

A NEW GENUS AND SPECIES OF NEMATODE HEXADORUS
DESERTICOLA GEN. N., SP. N (TYLENCHIDA,
BELONOLAIMINAE) IN THE DESERTS OF CENTRAL ASIA

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According to data in the literature (Sauer et. al., 1980) the subfamily Belonolaiminae contains 4 genera: Belonolaimus Steiner, 1949; Morulaimus Sauer, 1965; Carphodorus Colbran, 1965; and Ibipora Monteiro et Lordello, 1977. A description is given for a new genus and species Hexadorus deserticola gen. n., sp. n. from this subfamily.

The nematodes were registered by us in the rhizosphere of white saxaul Haloxydon persicum Bge. in the sand of Kara-Dum, Kashka-Kum and Kurdzhalakum in southern Tadzhikistan; and also in the rhizosphere of the Richter saltwort Salsola richteri Karel in the Kara Kum desert on the territory of Turkmenistan. These plants are adapted to a sandy desert landscape with a hilly eolian relief, whose soil is weakly developed and primitive. Such a wide distribution and the adaptation of this nematode to the arid zone forms the basis for assuming the possibility of its dissemination in other deserts of Central Asia.

To the new genus Hexadorus gen. n. is transferred the species Morulaimus arealoferus Razzhivin, 1971, observed in the rhizosphere of wild apple in the mountains of Dzhungar Alatau, Kazak SSR (Razzhivin, 1971).

Genus Hexadorus gen. n.

Diagnosis. Belonolaiminae. Body cylindrical, more than 1 mm in length; cuticle clearly annulated. Lateral field with 6 incisures, forming 5 bands completely areolated. Head end clearly offset from the body contours and supplied with 5-7 cuticular annules. Labial disc small and of rounded shape with a small oral opening in the center. There are 6 well developed labial lobes. Amphids oval and situated between labial disc and lateral lobes. Cephalic capsule sclerotization weak to sizeable. Stylet long and thin, from 60 to 130 μ m; its end part constitutes 60-75 percent of its general length. Stylet protractors represented by two types of musculature and correspond to the description cited in the literature (Sauer et. al., 1980). One group of muscles is attached to the stylet knobs and to the long, thin walls of the oral cavity in front of the basal part of the stylet's end part. The other group of protractors extends to the internal vertical plates of the cephalic capsule. Dorsal gland duct located close to the basal part of the stylet.

Metacorporeal bulb of the esophagus large and muscular, and with a well developed valvular apparatus in the center. Glandular part of esophagus slightly overlapping the intestine from the dorsal-lateral side. Esophageal-intestinal valve located on the level of the rear third of the esophageal glands. Lateral canals narrow and well marked. Ovaries paired and straight, oocytes arranged in one row, and spermatheca offset. Vulva transverse, equatorial, and supplied with a double epiptygma. Female tail conical or cylindrical in shape, with a rounded tip. Male tail conical in shape, bursa peloderan, spicules hoplolaimoid and gubernaculum slightly bent.

Type species: Hexadorus deserticola gen. n., sp. n.

Other species: H. arealoferus (Razzhivin, 1971) comb. n. Syn. Morulaimus arealoferus Razzhivin, 1971.

Differential diagnosis. Hexadorus deserticola gen. n., sp. n. is distinguished from all species of the subfamily Belonolaiminae by the presence of 6 incisures in the lateral field, by the small rounded labial disc and by the 6 well developed labial lobes (see table).

TABLE

Differential characteristics of genera of the subfamily Belonolaiminae (according to Sauer et. al., 1980), supplemented by the new genus.

Morphological Characters:	<u>Hexadorus</u> gen. n.	<u>Belonolaimus</u>	<u>Carphodorus</u>	<u>Morulaimus</u>	<u>Ibipora</u>
Labial disc	Round	Round	Round	Oblong	Round
Grooves separating the sub-median lobes	Without clear grooves	With 4 clear grooves	Without clear grooves	Without clear grooves	With 4 clear grooves
Number of incisures in the lateral field	6	1	2	4	4
Amphids	Between lateral lobes and labial disc	On the lateral lobes	Between lateral lobes and labial disc	Between lateral lobes and labial disc	On the lateral lobes
Arrangement of the esophageal glands	Dorsal-lateral	Ventral-lateral	Dorsal-lateral	Dorsal-lateral	Lateral

TABLE (Continued)

Morphological Characters:	<u>Hexadorus</u> gen. n.	<u>Belonolaimus</u>	<u>Carphodorus</u>	<u>Morulaimus</u>	<u>Ibipora</u>
Location of the esophago-intestinal valve	At level of rear half of esophageal glands	In front of esophageal glands	At level of rear half of esophageal glands	At level of front half of esophageal glands	In front of esophageal glands
Internal canals of the body	Thin, well visible	Very thick, well visible	Thin, poorly visible	Thin, poorly visible	Very thick, well visible
Spermatheca	Offset	Offset	Axial	Offset	Offset

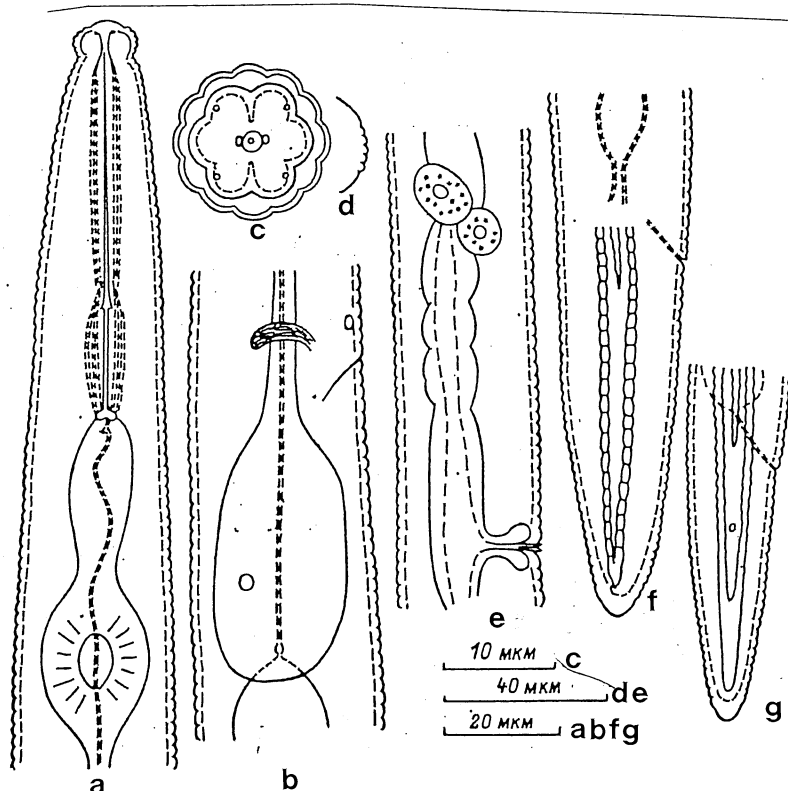
Hexadorus deserticola gen. n., sp. n.
(see figure)

Holotype (female): L = 1.59 mm; a = 48.0; b = 9.1; c = 24.0; c' = 2.7; v = 50.6%; stylet 68.5 μ m.

Paratypes: population from Tadzhikistan (n = 12): L = 1.01-1.5 (1.30 mm; a = 40.0-54.0 (46.1); b = 6.8-9.8 (8.1); c = 18.6-25.2 (23.7); c' = 2.3-3.2 (2.8); v = 50.6-56.5 (52.8)%; stylet 62.0-70.0 (67.0) μ m; population from Turkmenistan (n = 6): L = 1.06-1.15 (1.11) μ m; a = 47.7-52.0 (50.0); b = 10.4-11.8 (11.2); c = 19.8-22.5 (20.8); c' = 2.4-3.3 (2.8); v = 52.1-54.0 (52.8)%; stylet 60.1-60.9 (60.7) μ m. Males not observed. The fixation of the nematodes was done in a hot 5 percent solution of formalin; the total preparations in glycerin were enclosed in rings of paraffin.

Body of female cylindrical for almost its full length, slightly constricted toward the anterior and posterior ends. Cuticle clearly annulated, annule width in mid-body equals 1.5 μ m. Longitudinal lines observed on the cuticle from head end of body to stylet level, forming irregular rows with transverse striations. Lateral field occupies 1/3 of body diameter, consisting of 6 incisures which form 5 areolated bands (the larvae have 4 incisures at mid-body). At level of base of metacorporeal bulb of esophagus, and on the anus area, the number of incisures is reduced to 4. Head end clearly offset from body contour (6 X 12 μ m) and with 5-6 cuticular annules on which 12 longitudinal lines are distinctly visible. On the apical section 6 well developed labial lobes are visible, measuring on 11.04 - 10.70 μ m in diameter. Submedian lobes with papillae located their external side. Labial disc rounded in shape and 2.5 μ m in diameter. Amphids located between labial disc and lateral lobes (see illustration, c). Sclerotization of cephalic capsule weakly developed. Stylet long and thin and its condical part comes to 60-65% of the general length. Basal knobs of

stylet small, 4.1-4.5 μm in diameter. The protractors of the stylet consist of two types of musculature, described in the diagnosis of the genus. Dorsal esophageal gland duct opens into esophagus 2 μm behind the basal part of the stylet. Procorpus of esophagus short. Metacorporeal bulb muscular and oval (18.7 x 14.2 μm) with a well-developed valvular apparatus in the center. The distance from the head end to the middle of the metacorporeal bulb comes to 60% of the general length of the esophagus. Isthmus long and encircled by nerve ring in its middle part. Esophageal glands rounded in shape; their length is somewhat larger, or corresponds to the width of the body, in this area. Esophageal-intestinal valve located close to the base of the esophageal glands. The excretory pore opens at a distance 114-156 μm from the anterior end of the body, at level of the base of the isthmus or of the middle part of the glandular part of the esophagus. Hemizonid two annules of cuticle in front of excretory pore. Lateral canals narrow and clearly visible the full length of the body. Length of ovary is 380-460 μm . In each genital tract there is an offset double spermatheca (see illustration, b). Vulval slit transverse occupying 1/4 part of the body width, with a double epiptygma; vagina short. Tail conical, with rounded smooth tip; its length is 2.5-3.0 times larger than the body diameter in the area of



Hexadora deserticola gen. n., sp. n. (female)

a - Anterior end of body; b - Section of body in esophagus area; c - Labial area face view; d - Transverse section of body with lateral field; e - Section of body in vulva area; f, g - Variations of tail.

the anus; on its ventral side there are up to 39-45 annules of cuticle. Phasmids disposed on the anterior part of the tail, at 37-48% of the overall length.

Differential diagnosis. Hexadorus deserticola gen. n., sp. n. is distinguished from H. arealoferus by the smaller measurements of the stylet--60-70 μ m (as against 120-130 μ m), by the weak sclerotization of the cephalic capsule, and by the absence of annulation on the tip of the tail.

Distribution and localization. The nematodes were observed in the rhizosphere of the white saxaul Haloxylon persicum Bge. in the sands of the Kara-Kum and Kashka-Kum in the "Tiger Gorge" reserve of the Dzhilikul and Kurdzhalakum Kabadien districts in southern Tadzhikistan (April and May in the years 1980 and 1981). They were also found in the rhizosphere of the Richter saltwort Salsola richteri Karel; the anchored desert sands of the Kara-Kum Giaour district (April-June of the years 1976-1979).

Type habitat. Sands of Kara-Dum, southern Tadzhikistan; soil near the roots of Haloxylon persicum Bge.

Holotype (female) No. 494 and paratypes (11 females and 6 larvae) No. 495-507 are kept in the Academician E. N. Pavlov Institute of Zoology and Parasitology, Tadzhik SSR Academy of Sciences; paratypes (22 females and 7 larvae) No. 8-36, in the Institute of Zoology, Turkmen SSR Academy of Sciences.

LITERATURE

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SUMMARY

A new nematode genus, Hexadorus gen. n., differs from all other genera of the subfamily Belonolaiminae in having 6 incisures in the lateral field, a small rounded labial disc and 6 well developed labial lobes. The type species H. deserticola gen. n., sp. n. was found in the rhizosphere of the saxaul Haloxylon persicum Bge in the desert of Kara-Kum, Southern Tajikistan (type locality). It also occurs in other Central Asian deserts. The species Morulaimus arealoferus Razzhivin, 1971 is transferred to the genus Hexadorus gen. n.