Vestnik zoologii, **37**(1): 85–88, 2003

УДК 576.895.131.2

A CHORDODID WORM (NEMATOMOPRHA, GORDIACEA) FROM ORENBURG REGION OF RUSSIA

S. E. Spiridonov

Institute of Parasitology, Russian Academy of Sciences, Leninskii pr., 33, Moscow, 117071 Russia
E-mail: spiridon@rjnem.msk.ru

Accepted 7 February 2002

A Chordodid Worm (Nematomorpha, Gordiacea) from Orenburg Region of Russia. Spiridonov S. E. — General morphology and cuticular structures of a single female specimen of the nematomorph worm are described. The specimen was collected on the well bottom in Buzuluk Reserve, Orenburg region, Russia. According to the features of cuticular surface this nematomorph worm belongs to the family Chordodidae, representatives of which are common in tropics, not in temperate regions.

Key words: horse-hair worms, Nematomorpha, Chordodidae, tropical faunistic elements, report from temperate region, parasites of insects.

Волосатик-хордодида (Nematomorpha, Gordiacea) из Оренбургской области России. Спиридонов С. Э. — Приведено описание общей морфологии и строения поверхности кутикулы единственного экземпляра самки волосатика, обнаруженной на дне колодца в Бузулукском бору в Оренбургской обл. России. По особенностям строения поверхности кутикулы этот волосатик относится к семейству Chordodidae, представители которого обычны в тропиках, а не в умеренных широтах.

Ключевые слова: волосатики, Nematomorpha, Chordodidae, элементы тропической фауны, находка в умеренном поясе, паразиты насекомых.

Nematomorph worms (or horse-hair worms) are parasites of haemocoel of arthropods and considered by modern classification as independent class of Ashelminthes (Nemathelminthes). Nematomorphs can be found on all the latitudes though obviously more abundant in tropics, where they invade different insects, mainly orthopteran ones (mantes, cockroaches, locusts). In the temperate regions of Eurasia nematomorphs are less diverse than in tropics, and their fauna is mainly represented by the gordiids (parasites of beetles, orthopterans, trichopterans and other water insects) and parachordodids (parasites of carabids and tenebrionids). The findings of nematomorphs of the tropical family Chordodidae are very rare in temperate areas on the continent. A specimen of chordodid nematomoprh described below was found in Buzuluk forest.

Chordodes sp. (fig. 1, 2)

Material. ♀, Russia, Orenburg Region, Buzuluk forest, on the well bottom (Ljachov). Sample N 140 in the Nematomorpha collection of the Zoological Institute, Russian Academy of Sciences. This specimen bears the label with the inscription by the E. S. Kirjanova — ("*Chordodes ljachovi*"). As no description of such a species was published it is only possible to consider such a name as "nomen colleciorum".

Description. Long slender worm of general yellowish coloration. Cuticle light-yellow with scattered brown spots of separate areoles. Areoles not forming groups of darker coloration. Body length 226 mm, the weight of fixed worm 94 mg. Mid-body diameter 840 mkm. Numerous areoles (fig. 1, 2) — protrusions of globular matter sitting on fibrous cuticular layers. Most common areoles of first type (A I) 2–4 mkm high conical or hemispherical tubercles with 1–7 small spikes atop. A I base usually elongated across the body longitudinal axis, elliptical, polygonal or irregular in shape. A I base size about 5–11 x 4–9 mkm. Spikes atop A I 1–3 mkm long. A I interconnected with net-like pattern of lines on cuticle surface.

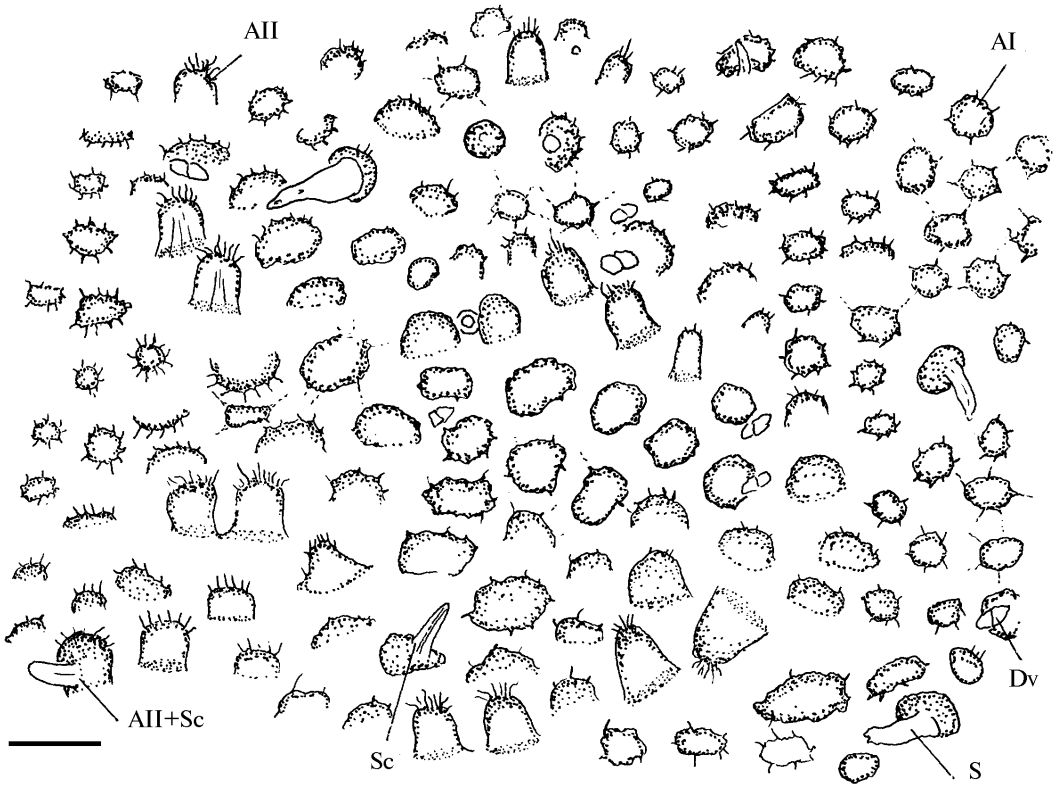

Fig. 1. The cuticle surface of *Chordodes* sp. from Buzuluk, Orenburg region, Russia under light microscope. A I — areoles of the first type; A II — areoles of second type; Dv — double vesicles under cuticle surface; S — spines without axial channel; Sc — spines with axial channel; A II+Sc — spine atop the A II. Scale bar 10 mkm.

Рис. 1. Поверхность кутикулы *Chordodes* sp. из Бузулука, Оренбургская обл. России, под световым микроскопом. A I — ареолы первого типа; A II — ареолы второго типа; Dv — двойные полости под поверхностью кутикулы; S — шипы без осевого канала; Sc — шипы с осевым каналом; A II+Sc — щетинки на вершине A II. Масштабная линейка 10 мкм.

Areoles of second type (A II) usually 10 mkm high and bearing 3–5 mkm long hairs atop. A II base always round or slightly elliptical, of 8–9 mkm diameter. A II mainly in pairs or in small groups of 3–7 ones, only rarely as singular ones.

Hyaline 7–8 mkm high spines rarely situated between two A II, sitting on cuticle surface, not on the areole, unlike two following types of spines for which an A I serving as a base: hyaline 15–17 mkm high spines without channel with 5–7 mkm diameter base and 7–9 mkm high spines of 2–4 mkm diameter of the base with longitudinal axial channel. Rarely spines situated on the A II were found (fig. 1).

Two types of vesicular structures beneath cuticle surface: double vesicles and round pores. Closely situated double vesicles 3–4 mkm in diameter each forming spindle-shaped 6–7 mkm long space. Double vesicle axis always across body longitudinal axis. Comparatively rare round 3–4 mkm pores always between two joined A II.

Host. Unknown.

Taxonomic remarks. The specimen of Nematomorpha described above belongs to the family Chordodidae. Highly protruding areoles with hairs or spikes atop are characteristic only for subfamily Chordodinae. Chordodids are mainly reported from tropical areas, though representatives of the genera *Euchordodes* Heinze, 1937, *Pantachordodes* Heinze, 1954 and *Dacochordodes* Capuse, 1965 were found in temperate Europe (Schmidt-Rhaesa, 1997). Chordodids of the genera *Chordodes* (Creplin, 1847) and *Spinochordodes* Kirjanova, 1950 are quite common in Central Asia (Kirja-

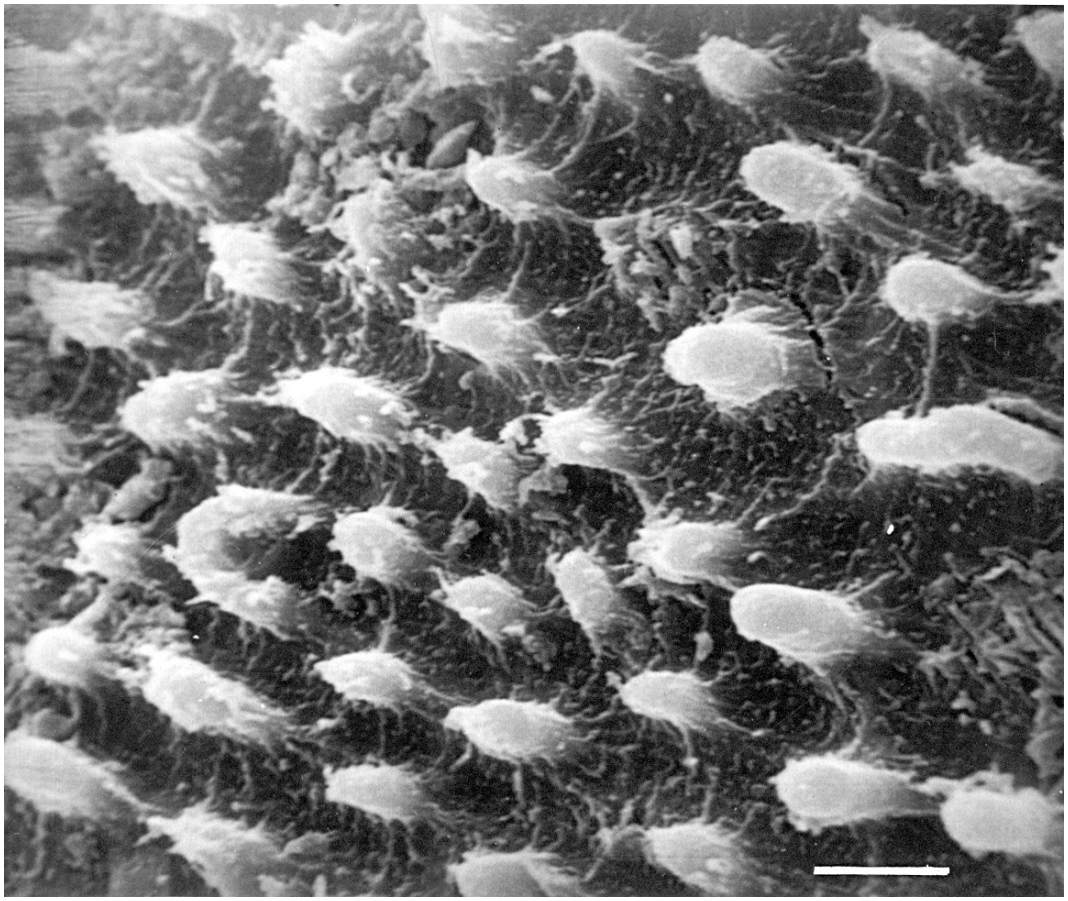

Fig. 2. The cuticle surface of *Chordodes* sp. from Buzuluk, Orenburg region, Russia under scanning electron microscope. Scale bar 10 mkm.

Рис. 2. Поверхность кутикулы *Chordodes* sp. из Бузулука, Оренбургская обл. России, в сканирующем электронном микроскопе. Масштабная линейка 10 мкм.

nova, 1950), but findings of these animals further to the North are rare. Recently *Chordodes sajanensis* Spiridonov, 2000 was described from Minussinsk Valley, Krasnoyarsk Region (Spiridonov, 2000). The specimen from Buzuluk lacks coarse granules on the surface of protruding areoles, which were reported for *Pantachordodes* and *Dacochordodes* (Spiridonov et al., 1992; Schmidt-Rhaesa, 1997). Though *Euchordodes libellulovivens* Heinze, 1937 is quite obscurely described, it can be distinguished from the Buzuluk specimen by the presence of bristles in the interareolar furrows. In our opinion, the specimen found in Buzuluk belongs to the genus *Chordodes*, demonstrating such characteristics of this genus as loose groups of protruding areoles with hairs atop and prominent spines (more than 10 mkm high and 5–6 mkm in base diameter) on the cuticle surface.

Male cuticle of chordodids is richer in morphological details than female cuticle. In absence of males we are unable to identify specimen to the species level. The morphology of cuticle in this specimen differs profoundly from other representatives of the genus Chordodes, described from the territory of the former USSR (Kirjanova, 1950). We do not describe new species for this specimen, as such a description would be incomplete due to the lack of males. The label data are also not complete, as date is absent and possible host for parasitic stage of this nematomorph can not be identified. It is believed that described specimen survived quite a long period in water, as its surface

is covered with a layer of mucous substance. This substance is produced by subcuticular glands of gordiids and makes the SEM study less informative, as obscuring the minor morphological details like spikes or hairs. Still the finding of chordodid worm in quite a cold area of Russia is very interesting, as proving that the elements of tropical fauna are able to survive in northern latitudes and under extreme winter conditions.

This publication was supported by RFBR grant 99–04–48144.

Căpuse I. Sur le Dacochordodes bacescui Capuse (Ord. Chordodida, fam. Chordodidae) // Trav. Mus. natur. "Grigore Antipa". — 1966. — **6**, N 1. — P. 17–23.

Heinze K. Würmer oder Vermes. III. Saitenwürmer oder Gordioidea (Nematomorpha) / Eds. Dahl & Bischoff. Die Tierwelt Deutschlands Bd. 39. — Jena, 1941. — 78 S.

Kirjanova E. S. Gordiid worms (Nematomorpha) of the Zeravshan basin // Tr. Zool. In-ta Acad. nauk SSSR. — 1950. — **9**. — P. 255–280. — Russian.

Schmidt-Rhaesa A. Nematomorpha. Süsswasserfauna von Mitteleuropa. — Stuttgart : Gustav Fisher, 1997. — 125 S.

Schmidt-Rhaesa A. Variation of cuticular characters in the Nematomorpha: studies on Gordionus violaceus (Baird, 1853) and G. wolterstorfii (Camerano, 1888) from Britain and Ireland // Systematic Parasitology. — 2000. — **49**, N 1. — P. 41–57.

Spiridonov S. E., Pikula Z. P., Drljevic E. T. Redescription of Dacochordodes bacescui Căpuse, 1966 (Nematomorpha: Chordodidae) // Helminthologia. — 1992. — **29**, N 2. — P. 193–196.

Spiridonov S. E. New species of gordian worms of the genus Chordodes (Nematomorpha: Chordodidae) from the Minussinsk valley // Parasitologiya. — 2000. — **34**, N 5. — P. 437–441. — Russian.