Anthrenus (*Florilinus*) *loebli* n. sp. (Coleoptera, Dermestidae, Anthrenini) from the Middle East

M. Kadej & J. Háva

Kadej, M. & Háva, J., 2010. *Anthrenus* (*Florilinus*) *loebli* n. sp. (Coleoptera, Dermestidae, Anthrenini) from the Middle East. *Animal Biodiversity and Conservation*, 33.1: 47–51.

Abstract

Anthrenus *(*Florilinus*)* loebli *n. sp. (Coleoptera, Dermestidae, Anthrenini) from the Middle East*.— A new species *Anthrenus* (*Florilinus*) *loebli* from Israel, Lebanon and Jordania is described, illustrated and compared with the similar species classified within the subgenus *Florilinus* Mulsant & Rey, 1868. The new species is characterized by oval eyes, eight–segmented antenna and subtriangular, occasionally triangular, scales on the dorsum. The yellowish/light brown scales are present on the anterior and terminal part of the elytra and create three irregular, transverse bands. Antennal segment eight are at least 4.8 to 5x longer than segment 7 in male, 2.1x longer in female. The new species is most similar to *A.* (*F.*) *museorum* (Linnaeus, 1761); *A.* (*H.*) *fuscus* Olivier, 1789 and *A.* (*F.*) *flavidus* Solsky, 1876. An identification key to externally similar species of the genus is given. The most distinctive taxonomic characteristics concern the male genitalia and antenna (in ratio of length of segments of antennal club) and are also described.

Key words: Taxonomy, New species, Coleoptera, Dermestidae, *Anthrenus*, Israel, Lebanon, Jordania.

Resumen

Anthrenus *(*Florilinus*)* loebli *sp. n. (Coleoptera, Dermestidae, Anthrenini) de Oriente Medio*.— Se describe una nueva especie, *Anthrenus* (*Florilinus*) *loebli*, de Israel, el Líbano y Jordania. Se la describe, ilustra y compara con las especies similares clasificadas en el subgénero *Florilinus* Mulsant & Rey, 1868. La nueva especie se caracteriza por tener los ojos ovalados, antenas de ocho segmentos y escamas subtriangulares, ocasionalmente triangulares, en el dorso. Dichas escamas, marrón claro/amarillentas, se hallan en la parte anterior y terminal de los élitros, formando tres bandas transversals irregulares. El octavo segmento de la antena es al menos de 4,8 a 5 veces más largo que el séptimo en el macho, y 2,1 veces más largo en la hembra. Esta nueva especie es muy parecida a *A.* (*F.*) *museorum* (Linnaeus, 1761); *A.* (*H.*) *fuscus* Olivier, 1789 y *A.* (*F.*) *flavidus* Solsky, 1876. Se da una clave de identificación para especies del mismo género que se parecen externamente. Las características taxonómicas distintivas de la especie conciernen a los genitales masculinos y a las antenas (en la proporción de la longitud de la maza de la antena) y se describen detalladamente.

Palabras clave: Taxonomía, Especie nueva, Coleoptera, Dermestidae, *Anthrenus*, Israel, Líbano, Jordania.

(Received: 27 X 09; Conditional acceptance: 19 I 10; Final acceptance: 26 III 10)

Marcin Kadej, Dept. of Biodiversity and Evolutionary Taxonomy, Zoological Inst., Univ. of Wrocław ul. Przybyszewskiego 63/77, 51–148 Wrocław, Poland.– Jiří Háva, Private Entomological Lab. and Collection, Únětice u Prahy 37, CZ–252 62 Praha–západ, Czech Republic.

Corresponding author: M. Kadej: E–mail:entomol@biol.uni.wroc.pl

ISSN: 1578–665X

Introduction

Anthrenus carpet beetles are small and round. Their body is covered with colourful scales of various brown, tan, red, whitish and grey hues. The scales create different patterns (spots, transversal bands), especially on the pronotum and elytrae. These patterns are usually specific to a particular species, making them very useful in the identification process.

The genus *Anthrenus* was initially divided into 8 subgenera (Mroczkowski, 1968). Zhantiev (1976), however, reduced this genus to only 2 subgenera but his postulate was ignored by other taxonomists who still recognized 8 subgenera (Beal, 1998; Burakowski et al., 1986). The ninth subgenus, *Peacockia*, was described in 1993 (Menier & Villemant, 1993), followed by another one –*Setapeacockia*, recognized by Háva (2008). The issue of *Anthrenus* classification remains unresolved, and both classifications prevail in the available publications. The classification by Zanthiev (2009) includes only two subgenera: *Anthrenus* s. str. and *Florilinus*, whereas the other classification adds to the nine subgenera: *Anthrenodes*, *Anthrenops*, *Anthrenus* s. str., *Florilinus*, *Helocerus*, *Nathrenus*, *Peacockia*, *Ranthrenus, Solskinus* (Háva, 2003), the tenth subgenus –*Setapeacockia.*

Subgenus *Florilinus* has 30 species and all of them are characterized by 8–segmented antennae with 2–segmented antennal club. Only two species within the subgenus *Florilinus* have been found in Israel–the cosmopolitan *Anthrenus museorum* (Linnaeus, 1761) and *A. sordidulus* Reitter, 1889 (Háva, 2010). This article follows up on the previous articles describing Dermestidae found in Israel (Háva, 2007; Háva et al., 2001, 2007).

Material and methods

The size of beetles or their body parts can be useful in species recognition and thus, the following measurements were made: total length (TL, linear distance from anterior margin of pronotum to apex of elytra); pronotal length (PL, maximum length measured from anterior margin to posterior margin); pronotal width (PW, maximum linear transverse distance); elytral length (EL, linear distance from shoulder to apex of elytron); elytral width (EW, maximum linear transverse distance); *F*. Subgenus *Florilinus; H*. Subgenus *Helocerus*.

Moreover, the following abbreviations refer to the collections in which the examined material is deposited: JHAC. Private Entomological Laboratory and Collection, Jiří Háva, Prague–west, Czech Republic; MHNG. Museum d´histoire naturelle, Genève, Switzerland; MKCP. Marcin Kadej, Institute of Zoology, Department of Biodiversity and Evolutionary Taxonomy collection, Wrocław, Poland; NMGW. National Museums and Galleries of Wales, Cardiff, United Kingdom.

Specimens of the species described here are provided with a red, printed label with text as follows: holotype (or paratype, respectively) *Anthrenus* (*Florilinus*) *loebli* n. sp. J. Háva & M. Kadej det. 2008.

The morphological structures were examined under a Nikon Eclipse E 600 phase contrast microscope with a drawing table attached, and a Nikon SMZ–800 binocular microscope; the samples were immersed in glycerin and exposed to transmitted light. After study, all structures were put back into plastic micro vials filled with glycerin under the appropriate specimen. Photos were taken with a Nikon Coolpix 4500 camera.

The terminology used in this paper follows that of Beal (1998).

Results

Subfamily Megatominae
Tribe Anthrenini

Anthrenus (*Florilinus*) *loebli* n. sp. (figs. 1–6)

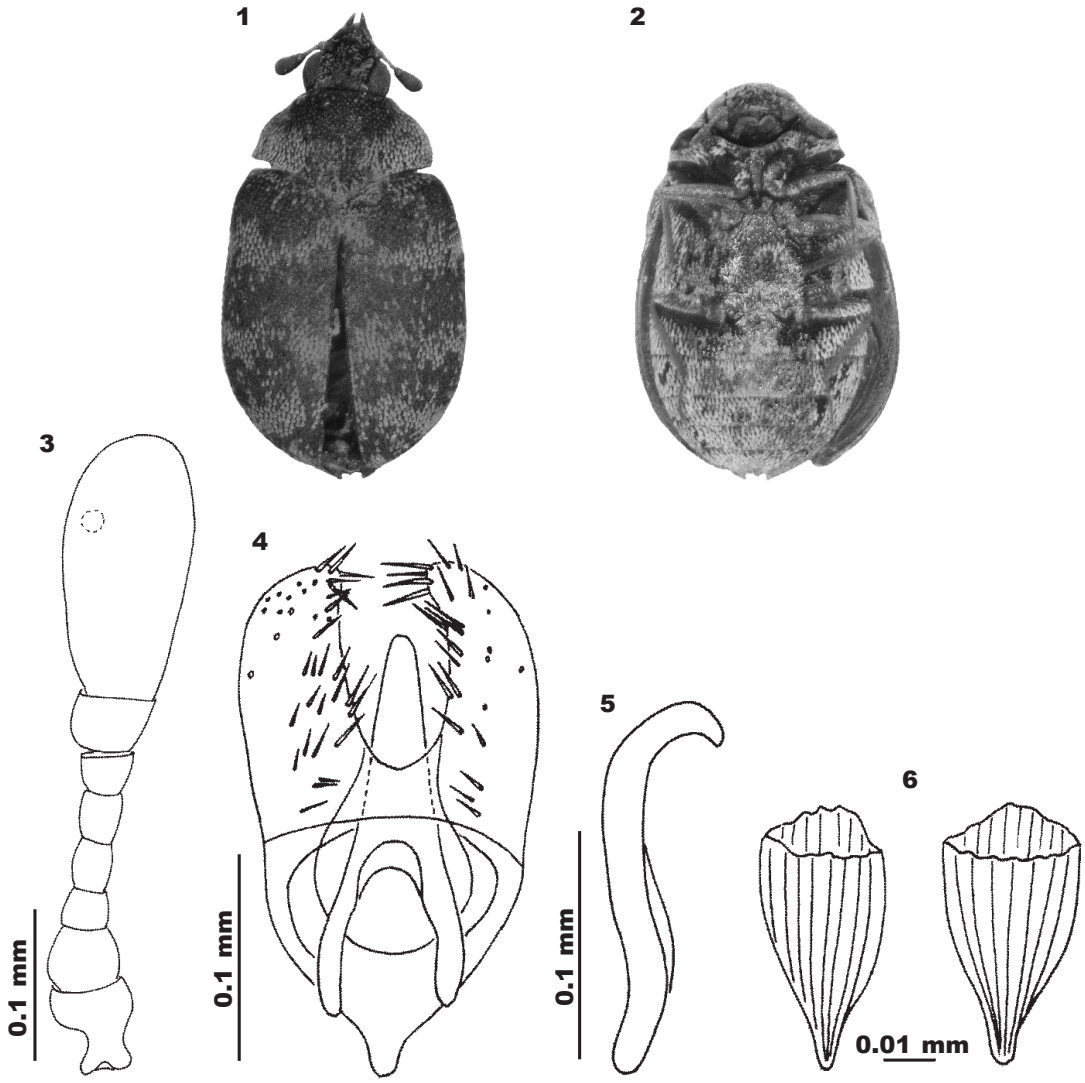
Name derivation
The name of the new species is dedicated to the Mr I. Löebl, MHNG, taxonomist of Scaphidiinae.

Type material
Holotype: male, Israel, Galilee, Ginosar, 26 V 1973, I. Löbl lgt., MNHG.

Paratypes: 4 males 7 females, the same data as holotype; 2 males 1 female, JHAC; 2 males 6 females, MHNG; 1 male 4 females, Israel, Galilee, au dessous Safad, 500 m, 14 VI 1973, I. Löbl lgt., MHNG; 1 male, Israel, Galilee, au dessous Safad, 500 m, 30 V 1973, I. Löbl lgt., MKCP; 3 females, Israel, Hagalil, Umg. Nahariyya Kabri, VI 1981, Kiener leg., MHNG; 4 males, N Lebanon, Nahrel–Bared, 20 km N.E. of Tripoli, 2 VI 2001, P. M. Pavett lgt., NMGW; 1 male 1 female, Jordan bor. occ., cca 20 km N of Amman, 32° 12´ N 35° 53´ E, 250 m, 19 V 2007, F. Kantner lgt., JHAC.

Description
Body measurements (mm): TL 2.07–2.15 PL 0.45–0.57 PW 0.95–1.00 EL 1.62–1.70 EW 1.29–1.35.

Body convex, slightly elongate, covered by subtriangular, occasionally triangular, scales, mostly with 7–8, occasionally 5 more or less linear ribs; the apex of the scale body is truncate or concave and an apical lappet is present (fig. 6). Head distinctly convex and oval eyes. Frons with median ocellus, covered with grey scales. Antenna 8–segmented, with 2–segmented antennal club (fig. 3); antennal segments 1–6 light–brown, antennal club brown. Antennal segment 8 at least 4.8 to 5x longer than segment 7 in male, 2.1x longer in female. Antenna occupies whole cavity of antennal fossa. Antennal club occupies less than half of the antenna length in male and female. Antennal fossa completely open along lateral margin of the pronotum. Dorsal and ventral surface of integument brown, slightly punctated, covered with scales (figs. 1, 2). Pronotum covered with mixed grey, yellowish/light brown (lateral margins, on the angles and central bottom apex) and dark brown scales (in the central part) scales. Elytra covered with mixed yellowish/light brown and



Figs. 1–6. *Anthrenus* (*Florilinus*) *loebli* n. sp.: 1. Habitus, dorsal aspect; 2. Habitus, ventral aspect; 3. Male antenna; 4. Male genitalia; 5. Median lobe, lateral view; 6. Scales.

Figs. 1–6. Anthrenus *(*Florilinus*)* loebli *sp. n.: 1. Hábito, vista dorsal; 2. Hábito, vista ventral; 3. Antena masculina; 4. Genitales masculinos; 5. Lóbulo medio, vista lateral; 6. Escamas.*

dark brown scales. The yellowish/light brown scales are present on the anterior and terminal part of the elytra and create three irregular, transverse bands. The areas between bands are covered with dark brown scales mixed with single yellowish scales. Ventral surface grey except for visible sternites I–V covered with mixed grey and light brown scales; first abdominal sternite without stria. Legs brown, covered with grey scales on dorsal surface. Tarsus with two tarsal claws slightly curved. Male genitalia as in figure 4. Parameres U–shaped, covered with numerous short setae. Median lobe C–shaped, wide posteriorly, distal end of aedeagus strongly reflexed ventrally (figs. 3, 5). Pygidium lacking dark, subbasal, transverse, carina–like line; setae limited to apical area, occasional and rather randomly placed.

Variability

Occasionally, the dorsum of some specimens might be covered with grey scales only; in such cases, the dorsal patterns are absent.

Differential diagnosis

The new species' dorsal appearance resembles *A.* (*F.*) *museorum* (Linnaeus, 1761); *A.* (*H.*) *fuscus* Olivier, 1789 and *A.* (*F.*) *flavidus* Solsky, 1876. It can be easily identified from externally similar species and from *A.*

Identification key for species of genus *Anthrenus* (*Florilinus*) externally similar.

Clave de identificación para especies del género Anthrenus *(*Florilinus*) parecidas externamente.*

1	Antenna 5–segmented, antennal club 1–segmented	*A.* (*H.*) *fuscus* Olivier, 1789
	Antenna 8–segmented, antennal club 2–segmented	2
2	Elytra and pronotum covered only by unicolor yellow, sometimes grey scales	*A.* (*F.*) *sordidulus* Reitter, 1889
	Elytra and pronotum covered by tricolor scales	3
3	Disc of pronotum usually with distinct median pronotal line of pale scales; abdominal sterna 1–5 bicolor; covered with patch of dark scales at lateral margins of abdominal sterna 2–5 and in the middle of sterna 5	*A.* (*F.*) *museorum* (Linnaeus, 1761)
	Disc of pronotum without distinct median pronotal line of pale scales; abdominal sterna 1–5 unicolor; sometimes covered with mixed grey and light brown scales	4
4	Disc of pronotum consist of all dark brown scales in the central part	*A.* (*F.*) *loebli* sp. n.
	Disc of pronotum covered with light brown/grey/yellowish scales in the central part	*A.* (*F.*) *flavidus* Solsky, 1876

sordidulus (also recorded from Israel) by characters mentioned in the identification key.

Some other important differences can be also found in the morphology of the male genitalia and antenna, especially in ratio of length of segments of antennal club.

Morfology of male genitalia

Aedeagus (median lobe) (in lateral view): S–like shape, slightly reflexed ventral F–like shape (*A. museorum*); C–like shape, slightly reflexed ventral (*A. flavidus* and *A. loebli*),

Apex of aedeagus (lateral view): rounded (*A. museorum/A. sordidulus*); acute (*A. flavidus* and *A. loebli*), but bridge between paramers is relatively wide in *A. flavidus* but thin in *A. loebli*. All the species of apex of aedeagus are conical in shape (in frontal view), except *A. museorum* which is bubble–shaped.

Morphology of antennae

Male antennal segment 8 at least 5x longer than segment 7, in female 2.2x longer (*A. museorum*), 7–8x longer in male, 1.7–2x in female (*A. flavidus*), 2x longer in male and female (*A. sordidulus*), 4.8 to 5x longer in male, 2.1x longer in female (*A. loebli*).

Discussion

Many of *Florilinus*'s species look similar externally thanks to the particular dorsal patterns. Main differences helpful in identification are found in morphology of male genitalia and form of antennae. For this reason the examination of the male genitalia and ratio of segment lengths of antennal club are crucial to confirm identification.

Acknowledgements

We would like to thank to D. Tarnawski (Zoological Institute, Wrocław University, Poland) who provided helpful comments to improve this manuscript, J. Tarnawski (Institute of Computer Science, Wrocław University, Poland) for his help with the manuscript translation and I. Löbl (MHNG), B. Levey (NMGW) and F. Kantner (České Budějovice, Czech Republic) for loan of the material of interest.

This work was supported by funding (2020/IZ/2010) from the Institute of Zoology, University of Wrocław.

References

Beal, R. S., 1998. Taxonomy and Biology of Nearctic Species of *Anthrenus* (Coleoptera: Dermestidae). *Transactions of the American Entomological Society*, 124: 271–332.

Burakowski, B., Mroczkowski, M., & Stefańska, J., 1986. Katalog fauny Polski, Cz. 23, Tom 11. Coleoptera (Dermestoidea, Bostrychoidea, Cleroidea i Lymexyloidea). Warszawa: PWN. (In Polish.)

Háva, J., 2003. World Catalogue of the Dermestidae (Coleoptera). *Studie a Zprávy Oblastního Muzea Praha–východ v Brandýse nad Labem a Staré Boleslavi*, Supplementum 1: 1–196.

– 2007. New or interesting Dermestidae (Coleoptera) from Jordan and Israel. *Stuttgarter Beiträge zur Naturkunde, Serie A*, 699: 1–6.

– 2008. Description of a New Subgenus *Setapeacockia* subgen. nov. of the genus *Anthrenus* GEOFFROY, 1762 (Coleoptera: Dermestidae: Anthrenini) from Central Asia. *Litvijas Entomologos*, 45: 43–45.

– 2010. Dermestidae World (Coleoptera). World Wide

Web electronic publication (open in 2004): http://www.dermestidae.wz.cz

Háva, J., Pavlíček, T., Chikatunov, V. & Nevo, E., 2001. Dermestid beetles in "Evolution Canyon", Lower Nahal Oren, Mt. Carmel including new records for Israel. *Phytoparasitica*, 29: 97–101.

Háva, J., Pavlíček, T. & Chikatunov, V., 2007. Corrigenda and addenda of Dermestidae in the "Catalogue of the Beetles (Coleoptera) of Israel and Adjacent Areas". *Mitteilungen des Internationalen Entomologischen Vereins,* 32: 117–131.

Menier, J., J. & Villemant, C., 1993. Description et biologie de *Anthrenus* (*Peacockia* n. sgen.) *vladimiri* n. sp. prédateur des pontes de *Porthetria dispar* (L.) au Maroc (Coleoptera, Dermestidae; Lepidoptera, Lymantriidae). *Revue France d´ Entomologique,* 15: 61–66.

Mroczkowski, M., 1968. Distribution of the Dermestidae (Coleoptera) of the world with a catalogue of all nown species. *Annales Zoologici,* 26: 15–191.

Zhantiev, R., D., 1976. Zhuki kozheedy fauny SSSR. [The skin eaters family Dermestidae of fauna of the USSR.] Moskva: Izdatelstvo Moskovskogo Universiteta. (In Russian.)

– 2009. Ecology and Classification of Dermestid Beetles (Coleoptera, Dermestidae) of the Palearctic Fauna. *Entomological Review*, 89(2): 157–174.