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New fossil dermestid beetles (Coleoptera: Dermestidae) from the Baltic amber

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Abstract. New representatives of dermestid beetles are described from the Late Eocene to Early Oligocene inclusions of the Baltic amber, i. e. *Anthrenus* (*Nathrenus*) *ambericus* sp. nov., *Anthrenus* (*Nathrenus*) *groehni* sp. nov., *Globicornis* (? *Hadrotoma*) *ambericus* sp. nov., *Attagenus hoffeinsorum* sp. nov. and *Trogoderma larvalis* sp. nov.

Taxonomy, fossil, new species, Coleoptera, Dermestidae, Tertiary, Eocene, Oligocene, Baltic amber

INTRODUCTION

Family Dermestidae is diverse group of Coleoptera with number of cosmopolitan species comprising about 1200 species in recent fauna (Háva 2003). Fossil record of dermestid beetles is well known especially from Cenozoic era of Baltic and Dominican ambers but also from lacustrine deposits of Europe and North America (Carpenter 1992, Wappler 2003). An attribution of the Late Triassic genera from Queensland (Australia) to the family Dermestidae based on elytra structure are considered as family uncertain assignments (Carpenter 1992).

The present study follows of the preceding papers about fossil Dermestidae from Dominican amber (Háva & Prokop 2004) and Baltic amber (Háva & Prokop 2005). Baltic amber is the world most well-known source of amber dated from Late Eocene to Early Oligocene between 35 to 45 Ma. The Dermestidae from Baltic amber are noticed by Larsson (1978), Spahr (1981), Hieke & Pietrzeniuk (1984) and Háva & Prokop (2004, 2005).

MATERIAL AND METHODS

Material of insect inclusions is preserved in polished pieces of rather transparent amber having protection against weathering and damage by embedding in the synthetic resin (GTS / 2-component resin) or at least covered with lacquer. Standard techniques of observation by stereomicroscope (Olympus SZX 9) and digital photography (Olympus 5060) were used.

Because the size of beetles or their body parts can be useful in species recognition, the following measurements were made: total length (TL) – linear distance from anterior margin of pronotum to apex of elytra, elytral width (EW) – maximal linear transverse distance.

Material examined for this study is housed in the following museums and private collections abbreviated by acronyms:

CGPC – Private collection, Carsten Gröhn, Glinde, Germany;
DEIC – Deutsches Entomologisches Institut im Zentrum für Agrarlandschafts- und Landnutzungsforschung (ZALF) e.V., Müncheberg [former in Eberswalde], Germany;

GPIH – Geologisch-Paläontologisches Institut der Universität Hamburg, Germany;
CHHC – Private collection, Christel & Hans Werner Hoffeins, Hamburg, Germany.
Photographs of the all presently described species are available also on the internet web site (Háva 2004b). The integumental structures are named according to Harris (1979). We follow systematics of Dermestidae proposed by Zhantiev (2000) amended by Háva (2003, 2004a).

SYSTEMATIC PALAEONTOLOGY

Anthrenus (*Nathrenus*) *ambericus* sp. nov.
(Figs 1, 2)

Type material. **Holotype** (no sexed): Amber inclusion of Baltic amber, Jantarnyj, Sambia, Kaliningrad Region, Russia, bought from amber traders, C 4456. Holotype deposited in (GPIH, type no. 4464). Holotype specimen is provided with a red, printed label with text as follows: "HOLOTYPE, *Anthrenus* (*Nathrenus*)*, ambericus* sp. nov., J. Háva, J. Prokop & A. Herrmann det. 2005".

Description of the holotype. Measurements (mm): TL 2.1 EW 1.4. Body brown, oval (Fig. 1). Dorsal surface covered by black scales (Fig. 1). Individual scales mostly widest about middle with sides converging to strongly rounding apex. Antennae brown with 11 antennomeres; antennal club brown, compact, with 3 antennomeres, terminal antennomere regularly rounded. Eyes with entire median margin. Frontal median ocellus present. Ventral surface covered only with white scales (Fig. 2). Prosternum only with white scales. Metasternum with only white scales, without a large patch of black scales at lateral margins. Abdominal sternites not bearing larger spots of black scales at antero-lateral margins. Sternites I–IV without one large spot of black scales in the middle. Legs brown with white setation.
Differential diagnosis. The new *Anthrenus* species belongs to the subgenus *Nathrenus* Casey, 1900. The subgenus *Nathrenus* differs from other subgenera by the following characters: antennae with 11- antennomeres, eyes with complete median margin. The new species visually similar to the following described new species, but differs from it of the characters mentioned in the following key of dermestid species from Baltic amber.

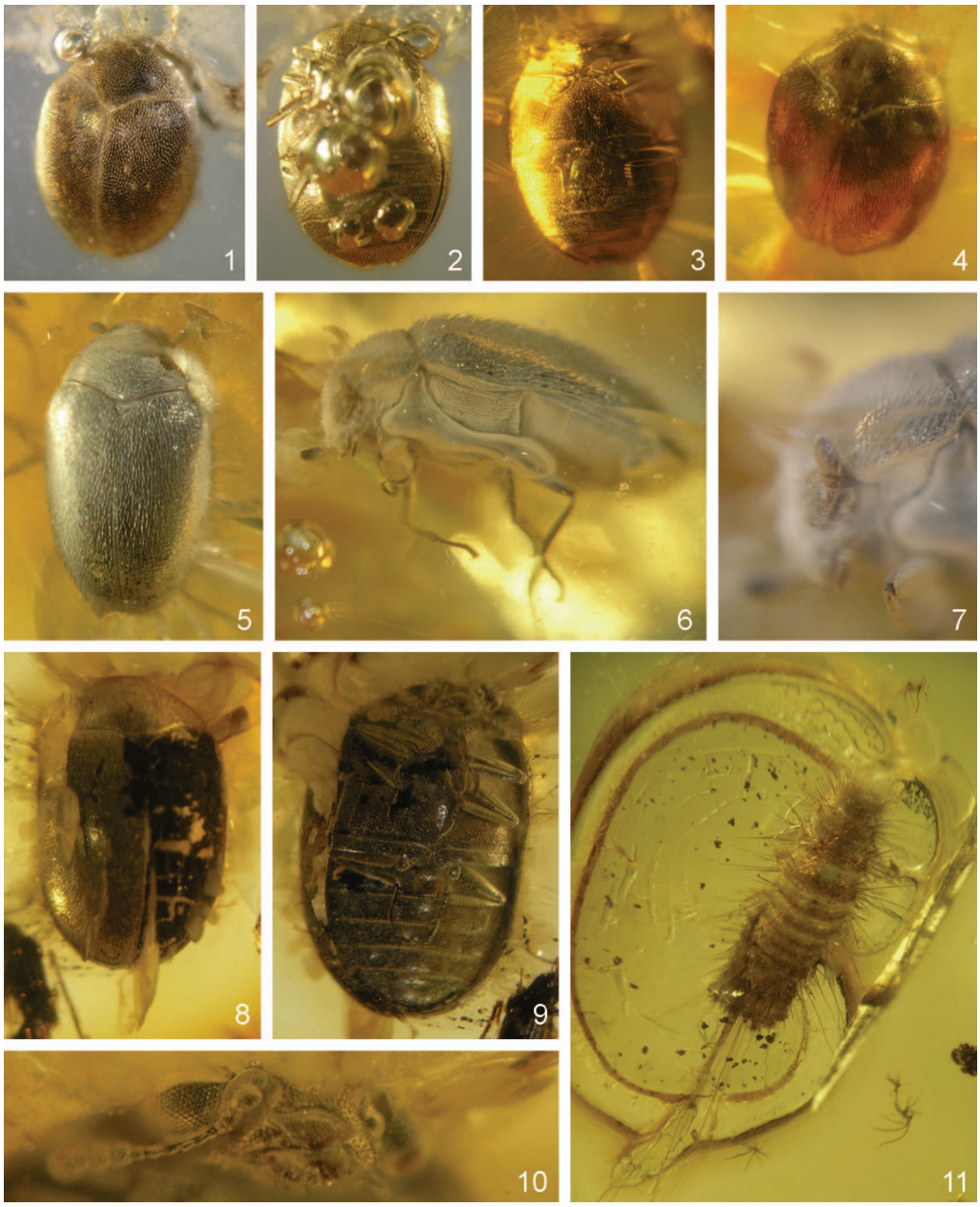
1(2) dorsal surfaces covered by bicolorous scales; each elytron with small circular patches from yellow scales..... ..... *Anthrenus* (*Nathrenus*) *groehni* sp. nov.
2(1) dorsal surfaces covered by unicolorous scales; each elytron without patches..... ..... *Anthrenus* (*Nathrenus*) *ambericus* sp. nov.

Derivatio nominis. The species named after English word amber.

Anthrenus (*Nathrenus*) *groehni* sp. nov.
(Figs 3, 4)

Type material. **Holotype** (no sexed): Amber inclusion from Baltic amber, Jantarnyj, Sambia, Kaliningrad Region, Russia, bought from amber traders, C 4064. Holotype deposited in GPIH (type no. 4465). Holotype specimen is provided with a red, printed label with text as follows: "HOLOTYPE, *Anthrenus* (*Nathrenus*)*, groehni* sp. nov., J. Háva, J. Prokop &, A. Herrmann det. 2005".

Description of the holotype. Measurements (mm): TL 1.8 EW 1.2. Body brown, oval (Fig. 3). Dorsal surface covered by black and light scales. Individual scales mostly widest about middle with sides converging to strongly rounding apex. Antennae black with 11 antennomeres; antennal club black, compact with 3 antennomeres, terminal antennomere regularly rounded. Eyes with entire median margin. Frontal median ocellus presented. Each elytron with five small circular spots; spots covered by light scales. Ventral surface covered with unicolorous scales (Fig. 4). Prosternum with unicolorous scales. Metasternum with unicolorous scales, without a large patch at lateral



Figs 1–11. *Anthrenus* (*Nathrenus*) *ambericus* sp. nov. (holotype): 1 – habitus dorsal view; 2 – habitus ventral view; *A.* (*N.*) *groehni* sp. nov. (holotype): 3 – habitus dorsal view; 4 – habitus ventral view; *Globicornis* (? *Hadrotoma*) *ambericus* sp. nov. (holotype): 5 – habitus dorsal view; 6 – habitus latero–ventral view; 7 – head and antennae; *Attagenus hoffeinsorum* sp. nov. (holotype): 8– habitus dorsal view; 9 – habitus ventral view; 10 – head and antennae; *Trogoderma larvalis* sp. nov. (holotype): 11 – habitus dorsal view.

margins. Abdominal sternites not bearing larger spots at antero-lateral margins. Sternites I–IV without one large spot in the middle. Legs black with white setation.
Differential diagnosis. The newly decribed species belongs to the subgenus *Nathrenus* Casey, 1900. The subgenus *Nathrenus* differs from other subgenera by the following characters: antennae with 11 antennomeres, eyes with complete median margin. The habitus of new species visually similar to *Anthrenus ambericus* sp. nov., but differs by structure of antennae, dorsal surfaces covered by bicolorous scales and each elytron with small circular patches from yellow scales.
Derivatio nominis. Patronymic, dedicated to the Carsten Gröhn, Glinde, Germany.

Globicornis (? *Hadrotoma*) *ambericus* sp. nov.
(Figs 5–7)

Type material. **Holotype** (male): Amber inclusion from Baltic amber, Jantarnyj, Sambia, Kaliningrad Region, Russia, bought from amber traders, C 4751. Holotype deposited in GPIH (type no. 4467). Holotype specimen is provided with a red, printed label with text as follows: "HOLOTYPE, *Globicornis (? Hadrotoma) ambericus* sp. nov., J. Háva, J. Prokop &, A. Herrmann det. 2005". In addition amber piece contains one more inclusion with undetermined specimen of Hymenoptera probably from the family Ichneumonidae.

Description of the holotype. Measurements (mm): TL 3.0 EW 1.8. Body black, covered with white long erected setation (Fig. 5). Head black, finely punctate with distinct erected setation. Palpi entirely brown. Frontal median ocellus presented. Antennae with 10 antennomeres, brown, antennal club with 3 antennomeres, terminal antennal antennomere long and oval (Fig. 7). Pronotum finely punctate like head with long white erected setation. Scutellum triangular finely punctate as pronotum, with short white setation. Antennal fossae very superficial. Elytra finely punctate; cuticle unicolorous, black, with white erected long setation. Apex of each elytron with long setation. Ventral surfaces as in (Fig. 6). Prosternum forming a "collar" under which mouthparts fit when head is retracted. Epipleuron reaching of episternum. Mesosternum and metasternum covered with white very short recumbed setation. Metasternum at lateral part near epipleuron with foveate-reticulate punctures. Abdominal sternites finely punctate, covered with white very short recumbed setation. Legs brown, with short setation; antrior tibiae without spines along shaft.
Differential diagnosis. The present newly described species belongs to the genus *Globicornis* Latreille, 1829 according to the number of antennomeres. The genus *Globicornis* attributed within the genera Group I according to the genera keys proposed by Háva (2004). However, the relationship between subgenera *Hadrotoma* Erichson, 1848 and *Globicornis* still remain uncertain, we prefer to attribute our species within subgenus *Hadrotoma* rather than *Globicornis* because of the structure of the terminal antennomeres. Nevertheless, the terminal antennomere of new species is rather suboval against elongated triangular structure typical of *Hadrotoma*. This character could even justify new subgenus, but we propose to attribute it within existing subgenus until supplementary material will be discovered.
Derivatio nominis. The species named after English word amber.

Attagenus hoffeinsorum sp. nov.
(Figs 8–10)

Type material. **Holotype** (probably male): Amber inclusion from Baltic amber, Primorskoje strip mine, Jantarnyj, Sambia Kaliningrad Region, Russia, 888/1, BaB. Holotype deposited in (DEIC). Holotype specimen is provided with a red, printed label with text as follows: "HOLOTYPE, *Attagenus, hoffeinsorum* sp. nov., J. Háva, J. Prokop &, A. Herrmann det. 2005". **Paratypes**: No. 1: (female): Amber inclusion from Baltic amber, Primorskoje in Yantarnyj, Kaliningrad Region, Russia, 888/2, BaB. Paratype deposited in (CHHC). Paratype specimens are provided with a red, printed label with text as follows: "PARATYPE No. 1, *Attagenus, hoffeinsorum* sp. nov., J.

Háva, J. Prokop &, A. Herrmann det. 2005". No. 2: (female): Amber inclusion from Baltic amber, Jantarny-Kaliningrad, bought from amber traders, C 4458. Paratype deposited in (GPIH, type no. 4468). Paratype specimen are provided with a red, printed label with text as follows: "PARATYPE No. 2, *Attagenus, hoffeinsorum* sp. nov., J. Háva, J. Prokop &, A. Herrmann det. 2005".

DESCRIPTION OF THE HOLOTYPE. Measurements (mm): TL 3.0 EW 1.9. Body black, suboval (Fig. 8). Head black, finely punctate with very short black suberected setation. Palpi entirely brown. Frontal median ocellus presented. Antennae with 11 antennomeres, black, antennal club with 3 antennomeres (Fig. 10). Pronotum black, finely punctate like head with short black suberected setation. Scutellum triangular finely punctate as pronotum, with short black setation. Elytra with unicolorous black cuticle, finely punctate with short subrecumbed setation. Apex of each elytron with very short blackish setation. Legs black with short black setation; tibiae without thorns along shaft. Habitus ventral view (Fig. 9). Prosternum not forming a "collar", therefore mouthparts free. Prosternal process narrow. Prosternum finely punctate on the disc and foveate on lateral parts. Mesosternum finely punctate as disc of prosternum. Metepisternum foveate punctate, with short black setation. Metasternum finely punctate on the disc and foveate on lateral parts, with short black setation. Abdominal sternites finely punctate, with short subrecumbed black setation.

VARIATION IN PARATYPES. Paratype No. 1: measurements (mm): TL 2.5 EW 1.3. Paratype No. 2: measurements (mm): TL 2.8 EW 1.8.

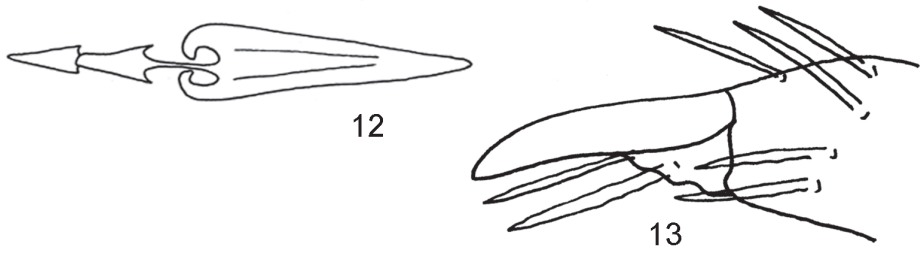
DIFFERENTIAL DIAGNOSIS. The new Baltic amber species *A. hoffeinsorum* sp. nov. belongs to the genus *Attagenus* (prosternum not forming a "collar", therefore mouthparts free) and similar to the species *A. dominicanum* Háva & Prokop, 2004 described from Dominican amber, but new species differs by the structure of antennae and form of body.

DERIVATIO NOMINIS. Patronymic, dedicated to the Christel & Hans Werner Hoffeins, Hamburg, Germany.

***Trogoderma larvalis* sp. nov.**

(Figs 11–13)

MATERIAL EXAMINED. **Holotype** (larva): Amber inclusion from Baltic amber, Jantarnyj, Sambia, Kaliningrad Region, Russia, bought from amber traders, L 1367. Holotype deposited in GPIH (type no. 4466). Holotype specimen is provided with a red, printed label with text as follows: "HOLOTYPE, *Trogoderma, larvalis* sp. nov., J. Háva, J. Prokop &, A. Herrmann det. 2005".



Figs 12–13. *Trogoderma larvalis* sp. nov. (holotype): 12 – abdominal hastisetae; 13 – middle left leg.

Description of the holotype. Measurements (mm) TL 3.8. Cuticle (Fig. 11) yellowish, covered with dense setation; dorsal side with long, yellow, straight or undulating setation, and with short, apically dilated, brown-reddish setation; ventral side with short, light yellow setation. Head hypognathous, strongly sclerotized, with dense yellow setation, which is longer and more delicate anterolaterally. Epicranial sutura present. Coronal suture short, it's frontal parts V-shaped. Ocellus absent. Clypeus not visible. Labrum not visible. Epipharynx not visible. Antennae short, three-segmented, membranose, with sclerotized ring on first and second segment. Mandibles not visible. Maxillae and maxillary palpus not visible. Prementum with rounded fore angles and with many setae in distal part; one pair of this setae exceed labial palpes; postmentum almost quadrangular, somewhat lighter in color than prementum, with many setae of different length. Labial palpes two-segmented.

Prothorax longer than meso- or metathorax, anteriorly and laterally bordered by long setae; anterior, posterior and lateral margins bordered on inner side by hastisetae, which are shorter and darker than other setae. Meso- and metathorax with lateral and central tufts and a transverse row of long setae and with transverse medial, in the middle interrupted band of short, scale-like setae. Mesothorax with one pair of large, oval, annular dorsolateral spiracules. Legs gradually longer from anterior to posterior pair; coxa elongate with long setae; trochanter, femur and tibia with simple, short setae; trochanter triangular; femur wider than but approximately as long as tibia; tarsungulus with two setae – one short and stout and second long and thin (Fig. 13).

Abdomen with eight visible segments. Abdominal tergites 6–8 with dense lateral tufts of dark hastisetae. The hastisetae are longer and more dense on distal segments (Fig. 12). 9th abdominal segment partially immersed in 8th segment, with lateral bands of long, undulate setae. 10th abdominal segment not visible.

Differential diagnosis. The described amber larvae belong to the genus *Trogoderma* Dejean, 1821. Larvae of *Trogoderma* differs from other known larvae of the following characters (Beal 1960, Peacock 1993): 1) antenna with antennomere II not more than half as long agin as III; 2) acrotergites with numerous very fine spinulate setae; 3) abdominal tergitesV or VI–VIII with dense lateral tufts of hastisetae; 4) pretarsal setae, on ventral claw, distinclty unequal. From the other known recent larvae belonged to the genus *Trogoderma*, differs the new species of the form and structure of abdominal hastisetae.

Derivatio nominis. The species named after larvae, immature stage of insect.

Trinodes puetzi Háva et Prokop, 2006

Trinodes puetzi: Háva & Prokop 2006: 278 + figs: 1–3.

Material examined (1 male). Amber inclusion from Baltic amber, Primorskoje strip mine, Jantarnyj, Sambia Kaliningrad Region, Russia, 887, BaB, J. Háva det. 2005, deposited in (CHHC).

Remarks. This species was recently described from the Baltic amber, Jantarnyj, Sambia, Kaliningrad Region, after to two males representing the first known fossil species of this genus (Háva & Prokop 2006).

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