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Redescription of *Telopes undatus* (Fabricius, 1787) (Coleoptera: Dermestidae: Attageninae) and new record from mainland Spain of *Attagenus balearicus* Holloway & Herrmann, 2026

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Abstract: The Dermestidae (Coleoptera) contain a large number of poorly described species. Many of these descriptions are from the 18th through to the late 20th century, predating the advent of digital imagery. It is important for poorly described species to be revisited to facilitate taxonomic and systematic discovery. *Telopes undatus* (Fabricius, 1787) is one such species. A number of *T. undatus* were collected from Málaga (Spain), offering the opportunity to describe the species in greater detail. Images of the habitus (dorsal and ventral), antenna, aedeagus, sternite IX, male tergites IX and X, and sclerites in the bursa copulatrix are presented. The first record of *Attagenus balearicus* Holloway & Herrmann, 2026 from mainland Spain is also presented.
Key words: Coleoptera, Dermestidae, *T. undatus*, *A. balearicus*, *A. trifasciatus*, *A. vitalii*, dissection, distribution, genitalia, taxonomy.

Resumen: Redescription of *Telopes undatus* (Fabricius, 1787) (Coleoptera: Dermestidae: Attageninae) and new record from mainland Spain of *Attagenus balearicus* Holloway & Herrmann, 2026. Los Dermestidae (Coleoptera) contienen un gran número de especies descritas de manera deficiente. Muchas de estas descripciones datan del siglo XVIII hasta finales del siglo XX, anteriores a la aparición de la imagen digital. Es importante revisar las especies mal descritas para facilitar los avances en taxonomía y sistemática. *Telopes undatus* (Fabricius, 1787) es una de estas especies. Se recolectaron varios ejemplares de *T. undatus* en Málaga (España), lo que brindó la oportunidad de describir la especie con mayor detalle. Se presentan imágenes del habitus (vistas dorsal y ventral), la antena, el edeago, el esternito IX, los terguitos IX y X del macho, y los escleritos de la bolsa copulatriz. Se presenta también el primer registro de *Attagenus balearicus* Holloway & Herrmann, 2026 para la España peninsular.
Palabras clave: Coleoptera, Dermestidae, *T. undatus*, *A. balearicus*, *A. trifasciatus*, *A. vitalii*, disección, distribución, genitalia, taxonomía.

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Introduction

The Dermestidae (Coleoptera) numbers about 2000 species (Háva, 2025). Unfortunately, many of these species are poorly described, which hinders taxonomic progress and interferes with our understanding of Dermestidae classification. Many of the weaker descriptions come from the 18th through to the end of the 20th century prior to the age of digital imagery. Holloway & Herrmann (2026) argue that for all species, images of habitus (dorsal and ventral), antennae, aedeagus, and sternite IX for males are required as a minimum, supplemented with habitus and antennal images for females if they differ

significantly along with images of any sclerite within the bursa copulatrix. Unfortunately, many species descriptions fall a long way short of meeting this requirement and it is incumbent on contemporary students of Dermestidae to redescribe species as required. This is a huge task, but sound evidence is required if we are to understand Dermestidae systematics.

An opportunity arose to study a run of *Telopes undatus* (Fabricius, 1787), one of the poorly described species referred to here, first referred to in the 18th century when few Dermestidae were known. Description by Fabricius (1787) reads as follows:

Body medium dark, immaculate. Elytra smooth, dark, with three or four wavy, white stripes.

At the time, Fabricius would not have realised how many Dermestidae remained to be discovered and his description, brief though it is, might have been adequate given the prevailing knowledge. However, now with about 2000 described species of Dermestidae (Háva, 2025), the description of *T. undatus* requires attention.

In addition to providing a redescription of *T. undatus*, a new distribution record for *Attagenus balearicus* Holloway & Herrmann, 2026 in mainland Spain is provided.

Materials and methods

Telopes undatus and *Attagenus balearicus* specimens were obtained from the field in Málaga (Spain), 2026. Dry specimens were relaxed in 5% acetic acid for two days prior to dissection, that 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 ×20 magnification using a Canon EOS 2000D camera mounted on the BMSL microscope. Images of aedeagi and sternite IX were captured at ×100 magnification using a Canon EOS 1300D camera mounted on a Brunel monocular SP28 microscope. After dissection, all body parts were mounted on a card. The antennae were teased out and images were taken at ×100 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 ImageJ 1.53M (Schneider *et al.*, 2012). Measurements:

- 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.

AHEC = Andreas Herrmann's Entomology Collection. **GHEC** = Graham Holloway's Entomological Collection. **NHMUK** = Natural History Museum, London. **RMNH** = Naturalis Biodiversity Centre, Leiden, The Netherlands. **SMNS** = Staatliches Museum für Naturkunde, Stuttgart, Germany.

Results

***Telopes undatus* (Fabricius, 1787)** (Figs. 1–3)

Specimens examined: six males and four females, Málaga, Spain (36.721, -4.486) 14.iv.2026, S. Mahie leg. (one male, one female, NHMUK; one male, one female, SMNS; one male, one female, RMNH; three males, one female, GHEC).

Description, external characteristics of male. Means male: BL = 3.73 mm, BW = 2.08 mm, BW/BL = 0.56. Means female: BL = 3.8 mm, BW = 2.25, BW/BL = 0.59. Head and pronotal integument very dark brown (Fig. 1A), single reddish-brown ocellus in centre of head at or just above level of top of eyes, lower inner margin of eye emarginated. Vertex, face, and clypeus covered in yellow hairs. Labrum dark brown. Pronotum with yellow and brown hairs. Yellow hairs in patches at pronotal outer angles, along the lateral and anterior margins, and a thin line along the posterior margin. Two oblong-shaped patches of yellow hairs from the yellow hairs lining the posterior margin into pronotal disk. Rest of pronotum with dark brown hairs with isolated yellow hairs scattered throughout.

Scutellar shield dark brown, small, triangular (Fig. 1B). Elytral integument dark brown and reddish-brown, covered in brown, white and pale-yellow hairs. The white hairs emerge from the reddish-brown integument and form three fasciae across elytra, one sub-basal, one sub-medial, and one sub-apical. The sub-basal fascia begins at the lateral margin adopting an anteriad line before looping downwards and then up towards the scutellar shield. The sub-medial fascia adopts a shallow upwards line from the lateral margin until just past the central point where it turns posteriad towards the elytral suture. The sub-apical fascia is almost straight and flat from lateral margin to elytral suture. There is a prominent spot of white hairs at elytral apex. Yellow hairs along elytral basal margins. Brown hairs across rest of elytra. Isolated yellow hairs scattered in amongst brown hairs between elytral base and sub-basal fascia. Ventrites (Fig. 1C) covered in yellow hairs, which are denser along posterior margin of each ventrite.

Antenna (Fig. 1D) black with eleven antennomeres. Antennomeres 1 and 2 large, globular, antennomeres 3 and 4 more or less square, antennomeres 5 to 8 transverse becoming wider towards antennomere 8. Antennal club with three antennomeres, antennomeres 9 and 10 disk-shaped, antennomere 11 extended with rounded apex. Antennomere 11 the same length as antennomeres 1 to 10 combined. Antennomere 11 densely covered in short, black hairs, many of which are hooked at the base of the antennomere. Antennomeres 1–8 with long, straight setae.

Femora brown, tibiae and tarsi reddish-brown. Femora and tibiae covered in yellow hairs (Fig. 1B).

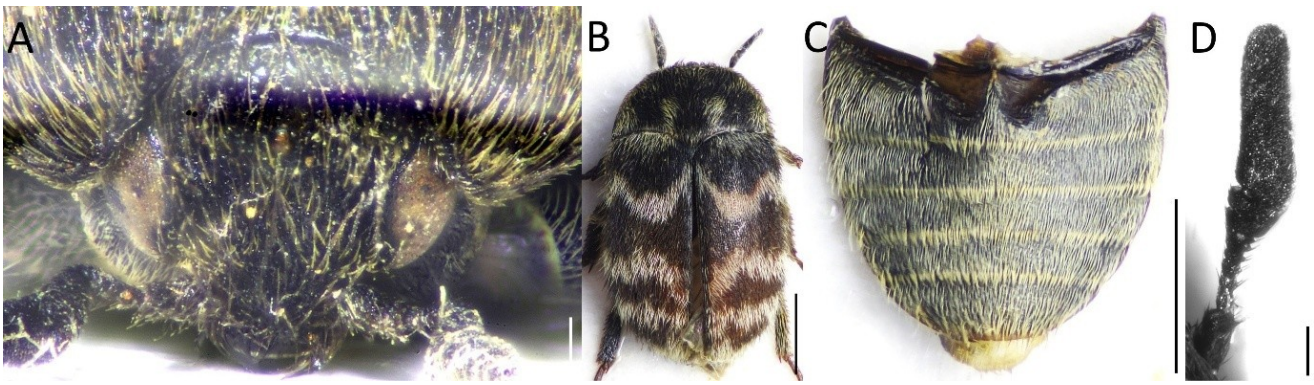

Fig. 1.- *Telopes undatus* (Fabricius, 1787), male. **A.-** Head (scale bar = 100 µm). **B.-** Habitus (scale bar = 1 mm). **C.-** Ventrites (scale bar = 1 mm). **D.-** Antenna (scale bar = 100 µm).

Description, external characteristics of female. In many respects, females resemble males externally. However, all female specimens examined had denser, brighter yellow hairs on the head and pronotum than males (Fig. 2A). Female habitus (Fig. 2B) and ventrites (Fig. 2C) are like males. The female antenna (Fig. 2D) is much shorter than the male's, the terminal antennomere is approximately the same length as the antennomeres 9 and 10 combined. All antennomeres except the terminal antennomere, carry long straight setae.

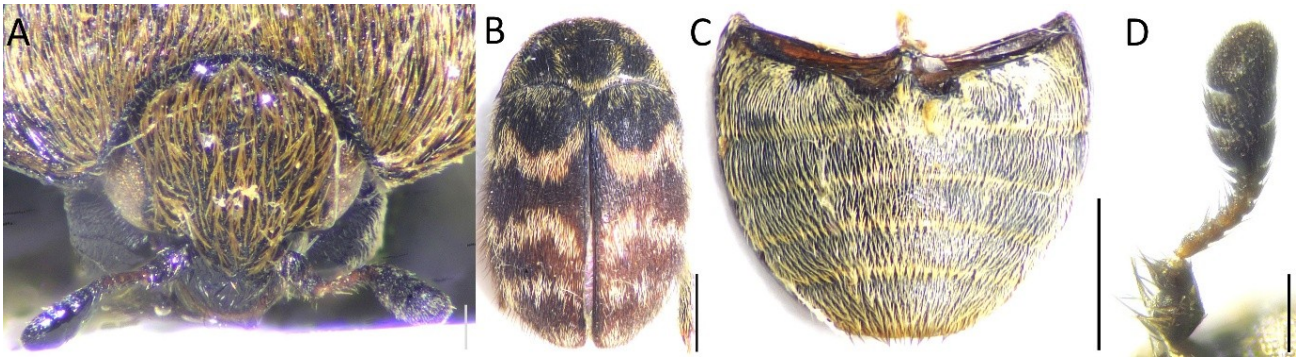

Fig. 2.- *Telopes undatus* (Fabricius, 1787) female. **A.-** Head (scale bar = 100 µm). **B.-** Habitus (scale bar = 1 mm). **C.-** Ventrites (scale bar = 1 mm). **D.-** Antenna (scale bar = 100 µm).

Description, internal characteristics of male. Parameres (Fig. 3A, PL = 365 µm) joined at base, curve posteriad as narrow, brown rods and diverge terminating in broad, pale brown and white apices heavily hooked inwards towards each other. At paramere apices, inner and outer margins adorned with long, thin, curved hairs. Median lobe (ML = 385 µm) brown, broad at base, lateral margins almost straight, and converge towards parallel-sided, extended terminal section with rounded tip that ends well before paramere apices. Sperm duct lying along ventral surface of median lobe narrow, barely wider than median lobe. Median lobe with two converging anterior stirrups that extend beyond phallobase. Sternite IX (Fig. 3B, SL = 515 µm) posterior half white, anterior half pale-brown. White tissue from posterior half extends from disk into brown tissue to single anterior attachment point. From attachment point, lateral margins straight, diverging to just before middle where they converge to broad, rounded posterior margin. Convergent lateral margins slightly sinuate and posterior margin slightly protruding centrally. Long-straight hairs across surface of sternite IX (except for central strip) and up convergent, lateral margins. Hairs, longer, thicker, denser and turned inwards across posterior margin. Long curved hairs extend sub-marginally from central posterior margin. Tergite IX and X (Fig. 3C) mostly pale brown with white patches from lateral margin and inwards along posterior margin of tergite IX. Short hairs along lateral margin and anterior margin of white patches on tergite IX. Anterior margin of posterior section of tergite IX form inverted 'V' that touches anterior margin of tergite X centrally. Either side of the tip of the inverted 'V' is a single, straight seta. Straight posterior margin and sub-margin with many long, straight setae. Posterior margin and most of lateral margins of tergite X consisting of white tissue.

Fig. 3.- *Telopes undatus* (Fabricius, 1787). **A.-** Aedeagus. **B.-** Male sternite IX. **C.-** Male tergites IX and X. **D.-** Sclerites in bursa copulatrix. Scale bars = 100 µm in all cases.

Description, internal characteristics of female. Bursa copulatrix with four thin, brown sclerites (Fig. 3D). Two divergent sclerites armed with conical teeth on outer margins. On other side of bursa copulatrix, two more curved sclerites without any teeth.

***Attagenus balearicus* Holloway & Herrmann, 2026** (Fig. 4)

Specimens examined: Two males, Málaga (Spain) (36.715, -4.447) 14.iv.2026, S. Mahie leg. (NHMUK and GHEC).

Attagenus trifasciatus (Fabricius, 1787) has long presented a confused picture, with blackish and brown individuals all assigned to the same species: *A. trifasciatus*. Holloway & Herrmann (2026) showed that blackish specimens were indeed *A. trifasciatus*, but the brown specimens studied belonged to two species, one from France (*A. vitalii* Holloway & Herrmann, 2026) and one from Ibiza (*A. balearicus*). In the current study, two brown specimens were obtained from Málaga (Spain). Dissection indicated they were both *A. balearicus* (Fig. 4A) No reliable way has been discovered to separate *A. balearicus* from *A. vitalii* externally, the critical information comes from internal structures. Also worth noting is the holotype *A. balearicus* has thicker fasciae and the second and third fasciae are linked by yellow hairs lining the elytral suture (Holloway & Herrmann, 2026). The current specimens from Málaga (Fig. 4A) have narrower fasciae and the second and third fasciae are not connected by yellow hairs lining the elytral suture. The tip of the *A. balearicus* median lobe is blunt and rounded (Fig. 4B), whereas *A. vitalii* median lobe is sharper. Additionally, the pale patches at the corners of the posterior margin of tergite IX (Fig. 4C) in *A. balearicus* are almost devoid of setae (although magnified inspection reveals a row of very tiny setae along the lateral margin of each pale patch). *Attagenus vitalii* tergite IX has a row of four or five long setae emerging from the pale patch pointing posteriad.

Fig. 4.- *Attagenus balearicus* Holloway & Herrmann, 2026 from Málaga (Spain). **A.-** Male habitus (scale bar = 1 mm). **B.-** Aedeagus (scale bar = 100 µm). **C.-** Tergites IX and X (scale bar = 100 µm).

The limited data available suggests *A. balearicus* has a more southerly distribution that *A. vitalii* (Fig. 5). The record presented here represents the first for *A. balearicus* from mainland Spain.

Also shown in Fig. 5 is the distribution of confirmed *T. undatus* in AHEC. The three *T. undatus* points shown in Fig. 5 coincide with the *T. undatus* distribution displayed on iNaturalist (Observations · iNaturalist). Nearly all the records are contained within the region from Murcia in the southeast, to Valladolid in the north, down to the southwestern tip of Portugal.

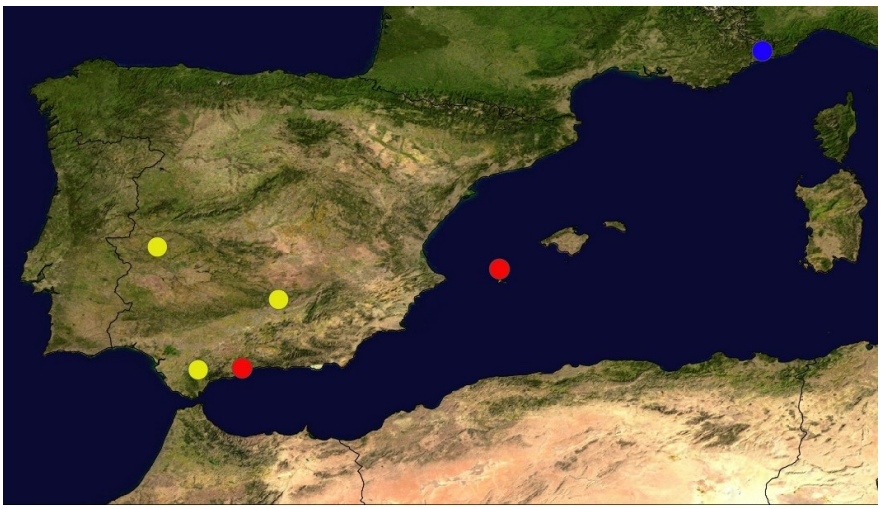

Fig. 5.- Distribution of records of:
● *A. balearicus* ● *A. vitalii* ● *T. undatus* (AHEC)

Discussion

It is very important to address the many poorly described species of Dermestidae to facilitate taxonomic and systematic discovery. Within the Attageninae, the description of *Attagenus tigrinus* (Fabricius, 1792) has been improved, providing the information required to synonymize *A. rossii* Ganglbauer, 1904 (Holloway & Herrmann, 2024). Also, a complete description of *A. trifasciatus* from Spain (Holloway *et al.*, 2026) provided the information required to split off *A. balearicus* and *A. vitalii*.

In the current study, *T. undatus* is thoroughly described because a number of other similar *Telopes* species are believed to exist in Spain, such as *T. civetta* Mulsant & Rey, 1868 and *T. escalerai* Mader, 1954. In order to study these species and others across the Iberian Peninsula and into north Africa, a solid description of *T. undatus* is required for comparative material.

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