

**Three new species of *Anthrenus* O. F. Müller, 1764
from Botswana, India and China**
(Coleoptera: Dermestidae)

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Abstract: Three new species *Anthrenus* (*Anthrenus*) *botswaniensis* **n. sp.** (Botswana), *A. (Florilinus) zhantievi* **n. sp.** (India: Himachal Pradesh) and *A. (Nathrenus) schawalleri* **n. sp.** (China: Sichuan) are described, illustrated and compared with related species.

Zusammenfassung: Drei neue Teppichkäfer-Arten *Anthrenus* (*Anthrenus*) *botswaniensis* **n. sp.** (Botswana), *A. (Florilinus) zhantievi* **n. sp.** (India: Himachal Pradesh) und *A. (Nathrenus) schawalleri* **n. sp.** (China: Sichuan) werden beschrieben, illustriert und mit ähnlichen Arten verglichen.

Key words: taxonomy, new species, Coleoptera, Dermestidae, *Anthrenus*, Botswana, India, China

Introduction

The genus *Anthrenus* O. F. Müller, 1764 comprises more than 160 species (HÁVA 2003, 2006), numerous of them have been described recently (HÁVA 2005; KADEJ & HÁVA 2006; ZHANTIEV 2006). The group is characterized by wide or elongate, differently coloured scales on the dorsum and venter. They show patterns which are proved to be diagnostic characters useful for species identification (BEAL 1998; HÁVA 2004; MROCZKOWSKI 1975; ZHANTIEV 1976, 2000). In the present paper three new species collected in the Afrotropical and Oriental Region are described.



Figs. 1–2. *Anthrenus (Anthrenus) botswaniensis* n. sp.: 1) dorsal view; 2) ventral view.

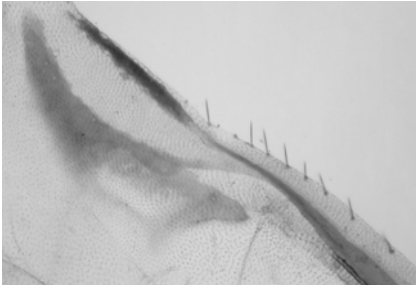


Fig. 3. *Anthrenus (Anthrenus) botswaniensis* n. sp.: wing.

Mesurements and methods

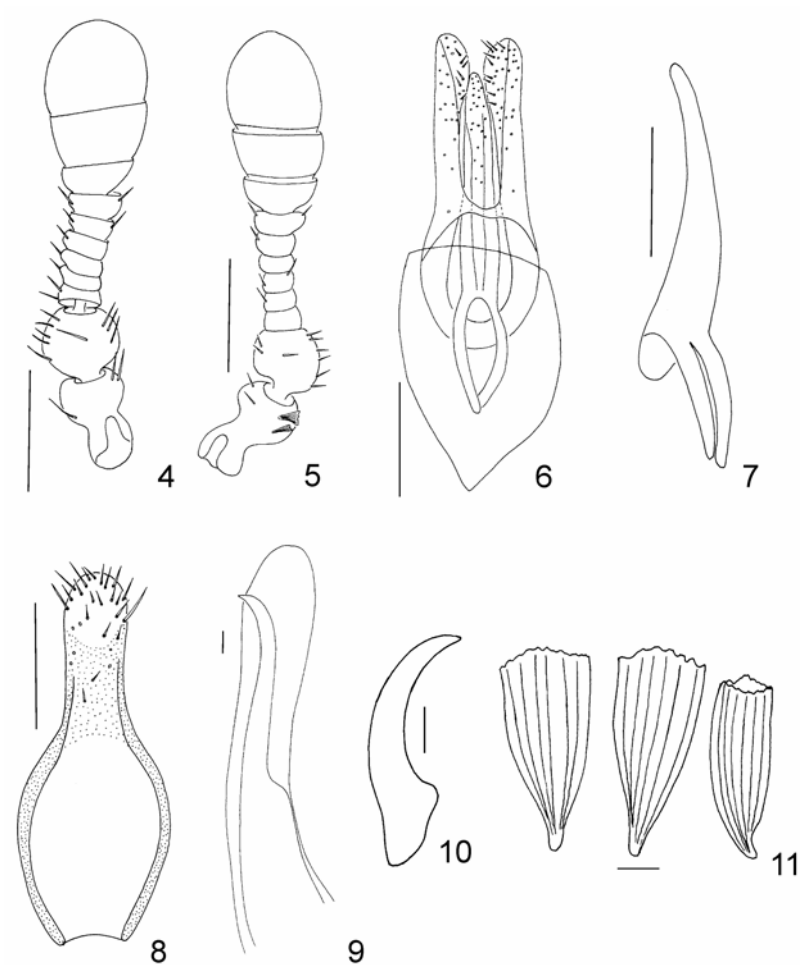
Abbreviations of collections

CMNH – Carnegie Museum of Natural History, Pittsburg, Pennsylvania, USA.

JHAC – Jiří HÁVA, Private Entomological Laboratory and Collection, Prague, Czech Republic.

MK – Marcin KADEJ, Institute of Zoology, Department of Biodiversity and Evolutionary Taxonomy collection, Wrocław, Poland.

SMNS – Staatliches Museum für Naturkunde, Stuttgart, Germany.



Figs. 4–11. *Anthrenus (Anthrenus) botswaniensis* n. sp.: 4) male antenna; 5) female antenna; 6) male genitalia; 7) aedeagus (lateral view); 8) abdominal sternite IX; 9) galea and lacinia; 10) tarsal claw; 11) scales (scale bar Figs. 4–8: 0.1 mm; Figs. 9–11: 0.01 mm).

Abbreviations of measurements

AFL – antennal fossa length (measured along the antennal fossa).

BL – body length (measured from the head anterior margin to the apex of the elytra).

- BW – body width (measured between two anterolateral humeral calli).
LMP – length of lateral margin of pronotum (measured as a distance between inferior part of pronotum and exterior angle).
PL – pronotum length (measured from the top of the anterior margin to scutellum).
PW – pronotum width (measured between the two posterior angles of pronotum).
SL – sternites length (measured from the anterior margin to the apex of posterior margin).
SW – sternites width (measured between two lateral margins in the anterior part of sternites).

All measurements are given in millimeters. The morphological structures were observed under phase contrast microscope Nikon Eclipse E 600 with a drawing attachment in transparenting light in glycerin. All morphological structures were put into plastic micro vials with glycerin under proper specimens. Photos were taken with the camera Nikon Coolpix 4500.

Descriptions

Anthrenus (Anthrenus) botswaniensis n. sp.

(Figs. 1–11)

Type material: Holotype (male): Botswana [Botswana]: 2 km SW Kgale Hill, 5 km SW Gabarone, 4250 ft, 25 Sep 1988 R. WARD; Paratypes (45 ex.): the same data as holotype. Holotype and 39 paratypes deposited in CMNH, 3 paratypes in JHAC, 3 paratypes in MK.

Type specimens provided with label “Holotype [or Allotype, Paratype respectively] *Anthrenus (Anthrenus) botswaniensis* n. sp., J. Háva & M. Kadej det. 2005 [red, printed].

Description: Body strongly convex, covered with scales (Fig. 11) (BL: 2.05–2.25; BW: 1.45–1.60) (Figs. 1–2). Head with large convex eyes. Frons covered with dark brown scales. Antenna of both sexes brown, 11-segmented, antennal club 3-segmented (Figs. 4–5), covered densely with brown pubescence. Terminal segment oval. Antenna fill out the whole cavity of antennal fossa. Antennal fossa completely open (AFL: 0.20) along lateral margin of the pronotum (LMP: 0.47–0.52). Dorsal and ventral integument dark brown, slightly punctated, covered with dark brown, brown and grey scales (Fig 1). Pronotum (PL: 0.60–0.70; PW:

1.20–1.35), covered with brown scales in the central part, brown and grey scales on the angles, lateral parts and on the anterior lateral margin. Elytra covered with dark brown, brown and grey scales, which create transverse, nearly complete bands. The antero-medial part of the elytra (near suture) covered with brown and grey scales, dark brown scales concentrated on the humeral calli. Inferiorly brown and grey scales create an irregular transverse band. The terminal parts covered with mixed dark brown (small spots), brown and grey scales.

Abdominal sternites covered with a mixture of grey and brown scales, especially the anterolateral parts of the sternites II–IV (SL: 1.00–1.20; SW: 1.45–1.60) (Fig. 2). Legs brown, dorsally with grey scales. Tarsus with two tarsal-claws slightly curved (Fig. 10). Male genitalia as in Figs. 6–7. Parameres (lateral lobes) covered with few short setae. Abdominal sternit IX as illustrated (Fig. 8). Galea and lacinia as in Fig. 9. Wing as in Fig. 3.

Differential diagnosis: The new species is similar to some other Afrotropical species like *Anthrenus* (*A.*) *merkli* Háva, 2003 and *A.* (*A.*) *bartolozzii* Háva, 2003, but differs by the form of antennae, the male genitalia, and the elytral scale pattern; from other known Botswanian species, the new species differs in the following characters:

- 1 Antennae composed of 9 segments; body large, parallel
..... *A. (Anthrenops) splendidus* Háva, 2004
- Antennae composed with 11 segments 2
- 2 Each elytron with very large black spot near the suture; elytra covered by dark brown to black and white scales
..... *A. (Anthrenus) tarnawskii* Kadej & Háva, 2006
- Each elytron covered with intermixed orange-brown, grey and dark brown scales (Figs. 1–2) *A. (Anthrenus) botswaniensis* **n. sp.**

Etymology: Named according to the type locality.

***Anthrenus (Florilinus) zhantievi* n. sp.**

(Figs. 12–18)

Type material: Holotype (male): “[India], Taranda 7000, Bashahr State [Himachal Pradesh] R.N. PARKER 18-V-1928”. Holotype deposited in SMNS. Type specimens provided with label “Holotype *Anthrenus (Florilinus) zhantievi* **n. sp.**, J. Háva & M. Kadej det. 2005 [red, printed].

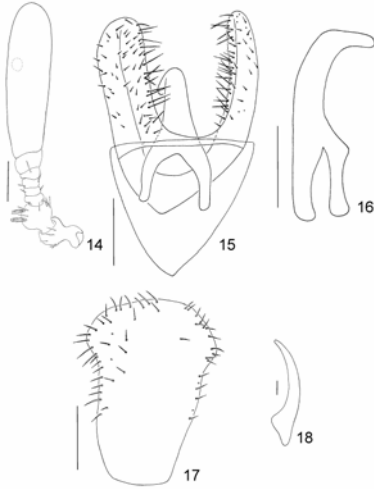
Remarks: The dorsal colour pattern of the holotype is incomplete in the central part of pronotum and elytra, since the scales were erased before preparation.



Figs. 12–13. *Anthrenus (Florilinus) zhantievi* n. sp.: 12) dorsal view; 13) ventral view.

Description: Body strongly convex, elongate, covered with scales (BL: 2.50; BW: 1.55) (Fig. 12). Head with big convex eyes. Frons with median ocellus, covered with grey scales. Antenna brown, 8-segmented, antennal club 2-segmented (Fig. 14), covered densely with brown pubescence. Terminal segment long, measuring about half antennal length. Antenna fills out the whole cavity of antennal fossa. Antennal fossa completely open (AFL: 0.30) along lateral margin of the pronotum (LMP: 0.45). Dorsal and ventral integument brown, slightly punctated, covered with grey, light-brown and brown scales (Figs. 50, 61). Pronotum (PL: 0.70; PW: 1.25), probably covered with brown scales in the central part, grey scales on the angles, lateral parts and on the anterior lateral margin. Elytra covered with grey, light brown and brown scales, which

create dorsal pattern. Abdominal sternites covered with grey scales (SL: 1.15; SW: 1.60) (Fig. 13). Legs brown, covered with grey scales on dorsal surface. Tarsus with two tarsal-claws slightly curved (Fig. 18). Male genitalia as in figures 15–16. Parameres short, U-shaped, covered with numerous setae on the lateral surfaces and apex. Median lobe wide at base, slightly bent, apex curved (Figs. 15–16). Abdominal sternit IX with short setae on the top and lateral parts (Fig. 17).



Figs. 14–18. *Anthrenus (Florilinus) zhantievi* n. sp.: 14) male antenna; 15) male genitalia; 16) aedeagus (lateral view); 17) abdominal sternit IX; 18) tarsal claw (scale bar Figs. 14–17: 0.1 mm; 18: 0.01 mm).

Differential diagnosis: The new species belongs to the western Himalayan fauna and is habitually very similar to *A. (Florilinus) hartmanni* Háva, 2000, but differs from it in the following characters:

Anthrenus (F.) zhantievi n. sp. has a very long terminal antennomere (8.5 x long as segment VII), individual scales are triangular, long; the shape of the aedeagus is also different (parameres slightly flat, median lobe very curved) (Figs. 6–7). *Anthrenus (F.) hartmanni* Háva, 2000 has a short terminal antennomere (0.5 x long as segment VII), individual scales are triangular and very short; aedeagus see (HÁVA 2000:169). The new species can be distinguished from other centralasiatic species by the morphology of antennae and male genitalia.

Etymology: Patronymic, dedicated to Prof. Rustem Devletovich ZHANTIEV, specialist in Dermestidae (Moscow State University, Russia).



Figs. 19–20. *Anthrenus (Nathrenus) schawalleri* n. sp.: 19) dorsal view; 20) ventral view.

***Anthrenus (Nathrenus) schawalleri* n. sp.**

(Figs. 19–29)

Type material: Holotype (male): [China] Sichuan, Xiangchen [31°71'; 105°72'], 3000 m asl., 21.vi.1982. Paratype (female) the same data as holotype. [Original locality labels in Figs. 21–22.] Holotype and paratype are deposited in SMNS. Type specimens provided with label “Holotype [or Paratype, respectively] *Anthrenus (Nathrenus) schawalleri* n. sp., J. Háva & M. Kadej det. 2005 [red, printed].

Remarks: The dorsal scale pattern is uncomplete in the central part of pronotum and elytra; scales were erased before preparation.

四川乡城柴柯 1982.vi.21
3000 m
中国科学院
采集者: 柴怀成

Figs. 20–21. *Anthrenus (Nathrenus) schawalleri* n. sp.: 21) first label; 22) second label.

Description: Body strongly convex, oval, almost round, covered by scales (BL: 2.60–2.75; BW: 1.55–1.65) (Figs. 19–20, 29). Head with large convex eyes. Frons covered with brown scales. Antenna of both sexes brown, 11-segmented, antennal club 2-segmented (Figs. 23–24),

covered densely with brown pubescence. Terminal segment oval. Antenna fills out the whole cavity of the antennal fossa. Antennal fossa completely open (AFL: 0.20–0.30) along lateral margin of the pronotum (LMP: 0.40–0.50). Dorsal and ventral integument dark brown, slightly punctated, covered with dark brown, brown and grey scales (Figs. 19–20). Pronotum (PL: 0.70; PW: 1.30–1.40), probably covered with dark brown scales in the central part, mixed by grey and brown scales on angles, lateral parts and on the anterior lateral margin. Elytra covered with dark brown, light brown and grey scales, which create three transverse, nearly complete bands. Abdominal sternites covered with yellowish-grey scales (SL: 1.20–1.40; SW: 1.65) (Fig. 20). Legs brown, covered with grey-yellowish scales on dorsal surface. Tarsus with two tarsal-claws slightly curved (Fig. 26). Male genitalia as in (Figs. 25–26). Parameres long, covered with numerous setae on the lateral surfaces and apex. Median lobe slightly bent with the apex curved. Abdominal sternit IX oval with numerous short setae on the lateral parts (Fig. 27).

Differential diagnosis: The new species is similar to other taxa of the Chinese fauna, but differs by the characters mentioned in the following table.

Species	<i>A. verbasci</i> (Linnaeus, 1767)	<i>A. turnai</i> Háva, 2004	<i>A. pro- pinquus</i> Háva, 2005	<i>A. sichu- anicus</i> Háva, 2004	<i>A. scha- walleri</i> n. sp.	<i>A. kucerai</i> Háva, 2005	<i>A. knizeki</i> Háva, 2004
Anten- nal club, number of seg- ments	3	2	2	2	2	2	2
Anten- nal color	entirely black	entirely brown	entirely brown	entirely black	entirely brown	I–IX brown, X–XI black	I–IX brown, X–XI black

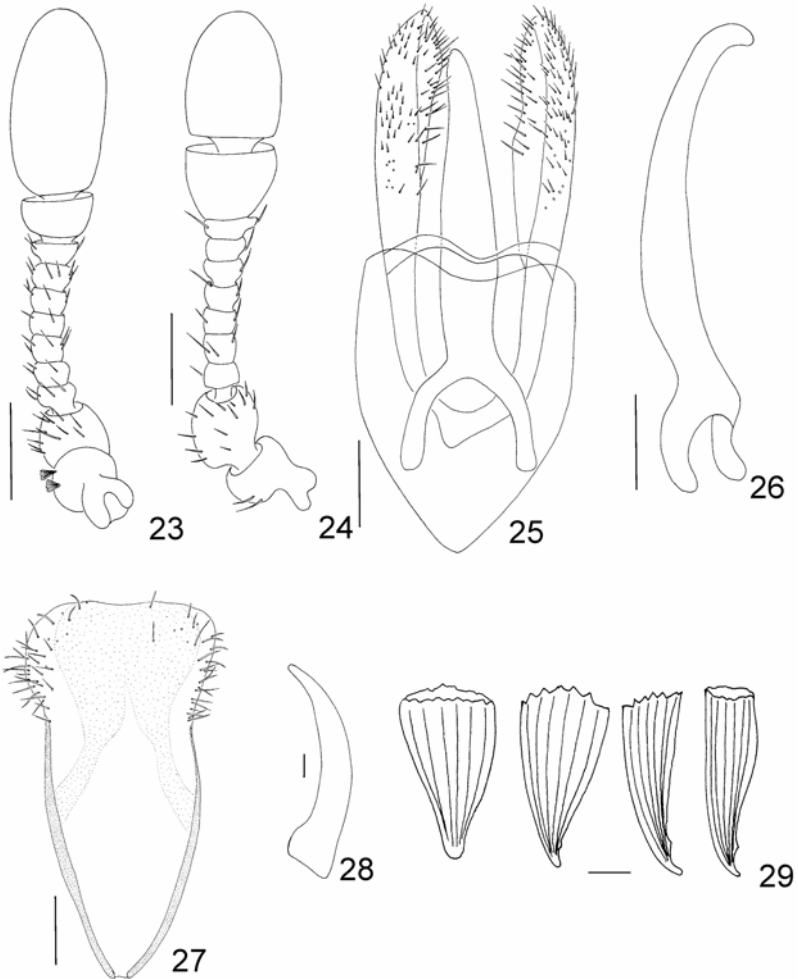
Species	<i>A. verbasci</i> (Linnaeus, 1767)	<i>A. turnai</i> Háva, 2004	<i>A. propinquus</i> Háva, 2005	<i>A. sichuanicus</i> Háva, 2004	<i>A. schawalleri</i> n. sp.	<i>A. kucerai</i> Háva, 2005	<i>A. knizeki</i> Háva, 2004
Scale form	setiform to triangular, broad	triangular with apex moderately to strongly rounded	setiform and very long	parallel and long with truncate apex	triangular with apex moderately to strongly rounded	narrowly subtriangular or narrow with subparallel margins (elytral brown scales forming of three transverse fasciae and apical spot)	triangular with apex moderately to strongly rounded (elytral brown scales not forming spots or fasciae)
IX abdominal sternum	without setation	without setation	with very long setation	without setation	with short setation laterally	without setation	without setation
Structure of parameres near apex	narrow	broad	broad	narrow	broad	narrow	broad
Distribution	China (cosmopolitan species)	S Sichuan	C Sichuan	W Sichuan	E Sichuan	C Sichuan	Hebei

Etymology: Patronymic, dedicated to Dr. Wolfgang SCHAWALLER curator of Coleoptera (SMNS).

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Figs. 23–29. *Anthrenus (Nathrenus) schawalleri* n. sp.: 23) male antenna; 24) female antenna; 25) male genitalia; 26) aedeagus (lateral view); 27) abdominal sternite IX; 28) tarsal claw; 29) scales (scale bar Figs. 23–27: 0.1mm; 28–29: 0.01mm).

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