

## Contribution to knowledge of genus *Trinodes* Dejean, 1821 from the Oriental Region (Coleoptera: Dermestidae: Trinodinae)

Jiří HÁVA<sup>1,2</sup>

<sup>1</sup>Daugavpils University, Institute of Life Sciences and Technology,  
Department of Biosystematics, Vienības Str. 13, Daugavpils, LV - 5401, Latvia

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

### Taxonomy, new species, Coleoptera, Dermestidae, Trinodinae, *Trinodes*, Oriental Region

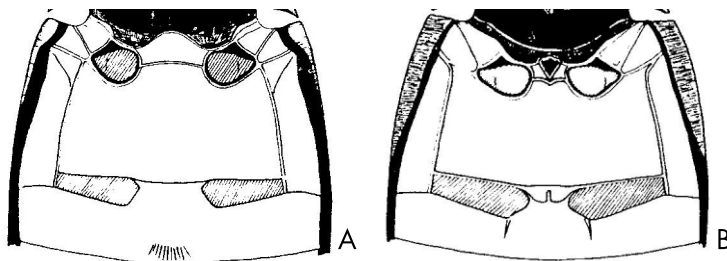
**Abstract.** The following new species are described, compared and illustrated: *Trinodes rihai* sp. nov. (Thailand, Laos); *T. cechovskyi* sp. nov., *T. haucki* sp. nov. and *T. sabahensis* sp. nov. (all Malaysia); *T. makak* sp. nov. (Vietnam). A new synonym is proposed: *Trinodes emarginatus* Arrow, 1915 (= *Trinodes carinatus* Pic, 1916 syn. nov.).

### INTRODUCTION

The dermestid genus *Trinodes* Dejean, 1821 belongs to the subfamily Trinodinae, tribe Trinodini, and recently contains 16 species known from the Palaearctic, Oriental and Afrotropical Regions, including a fossil species from Baltic amber (Háva 2015). The genus from the Oriental Region is poorly known. A new species was recently described by Herrmann & Háva (2015) from Malaysia. In the present article, five new species are described from Malaysia, Laos, Thailand and Vietnam.

### MATERIAL AND METHODS

The genus *Evorinea* Beal, 1961 differs from *Trinodes* Dejean, 1821 by a 1- or 2-segmented antennal club and posterior margin of metasternum without small median emargination; *Trinodes* has antennal club with 3 antennomeres (Beal 1961, Peacock 1978, Háva 2016).



Figs. A-B. Metasternum: A- *Evorinea* sp.; B- *Trinodes* sp. (according to Peacock 1978).

The following abbreviations were used for measurements and collections:

TL total length - linear distance from anterior margin of pronotum to apex of elytra.

EW elytral width - maximum linear transverse distance.

Type material depository:

JHAC Jiří Háva, Private Entomological Laboratory & Collection, Jiří Háva, Únětice u Prahy, Prague-west, Czech Republic;

MNHN Museum National d'Histoire Naturelle, Paris, France;

NHMB Naturhistorisches Museum, Basel, Switzerland.

The type specimens are provided each with a red, printed label showing the text: "HOLOTYPE [or PARATYPE, respectively] *name of taxon* sp. nov. Jiří Háva det. 2019".

## RESULTS

The Oriental (south-east Asian) *Trinodes* species belong to three species "groups". (Species from China, Japan, Taiwan = *T. amamiensis* Ohbayashi, 1977, *T. sinensis* Fairmaire, 1886, *T. insulanus* Zhantiev, 1988, *T. rufescens* Reitter, 1877 are not included).

**Group A.** Pronotum yellowish-orange; elytra black and yellowish-orange (Philippines) .....  
..... *T. rufithorax* Pic, 1926

**Group B.** Pronotum and elytra light brown; elytral setation white or yellow .....  
..... (*T. tonkineus* Pic, 1922, *T. cinereohirtus* Motschulsky, 1863, *T. emarginatus* Arrow, 1915)

- 1(4) elytral setation white
- 2(3) elytral setation white, forming "tufts" without other setation (Laos, Thailand, Vietnam) ..... *tonkineus*
- 3(2) elytral setation white, forming "tufts" including separate, very long brown setae (Sri Lanka) .....  
..... *cinereohirtus*
- 4(1) elytral setation yellow, setae separated (India: Kerala, Sri Lanka) .... *emarginatus* (= *carinatus* syn. nov.)

**Group C.** Pronotum and elytra dark brown or black; elytral setation black or brown ..... (*T. malayensis* Herrmann & Háva, 2015, *T. cechovskyi* sp. nov., *T. haucki* sp. nov., *T. sabahensis* sp. nov., *T. makak* sp. nov., *T. rihai* sp. nov., *T. minutus* Pic, 1915).

- 1(2) terminal antennomere circular or shortly oval
- a(b) antennomeres forming club are more separated  
antennomeres IX-XI large; tip of median lobe very narrow; (Malaysia: Sarawak) ..... *malayensis*  
antennomeres IX-XI small; tip of median lobe broad; (Malaysia) ..... *haucki* sp. nov.
- b(a) antennomeres forming club are more compact  
pronotal lateral carina narrow and flat (Borneo) ..... *minutus* (= *rotundus*)  
pronotal lateral carina very broad and deep (Malaysia: Perak) ..... *cechovskyi* sp. nov.
- 2(1) terminal antennomere elongate oval
- a(b) median lobe very broad (Vietnam) ..... *makak* sp. nov.
- b(a) median lobe narrow
- c(d) 9<sup>th</sup> antennomere broad; tip of median lobe broad (Borneo: Sabah) ..... *sabahensis* sp. nov.
- d(c) 9<sup>th</sup> antennomere very small; tip of median lobe narrow (Thailand, Laos) ..... *rihai* sp. nov.

## *Trinodes emarginatus* Arrow, 1915

*Trinodes carinatus* Pic, 1916: 17 **syn. nov.**

**Type material.** Holotype (not sexed) *Trinodes carinatus*: "Indes, Mahé" / "TYPE" / "Type" / "Trinodes carinatus n sp", (MNHN).

**Remarks.** Pic (1916) described the species *Trinodes carinatus* from India: Mahé [Kerala], Arrow (1915) described the same species from Sri Lanka. Both species are identical and *T. carinatus* is a junior synonym of *T. emarginatus*.

***Trinodes rihai* sp. nov.**

(Figs. 1-2)

**Type material.** Holotype (♂): Thailand NE, Loei prov., Phu Kradung NP, 1300 m, 11-15.5.1999, M. Říha lgt., (JHAC). Paratypes (2 ♀♀): the same data as holotype, (JHAC); (2 ♂♂): Laos, Louangnamtha pr., 21°09'N 101°19'E, Namtha-Muang Sing, 5-31.5.1997, 900-1200 m, V. Kubáň lgt., (1 NHMB, 1 JHAC).

**Description.** Body small and oval, entirely dark brown, more or less shiny. Body measurements (in mm): TL 2.1, EW 1.3. Head finely punctuate, sparsely covered with long, erect brown setae; the punctures are partly indistinct. Palpi light brown. Eyes large with hardly visible, short and erect microsetae. Ocellus present on frons. Antennae yellow, with 11 antennomeres, the last three antennomeres forming a distinct club sparsely covered by yellow setae; the terminal antennomere much larger than the penultimate one (Fig. 1), brown. Pronotum dark brown, shiny, sparsely and coarsely punctured (with some intermixed finer punctures), sparsely covered with erect, long, brown setae; density of punctures and setation increase towards lateral margins; pronotal lateral margins smooth, untoothed; prominent sublateral carina on each side subparallel to lateral margin. Scutellum triangular, without any setae or punctuation, brown and shiny. Elytra dark brown, shiny brown, sparsely covered by long, erect, brown setae, punctures similar to those on pronotum, lateral margins smooth, untoothed; humeri with a small distinct bump. Epipleura brown, sparsely punctured, with short setation. Mesosternum dark brown, sparsely punctuate, with a few recumbent brown setae. Legs totally brown, sparsely covered with suberect, short, light brown setae. Abdominal ventrites brown, finely punctuate, sparsely covered with recumbent light brown setae. Aedeagus (Fig. 2), median lobe narrow.

**Female.** Similar to male, but the terminal antennomere is shorter.

**Variability.** Body measurements (in mm): TL 1.9-2.1, EW 1.2-1.3.



Figs. 1-2. *Trinodes rihai* sp. nov.: 1 - antenna of male; 2 - male genitalia.

**Differential diagnosis.** See the key in the species group.

**Etymology.** Patronymic, dedicated to the collector of type specimens - Martin Říha (Brno, Czech Republic).

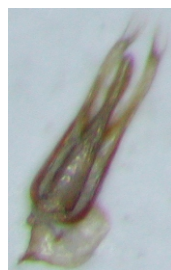
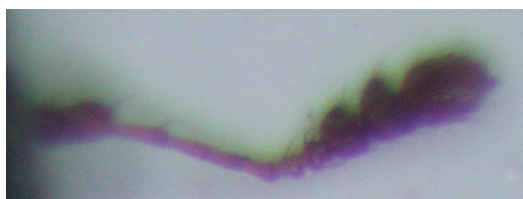
***Trinodes cechovskyi* sp. nov.**

(Figs. 3-4)

**Type material.** Holotype (♂): Malaysia W - Perak, 25 km NE of Ipoh, 2100 m, Banjaran Titi Wangsa Mts., Korbu Mt., 4-13.3.1998, P. Čechovský lgt., (JHAC). Paratype (♂): Malaysia W, Pahang, Cameron Highlands, Tanah Rata, 1200-1500 m, 3-19.ii.2005, P. Čechovský lgt., (JHAC).

**Description.** Body small and oval, entirely dark brown, more or less shiny. Body measurements (in mm): TL 2.0, EW 1.4. Head finely punctuate, sparsely covered with long, erect brown setae; punctures partly indistinct. Palpi light brown. Eyes large, with hardly visible, short and erect microsetae. Ocellus present on frons. Antennae yellow, with 11 antennomeres, the last three antennomeres forming a distinct club sparsely covered by yellow setae; the terminal antennomere (Fig. 3) brown. Pronotum dark brown, shiny, sparsely and coarsely punctured (with some intermixed finer punctures), sparsely covered with erect, long brown setae; density of punctures and setation increases towards lateral margins; pronotal lateral margins smooth, untoothed; with prominent sublateral carina on each side, very broad and deep, subparallel to lateral margin. Scutellum triangular, without any setae or punctuation, brown and shiny. Elytra dark brown, shiny, sparsely covered by long, erect, brown setae, punctures similar to those on pronotum, lateral margins smooth, untoothed; humeri with a small distinct bump. Epipleura brown, sparsely punctured, with short setation. Mesosternum dark brown, sparsely punctuate, with a few recumbent brown setae. Legs totally brown, sparsely covered with suberect, short light brown setae. Abdominal ventrites brown, finely punctuate, sparsely covered with recumbent light brown setae. Aedeagus (Fig. 4), median lobe broad.

**Female.** Unknown.



Figs. 3-4. *Trinodes cechovskyi* sp. nov.: 3- antenna of male; 4- male genitalia.

**Differential diagnosis.** See the key in the species group.

**Etymology.** Patronymic, dedicated to the collector of type specimens - Petr Čechovský (Brno, Czech Republic).

### ***Trinodes sabahensis* sp. nov.**

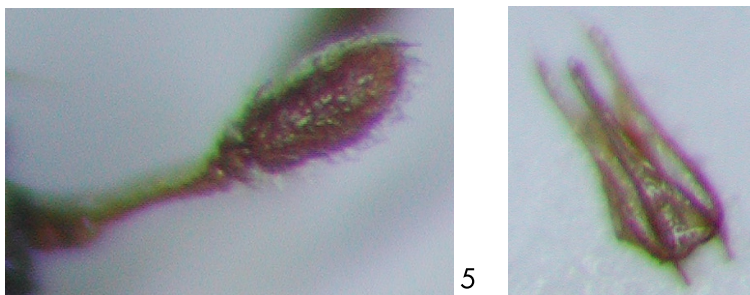
(Figs. 5-6)

**Type material.** Holotype (♂): [Malaysia] Borneo: Sabah, Km 53 road KK-Tambunan, E slope Gn. Emas, 700 m, 1-5.4.2000, Bolm lgt., (JHAC).

**Description.** Body small and oval, entirely dark brown, more or less shiny. Body measurements (in mm): TL 2.1, EW 1.5. Head finely punctuate, sparsely covered with long, erect, brown setae; punctures partly indistinct. Palpi light brown. Eyes large, with hardly visible, short and erect microsetae. Ocellus present on frons. Antennae brown, with 11 antennomeres, the last three antennomeres forming a distinct club sparsely covered by yellow setae; the terminal antennomere long (Fig. 5). Pronotum dark brown, shiny, sparsely and coarsely punctured (with some finer intermixed punctures), sparsely covered with erect, long brown setae; density of punctures and setation increases towards lateral margins; pronotal lateral margins smooth, untoothed; prominent sublateral carina on each side, very broad and deep, subparallel to lateral margin.

Scutellum triangular, without any setae or punctuation, brown and shiny. Elytra dark brown, shiny brown, covered sparsely by long, erect, brown setae, punctures similar to those on pronotum, lateral margins smooth, untoothed; humeri with a small distinct bump. Epipleura brown, sparsely punctured, with short setation. Mesosternum dark brown, sparsely punctuate, with a few recumbent brown setae. Legs totally brown, sparsely covered with suberect, short light brown setae. Abdominal ventrites brown, finely punctuate, sparsely covered with recumbent light brown setae. Aedeagus (Fig. 6), median lobe narrow.

**Female.** Unknown.



Figs. 5-6. *Trinodes sabahensis* sp. nov.: 5-antenna of male; 6- male genitalia.

**Differential diagnosis.** See the key in the species group.

**Etymology.** Named after the type locality - Malayan state Sabah.

***Trinodes haucki* sp. nov.**

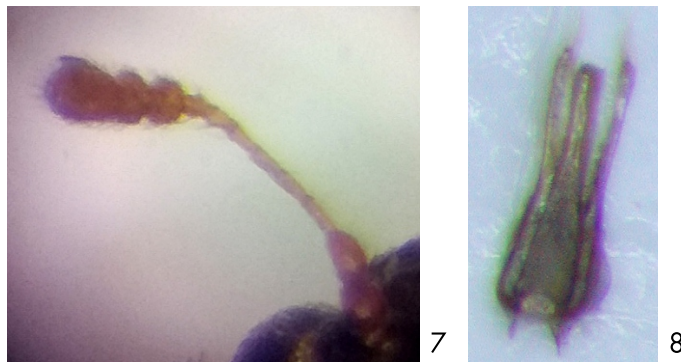
(Figs. 7-8)

**Type material.** Holotype (♂): Malaysia, Benom Mts., 15 km E Kampong Dong, 700 m, 1.4.1998, D. Hauck lgt., (JHAC).

**Description.** Body small and oval, entirely dark brown, more or less shiny. Body measurements (in mm): TL 2.4, EVW 1.8. Head finely punctuate, sparsely covered with long, erect light brown setae; the punctures partly indistinct. Palpi light brown. Eyes large, with hardly visible, short and erect microsetae. Ocellus present on frons. Antennae yellow, with 11 antennomeres, the last three antennomeres forming a distinct club covered sparsely by yellow setae; the terminal antennomere long (Fig. 7), brown. Pronotum dark brown, shiny, sparsely and coarsely punctured (with some intermixed finer punctures), covered sparsely with erect, long light brown setae; density of punctures and setation increases towards lateral margins; pronotal lateral margins smooth, untoothed; prominent sublateral carina on each side, very broad and deep, subparallel to lateral margin. Scutellum triangular, without any setae or punctuation, brown and shiny. Elytra dark brown, sparsely covered by long, erect light brown setae, punctures similar to those on pronotum, lateral margins smooth, untoothed; humeri with a small distinct bump. Epipleura brown, sparsely punctured, with short brown setation. Mesosternum dark brown, sparsely punctuate, with a few recumbent brown setae. Legs totally brown, sparsely covered with suberect, short light brown setae. Abdominal ventrites brown, finely punctuate, sparsely covered with recumbent light brown setae. Aedeagus (Fig. 8), median lobe broad.

**Female.** Unknown.

**Differential diagnosis.** See the key in the species group.



Figs. 7-8. *Trinodes haucki* sp. nov.: 7- antenna of male; 8- male genitalia.

**Etymology.** Patronymic, dedicated to the collector of type specimen - David Hauck (Brno, Czech Republic).

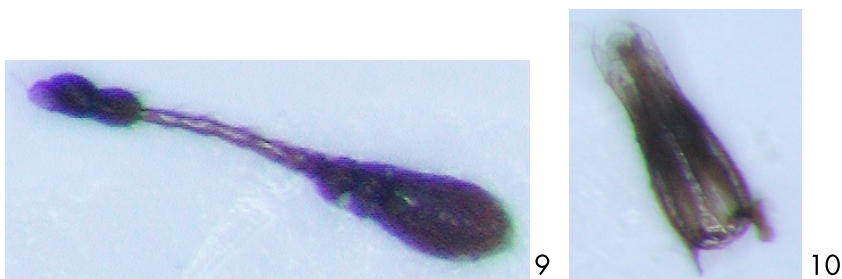
***Trinodes makak* sp. nov.**  
(Figs. 9-10)

**Type material.** Holotype (♂): Vietnam N, Ninh Binh Pr., 90 km SW Hanoi, Cuc Phuong NP, primate rescue centre, 25.iv. / 2012, 190 m, 20°14'24"N 105°42'53"E, light trap, (JHAC).

**Description.** Body small and oval, entirely dark brown, more or less shiny. Body measurements (in mm): TL 2.2, EW 1.3. Head finely punctuate, sparsely covered with long, erect brown setae; punctures partly indistinct. Palpi light brown. Eyes large, with hardly visible, short and erect microsetae. Ocellus present on frons. Antennae dark brown, with 11 antennomeres, the last three antennomeres forming a distinct club sparsely covered by yellow setae; the terminal antennomere long (Fig. 9), brown. Pronotum dark brown, shiny, sparsely and coarsely punctured (with some finer intermixed punctures), sparsely covered with erect, long brown setae; density of punctures and setation increases towards lateral margins; pronotal lateral margins smooth, untoothed; prominent sublateral carina on each side, very broad and deep, subparallel to lateral margin. Scutellum triangular, without any setae or punctation, brown and shiny. Elytra dark brown, sparsely covered by long, erect, brown setae, punctures similar to those on pronotum, lateral margins smooth, untoothed; humeri with a small distinct bump. Epipleura brown, sparsely punctured, with short setation. Mesosternum dark brown, sparsely punctuate, with a few recumbent brown setae. Legs totally brown, sparsely covered with suberect, short light brown setae. Abdominal ventrites brown, finely punctuate, sparsely covered with recumbent light brown setae. Aedeagus (Fig. 10), median lobe broad.

**Female.** Unknown.

**Differential diagnosis.** See the key in the species group.



Figs. 9-10. *Trinodes makak* sp. nov.: 9-antenna of male; 10-male genitalia.

**Etymology.** Named after Czech name “Makak” of the monkey *Macaca* Lacépède, 1799 (Primates: Cercopithecidae).

ACKNOWLEDGEMENTS. I am indebted very much to all collectors for providing me with interesting material and to Miloslav Rakovič (Czech Republic) for corrections to the English manuscript.

## REFERENCES

- BEAL R. S. 1961: *Insects of Micronesia, Coleoptera: Dermestidae. Insects of Micronesia. Vol. 16. Number 3.* Honolulu: Bernice P. Bishop Museum, pp. 109-131.
- HÁVA J. 2015: *World Catalogue of Insects. Volume 13. Dermestidae (Coleoptera).* Leiden/Boston: Brill, xxvi + 419 pp.
- HÁVA J. 2016: Contribution to the knowledge of *Evorinea* Beal, 1961 from East Palaearctic and Oriental Regions (Coleoptera: Dermestidae: Trinodinae). *Studies and Reports, Taxonomical Series* 12(1): 73-78.
- HERRMANN A. & HÁVA J. 2015: A new species of the genus *Trinodes* Dejean, 1821 from Malaysia (Coleoptera: Dermestidae: Trinodinae). *Arquivos Entomolóxicos* 13: 405-407.
- PEACOCK E. R. 1978: *Trichelodes* (= *Hexanodes*), type of Trichelodini new tribe, and its affinities with the Trinodini (Coleoptera: Dermestidae). *New Zealand Journal of Zoology* 5: 341-349.
- PIC M. 1916: Diagnoses spécifiques. *Mélanges Exotico-Entomologiques* 17: 8-20.

Published: 28. 6. 2019