

# *Dermestes pardalis* Billberg, 1808 (Coleoptera: Dermestidae): lectotype designation, new synonymy and proposed similar new species

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**Abstract:** A lectotype is designated for *Dermestes pardalis* Billberg, 1808 (Coleoptera: Dermestidae) based on the only known type specimen preserved in the Naturhistoriska Riksmuseet, Stockholm, Sweden. The designation is made to resolve longstanding taxonomic confusion surrounding the identity of the species and its distinction from *Dermestes hankae* Háva, 1999. Examination of type and non-type material from multiple collections shows that the diagnostic characters previously used to separate *D. hankae* fall within the variation observed in *D. pardalis*. There is also no difference between any of the aedeagi examined here and the aedeagus of *D. hankae* holotype, but none of them resembles the illustration provided by Háva in the original description of *D. hankae*. Consequently, *D. hankae* is proposed as a junior synonym of *D. pardalis*. A new species resembling *D. pardalis* is described as *Dermestes havai* sp. nov.

**Key words:** Coleoptera, Dermestidae, *Dermestes pardalis*, *Dermestes hankae*, *Dermestes havai*, lectotype, taxonomy, synonymy, description.

**Resumen:** *Dermestes pardalis* Billberg, 1808 (Coleoptera: Dermestidae): designación de lectotipo, nueva sinonimia y propuesta de nueva especie similar. Se designa un lectotipo para *Dermestes pardalis* Billberg, 1808 (Coleoptera: Dermestidae) basado en el único ejemplar tipo conocido conservado en el Naturhistoriska Riksmuseet de Estocolmo, Suecia. La designación se realiza para resolver la frecuente confusión taxonómica en torno a la identidad de la especie y su diferenciación de *Dermestes hankae* Háva, 1999. El examen de material tipo y no tipo de múltiples colecciones muestra que los caracteres diagnósticos previamente usados para separar *D. hankae* entran dentro de la variación observada en *D. pardalis*. Tampoco hay diferencia entre ninguno de los edeagos examinados aquí y el edeago del holotipo de *D. hankae*, pero ninguno se parece a la ilustración proporcionada por Háva en la descripción original de *D. hankae*. En consecuencia, *D. hankae* se propone como sinónimo más moderno de *D. pardalis*. Una nueva especie parecida a *D. pardalis* es descrita como *Dermestes havai* sp. nov.

**Palabras clave:** Coleoptera, Dermestidae, *Dermestes pardalis*, *Dermestes hankae*, *Dermestes havai*, lectotipo, taxonomía, sinonimia, descripción.

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## Introduction

The species *Dermestes pardalis* Billberg, 1808 (Coleoptera: Dermestidae) was originally described from outside of Europe. The synonymous species *Dermestes thoracicus* Dejean, 1821 (nn) (described by Gené,

1836) was first noted from southern France. Relatively recently, a new species was described from southern France, namely *Dermestes hankae* Háva, 1999. This species is morphologically very similar to *D. pardalis*. A longstanding taxonomic confusion surrounding the identity of *D. pardalis* and its distinction from *D. hankae* exists, resulting in numerous inconsistent identifications in collections. The designation of a lectotype for *D. pardalis* is necessary to resolve this problem. The only known type specimen of *D. pardalis* is preserved in the Naturhistoriska Riksmuseet, Stockholm, Sweden.

## Materials and methods

The material examined consisted of photographs of *D. pardalis* and *D. hankae* specimens from the following collections:

AHEC = Andreas Herrmann's Private Collection, Stade, Germany

MHNG = Museum d'Histoire Naturelle, Genève, Switzerland

MZHF = Finnish Museum of Natural History, Helsinki, Finland

NHMB = Naturhistorisches Museum, Basel, Switzerland

NHMR = Natural History Museum, Rotterdam, The Netherlands

NHMUK = Natural History Museum, London, United Kingdom

NHRS = Naturhistoriska Riksmuseet, Stockholm, Sweden

OUMNH = Hope Entomological Collections, University Museum, Oxford, United Kingdom

RMNH = Naturalis Biodiversity Center, Leiden, The Netherlands

ZMAS = Zoological Museum, Academy of Sciences, St.-Petersburg, Russia

The examination of the specimens was conducted via images, with the exception of one specimen on location. The pattern on the abdomen and aedeagal structure were used as the main traits for identification and the colour of the antennae as the secondary trait. Male genitalia were only assessed when visible. One specimen from MHNG, two specimens from RMNH and four specimens from AHEC were dissected and the aedeagus of one specimen from MZHF was protruding from its abdomen.

## Taxonomy

### *Dermestes pardalis* Billberg, 1808

= *Dermestes thoracicus* Dejean, 1821 (nom. nud.)

= *Dermestes thoracicus* Gené, 1836

= *Dermestes hankae* Háva, 1999, syn. nov.

Lectotype (here designated): ♀, preserved in the collections of the Naturhistoriska Riksmuseet, Stockholm, Sweden (NHRS), catalogue number NHRS-JLKB000027462. Type-locality: extra Europam.

The specimen bears the following label data: "*Pardalis*. Billb: Syn. Ins. 25. au *D. tessellatus*. Herbst. [handwritten]".

This specimen is the only known type of *D. pardalis* Billberg, 1808 (Figs. 1 & 2). In order to ensure nomenclatural stability and to clarify the taxonomic identity of this species, particularly in relation to *D. hankae*, this specimen is hereby designated as the lectotype, in accordance with Article 74 of the International Code of Zoological Nomenclature (ICZN, 1999). The lectotype is designated here to fix the identity of the nominal species. The designation of a neotype is unnecessary, as original type material is extant.

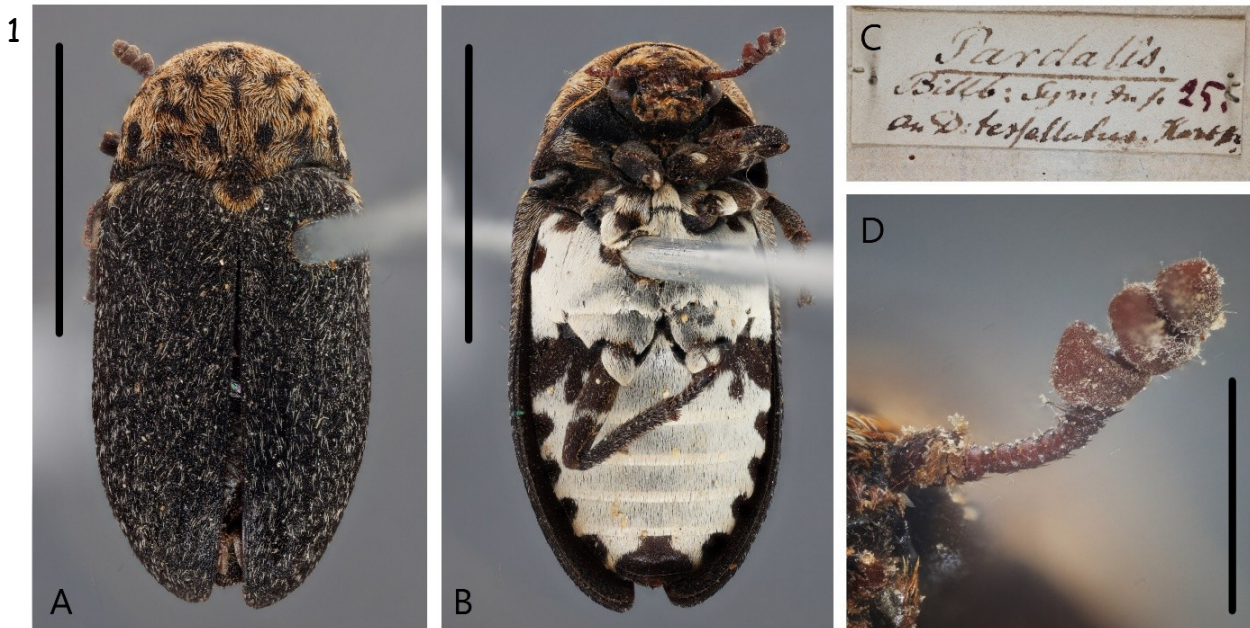


Fig. 1.- Morphology of the designated lectotype of *Dermestes pardalis* (NHR5-JLKB000027462). A.- Habitus dorsal aspect (scale bar = 5 mm). B.- Habitus ventral aspect (scale bar = 5 mm). C.- Label data. D.- Antenna (scale bar = 1 mm). Photographed by Maria Alejandra Álvarez Covellii (©2026 Naturhistoriska Riksmuseet). Original photos cropped and processed into collage. Made available by NHR5 under the CC-BY-4.0 license.

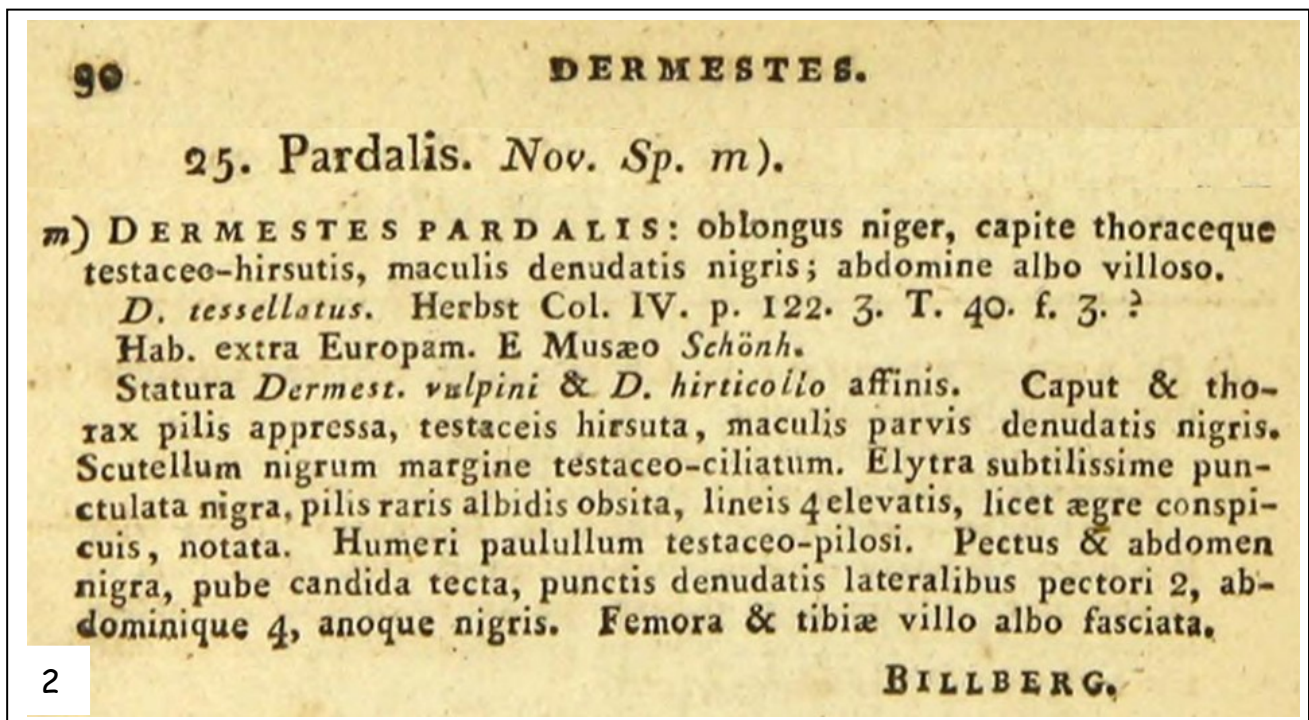


Fig. 2.- The original species description of *Dermestes pardalis* by Billberg in Schönherr (1808).

Because the lectotype is female, an externally similar male non-type specimen (ZMA.INS.5119699) deposited in a publicly accessible collection (RMNH) from a similar locality as the lectotype (Algeria = outside of Europe) is here used to illustrate male morphology of the species to complement the lectotype (Fig. 3).

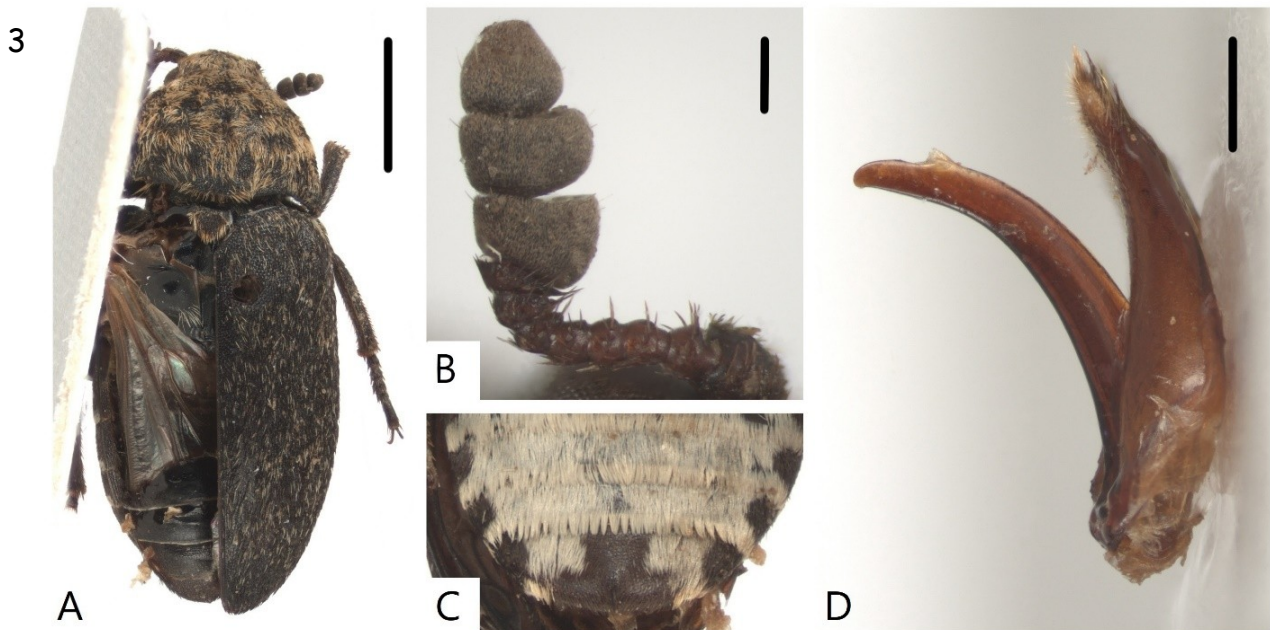


Fig. 3.- Morphology of male *D. pardalis* based on non-type material from Algeria (ZMA.INS.5119699). A.- Habitus dorsal aspect (scale bar = 2 mm). B.- Antenna (scale bar = 0.2 mm). C.- Ventral pattern. D.- Aedeagus (scale bar = 0.5 mm). Photographed by Yvonne van Dam on behalf of RMNH.

***Dermestes havai* sp. nov.**

= *Dermestes pardalis* sensu Háva, 1999 (misidentification)

Holotype (here designated): ♂ (Fig. 4), preserved in the collections of the Naturalis Biodiversity Center, Leiden, The Netherlands (RMNH), catalogue number ZMA.INS.5119697. Type-locality: Algeria.

The specimen bears the following label data: "*Dermestes pardalis* Küst. [handwritten] Emm. Reiter [printed] \ Algeria Reitter. [printed] \ *Dermestes* [printed] *pardalis* Bill. [handwritten] Jiří Háva det. [printed] 00 [handwritten] \ +1 [handwritten] \ ZMA.INS.5119697 [printed]".



Fig. 4.- Morphology of the designated holotype of *Dermestes havai* from Algeria (ZMA.INS.5119697). A.- Habitus ventral aspect (scale bar = 2 mm). B.- Antenna (scale bar = 0.2 mm). C.- Ventral pattern. D.- Aedeagus (scale bar = 0.5 mm). Photographed by Yvonne van Dam on behalf of RMNH.

Specimens previously misidentified as *Dermestes pardalis* by Háva (1999) are here transferred to *Dermestes havai* sp. nov.

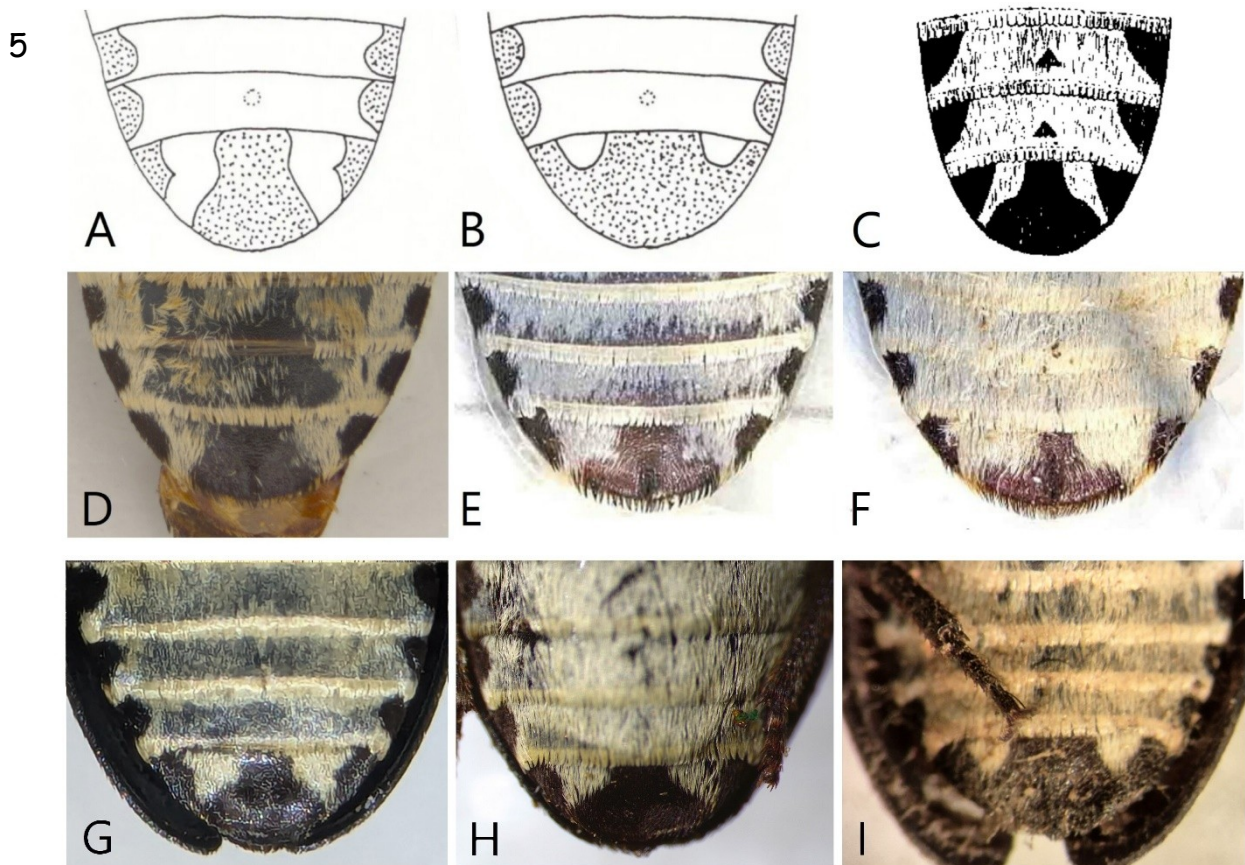
The new species name is proposed to avoid confusion with *D. pardalis* Billberg, 1808. The species is named in honour of Jiří Háva, who originally noted that two different species were present. The specimen illustrated is hereby designated as the holotype of *Dermestes havai* sp. nov. in accordance with Article 73 of the International Code of Zoological Nomenclature (ICZN, 1999). The distribution of *D. havai* is currently confirmed only from Algeria.

The examined material consists of the lectotype of *D. pardalis* as designated above (NHRS: outside of Europe), the holotype of *D. havai* as designated above (RMNH: Algeria, leg. Reitter), the holotype of *D. hankae* (MHNG: Camargue, France, leg. Fleischer) and 36 additional specimens of non-type material from France, Spain, Morocco and Algeria (see Material and Methods for collection abbreviations):

- AHEC: Algiers, Algeria, 17 v 1956, leg. Morawitz (1); Granucillo de Vidriales, Zamora, Spain, 4-7 viii 1998, leg. Bahillo (4); Santa Elena, Jaén, Spain, 15 vii 2005, leg. Jover (1); Ciudad Real, Spain, 29 vii 2015, leg. Alguacil (1).
- MZHF: Algeria, leg. Niklander (2); Atlas Mountains, Amismiz, Morocco, 24-26 v 1926, leg. Lindberg (1); Sierra Morena, Santa Elena, Spain, 4-8 iv 1926, leg. Lindberg (1); southern France (1); France (1).
- NHMB: Batna-Konstantine, Algeria, leg. Schaposchnikoff (1); Vendres, France (1); Avignon, France, leg. Puel (1).
- NHMR: Delta Llobregat, Spain, 19 vi 1948, leg. Volkhemer (1).
- NHMUK: Spain (1).
- OUMNH: Montpellier, France (1).
- RMNH: Chellala, Algeria, 1895, leg. de Vauloger (1); Spain, leg. Jenison (1); France, leg. Desbroch (1).
- ZMAS: Algiers, Algeria (4); southern France (10).

## Results

The lectotype specimen corresponds in all observable characters with specimens previously identified as *D. hankae*. This suggests that the type material of *D. pardalis* may not have been examined by Háva and was therefore unlikely to have served as a primary point of comparison. Characters proposed and illustrated by Háva (1999) to distinguish *D. hankae* from *D. pardalis* include the pattern on the last abdominal sternite (Figs. 5A & 5B). However, Háva's illustration does not correspond to the earliest depiction of the ventral pattern of *D. pardalis*, illustrated by Lepesme in 1949 (Fig. 5C). Instead, Lepesme's illustration corresponds to Háva's illustration of *D. hankae*. The depiction of the ventral pattern of *D. pardalis* from Lepesme (1949) is accompanied by the text (translated from French, author's translation): 'Last sternite with only two oblique subtriangular bands of white pubescence' (Fig. 6). No other literature up to 1999 describes the ventral pattern on the last abdominal sternite of *D. pardalis*, except for Billberg in Schönherr (1808) whom mentioned the apex being black (Fig. 2) and this trait also applies to *D. hankae*. The images of examined material in Fig. 5 show considerable variation and it is likely that the patterns overlap and are unreliable. The majority of examined specimens have a ventral pattern that do not correspond to either one of Háva's illustrations and appear to be an intermediate pattern. However, the observed ventral patterns do correspond with the assigned lectotype of *D. pardalis* (Fig. 1B), the holotype of *D. hankae* (Fig. 5D) and non-type specimens identified as *D. hankae* by Háva (Figs. 5E & 5F).



**Fig. 5.** - Illustrations of ventral patterns: **A.** - *Dermestes hankae* by Háva (1999). **B.** - *Dermestes pardalis* by Háva (1999). **C.** - *D. pardalis* by Lepesme (1949). Images of ventral patterns: **D.** - *D. hankae* holotype. **E.** - *D. hankae* (det. by Háva in 2002) from Granucillo de Vidriales, Zamora, Spain. **F.** - *D. hankae* (det. by Háva in 2003) from Algiers, Algeria. **G.** - *D. pardalis* from Delta Llobregat, Spain. **H.** - *D. pardalis* from Montpellier, France. **I.** - *D. pardalis* from southern France. Fig. 5D is photographed by Giulio Cuccodoro on behalf of MHNG. Fig. 5H is photographed by Amoret Spooner on behalf of OUMNH. Fig. 5I is photographed by Mark Volkovitsh on behalf of ZMAS.

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28. ***D. pardalis*** BILLBERG, 1808, in SCHÖNHERR, Syn., I, 2, p. 90. — *thoracicus* GENÉ, 1836, Mem. Ac. Torino, XXXIX, p. 182, t. 1, f. 13.

Long. : 7-11 m. — Forme générale de *dimidiatus* Stev., mais plus convexe et le prothorax plus régulièrement arrondi en avant. Noir, la tête et le pronotum mouchetés de fascies irrégulières de pubescence jaune-doré. Une ceinture de poils semblables autour de l'écusson. Pubescence élytrale peu dense, composée de poils noirs et de poils blancs, ces derniers clairsemés. Métépisternes et quatre premiers sternites abdominaux couverts d'une épaisse pubescence blanche, les premiers avec une tache noire carrée à l'angle antéro-interne et une autre couvrant le tiers médian du bord externe, les seconds avec une tache latérale triangulaire noire. Dernier sternite avec seulement deux bandes obliques subtriangulaires de pubescence blanche (fig. 33). Fémurs étroitement annelés de blanc un peu en avant de leur tiers distal.

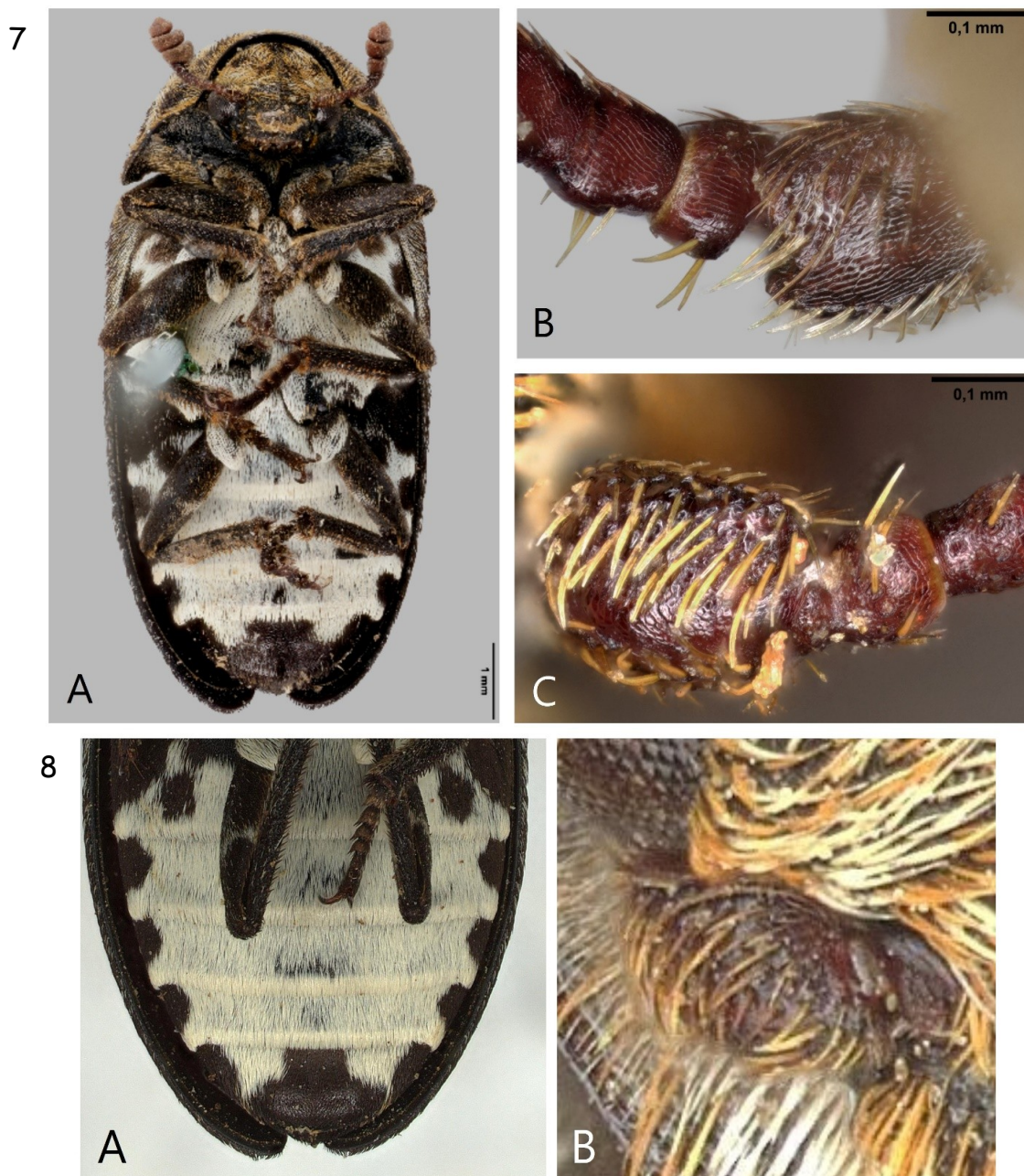
♂. Comme chez *undulatus* Brahm.

DISPERSION GÉOGRAPHIQUE. — Bassin méditerranéen occidental.

**Fig. 6.** - The species description of *Dermestes pardalis* by Lepesme (1949).

Seven of the 39 examined specimens exhibited a pattern on the last abdominal sternite resembling Háva's illustration of *D. pardalis* (Figs. 5B & 5I). However, there is no certainty that the pattern might appear this way because of the setae being worn. Háva (1999) also states that the antenna of *D. pardalis* is entirely brown and that *D. hankae* has a black first segment. Fig. 7 shows a

specimen with a ventral pattern that Háva (1999) designated as *D. pardalis*. Instead of entirely brown, the first antennal segment of this specimen appears black posteriorly and brown anteriorly. Similar coloured first antennal segments can be found in specimens with a ventral pattern that Háva (1999) designated as *D. hankae* (Fig. 8). No correlation between the coloration of the first antennal segment and the pattern on the last abdominal sternite was found. No literature regarding *D. pardalis* up to 1999 contains any description of antennal colour or the shape of the aedeagus (Billberg in Schönherr, 1808; Gené, 1836; Lepesme, 1949), so it is not clear why Háva chose to split *D. hankae* from *D. pardalis* based on ventral pattern, antenna colour and aedeagus shape, while simultaneously opposing to the existing description of the ventral pattern of *D. pardalis* from Lepesme (Figs. 5C & 6) by doing so.

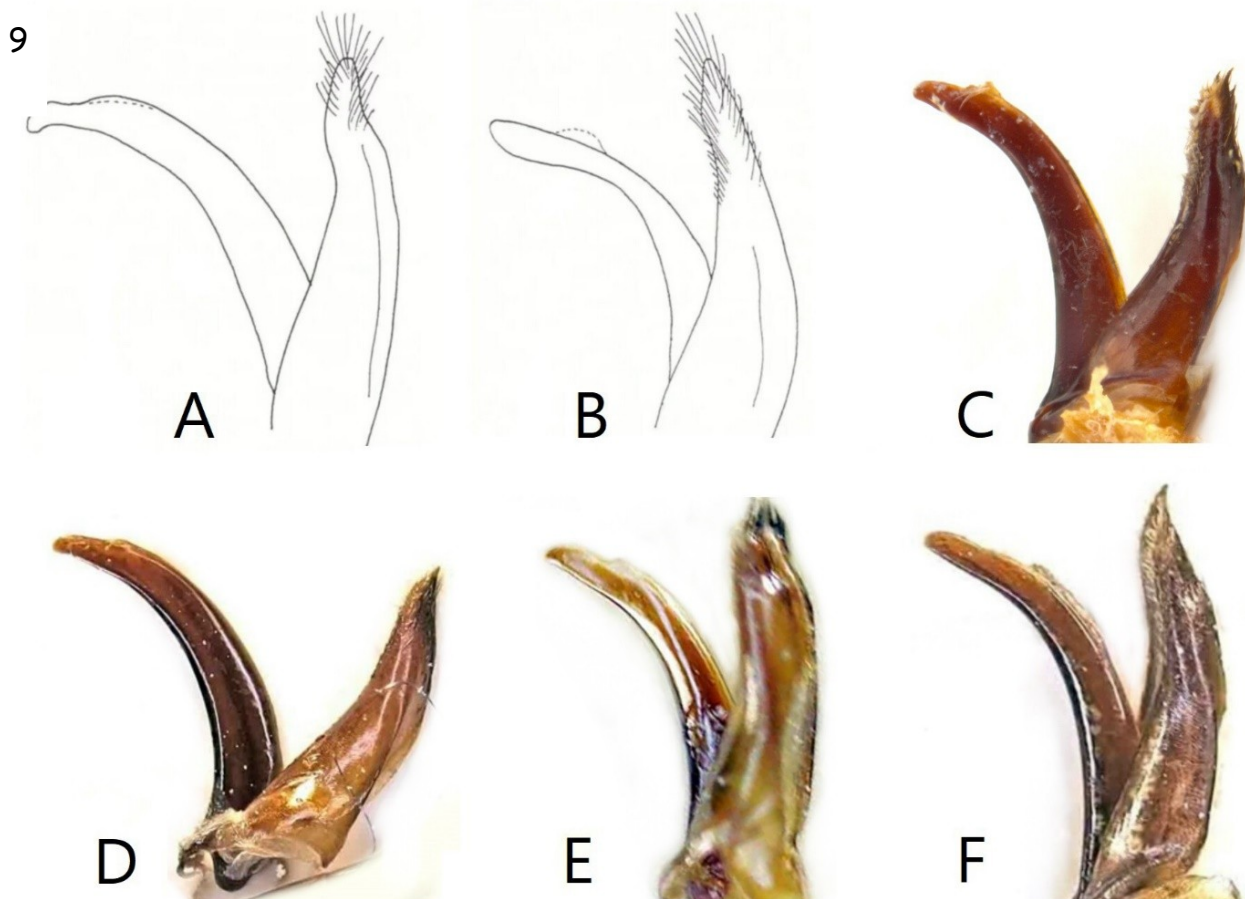


**Fig. 7.** - *D. pardalis* (GAC.40910) from Algeria. **A.** - Habitus ventral aspect (scale bar = 1 mm). **B.** - Dorsal view of the first antennal segment (scale bar = 0.1 mm). **C.** - Posterior view of the first antennal segment (scale bar = 0.1 mm). Photographed by Pekka Malinen (©2026 Luomus). Made available by MZHF under CC-BY-4.0 license.

**Fig. 8.** - *D. pardalis* from Vendres, France. **A.** - Ventral pattern. **B.** - First antennal segment. Photographed by Matthias Borer on behalf of NHMB.

The species *D. pardalis* does not occur in France according to the 'World Catalogue of the Dermestidae (Coleoptera)' by Háva (2025), however this does not align with the fact that *D. thoracicus* Dejean, 1821 was first noted from southern France. *Dermestes hankae* was also described from southern France, which supports their synonymy. Lepesme (1949) mentions the distribution of *D. pardalis* being the western Mediterranean Basin (Fig. 6). This would suggest that the distribution of *D. pardalis* is from southern France to Tunisia. In literature up to 1999, the species *D. pardalis* is specifically noted to be present in southern France, Spain, Portugal and Algeria (Lucas, 1847; Fuente, 1929). The localities of the examined material are consistent with the localities of *D. pardalis* and its synonyms as described in literature, including the locality of the newly assigned lectotype of *D. pardalis*.

Fig. 9 shows the illustrations from Háva (1999) depicting the aedeagi of *D. hankae* and *D. pardalis* and a selection of aedeagi from specimens with an externally similar appearance to *D. pardalis* lectotype (Fig. 1B) available for study, including *D. hankae* holotype. None of the examined aedeagi have a hooked tip as shown in Fig. 9A, including *D. hankae* holotype (Fig. 9C) and non-type material identified as *D. hankae* by Háva (Figs. 9E & 9F), or an expanded tip as shown in Fig. 9B. All the aedeagi, including the aedeagus of the male selected to complement the *D. pardalis* lectotype (Fig. 3D), show a striking resemblance to *D. hankae* holotype. The picture is confused, but given that all the aedeagi are the same and none of them resembles the illustrations by Háva (1999), the conclusion has to be that there is only one species. Therefore, by virtue of priority, *Dermestes hankae* Háva, 1999 is here considered a junior synonym of *Dermestes pardalis* Billberg, 1808.



**Fig. 9.** - Illustrations of aedeagi by Háva (1999). **A.** - Designated as *Dermestes hankae*. **B.** - Designated as *Dermestes pardalis*. Images of aedeagi. **C.** - *D. hankae* holotype. **D.** - *D. hankae* (det. by Herrmann in 2008) from Santa Elena, Jaén, Spain. **E.** - *D. hankae* (det. by Háva in 2002) from Granucillo de Vidriales, Zamora, Spain. **F.** - *D. hankae* (det. by Háva in 2003) from Algiers, Algeria. Fig. 9C is photographed by Giulio Cuccodoro on behalf of MHNG. The photo has been horizontally mirrored to provide a more direct comparison with the other images.

A single aedeagus from a specimen exhibiting a ventral pattern deviating from *D. pardalis* lectotype was examined (Fig. 4). The shape of this aedeagus differs from that observed in *D. pardalis*, indicating that it likely represents a distinct species. The ventral pattern and aedeagal morphology correspond to the illustrations of Háva (1999) attributed to *D. pardalis*. This suggests that these illustrations were based on a misidentification. As this taxon lacks a valid name, type material, and formal status, the examined specimen is here designated as the holotype, and the name *Dermestes havai* sp. nov. is proposed.

## Discussion

Changing the status of the only type specimen of *D. pardalis* to lectotype is straight forward and necessary given the loss of the holotype of *D. pardalis*. The type specimen of *D. thoracicus* Gené, 1836 that was stored in the MRSN collection was destroyed before 1970 (M. Ruzzon on behalf of Museo Regionale di Scienze Naturali, personal communication, March 5, 2026). It is unfortunate that the lectotype is female as it does not provide additional information on aedeagal structure. The discovery of a new species needs to be associated with a good description and clear illustrations (or images). In this case when the new species is split from a very similar confusion species, clarity becomes even more important.

"*D. tessellatus* Herbst" is written as a synonym on the label of the designated *D. pardalis* lectotype (Fig. 2). The original species description of Herbst (1792) regarding *Dermestes tessellatus* Herbst, 1792 refers to two different species: the described specimens from North America were *Dermestes caninus* Germar, 1824 and the described specimens from Europe were *Dermestes undulatus* Brahm, 1790 (Háva, 2025). The latter species was differentiated from *D. pardalis* by Dejean (1821), whom gave the name *Dermestes tessellatus* var. *vulpecula* to *D. undulatus* in the same catalogue he noted *D. pardalis* as *D. thoracicus*.

In the present study, all examined aedeagi of *D. pardalis* resemble that of the holotype of *D. hankae*, but not the illustration of the *D. hankae* holotype provided by Háva (1999). The antennal coloration highlighted by Háva (1999) as a distinguishing character between the two species is not a reliable diagnostic trait, and the ventral pattern is variable. The available evidence, including both newly examined and literature-based data, provides no support for the recognition of *D. hankae* as a species distinct from *D. pardalis*.

The ventral pattern of *D. havai* is not a reliable diagnostic character for species identification without examination of the aedeagus. Moreover, the ventral pattern of *D. pardalis* may closely resemble that currently known for *D. havai*, particularly when the setae near the posterior margin of the last abdominal sternite are worn. No other additional morphological differences from *D. pardalis* were observed.

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