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new to Western Mediterranean

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## *Anthrenus corona* Holloway, 2021 (Coleoptera: Dermestidae: Megatominae), new to Western Mediterranean

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**Abstract:** *Anthrenus corona* Holloway, 2021 (Coleoptera: Dermestidae: Megatominae) is a scarce species known from Eastern Europe and parts of the Middle East. During an examination of some unidentified *Anthrenus* Geoffroy, 1762 held by the Naturalis Biodiversity Centre, Leiden, The Netherlands, two very large female specimens from Spain were noticed. The specimens were dissected. Images of habitus, antenna, and the sclerites within the bursa were imaged and compared with a female *A. corona* from Romania. The conclusion was that the Spanish specimens were also *A. corona*. A key to the *Anthrenus pimpinellae* (Fabricius, 1775) group species from Western Europe incorporating *A. corona* is presented.

**Key words:** Coleoptera, Dermestidae, *Anthrenus corona*, *Anthrenus pimpinellae* group species, bursa copulatrix, dissection, distribution, *Anthrenus goliath*, identification, *Anthrenus isabellinus*, taxonomy, Spain, Western Europe.

**Resumen:** *Anthrenus corona* Holloway, 2021 (Coleoptera: Dermestidae: Megatominae), nuevo para el Mediterráneo occidental. *Anthrenus corona* Holloway, 2021 (Coleoptera: Dermestidae: Megatominae) es una especie escasa conocida de Europa del Este y zonas de Oriente Medio. Durante el estudio de algunos *Anthrenus* Geoffroy, 1762 depositados en el Naturalis Biodiversity Centre, Leiden, Países Bajos, se detectaron dos ejemplares hembra muy grandes procedentes de España. Los ejemplares fueron diseccionados. Se tomaron imágenes del habitus, antena y escleritos de la bursa y se compararon con una hembra de *A. corona* de Rumanía. La conclusión fue que los ejemplares españoles eran también *A. corona*. Se presenta una clave para el grupo de especies de *Anthrenus pimpinellae* (Fabricius, 1775) de Europa occidental a la que se incorpora *A. corona*.

**Palabras clave:** Coleoptera, Dermestidae, *Anthrenus corona*, grupo de especies de *Anthrenus pimpinellae*, bursa copulatrix, disección, distribución, *Anthrenus goliath*, identificación, *Anthrenus isabellinus*, taxonomía, España, Europa occidental.

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### Introducción

The *Anthrenus pimpinellae* (Fabricius, 1775) group is now known to contain about 30 species (Holloway & Herrmann, 2025), but given the rate at which new species assigned to the group are being discovered, that number is likely to increase. About 19 species within the *A. pimpinellae* group were known by 2010 (Háva, 2025) and a new phase of discovery was started by Háva (2018). Several new species of the *A. pimpinellae* group have been discovered since Háva (2018) in Spain (*A. amandae* Holloway, 2019) or from regions bordering Spain (*A. chikatunovi* Holloway, 2020; *A. algeriensis* Holloway, 2024). During an examination of *Anthrenus* Geoffroy, 1762 specimens held by Naturalis Biodiversity Centre, Leiden, The Netherlands (ZMAN), two disproportionately large *A. pimpinellae* group individuals were noted, both collected in Spain. The only giant *A. pimpinellae* group species are found around the Eastern Mediterranean, *A. corona* Holloway, 2021, and northeastern Africa, *A. goliath* Saulcy in Mulsant & Rey, 1868. Only four specimens of *A. corona* have been reliably reported in the literature (Holloway, 2021; Pintilioaie *et al.*, 2025; Holloway *et al.*, 2025). The mean body length of these four specimens is 4.22 mm (Holloway *et al.*, 2025), considerably larger than any other *Anthrenus* species from Europe. A neotype

for *A. goliath* from Egypt was raised by Holloway & Herrmann (2023) with a body length of 3.9 mm. In the same paper a female, also from Egypt, was reported with a body length of 4.05 mm. These two individuals represent the only two specimens reliably reported in the literature, so following the current evidence the average size of *A. goliath* is about 4 mm. *Anthrenus goliath* has a narrow body profile whilst *A. corona* is more rounded. The two individuals in the ZMAN collection had rounded profiles. A study was carried out to establish whether the two giant ZMAN *Anthrenus* specimens from Spain were *A. corona* or a species new to science.

## Material and methods

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The specimens were relaxed in 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. Habitus images, both dorsal and ventral views, were captured at  $\times 20$  magnification using a Canon EOS 2000D camera mounted on the BMSL microscope. Images of the sclerites within the bursa copulatrix were captured at  $\times 100$  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  $\times 100$  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 DsCap.Ink software version 3.90. Measurements were taken as follows:

- Body length (BL): distance from anterior margin of pronotum to the apex of the elytra.
- Body width (BW): distance across widest part of abdomen.

Scale bars were added using ImageJ 1.53M (Schneider *et al.*, 2012).

## Results

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Two females were found:

Spain, Nagore (42.853, -1.376), 24.vi.1996, E.A.M. Speijer leg., and Spain, Huesca, Ordesa-Torla (42.628, -0.112), 8.vii.1974, R. Batten leg., (BL = 4.25 and 4.5 mm, BW = 3.05 and 3.25, respectively, BW/BL = 0.72 in both cases).

Both specimens were broader than *A. goliath* (BL < 0.7, Holloway & Herrmann, 2023). Figs. 1 and 2 illustrate habitus elements of the Spanish specimens (Fig. 1) compared with an *A. corona* female from Romania (Fig. 2). Although the Spanish insects had paler orange scales, the distributions of white scales across the head and pronotum are similar (Figs. 1a and 2a). The habitus colour patterns were similar (Figs. 1b and 2b), although the integument towards the elytral apices was bright red in the Spanish insects, reddish but not as bright in the Romanian specimens. There was little to choose between the ventrites (Figs. 1c and 2c), both being covered in overlapping white scales with a similar distribution of similar shaped patches of black marginal scales.

The Spanish specimens had bright red, 11-segmented antennae (Fig. 3a) (and legs) with a well-defined, three segmented antennal club. All three antennomeres forming the club were shorter on the straight ventral margin than the convex dorsal margin producing an asymmetric club. *Anthrenus corona* from Romania had an identically shaped, red antenna (Fig. 4a). The bursa copulatrix contained two cupped sclerites (Fig. 3b), with plates extending up from the top of each sclerite. The Romanian female had identically shaped sclerites (Fig. 4b).

The conclusion from the examination is that the specimens from Spain are *A. corona*.

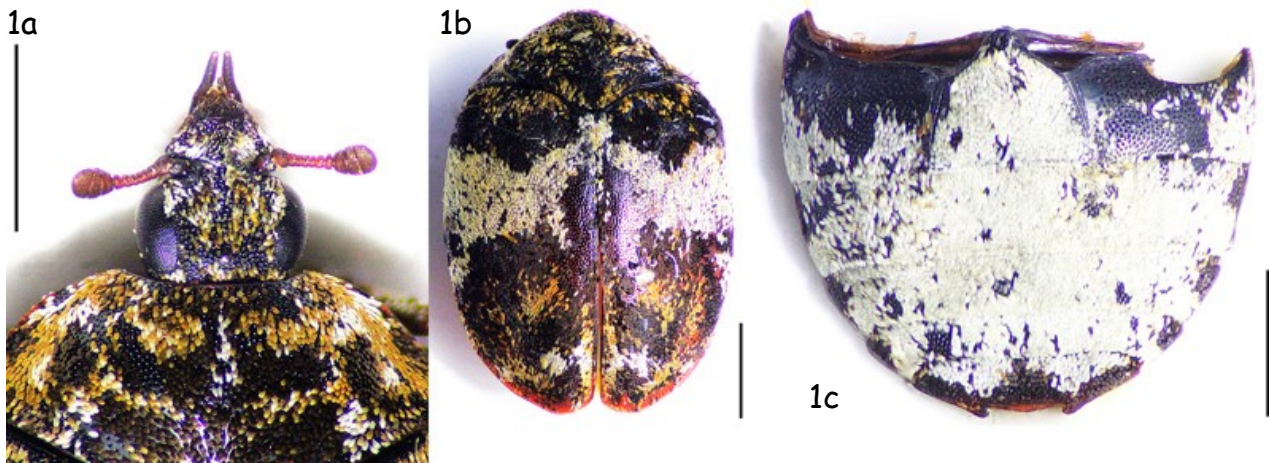


Fig. 1. - Spanish specimen. 1a. - Head and pronotum. 1b. - Habitus dorsal aspect. 1c- Ventrites. Scale bars = 1 mm in all cases.

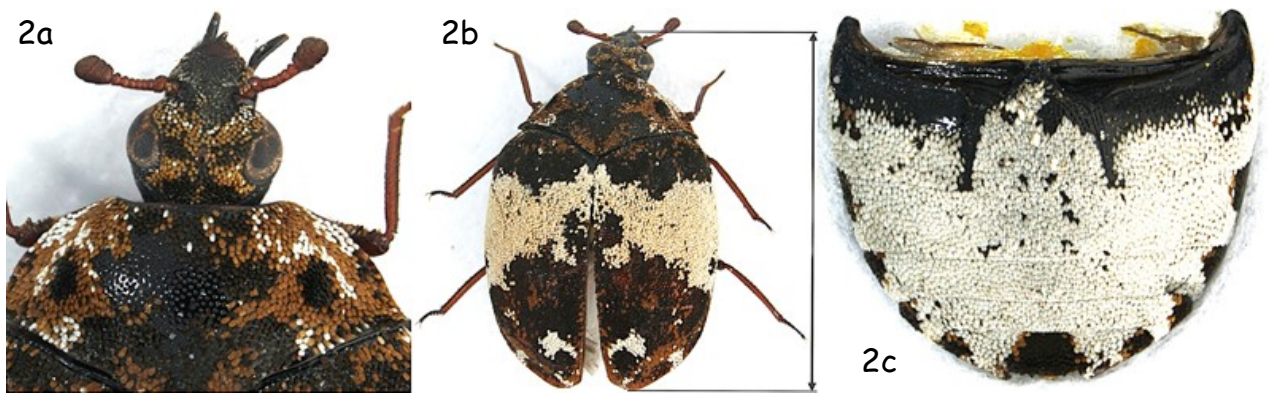


Fig. 2. - Romanian female. 2a. - Head and pronotum. 2b. - Habitus dorsal aspect. Arrow = 4.369 mm long. 2c- Ventrites.

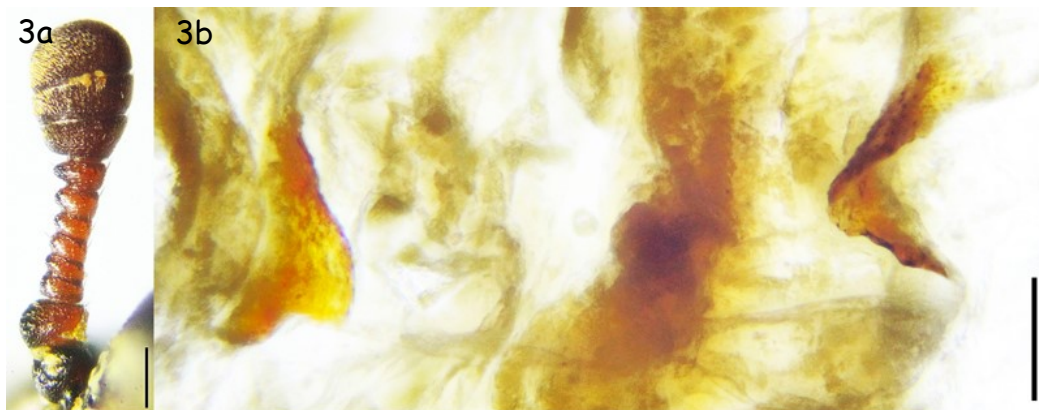


Fig. 3. - Spanish specimen. 3a. - Antenna. 3b. - Sclerites within bursa copulatrix. Scale bars = 100 µm in both cases.



Fig. 4. - Romanian female specimen. 4a. - Antenna. 4b. - Sclerites within bursa copulatrix.

## Discussion

*Anthrenus corona* is most likely a scarce species because it is very noticeable in a collection as a result of its size. Holloway *et al.* (2025) described the species as 'disproportionately large, not simply a specimen towards the larger end of a range' (Fig. 5). Fig. 5 shows three specimens, an *A. mesopotamicus* Háva, 2001 BL = 2.3 mm and *A. indicus* Kadej, Háva & Kalík, 2007 BL = 3.2 mm encompassing the size range of most *Anthrenus* species, compared with an *A. corona*. Fig. 5 shows why *A. corona* is described here as a 'giant'. *Anthrenus isabellinus* Küster, 1848 is very common in Spain and some specimens can be quite large reaching 3.6 mm (Holloway *et al.*, 2020) but few exceed this size, and none have been found by the author reaching 4 mm. Despite being noticeable, only four *A. corona* have been previously reported, all from Eastern Europe and the Middle East, including Turkey (Holloway, 2021), Romania (Pintilioaie *et al.*, 2025), Armenia and Greece (Holloway *et al.*, 2025). Finding two specimens about 2000 kms west of the supposed distribution focus (Holloway *et al.*, 2025) is unexpected.



Fig. 5. - Three species from the *Anthrenus pimpinellae* group shown at the same scale to illustrate the size of *A. corona*. 5a. - *A. mesopotamicus* (BL = 2.3 mm). 5b- *A. indicus* (BL = 3.2 mm). 5c. - *A. corona* (BL = 4.5 mm).

Along with the external similarities, identification was confirmed through the two characteristically shaped sclerites within the bursa copulatrix. Sclerites within the bursa copulatrix is common in some *Anthrenus* subgenera, such as *Anthrenodes* Chobaut, 1898 (Holloway & Herrmann, 2024a; Holloway & Pinniger, 2024) and *Florilinus* Mulsant & Rey, 1868 (Adams, 1988), but they are rarely found in subgenus *Anthrenus* species, the exception being *A. muehlei* Holloway & Herrmann, 2024. Sclerites in the bursa copulatrix are so unusual in subgenus *Anthrenus* that the female was used to define the species *A. muehlei* (Holloway & Herrmann, 2024b).

Holloway (2024) reviewed the *A. pimpinellae* group species occurring in Spain. There was good evidence for five species: *A. amandae* (Mallorca only, Holloway, 2019), *A. angustefasciatus* Ganglbauer,

1904 (ubiquitous in Spain, Holloway & Herrmann, 2024c), *A. chikatunovi* (Pyrenees region, Holloway 2020), *A. isabellinus* (ubiquitous in Spain, Holloway et al., 2025), and *A. munroi* Hinton, 1943 (common across Spain, Holloway & Herrmann, 2024c). *Anthrenus corona* brings that number to six. Holloway & Cañada Luna (2022) produced a key to differentiate among the *A. pimpinellae* group species from Western Europe (NB not necessarily Spain), reproduced here using just external characteristics and extended to include *A. corona*. Also included in the key is *A. valenzuelai* Holloway & Herrmann, 2024 which has a Western Mediterranean distribution (Italy, northwestern Africa) (Holloway & Herrmann, 2024d) and might be reliably recorded in Spain in the future (Holloway, 2024). Finally, *A. oceanicus* Fauvel, 1903 is included in the key (see Annex I). *Anthrenus oceanicus* is essentially a tropical species (Holloway, 2025) but as a pest of stored commodities, it has the potential to reach Spain in shipments of food products (Holloway, 2025, provides images of *A. oceanicus*).

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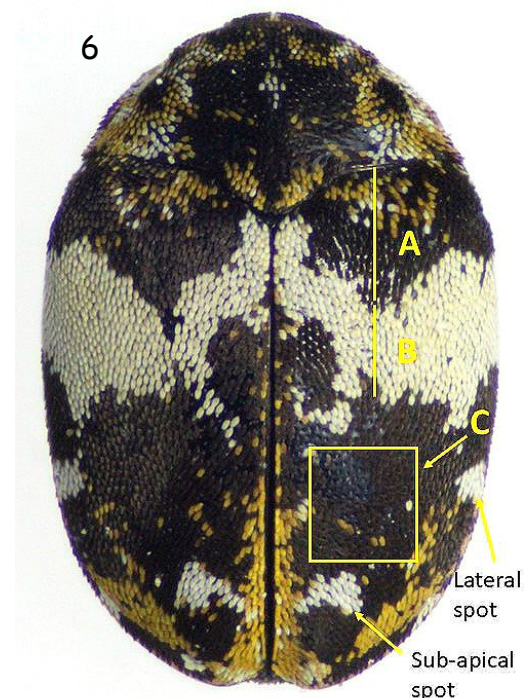


Fig. 6.- Characters used in the identification key to Western European *Anthrenus pimpinellae* group species.

Annex I. - Key to Western European *Anthrenus pimpinellae* group species

Refer to Fig. 6 for explanations of A, B, C, lateral spot and sub-apical spot.

- 1 Small, very round species, with scales on white fascia reaching elytral base at two points on each elytron..... *A. oceanicus*  
 - Scales of white fascia reach up to meet elytral base only at scutellar shield..... 2
- 2 Body length usually greater than 3.9 mm..... *A. corona*  
 - Body length usually less than 3.9 mm..... 3
- 3 B usually longer than A.  
 Additional features: lateral spots broadly connected to band, apical spots round to broadly elongated, many orange scales in area C, ventrite 1 black spot not meeting lateral margin, antennal club broad, teardrop shape (not narrow spindle shape)..... *A. isabellinus*  
 - B usually shorter than A..... 4
- 4 Lateral spot not (or occasionally very weakly) connected to band..... 5  
 - Lateral spot clearly connected to band..... 7
- 5 Area C with few orange scales, and those that are present do not line up.  
 Additional features: ventrite 1 black spot meets lateral margin, underside scruffy, off-white..... *A. pimpinellae*  
 - Area C with many orange scales often forming anterior posterior lines..... 6
- 6 Inner half of band very narrow, and often with a small break across the band.  
 Additional features: lateral spot often very small or vague and distant from band, ventrite 1 black spot meets lateral margin, broad across shoulders..... *A. angustefasciatus*  
 - Band broader and never broken.  
 Additional features: lateral and sub-apical spots large, usually roundish, and obvious, ventrite 1 black spot not meeting lateral margin, flat-topped and vase-shaped antennal club..... *A. delicatus*
- 7 Antennal club narrow, spindle shaped..... *A. valenzuelai*  
 - Antennal club broad, cubic or rounded..... 8
- 8 Very few orange scales in Area C.  
 Additional features: ventrite 1 black spot not meeting lateral margin, few orange scales on pronotum so white spots on pronotum very obvious, cubic antennal club..... *A. amandae*  
 - Orange scales in Area C..... 9
- 9 Apical spots usually reduced to very narrow, sometimes vague, lines often forming anterior pointing chevrons.  
 Additional features: more orange scales in Area C often tending to form lines, lateral spot strongly connected with band, ventrites 1 black spot not meeting lateral margin, antennal clubs large and rounded..... *A. munroi*  
 - Apical spots round or slightly elongated but not very narrow.  
 Additional feature: cubic antennal club..... *A. chikatunovi*