

Zoology

New Data on Georgian Species of Freshwater Horsehair Worms (Nematomorpha: Gordiida)

Oleg Gorgadze*, Andreas Schmidt-Rhaesa**, Nunu Kintsurashvili*

* Institute of Zoology, Ilia State University, Tbilisi

** Zoological Museum, University of Hamburg, Hamburg, Germany

(Presented by Academy Member Irakli Eliava)

ABSTRACT. The results of the taxonomic studies of the freshwater hairworms spread at present in Georgia are given in the work. Based on the light and electron microscopic studies species *Gordionus violaceus* Baird, 1853 from the *Gordionus* genus is described for Georgia for the first time. © 2012 Bull. Georg. Natl. Acad. Sci.

Key words: nematomorpha, hairworm, Gordiida, Gordionus, cuticle, areole.

Introduction. Several species of hairworms (Nematomorpha: Gordiida) are described from the Georgian fauna belonging to the three genera: *Gordius*, *Chordodes* and *Spiniochordodes*. These species are *Gordius villoti* Rosa, 1882 [1], *Gordius georgiensis* Kirjanova, 1955 [2], *Chordodes oscillatus* Kirjanova, 1953 [3], *Spiniochordodes baeri* Kirjanova, 1950 [4], *Gordius* sp. Gorgadze and Kintsurashvili, 2002 [5], *Spiniochordodes* sp. Gorgadze, et al., 2008 [6], *Chordodes parabipilus* Kintsurashvili, et al., 2011 [7]. Representatives of the genus *Gordionus* have not been found in Georgia to date.

Material and methods. Hairworms were collected in different localities of Georgia. They were fixed in 70% ethanol. Measurements of the body were taken after fixation of material and cuticle prepara-

tions were prepared for light microscopy studies. Studies of the preparation were performed under a binocular microscope at 100 X 10 magnification: binocular microscope PH 100. Pieces of the cuticle and the posterior end (about 1-2 mm from the terminal tip) were prepared for Scanning Electron Microscopy (SEM). Pieces were dehydrated in an increasing ethanol series, critically point dried and coated with gold in a sputter coater. Observation took place using a LEO SEM 1524 under 10 kV. Digital images were taken.

Results

Gordionus violaceus Baird, 1853

Type locality. One male specimen of the hairworm was collected together with its insect host in a field near a stream, on the territory of Borjomi – Kharagauli National Park (territory of the Romanov's Park). The host insect is *Carabus septemcarinatus* (Coleoptera,

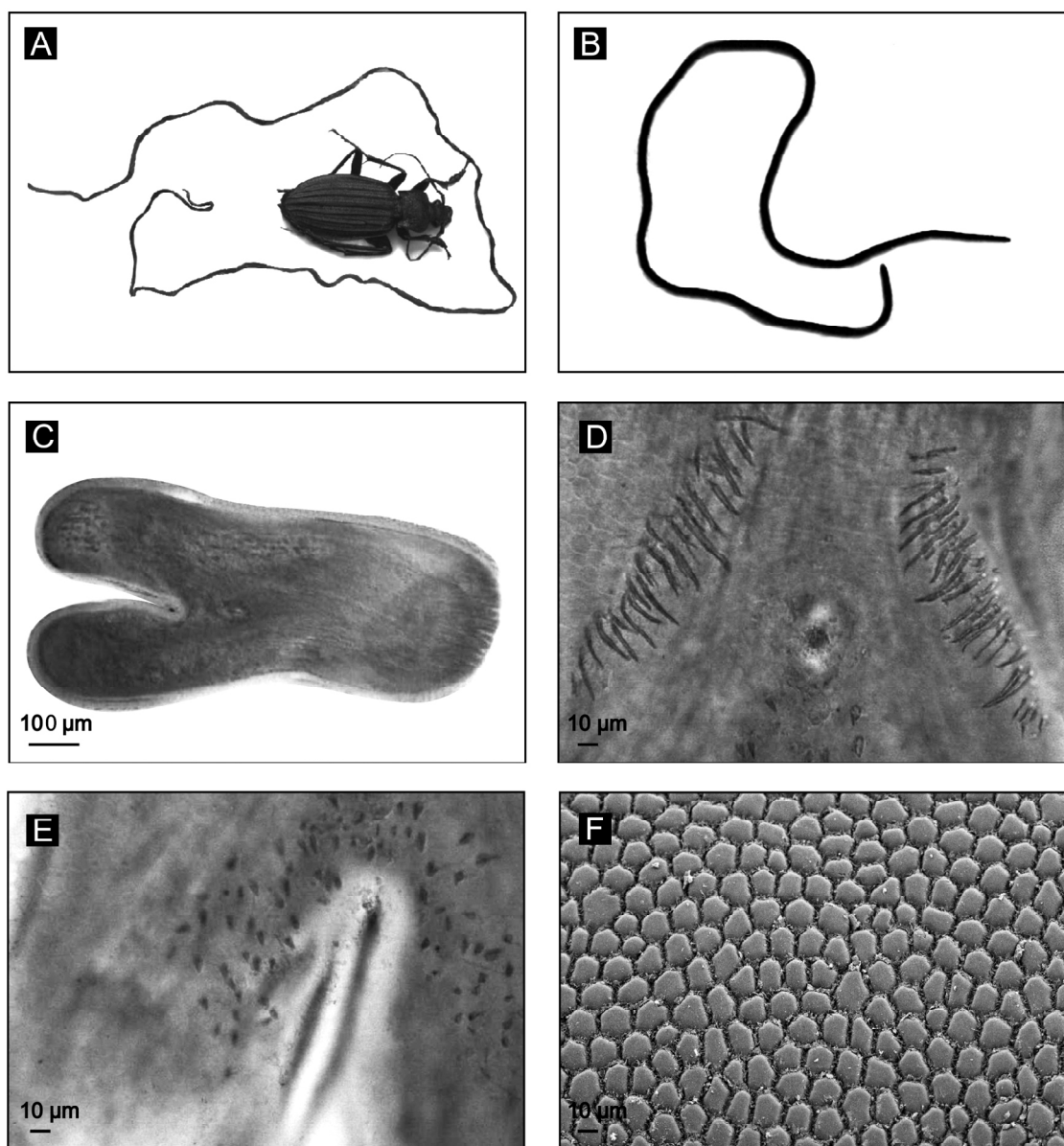


Fig. 1. A. *Gordionus violaceus*. The male specimen together with its insect host (Photo by G. Chaladze) B. Female Specimen. C. Terminal end of the body male. D. Precloacal rows of spines of the male. E. Conical spines posterior of the cloacal opening. F. Overview of the cuticle with one type of the areoles

Carabidae). A second male specimen was collected from the same location. The host is unknown. Female specimens were collected in a stream, in Borjomi-Kharagauli National Park, Likani village, the host is unknown.

Description. Male. (Fig.1,A). The length of the body is 235 mm. The body is narrow towards the anterior part. The width is 340 µm. The body widens towards

tail and its maximum width is 1 mm. The body is dark brown. The exception is the anterior part, where the body is whitish. Mouth opening is located in the centre of the apex. Posterior end of the body is divided into two parts and forms two lobes (Fig.1, C). Tail lobes are longer (300 µm) than their width (213 µm). Cloacal opening is oval. The diameter of the long side of the cloacal opening is 67 µm and of the short side 33 µm. The distance between the cloacal

opening and the base of the lobes is 87 μm . Above the cloaca, a pair of precloacal rows of long spines is arranged on both sides of the middle line of the body (Fig. 1, D). At the beginning, the distance between the two rows is about 75 μm . The rows gradually separate from one another and end in a lateral position. The number of spines in each row is 27-28, the length of spines is 12.5-42.5 μm . Precloacal rows of spines are spread below the cloaca, not reaching the base of the tail lobes (at the level of lobe division). The surface of the hairworm body posterior to the cloacal opening is covered with numerous spines (Fig. 1, E). These are short, sharpened, conical spines 2.5-12.5 μm in length. Postcloacal spines occur in several clusters. They are located immediately below the cloaca and spread on the surface of the tail lobes. Immediately below the cloaca the number of conical spines is about 55-60, 26-30 on each lobe. Conical spines are localized on the medial part of the tail lobes but they are not spread on the terminal part of the tail lobes, conical spines are absent around the cloaca as well.

The cuticle is composed of one type of areoles (Fig. 1, F). Areoles are polygonal in shape and are characterized by some variations depending on the difference in the length and number of facets in them. Areoles in the cuticle are in the form of quadrangles, pentagons and hexagons; they fuse to form one whole layer of the cuticle. The size of areoles varies significantly. The diameter of the long side of the areoles is about 9-24 μm . Areoles are well-defined from each other by interareolar furrows, though in

some cases limits between two areoles are almost indistinguishable. The width of the interareolar furrows is about 2 μm . Sometimes cuticular areoles arrange according to some order and form longitudinal strings. During the examination under the light microscope small, spherical granules and outgrowths surrounding areoles are noticeable. The surface of the areoles is smooth.

Female. (Fig. 1, B). Body colour is brown. Body length of the first specimen is 315 mm, width at the anterior end is 600 μm , the maximum width is 1.6 mm, and at the posterior end of the body it is 600 μm . The length of the second specimen is 165 mm, the width at the anterior end is 180 μm , the maximum width is 1.1 mm and at the posterior end it is 320 μm . The cloacal opening is located at the posterior end. Cuticle structure of the female is identical with that of the male.

Diagnosis. The presence of bilobed terminal end, two fences of long bristles on the precloacal area, fields of numerous, short, conic, spines behind the cloaca and interior to the lobes of the tail side not reaching the tail tips, although cuticle with one type of the irregular, polygonal areoles, the presence of well defined outgrowths and short spines in interareolar furrows in male enables to identify the described specimen of the hairworm as *Gordionus violaceus*.

Acknowledgement. We would like to thank Research Assistant of Ilia State University Giorgi Chaladze for providing material.

ზოოლოგია

ახალი მონაცემები საქართველოს მტკნარი წყლის ბეწვურების (Nematomorpha: Gordiida) შესახებ

ო. გორგაძე*, ა. შმიდტ-რეზა**, ნ. კინსურაშვილი*

* ილიას სახელმწიფო უნივერსიტეტი, ზოოლოგიის ინსტიტუტი, თბილისი

** კამბურგის უნივერსიტეტი, ზოოლოგიის მუზეუმი, კამბურგი, გერმანია

პირველად, საქართველოს ფაუნადან რეგისტრირებულია მტკნარი წყლის ბეწვურების (Nematomorpha: Gordiida) გვარი *Gordionus*. სინათლის და ელექტრონული მიკროსკოპული გამოკვლევის საფუძველზე იდენტიფიცირებულია ამ გვარის ერთ-ერთი სახეობა *Gordionus violaceus* Baird, 1853.

REFERENCES

1. L. Camerano (1896), Monografia del Gordii R. Acad. Torino, 2: 247-419.
2. E. Kirjanova (1955), Trudy Zool. Inst. AN SSSR, 21: 152-160 (in Russian).
3. E. Kirjanova (1953), Soobshcheniia AN Gruz. SSR, 14:101-103 (in Georgian).
4. E. Kirjanova (1950), Trudy Zool. Inst. AN SSSR, 9: 255-280 (in Russian).
5. O. Gorgadze, N. Kintsurashvili (2002), Proc. Inst. Zool. of Georgia, 21: 68-70 (in Russian).
6. O. Gorgadze, A. Schmidt-Rhaesa, N. Kintsurashvili (2008), Bull. Georg. Natl. Acad. Sci., 2, 4: 131 -133.
7. N. Kintsurashvili, A. Schmidt-Rhaesa, O. Gorgadze (2011), Verh. Naturwiss. Ver. Hamburg, 46: 235-241.

Received December, 2011