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CESTODES OF CYPRINIFORMES FISHES IN THE WATERBODIES OF THE MIDSTREAM OF THE RIVER SYRDARYA

N. M. Soroka[1], *Doctor of Veterinary Sciences*
F. E. Safarova[3], *Research Assistant*
F. D. Akramova[3], *Doctor of Biological Sciences*
E. B. Shakarboev[2], *Doctor of Biological Sciences*
D. A. Azimov[3], *Doctor of Biological Sciences*
G. A. Mengliyev[2], *PhD of Veterinary Sciences, Associate Professor;*
S. R. Halikov[2], *PhD of Economical Sciences, Associate Professor;*
Sh. K. Mamatiminov[2], *Senior Lecturer*

[1]National University of Life and Environmental Sciences of Ukraine
[2]Tashkent State Agrarian University
[3] Institute of Flora and Fauna Genofound of the Republic of Uzbekistan

The article provides data on the cestodes of Cypriniformes fishes inhabiting waterbodies of the mid-stream of the River Syrdarya. Based on our own data and literature we revealed thirteen cestode species in Cypriniformes fishes belonging to 8 genera, 6 families and 4 orders.

Introduction. Among Uzbekistan wildlife an important place occupy by fish and approximately 80 species inhabit the waters of the country [10, 12].

Parasites prevention take place high role in improving fish productivity. Prophylactic activities increase fish productivity and to many reasons it is impossible without comprehensive ichthyo-parasitological researches. These studies represent a theoretical and practical interest, contributing to the construction of scientific bases of rational methods of invasion prevention and parasites elimination.

Published data on helminth and helminthiasis fish of Uzbekistan, particularly in Cypriniformes focused on the area Pryarallya [9, 11, 13, 14, 15] and some southern republics [1, 7]. Researches in this direction, concerning the middle reaches of the Syrdarya river, held still enough.

Material and methods. Helminthological study of some Cypriniformes species conducted in different reservoirs north-eastern part of the country in 2009–2013. Also analysis of literature [1, 2, 7–9, 11, 13–15] and archival materials for the 1970–2009 years was done from general parasitology laboratory of the Institute of Flora and Fauna Genofound of Uzbekistan Republic.

In total studied 142 specimens of fish 5 species of carp that belong to five genera and one family.

Fish caught for research with fishing rod and nets.

Collection and analysis of the material was carried out by full parasitological section [3]. Studied 97 specimens of fish, inclu-

ding carp (*Cyprinus caprio*) – 42 Scardinius (*Scardinius erythrophthalmus*) – 5, roach (*Rutilus rutilus*) – 11 silver carp (*Carassius auratus gibelio*) – 13; ordinary carp (*Hypophtalmichthys molitrix*) – 26.

With method of partial parasitological section 45 fishes was examined. Preparations examined with a microscope "MBI-3", and drawings produsedwith kit "PA-4" and "PA-5".

Identification of cestode species was carried out by the relevant determinants [4–6, 11].

To monitor the epizootic process and determine the contamination of fish with following parameters: features, location and nature of the reservoir; the degree of filling of the reservoir; extensiveness and intensity of invasion by type.

Results and discussion. Based on our researches and the literature data in Cypriniformes fish were found 13 species of cestodes belonging to 8 genera, 6 families and 4 rows.

Row *Caryophyllidea van Beneden in Carus*, 1863.

Family *Caryophyllaeidae Leuckart*, 1878.

Genus *Caryophyllaeus Muler*, 1787.

Caryophyllaeus laticeps (Pallas, 1781) –found in the intestines of two carp (4,7 %) with the intensity of infestation – 3 and 4 parasites. Biohelminth. Intermediate hosts – invertebrates: *Tubifex tubifex, T. barbatus, Limnodrilus claperedeanus.*

Caryophyllaeus fimbriceps, Annenkova – Chlopina, 1919 – intestinal parasite. Quite common carp parasite. High level of invasion causing mass destruction, especially in one year age fish [5]. Extensiveness of invasion – 5 (11,9 %), intensity – 2–7 parasites. Biohelminth. Intermediate hosts – invertebrates: *Tubifex tubifeh, T. barbatus, Psammoryctes albicola, Limnodrilus udekemianus.*

Genus *Biacetabulum*, Hunter, 1927.

Biacetabulum appendiculatum, Szidat, 1937 – detected in carp intestine, in which observed 2 parasites (4,7%) with intensity - 2 and 3 parasites. Pirogenetic procerkoides founded in the body cavity of invertebrates *Tubifex tubifex* and *Limnodrilus claparedeanus.*

Genus *Khawia*, Hsu, 1935.

Khawia sinensis, Hsu, 1935 – found in the intestines of seven carps, caught in the tributary Chircik river (basin Syrdarya) [11]. Extensiveness of invasion was 17,6 %, and intensity – 3–7 parasites. Intermediate hosts – invertebrates: *Ilyodrilus hommoniensis, Limnodrilus hoffmeisteri, L. undekemianus, Psammoryctes barbatus, Tubifex tubifex.* In terms pond farms can cause massive loss of young carp.

Row *Pseudophyllidea*, *Carus*, 1863.

Family *Amphicotylidae*, *Ariola*, 1899.

Genus *Bathybothrium*, *Luhe*, 1902.

Bathybothrium rectangulum, Bloch, 1782 – found in the intestines of the Aral barbel, Schizothorax and Diptychus [11]. Extensiveness of Diptychus invasion –33,3% in intensity 1–15 parasites. [11]. Intermediate hosts – cyclops *Acanthocyclops viridis, Macrocyclops albidus* [5].

Family *Bothriocephalidae*, *Blanchard*, 1849.

Genus *Bothriocephalus*, Rud., 1808.

Bathriocephalus opsariichthydis, Yamaguti, 1934 – was found in the intestines of carp and ordinary silver carp. Extensiveness of invasion of carp – 4 (9,5%) and silver carp – 1 (3,8%) with intensity – 2–5 parasites. Intermediate hosts – copepods *Cyclops strenuus, C. vicinus, Acanthocyclops bicuspidatus, A. vernalis, A. viridis, Mesocyclops oithonoides, M. leuckarti, Eucyclops serrulatus and others.* In terms of fish farm sometimes causes the death of young fish.

Family *Ligulidae, Claus*, 1885.

Genus *Ligula, Bloch*, 1782.

Ligula *intestinalis*, L., 1758.

Plerocercoid found in the body cavity of the scardinius, roach and bream. Extensiveness invasion of the scardinius – 1 (20 %) and roach – 1 (9,1 %) with intensity 3 and

8 plerocercoids.

These parasites are dangerous and cause epizootics in some years among some species of carp, especially at low flow ponds and reservoirs [4, 5].

Sexually mature cestodes localized in the gut piscivorous birds – gulls and more rarely – ducks, grebes and tern. Procercoid stage migrates through body cavity copepods (*Cyclops strenuus, Acanthocyclops bicuspidatus, A. viridis, Mesocyclops oithonoides, Eudiaptomus gracilis, E. graciloides*) [5, 6].

Genus *Digramma, Cholodkovsky*, 1914.

Digramma *interrupta, Rud.*, 1810.

Plerocercoid found in the body cavity of carp. In five observed carp one was infected (20%) with the intensity of infestation 8 plerocercoides. Sexually mature forms of parasites in piscivorous birds – gulls and ducks. Procercoid stage *D. interrupta* develops in the body cavity of the cyclops *Cyclops strenuus, Acanthocyclops viridis, Eucyclops serrulatus, Diaptomus gracilis* [4–6].

On plerocercoid stage it is high pathogenic parasite, causes epizootic among Cypriniformes in reservoirs and other water bodies of slow-flow waters.

Row *Proteocephalidea, Mola*, 1928.

Family *Proteocephalidae, La Rue*, 1911.

Genus *Proteocephalus, Weinland*, 1858.

Proteocephalus torulosus, Batsch, 1786 - roach found in the intestines. Extensiveness of invasion – 2 (8,2 %), with intensity - 4 and 6 copies. Intermediate host – copepods *Diaptomus castor, Cyclops strenuus, Eucyclops serrulatus.*

Row *Cyclophyllidea, Braun*, 1900.

Family *Dilepididae, Fuhrmann*, 1907.

Paradilepis scolecina, Rud., 1819.

Larvae in transparent capsules are found in the body cavity, liver, mesentery and on the wall of the intestines of many freshwater fishes, mainly – in Cypriniformes [5, 6, 11]. Was found in carp. Extensiveness of invasion – 3 (7,1%) with intensity 2–6 larvae. Adult parasites are found in the intestines of cormorants, and larvae – the fish. The first intermediate host – invertebrates Eudiaptomus graciloides.

Neogryporhynchus cheilancristrotus, Wedl, 1955.

This parasite localized in the walls of the intestine and gallbladder many freshwater fish, mainly carp. Was found in roach. Extensiveness of invasion – 1 (9,1%) with intensity 2 parasites.

The first intermediate host – Mesocyclops oithonoides; adult worms were found in the intestines of herons and larval forms – fish [5, 6].

Gryporhynchus pusillus, *Nordman*, 1832.

Cestodes found in the mucosa of the anterior intestine, mainly in Cypriniformes. The larva was found in Scardinius and silver carp. Extensiveness of invasion – 2,3% and 5,9%, respectively. The intensity of infestation – 3–5 copies. Adult forms of the parasite is not installed. The noted before the adult form of the larvae of G. pusillus bowel herons were Neogryporhynchus cheilancristrotus [5, 6].

Dilepis unilateralis, Rud., 1819.

Cestodes found in the gallbladder of carp. Extensiveness of invasion – 2,3%, intensity – 2–7 copies. Adult D. unilateralis parasites are found in the intestines herons.

Conclusions

From 6 registered cestode species was found in larval forms. Places of parasitism - a body cavity, liver, mesentery, the walls of the intestine, gallbladder mucosa of the anterior intestine.

One of the important factors in the genesis of helminth fauna animals – biocenotical ties hosts and parasites. Circulation of worms in the relevant biocenoses is based on trophic relationships or topical components of ecosystems. Contamination of fish in a variety of ways – most species when feeding on zooplankton, and for some types of intermediate hosts are oligochaetes and

other benthic organisms. Caryophyllaeus laticeps (Pallas, 1781) and Ligulaintes tinalis (L., 1758) are specific parasites carp fish.

The studies to clarify the species composition cestode Cypriniformes fish in the northeastern part of the Republic of Uzbekistan can serve as a scientific basis for the development of a comprehensive system of preventive measures against helminths appropriate that lead to significant economic losses, and for high performance water.

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АННОТАЦИЯ

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В статье представлены данные о цестодах карпообразных рыб водоемов среднего течения реки Сырдарья. На основании собственных исследований и данных литературы у карпообразных рыб обнаружено 13 видов цестод, относящихся к 8 родам, 6 семействам и 4 отрядам.

АНОТАЦІЯ

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У статті наведено дані стосовно цестод коропоподібних риб водойм середньої течії ріки Сирдар'я. На підставі власних досліджень і даних літератури у коропоподібних риб виявлено 13 видів цестод, що відносяться до 8 родів, 6 родин і 4 рядів.