Species and Ecological Diversity of Nematodes Amphibian Uzbekistan

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Annotation: This article provides a list of species diversity and some environmental features of the amphibian nematode of Uzbekistan.

Keywords: amphibian, nematodofauna, transformation, Lake Frog, green toad

1. Introduction

Amphibian nematodes in Uzbekistan are a poorly studied group of helminths. Nematodes parasitizing amphibians in the body strongly affect all vital physiological processes of the animal. The study of amphibian nematodes can be used to solve many unresolved issues of general biological, physiological and environmental parasitology. However, prior to our studies, there was no special work on nematodofauna of amphibians.

2. Literature Review

Several studies have been devoted to the research of the amphibian nematode, starting from the 30s of the last century B.G. Massino [1] on the basis of materials 5 of the SGE in Bukhara, amphibians noted the nematodes Hystrichis tricolar larvae and Rhabdias bufonis.

A.A. Brain, K.M. Ryzhikov, B.E. Sudarikov [2] as a part of the 289th SGE in the territory of Turkmenistan and partially in Karakalpakstan (Muynak) studied 110 specimens. amphibian (green toad, common toad and lake frog). At the same time, the nematode Gnathostoma hispidum was discovered.

E.V. Vashetko, B.Kh. Siddikov [3] in Tashkent, Navoi, Jizzakh regions as well as Tashkent and Karshi examined 272 specimens. green toad. In this case, 13 species of nematodes were identified.

D.A. Azimov, E.F. Ikromov [4] studied the helminth fauna of amphibians of the Ferghana Valley. As a result, 20 species of amphibians were registered, of this number of nematodes, for the first time in Uzbekistan, 5 species of nematodes were identified: Strongyloides spiralis, Aplectana multipapillosa, Cosmocercoides skrjabini, Neoxysomatium brevicaudatum, Thelandros tba. The distribution and functional - biological groups of each species of nematodes in the Ferghana Valley are analyzed.

3. Material and Methodology Research

Complete helminthological autopsy of amphibians was carried out according to the traditional method (Scriabin, 1928). Amphibians were mined in various geographical areas of Uzbekistan. The article is based on data from complete helminthological autopsies of 1435 copies. 2 types of amphibians.

In 2000-2013 We examined 847 lake frogs - Rana ridibunda and 588 green toads - Bufo viridis. A total of 15986 copies were found. nematodes. The bulk of helminths were localized in the digestive system and respiratory tract of amphibians.

In the taxonomic list for each species, the number of infected individuals (specimens) is given in front of the brackets, the percentage of invasion in percent, the limits of invasion intensity in specimen in parentheses.

4. Result and Discussion

Type Nemathelminthes Schneider, 1973
Order Dioctophymida (Railllet, 1916, Subord.) Yamaguti, 1961
Family Dioctophymidae (Gastellani et Chalmers, 1910, Subfam.) Railllet, 1916, Hystrichis tricolar, larvae - in the intestines of 62 (7.31 / 1 - 5) lake frogs. Very rare species, foothill zone.

Order Rhabditidae (Railllet, 1933)
Family Rhabdiasidae Railllet, 1915
Rhabdias bufonis - in the lungs of 405 (68.87 / 1 - 14) green toad, 645 (76.1 / 5 - 26) lake frogs. Numerous species are found everywhere.

Rhabdias rexrovenosus - in the lungs of 79 (13.3 / 4 - 7) green toads. A very rare species, in the lowlands.

This nematode in amphibians we mark for the first time in Uzbekistan.

Family Strongyloidae Chitwood et Melntosh, 1934
Strongyloides spiralis - in the intestinal epithelium of 127 (21.5 / 4-17) green toad, 290 (34.23 / 4-37) lake frog. The usual view, on the plains and foothills.

Strongyloides sp.l - in the intestinal epithelium of 34 (4.01 / 1 - 22) lake frogs. Little studied form. It occurs on the lowlands of the Ferghana Valley.

Strongyloides sp. 2 - in the intestinal epithelium of 52 (6.13 / 2-15) lake frogs. Little studied form. It occurs in foothill zones (Sherabad district of Surkhandarya region).

Family: Trichostrongyldiae (Leiper, 1908, Subfam) Leiper, 1912
Oswaldocruzia filiformis (Goeze, 1782) - in the intestine of 87 (14.79 / 3-8) green toad. Locally common. It occurs on the lowland and foothill zones.
Spirocerca lupi (Rud., 1819), larvae - in the stomach wall of 37 (6.29 / 3 - 11) green toads and in 19 (2.24 / 1 - 16) lake frogs. Locally common. It occurs on the lowland and foothill zones of the Republic.

Gongylonema pulchrum (Molin, 1857), larvae - in the body cavity of 17 (2.89 / 2 - 6) green toads. Locally widespread view. It occurs on the lowland and foothill zones of the Republic.

Agamospirura larvae

Agamospirura magna Sharpilo, 1963, larvae - in the mesentery of 27 (4.59 / 2 - 4) green toads. Locally common. It is found on lowland zones.

Thus, in Uzbekistan, 29 species of nematodes belonging to 3 orders, 9 families, and to one species of larva of the Agamospirura group were found in the studied amphibians.

According to our data, the maximum values were found for R. bufonis 76.1% in the lake frog, 41.4% for C. commutata in the green toad. Indicators of invasion intensity in some cases reach a high value: 37 copies. S. spiralis in a lake frog, 32 specimens. C. skryabinii in green toad, 26 copies R. bufonis in the lake frog. A variety of nematodofauna is found in the green toad of 21 species, lake frog 12 species. Among the detected nematodes, 20 species are found in the foothill zone, 18 plains and 5 species in the mountain zone.

5. Conclusion

In general, the nematodofauna of amphibians is closely related to its lifestyle and is formed depending on the length of time the amphibian stays in the water and on the creature, biotopic confinement. The basis of the nematodofauna of amphibians in the “populations” of Uzbekistan is composed of sexually mature and larval forms of nematodes, the infection rate of which is generally low. Of interest are data on the infection of green toads in various habitats of the city of Kokand, where green toad is numerous. It turned out that the species composition of nematodes was very depleted, which did not depend on the sample size.

In our opinion, the low species diversity of green toad nematodes from populations is associated with environmental pollution. The anthropogenetic transformation of biocenoses can lead to the destruction of historically developed parasitic systems. A consequence of this is a decrease in the species diversity of parasites, a decrease in the size of invasion and a simplification of the structure of the community of the latter.

Our studies have significantly expanded our understanding of the diversity of the nematodofauna of one of the systematic and ecological groups of vertebrates in Uzbekistan.

References


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