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NEW RECORD OF THE GENUS *HOMOLOPHUS* (OPILIONES: PHALANGIIDAE) IN TURKEY AND SEM STUDIES ON ITS MORPHOLOGY

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ABSTRACT

In this study, *Homolophus nakhichevanicus* Snegovaya, 2012 (Opiliones: Phalangiidae) was recorded in Turkey for the first time. This is only the second known location for this species, the first being the type locality (Nakhichevan Autonomous Republic, Azerbaijan). The morphological characteristics are described along with a scannig electron microscope (SEM) study on the dorsal aspect, crown-shape on cephalothorax, ocularium, chelicera, pedipalp, the first pair of legs. The male genitalia of the specimens are also presented.

Key Words: Opiliones, Phalangiidae, *Homolophus nakhichevanicus*, new record, scanning electron microscope (SEM), Turkey

RESUMEN

En este estudio, se registró por primera vez *Homolophus nakhichevanicus* Snegovaya, 2012 (Opiliones: Phalangiidae) en Turquía con la excepción de la localidad tipo (Azerbaiyán, República Autónoma de Najicheván). Se proveen las características morfológicas, datos relativos a los sitios de recolección y de distribución mundial de esta especie. También, se presenta estudios de microscopía electrónica de barrido (MEB) de la vista dorsal, la forma corona en el cefalotórax, el ocularium, quelíceros, pedipalpos, el primer par de patas y la genitalia masculina de los especimenes.

Palabras Clave: Opiliones, Phalangiidae, *Homolophus nakhichevanicus*, nuevo registro, microscopía electrónica de barrido (MEB), Turquía

To date, 21 species of the genus *Homolophus* Banks, 1893 (Opiliones: Phalangiidae) have been described worldwide (Banks 1893; Šilhavý 1967, 1972; Cokendolpher 1987; Tchemeris et al. 1998; Tchemeris 2000; Tsurusaki et al. 2000; Staręga 2003; Snegovaya & Staręga 2008; 2011; Snegovaya 2012). Two species [*H. funestus* L. Koch 1877 (Niğde Province); *H. turcicus* (Roewer 1959) (Van Province)] of this genus has previously been found in Turkey (Fig. 1) (Roewer 1959; Kurt et al. 2008).

The genus is characterized by having: relatively large body (more than 5 mm long); a crown-like mound containing numerous black-tipped tubercles on cephalothorax anterior to the ocularium , coxae I-IV smooth and only with sparse setae; chelicerae usually normal structured with blackish brown zebra-like stripped pattern, pedipalps short, robust and femora, patella, tibiae covered with numerous black-tipped tubercles (males having microtubercles

TABLE. 1. MEASUREMENTS (MM) OF MALE AND FEMALE ANATOMICAL FEATURES OF *HOMOLOPHUS NAKHICHEVANICUS*.

Body ♂(♀) Length 6.3 (7.4)
Width 4.5 (5.3)

	Basal segment 1.65 (1.7)		Distal segment 1.95 (2.1)			
Chelicerae	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Pedipalp	1.4 (1.2)	0.70 (0.65)	1.30 (0.9)	—	1.6 (1.4)	5.0 (4.15)
Leg I	3.0 (2.6)	1.05 (1.02)	2.45 (2.4)	3.4 (3.3)	4.8 (4.7)	14.7 (14.02)
Leg II	6.2 (6.1)	1.80 (1.7)	6.00 (5.8)	5.7 (5.5)	10.0 (9.0)	29.7 (28.1)
Leg III	3.3 (3.1)	1.40 (1.3)	3.00 (2.9)	3.7 (3.6)	5.0 (4.9)	16.4 (15.8)
Leg IV	4.3 (4.2)	1.52 (1.5)	4.00 (3.9)	4.8 (4.8)	8.5 (7.8)	23.12 (22.2)

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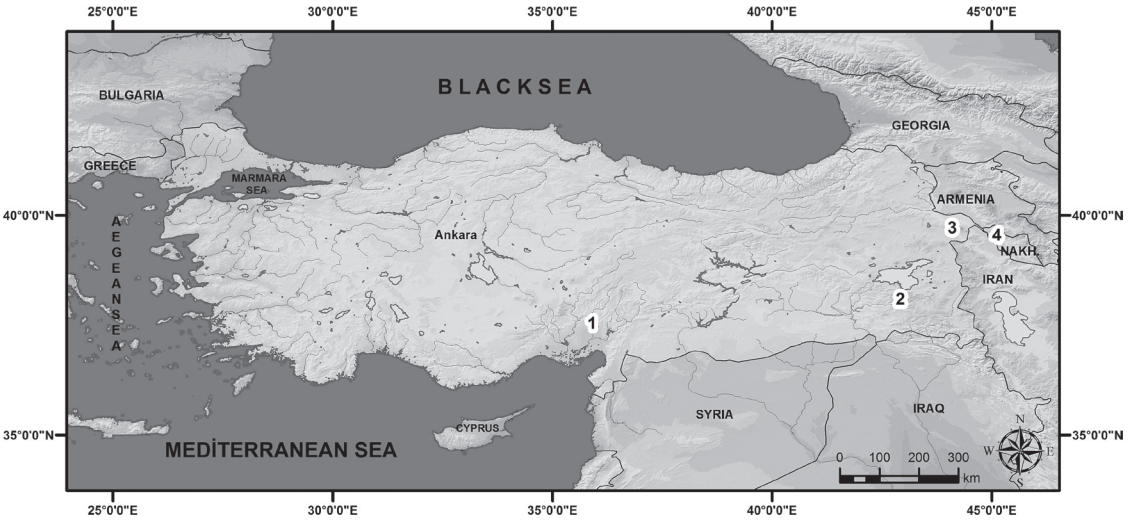


Fig. 1. Distribution of genus *Homolophus* in Turkey and distribution of *H. nakhichevanicus* in world. 1: *H. funestus* (Niğde Province); *H. turcicus* (Van Province); 3: *H. nakhichevanicus* (Iğdır Province); 4: *H. nakhichevanicus* (Nakhichevan Autonomous Republic, Azerbaijan).

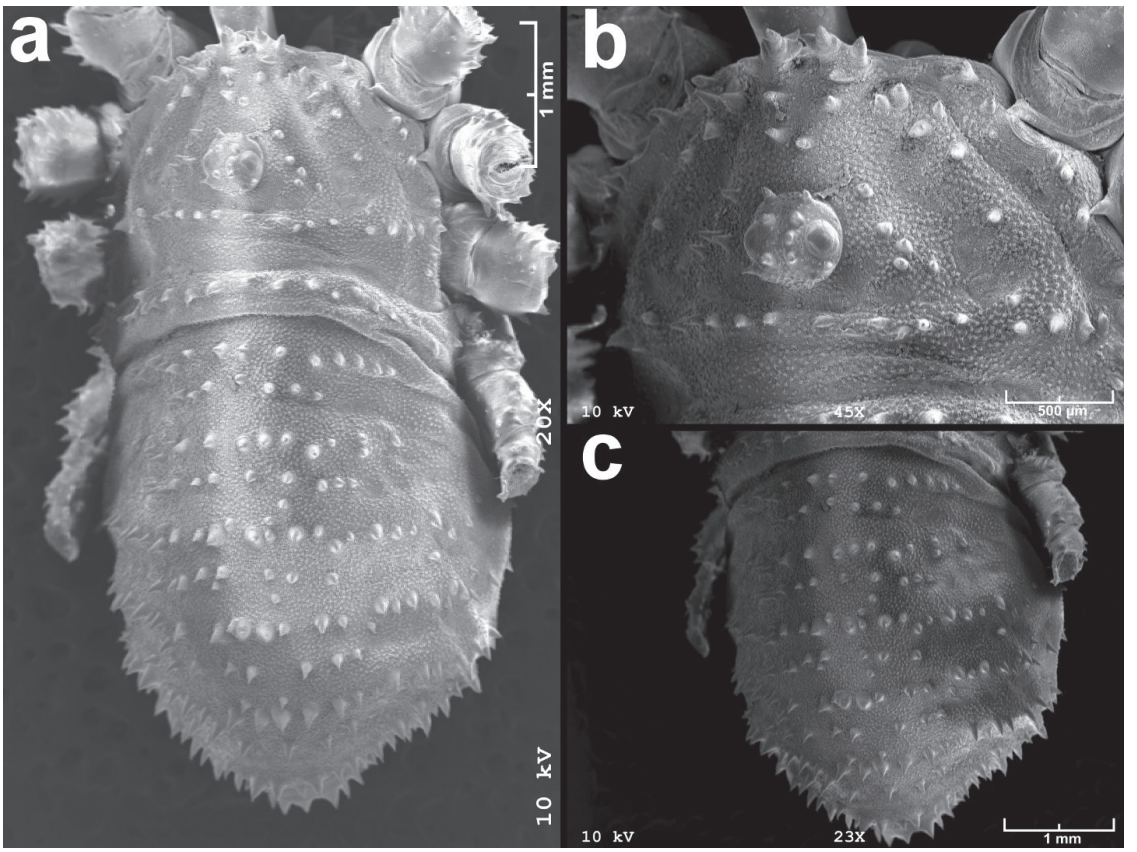


Fig. 2. Dorsal view of *Homolophus nakhichevanicus*, male, SEM: a. Body, dorsal view; b. Cephalothorax, dorsal view; c. Abdomen, dorsal view.

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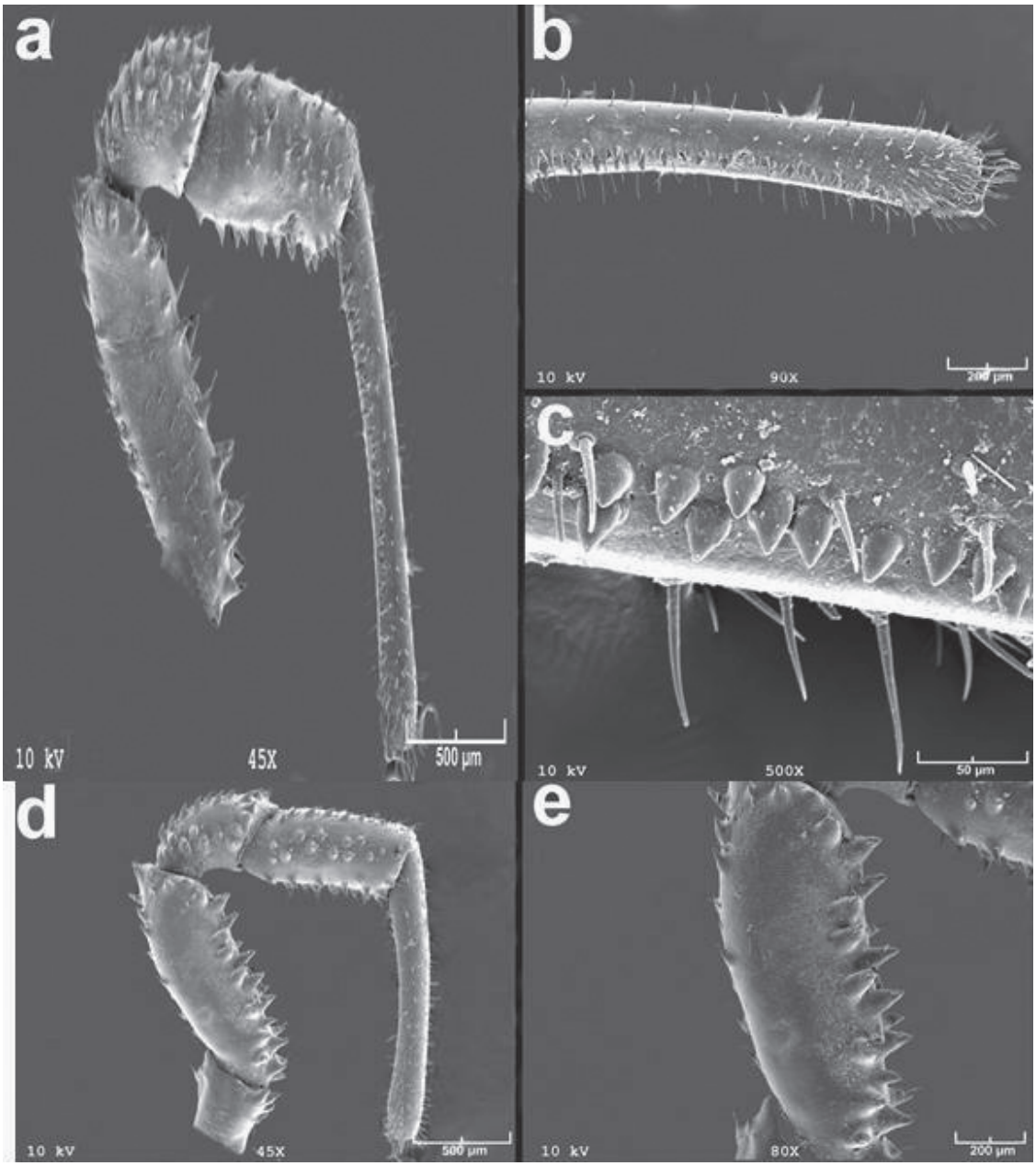


Fig. 3. Pedipalp of *Homolophus nakhichevanicus*, male, SEM: a. Entire pedipalp, prolateral view; b, c. Tarsus, prolateral view; d. Entire pedipalp, retrolateral view; e. Femur, retrolateral view.

on ventor of tarsus); legs short or more commonly long (Tsurusaki 1987; Tsurusaki et al. 2000; Snegovaya & Staręga 2008).

The genus *Homolophus* is similar to *Opilio* and *Phalangium*. It differs from *Phalangium* in terms of shorter tarsus of pedipalps, shorter and thicker legs (Banks, 1893; Snegovaya 2012). Its penis structure is similar to the genus *Opilio,* but according to Snegovaya & Staręga (2008), Snegovaya (2012), it differs from *Opilio* because: "Penis without lateral incisions or similar structures in the apical part of the shaft; shaft often flattened dorso-ventrally, particularly in distal part; glans cuneiform, in profile mostly triangular with rounded "lower" corner; stylus relatively long".

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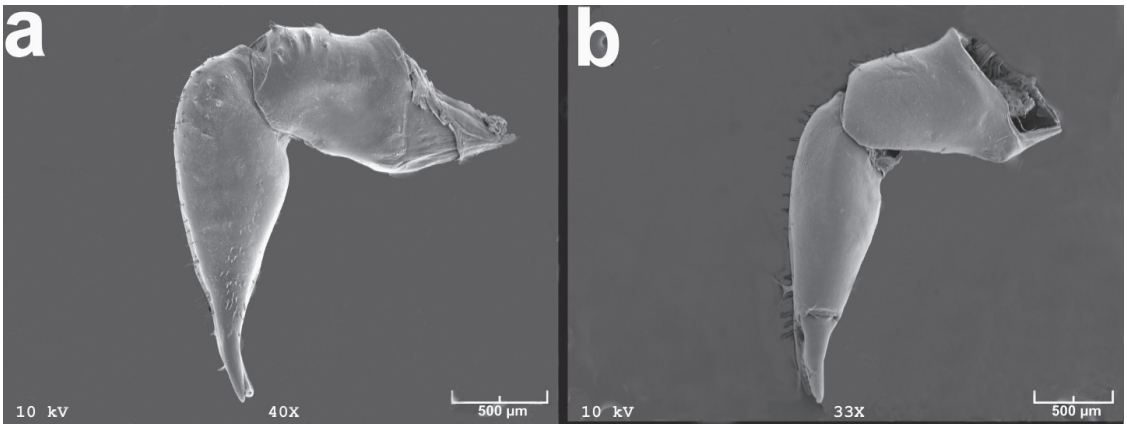


Fig. 4. Chelicera of *Homolophus nakhichevanicus*, SEM: a. Chelicera, lateral view, male; b. Chelicera, lateral view, female.

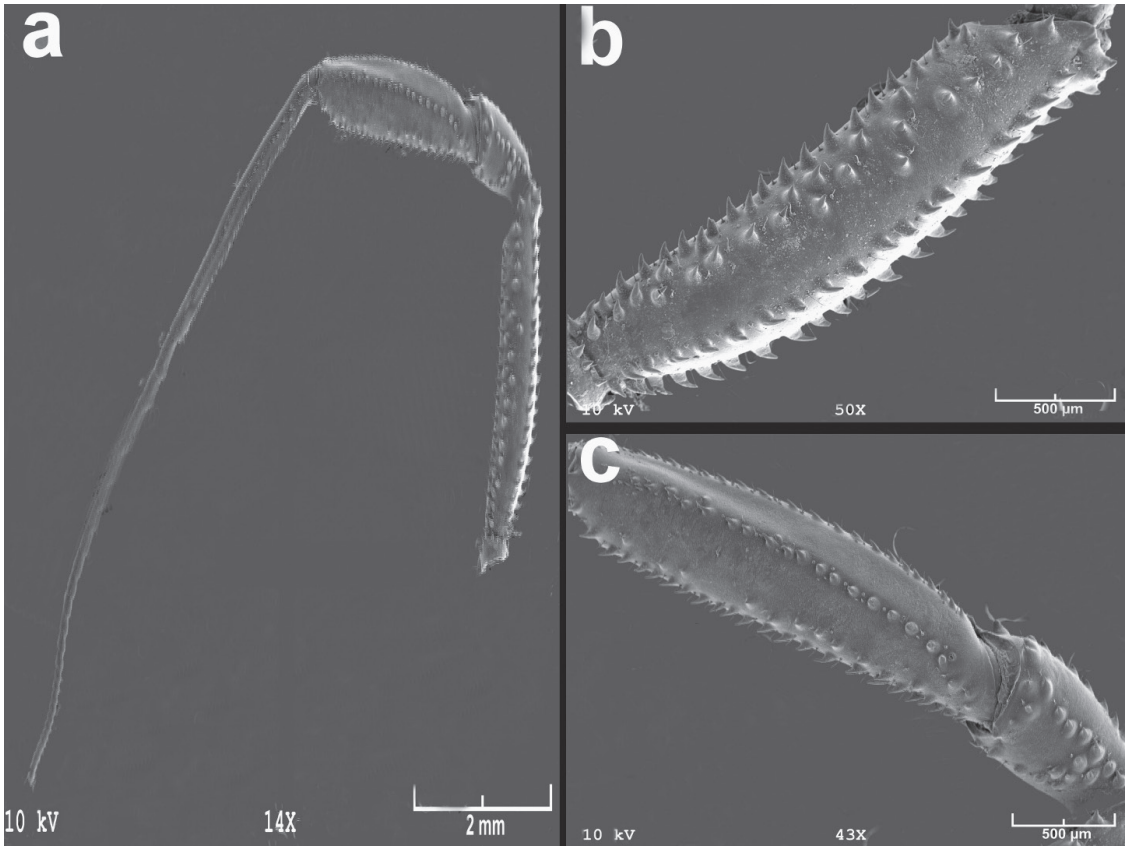


Fig. 5. The first pair of legs of *Homolophus nakhichevanicus*, male, SEM: a. Entire leg, lateral view; b. Femur, lateral view; c. Patella and tibia, lateral view.

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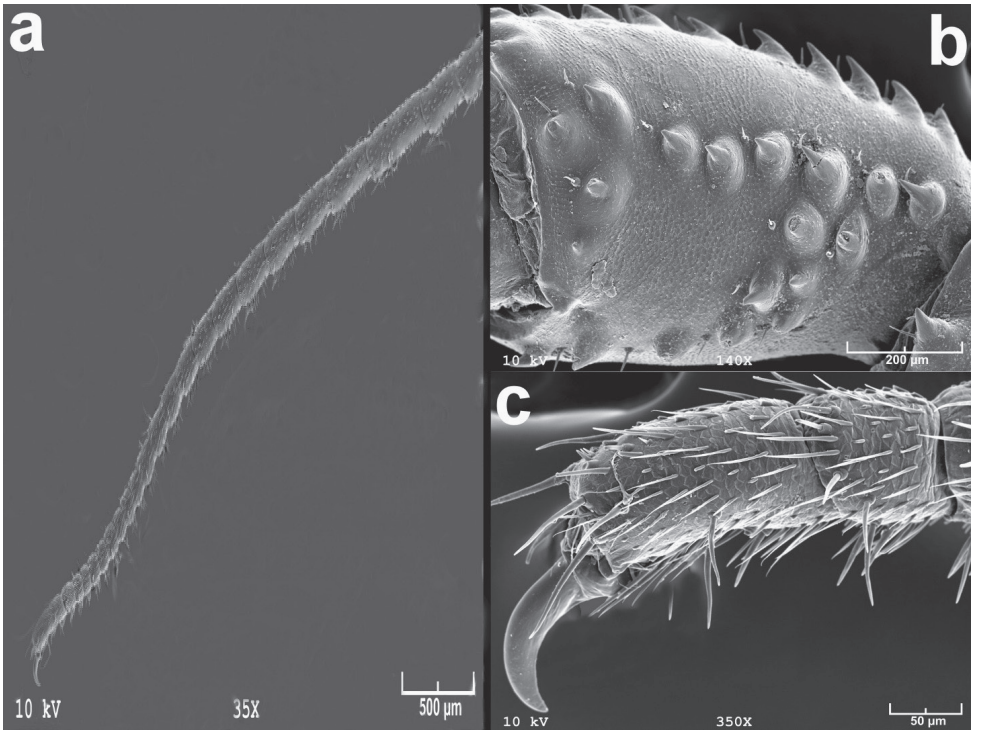


Fig. 6. The first pair of legs of *Homolophus nakhichevanicus*, male, SEM: a. Tarsus, lateral view; b. Patella, lateral view; c. Tarsal claw, lateral view.

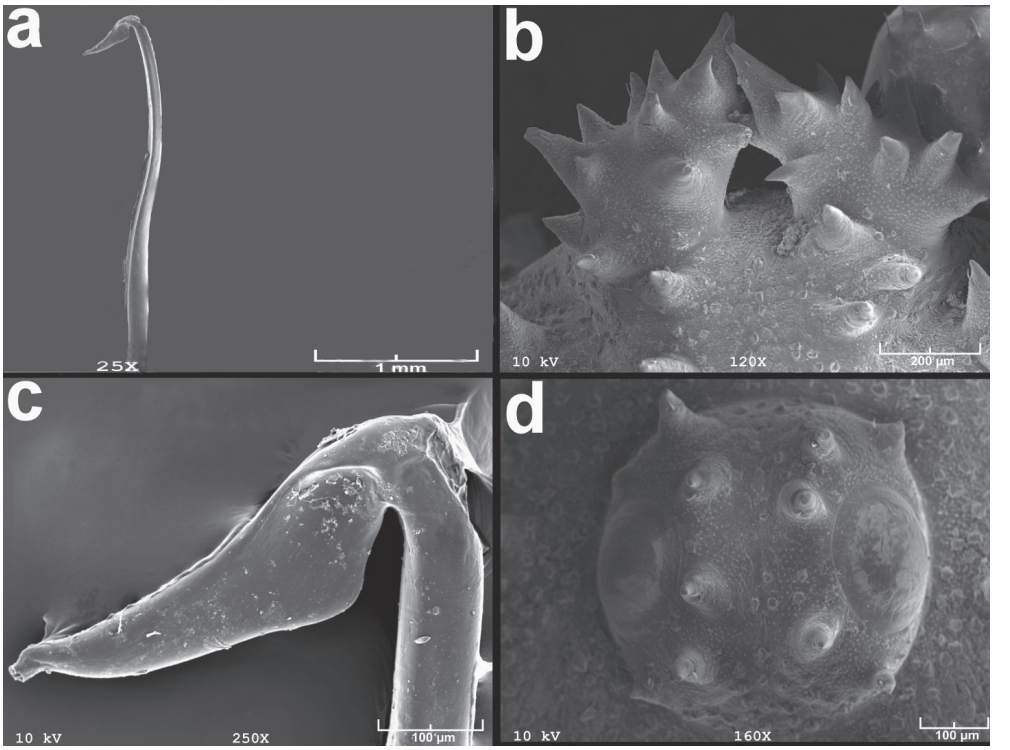


Fig. 7. a. Penis of *Homolophus nakhichevanicus*, lateral view; b. Crown shape on cephalothorax, dorsal view, female; c. Glans, lateral view; d. The ocularium, dorsal view, female.

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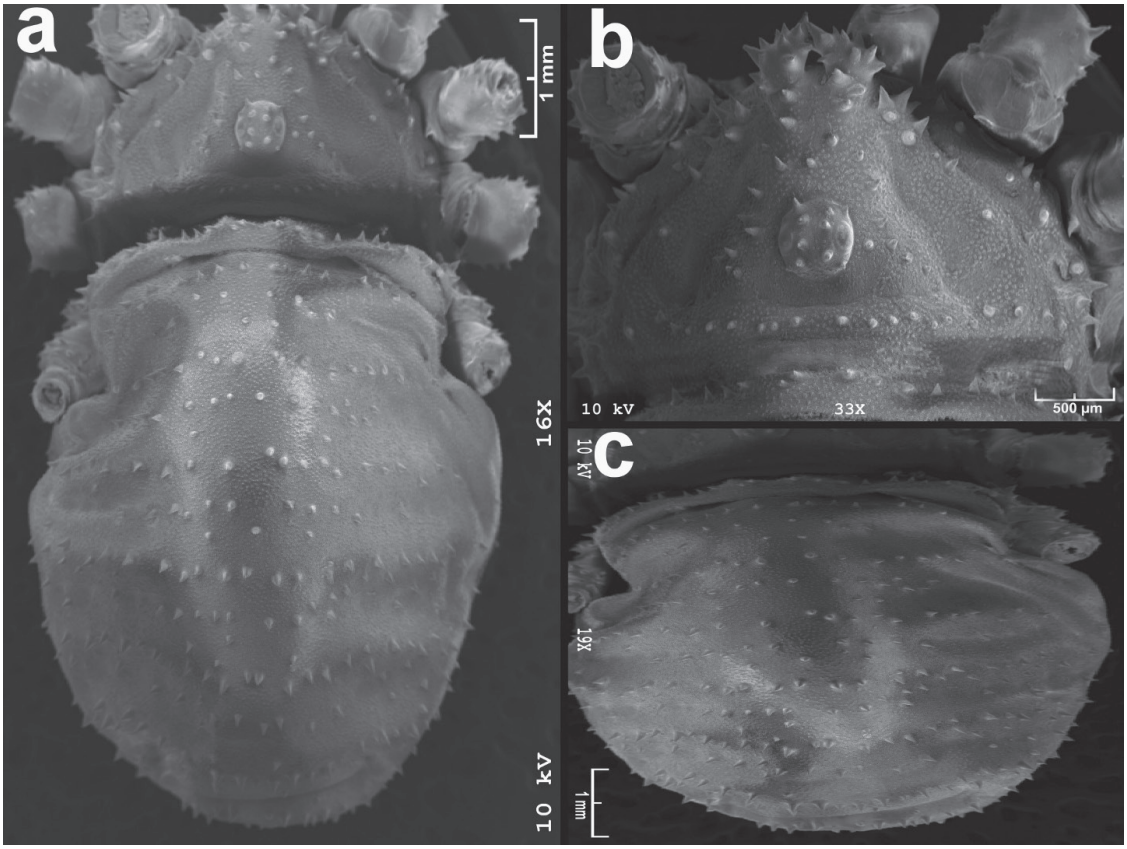


Fig. 8. Dorsal view of *Homolophus nakhichevanicus*, female, SEM: a. Body, dorsal view; b. Cephalothorax, dorsal view; c. Abdomen, dorsal view.

Materials and Methods

This study was carried out in June 2007 in Iğdır Province, Turkey. Samples were collected with forceps. The identification of species was made using a Leica EZ4 stereomicroscope. Examined specimens were preserved in 70% ethanol and deposited in the collection of Arachnological Laboratory of Şiran Vocational School, Gümüşhane University (GUSAL). Measurements were made on one female and one male. All measurements are given as millimeters (Table 1).

For SEM studies, specimens were kept in 70% ethyl alcohol before being photographed by SEM. They were dried at 37 °C in an oven for 30 min and were affixed on to copper stubs covered by a two-sided sticky carbon tape. The specimens were then coated with a thin layer of gold by a sputter coater (Polaron CA508) in the electron microscopy unit of the University of Karadeniz Technical, Trabzon, Turkey. Finally, the specimens were photographed using a SEM (Jeol JSM 6400).

Results

Genus: *Homolophus* Banks, 1893

Type Species: *Homolophus arcticus* Banks, 1893

Homolophus nakhichevanicus Snegovaya, 2012 (Figs. 2-8)

Homolophus nakhichevanicus: Snegovaya, 2012: 5-10, Figs. 6-20

Material Examined

TURKEY: Iğdır province, Tuzluca district, (N 40° 04' 235" E 43° 66' 275"), 4 ♂♂, 7 ♀♀, 28-VI-2007; leg. E. A. Yağmur and H. Koç. This species was collected from under stones.

Male:

Body approximately rectangular shape in dorsal view. Cephalothorax with anterior crown-

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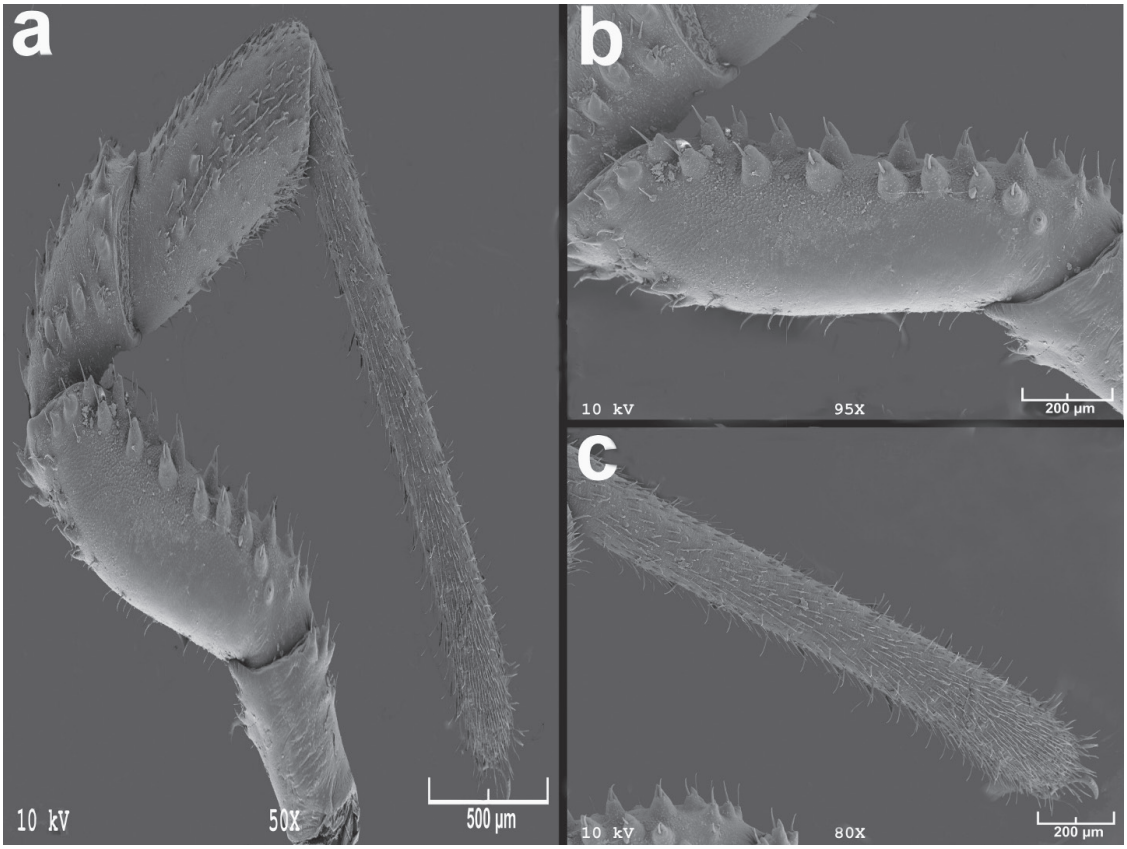


Fig. 9. Pedipalp of *Homolophus nakhichevanicus*, female, SEM: a. Entire pedipalp, lateral view; b. Femur, lateral view; c.Tarsus, lateral view.

shape consisting of group of large denticles in front-center (Fig. 7b). Cephalothorax, lateral borders of eye mound and around opening of odoriferous gland with black tipped denticles. Cephalothorax yellow with irregular black spots. Abdomen dorsally with indistinct light brownish-yellow saddle. Saddle with longitudinal row of whitish-yellow stripe in the center. Abdominal tergites with transverse rows of black- tipped denticles, especially numerous posterior borders (Fig. 2). Body ventrally covered only setae.

Ocularium: eye tubercle low and 4-5 small denticles in two rows (Figs. 2b, 7d).

Chelicera: normal structure, not enlarged (Fig. 4). Basal segment with black tipped denticles and scattered brown spots. Dorsal of distal segment with few denticles, entirely setose and light brown zebra-like stripped pattern.

Pedipalps: strong, robust, trochanter with black-tipped denticles, femur ventrally and dorsally covered with numerous black tipped denticles, patella dorsally and laterally with black tipped denticles, tibia with denticles and setae, tarsus only setae, but male tarsus ventrally covered with microdenticles, tarsal claw smooth (Figs. 3a-e; 9a-c).

Legs: not very long, pair I slightly thicker. All segments (except tarsus) covered with longitudinal rows of denticles, tarsus only setae (Figs. 5 and 6).

Penis: long and narrow, glans wedge-shaped, sylus long (Fig. 7a, c).

Female

General appearance is similar to that of the male, but the body is larger and wider (Fig. 8).

Distribution

This species had been previously recorded only from Azerbaijan (Nakhichevan Autonomous Republic) (Snegovaya, 2012).

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