

A taxonomic study on the genus *Rhynchotricida* Bouček (Hymenoptera: Chalcidoidea: Torymidae) of Vietnam

T.C. Narendran & C. van Achterberg

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T.C. Narendran, c/o Department of Zoology, University of Calicut, Kerala, 673635, India (drtnarendran@yahoo.com).

C. van Achterberg, Naturalis Biodiversity Center, Department of Terrestrial Zoology, P.O. Box 9517, 2300 RA Leiden, The Netherlands (Kees.vanAchterberg@naturalis.nl).

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The species of the genus *Rhynchotricida* Bouček, 1978 (Torymidae: Toryminae) from Vietnam are revised and keyed. Four species are recognized of which two are new to science: *Rhynchotricida vriesi* spec. nov. and *R. vietnamica* spec. nov. In addition, *R. maai* Bouček, 1978, and *R. frenalis* Bouček, 1978, are reported from Vietnam. The genus and all known species of the genus *Rhynchotricida* (five species) are diagnosed and keyed.

Introduction

The genus *Rhynchotricida* was named by Bouček (1978) with as type species *Rhynchotricida ovivora* Bouček, 1978, from West Malaysia. This is a small genus containing so far only five species, all described by Bouček (1978). In this paper we add two more species new to science. Since Bouček published on *Rhynchotricida*, Narendran (1994) studied the Indian fauna and Grissell (1995) treated briefly the affinity of the genus and catalogued the world species. We have made a comprehensive review of the species with particular reference to the Vietnamese fauna. The key of Bouček is modified in order to accommodate the new species. Diagnoses and distribution of the genus *Rhynchotricida* and the known species are provided. Comments on all treated taxa are given under each taxon.

The holotypes of the new species are deposited in the Naturalis Biodiversity Center, Leiden (RMNH); additional material is partly deposited in the Institute of Ecology & Biological Resources at Hanoi (IEBR). BPBM stands for B.P. Bishop Museum, Honolulu and BMNH for the Natural History Museum, London.

Abbreviations used: CC = costal cell; F1 to F7 = funicular segments 1-7; L = length; MV = marginal vein; OOL = distance between eye and hind ocellus; PMV = postmarginal vein; POL = distance between posterior ocelli; SMV = submarginal vein; STV = stigmal vein; T1 to T4 = metasomal (or gastral) tergites 1 to 4. W = width.

Key to world species of the genus *Rhynchotricida* Bouček (modified from Bouček, 1978)

1. Hind femur with three outer (plus one inner) teeth (figs 1, 2, 7) 2
- Hind femur with more than 3 teeth in a row on outer ventral margin (figs 3-5, 8, 12) 3

2. Scutellum without distinct frenum (seen from behind) and its sculpture and pilosity virtually reach the marginal crenulate groove; India *R. tridens* Bouček, 1978
- Scutellum with a distinct shining frenal area, smooth and glabrous; Laos
..... *R. frenalis* Bouček, 1978
3. Hind femur with a row of 7 almost regular teeth (fig. 3); narrow frenal area dull owing to engraved reticulation and striation (fig. 6); [ovipositor sheath about 0.7 times as long as hind tibia; flagellum mainly yellow]; West Malaysia
..... *R. ovivora* Bouček, 1978
- Hind femur with 5-6 teeth (figs 4, 5, 12); frenal area medially narrowly smooth (Fig. 13) 4
4. Ovipositor sheath 0.5-0.6 times as long as hind tibia 5
- Ovipositor sheath 1.2-1.3 times as long as hind tibia 6
5. Frenal line indistinct (fig. 13); hind femur with 6 teeth on outer ventral margin (fig. 12); ovipositor sheath about 0.5 times as long as hind tibia (fig. 12); MV 1.5 times as long as PMV; T1 violet; Vietnam *R. vriesi* spec. nov.
- Frenal line distinct; hind femur with 5 teeth on outer ventral margin; ovipositor sheath about 0.6 times length of hind tibia; MV 1.2 times as long as PMV; T1 bright green; East Malaysia, Laos, Vietnam and Philippines *R. maai* Bouček, 1978
6. PMV 3 times as long as STV; ovipositor sheath 1.2 times as long as hind tibia; F2 to F7 broader than long; clava with two apical segments combined 1.4 times as long as first claval segment (fig. 9). Vietnam *R. vietnamica* spec. nov.
- PMV 2.2 times as long as STV; ovipositor sheath 1.3 times as long as hind tibia; F2 to F7 longer than broad; clava with two apical segments combined as long as first claval segment; Indonesia, Philippines; Papua New Guinea
..... *R. caudata* Bouček, 1978

Genus *Rhynchotocida* Bouček, 1978

(figs 1-14)

Rhynchotocida Bouček, 1978: 116. Type species: *Rhynchotocida ovivora* Bouček, 1978 (original designation; holotype ♀, BMNH examined).

Diagnosis (female & male).— Antenna with stout scapus and long stout filiform flagellum; clypeus sub quadrate, convex, protruding below; scutellum narrowly touching mesoscutum; frenal area distinct; hind coxa with a large area with elongate-lunulate deep punctures, dorsal edge distally often serrate (fig. 5); hind femur enlarged, with an outer ventral row of irregular teeth, an inner array of irregular bump-like protuberances and a single enlarged basal tooth (figs 1-5); hind tibia curved, apically truncate with thick spurs, though outer spur extremely short and easily overlooked (figs 1, 2, 5); head with a convex clypeus and malar sulcus (fig. 14).

Biology. — One species is reported from eggs of Heteroptera (Bouček, 1978).

Distribution. — Oriental (Vietnam, India, Philippines, Laos, [West and East] Malaysia) and Australian regions (Indonesia [Iriyan Jaya]; Papua New Guinea).

Remarks. — *Rhynchotocida* Bouček plus *Anneckaida* Bouček, 1978 are the hypothetical sister taxa to *Oopristus* Steffan, 1968, plus *Chrysochalcissa* Girault, 1915, based on the shared character of having 2 rows of teeth at the hind femur and supposedly the convex

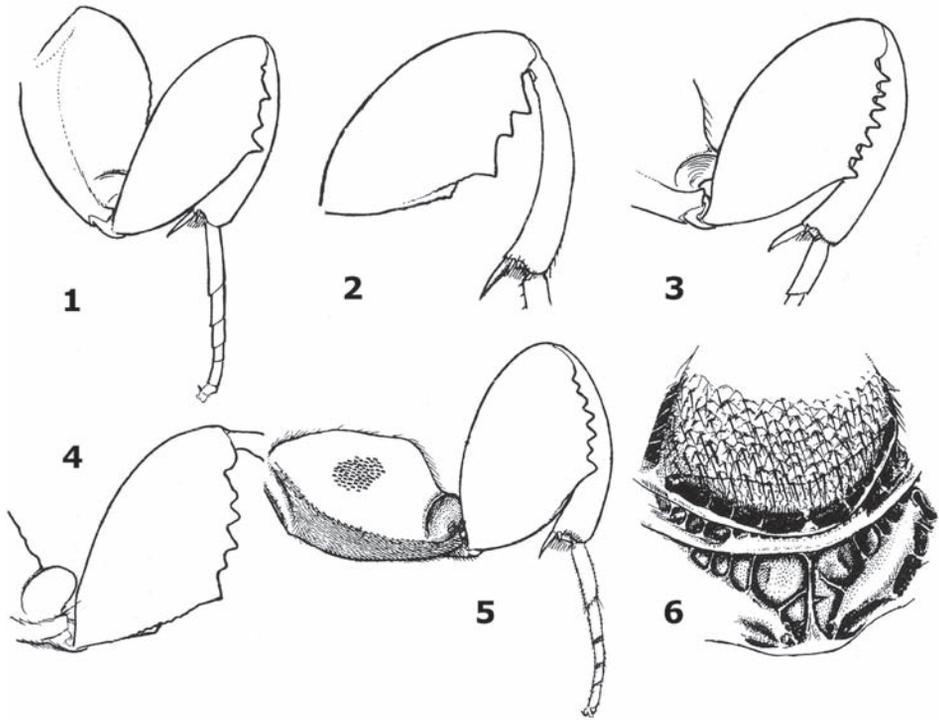


Fig. 1, *Rhynchotricida tridens* Bouček; 2, *R. frenalis* Bouček; 3, *R. ovivora* Bouček; 4, *R. maai* Bouček; 5, *R. caudata* Bouček. 1-5, hind leg, lateral aspect; 6, scutellum, postero-dorsal aspect. After Bouček, 1978.

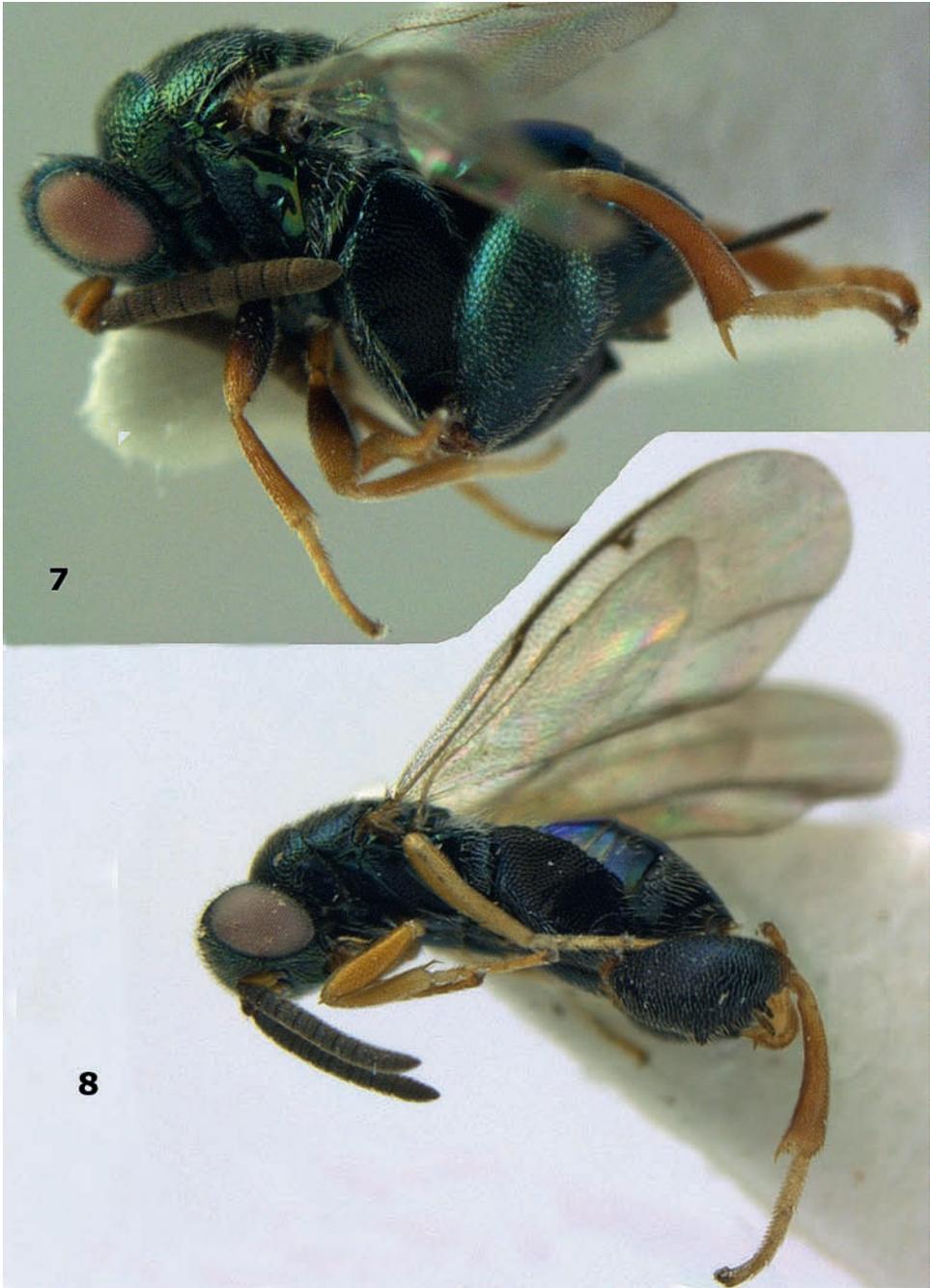
clypeus from which, the recessed state of *Oopristus* and emarginated state of *Chrysochalcissa* were each derived (Grissell, 1995). The double row of hind femoral teeth has not been found in any other group of Torymidae and this provides evidence that these four genera constitute a natural group (Grissell, 1995).

Rhynchotricida caudata Bouček, 1978
(fig. 5)

Rhynchotricida caudata Bouček, 1978: 119. Holotype female, Indonesia (BPBM).

Diagnosis. — (based on Bouček, 1978).

Female. — Length: 3.3 mm (excluding ovipositor). Ovipositor 1.2 mm. Mainly with dark bluish refringence; mesosoma dorsally slightly greenish, blue on T1 and partly on hind femur, otherwise sides blackish; flagellum black; scapus yellow; fore and mid legs (except coxae) and hind tibiae and tarsi testaceous. Head width 1.2 times height in anterior view; malar space 0.2 times eye height; flagellum plus pedicellus 2.6 times eye height; F1 1.3 times F2; F2 to F7 and first claval segment 1.2-1.3 times as long as broad;



Figs 7-8. Habitus of *Rhynchoticida* species in lateral view: 7. *R. frenalis* Bouček, female, Vietnam, Nui Chua N.P.; 8. *R. maai* Bouček, female, Vietnam, Hang Kia Pa Co N.R.

clava with two apical segments combined as long as first claval segment. Mesosoma 1.8 times as long as broad; frenal area longitudinally rugulose; hind femur $1.64 \times$ as long as broad, with a row of 6 differently sized teeth on outer ventral side; relative length of CC = 75; MV 2.5 times as long as PMV; PMV 2.2 times as long as STV. Ovipositor sheath 1.27 times as long as hind tibia, nearly as long as gaster.

Male. — Similar to female except for the few differences mentioned by Bouček (1978).

Host. — Unknown.

Distribution. — Indonesia, Philippines, Papua New Guinea (Noyes, 2012).

Remarks. — This is an extralimital species to Vietnam and included here to enable easy identification if found later in Vietnam. Its comes near *R. vietnamica* spec. nov. in the key to species by Bouček (1978), but can be separated from it by the characters given under “remarks” of *R. vietnamica*.

Rhynchotricida frenalis Bouček, 1978
(figs 2, 7)

Rhynchotricida frenalis Bouček, 1978: 120. Holotype female, Laos (BPBM).

Material. — 1 female (RMNH), “Vietnam: Ninh Thuân, Núi Chá N.P., dry south part, Mal. traps, 100-180 m, 22-29.v.2007, C. v. Achterberg & R. de Vries, RMNH’07”.

Diagnosis. — Female. Length 2.3 mm. Ovipositor sheath 0.5 mm. Dark, but rather bright metallic green to bluish (fig. 7); pronotum and vertex brassier sublaterally; trochanters, apices of fore and mid femora, all tibiae and tarsi pale testaceous. Frenal area narrow, smooth and distinct, twice as long as broad in horizontal posterior view; metanotum with 4 irregularly spaced carinulae; propodeum foveolate; prepectus pilose; lower fovea of mesepimeron removed from hind corner, episternum reticulate; hind femur 1.9 times as long as broad, with an inner basal tooth and outer ventral margin with 3 large differently sized teeth (fig. 2). MV = 20; PMV = 12; STV = 5.

Male. — Unknown.

Host. — Unknown.

Distribution. — Laos, Vietnam (new record).

Remarks. — *R. frenalis* comes near *R. tridens* Bouček in the key to species by Bouček (1978) but differs from *R. tridens* in having the scutellum with a distinct glabrous, smooth frenal area whereas in *R. tridens* the scutellum lacks a distinct frenum as its sculpture and pilosity virtually reach the marginal crenulate groove.

Rhynchotricida maai Bouček, 1978
(figs 4, 8)

Rhynchotricida maai Bouček, 1978: 118. Holotype female, East Malaysia (BPBM).

Material. — 1 ♀ (RMNH), “N. Vietnam: Hoa Binh, Pa Co Hang Kia N.R., 1378 m, N 20°41’44” E 104°53’35”, 10-24.x.2009, Mal. tr[ap] 20, C. v. Achterberg & R. de Vries, RMNH’09”.

Diagnosis (female). — Length 2.5-3.1 mm. Bronze green, in places darker or bluish sheen; T1 comparatively brightly green; antennae brown; scapus paler; coxae and hind

femora concolorous with mesosoma; all remaining parts of legs testaceous. Head width in anterior view 1.2 times its height; head length 0.4 times its width; in side view clypeus appearing as almost in one plane; minimum distance between eyes in dorsal view 0.5 times head width; malar sulcus nearly half as long as shortest diameter of eye; scape 2.8 times as long as wide. Mesosoma 1.6 times as long as wide. Relative length of CC = 60; MV = 37; PMV = 20; STV = 7. Hind femur 1.85 times as long as broad, with an inner basal tooth, outer ventral margin with a row of 5 differently sized teeth; ovipositor sheath 0.6 times length of hind tibia.

Male. — Similar to female except for some minor differences mentioned by Bouček (1978).

Host. — Unknown.

Distribution. — East Malaysia, Laos, Vietnam and Philippines (Bouček, 1978).

Remarks. — The remarks given under *R. vriesi* spec. nov. are also applicable here.

Rhynchotricida tridens Bouček, 1978

(fig. 1)

Rhynchotricida tridens Bouček, 1978: 120. Holotype female, India (BMNH, examined).

Diagnosis (female). — Length 2.2-2.3 mm. Ovipositor 0.5 mm. Dark green, on sides darker, bluish or blackish; on vertex and pronotum brightly brassy; scapus, tibiae and tarsi pale yellow; flagellum pale brown. Head in anterior view 1.3 times as wide as high; relative L:W of antennal segments: scapus = 5:2.5; pedicellus: 2:2; F1 to F7 3:4 for each segment; clava = 6:4; apical two claval segments combined as long as first claval segment. Scutellum with pilosity extending to marginal crenulate furrow; prepectus pilose; hind coxa 1.7 times as long as wide; hind femur 2.3 times as long as broad; with 3 outer differently sized teeth. Ovipositor sheath 0.6 times as long as hind tibia.

Male. — Unknown.

Host. — Unknown.

Distribution. — India.

Remarks. — This is a species not found in Vietnam. It is included here to make identification easier if found later in Vietnam and for easy comparison. For comparison with resembling species see “remarks” under *R. frenalis* given above.

Rhynchotricida ovivora Bouček, 1978

(figs 3, 6)

Rhynchotricida ovivora Bouček, 1978: 117. Holotype female, West Malaysia, (BMNH, examined).

Diagnosis. — (partly based on Bouček, 1978).

Female. — Length 2.3 mm.

Dark blue, in some places brighter, often merging with green or violet; propodeum and dorsal side of metasoma (except cupreous bases of T3 and T4) bright violet blue; antenna yellow with apex infuscate; legs (except coxae and hind femur) yellow testaceous; middle tibia and tarsus pale whitish. Head with lower face medially glabrous; median part down to clypeus raised; head width 1.2 times its height in anterior view;

POL twice as OOL; malar space 0.25 times height of eye. Flagellum plus pedicellus 2.3 times as long as height of eye. Relative L:W of antennal segments: scapus 7:3; pedicellus =3:3; F1 = 4:4; F2 to F7 uniformly 3:4; clava = 6:4; combined length of apical two segments of clava as long as first claval segment. Mesosoma 1.4 times as long as wide; scutellum slightly broader than long; narrow frenal area longitudinally engraved reticulate (fig. 6); prepectus with setae on depressed dotted area; hind femur twice as long as broad, with a row of 7 almost regular teeth on outer ventral margin. Fore wing with MV as long as CC; PMV 0.6 times as long as MV, 2.4 times as long as STV. Ovipositor sheath 0.6 times length of hind tibia.

Male. — Similar to female except in characters mentioned by Bouček (1978).

Host. — Oviposition in heteropterous eggs on cocoa (Bouček, 1978).

Distribution. — West Malaysia.

Remarks. — This extralimital species is included here in order to make identification of this species if found in Vietnam later and for easy comparison with other species treated here. This species differ from all other species of *Rhynchoticida* in having the hind femur with a row of 7 almost regular teeth on the outer ventral margin and in having a dull narrow frenal area with engraved reticulate-striate surface (fig. 6).

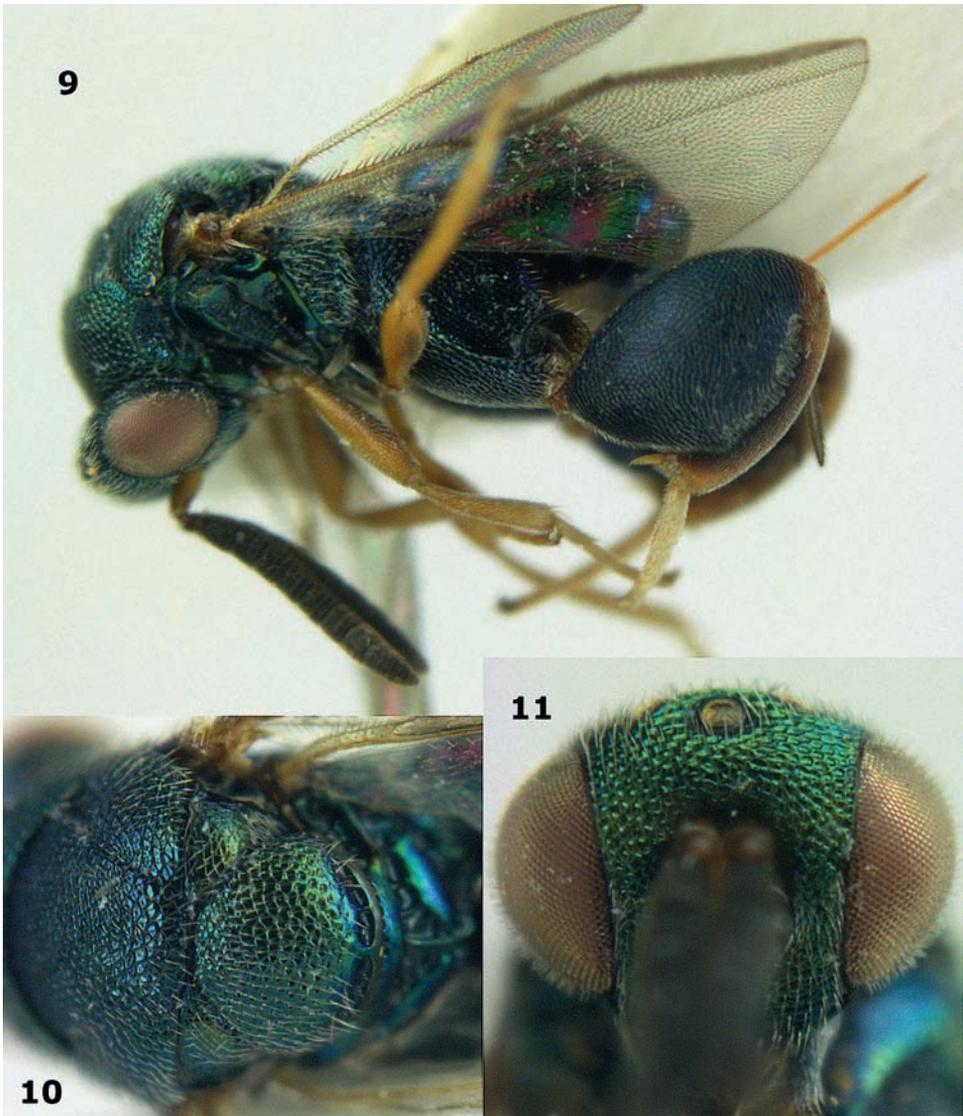
Rhynchoticida vietnamica spec. nov.
(figs 9-11)

Material. — Holotype (RMNH), female, "Vietnam: Ninh Thuận, Núi Chúa N.P., northwest part, Mal. tr. 17, c. 150 m, 24-30.v.2007, C. v. Achterberg & R. de Vries, RMNH'07". Paratype (IEBR): 1 female, "S. Vietnam: Đông Nai, Cát Tiên N.P., ca 100 m, 19-25.iv.2007, Mal[aise] traps Dong trail, Mai Phu Quy & Nguyen Thanh Manh, RMNH'07".

Female (holotype). — Length 2.4 mm, plus ovipositor sheath 0.9 mm.

Colour. — Body metallic (fig. 9), head green (fig. 11); eyes pale yellowish brown; ocelli pale reflecting yellow; antennae dark brown but scapus brownish yellow, with golden yellow pilosity; pronotum, mesoscutum and scutellum dark bluish green; metanotum and propodeum largely blue; pleural region dark greenish blue; T1 blue with greenish sheen; remaining metasomal tegites dark bluish with purple sheen; ovipositor sheath dark brown; fore and mid coxae dark bluish green; remaining segments of fore and mid legs brownish yellow; hind coxa dark blue, femur black; hind trochanter brown; hind tibia dark brown, but base and apex brownish yellow; tarsi pale yellow; wings hyaline with veins brown; wing pilosity dark brown; pubescence on body dirty white.

Head. — Width 1.33 times height in anterior view (excluding mandibles); width in dorsal view 2.2 times length, 0.9 times width of mesosoma (excluding tegulae); face mostly rugose, but medially smooth; frons and vertex reticulate-rugose; convex upper clypeus superficially coriaceous, shiny, lower part smooth, margin slightly convex; minimum distance between eyes and toruli 3.0 times distance between toruli, and 0.9 times height of eye in profile; eyes densely setose; width of eye in profile 0.65 times eye height. Scrobe separated from anterior ocellus by 1.7 times diameter of anterior ocellus. Antenna with scape not reaching level of anterior ocellus (fig. 9); relative L:W of antennal segments: scapus = 14:5; pedicel = 4:3; anellus = 1:3; F1 = 9:8; F2 to F7 (each segment) 8:9 as long as broad; clava = 19:8; each funicular segment with 3 rows of longitudinal sensillae; clava with two apical segments combined 1.4 times as long as first claval segment.



Figs 9-11, *Rhynchotricida vietnamica* spec. nov., female, holotype: 9, habitus, lateral aspect; 10, scutellum, dorsal aspect; 11, head, anterior aspect.

Mesosoma.— Length 1.4 times width (excluding tegulae); pronotum 1.65 times as wide as long; mesoscutum 1.2 times longer and broader than pronotum, 1.6 times as broad as long; scutellum as long as broad; axillae not advanced anteriorly; pronotum, mesoscutum and scutellum superficially reticulate and uniformly pubescent; frenal area medially narrowly smooth posteriorly (fig. 10). Propodeum with a distinct median carina and coarsely crenulate-rugose at basal margin and near median carina; convex submedian surface smooth and shiny; propodeal spiracles elongate; each callus with

more than 20 setae. Mesepimeron broad and smooth, with central fovea and another pit in postero-ventral corner. Prepectus without pits, glabrous. Hind coxa 1.4 times as long as broad, 0.9 times shorter than hind femur, dorsal half distinctly and closely punctate, interstices shorter than diameter of a pit, shiny, with some setae, ventral side superficially reticulate and pubescent. Hind femur 1.65 times as long as wide, with close setigerous punctation on outer disc, interstices and inside of pits smooth, inner side of hind femur with a strong basal tooth, outer ventral margin with a row of 6 differently sized teeth (fig. 9); hind tibia 5.2 times as long as width of its distal end; hind tibial spur 0.65 times as long as hind metatarsus. Forewing 2.5 times as long as broad; relative length of CC = 40, SMV 32; parastigma = 9; MV = 23; PMV = 12; STV = 4. CC on upper surface in proximal half with 1 or 2 rows of setae, distal half with 2-4 rows of setae.

Metasoma. — Length 0.9 times as long as mesosoma; T1 not quite reaching middle of metasoma, smooth and shiny; T2 smooth and shiny, 0.35 times as long as T1; ovipositor sheath 1.2 times length of hind tibia.

Male. — Unknown.

Biology. — Unknown.

Etymology. — Named after the country of origin, Vietnam.

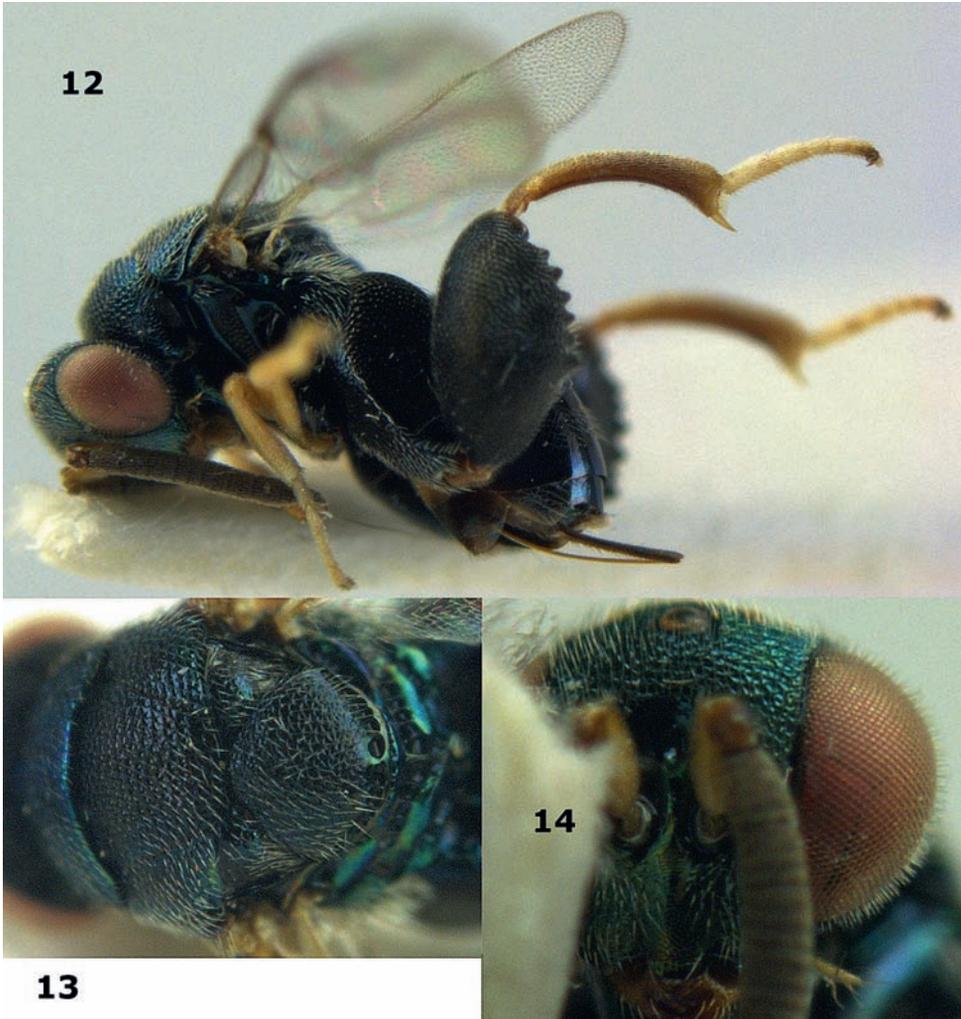
Remarks. — This new species comes near *Rhynchoticida caudata* Bouček in the key to species by Bouček (1978) but differs by having (i) MV 1.9 times as long as PMV (in *R. caudata* MV 2.5 times as long as PMV), (ii) PMV 3 times as long as STV (PMV 2.2 times STV), (iii) ovipositor sheath 1.2 times as long as hind tibia (ovipositor sheath 1.27 times as long as hind tibia), (iv) head width in anterior view 1.3 times its height (head 1.2 times its height), (v) frenal area medially narrowly smooth (frenal area longitudinally rugose), (vi) F1 1.13 times as long as wide (F1 1.35 times as long as wide), (vii) F2 to F7 broader than long (F2 to F7 longer than broad), (viii) clava with two apical segments combined 1.4 times as long as first claval segment (two apical segments combined as long as first claval segment), (ix) mesosoma length 1.4 times its width (mesosoma 1.75 times as long its width) and (x) antenna with golden yellow pilosity (antenna without golden pilosity).

Rhynchoticida vriesi spec. nov.
(figs 12-14)

Material. — Holotype female (RMNH), "S.Vietnam: Đông Nai, Cat Tien N.P., ca 100 m, 14-20.v.2007, Mal[aise] traps 20-23, *Lagerstroemia* tr[ail], C. v. Achterberg & R. de Vries, RMNH'07".

Female (holotype). — Length 2.7 mm, plus ovipositor sheath 0.6 mm.

Colour. — Head metallic green (fig. 14); eyes pale brownish yellow; ocelli pale reflecting yellow; antennae brown with scapus pale yellow, base of pedicel pale yellow; pronotum dark bluish; mesoscutum and scutellum darker with bluish refringence; metanotum and propodeum bluish green; pleural region dark metallic blue; T1 with violet refringence; remaining gastral tegites dark bluish with violet refringence; ovipositor sheath black; fore and mid coxae dark bluish green; remaining segments of fore and mid legs pale yellow; hind coxa and femur black; hind trochanter pale brownish yellow; hind tibia pale reddish brown with base and apex pale yellow; tarsi whitish yellow; wings hyaline with veins pale brown; wing pilosity pale brown; pubescence on body dirty white.



Figs 12-14, *Rhynchotricida vriesi* spec. nov., female, holotype: 12, habitus, lateral aspect; 13, scutellum, dorsal aspect; 14, head, anterior aspect.

Head.— Width 1.4 times height in anterior view (excluding mandibles); width in dorsal view 2.5 times length, equal to width of mesosoma (excluding tegulae); convex upper clypeus cross striolate, lower part strongly reticulate, margin truncate; minimum distance between eyes at toruli 3.5 times distance between toruli, 0.7 times height of eye in profile; length of eye in profile 0.8 times eye height. Scrobe separated from anterior ocellus by twice diameter of anterior ocellus. Antenna with scape not reaching anterior ocellus; relative L: W of antennal segments: scapus = 15:5; pedicel = 6:4; anellus = 2:3; F1 = 9:8; F2 to F7 (each segment) 1.25 times as long as broad (8:9); clava = 15:9; each funicular segment with 3 rows of longitudinal sensillae; clava with two apical segments combined as long as its first claval segment.

Mesosoma. — Length 1.4 times width (excluding tegulae); pronotum twice as wide as long; mesoscutum a little longer and broader than pronotum, twice as broad as long; scutellum as long as broad; axillae not advanced anteriorly; pronotum, mesoscutum and scutellum strongly reticulate and uniformly pubescent; frenal area medially narrowly smooth posteriorly (fig. 13). Propodeum with a strong median carina and a row of deep pits at basal margin, followed by two smaller pits (one each) on either side of median carina, lying close to it; convex submedian surface smooth and shiny; propodeal spiracles elongate; each callus with more than 20 setae. Broad smooth mesepimeron with central fovea and another pit in postero-ventral corner. Prepectus with two pits, not setose. Hind coxa 1.7 times as long as broad, a little shorter than hind femur (19:21), dorsal half distinctly and closely pitted, interstices shorter than diameter of a pit, smooth and shiny, not pubescent, ventral side closely reticulate and pubescent. Hind femur twice as long as wide, with close setigerous pits on outer disc, interstices and inside of pits rugose, inner side of hind femur with a strong basal tooth, outer ventral margin with a row of 6 differently sized teeth; hind tibia 4 times as long as width of its distal end; hind tibial spur 0.5 times as long as hind metatarsus. Forewing 2.4 times as long as broad; relative length of CC = 40, SMV 33; parastigma = 9; MV = 23; PMV = 15; STV = 5. [CC = costal cell, SMV = submarginal vein; PMV = postmarginal vein; STV = stigma vein]. CC on upper surface in proximal half with 1 or 2 lines of setae, distal half with 2-4 rows of setae.

Metasoma. — Longer than mesosoma (14:12); T1 not quite reaching middle of metasoma, smooth and shiny; T2 smooth and shiny, 0.38 times as long as T1; ovipositor sheath 0.5 times length of hind tibia.

Male. — Unknown.

Biology. — Unknown.

Etymology. — Named after Mr R. de Vries who is one of the collectors and most of the parasitoids from Vietnam were prepared by him.

Remarks. — This new species comes to *R. maai* Bouček in the key to species by Bouček (1978) but differs from it having (i) the frenal line indistinct (frenal line distinct in *R. maai*), (ii) hind femur with 6 teeth on outer ventral margin (outer ventral margin of hind femur with 5 teeth), (iii) ovipositor sheath half length of hind tibia (ovipositor about 0.6 times length of hind tibia), (iv) MV 1.53 times PMV (MV 1.23 times PMV), (v) mesosoma 1.4 times as long as wide (mesosoma 1.6 times as long as wide), (vi) head width 1.37 times its height (head width 1.24 times its height) and T1 violet (T1 bright green).

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