



STUDY OF THE PARASITOFAUNA OF CERTAIN FISH SPECIES IN THE CHANGED HYDROLOGICAL REGIME OF THE DAUTKUL RESERVOIR

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ABSTRACT

This article presents the results of a study of the parasite fauna of some commercial and common fish species in the Dautkul Reservoir under altered hydrological conditions. The species composition, prevalence, and intensity of parasite infestations in the reservoir's main fish species were examined. The study identified representatives of monogeneans, trematodes, cestodes, nematodes, and parasitic crustaceans. It was established that changes in the reservoir's hydrological regime significantly influence the formation of fish parasite complexes, altering the living conditions of intermediate hosts and the transmission routes of parasites. The data obtained are important for assessing the sanitary status of the reservoir and preserving the region's fish resources.

KEY WORDS: Dautkul Reservoir, fish parasite fauna, hydrological regime, parasites, infestations, ecosystem, ichthyofauna.

INTRODUCTION

The Dautkul Reservoir is one of the largest artificial reservoirs in the Republic of Karakalpakstan and plays a vital role in preserving the biodiversity of aquatic ecosystems, supporting fisheries, and ensuring the region's water resources. In recent decades, climate change, reduced flow of the Amu Darya, and anthropogenic impacts have significantly altered the reservoir's hydrological regime. Fluctuations in water levels, mineralization, temperature, and hydrochemical parameters are observed.

Changing environmental conditions significantly influence the structure of parasite communities of aquatic organisms. Parasites are an important component of aquatic ecosystems and can serve as bioindicators of the ecological state of water bodies. Studying fish parasite fauna allows us to assess the state of the ecosystem, the characteristics of trophic relationships, and potential risks to the fisheries industry.

The aim of this study is to examine the species composition of parasites in certain fish species in the Dautkul Reservoir and to assess the impact of the changed hydrological regime on the formation of parasite complexes.

MATERIALS AND METHODS

Research was conducted in 2024–2025 on the territory of the Dautkul reservoir, located in the northwestern part of the Republic of Karakalpakstan. The research material consisted of 120 specimens of fish belonging to five species: common carp (*Cyprinus carpio*), silver carp (*Carassius gibelio*), pike (*Abramis brama*), pike (*Sander lucioperca*), and sturgeon (*Aspius aspius*). Fish fishing was carried out with set nets and nets in various sections of the reservoir. The parasitological study was conducted using a complete parasitological dissection method according to generally accepted methods. During the examination, the skin, gills, fins, muscles, body cavity, internal organs, and intestines of fish were examined. The determination of parasites was carried out using Central Asian fish parasite determiners and modern systematics of parasitic organisms. To assess the level of infection, the intensity of infection (IE, %), the intensity of infection (IE), and the abundance index (IB) were calculated. Statistical processing of the obtained

RESULTS AND DISCUSSION

As a result of the studies, 15 species of parasites belonging to 11 genera and 5 taxonomic groups were identified in the examined fish: monogenetic flukes (Monogenea), trematodes (Trematoda), cestodes (Cestoda), nematodes (Nematoda), and parasitic crustaceans (Crustacea).

The parasite fauna species composition varied in prevalence among the studied fish species and depended on their environmental characteristics, diet, and habitat conditions in the reservoir.



Table 1
Species composition of fish parasites in the Dautkul Reservoir

Parasite	Taxonomic group	Hosts
<i>Dactylogyrus extensus</i>	Monogenea	Carp
<i>Dactylogyrus vastator</i>	Monogenea	Crucian Carp
<i>Gyrodactylus elegans</i>	Monogenea	Crucian Carp
<i>Diplostomum spathaceum</i>	Trematoda	Bream
<i>Tylodelphys clavata</i>	Trematoda	Crucian Carp
<i>Posthodiplostomum cuticola</i>	Trematoda	Bream
<i>Caryophyllaeus laticeps</i>	Cestoda	Carp
<i>Bothriocephalus acheilognathi</i>	Cestoda	Crucian Carp
<i>Khawia sinensis</i>	Cestoda	Crucian Carp
<i>Camallanus lacustris</i>	Nematoda	Bream
<i>Raphidascaris acus</i>	Nematoda	Pike-perch
<i>Philometra abdominalis</i>	Nematoda	Carp
<i>Ergasilus sieboldi</i>	Crustacea	Bream
<i>Lernaea cyprinacea</i>	Crustacea	Crucian Carp
<i>Argulus foliaceus</i>	Crustacea	Crucian Carp

The most common parasites were monogenetic flukes of the genus *Dactylogyrus*, with prevalence reaching 48.3%. Among endoparasites, the trematode *Diplostomum spathaceum* and the cestode *Bothriocephalus acheilognathi* were dominant. The highest number of parasites was recorded in carp fish, due to their abundance, feeding habits, and high numbers of intermediate hosts.

Table 2
Indicators of fish infestation with parasites

A type of fish	Number of examined individuals	Extent of infection (IE, %);	Average intensity of invasion (II);
Sazan	35	68,6	7,2
Silver carp	30	63,3	5,8
Lizard	25	56,0	4,9
Sudak	15	33,3	2,6
Stallion	15	26,7	2,1

It has been established that in areas with lower water levels and increased mineralization, the diversity of parasites with complex life cycles decreases. At the same time, the role of monoxenous parasites, which do not require intermediate hosts, increases.

These results indicate a significant impact of hydrological changes on the structure of parasite communities in fish in the Dautkul Reservoir. Lower water levels lead to the transformation of coastal biotopes and a reduction in the abundance of mollusks, which are intermediate hosts for many trematodes.

Similar trends have been observed by researchers in the Aral Sea region and the Amu Darya Delta, where environmental transformation has led to a decrease in the diversity of parasites with complex life cycles and an increase in the proportion of directly parasitic forms.

The high infectiousness of carp fish is due to their benthic feeding type and constant contact with intermediate host parasites. The presence of *Diplostomum*, *Bothriocephalus*, and *Lernaea* parasites can negatively affect fish growth rates and reduce their economic value. Thus, the parasitofauna of fish reflects changes occurring in the environment and can be used as an indicator of the state of the aquatic ecosystem.

CONCLUSION

Fifteen species of fish parasites belonging to five main taxonomic groups have been identified in the Dautkul reservoir. The most common parasites are representatives of Monogenea, Trematoda, and Cestoda. Maximum infection was observed in carp fish - common carp and silver carp. The change in the reservoir's hydrological regime significantly influences the formation of parasitic fish complexes. Fish parasitofauna can serve as an effective bioindicator of the ecological state of Aral Sea region water bodies. The obtained results can be used in conducting environmental monitoring and developing measures for the rational use of fish resources in the Dautkul reservoir.

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