

FIRST DESCRIPTION OF THE FEMALE OF *ARRENURUS NAGYSALLOENSIS* SZALAY (ACARI, HYDRACHNIDIA)

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ABSTRACT: In this study, the female of *Arrenurus (Truncaturus) nagysalloensis* Szalay, 1934 is described for the first time from Elazığ Province, Turkey.

KEY WORDS: *Arrenurus nagysalloensis*, Hydrachnidia, female morphology, description, Turkey.

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INTRODUCTION

Arrenurus is the largest genus of water mites with over 1,100 species known worldwide and occurs in every continent except Antarctica (Cook 1976; Smith 2012). With the 56 recorded species, the genus *Arrenurus* is the most species-rich in Turkey (Erman *et al.* 2010; Esen and Erman 2013). Four subgenera are known from Turkey belonging to the genus *Arrenurus*: *Arrenurus* (s. str.), *Megaluracarus*, *Micruracarus* and *Truncaturus*. To date 8 species are known belonging to the subgenus *Truncaturus*: *A. (T.) corsicus* Angelier, 1951; *A. (T.) fontinalis* Viets, 1920; *A. (T.) isikliensis* Boyacı and Özkan, 2004; *A. (T.) integrator* (Müller, 1776); *A. (T.) nagysalloensis* Szalay, 1934; *A. (T.) nodosus* Koenike, 1896; *A. (T.) stecki* Koenike, 1894 and *A. (T.) truncatellus* (Müller, 1776) (Erman *et al.* 2010; Esen and Erman 2013).

Arrenurus (Truncaturus) nagysalloensis is a rare species and so far the females of this species were unknown. The female was attributed to *A. nagysalloensis* by Szalay (1934) which actually belongs to *A. globator*, according to Smit and Van der Hammen (1992) and Smit *et al.* (2000). The aim of this study is to describe the female of *A. nagysalloensis*.

MATERIAL AND METHODS

During field work, water mites were collected by hand netting, sorted on the spot from the living material, conserved in Koenike's fluid, and dissected as described elsewhere (e.g., Gerecke *et al.* 2007).

The composition of the material is given as (males/females). All measurements are given in micrometers. The following abbreviations are used: Cx-III=third coxae; dL=dorsal length; H=height; I-L-6=leg 1, sixth segment (tarsus); L=length; P-3=palp segment 3; a.s.l.=above sea level; W=width.

RESULTS

Family: *Arrenuridae* Thor, 1900

Genus: *Arrenurus* Dugès, 1834

Subgenus: *Truncaturus* Thor, 1900

Arrenurus (Truncaturus) nagysalloensis
Szalay, 1934

Material examined: Elazığ Province, Karakoçan, Bahçecik Village, *Sphagnum* pond, 38°53'11" N, 40°05'12" E, 1,435 m a.s.l., 18.08.2016 (1/2).

Male: Idiosoma L/W 660/525, anterior margin slightly convex, dorsal furrow incomplete (Figs. 1A, 3A). Cauda not developed, posterior margin slightly undulating, medially widely convex. Cx-IV subtriangular, posterior margin straight, medial margin very narrowed (Figs. 1B, 3B). Acetabular plates not extending to lateral margin, genital field W 372. Gnathosoma ventral margin L 138, chelicera L/H 131/60, claw 52 (Fig. 1C). P-2 with 3 medial setae, P-4 not tapering distally, P-2 and P-4 almost in the same length (Figs. 1D, E). Dorsal L P-1-5 36-78-49-80-33. IV-L-4 without a spur. Leg swimming setae numbers: III-L-5: 3, IV-L-3: 3, IV-L-4: 5, IV-L-5: 10.

Female: Idiosoma egg-shaped, posterolateral corners not developed, anterior margin slightly convex, L/W 968/790. Dorsal furrow complete, dorsal shield large, L/W 870/680 (Figs. 2A, 3C). Cx-IV subtriangular, almost without a medial margin. Medial separation of Cx-III and IV narrow, equal to length of half gonopore field (Figs. 2B, 3D). Genital field close to coxal field, gonopore membranes without sclerotized patches. Acetabular plates short, rounded laterally, directed straight to idiosoma posterolateral margin, and narrowed laterally. Genital field W 448, gonopore L/W 138/150. Gnathosoma ventral L 200, chelicera L/H 170/74, claw

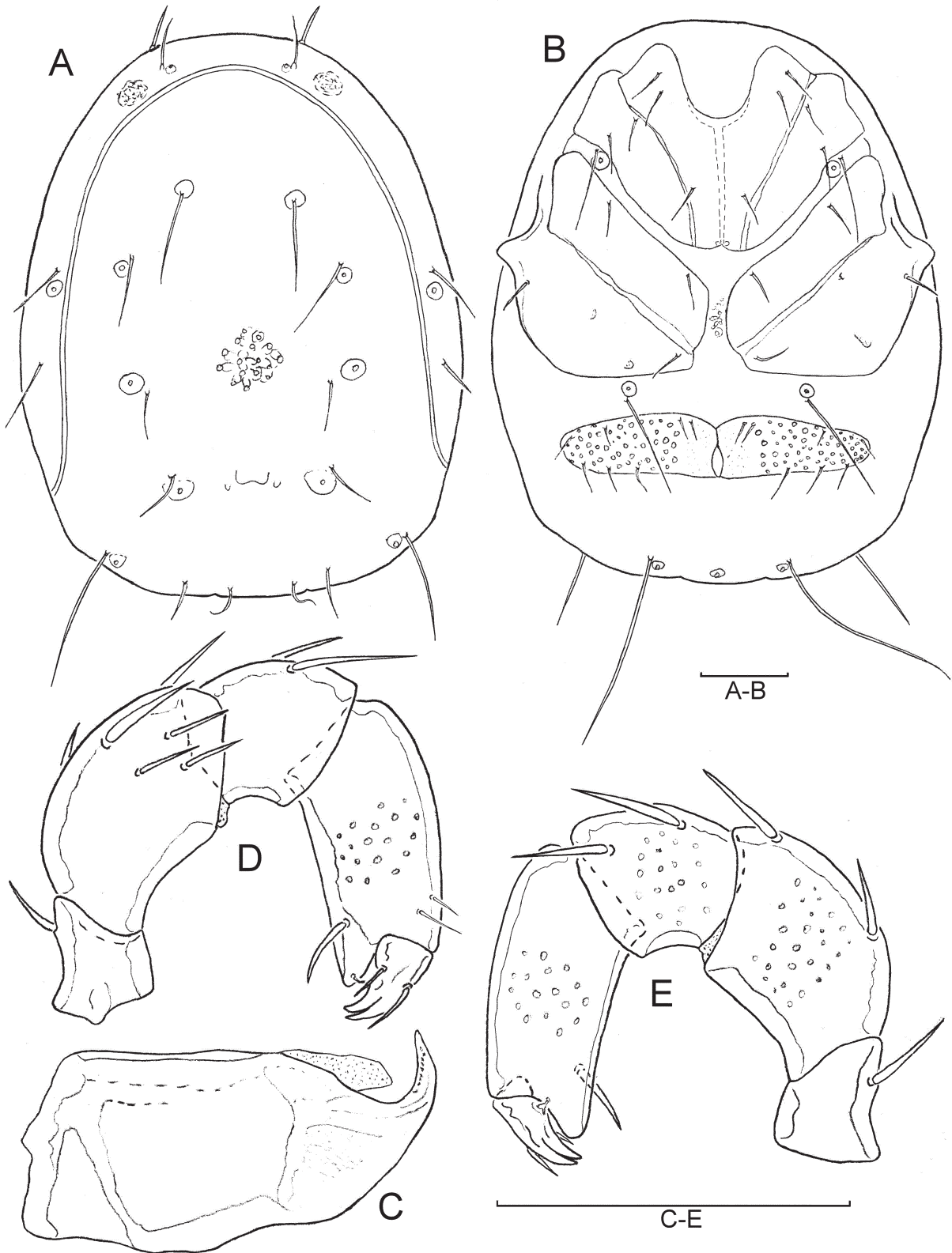


Fig. 1. *Arrenurus (Truncaturus) nagysalloensis* male: A—Idiosoma, dorsal view, B—Idiosoma, ventral view, C—chelicera, D—Palp, medial view, E—Palp, lateral view. Scale bars=100 μ m.

70. P-2 with 3 medial setae (Fig. 2C). dL P-1-5 40-97-55-100-37. Leg swimming setae numbers: III-L-4: 2, III-L-5: 3, IV-L-3: 2, IV-L-4: 5, IV-L-5: 7-9.

Habitat: *Sphagnum* ponds.

Distribution: Slovakia, the Netherlands, Eastern Turkey (Gerecke *et al.* 2016).

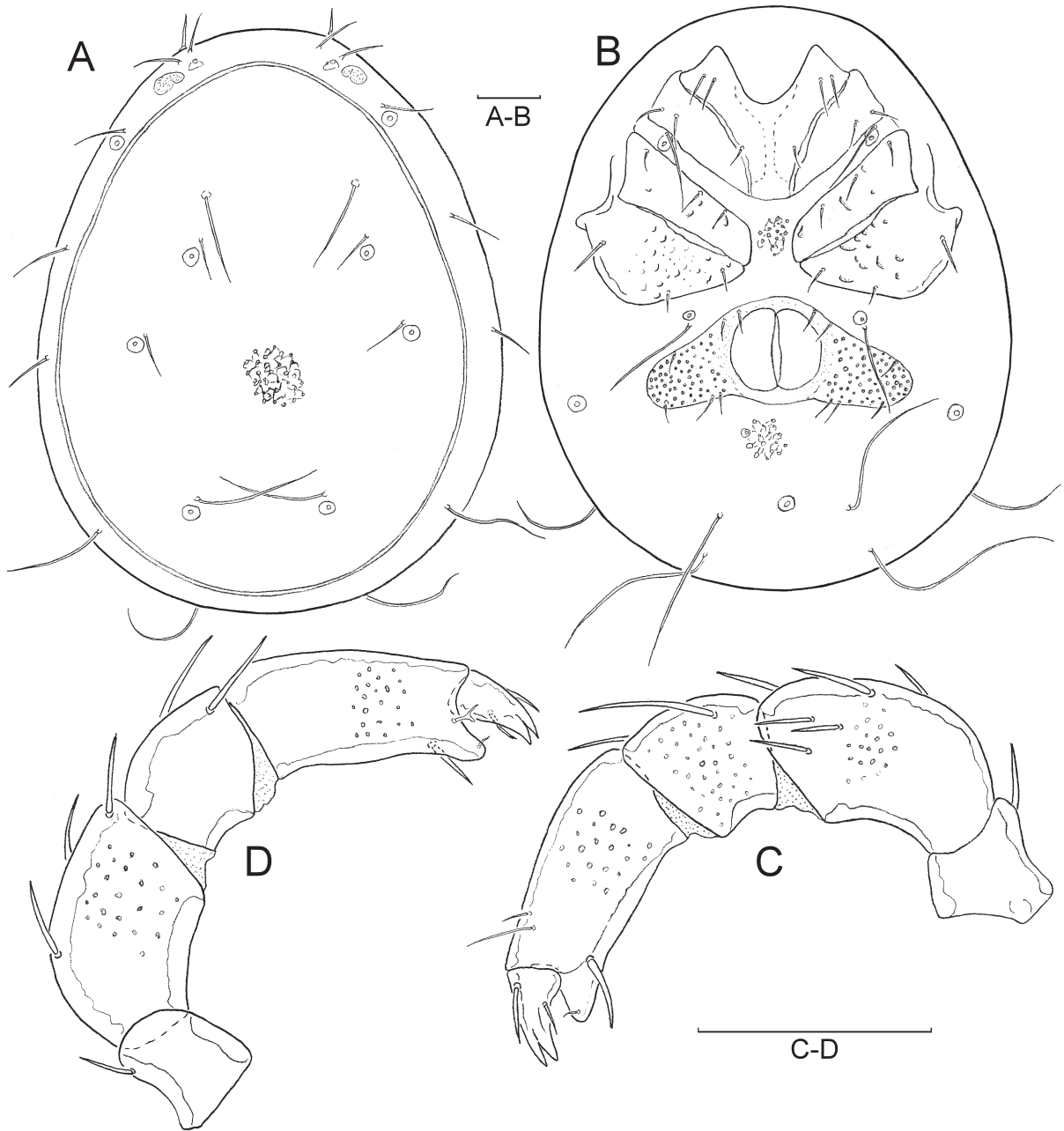


Fig. 2. *Arrenurus (Truncaturus) nagysalloensis* female: A—Idiosoma, dorsal view, B—Idiosoma, ventral view, C—Palp, medial view, D—Palp, lateral view. Scale bars=100 μ m.

DISCUSSION

Arrenurus (Truncaturus) nagysalloensis was described by Szalay (1934) from a marsh in Nagysalló, Slovakia. The female attributed to *A. nagysalloensis* was rejected by Smit and Van der Hammen (1992) and Smit *et al.* (2000) because it belonged to *A. (Megaluracarus) globator*. In general, setation of the palp of male and female specimens of the genus *Arrenurus* is similar. The male collected from the Elazig Province corresponds with holotype in which P-2 with 3 medial setae and P-4 not tapering distally (see Fig. 2 in Szalay 1934).

Further, the male has a posterior margin slightly undulating and more broad convex protrusion. The male reported from the Erzurum Province, Turkey has no tapering distally P-4, but there is no comment about medial seta on P-2 in the paper (Özkan and Boyacı 1994). Notwithstanding, the male reported by Smit and Van der Hammen (1992) from the Netherlands has a tapering distally P-4 and P-2 with one medial seta (Gerecke *et al.* 2016).

The female of *A. nagysalloensis* is similar to the female of *A. fontinalis* by the genital field close to coxal field and posterolateral corners not de-



Fig. 3. *Arrenurus (Truncaturus) nagysalloensis* A-B male: A—Idiosoma, dorsal view, B—Idiosoma, ventral view; C-D female: C—Idiosoma, dorsal view, D—Idiosoma, ventral view. Scale bars=100 µm.

veloped. The latter species is different by the narrow medial separation of Cx-III and -IV (less than width of half gonopore field), very small sclerotized patches and slightly bowed acetabular plates.

REFERENCES

- Cook, D.R. 1976. New species of North American *Arrenurus*, mostly from Florida (Acari: Arrenuridae). *Contributions of the American Entomological Institute*, 11: 1–58.
- Erman, O., Pešić, V., Esen, Y. and Özkan, M. 2010. A checklist of the water mites of Turkey (Acari: Hydrachnidia) with description of two new species. *Zootaxa*, 2624: 1–48.
- Esen, Y. and Erman, O. 2013. A new species of the genus *Arrenurus* Dugès, 1834 (Acari: Hydrachnidia: Arrenuridae) for the Turkish fauna: *Arrenurus (Truncaturus) corsicus* (E. Angelier, 1951). *Turkish Journal of Zoology*, 37: 372–375.
- Gerecke, R., Gledhill, T., Pešić, V. and Smit, H. 2016. *Süßwasserfauna von Mitteleuropa, Bd. 7/2-3 Chelicerata: Acari III*. Springer, 429 pp.
- Gerecke, R., Weigmann, G., Wohltmann, A. and Wurst, E. 2007. Order Acari: general introduction and key to major groups. *In*: Gerecke (Ed.). *Süßwasserfauna*

- von Mitteleuropa: vol. 7, 2-1. Elsevier GmbH, Spektrum Akademischer Verlag, Munich, pp. 14–57.
- Özkan, M. and Boyacı, Y.Ö. 1994. Türkiye faunası için yeni üç *Arrenurus* Duges, 1834 (Arrenuridae, Hydrachnellae, Acari) türü. *Turkish Journal of Zoology*, 18: 185–191.
- Smit, H. 2012. New records of the water mite family Arrenuridae from the Afrotropical region, with the description of 11 new species and two new subspecies (Acari: Hydrachnidia). *Zootaxa*, 3187: 1–31.
- Smit, H. and Van der Hammen, H. 1992. New and rare water mites from The Netherlands. *Entomologische Berichten (Amsterdam)*, 52: 144–146.
- Smit, H., Gerecke, R. and Sabatino, A. 2000. A catalogue of water mites of the superfamily Arrenuroidea (Acari: Hydrachnidia) from the Mediterranean countries. *Archiv für Hydrobiologie, Supplement*, 121 (3-4): 201–267.
- Szalay, L. 1934. Eine neue Hydracarine aus der Gattung *Arrenurus* Dugès. *Zoologischer Anzeiger*, 107 (3-4): 64–66.