

*Anthrenus (Anthrenodes) Funiculus*  
*(Coleoptera: Dermestidae: Megatominae),*  
*a new species from Jordan*

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***ANTHRENUS (ANTHRENODES) FUNICULUS***  
**(COLEOPTERA: DERMESTIDAE: MEGATOMINAE),**  
**A NEW SPECIES FROM JORDAN**

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**ABSTRACT:** A new species, *Anthrenus (Anthrenops) funiculus* Holloway (Coleoptera: Dermestidae: Megatominae) is described from Jordan and compared with *A. A. eichleri* Kadej & Háva, 2006 and *A. A. aradensis* Mawlood & Abdul-Rassoul, 2003 the most likely confounding species from the region. Differentiation is performed using habitus coloration, antennal and genital structure. Images of habitus, ventrites, antenna, and male and female genital structures are presented. *Anthrenus funiculus* is the first *Anthrenops* species described from Jordan.

**KEY WORDS:** *A. eichleri*, *A. aradensis*, *A. coloratus*, dissection, identification, new species, taxonomy

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The Dermestidae is a medium sized family compared with other Coleopteran families. It contains nearly 2000 described species (Háva, 2025) and well over 300 of those species belong to the genus *Anthrenus* Geoffroy, 1762 (Háva, 2025). The classification of *Anthrenus* is helped by it being split into 10 subgenera (Peacock, 1993), one of which is *Anthrenops* Reitter, 1881. The subgeneric divisions are predicated mostly on number of antennomeres with *Anthrenops* characterised by having nine antennomeres. Our grasp of the number of species in different regions of the world is patchy and largely dictated by the location of collectors. For example, no *Anthrenops* species have been described from Jordan. In the current study, specimens from Jordan are borrowed from the Staatliches Museum für Naturkunde, Stuttgart, Germany for study. A new species *Anthrenus Anthrenops funiculus* is described from Jordan, and new distribution records are provided for *A. A. eichleri*, Kadej & Háva, 2006 the first two *Anthrenops* species recorded from Jordan.

#### **MATERIALS AND METHODS**

Specimens from Jordan were borrowed from the Staatliches Museum für Naturkunde, Stuttgart, Germany for study. Specimens were floated from staging using water prior to maceration and dissection. Each specimen was macerated in 5% acetic acid for one day. Dissection was carried out under a Brunel BMSL zoom stereo LED microscope and involved detaching the abdomen from the rest of the insect using two entomological pins. The soft tergites were then peeled away from the harder ventrites to expose the genitalia. The aedeagus was detached from the

ring sclerite, and then sternite IX was detached from the ring sclerite and the aedeagus. Habitus images were captured at  $\times 20$  magnification, ventrite image was captured at  $\times 50$ , and the head image was captured at  $\times 63$  using a Canon EOS 2000D camera mounted on the BMSL microscope. Male genitalia were cleaned in potassium hydroxide (KOH) for 40 minutes. Images of genitalia were captured at  $\times 200$  magnification, using a Canon EOS 1300D camera mounted on a Brunel monocular SP28 microscope. The aedeagus was suspended in glycerol for the dorsolateral image. After dissection, all body parts were mounted on card. The antennae were teased out and images were taken at  $\times 200$  magnification through the SP28 microscope. All images were fed through Helicon Focus Pro version 8.2.2 focus-stacking software. Habitus measurements were made using a calibrated eyepiece. All other measurements were made using DsCap.Ink software version 3.90. Measurements taken:

- Body length (BL): distance from anterior margin of pronotum to the apex of the elytra.
- Body width (BW): distance across widest part of abdomen.
- Paramere length (PL): distance from the anterior end of the parameres to the apex of the parameres.
- Median lobe length (ML): distance from posterior tip to tip of one anterior stirrup.
- Sternite IX length (SL): distance from the tip of one anterior horn to the tip of the posterior lobe.

Distribution map created using Shorthouse (2010). Scale bars added using ImageJ 1.53M (Schneider et al., 2012). AHEC = Andreas Herrmann's Entomological Collection. NHMUK = Natural History Museum, London, UK. SMNS = Staatliches Museum für Naturkunde, Stuttgart, Germany.

## RESULTS

Of the specimens studied, eight were *A. funiculus*.

### Taxonomy

**Dermestidae** Latreille, 1803

**Megatominae** Dalla Torre, 1911

**Megatomini** Leach, 1815

**Megatomina** Leach, 1815

***Anthrenops*** Reitter, 1881

***Anthrenus (Anthrenops) funiculus* Holloway sp. nov.**

(Figs. 1-4)

**Type specimens. Holotype male.** Jordan, Dehbeen b. Jerash (32.260, 35.888), 13.vi.1963 J. Klapperich leg. (SMNS).

**Paratypes.** Three females same data as holotype (SMNS), three males and one female, Jordanien – ost, b. Jerash Wald., 10.iv.1956 J. Klapperich leg (one male AHEC, one male NHMUK, one male and one female SMNS).

### Description external characteristics.

Holotype small, narrow body profile, BL = 2.2 mm, BW = 1.35 mm (BW/BL = 0.61) (paratype male BL = 2.1 – 2.25 mm, paratype female BL 1.85 – 2.3 mm). Head (paratype female Fig. 1A) very dark brown/black integument. Inner eye margins complete. Single dark red ocellus in centre of face just below level of top of eyes. Scales on vertex mostly brown with some yellow scales. Between vertex and ocellus, scales mostly yellow. Horizontal band of mostly brown scales through ocellus reaching eye margins. Below brown band, scales admixed brown and yellow. Clypeus covered in brilliant white, elongated scales. Labrum red, hirsute.

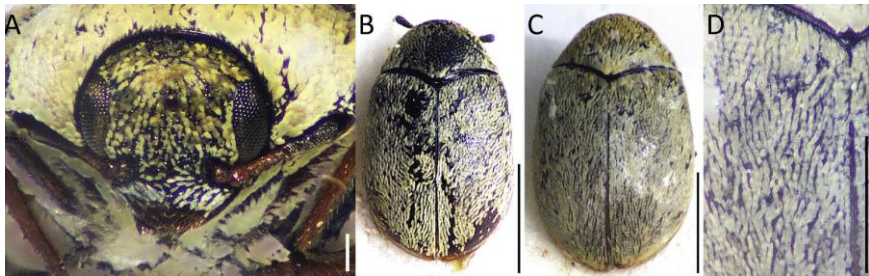


Figure 1. *Anthrenus funiculus* sp. nov. A) Paratype female head (scale bar = 100  $\mu$ m). B) Holotype habitus (scale bar = 1 mm). C) Paratype female habitus (scale bar = 1 mm). D) Elytral scales (scale bar = 0.5 mm).

Pronotum (holotype Fig. 1B, paratype female 1C) with black or dark brown integument covered in cream-coloured and yellow scales. Scutellar shield small, black subtriangular (Fig. 1D). Elytra black or dark brown integument, becoming reddish around apical margin. Scales (Fig. 1D) pale cream-colored, elongated, oval, overlapping only top and bottom not laterally, so lining up as strings of scales not all orientated anterior posterior but tending to ‘flow’ down elytra as if currents are moving strings of scales in different directions.

Ventrites (holotype Fig. 2A) with dark integument covered in admixed white, cream, yellow, and greyish brown scales. No patches of dark scales at ventrite margins. Antenna (holotype Fig. 2B) with nine antennomeres. Antennomeres 1–5 pale red, antennomere 6 bicolored, basal half red, apical half dark brown, antennomeres 7–9 dark brown and forming club. Antennomere 7 the same length as antennomere 8. Antennomere 9 as long as antennomeres 7 and 8 combined. Legs entirely red with pale scales on ventral surfaces of femora. Fore tibia with 13 spines along anterior margin and three more on tibia apex.

### Description interior characteristics.

Aedeagus (Fig. 3A) slightly longer than wide (PL = 190  $\mu$ m). Parameres brown. Outer paramere margins smoothly convex from rounded phallobase, posterior apices blunt, slightly turned inwards. Apices with short, spikey setae, extending down inside surface of paramere. Inner paramere margin membranous, slightly sinuous and transparent. Median lobe short (ML = 135  $\mu$ m) triangular, terminating at anterior end in two straight stirrups that do not extend beyond anterior margin of phallobase. Posterior end of median lobe bent at right angles, ending in an elongated, parallel-sided peg (Fig. 3B). Sternite IX (Fig. 3C) long (SL = 325  $\mu$ m), pale brown with broad, rounded lateral margins. Posterior

margin with broad appendage terminating in two ‘cat’s ears’. Small number of regularly spaced, long, stout setae lining lateral margins in posterior half including on surface of posterior appendage. Anterior end of sternite IX terminates with two, straight, converging rods.

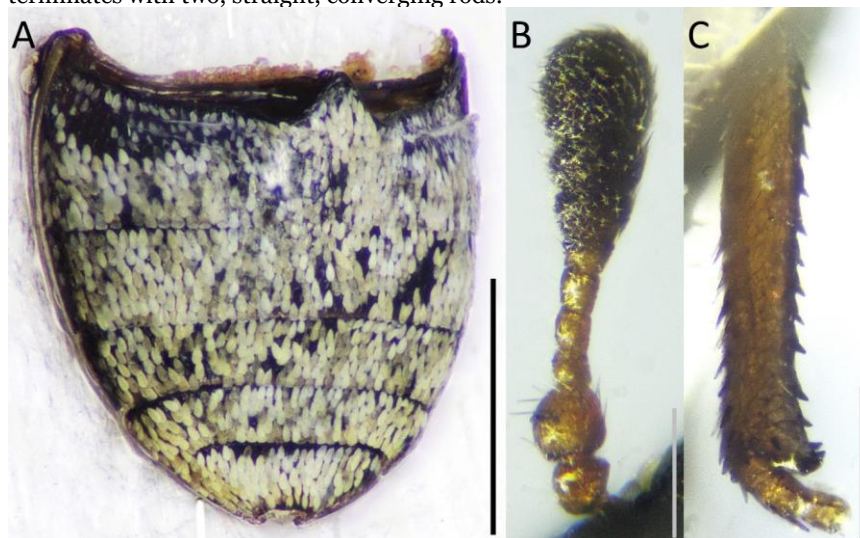


Figure 2. *Anthrenus funiculus* sp. nov. A) Holotype ventrites ventrolateral aspect (Scale bar = 0.5 mm). B) Holotype antenna (scale bar = 100  $\mu$ m). C) Fore tibia (Scale bar = 100  $\mu$ m).

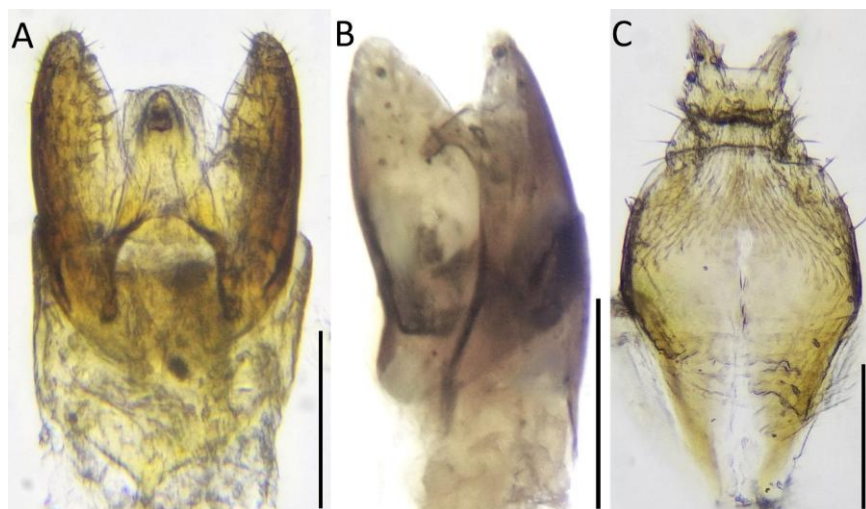


Figure 3. *Anthrenus funiculus* sp. nov. Holotype. A) aedeagus dorsal aspect. B) aedeagus dorsolateral aspect. C) Sternite IX. All scale bars = 100  $\mu$ m.

### Etymology.

The specific epithet refers to the way the scales line up producing a rope or cord-like appearance.

### Distribution.

Figure 4 shows the location of *A. funiculus* holotype collection along with the distributions of two potential confusion *Anthrenops* species, *A. eichleri* and *A. aradensis*. *Anthrenus eichleri* distribution overlaps *A. funiculus* and *A. aradensis* Mawlood & Abdul-Rassoul, 2003 bears similarities with *A. funiculus*.

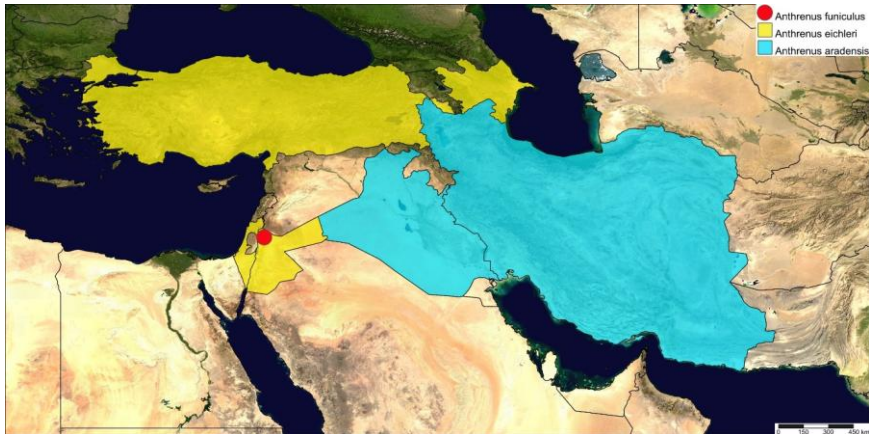


Figure 4. Collection point of holotype *Anthrenus funiculus*, and distributions of *A. eichleri* (current study and according to Háva, 2025) and *A. aradensis* (according to Háva, 2025).

### Confusion species.

Two *Anthrenops* species are considered (Fig. 4), one because of range overlap (*A. eichleri*) and one due to external similarities (*A. aradensis*).

New records for *A. eichleri*: Jordan, Dehbeen b. Jerash (32.260, 35.888), 13.vi.1963 and Jordan, Ghor Safi (31.039, 35.486), 350m, 11.iv.1967, J. Klapperich leg in both cases. (SMNS).

*Anthrenus eichleri* (Fig. 5) is coated in tightly packed, overlapping orange and yellow scales (Fig 5A). *A. eichleri* ventrites (Fig. 5B) are covered in white and yellow scales interspersed with some greyish scales. The yellow scales are concentrated at the margins of ventrites 1 and 2 and spread across ventrites 3–5. The male 8<sup>th</sup> antennomere (Fig. 5C) is longer than the 7<sup>th</sup> antennomere, and the 9<sup>th</sup> antennomere is longer than the 7<sup>th</sup> and 8<sup>th</sup> antennomeres combined. *Anthrenus eichleri* parameres (Fig. 5D) curve in more at the apices. *Anthrenus eichleri* sternite IX (Fig. 5E) terminal appendage is deeper relative to width and the ‘ears’ are shorter meeting to form a ‘V’ on the posterior margin. These observations reflect closely the original description of *A. eichleri* (Kadej & Háva, 2006).

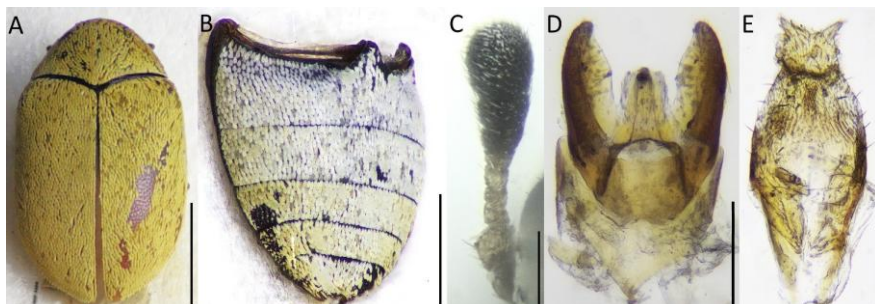


Figure 5. *Anthrenus eichleri*. A) Habitus (scale bar = 1 mm). B) ventrites ventrolateral aspect (scale bar = 0.5 mm). C) Antenna (scale bar = 100  $\mu$ m). D) Aedeagus (scale bar = 100  $\mu$ m). E) Sternite IX (scale bar = 100  $\mu$ m).

*Anthrenus aradensis* is briefly described in Mawlood & Abdul-Rassoul (2003) and copied by Háva (2015). *Anthrenus aradensis* has milky scales on the head (see Fig. 1A). Antennomere 8 is 'distinctly longer' than antennomere 7 (see Fig. 2B). *Anthrenus aradensis* pronotum is covered in whitish scales (see Figs. 1B, 1C). *Anthrenus aradensis* fore tibia with 12-13 spines, illustrated with 11 spines along ventral margin, a large gap between spines 1 and 2 from base, and three more spines on tibia apex (see Fig. 2C). Phallobase subtriangular (see Fig. 3A). No mention is made of the way the scales overlap and line up (Figs. 1B, 1C, 1D) which is an obvious feature of *A. funiculus*. There is currently no evidence that the distributions of *A. funiculus* and *A. aradensis* overlap (Fig. 4). The collection locations of the holotype *A. funiculus* and the neotype *A. aradensis* (Háva 2015) are approximately 1000km apart and beyond that *A. aradensis* is believed to spread further east into Iran.

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