

Mesodorylaimus aberrans (Nematoda, Dorylaimida) from the River Vere Valley

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(Presented by Academy Member Irakli Eliava)

A new species of *Mesodorylaimus aberrans*, genus *Dorilaimidae* (Nematoda) is described in the paper. The dimensions of both the females and males, differential diagnosis and images are provided. This species is first registered in Georgia. It was registered on the left bank of the Vere River, in the 50-60-year-old artificial pine forest - *Pinus eldarika* in the environs of Tbilisi. The soil cover of the pine forest represents brown soil of medium-thickness developed on the loess rocks. It should be noted that the presence of loess rocks in the lower part of the Vere River is conditioned by the existence of a dammed lake in the geological past. The soil is characterized by a well-developed humus horizon and granular structure. © 2022 *Bull. Georg. Natl. Acad. Sci.*

Nematode, Mesodorylaimus, supplement

We have studied the soil nematodes found in the restored ecosystems on the left bank of the Vere River. The territory used to be covered with broadleaved forest, which is now deforested as a result of cutting trees for the needs of the city population. We carried out the works of vegetation restoration in the environs of Tbilisi city, including the area of the research. The research was carried out on three sites. The first plot was planted with pines (Eldar pine), the second with almonds. The third plot was selected as the control one and, consequently, no restoration work was carried out there. The territory is covered with bushes and grass; there are some broadleaved forest derivatives

remained. Among the established species of nematodes, we found a representative of *Mesodorylaimus* Andrassy, 1959, which we describe as first registered in Georgia. This species *Mesodorylaimus aberrans* is similar to *Mesodorylaimus obscurus*, but it has distinctive signs. We described both female and male. Taxonomic analysis of soil nematodes in the studies plots indicates the complexity of the taxonomic structure of the nematode population, the significant diversity of fauna.

Materials and Methods

Material was collected on a stationary basis. We made three soil cuttings per plot with the size of

25x25 cm and the depth up to 50 cm (0-10; 11-20; 21-30; 31-40; 41-50 cm). In conditions of laboratory, 20 cm³ of soil of each sample was placed on a metal sieve (Berman modified method) covered with a thin layer of cotton as a filter. The sieve was placed on the plate with water and the active nematodes began to leave the soil and move in the water. This is a well-known dynamic method. By means of that method approximately 80% of nematodes can be isolated from the soil samples [1].

We transferred the water with the nematode into the test tubes and heated the tubes in the water bath up to 50-60°C. As a result of heating, the foiled nematodes straightened, the cuticle lipoid elements began decomposition, and the cuticle became dye-permeable because it lost its barrier properties [2]. After heating, we added a few drops of formalin to the test tubes so that the fixation liquid was a 4-6% solution. After that, the temporary glycerol preparations were made according to the standards accepted in phytohelminthology [2-4].

To identify the nematodes, they were measured, de Mann's formula was written down and various morpho-anatomical features were described, which have a taxonomic significance.

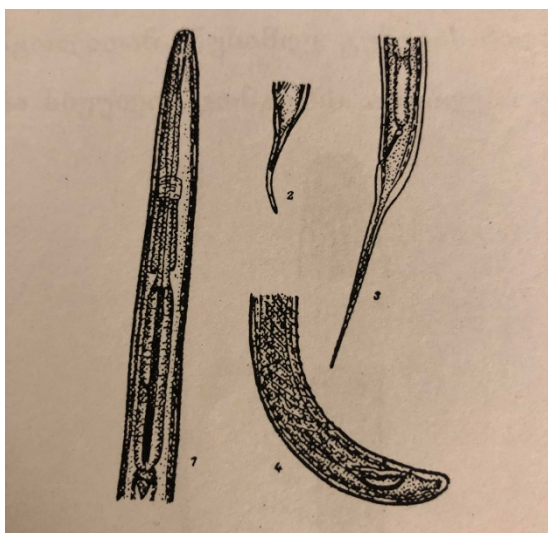


Fig. Anterior part of the body; 2, 3-female tail; 4 - the last part of the male

For taxonomic and faunal analysis, we registered the taxa, determined the representatives of each taxon in the faunal complex, and compared the plots by calculating the similarity coefficients [5]. Besides, we determined the dominance of the individual taxa [6] (Krogerus, 1932) and the coefficient of consistence [5] (Vitkovsky, 1966).

The diagrams and tables reflecting various parameters determined by us and the nature of the fauna dynamics were drawn up. The species which were new to the fauna of Georgia were depicted.

The preparations were prepared at the Institute of Zoology, Iliia State University according to the standards accepted in phytohelminthology.

Mesodorylaimus Aberrans

Dimensions:

Female♀: L = 1,21-1,69; a = 27-34; b = 3.7-4.7; c = 7-25; v = 47-52%

Male: L = 1.26-1.48 mm; a = 30-35; b = 3.9-4.4; c = 5-5.8, spear 18-20 μm; spicula 46-54 μm.

The body is ventrally bent; it is narrowing in the direction of the lips, the width of which is equal to 1/3-1/7 of the body diameter at the end of the esophagus and reaches to 4-5 μm in the body area. The lateral area is 1/6 of the body thickness. In the anterior part of the body there are 6 to 10 narrow ventral pores and there are two pores between the vulva and the end of the esophagus.

The labial area merges with the contour of the body. The lips are fused, the papillae are not visible (unnoticeable). Amphids are stirrup-shaped and their width reaches 60% of the body diameter. The length of the spear is 18 to 20 μm or 1.3-1.4 times more than the diameter of the labia. The nerve ring surrounds the esophagus at the level of 37-41% of its length from the anterior end. The cardium is conical, triangle with the length of 24 μm. The esophagus is wider in the middle of the lower back, at the level of 52-60% of its length. The vulva is transversal and the vagina is sclerotized occupying half the width of the body. There are two gonads in opposite directions; the uterus is long, full of

sperms separated from the gonads by sphincter. The eggs size ranges within: 80-85X32-33 μm . The tail is convex, conical at the beginning, then it is thinner; the terminus is narrow, rounded. The length of the tail varies. It usually equals 4 to 5-times more than the anal diameter, but there are some specimens with much longer tail (from 7 to 8-times more than the anal diameter in length). The length of the rectum is 1.3-1.8-times more than the diameter of the anus. The prerectum is either equal to the rectum or twice longer than that.

There are two testes; the spicula are dorylaimid with the length of 46-54 μm having 12-14 μm long tendons. The series of supplements is represented by 10-15 separate papillae; of them the posterior one is separated from the rest; the length of the series is 2.4-3.2 times more than the length of the tail. There is also a pair of anal papillae. The prerectum is quite short - it is about 60 to 90 μm and starts from the middle of the series of supplements. There are 6 pairs of subventricular papilla.

They are found in moist soils in number of European countries. We have registered it in plot I of pines (Eldar pine -*Pinus eldarica*).

Differential diagnosis: The species of *Mesodorylaimus aberrans* first registered in Georgia resembles *Mesodorylaimus obscurus*. Both species belong to the number of medium-sized species of the genus. Their lips and the shape of the tail are similar, but there are some distinctive signs: 1. The esophagus of *Mesodorylaimus aberrans* is relatively shorter; 2. The esophagus of *Mesodorylaimus aberrans* is wide a little below the lower back at the level 52-60% of body length, while the esophagus of *Mesodorylaimus obscurus* is wide in the middle of the lower back; 3. The prerectum of *Mesodorylaimus aberrans* is rather short, while that of the *Mesodorylaimus obscurus* is relatively longer.

Localization: There were found 4 females, 3 males and several larvae in the soil of the restored ecosystems on the left bank of the Vere River in the environs of Tbilisi.

ზოოლოგია

Mesodorylaimus aberrans (Nematoda, Dorylaimida) მდინარე ვერეს ხეობიდან

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ნაშრომში აღწერილია რიგი დორილაიმიდას (Nematoda) საქართველოში პირველად რეგისტრირებული სახეობა *Mesodorylaimus aberrans*. მოცემულია მდედრების და მამრების განაზომები. შესწავლია მდინარე ვერეს მარცხენა ნაპირზე განლაგებული ალდგენილი ეკოსისტემების ნიადაგის ნემატოდები. კვლევა ჩატარდა მდინარე ვერეს მარცხენა ნაპირის ფერდობზე შერჩეულ 3 ნაკვეთზე. აღნიშნულ ტერიტორიაზე წარსულში იყო ფოთლოვანი ტყე, რომელიც შემდგომში გაჩეხილ იქნა ქალაქის მოსახლეობის მოთხოვნილებათა დასაკმაყოფილებლად. ქ. თბილისის შემოგარენში ჩატარდა სამუშაოები მცენარეული საფარის ალდგენის მიზნით, მათ შორის, გამოსაკვლევ ტერიტორიაზეც. პირველ ნაკვეთზე გაშენებულია ფიჭვნარი (ელდარის ფიჭვი), მეორეზე ნუში, მესამე ნაკვეთი კონტროლისთვის შეირჩა, სადაც ალდგენითი სამუშაოები არ ჩატარებულა და სადაც განვითარებულია ბუჩქნარი, არის მდიდარი ბალახოვანი საფარი და შემორჩენილია ფოთლოვანი ტყის დერივატები. დადგენილი ნემატოდების სახეობებს შორის აღმოჩნდა გვარ *Mesodorylaimus* Andrassy, 1959-ის წარმომადგენელი, რომელსაც აღწერეთ, როგორც საქართველოში პირველად რეგისტრირებული. ჩვენი სახეობა მეზოდორილაიმუს *Mesodorylaimus aberrans* მსგავსია *Mesodorylaimus obscurus*-ის. მაგრამ აქვს განმასხვავებელი ნიშნები. ჩვენ აღვწერეთ როგორც მდედრი, ასევე მამრი. შესწავლილი ნაკვეთების ნიადაგის ნემატოდების ტაქსონომიური ანალიზი მიუთითებს ნემატოდების მოსახლეობის ტაქსონომიური სტრუქტურის სირთულეზე, ფაუნის მნიშვნელოვან მრავალფეროვნებაზე.

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