



UDC 597

PARASITOFAUNA OF FISH IN THE WATER BODIES OF THE SOUTH PIRARALIE

Kurbanova Alfiya Ismailovna¹, Kurbanov Ulugbek²

¹Associate Professor of the Department of General Biology and Physiology

²Master's student in Biology, Karakalpak State University named after Berdakh
The Republic of Uzbekistan

ANNOTATION

In connection with a sharp decrease in the level of the Aral Sea, degradation of the aquatic ecosystems of the Southern Aral Sea is taking place. The increase in water salinity, its pollution with toxic substances, unstable oxygen content, instability of the temperature regime and many other factors have led to a decrease in the number of aquatic organisms, including fish and forage invertebrates, as well as birds associated with the aquatic environment.

All this, in turn, negatively affects the circulation of parasites in nature. Changes in the natural environment of the region make it relevant to revise the fauna of ichthyoparasites.

KEY WORDS: *parasite fauna, chemical composition of water, geographical the position of the reservoir, parasites.*

INTRODUCTION

The ecological situation of the territory of the Southern Aral Sea region had a negative impact on the current state of water bodies, which is the main habitat of aquatic organisms.

Due to the inappropriate use of the water resources of the Southern Aral Sea region, many freshwater lakes have dried up and new reservoirs have been formed due to discharge collector-drainage waters, highly mineralized contaminated with residues of mineral fertilizers, herbicides and pesticides. They have formed ecological conditions that are completely unacceptable for aquatic organisms. As a result, the number of aquatic organisms, mainly fish and their parasites, decreases from year to year in the water bodies of the Southern Aral Sea region.

Currently, in the Republic of Karakalpakstan, measures are being taken to improve the condition of inland water bodies, to increase the number of valuable fish species, and to study their parasitic fauna in the changed ecological conditions of the Southern Aral Sea region. In this connection, the Resolution of the President of the Republic of Uzbekistan was adopted "On measures to support and improve the efficiency of the fishing industry" No. PP-4816 08/29/2020¹ и Resolutions of the Cabinet of Ministers of the Republic of Uzbekistan "On measures for

the further development of the fishing industry in the Republic of Karakalpakstan²".

MATERIAL AND METHODS

For the study, we selected reservoirs located on the territory of South Piaralia. Parasitological materials were collected from 2017 to 2020. Muynak and Sarybass bays of the Aral Sea, which now have a lake regime, as well as lakes Shegekul and Makpalkul, which are similar in their hydro regime. The method of complete parasitological dissection was used (Dogel, 1993, Bykhovskaya-Pavlovskaya, 1985), where 17 fish species were studied. The data of parasites of 8 species of indigenous commercial fish, opened according to the method, in the amount of 382 specimens were considered. Their species composition and number are given in the relevant sections.

DISCUSSION RESULTS

Studies of fish parasites were carried out on the lakes of the Muynak and Sarybass bays of the Aral Sea, as well as in the lakes She-gekul and Makpalkul, which are similar in their hydro-regime. 287 specimens were subjected to complete parasitological analysis. fish from 8 species: oriental bream (27

¹ Resolution of the President of the Republic of Uzbekistan was adopted "On measures to support and improve the efficiency of the fishing industry" No. PP-4816 08/29/2020

² Resolutions of the Cabinet of Ministers of the Republic of Uzbekistan "On measures for the further development of the fishing industry in the Republic of Karakalpakstan²".



specimens), Aral roach (40 specimens), silver crucian carp (28 specimens), carp (63 specimens), silver carp (23 specimens), pike perch (68 specimens), snakeheads (38 specimens).

In these species, 33 species of parasites were found (sporozoa-1, myxosporidia-2, ciliated ciliates-2, monogenea-11, cestodes-5, trematodes-6, nematodes-5, crustaceans-1). In bream and roach, 5 species of parasites were registered each, crucian-7, sazan-17, silver carp-8, catfish-7, pike-perch-9, snakehead-5. The total infection of the tested fish was 93.5%. Infection of certain fish species ranged from 84.2 to 100%.

The analysis of the results of these studies indicates the impoverishment of the fish parasite fauna of the Southern Aral Sea region in comparison with the seven-tenth years.

The most severe depletion was experienced by the parasite fauna of aboriginal fish - bream (7.2 times), roach (5.8 times) and catfish (4.7 times). In the studied fish, pathogenic forms of parasites were more common (representatives of the genera *Dactylogirus*, *Antyrocephalus*, *Diplostomum*, *Contracum*). Along with them, tapeworms - *caryophyllus* and *botryocephalus* - pose a certain danger to fish. If favorable conditions arise, they can develop and give an outbreak of epizootics in the region.

In the southern Aral Sea region, there are natural foci of fish diseases, which cause the above types of parasites. The results of these studies form the biological basis of measures to combat parasites in the conditions of the region. The study of parasites of fish and invertebrates of the Southern Aral Sea region under conditions of anthropogenic transformation of the environment is urgent.

The nature of the reservoir (river, lake, pond), features of the chemical composition of water, geographical location, composition of aquatic organisms, season and other environmental factors of the second order determine the parasite fauna of any fish species inhabiting this reservoir

It has been established that the parasite fauna depends on the size and nature of the reservoir. The intensity of fish infestation in a lake or pond is higher than in a river, although the number of parasite species in a river is usually higher.

In ponds, the accumulation of parasites and invasive stages (spores, eggs) occurs faster than in the river, due to the low flow rate and the large number of hosts on which they can inhabit.

In stagnant water bodies, the accumulation of parasites with a direct development cycle, such as ichthyophthirius, chilodonella, and lernaea, occurs especially rapidly. In reservoirs, where the flow rate is less than in the river, parasites characteristic of river fish disappears (side-scrapers, some tapeworms and nematodes), however, the number of parasites

characteristic of stagnant water (crustaceans, monogeneans, trematodes, cestodes) is increasing.

The depth of the reservoir directly or indirectly affects the parasite fauna of fish. The chemical composition of water, in addition to its direct effect on certain stages of the life cycle of the parasite, can have an indirect effect, determining the composition of ichthyofauna and invertebrates - the final or intermediate hosts of parasites.

The richness of the parasite fauna is facilitated by the diversity of the composition of hydrobionts, which are both food objects for fish and intermediate hosts of parasites. A change in the composition of hydrobionts, which occurs, for example, when creating reservoirs, leads to a sharp change in the parasite fauna of fish.

The geographic position of the reservoir (northern or southern, mountainous or flat, etc.), reflecting on the temperature of water, vegetation, composition of aquatic organisms and other environmental factors of the second order, can prevent or contribute to the infection of fish with various parasites.

The parasite fauna of fish depends on the season. In freshwater fish, the richest and most diverse parasite fauna is observed mainly in spring and summer.

At this time, the maximum number of aquatic organisms (crustaceans, molluscs, etc.) and parasites characteristic of them (trematodes, cestodes, nematodes) is noted.

The high temperature of the summer season contributes to the rapid reproduction of many protozoa (bone, coccidia), monogeneans (dactylogyrus), parasitic crustaceans (lernae, argluses).

The totality of the listed conditions of the external environment creates a general background against which a number of complex relations between hosts and parasites are carried out.

At the same time, the composition of parasites is determined by the morphological and physiological characteristics of the host organism, that is, by the first-order environment. The nature of the cover, the degree of development of the mucous glands, the structure of the branchial apparatus have a constant effect on the composition of ectoparasites.

The structure of the digestive tract, the presence or absence of teeth determine the composition of numerous and varied intestinal, cavity, tissue and other endoparasites, which penetrate into the internal organs not through the integument, but through the intestinal walls.

The physiological characteristics of the host acquire even greater importance for the composition of the parasite fauna: the nature of the food with which many endoparasites enter the fish organism; character and speed of movement; ability to migrate; depth of habitation, etc. Of great importance



is the ability of a given fish to develop immunity to certain parasites, the state of the whole organism (fatness, preparation for spawning), the age of the host, etc.

The feeding habits of fish also have a direct and indirect effect on its parasite fauna. The presence in the fish diet of molluscs, oligochaetes, crustaceans and other animals - intermediate hosts of pathogenic helminths - contributes to the infection of fish with these parasites.

In this regard, the parasite fauna of peaceful and predatory fish, plankton-phages and benthophages is significantly different. In herbivorous fish, intestinal helminths are almost completely absent. The parasite fauna of fish significantly changes during their migrations. During migrations, fish, first of all, are freed from ectoparasites, which cannot withstand salinization (or desalination). Migration has almost no effect on cavity parasites.

CONCLUSIONS

1. Studies of fish parasites were carried out on the lakes of the Muinak and Sarybass bays of the Aral Sea, as well as in the lakes Shegekul and Makpalkul, which are similar in their hydro-regime.
2. 287 specimens were subjected to complete parasitological analysis. fish from 8 species: oriental bream (27 specimens), Aral roach (40 specimens), silver crucian carp (28 specimens), carp (63 specimens), silver carp (23 specimens), pike perch (68 specimens), snakeheads (38 specimens).
3. In 8 selected fish species, 33 species of parasites were found (spore-ki-1, myxosporidia-2, ciliated ciliates-2, monogeneans-11, cestodes-5, trematodes-6, nematodes-5, crustaceans-1).
4. The total infestation of the tested fish was 93.5%. Infection of certain fish species ranged from 84.2 to 100%.
5. The analysis of the results of these studies indicates the impoverishment of the fauna of parasites of fish in the Southern Aral Sea region in comparison with the years of the last century. The most severe depletion was experienced by the parasite fauna of aboriginal fish - bream (by 7.2 times), roach (by 5.8 times) and catfish (by 4.7 times).
6. In the studied fish, pathogenic forms of parasites were more common: representatives of the genera *Dactylogirus*, *Antyrocephalus*, *Diplostomum*, *Contracecum*.

LITERATURE

1. Nikolsky G.V. *Private ichthyology*. - M.: Higher school, 1971. - 472 p.
2. Steffens V.A. *Industrial methods of fish farming*. - M.: Ag-ropromizdat, 1985.-383p.
3. Naumova V.A., Roitman V.A. *Parasitic diseases of farmed fish and their prevention* // VINITI, ser. Zooparasitology. - 1989. - T. 10. - S. 3-208.
4. Pugachev O.N. *Freshwater fish parasites of Northeast Asia*. - L.: Publishing house of the Zoological Institute of the USSR, 1984.- 156s.
5. Bauer O.N. *Ecology of parasites of freshwater fish* // *Izvestiya VNIIOKKh*. 1959.-Issue 49. - 206 p.
6. Dogel V.A. *General parasitology*. - L.: Publishing house of Leningrad University, 1962. - 464s. 7.
7. Roitman V.A., Beer S.A. *Parasitism as a form of symbiotic relationship*. - M.: Partnership of scientific publications KMK, 208. - 300 p.
8. Vovk P.S. *Biology of Far Eastern herbivorous fish and their economic use in water bodies of Ukraine*. -K.: Nauk. dumka, 1976.-248 p.
9. Akhmerov A.Kh. *Parasites and diseases of Amur fish during the period of acclimatization in pond farms of the RSFSR* // *Proceedings of the Ichthyological Commission of the Academy of Sciences of the USSR*. - M.-L. : Publishing house of the Academy of Sciences of the USSR, 1959. - Issue. 9. - S. 104-109.
10. Davydov O.N., Neborachek S.I., Kurovskaya L.Ya., Lysenko V.N. *Ecology of fish parasites in reservoirs of Ukraine*. - K. : *Bulletin of Zoology*, 2011 --- 492 p.