4.995www.pedagogs.uzVolume-64, Issue-1, August-202437ACADEMICIA: An International Multidisciplinary Research Journal, 11(11), 836-840.
- 10.Abdumuminova, R. N. (2016). Effective use of Natural Resources and techniques factors in gardening. Scientific application" Agro science" of the Journal of Agriculture of Uzbekistan.-Tashkent, 6, 42-43.



11. Shaw B, Nagy C, Fountain MT. Organic Control Strategies for Use in IPM of Invertebrate Pests in Apple and Pear Orchards. *Insects*. 2021;12(12).
12. Narbuvaevna AR, Karimovich BZ, Mahramovna MM. Improving Food Safety and Improving the Fundamentals of Reducing the Negative Effects on The Environment. *Eurasian Research Bulletin*. 2022;5:41-6.
13. Abdumuminova, R. N. (2017). Requirements of peach to external environmental factors. *Journal of Agriculture of Uzbekistan*. -Tashkent, 8, 40.
14. Norbuvaevna, A. R., Nurmuminovna, G. G., & Rukhsora, M. (2021, August). HYGIENIC ASSESSMENT OF THE EFFECT OF NITRATES ON HUMAN HEALTH. In *Archive of Conferences* (pp. 24-26).
15. Abdumuminova, R. N., Sh, B. R., & Bulyaev, Z. K. (2021). On The Importance Of The Human Body, Nitrates. *The American Journal of Medical Sciences and Pharmaceutical Research*, 3(04), 150-153.
16. Eshnazarovich TB, Norbuvaevna AR, Nurmuminovna GG. RESEARCH OF ECOLOGICAL AND HYGIENE ASPECTS OF AGROFAKTORS AFFECTING HUMAN HEALTH. *Web of Scientist: International Scientific Research Journal*. 2021;2(08):7-11.
17. The Future Of Food Safety First FAO/WHO/AU International Food Safety Conference Addis, 12-13 February 15. R. N., A. ., K. Kh., M. ., & Sh. M., M. . (2023). Technology of Maintaining the Medicinal Properties of Peaches through Organic Production and Increase Valuable Economic Characteristics. *World of Science: Journal on Modern Research Methodologies*, 2(3), 160–164. Retrieved from <https://univerpubl.com/index.php/woscience/article/view/781>
18. Намозбоева М.А, Тухтаров Б.Э., Абдумуминова Р.Н. ЎЗБЕКИСТОН РЕСПУБЛИКАСИДАГИ МЕНОЛЕПИДОЗ БИЛАН КАСАЛЛАНГАНЛАРНИНГ ЭПИДЕМИОЛОГИК ТАҲЛИЛИ Vol. 1 No. 5 (2022): PROSPECTS OF DEVELOPMENT OF SCIENCE AND EDUCATION, P 58-60



19. Narbuvayevna, A. R., Shomuratovna, B. R., Sattarovna, N. Z., & Ikramovna, N. Z. (2022). Explore Ecological and Hygiene Assignment of Soil Contamination With Heavy Metals. Central Asian Journal of Medical and Natural
20. Abdumuminova R.N., Ismoilov Zoxid Yo'ldashevich Isayev G'ulom Bobonazarovich, & Jalolova Shoxida. (2024). ONTOGENESIS. DEVELOPMENT OF SKULL BONES. UNIVERSAL JOURNAL OF MEDICAL "PEDAGOGS" international research journal ISSN: 2181-4027_SJIF: 4.995 www.pedagogs.uz Volume-64, Issue-1, August-2024 38 AND NATURAL SCIENCES, 2(9), 81–86. Retrieved from <https://humoscience.com/index.php/mc/article/view/2593>
21. Abdumuminova Ra'no Narbuvayevna, Mukhitdinov Shavkat Mukhamedjanovich, & Kholyarova Gulmira Rabbimovna. (2024). INVESTIGATION OF THE MEDICINAL PROPERTIES OF PEACH. In International Multidisciplinary Research in Academic Science (IMRAS) (Vol. 7, Number 02, pp. 86–189). Zenodo. <https://doi.org/10.5281/zenodo.10728635>
22. Abdumuminova R.N., Tursunqulova S.T., & O'tayev B.J. (2024). SHAFTOLINING DORIVOR XUSUSIYATALARINI TADQIQ ETISH. <https://doi.org/10.5281/zenodo.10500696>
23. Abdumuminova R.N., & Annaqulov S. A. Xasanova G. A. (2024). BOLALAR SALOMATLIK HOLATIGAMAKTAB JIHOZLARNING TA'BSIRINI GIGIYENIK BAHOLASH. <https://doi.org/10.5281/zenodo.10500703>
24. R.N. Abdumuminova, G. A. Vafaxonova, & Y. M. Shakarboyeva. (2024). SHARQIY ZIRABULOQ AHOLISI HUDUDLARIDAGI OCHIQ SUV HAVZALARINING SANITAR-GELMINTOLOGIK HOLATI. <https://doi.org/10.5281/zenodo.10500719>