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**INFESTATION OF DICE SNAKE *NATRIX TESSELLATA*  
(LAURENTI, 1768) BY HELMINTHS IN ARMENIA**

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One Trematoda species (*Telorchis assula*) and two Cestoda species (*Ophiotaenia europea* and *Spirometra erinacei europea*) of helminthes were found and described for widespread Dice snake *Natrix tessellata* (Laurenti, 1768) in Armenia.

*Natrix tessellata – helminthes – Telorchis assula – Ophiotaenia europea –  
Spirometra erinacei europea*

Հայտնաբերվել և նկարագրվել են Հայաստանում լայնորեն տարածված ջրային լորսու *Natrix tessellata*-ի (Laurenti, 1768) 3 տեսակի հելմինթների՝ 1 ծծող և 2 ժապավենաձև որդեր (*Telorchis assula*, *Ophiotaenia europea* և *Spirometra erinacei europea*).

*Natrix tessellata – հելմինթներ – Telorchis assula – Ophiotaenia europea –  
Spirometra erinacei europea*

Обнаружено и описано 3 вида гельминтов: 1 вид трематоды (*Telorchis assula*) и 2 вида цестоды (*Ophiotaenia europea* и *Spirometra erinacei europea*) у широко распространенного водяного ужа *Natrix tessellata* (Laurenti, 1768) в Армении.

*Natrix tessellata – гельминты – Telorchis assula – Ophiotaenia europea –  
Spirometra erinacei europea*

Dice snake *N. tessellata* is widespread species in Armenia. It inhabits damp places in various habitats from semi-desert zones to mountain meadows. This snake can be observed also far from water. Usually it is found on riverbanks, channel banks, swamps, mountain streams, lake shores and reservoirs, isolated populations in mountain steppe are also known near small ponds [1]. The color of snake may vary from grayish green to brownish or almost black, with dark spots on the back. The belly is sometimes vividly colored in yellow or orange, with black spots, very similar to dice. Individuals from mountains are usually darker than those found at lower altitudes. Animals are active from mid March to mid October. *N. tessellata* from vicinity of Sevan Lake mostly preys on fish. while snakes living in smaller water bodies - mainly on frogs and toads. Far from water bodies *N. tessellata* preys on lizards (*Ophisops elegans* and *Lacerta media*) and rodents [2, 3].

Very limited information about helminthes of Dice snake in Armenia is available. Only few studies have examined its helminthofauna [4, 5]. In the present paper the helminthofauna of *N. tessellata* living in Armenia was studied.

**Materials and methods.** A total of 16 snakes were collected from various regions of Armenia during the years 2009-2012. They were transported alive to the laboratory and examined for helminthes. Helminthes found in the gastrointestinal tract, lungs or body cavity were placed in 70% ethanol for later identification. For species identification Cestoda and Trematod were stained with carmine, washed in water, three times dehydrated by ethanol solutions series (70%, 80% and 96%), put in pink balm for brightening and mounted in balm.

Morphology of the parasites was examined under a dissection microscope at 40x and 100x magnification. Identification of helminthes was carried out according to Sharpilo [5].

**Results and Discussion.** In helminthofauna of *Natrix tessellata* the following three species of helminthes were found: *Telorchis assula*, *Ophiotaenia europea* and *Spirometra erinacei europea*.

Description of helminth species is given below.

**1. *Telorchis assula* Dujardin, 1845 (Trematoda: Telorchidae)**

*Type host:* *Natrix tessellata*

*Site of infection:* small and large intestines

*Description* (based on 5 specimens): Body elongate, 4-4.9 mm long, 0.3-0.4 mm wide. Maximum wide is near acetabulum (ventral sucker). Tegument is spinose. Oral sucker subterminal, nearly round, 0.11 mm long, ventral sucker 0.09 mm. Oral suckerventral sucker ratio: 1:0.81. Distance between oral sucker and ventral sucker centers 0.14 mm. Esophageal bifurcation in the middle of suckers. Testes are postacetabular. Anterior testis is 0.24 mm long, 0.16 mm wide. Posterior testis is 0.27 mm long, 0.16 mm wide. Distance from posterior testis to posterior end of the body is 0.4 mm. Cirrus is elongated, curved and closely to ovary. Ovary is nearly round, 0.15 mm long, 0.147 mm wide. Vitelline fields are lateral. Uterus has raised branches. Eggs are small, 0.02 mm long, 0.16 mm wide.



**Fig.1. *Telorchis assula* Dujardin, 1845 (Trematoda: Telorchidae)**

a. General view

b. Testes

c. Ovaries

**2. *Spirometra erinacei europea* Rud, 1819 (Cestoda:Diphyllobothriidae), Larval stage**

*Type host:* *Natrix tessellata*, *Macrovipera lebetina*

*Site of infection:* body cavity

*Description* (based on 3 specimens): Larval stages of this Cestoda called plerocercoides are parasitizing in reptiles. Its color is milky. Body length is 5-7 mm. Helminthes 3-8 times are shortened and width considerably rises in saline. In scolex situated bothridial fissure, which have 0.2 mm width and 0.4 mm length. Cuticle is well developed. Its thickness 0,007-0,008 mm. Willus in cuticle are absent. Long time can live in water and saline.

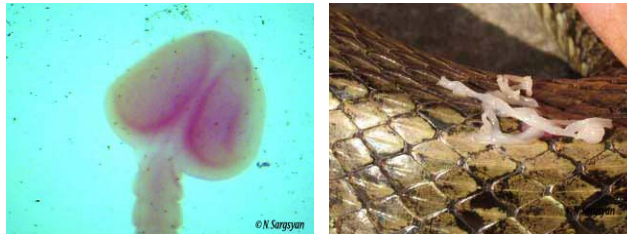
**3. *Ophiotaenia europea* Odening, 1963 (Cestoda, Ophiotaeniidae)**

*Type host:* *Natrix tessellata*, *Macrovipera lebetina*

*Site of infection:* small intestine

*Description* (based on 3 specimens): Body length of mature worm is 330-450

mm, the maximal wide 2.3-3.2 mm. Scolex is spherical and has 0.18-0.2 mm wide. Suckers are oval (0.09x0.09 mm). The longest proglotide is 4.2x1.5 mm.



**Fig.2. *Telorchis assula* Dujardin, 1845 (Trematoda: Telorchidae)**

a. b.

Sexual paths are in the middle of mature segment and divides testes into right and left fields. Total amount of testes is 170. There are oval 0.06x0.07mm. Invaginated bursae is 0.02x0.12 mm. Ovaries are oval 0.4x0.2 mm and have two wings. Vulvae is 0.1 mm. The number of uterine branches is 32-65. Eggs are oval or round 0.05x0.07 mm.



**Fig.3 *Ophiotaenia europea* Odening, 1963 (Cestoda, Ophiotaeniidae)**

a. Scolex b. Mature segment c. Gravid segment

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