

Three new species of *Anthrenus* Geoffroy s. str. (Coleoptera: Dermestidae: Megatominae) from Jordan and Israel

GRAHAM J. HOLLOWAY 

*Cole Museum of Zoology, School of Biological Sciences, HLS Building,
University of Reading, Whiteknights, UK. E-mail: g.holloway@reading.ac.uk*

ABSTRACT

Three new species of the genus *Anthrenus* s. str. are described from the southern Levant: *Anthrenus* (*Anthrenus*) *andreasi* and *A. (A.) illuminatus* from Jordan, and *A. (A.) yardenicus* from Jordan and Israel. For each species images of head, habitus, ventrites, antennae, aedeagus, sternite IX and internal features from females are illustrated. The species are compared with all similar species from the region to ensure species validity. The study brings the number of *Anthrenus* s. str. species known from Jordan to eleven.

KEYWORDS: Biodiversity, Dermestidae, genitalia, hide beetles, East Mediterranean, Levant, Middle East, Palaearctic, skin beetles, new species, taxonomy.

INTRODUCTION

The number of described Dermestidae Latreille, 1804 species continues to grow with now about 2000 species known to exist (Háva 2025). Within the Dermestidae sits the large genus *Anthrenus* Geoffroy, 1762 with over 330 species (Háva 2025), which is split into 10 subgenera based largely on the number of the antennal segments and the presence or absence of a notch on the inner eye margin (Peacock 1993; Háva 2004). One of the largest subgenera is *Anthrenus* s. str. with over 100 species. Around the world, there are relatively few people studying the Dermestidae and, as a result, our knowledge of the *Anthrenus* diversity in different regions is patchy. Jordan is one of the countries that has been historically overlooked. Recently, however, four new species of the subgenus *Anthrenus* (*Anthrenodes*) Chobaut, 1898 (Holloway 2026a), three new species *Anthrenus* (*Anthrenops*) Reitter, 1881 (Holloway 2026b), and one new species of *Anthrenus* s. str. (Holloway 2026c) have been described from Jordan. The Israeli fauna of hide beetles is relatively better studied (e.g. Bodenheimer 1937; Bytinski-Salz 1954; Bytinski-Salz & Sternlicht 1967; Calderon & Donahaye 1964; Chikatunov *et al.* 1999; Donahaye & Calderon 1969; Háva 2002, 2004, 2007, 2025; Háva *et al.* 2001; Háva *et al.* 2007; Herrmann 2026), but may still comprise unrecorded and undescribed taxa, especially in undersurveyed biotopes like, e.g., the Jordan Valley. The current study of Dermestidae from the both banks of the Jordan River has yielded three new species: *Anthrenus* (*Anthrenus*) *andreasi* sp. n., *A. (A.) illuminatus* sp. n. and *A. (A.) yardenicus* sp. n.; the first two from Jordan, the last one from both Israel and Jordan.

MATERIALS AND METHODS

The materials for the recent study were obtained from Naturalis Biodiversity Centre (RMNH), Leiden, The Netherlands, Staatliches Museum für Naturkunde (SMNS), Stuttgart, Germany, and Natural History Museum (NHMUK), London, UK. The studied specimens had been relaxed in 5% acetic acid for two days prior to dissection. 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, both dorsal and ventral views, were captured at $\times 20$ magnification and head view captured at $\times 63$ using a Canon EOS 2000D camera mounted on the BMSL microscope. Images of the aedeagi, sternite IX, antennae, and female sternite VIII and tergite VIII were captured at $\times 100$ or $\times 200$ magnification using a Canon EOS 1300D camera mounted on a Brunel monocular SP28 microscope. All images were fed through Helicon Focus Pro version 8.2.2 stacking software. All other measurements were made using ImageJ 1.53M (Schneider *et al.* 2012). The following measurements were taken: BL – body length, distance from anterior margin of pronotum to apex of elytra; BW – body width, distance across widest part of abdomen; PL – paramere length, distance from anterior end of parameres to apex of parameres; ML – median lobe length, distance from posterior tip to tip of one anterior stirrup; SL – sternite IX length, distance from tip of one anterior horn to tip of posterior lobe.

TAXONOMY

Family Dermestidae Latreille, 1804
Subfamily Megatominae Leach, 1815
Genus *Anthrenus* Geoffroy, 1762
Anthrenus (Anthrenus) andreasi sp. n.

Figs 1, 2

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Etymology: The new species is named in honour of Andreas Herrmann, who for three decades has worked relentlessly to support research of the Dermestidae.

Diagnosis: The only other *Anthrenus* s. str. species known from Jordan and Israel resembling *A. andreasi* sp. n. is *A. x-signum* Reitter, 1881. However, *A. x-signum* has many more yellow scales between the fasciae than *A. andreasi* and its antenna is yellow ochre rather than brown. The ventrites of *A. x-signum* are covered in white and yellow scales, rather than the pure white of *A. andreasi*, or *A. x-signum* ventrites with patches of brown scales at the lateral margins. The parameres of *A. x-signum* are bowed curving into sharp apices over the top of the median lobe rather than the spatulate parameres of *A. andreasi*.

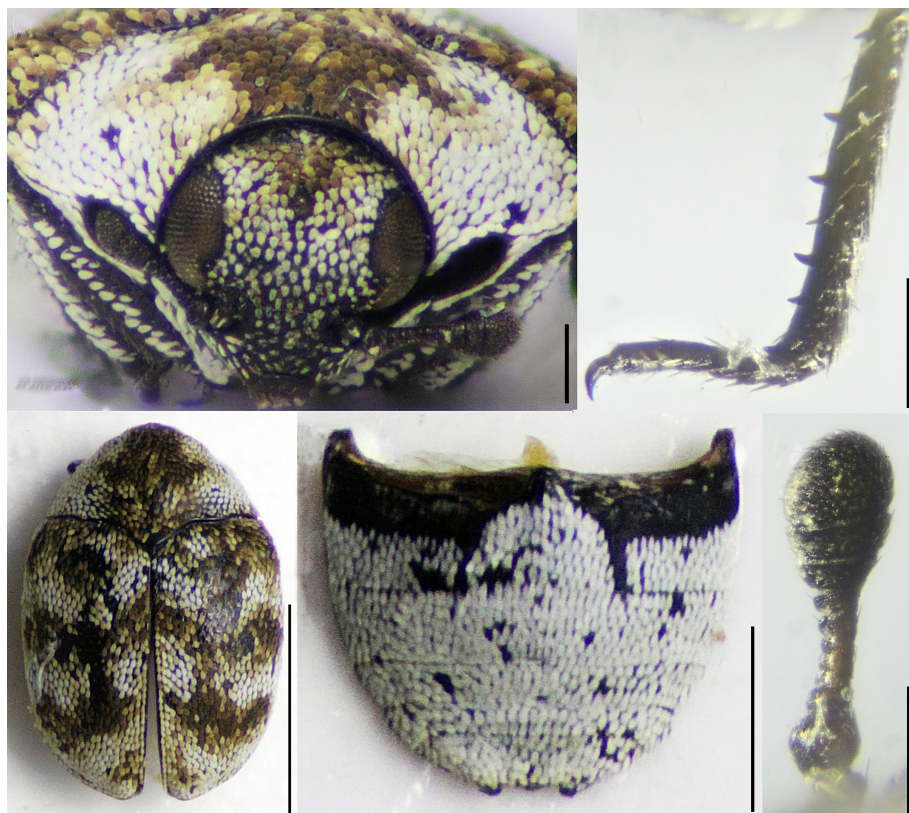


Fig. 1. *Anthrenus andreasi*, holotype male: (A) head (scale bar = 100 μ m), (B) habitus (scale bar = 1 mm), (C) ventrites (scale bar = 1 mm), (D) antenna (scale bar = 100 μ m), (E) spines on foretibia (scale bar = 100 μ m).

Description: Male (holotype). BL = 1.725 mm, BW = 1.200 mm (BW/BL = 0.70). Head and pronotal integument dark brown, brown ocellus in centre of face, notch lower, inner eye margin as in Fig. 1A. Small, overlapping broad, medium brown scales clustered in centre of vertex above ocellus, becoming yellow towards outer edges of vertex. Scales over face and clypeus non-overlapping, white or yellowish white, scales on clypeus narrow, labrum brown. Scales on pronotum larger, overlapping, admixed dark and medium brown along central third of pronotum (edged with yellow scales) contiguous with brown scales on vertex, scales white on outer thirds of pronotum (Fig. 1A).

Elytral integument brown (Fig. 1B) covered with white, yellow, pale brown, medium brown and dark brown scales. White and yellow scales forming two poorly defined fasciae: sub-basal and sub-medial. Sub-basal fascia starts at lateral margin,



Fig. 2. *Anthrenus andreasi*, holotype male: (A) aedeagus, (B) sternite IX, paratype female (C) sternite VIII, (D) tergite VIII. All scale bars = 1 mm.

sweeps down and then up towards small dark brown scutellum. Pale scales continue along elytral bases from scutellum for a short way. Sub-medial fascia likewise composed of white and yellow scales stretching from lateral margin and meeting elytral suture as vertical line of yellow scales that continue down to elytral apices. Both sub-basal and sub-medial scales broken halfway across by brown scales. Elytral apices almost completely covered with white and yellow scales apart from small patch of brown scales centrally against elytral suture. Scales between fasciae mostly medium and dark brown. Ventrites (Fig. 1C) covered with white scales (slight hint of yellow on ventrite 5) that butt up against each other.

Antenna (Fig. 1D): with 11 antennomeres, antennomeres 1 and 2 brown, globular, antennomeres 3–8 transverse, reddish (apart from antennomere 8 which is brown), Antennomeres 9–11 forming well-defined offset, dark brown club. Terminal antennomere at least same length as antennomeres 9 and 10 combined. Legs reddish brown (Fig. 1E), with six spines on outer surface of tibia (Fig. 1E), from tibial apex five equally spaced spines, central one weak rest stout, sixth spine close to base of tibia.

Aedeagus (Fig. 2A): brown, slim with heavily concave outer paramere margins. Spatulate paramere apices strongly asymmetric, sloping sharply down towards tip of median lobe. Tips of parameres and down inner margins less sclerotized than rest of aedeagus, small number of short setae emerging from less sclerotized tissue. Median lobe slim, tapering to sharp point that terminates at base of spatulate paramere apices. Anterior end of median lobe with two long, straight converging stirrups.

Sternite IX (Fig. 2B) posterior lobe with virtually no neck at base. Posterior lobe twice as long as wide and 35% length of entire sternite IX, most of sternite consists of two, long, curved horns. Sternite IX pale brown apart from posterior margin and short way down lateral margins of posterior lobe paler (less sclerotized). Many setae emerge from paler tissue, longest setae at corners of posterior margin, these long setae strongly curved inwards and much longer than setae emerging from middle of posterior margin. Fewer, shorter setae emerging from more sclerotized dark tissue of posterior lobe disk and lateral margins.

Female (paratypes). BL = 2.075 mm and 1.950 mm, BW = 1.500 mm and 1.425 mm (BW/BL = 0.72 and 0.73).

Female sternite VIII (Fig. 2C): parasol shaped. Anterior stem reddish brown, expanding towards posterior lobe. Reddish brown of stem penetrates disk of posterior lobe, anterior margins of posterior lobe also reddish brown. Posterior lobe pale brown except for broad pale posterior margin. Row of straight setae emerge from pale marginal tissue reaching corners of posterior margin. Lateral margins slightly diverging. Anterior margin almost straight from sharp outer angles. Posterior lobe very slightly wider than length of anterior stem and just over 3× wider than long. **Female tergite VIII** (Fig. 2D) mostly very pale brown and consists of two lozenge-shaped halves joined in middle by paler, less sclerotized tissue, paler tissue most evident in centre of tergite up to centre of posterior margin. Patches of paler tissue also at outer angles of posterior margin. Posterior margin lined with long, straight, inward angled setae, longest setae emerging from paler tissue at outer corners of posterior margin and the paler tissue at centre of posterior margin.

Holotype: ♂ **Jordan:** Beida (4 km north of Petra) [30.384°N 35.473°E], 25.vii.1985, Ph. Pronk (RMNH.INS 1492175).

Paratypes: 2♀, same data as holotype (RMNH.INS 1492163, RMNH.INS 1492181).

Distribution: *Anthrenus andreasi* is only known from Jordan.

Anthrenus (Anthrenus) illuminatus sp. n.

Figs 3, 4

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Etymology: The species name is from Latin *illuminatus* (illuminated), referring to the bright fasciae across the elytra and the brilliant white of the ventrites.

Diagnosis: The only *Anthrenus* s. str. species known from Jordan with a dorsal colour pattern remotely resembling *A. andreasi* sp. n. or *A. illuminatus* sp. n., is *A. x-signum* Reitter, 1881. However, the aedeagus of *A. x-signum* is different with straight sided parameres, curved inwards and ending in pointed apices, and a slim extended median lobe (see Herrmann 2026). Indeed, both *A. andreasi* sp. n. and *A. illuminatus* sp. n. differ quite obviously from all known *Anthrenus* s. str. species from other parts of the world both externally and internally. The two species described here can only really be confused with each other, although the colour patterns of the type specimens are consistent within species and differ between species (cf. Fig. 1B and Fig. 3B).

Description: Male (holotype). BL = 2.025 mm, BW = 1.375 mm (BW/BL = 0.68). Head and pronotal integument dark brown, brown ocellus in centre of face, notch lower, inner eye margin (Fig. 3A). Small, overlapping broad, brown scales across most of vertex down to ocellus. Pale brown scales edge brown scales and reach upper eye margin. Rest of face covered in slightly off-white and yellowish scales butting up against each other. Scales smaller on clypeus and more widely spaced. Labrum

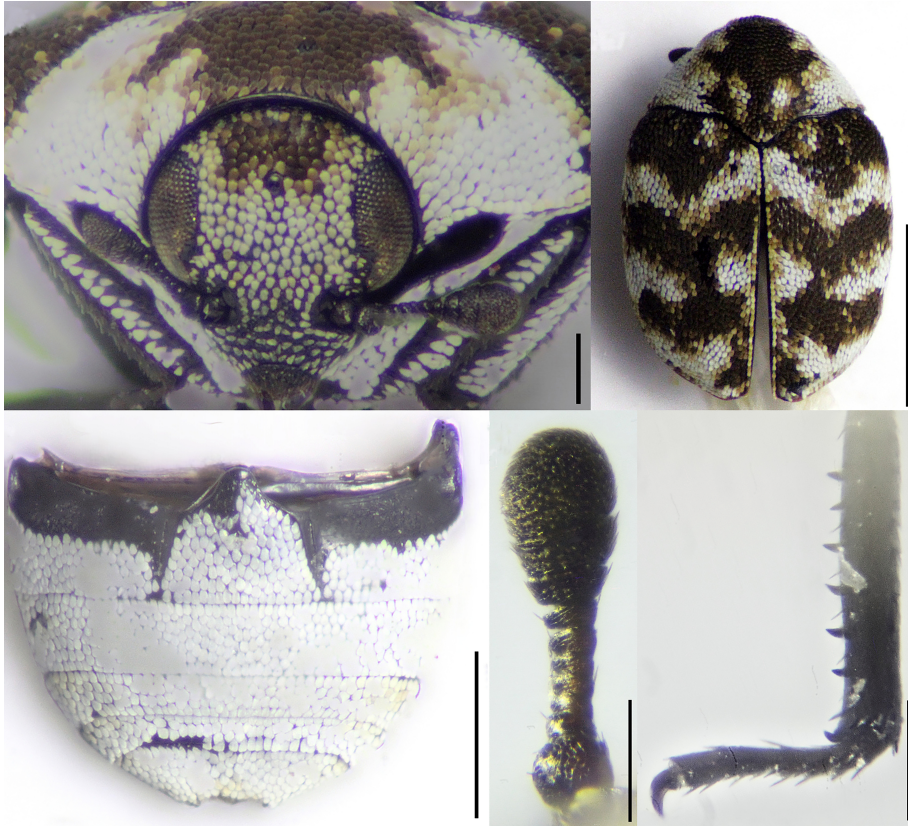


Fig. 3. *Anthrenus illuminatus*, holotype male: (A) head, (B) habitus, (C) ventrites, (D) antenna, (E) tibia. Scale bars: 100 µm in Fig. 3A, D, E and 1 mm in Fig. 3B, C.

dark brown. Scales on pronotum larger, dense and overlapping, dark brown along central third of pronotum (edged with pale brown and yellow scales) contiguous with brown scales on vertex. Scales white on dorsolateral thirds of pronotum (Fig. 3A). Two patches of pale scales in vertical band of dark brown scales above and either side of scutellar shield.

Elytra (Fig. 3B) appearing dark and white. Three fasciae (sub-basal, sub-medial, and sub-apical) of white scales edged with pale brown scales. Sub basal fascia sinuous from lateral margin to centre of elytra where it sweeps up to join elytral suture and up to small dark, triangular scutellum. Sub-medial fascia also sinuous from lateral margins to elytral suture. Large gap of dark brown scales breaks sub-medial fascia. Sub-apical fascia extends from lateral margins, but does not reach elytral suture. White scales extend from base of sub-apical fascia down to elytral apices. Single line of yellow scales along elytral suture from scutellum to elytral apices.

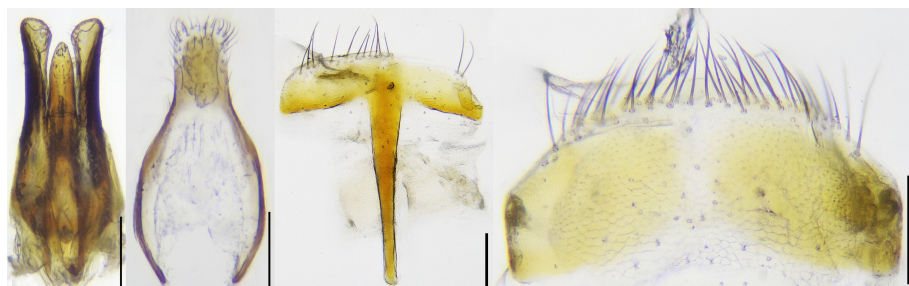


Fig. 4. *Anthrenus illuminatus*, holotype male: (A) aedeagus, (B) sternite IX, paratype female (C) sternite VIII, (D) tergite VIII. All scale bars = 1 mm.

Two spots of white and pales brown scales at elytral base outside scutellum. Rest of scales on elytra between white fasciae dark brown. Ventrites (Fig. 3C) densely covered in overlapping, brilliant white scales, faint trace of yellow at outer margins of ventrites 3–5.

Antenna (Fig. 3D): entirely dark brown and with 11 antennomeres. Antennomeres globular, antennomeres 3–8 transverse, antennomeres 9–11 forming a well-defined club. Terminal antennomere no more than the same length as antennomeres 9 and 10 combined. Legs dark brown (Fig. 3E), with six equally spaced, strong spines on outer surface of tibia, none close to tibial base.

Aedeagus (Fig. 4A): brown, slim with heavily concave outer paramere margins. Spatulate paramere apices strongly asymmetric, dorsal surfaces sloping down towards tip of median lobe. Tips of parameres and down inner margins paler than rest of aedeagus. About four long straight setae extending beyond inner margin of tip of paramere. Median lobe slim, tapering to blunt tip that terminates at base of spatulate paramere apices. Anterior end of median lobe with two long, straight converging stirrups.

Sternite IX (Fig. 4B) posterior lobe with virtually no neck at base. Posterior lobe 1.5 times longer than wide and 30% length of entire sternite IX, most of sternite consists of two, long, curved horns. Sternite IX medium brown apart from posterior margin and short way down lateral margins of posterior lobe which is broadly less sclerotized (paler). Many strong setae emerge from pale, less sclerotized tissue, longest setae at corners of posterior margin, these long setae are strongly curved inwards and slightly longer than setae emerging from middle of posterior margin. Fewer, setae emerging from darker, more sclerotized tissue of posterior lobe disk and lateral margins.

Female (paratypes). BL = 2.000 mm and 2.250 mm, BW = 1.375 mm and 1.650 mm (BW/BL = 0.69 and 0.73).

Female sternite VIII (Fig. 4C) parasol shaped. Anterior stem reddish brown, expanding towards posterior lobe. Reddish brown of stem penetrates disk of posterior lobe, anterior margins of posterior lobe also reddish brown. Posterior lobe pale

brown except for broad paler, less sclerotized posterior margin. Row of straight setae emerge from paler tissue but not reaching rounded corners of posterior margin. Lateral margins diverging. Anterior margin curving up to base of anterior stem from rounded outer angles. Posterior lobe very slightly wider than length of anterior stem and 4x wider than long. Female tergite VIII (Fig. 4D) mostly very pale brown and consists of two lozenge-shaped halves joined in middle by broad vertical strip of less sclerotized tissue extending up to centre of posterior margin spreading out to outer corners. Posterior margin lined with long, straight, inward angled setae, line of setae not reaching outer corners of posterior margin.

Holotype: ♂ **Jordan:** Beida (4 km north of Petra) [30.384°N 35.473°E], 25.vii.1985, Ph. Pronk (RMNH.INS 1492176).

Paratypes: 2♀, same data as holotype (RMNH.INS 1492171, RMNH.INS 1492172).

Distribution: *Anthrenus illuminatus* is only known from Jordan.

Anthrenus (Anthrenus) yardenicus sp. n.

Figs 5, 6

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Etymology: ‘Yarden’, literally ‘going or flowing down’, is the Hebrew name for the Jordan River, flowing down from Mt Hermon (above 2000 m a.s.l.) to the Dead Sea (400 m b.s.l.), on both sides of which the type specimens were collected.

Diagnosis: Holloway (2026c) reviewed the Palaearctic *A. pimpinellae* (Fabricius, 1775) species group and placed the species into several lineages based on the aedeagal structure. The *A. delicatus* Kiesenwetter, 1851 lineage contains nine species (Fig. 7) characterized by thin, narrow, flexible parameres (Fig. 8). *Anthrenus yardenicus* sp. n. belongs to the *A. delicatus* lineage. The new species has a relatively deep pale fascia that rules out *A. bakaloudisi* Holloway, Thanasoulis & Herrmann, 2023, *A. delicatus*, *A. pfefferi* Kalík, 1954, and *A. sexmaculatus* Holloway & Herrmann, 2024, all of which have thinner fasciae, or in the case of *A. pfefferi*, virtually

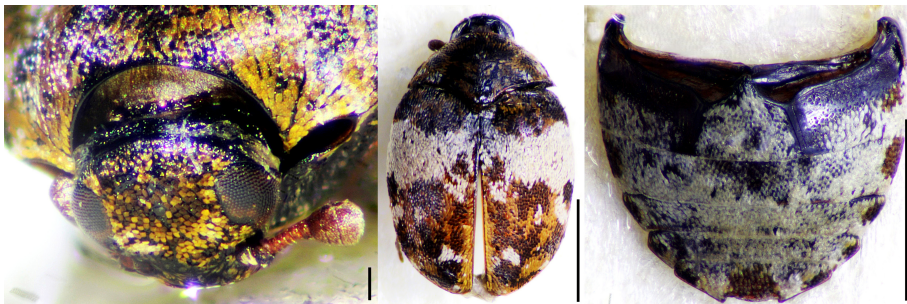


Fig. 5. *Anthrenus yardenicus*, holotype male: (A) head (scale bar = 100 µm), (B) habitus (scale bar = 1 mm), (C) ventrites (scale bar = 1 mm).

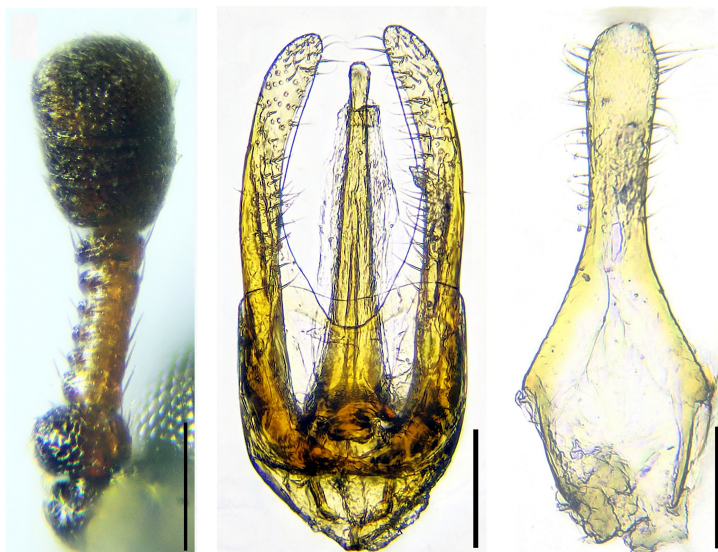


Fig. 6 *Anthrenus yardenicus*, holotype male: (A) antenna, (B) aedeagus, (C) sternite IX. All scale bars = 100 μ m.

no fascia (Fig. 7). *Anthrenus latefasciatus* Reitter, 1892 and *A. strejceki* Holloway, 2026 have broader parameres (Fig. 8). *Anthrenus indicus* Kadej, Háva & Kalík, 2007 has a wider median lobe and sharper paramere apices. *Anthrenus similis* Kadej, Háva & Kalík, 2007 and *A. warchalowskii* Kadej, Háva & Kalík, 2007 have parallel-sided median lobes and the aedeagus widest towards its posterior end. Another feature of *A. yardenicus* sp. n. setting it apart from virtually all other Palearctic *A. pimpinellae*-group species is the gingery brown colour of the patches at the lateral margins of the ventrites (Fig. 5C). In all other species, the scales in these patches are dark brown to black.

Description: Male. BL = 2.400 mm (holotype) and 2.800 mm (paratype), BW = 1.700 mm (holotype) and 2.050 mm (paratype) (BW/BL = 0.71 and 0.73). Head and pronotal integument dark brown, dark brown ocellus in centre of face, notch lower, inner eye margin (Fig. 5A). Face covered in brown, orange, and yellow broad, overlapping scales. Scales on vertex brown down to and slightly beyond ocellus. Eye margins and lower face covered in orange scales with two small patches of yellow scales in from eye margin notches. Labrum brown. Outer thirds and anterior margin of pronotum covered in bright overlapping orange scales, across rest of pronotum a patchy mixture of orange and dark brown scales.

Elytral integument (Fig. 5B) brown becoming more orange towards apices, covered in pale cream, orange and dark brown scales. Cream scales concentrated in broad fascia crossing elytra from lateral margins, sweeping upwards to join elytral suture

below small dark, triangular scutellar shield. Cream patch of scales weakly joined to pale fascia sub-elytral suture, another weakly joined to fascia sub-lateral margin. A third patch of pale scales sub-apical and a fourth small patch of pale scales on elytral disk below pale fascia on each elytron. Strip of orange scales line elytral suture below pale fascia. Many orange scales below pale fascia and along elytral base from scutellar shield. All other scales dark brown. Ventrites (Fig. 5C) covered in cream scales. Elongated patches of gingery brown scales lining anterior part of lateral margins of ventrites 2–5, patch on ventrite 2 larger than patches on other ventrites. Ventrite 1 with patch of gingery brown scales admixed with some cream scales sub-lateral margin at anterior edge of cream scales. Ventrite 5 with large, semicircular patch of gingery brown scales covered apex.

Antenna (Fig. 6A): entirely red (Fig. 5A), antennal club slightly darker, and with 11 antennomeres. Antennomeres globular, antennomeres 3–8 transverse, antennomeres 9–11 forming well-defined club. Antennal club almost cubic but expands slightly to terminal antennomere. Terminal antennomere no more than same length as antennomeres 9 and 10 combined. Legs reddish brown, anterior faces of femora covered in dark brown scales with patch of cream scales at apices.

Aedeagus (Fig. 6B): pale brown, darker brown at phallobase, with narrow, thin, flexible parameres. Parameres highly hirsute with long setae protruding beyond inner margins, long setae on inner margins at blunt, rounded apices, short stout setae behind long apical setae. Parameres evenly curved and equally wide from base to tip, aedeagus widest at mid-point of parameres. Median lobe slim with straight

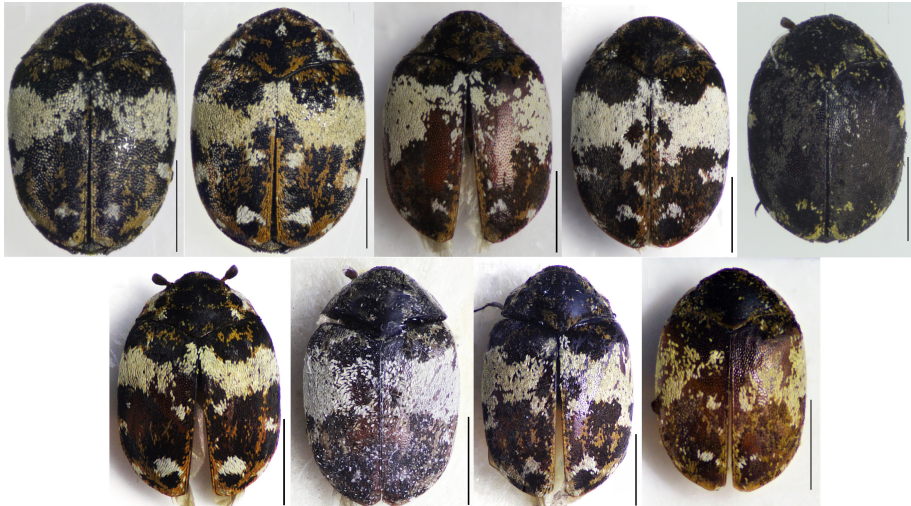


Fig. 7. *Anthrenus delicatus* lineage aedeagi: (A) *A. bakaloudisi*, (B) *A. delicatus*, (C) *A. indicus*, (D) *A. latefasciatus*, (E) *A. pfefferi*, (F) *A. sexmaculatus*, (G) *A. similis*, (H) *A. strejceki*, (I) *A. warchalowskii*. All scale bars = 100 μ m. (From Holloway 2026c).

slightly converging margins to slightly bulbous tip terminating just under long apical paramere setae. Anterior end of median lobe with two short converging stirrups.

Sternite IX (Fig. 6C) slim, pale brown. Posterior lobe with well-defined neck at base and occupying about 40% length of sternite IX. Lateral margins of posterior lobe with many evenly spaced short setae, longer setae at corners of posterior margin. No setae across evenly and strongly convex posterior margin. Tip of posterior lobe with patch of paler tissue. Below neck of posterior lobe, margins sweep apart before converging as two anterior pointing horns.

Female. BL = 2.275–3.000 mm, BW = 1.700–2.150 mm (BW/BL ranges 0.73–0.74).

Holotype: ♂ **Jordan:** “Debeen b. Jerash” [= Debbeen Forest Reserve, near Jerash, 32.251°N 35.830°E] (SMNS).

Paratypes: 1 ♀ **Israel:** “Kleat, 200 m, Oberes Jordantal” [32.36°N 35.53°E], 15.ii.1963 J. Klapperich (NHMUK). **Jordan:** 1 ♂ 1 ♀, Romana [32.052°N 35.906°E], 26.iii.1966, 24.v.1963, J. Klapperich (SMNS); 2 ♀ Petra, 400 m a.s.l. [30.334°N 35.443°E], 2.v.1964, J. Klapperich (RMNH, AHEC).

Distribution: *Anthrenus yardenicus* is known from Israel and Jordan.

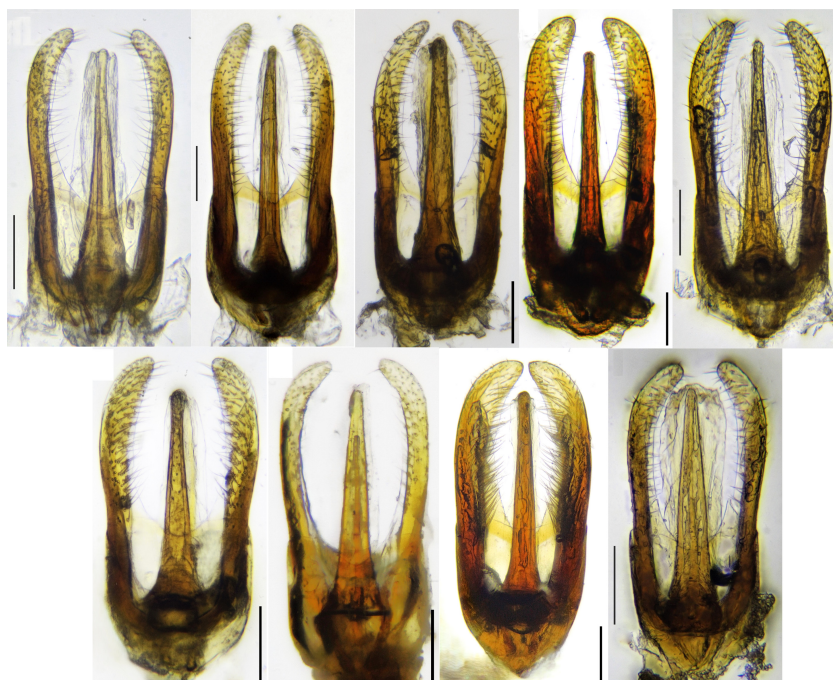


Fig. 8. *Anthrenus delicatus* lineage habitus: (A) *A. bakaloudisi*, (B) *A. delicatus*, (C) *A. indicus*, (D) *A. latefasciatus*, (E) *A. pfefferi*, (F) *A. sexmaculatus*, (G) *A. similis*, (H) *A. strejceki*, (I) *A. warchalowskii*. All scale bars = 1 mm. (From Holloway 2026c).

DISCUSSION

The *Anthrenus* fauna of Jordan has been poorly studied given the number of species discovered in the first examination of *Anthrenus* from the region. Holloway (2026a) described four *Anthrenus* (*Anthrenodes*) species new to Jordan; prior to that only one *Anthrenodes* species was known from Jordan: *A. (A.) jordanicus* Pic, 1934. Holloway (2026b) described three new species of *A. (Anthrenops)*, two of which were from Jordan; prior to this only three *Anthrenus* (*Anthrenops*) species were known from Jordan: *A. (A.) coloratus* Reitter, 1881, *A. (A.) eichleri* Kadej & Háva, 2006 and *A. (A.) funiculus* Holloway, 2026. The current study brings the number of *Anthrenus* s. str. species known with certainty from Jordan to eleven: *Anthrenus andreasi* sp. n., *A. citrinus* Holloway, 2026. *A. delicatus* Kiesenwetter, 1851, *A. flavidulus* Reitter, 1889, *Anthrenus flavipes* LeConte 1854, *Anthrenus illuminatus* sp. n., *A. munroi* Hinton, 1943, *A. pimpinellae* (Fabricius, 1775), *A. scrophulariae* Linnaeus, 1758, *A. yardenicus* sp. n., *A. x-signum* Reitter, 1881.

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