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Anthrenus (s. str.) *amandae* (Coleoptera: Dermestidae): a new species from Mallorca, Spain

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A new species, *Anthrenus amandae* sp. nov., from Mallorca, Spain is described and illustrated. The species differs from likely confusion species on the basis of a combination of habitus morphometrics, antennal and male genitalia structure.

Key words: *Anthrenus pimpinellae*, complex, systematics, taxonomy

The family Dermestidae contains more than 1600 species worldwide (Háva 2018). Contained within the Dermestidae is the highly speciose genus *Anthrenus* Geoffroy, 1762. The precise number of *Anthrenus* spp. is unknown but is considerably more than 200 species. One of the reasons why the exact number of *Anthrenus* spp. is unknown is the existence of species complexes, such as the *Anthrenus pimpinellae* species complex. Kadej *et al.* (2007) examined variation within this complex from the Palaearctic and established 17 species plus one further sub-species. Since then Kadej & Háva (2011) have added a further three species to the Palaearctic *A. pimpinellae* species complex. Eight species from this complex are currently known from Spain (Anon 2018; Holloway *et al.* 2018).

Several species within the *A. pimpinellae* species complex were collected from Mallorca, Spain. Allocation of individuals to this species complex is straight-forward: species within the genus *Anthrenus* possess a single ocellus on the vertex, are covered in flattened scales rather than hairs and those within the *A. pimpinellae* complex carry a broad white band of scales across the width of the elytra. In the present paper a species new to the *A. pimpinellae* complex is described and compared with a possible confusion species.

Materials and methods

Dermestidae were collected during a trip to the Balearic island of Mallorca, 5–12 May 2018. Individuals were aspirated using a pooter from roadside Apiaceae, principally *Daucus carota* L. The site where collections were made are shown in Figure 1. Specimens were kept alive at 4°C whilst in Mallorca and transported back to the UK alive where the *A. pimpinellae* complex species were dissected whilst fresh to confirm identification. Characters used by Kadej *et al.* (2007) were used for identification, namely habitus pattern and structure, antennal shape and dimensions, abdominal segment IX structure, and aedeagus structure. All individuals were dissected under a Brunel BMSL zoom stereo LED microscope. Images were taken using a Canon EOS 1300D and fed through Helicon Focus 6-Pro focus stacking software. Habitus images were captured at x20. Images of abdominal segment IX, aedeagus and antennae were captured at x100 (unless stated) using a Brunel monocular SP28 microscope. Morphometrics were taken using DsCap.Ink software.

The following measurements were made:

Total length (TL)	linear measurement from anterior margin of the pronotum to the apex of elytra
Elytral length (EL)	linear distance from anterior margin (mid-point) to apex of elytra
Elytral width (EW)	linear transverse distance from mid-point of outer margin (values were obtained for each elytron separately and the values summed)
Aedeagus length (AL)	linear distance from anterior tip of aedeagus to tip of paramere
Abdominal segment IX length (AS)	linear distance from tip of posterior projections to middle of anterior end of sternite

Acronyms of depositories for type specimens:

GJHC private collection of Graham J. Holloway, Marlborough, UK
NHM Natural History Museum, London, UK
ONHM Oxford Natural History Museum, UK

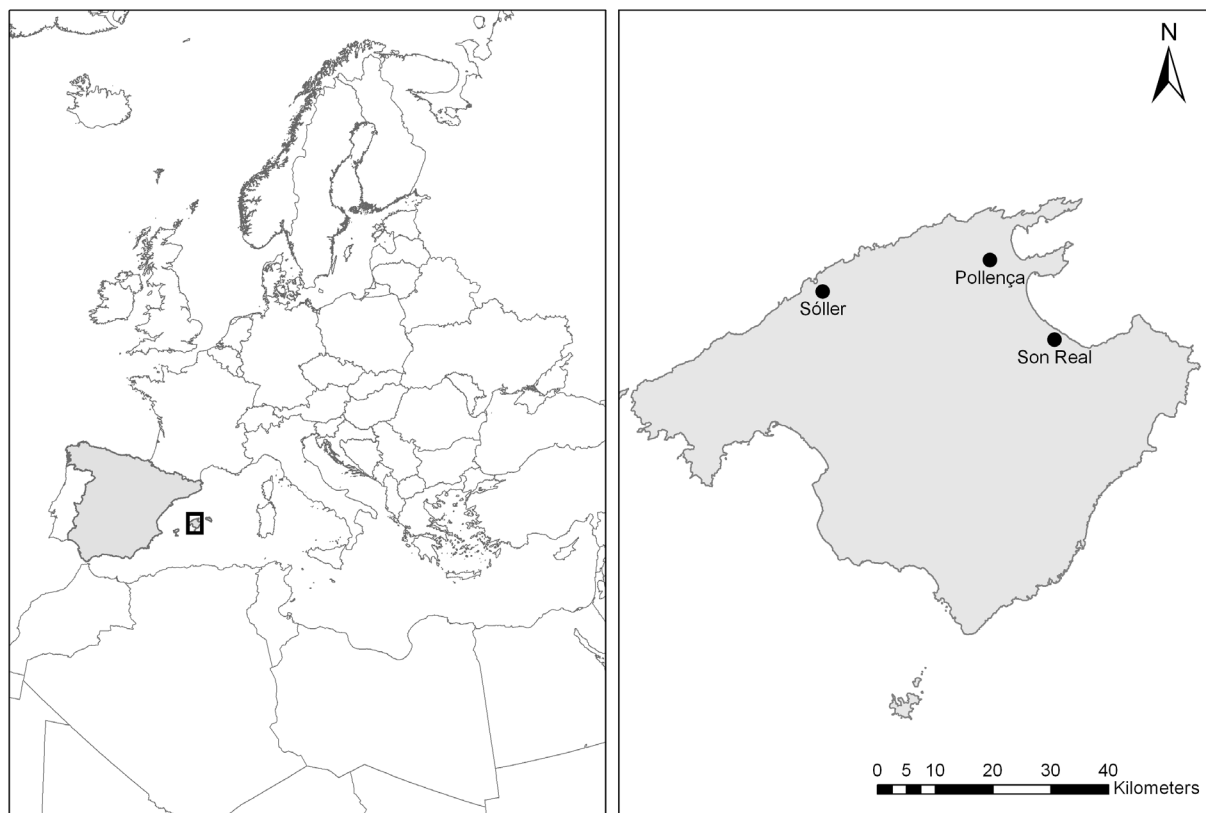


FIGURE 1. Map of Mallorca indicating position in the Mediterranean relative to Spain and the three collection sites.

Records

Four species from the *Anthrenus* (s. str.) *pimpinellae* complex were collected: *A.* (s. str.) *amandae* **sp. nov.**, *A.* (s. str.) *angustefasciatus* Ganglbauer, 1904, *A.* (s. str.) *dorsatus* Mulsant et Rey, 1868 (Holloway *et al.* 2018), and a recognisable sub-species *A.* (s. str.) *pimpinellae isabellinus* Küster, 1848. Male specimens were used for identification purposes. Only *A. amandae* is described here.

New records for *Anthrenus* (s. str.) *amandae* **sp. nov.**: Spain: Mallorca: Pollença (39° 85' 23" N, 03° 04' 00" E), 7th May 2018, G.J. Holloway and A. Callaghan, 5 males (including holotype) and 3 females. Spain: Mallorca: Son Real (39° 73' 74" N 3° 18' 25" E), 9th May 2018, G.J. Holloway, 2 males and 1 female.

Material examined: Holotype NHM (male) plus paratype female. Paratypes ONHM (male and female). Paratypes GJHC.

Description *Anthrenus amandae*. Body short and narrowly oval. Cuticle entirely black. Small, body length on average 2.716 mm (BL range 2.34 mm–2.94 mm). Body relatively parallel sided (average EW/EL = 0.88). The whole of the upper parts covered in flat, broadly oval, overlapping and mostly jet-black scales, with varying but small numbers of dark ginger coloured scales mostly distributed as a narrow line along the elytral suture and apex plus the posterior mid-point of the pronotum, with a whitish, slightly creamy coloured band of scales across both elytra, broad from the outer margin but narrowing considerably towards the elytral suture and upturned towards the small, black scutellum (Figure 2A). The pale spots on the pronotum pure white as are the spots on the elytra close to the apices. A higher proportion of the scales on the pronotum are ginger, especially towards the lateral margins. Whole of the body covered in dust, possibly originating from feathers, giving the animal a mauve hue; dust is lost when stored in dilute alcohol revealing glossy black scales. Eyes emarginated on the inner edge and covered in sparse, very short, black, pointed setae.

Pronotum widest at hind edge narrowing towards anterior. The abdominal ventrites I–V are covered in white scales, slightly yellowish towards the margins and apex (Figure 2B). Each ventrite carries a spot of black scales at outer margin and the black spot on ventrite 1 is set slightly in from the margin. Tibiae and tarsi brown, femora darker brown and scaled. Dorsal surface of tibiae slightly paler brown than the sides and ventral surface of the tibiae. Antenna with 11 antennomeres, the last three forming and broad, slightly asymmetric club (average AL/AW = 1.3) (Figure 2C).

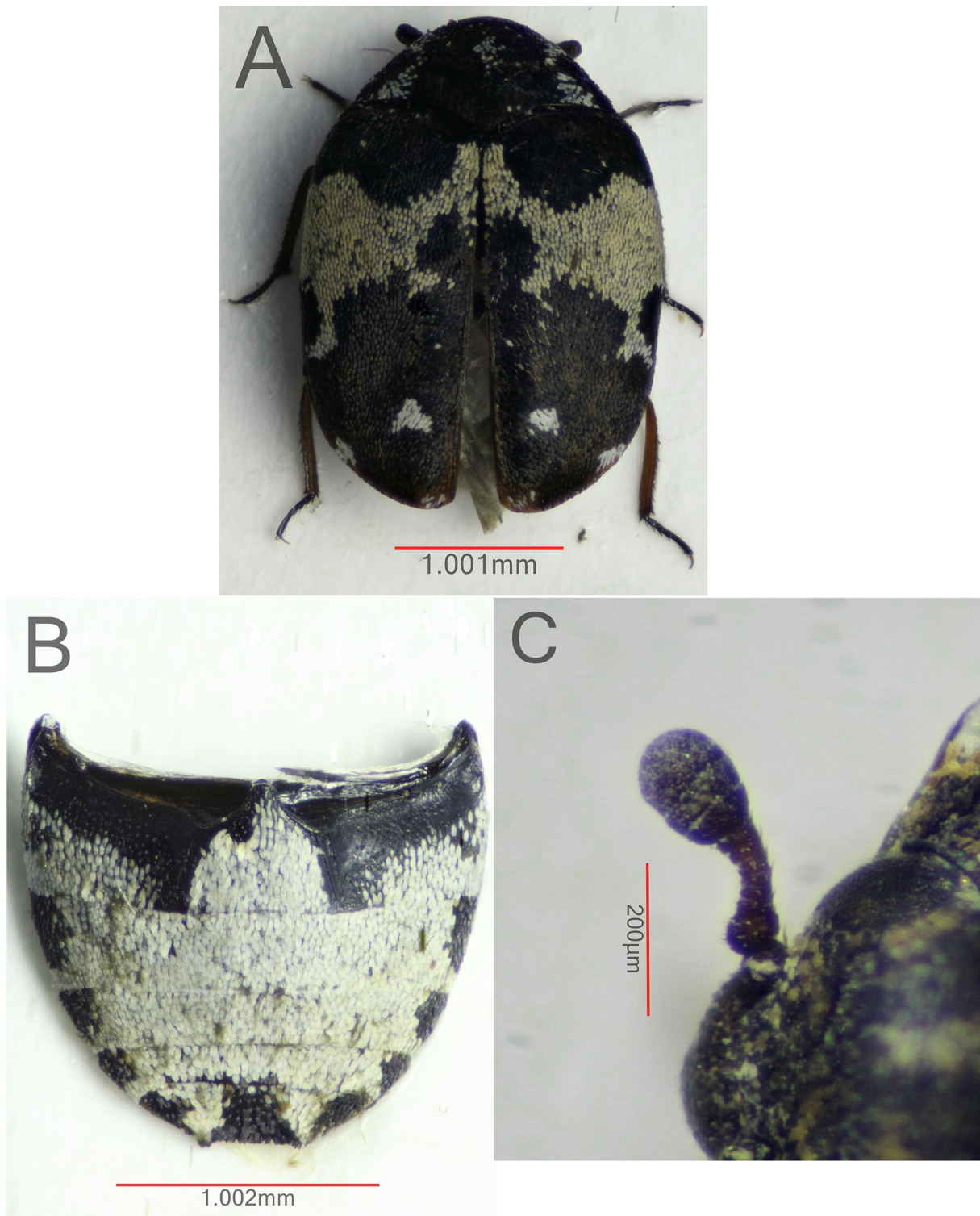


FIGURE 2. *Anthrenus* (s. str.) *amandae* sp. nov.: A) habitus (dorsal view), B) abdominal ventrites I–V, C) antenna.



FIGURE 3. *Anthrenus* (s. str.) *amandae* sp. nov.: A) aedeagus (dorsal view), B) aedeagus (ventral view), C) abdominal segment IX, D) abdominal segment IX (x200) showing setae on anterior stem.

Antennomeres I–VIII dark brown, the antennal club is darker, almost black. The terminal (XI) antennomere approximately the same length as antennomeres IX and X combined. Palpi are dark brown to black. Aedeagus (Figure 3A, B) short and relatively broad (average AL = 0.45 mm). Aedeagus short relative to body length (AL/BL = 0.17). Parameres broad and hook inwards at tip with a transparent membranous window in the body of the paramere. Median lobe is short, tapering to a relatively thick, blunt and slightly expanded point. Posterior extensions to abdominal segment IX widely spaced and each carry obvious ‘teeth’ (Figure 3C) at mid-point. Apex of anterior pointing stem of abdominal segment IX is rounded and bears relatively short, fine setae (Figure 3D). The setae are in loose pairs along lateral margin of stem. Transparent membrane between the posterior extensions continues back along stem and grades into yellow sclerotized membrane without forming a sharp boundary between the two. The average AS = 0.43mm so almost as long as the aedeagus. There was no difference in the body or antennal dimensions between males and females.

Differential diagnosis. The only species likely to be confused with *Anthrenus* (s. str.) *amandae* sp. nov. is *A.* (s. str.) *pimpinellae* Fabricius, 1775. The habitus size is similar although the extent of ginger scales is more restricted than *A. pimpinellae* as illustrated by Kadej *et al.* (2007). The antenna of *A. amandae* is much broader relative to length and has a larger terminal antennomere. The parameres of *A. amandae* are broader than *A. pimpinellae* and the structure of the median lobe differs from that illustrated by Kadej *et al.* (2007). Overall the aedeagus of *A. amandae* is much broader and squarer than *A. pimpinellae*. *Anthrenus amandae* abdominal segment IX is wider at the posterior end than *A. pimpinellae* and carries fewer setae (also arranged differently) than *A. pimpinellae* as illustrated by Kadej *et al.* (2007).

Name derivation. The species is named after Professor Amanda Callaghan who helped to collect the paratype series.

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