

Three new species of *Anthrenus pimpinellae* species group from Palaearctic Region (Coleoptera: Dermestidae: Megatominae: Anthrenini)

Marcin KADEJ¹⁾ & Jiří HÁVA²⁾

¹⁾Department of Biodiversity and Evolutionary Taxonomy, Zoological Institute, University of Wrocław, ul. Przybyszewskiego 63/77, PL-51 148 Wrocław, Poland, e-mail: entomol@biol.uni.wroc.pl

²⁾Private Entomological Laboratory & Collection, Rýznerova 37/37, CZ-252 62 Únětice u Prahy, Praha-západ, Czech Republic, e-mail: jh.dermestidae@volny.cz

Taxonomy, new species, Coleoptera, Dermestidae, *Anthrenus pimpinellae*-group, Palaearctic Region

Abstract. *Anthrenus farsicus* sp. nov. (Iran); *Anthrenus kafkai* sp. nov. (Iran) and *Anthrenus smetanai* sp. nov. (Algeria) are described, illustrated and compared with a related species.

INTRODUCTION

Anthrenus genus is one of the biggest genera in Dermestidae. So far, more than 220 species, classified in 10 subgenera, have been recorded worldwide. In the past, 4 informal subgroups of the species have been created. They are: *flavipes*, *parvus*, *pimpinellae* and *scrophulariae*-group (Kadej 2005). The most species-rich is the *pimpinellae* group with 18 described species (Kadej et al. 2007a, b, Háva 2007). Most species that belong to the *pimpinellae* group have been recorded in the Palaearctic region, mostly in Mediterranean area. Only *A. pimpinellae pimpinellae* is a cosmopolitan species. The common character of species of the *pimpinellae* group is the presence of a white, subbasal, elytral band, which in some species might be hardly reduced or covered almost all of elytron. The shape of the transversal band is a rather good diagnostic feature in distinguishing the species, but for many others, careful analyses of some morphological structures such an aedeagus, abdominal sternite IX or galea with lacinia are required for final determination.

This paper is a continuation of earlier study on morphological variability of the *pimpinellae* group (Kadej 2005; Kadej et al. 2007a, b), and includes revisions (comparative analyses of related species) and descriptions of three new species classified to this group.

MATERIAL AND METHODS

The morphological structures were cleared in boiling 10% KOH solution, rinsed in distilled water, mounted in glycerol and exposed to transmitted light, then examined, measured and illustrated under the Nikon Eclipse E 600 phase contrast microscope. External structures were examined under the Nikon SMZ-800 stereoscopic microscope. The morphological structures were placed in glycerol filled plastic micro vials and attached to the pin of the specimen.

Photos were taken with Canon 500D and Nikon Coolpix 4500.

Specimens have been equipped with a red printed label with the following text: "HOLOTYPE / or PARATYPE, respectively, *species name* n. sp. M. Kadej & J. Háva det. 2010".

The terminology used in this paper follows Lawrence & Ślipiński (2010).

The following abbreviations refer to the collection where the examined material is deposited:

JHAC Private entomological laboratory and collection, Jiří Háva, Prague, Czech Republic;

MHKC Museum Eastern Bohemia in Hradec Králové, Hradec Králové, Czech Republic.

TAXONOMY

Megatominae Leach, 1815

Anthrenini Casey, 1900

***Anthrenus* Geoffroy, 1762**

***Anthrenus* (s. str.) *farsicus* sp. nov.**

(Figs 1-6)

Type material. Holotype (♂): Iran, Fars prov., Zagros Mts., 10 km N Firuz Abad, 28°55'N 52°31'E, 1450 m, 20-21. iv.2000, Iran 2000 Czech Biological expedition, J. Hájek & M. Mikát lgt., (JHAC). Paratype (1 ♂): the same data as holotype, (JHAC).

Description. Body convex, slightly rounded laterally; measurements: body length from anterior margin of pronotum to apex of elytra 2.4 mm, median length of pronotum 0.7 mm, maximum width of pronotum 1.4 mm, length of elytra 1.7 mm, maximum width of elytra 1.8 mm. Body covered with oval-subtriangular scales; they are from 2.0x as long as wide.

Head visible from above; eyes large, convex, with internal, medial deep and broad emargination at anterior third. Median ocellus present. Frons and clypeus covered with mixed white and light-brown and dark-brown scales. Clypeus emarginated. Labrum light-brown and entire, with short tan setae on the dorsal surface. Galea with lacinia as in Fig. 6. Apex of lacinia slightly sclerotized rounded and expanded, length of the lacinia shorter than length of the galea. Antenna has 11 antennomeres, antennal club dark-brown, composed of 3 antennomeres (Fig. 2); rest of the antennomeres lighter than club. Antennal fossa conforming to shape of antennal club. Antennal club shorter than flagellum. Antennal club with relative length of terminal antennomere to length of penultimate and antepenultimate antennomeres combined nearly 1:0.9. Ratio of length of antennal fossa to length of lateral margin of pronotum 1: 2.5. Dorsal and ventral surface of integument dark-brown, almost black sparsely punctured, covered by scales (Figs 1, 4). Pronotum covered by brown, black and white scales; lateral declivity with white scales along margin and toward middle, on the disc mostly black scales are present; only one spot of white scales with few brown scales mixed in on the central part of the pronotum. Lateral margin of pronotum dilated above antennal fossa and visible from above. Scutellum small and poorly marked. Elytron covered

by white, black and brown scales. White scales forming one transverse band, one patch near the lateral margin of elytra under the band and three small spots near the posterior, apical margin of elytron. Subbasal band complete, at anterior third, started from the suture under the scutellum to humeri. Small patches with brown scales above the subbasal band present. A thin line of brown scales from half of elytra to the apex along the suture present. The brown scales also present on the margins of the subbasal band. Ventral surface is white with patches of black scales present only on abdominal ventrites I-V (black scales cover posterior margin of ventrites I-V and the middle section of ventrite V); first abdominal ventrite has post-coxal lines (Fig. 4), sulcus without scales. Abdominal sternite IX as in Fig. 3. Male aedeagus as in Fig. 15. Pygidium dark-brown with sub-basal, transverse, carina-like line with adjacent setae; setae limited to apical area. Legs dark-brown and covered with white scales on dorsal surface. Tibiae without distinct teeth (tibial spines). Tarsus with two slightly curved claws.

Remark. Left and right tarsus broken and glued to the label under the specimen.

Differential diagnosis. The new species closely resembles *A. munroi* Hinton, 1943 (compare with Figs in Kadej et al. 2007b: 14, 33, 52, 70, 88, 106, 124, 139). It can be distinguished from these species by the following characteristics:

Dorsal patterns. In *A. farsicus* subbasal band of white scales with brown scales on its margins, it is broad near the lateral margin of the elytra, deeply cut near the suture; in *A. munroi* subbasal band with only white scales, broad and without deeply cut near the suture.

Aedeagus. In *A. farsicus* parameres with sharpened apices, inner margin of paramere under the apex with slightly indentation, then the inner margin runs straight down; in *A. munroi* parameres with rounded apices, inner margin of paramere under the apex without indentation, then runs down diagonally.

Name derivation. The name after the *locus typicus* - the name of the Fars province, where the specimen was collected.

Anthrenus (s. str.) *kafkai* sp. nov.

(Figs 7-12)

Type material. Holotype (♂): Iran, Tehran-Darakesh, 31.v.1997, M. Kafka lgt., (JHAC); [collected together with *A. similis* Kadej, Háva & Kalík, 2007].

Description. Body convex, slightly rounded laterally; measurements: body length from anterior margin of pronotum to apex of elytra 2.4 mm, median length of pronotum 0.7 mm, maximum width of pronotum 1.4 mm, length of elytron 1.7 mm, maximum width of elytron 1.6 mm. Body covered with oval-subtriangular scales; they are from 2.0x as long as wide.

Head visible from above; eyes large, convex, with internal, medial deep emargination. Median ocellus present. Frons and clypeus covered with mixed white and light-brown and dark-brown scales. Clypeus emarginated. Labrum light-brown and entire, with short tan setae on the dorsal surface. Galea with lacinia as in Fig. 12. Apex of lacinia slightly sclerotized rounded and not expanded, length of the lacinia shorter than length of the galea. Antenna dark brown, composed of 11 antennomeres. Antennal club has 3 antennomeres; terminal antennomere oblate (Fig. 8). Antennal fossa conforming to shape of antennal club. Antennal club shorter than flagellum. Antennal club with relative length of terminal antennomere to length of penultimate

and antepenultimate antennomeres combined nearly 1: 1. Ratio of length of antennal fossa to length of lateral margin of pronotum 1: 2.5. Dorsal and ventral surface of integument dark-brown, almost black sparsely punctured, covered by scales. Pronotum covered by brown, black and white scales; lateral declivity with white scales along margin and toward middle, on the disc mostly black scales are present; only one spot of white scales intermixed with few brown scales on the central part of the pronotum. Lateral margin of pronotum dilated above antennal fossa and visible from above. Scutellum small and poorly marked. Elytron covered by white, black and brown scales. White scales forming one transverse band, one patch near the lateral margin of elytra under the band and three small spots near the posterior, apical margin of elytron. Subbasal band at anterior third complete, extending from the suture under the scutellum to humeri. Small patches with brown scales above the subbasal band present. A thin line of brown scales present along suture from middle of elytron to apex. Brown scales also present on the margins of the subbasal band and the apical margins of elytron. Ventral surface is white with patches of black scales present only on abdominal ventrites I-V (black scales cover posterior margin of ventrites I-V and the middle section of ventrite V); first abdominal ventrite with post-coxal lines (Fig. 10), sulcus without scales. Abdominal sternite IX as in Fig. 9. Male aedeagus as in Fig. 11. Pygidium dark-brown with sub-basal, transverse, carina-like line with adjacent setae; setae limited to apical area. Legs dark-brown and covered with white scales on dorsal surface. Tibiae without distinct teeth (tibial spines). Tarsus with two slightly curved claws.

Remark. Left and right tarsus broken and glued to the label under the specimen.

Differential diagnosis. The new species closely resembles *Anthrenus delicatus* Kiesenwetter, 1851 (compare with Figs in Kadej et al. 2007b: 5, 24, 43, 62, 80, 98, 116, 132), *A. pimpinellae pimpinellae* (Fabricius, 1775) (compare with Figs in Kadej et al. 2007b: 18, 37, 56, 74, 92, 110, 128, 143) and *A. similis* Kadej, Háva & Kalík, 2007 (compare with Figs in Kadej et al. 2007b: Figs 2, 21, 40, 59, 77, 95, 113). It can be distinguished from these species by the following characteristics:

Aedeagus. In *A. kaffkai* parameres broad, covered with short, outstanding numerous setae, with sharpened apices; in *A. delicatus* parameres thin, covered with short, outstanding numerous setae, with dull apices; in *A. similis* parameres thin, covered with short, outstanding numerous setae, with dull apices; in *A. pimpinellae pimpinellae*, parameres broad, covered with long, outstanding numerous setae, with dull apices.

Lacinia. Besides in *A. kaffkai* apex of the lacinia slightly expanded; in *A. similis* strongly expanded.

Name derivation. The epithet is a patronym honouring the collector Marek Kafka (Neratovice, Czech Republic).

Anthrenus (s. str.) *smetanai* sp. nov.

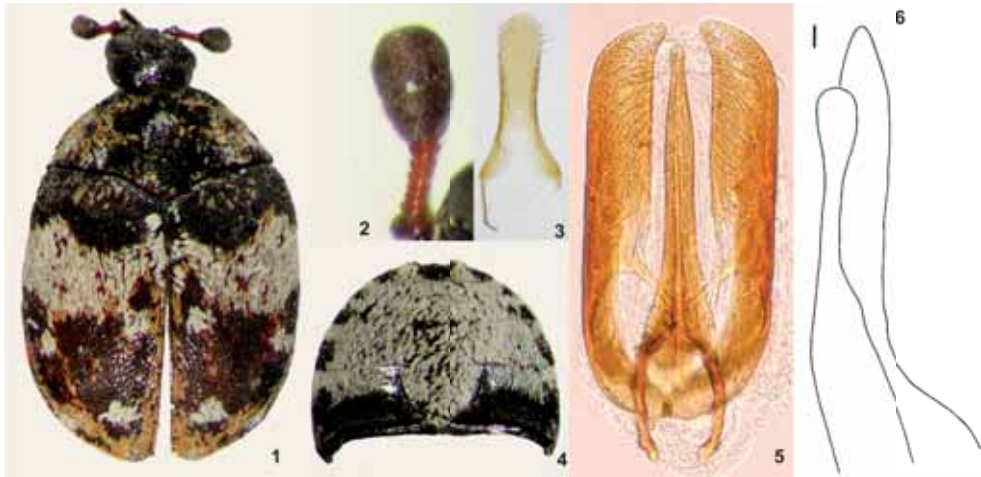
(Figs 13-17)

Anthrenus pimpinellae mroczkowski: Háva, 2007: 312.

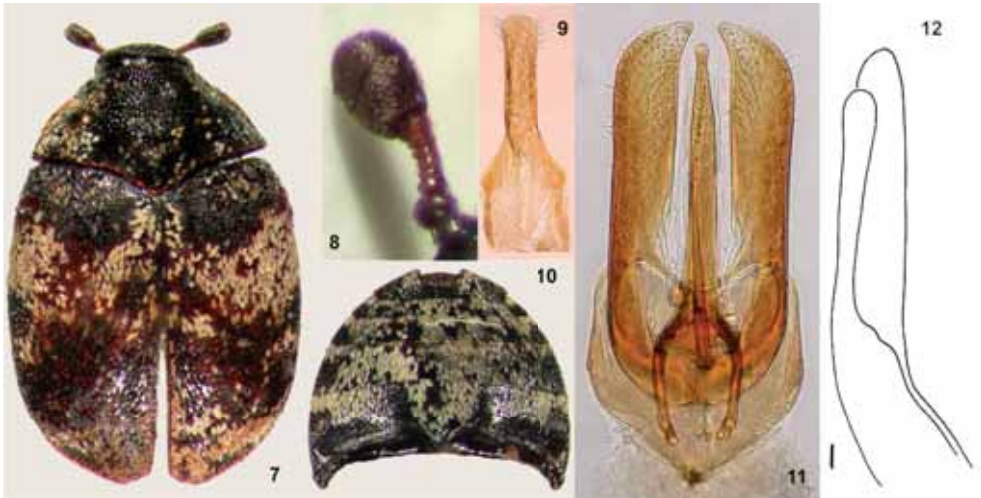
Anthrenus mroczkowski: Kadej et al., 2007: 730.

Type material. Holotype (♂): Algeria bor., Alger, 15-16.v.1971, Hoffer & Horák lgt., (JHAC).

Paratypes (1 ♀): the same label as holotype, (JHAC); (1 ♀): Algeria, El-Khemis, vil. El-Khemis, 18.iv.1986, I.



Figs 1-6. *Anthrenus* (s. str.) *farsicus* sp. nov.: 1- habitus dorsal aspect; 2- antenna; 3- lacinia; 4- abdomen; 5- aedeagus; 6- aedeagus laterally.



Figs 7-12. *Anthrenus* (s. str.) *kafkai* sp. nov.: 7- habitus dorsal aspect; 8- antenna; 9- lacinia; 10- abdomen; 11- aedeagus; 12- aedeagus laterally.

Rozner lgt., (JHAC); (1 ♀): Algeria, Ouarsenis. Teniet el Haad, 30.v.-5.vi.1954, G. Fagel [lgt.]“ / „*Anthrenus pimpinellae* var. *angustefasciatus*, V. Kalík det. 1959“, (MHKC).

Description. Body convex, slightly rounded laterally; measurements: body length from anterior margin of pronotum to apex of elytra 2.4 mm, median length of pronotum 0.7 mm, maximum width of pronotum 1.3 mm, length of elytron 1.7 mm, maximum width of elytron 1.7 mm. Body covered with oval-subtriangular scales; they are from 2.0x as long as wide.

Head visible from above; eyes large, convex, with internal, medial deep emargination. Median ocellus present. Frons and clypeus covered with mixed white and light-brown and dark-brown scales. Clypeus emarginated. Labrum light-brown and entire, with short tan setae on the dorsal surface. Antenna dark brown, composed of 11 antennomeres. Antennal club has 3 antennomeres; terminal antennomere slightly oblate (Fig. 14). Antennal fossa conforming to shape of antennal club. Antennal club shorter than flagellum. Antennal club with relative length of terminal antennomere to length of penultimate and antepenultimate antennomeres combined nearly 0.7: 1.0. Ratio of length of antennal fossa to length of lateral margin of pronotum 1: 2.5. Dorsal and ventral surface of integument dark-brown, almost black sparsely punctured, covered by scales (Figs 13, 16). Pronotum covered by brown, black and white scales; lateral declivity with white scales along margin and toward middle, on the disc scales mostly absent (they had been grated before identification). Lateral margin of pronotum dilated above antennal fossa and visible from above. Scutellum small and poorly marked. Elytra covered by white, black and brown scales. White scales forming one transverse band, one patch near the lateral margin of elytra under the band and three small spots near the posterior, apical margin of elytra. Subbasal band at anterior third probably complete (on the figure no. 13 some scales not present; they had been lost during the dissection), started from the suture under the scutellum to humeri. Small patches with brown scales above the subbasal band present. A thin line of brown scales from half of elytra to the apex along the suture present. The brown scales also present on the margins of the subbasal band. Ventral surface is white with patches of black scales present only on abdominal ventrites I-V (black scales cover posterior margin of ventrites I-V and the middle section of ventrite V); first abdominal



Figs 13-17. *Anthrenus* (s. str.) *smetanai* sp. nov.: 13- habitus dorsal aspect; 14- antenna; 15- lacinia; 16- abdomen; 17- aedeagus.

ventrite has post coxal lines (Fig. 16), sulcus without scales. Abdominal sternite IX as in Fig. 15. Male aedeagus as in Fig. 17. Pygidium dark-brown with sub-basal, transverse, carina-like line along which setae are inserted; setae limited to apical area. Legs dark-brown and covered with white scales on dorsal surface. Tibiae without distinct teeth (tibial spines). Tarsus with two slightly curved claws.

Remark. Left antenna of male broken - only 2 basal segments present, the other 9 lost.

Differential diagnosis. The new species closely resembles *A. angustefasciatus* Ganglbauer, 1904 (Figs see Kadej et al. 2007b: 4, 23, 42, 61, 79, 97, 115, 131), *A. delicatus* Kiesenwetter, 1851 (Figs see Kadej et al. 2007b: 5, 24, 43, 62, 80, 98, 116, 132) *A. similaris* Kadej et al. 2007b (Figs see Kadej et al. 2007b: 2, 21, 40, 59, 77, 95, 113). It can be distinguished from these species by the following characteristics:

Aedeagus. In *A. smetanai* parameres equally wide, with broad apices, ratio of length of parameres to length of median lobe 1: 0.8; in *A. delicatus* and *A. similaris* parameres uniformly narrow, with thin apices, ratio of length of parameres to length of median lobe 1: 0.9; in *A. angustefasciatus* parameres broad near the apices and then gradually tapered, with broad apices, ratio of length of parameres to length of median lobe 1: 0.9.

Name derivation. The epithet is a patronym honouring the excellent Czech entomologist Aleš Smetana.

ACKNOWLEDGMENTS. This study was funded by (project no. 1018/IZ/2011) the Institute of Zoology, University of Wrocław.

REFERENCES

- HÁVA J. 2007: Dermestidae pp. 57, 299-320. In: LÖBL I. & SMETANA A. (eds.): *Catalogue of Palaearctic Coleoptera. Volume 4. Elateroidea, Derodontoidea, Bostrichoidea, Lymexyloidea, Cleroidea and Cucujoidea*. Stenstrup: Apollo Books, 935 pp.
- KADEJ M. 2005: Morphological variability of *pimpinellae* - group (Coleoptera: Dermestidae: Anthrenus) with a key to identification. Part I. *Polskie Pismo Entomologiczne* 74: 117-135.
- KADEJ M., HÁVA J. & KALÍK V. 2007a: A new species and a new synonym of *Anthrenus* Geoffroy, 1762 (Coleoptera: Dermestidae: Anthrenini) from Palaearctic region. *Studies and Reports of District Museum Prague-East Taxonomical Series* 3: 101-108.
- KADEJ M., HÁVA J. & KALÍK V. 2007b: Review to the *Anthrenus pimpinellae* species group from Palaearctic region (Coleoptera: Dermestidae: Anthrenini). *Genus* 18: 721-750.
- LAWRENCE J. F., ŠLIPÍŇSKI A. 2010. 6.1. Dermestidae Latreille, 1804. pp. 198-206. In: Leschen R. A. B., Beutel R. G., J. F. Lawrence, (volume eds.): *Coleoptera, beetles. Volume 2: Morphology and systematics (Elateroidea, Bostrichiformia, Cucujiformia partim)*. In: KRISTENSEN N. P., R. G. BEUTEL (eds.): *Handbook of zoology. A natural history of the phyla of the animal kingdom. Volume IV. Arthropoda: Insecta. Part 38*. Berlin, New York: Walter de Gruyter.

