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ECONOMIC IMPORTANCE OF GASTROPOD MOLLUSCS IN THE NORTH-WEST OF THE TURKESTAN RANGE

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ХОЗЯЙСТВЕННОЕ ЗНАЧЕНИЕ БРЮХОНОГИХ МОЛЛЮСКОВ СЕВЕРО-ЗАПАДА ТУРКЕСТАНСКОГО ХРЕБТА

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ABSTRACT

The article describes the economic importance of gastropods in the north-west of the Turkestan Range. According to the given data, all slugs and 23 species of gastropod molluscs with an external shell found in the region were noted as agricultural pests. Of the 58 identified gastropods, 27 are noted as intermediate hosts of helminths.

АННОТАЦИЯ

В статье описывается хозяйственное значение брюхоногих моллюсков северо-запада Туркестанского хребта. Согласно приведенным данным, все выявленные в регионе слизни и 23 вида брюхоногих моллюсков с наружной раковиной отмечены как вредители сельского хозяйства. Из 58 определенных брюхоногих моллюсков 27 отмечены как промежуточные хозяева гельминтов.

Keywords: gastropods, economic importance, Turkestan Range, intermediate hosts, helminths.

Ключевые слова: брюхоногие моллюски, хозяйственное значение, Туркестанский хребет, промежуточные хозяева, гельминты.

Introduction

The economic importance of gastropods not only in the north-west of the Turkestan Range, but throughout Central Asia has two sides: positive and negative. The positive side of the events is that they turned out to be a link in the diet of some animals. For example, many waterfowl: ducks, geese, gulls, as well as amphibians and fish feed on aquatic molluscs. Domestic chickens are also found in the extermination of gastropods. That some species of gastropods have been reported as harmful to crops and as intermediate hosts of parasitic helminths is certainly a negative lack of data in animals.

Materials and methods

The material for this work was the long-term collection of gastropods carried out in the territory of the north-west of the Turkestan Range.

When collecting terrestrial molluscs, the methods of I.M. Likharev and E.S. Rammelmeyr [10], A.A. Shileyko [12, 13], and during fixation by I.M. Likharev and

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A.Y. Viktor [8]. To study the anatomical structure, the methods of I.M. Likharev [7] and A.A. Shileyko [12] were used.

Harmfulness and participation of some gastropods as intermediate hosts of parasitic helminths was determined from literary sources [1, 2, 3, 5, 9, 11].

Results

Analyzing the accumulated material on gastropod molluscs in the northwest of the Turkestan Range and the literature data in recent years, we found that 58 species of gastropod mollusks inhabit the northwestern part of the Turkestan Range. Of these, 43 species belong to terrestrial, and 15 to freshwater molluscs.

As pests of agricultural crops, slugs cause great damage among gastropods. In the northwestern part of the Turkestan Range, we identified 7 species of slugs [4, 5]. All of them are pests of grain, vegetable, industrial and ornamental crops. In addition, they live in greenhouses, greenhouses and gardens, especially in the zone of irrigated agriculture, where they are very active and numerous. 80-100% damage cabbage, onions, dill, strawberries, pumpkin leaves, seedlings of many crops. Since slugs willingly eat the corpses of animals and feces, they can introduce eggs of helminths dangerous to humans on plants [9]. Of certain slugs, *Lehmannia valentiana* is considered an introduced species, which, like other species, causes significant damage to vegetable and ornamental crops [6]. The systematic composition of slugs in the northwest of the Turkestan Range is given below (Table 1). According to the table, it can be seen that the main pests of agricultural plants are representatives of the families Agriolimacidae and Parmacellidae. They cause especially great damage during the spring and autumn periods of rains. Like all slugs, they have high ecological plasticity and tolerate summer drought very well, hibernating. But representatives of some families (Agriolimacidae) can also be found in summer along streams and ditches. Although at this time of the year they are not very dangerous as pests of agricultural crops, they are dangerous because during this period they lay eggs and breed.

Table 1.

Systematic composition of slugs in the northwest of the Turkestan Range

№	Family name	Species name
1	Agriolimacidae	1. *Deroceras leave* 2. *D. agreste* 3. *Lytopelte maculata*
2	Parmacellidae	1. *Candaharia rutellum* 2. *C. levanderi* 3. *C. izzatullaevi*
3	Limacidae	*Lehmannia valentiana*

A literary analysis [1, 2, 11] of gastropod molluscs - pests of farm animals showed that 4 species of freshwater molluscs out of 15 species, and 23 species of terrestrial molluscs out of 43 species are intermediate hosts of certain parasites. Below we provide a list of molluscs intermediate hosts and the names of helminths (Table 2).

Table 2.

Molluscs are intermediate hosts of helminthes

№	The name of the molluscs	Helminths
	Freshwater clams	
1	*Lymnaea truncatula*	*Fasciola hepatica*
2	*Lymnaea auricularia*	*Fasciola gigantica, Orientobilharzia turkestanica*
3	*Lymnaea bactriana*	*Fasciola gigantica, Orientobilharzia turkestanica.*
4	*Planorbis tangitarensis*	*Gastrothylax crumenifer*
	Land molluscs	
1	*Succinea putris*	*Protostrongylus davtiani, P. raillieti, P. skrjabini.*
2	*Oxyloma elegans*	*Protostrongylus raillieti*
3	*Cochlicopa nitens*	*Protostrongylus davtiani, P. raillieti.*
4	*Cochlicopa lubrica*	*Varestrogylus pneumonicus*
5	*Cochlicopa lubricella*	*Spiculocaulus leuckarti*
6	*Sphyradium doliolum*	*Protostrongylus hobmaieri*
7	*Vallonia costata*	*Hasstilesia ovis, Dicrocoelium dendriticum, Spiculocaulus kwongi.*
8	*Vallonia pulchella*	*Hasstilesia ovis*
9	*Vallonia ladacensis*	*Dicrocoelium dendriticum*
10	*Gibbulinopsis signata*	*Protostrongylus rufescens, P. hobmaieri, Cystocaulus ocreatus.*
11	*Pupilla triplicata*	*Protostrongylus davtiani, P. raillieti.*

№	The name of the molluscs	Helminths
12	*Pupilla muscorum*	*Hasstilesia ovis, Dicrocoelium dendriticum, Protostrongylus hobmaieri, Spiculocaulus austriacus, S. kwongi.*
13	*Vertigo antivertigo*	*Protostrongylus davtiani, P. skrjabini.*
14	*Pseudonapaeus miser*	*Protostrongylus hobmaieri, P. skrjabini.*
15	*Pseudonapaeus sogdiana*	*Cystocaulus ocreatus*
16	*Leucozonella rufispira*	*Cystocaulus ocreatus, Dicrocoelium dendriticum.*
17	*Leucozonella retteri*	*Dicrocoelium dendriticum*
18	*Xeropicta candaharica*	*Cystocaulus ocreatus, C. vsevolodovi, Protostrongylus rufescens, P. davtiani, P. hobmaieri, P. raillieti, P. skrjabini, P. caprae, Dicrocoelium dendriticum, Muellerius capillaris, Spiculocaulus leuckarti, S. austriacus, S. kwongi, S. orloffi.*
19	*Monacha carthusiana*	*Cystocaulus ocreatus*
20	*Zonitoides nitidus*	*Dicrocoelium dendriticum, Cystocaulus ocreatus, Protostrongylus davtiani, P. skrjabini.*
21	*Macrochlamys sogdiana*	*Spiculocaulus austriacus*
22	*Candaharia izzatullaevi*	*Dicrocoelium dendriticum*
23	*Deroceras agreste*	*Dicrocoelium dendriticum*

Conclusion

From the above data, it can be seen that the most infected of freshwater molluscs is molluscs of the genus *Lymnaea*, and of terrestrial molluscs, molluscs of the genera *Pupilla* and *Xeropicta*. The most dangerous and widespread among them are *Lymnaea truncatula, L. auricularia* and *Xeropicta candaharica.* These species are widespread not only in the northwestern part of the Turkestan Range, but also throughout Central Asia. If freshwater molluscs are intermediate hosts of trematodes, then terrestrial molluscs are mainly nematodes. As you know, the larvae of these helminths can infect not only farm animals, but also humans. Considering the wide distribution of representatives of these molluscs throughout Central Asia, one can imagine what a huge threat they pose to the national economy. Therefore, it is impossible for a minute to relax the fight against them both in natural biotopes and in agrocenoses. An effective way to fight against harmful molluscs is considered to be the simultaneous use of agrotechnical, chemical and biological methods of control. In recent years, special attention has been paid to the biological method of control, since it does not require large financial costs and, most importantly, is environmentally friendly.

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