

**A CONTRIBUTION TO THE TAXONOMIC KNOWLEDGE OF THE GENUS  
*Thrinchostoma* (*Thrinchostoma* s. str.) Saussure (Hymenoptera: Halictidae)  
FROM VIETNAM, WITH NEW RECORDS OF THREE SPECIES  
AND A KEY TO SPECIES**

**Tran Thi Ngat<sup>1,2,\*</sup>, Dang Thi Hoa<sup>1</sup>, Nguyen Thi Phuong Lien<sup>1,2</sup>, Phan Thi Giang<sup>3</sup>,  
Truong Thanh Truc<sup>4</sup>**

<sup>1</sup>Institute of Ecology and Biological Resources, VAST, Vietnam

<sup>2</sup>Graduate University of Science and Technology, VAST, Vietnam

<sup>3</sup>Vinh University, Vietnam

<sup>4</sup>Phan Dinh Phung School, Ba Dinh, Ha Noi, Vietnam

Received 24 October 2022; accepted 9 March 2023

**ABSTRACT**

Four species of the little-known bee genus *Thrinchostoma* Saussure, 1890 from Vietnam are presented including *Thrinchostoma* (*Thrinchostoma* s. str.) *tonkinense* Blüthgen, 1926 and three new records: *T. (T.) flaviscapus* Blüthgen, 1926; *T. (T.) sladeni* Cockerell, 1913; and *T. (T.) yunnanense* Niu & Zhu, 2016. The occurrence of *T. (T.) tonkinense* Blüthgen, 1926 in Vietnam is confirmed. A key to species and distribution map of four species of the genus *Thrinchostoma* are also provided for Vietnam.

**Keywords:** Apoidea, Halictinae, Halictini, morphology, key.

---

*Citation:* Tran Thi Ngat, Dang Thi Hoa, Nguyen Thi Phuong Lien, Phan Thi Giang, Truong Thanh Truc, 2023. A contribution to the taxonomic knowledge of the genus *Thrinchostoma* (*Thrinchostoma* s. str.) Saussure (Hymenoptera: Halictidae) from Vietnam, with new records of three species and a key to species. *Academia Journal of Biology*, 45(1): 23–33. <https://doi.org/10.15625/2615-9023/17607>

\*Corresponding author email: tranthingat1012@gmail.com

©2023 Vietnam Academy of Science and Technology (VAST)

## INTRODUCTION

The halictid bee genus *Thrinchostoma* Saussure, 1890 currently consists of about 50 species of three subgenera: *Diagonozus* Enderlein, 1903; *Eothrinchostoma* Blüthgen, 1930; and *Thrinchostoma* s. str. Saussure, 1890 (Michener, 2007; Michener & Engel, 2010; Niu et al., 2016). Among them, all these subgenera occur in Africa and Madagascar, while in the Asian region, mostly recognized species belong to the subgenus *Thrinchostoma* s. str. except one species in subgenus *Diagonozus*, *Thrinchostoma (Diagonozus) asianum* Sakagami, Kato & Itino, 1991. In Vietnam, only one species, *T. (T.) tonkinense* Blüthgen, 1926 was described from Tuyen Quang Province by Blüthgen (1926). No additional data on the genus has been updated from this country.

In this paper, we provide three new country records and occurrence confirmation of *T. (T.) tonkinense*. In addition, a key to four species of the genus *Thrinchostoma* (*Thrinchostoma* s. str.) occurring in Vietnam and their distribution map are given.

## MATERIALS AND METHODS

Specimens examined in the present study are deposited in the collection of Hymenoptera of the Institute of Ecology and Biological Resources (IEBR), Hanoi, Vietnam. Adult morphological and color characteristics were examined with a Nikon SMZ745 stereomicroscope. Photographs were taken with an ILCE-6000L/WAP2 digital camera attached to Nikon SMZ800N digital stereomicroscope, then stacked by Helicon Focus v7. All images were processed with Adobe Photoshop CS6. This software was also used to mark points on the distributed map (Fig. 7). The morphological terminology follows Michener (2007).

The abbreviations S 1, 2, 3... and T 1, 2, 3... refer to numbered metasomal sterna and metasomal terga, respectively.

Species with an asterisk mark (\*) are recorded in Vietnam for the first time.

## RESULTS

### Taxonomic accounts

#### Genus *Thrinchostoma* Saussure, 1890

Subgenus *Thrinchostoma* s. str.: *Thrinchostoma* Saussure, 1890: 52. Type species: *Thrinchostoma renitantly* Saussure, 1890, monobasic.

**Diagnosis.** According to Michener (2007), the diagnosis of the genus *Thrinchostoma* is as follows: elongate bees (body length 8-16 mm); body nonmetallic, black or with parts of the metasoma and even the whole body yellowish red; the clypeus strongly produced downward and strongly protuberant forward; the malar area distinct but variable, from less than one-third as long as wide to four times as long as wide, and as long as or longer than the eye; the paraocular lobe strongly produced down into the clypeus; both of the recurrent veins usually enter the third submarginal cell; the hind tibial spur of the female finely to coarsely serrate or the margin almost undulate; the hind tibia of the male with a broad yellowish enlargement that carries the tibial spurs; S4 of the male usually shortened, largely hidden by S3, but the lateral parts extend far posteriorly on either side of a broad concavity; the gonostylus dorsally large and rather elaborate, ventrally erect or retrorse.

In this paper, all four species from Northern and Central Highlands of Vietnam are placed in the subgenus *Thrinchostoma* s. str. because of the presence of the lower margin of the clypeus only moderately below the lower ocular tangent; the malar area with one-third to three times as long as wide; the inner hind tibial spur of the female widened medially by a broad tooth, distal to which the margin with coarsely toothed to almost edentate; S4 of the male with long setae on posterior lateral projections, but lacks a row of very coarse setae; such a row of setae often present on the basal thickening of S5.

#### *Thrinchostoma (Thrinchostoma) flaviscapus* Blüthgen, 1926 (\*) (Figs. 1a-f, 6a-c)

*Thrinchostoma flaviscapus* Blüthgen, 1926. Zoologische Jahrbucher. Abtheilung für

Systematik, Geographie und Biologie der Tiere, 51: 385–387, male, fig. 12, 17 - “Hinterindien, Yoonzaleen-Tal, Mai.1893, Bigham leg.” (Berliner Museum).

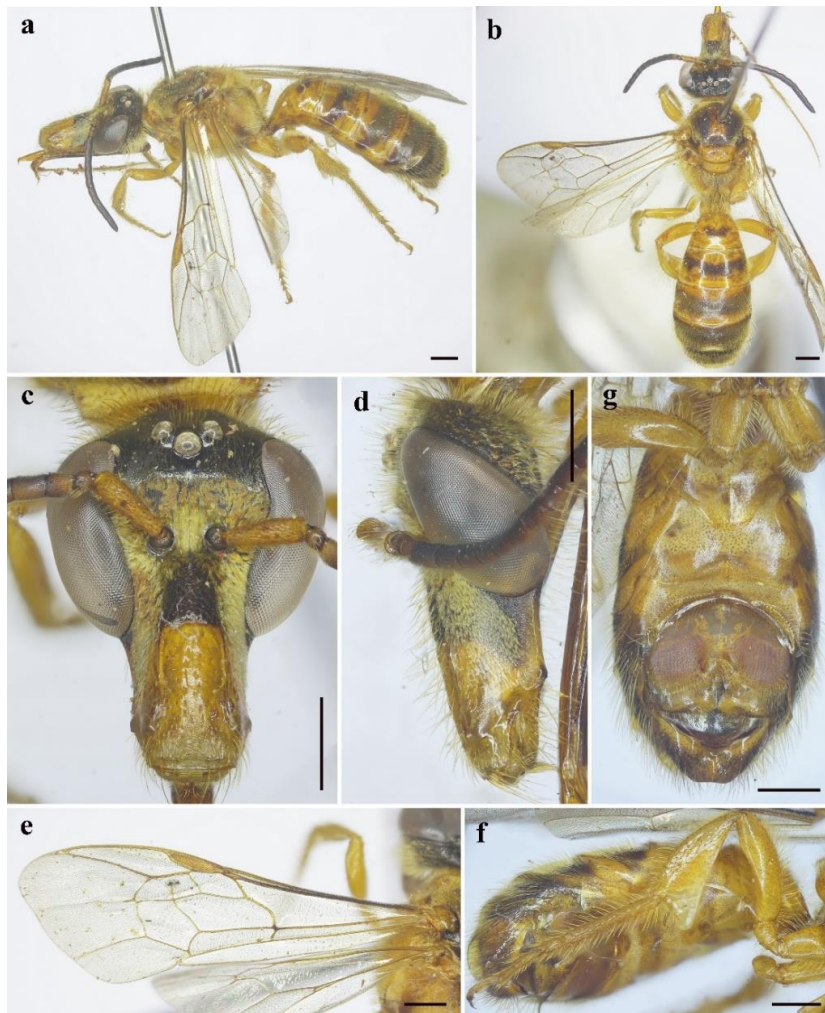


Figure 1. *Thrinchostoma (Thrinchostoma) flaviscapus* Blüthgen, 1926, male. a. Habitus, lateral view; b. Habitus, dorsal view; c. Head, frontal view; d. Head, lateral view; e. Fore wing; f. Hind leg; g. Metasoma, ventral view. Scale bars: 1 mm

**Diagnosis.** In both sexes, scape, clypeus, and legs entirely rusty yellow; in female, malar area much longer than the basal mandibular width; in male, the mesepisternum shining, with dense, fine punctures, forewing yellowish (like parchment), T1 and T2 pale reddish yellow (usually with transverse brown bands), S5 with 7–8 closely spaced, peg-like setae decreasing gradually in length laterad, basal disk at middle longitudinally and flatly wrinkled.

According to Blüthgen (1926) and Michener & Engel (2010), *T. flaviscapus* is similar to *Thrinchostoma sladeni* but can be separated from the latter by the combination of the following characteristics: in female, malar area much longer than the basal mandibular width (only about one-third as long as basal mandibular width in *T. sladeni*); in male, hind trochanter unmodified ventrally (having angular projection in *T. sladeni*), hind femur and hind tibia weakly swollen (both

being strongly swollen in *T. sladeni*), apical margin of S2 with long, tongue-like extension (straight, unmodified in *T. sladeni*).

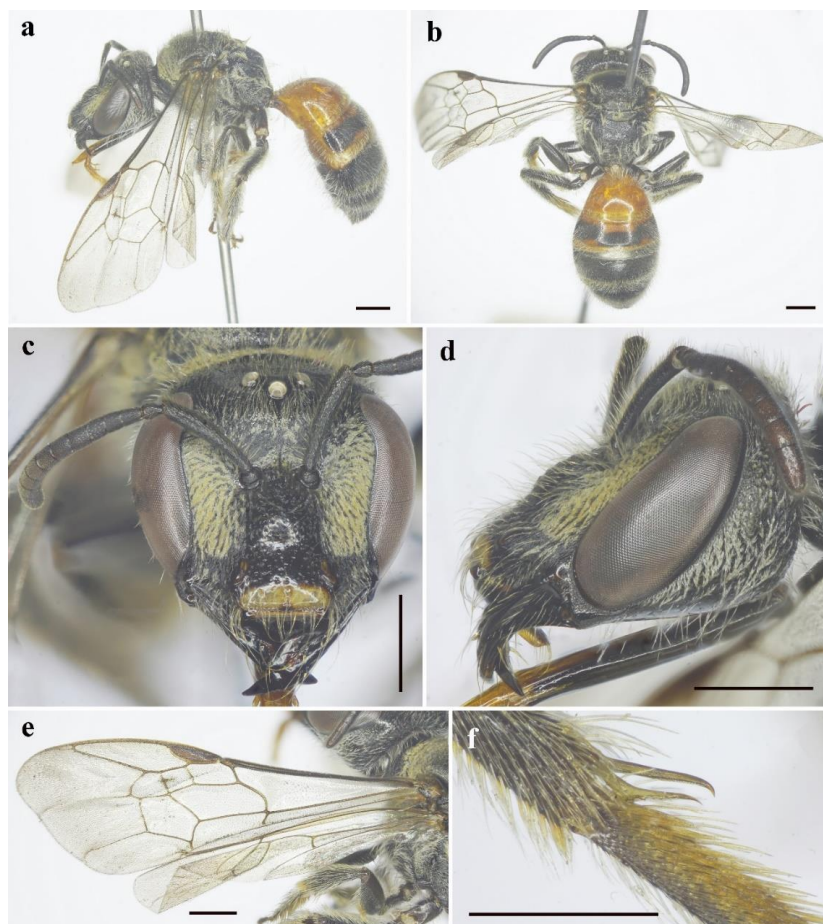
**Material examined.** VIETNAM: Tuyen Quang province: 5♂, Na Hang district, Na Hang Natural Reserve, Son Phu Ranger Station, 22°2'07"N, 105°25'34.7"E, alt. 264 m, 9.vi.2015, Nguyen Thi Phuong Lien, Nguyen Dac Dai, Truong Xuan Lam leg.; 1♂, xi.2018, Khuat Dang Long leg., malaise trap.

**Notes.** The characteristics of most Vietnamese specimens match well the original description of Blüthgen (1926) except for one specimen from Tuyen Quang province collected by Malaise trap with dark marks on clypeus laterally.

In this study, S7–8 and male genitalia of *T. (T.) flaviscapus* are described and illustrated for the first time (Figs. 6a–c). S7 with median part triangular, slender from base to near apex and little extend at the apex (Fig. 6a). S8 as in Fig. 6a. In dorsal view, penis valve without a middle horizontal groove as in *T. (T.) tonkinense*, divided into three lobes apically, the inner lobe longer than the remaining two lobes (Fig. 6b). In ventral view, volsella without sharp antero-lateral corner (Fig. 6c).

**Distribution.** Indonesia, Vietnam (Tuyen Quang).

*Thrinchostoma (Thrinchostoma) sladeni* Cockerell, 1913 (\*) (Figs. 2a-f)



**Figure 2.** *Thrinchostoma (Thrinchostoma) sladeni* Cockerell, 1913, female. a. Habitus, lateral view; b. Habitus, dorsal view; c. Head, frontal view; d. Head, lateral view; e. Fore wing; f. Hind tibia, showing the inner tibial spur. Scale bars: 1 mm



*Thrinchostoma sladeni* Cockerell, 1913. The Canadian Entomologist, 45: 35–36, male, female—“India, Khasia Hills, 1895, F. W. L. Sladen leg.” (depository unknown).

**Diagnosis.** The female malar area about one-third as long as the width of mandible base, second marginal crossvein angulated medially, metasomal terga with short, simple, laterally-directed hairs on posterior marginal zones, T2 with broad orange apical margin; the male malar area nearly as long as the width of mandible base, hind femur, hind tibia strongly swollen, and hind trochanter ventrally with angular projection, basal margin of S5 with two transverse rows of

spines numbered in 3 respectively at both sides.

**Material examined.** VIETNAM: **Dien Bien** province: 1♀, Muong Cha district, Xa Tong commune, 21°56'13"N, 103°15'11"E, 13.iv.2022, Dang Thi Hoa leg.

**Notes.** All these characteristics of the female specimen from Vietnam agree with diagnosis of *T. (T.) sladeni* of Cockerell (1913).

**Distribution.** India, China, Vietnam (Dien Bien).

*Thrinchostoma (Thrinchostoma) tonkinense* Blüthgen, 1926 (Figs. 3a-f, 4a-f, 6d-f)

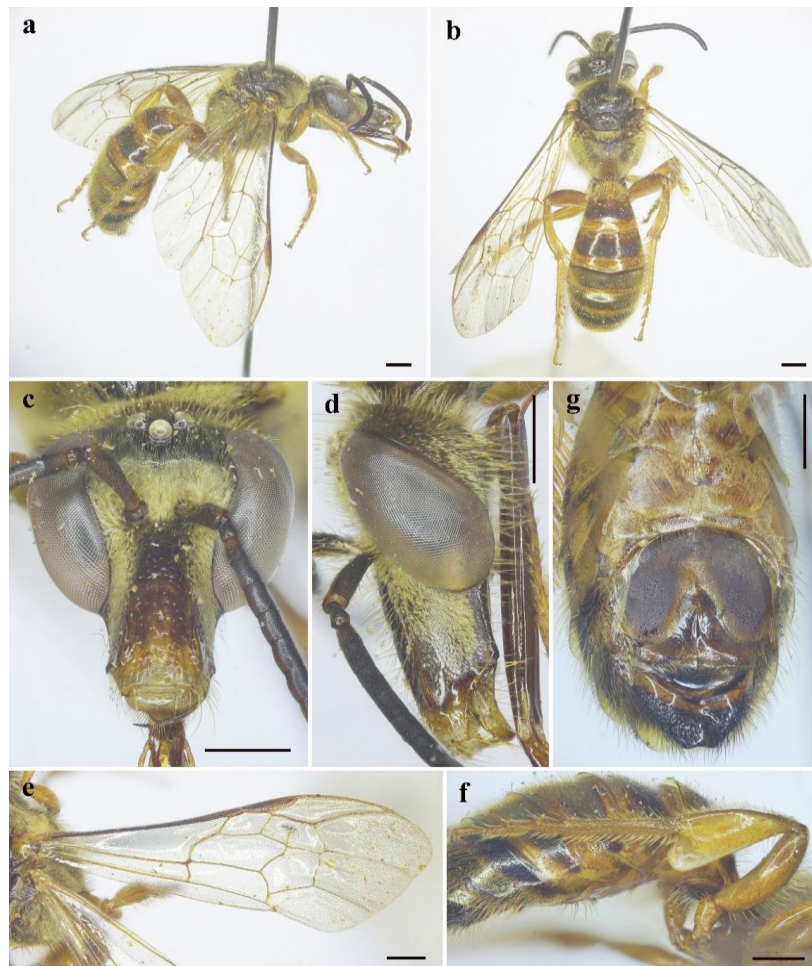


Figure 3. *Thrinchostoma (Thrinchostoma) tonkinense* Blüthgen, 1926 (from Tuyen Quang province), male. a. Habitus, latero-dorsal view; b. Habitus, dorsal view; c. Head, frontal view; d. Head, lateral view; e. Fore wing; f. Hind leg; g. Metasoma, ventral view. Scale bars: 1 mm

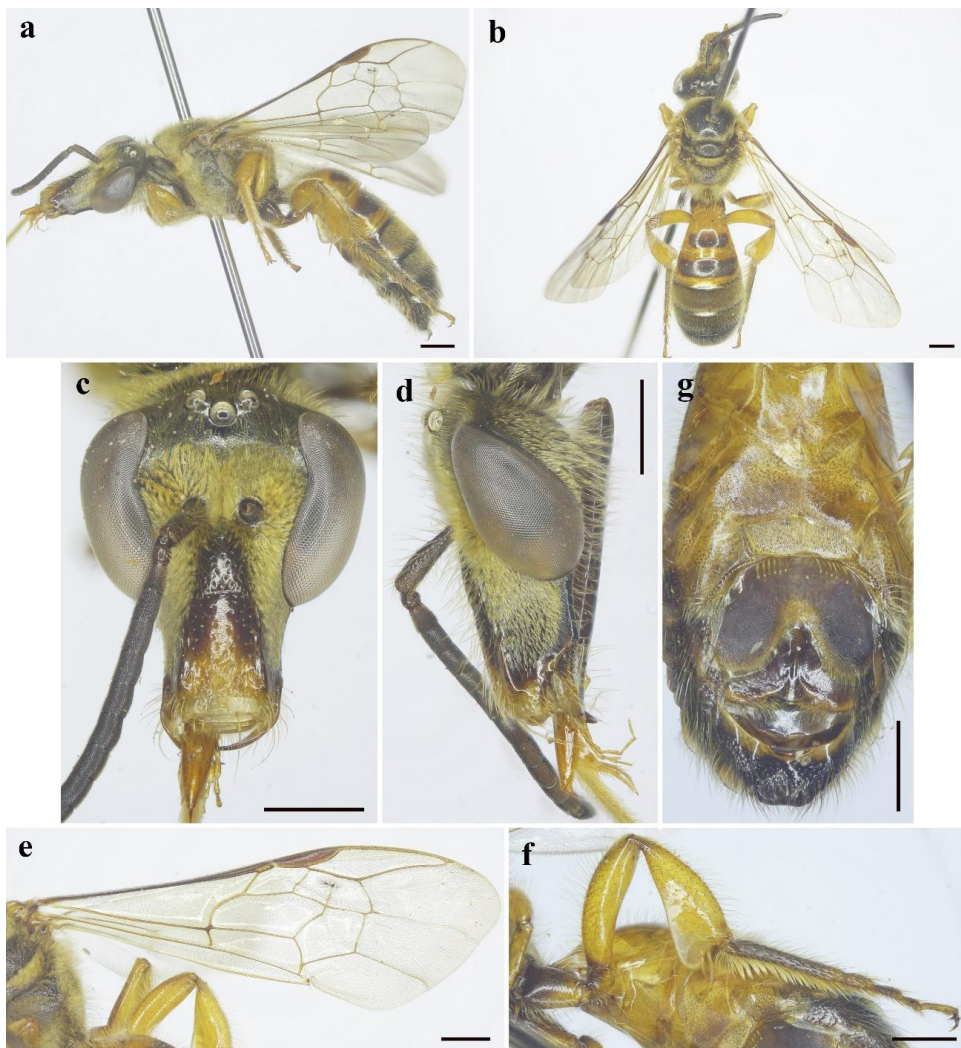


Figure 4. *Thrinchostoma (Thrinchostoma) tonkinense* Blüthgen, 1926 (from Gia Lai province), male. a. Habitus, lateral view; b. Habitus, dorsal view; c. Head, frontal view; d. Head, lateral view; e. Fore wing; f. Hind leg; g. Metasoma, ventral view. Scale bars: 1 mm

*Thrinchostoma tonkinense* Blüthgen, 1926. Zoologische Jahrbucher. Abtheilung für Systematik, Geographie und Biologie der Tiere, 51: 387–389, male, fig. 13-“Vietnam, Chiem Hoa, fruhstorfer leg., aug.-sept.” (Wiener Museum).

**Diagnosis.** The male metafemur unmodified; S5 with 6–8 closely spaced, peg-like setae, approximately the same length; disc of S6 with a low hump separated by small area of level integument from apical depression, apically triangular depression or pit; apical most metasomal terga yellowish

red, with reddish brown transverse bands of various development.

**Material examined.** VIETNAM: **Tuyen Quang** province: 2♂, Na Hang district, Na Hang Natural Reserve, Son Phu Ranger Station, 22°21'07"N, 105°25'34.7"E, alt. 264 m, 9.vi.2015, Nguyen Thi Phuong Lien, Nguyen Dac Dai, Truong Xuan Lam leg.; **Gia Lai** province: 16♂, Kbang District, Kon Pne commune, Kon Ka Kinh National Park, 14°23'22.9"N, 108°20'27.5"E, alt. 847 m, 15.vii.2012, Nguyen Thi Phuong Lien leg.



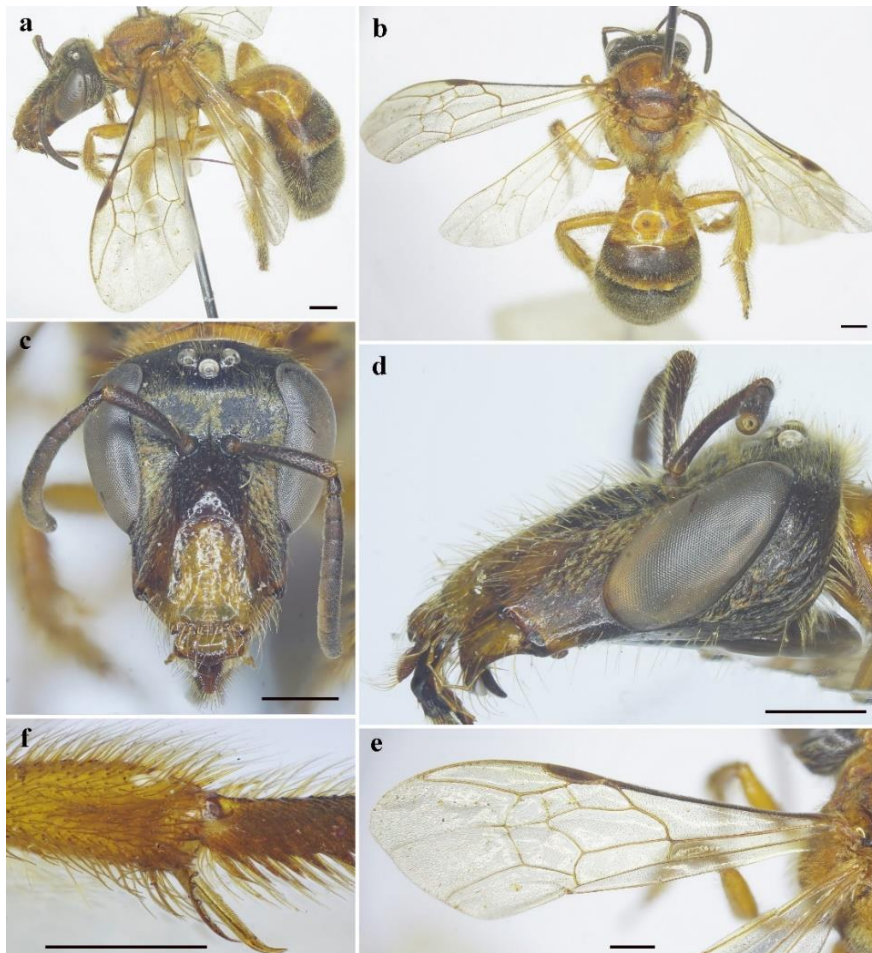
**Notes.** *T. (T.) tonkinense* was recorded only from Tuyen Quang province of Vietnam (Blüthgen, 1926). In this study, the occurrence of this species in Vietnam is confirmed after nearly a century, with new records in Gia Lai province.

The specimens collected from Tuyen Quang province bear characteristics similar to the diagnosis of Blüthgen (1926). However, in the specimens from Gia Lai province, the antenna beneath is blackish, T3-7 lack yellow rust bands apically. These differences may be geographical variations because male genitalia of specimens from two populations is very similar to each other.

In this study, S7-8 and male genitalia of *T. (T.) tonkinense* is described and illustrated for the first time (Figs. 6d-f). S7 with median part triangular, slender from base to apex and round apically (Fig. 6d). S8 as in Fig 6d. In dorsal view, penis valve with a middle horizontal groove and divided into three lobes apically, the median lobe longer than the remaining two lobes (Fig. 6e). In ventral view, volsella with spine antero-lateral corner (Fig. 6f).

**Distribution.** Vietnam (Tuyen Quang, Gia Lai).

*Thrinchostoma (Thrinchostoma) yunnanense* Niu & Zhu, 2016 (\*) (Figs. 5a-f)



*Figure 5. Thrinchostoma (Thrinchostoma) yunnanense* Niu & Zhu, 2016, female. a. Habitus, lateral view; b. Habitus, dorsal view; c. Head, frontal view; d. Head, lateral view; e. Fore wing; f. Hind tibia, showing the inner tibial spur. Scale bars: 1 mm

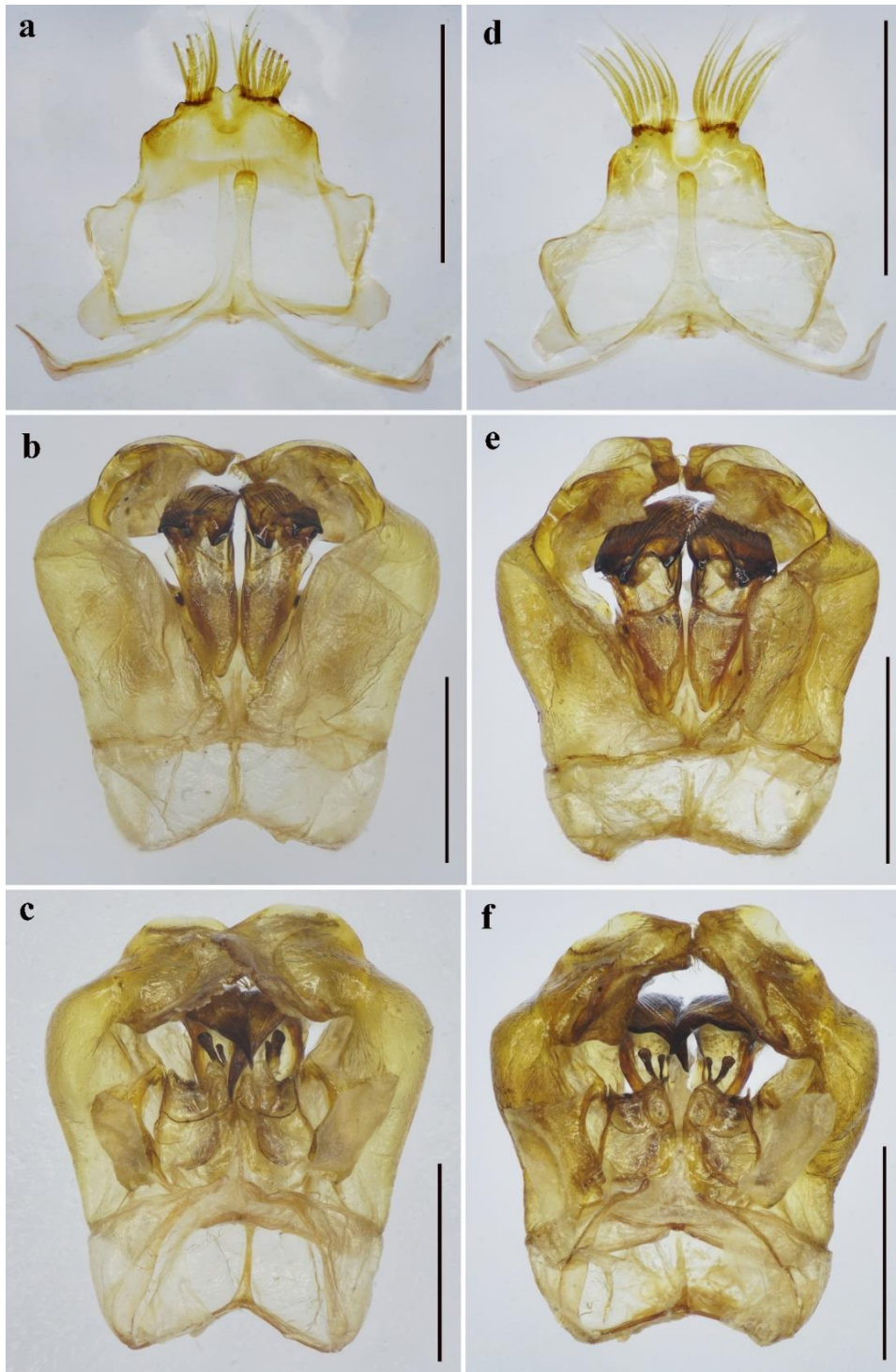


Figure 6. S7-8 and male genitalia of two Vietnamese species (a-c. *Thrinchostoma (Thrinchostoma) flaviscapus*; d-f. *Thrinchostoma (Thrinchostoma) tonkinsense*). a, d. S7-8, ventral view; b, e. Male genitalia, dorsal view; c, f. Male genitalia, ventral view. Scale bars: 1 mm



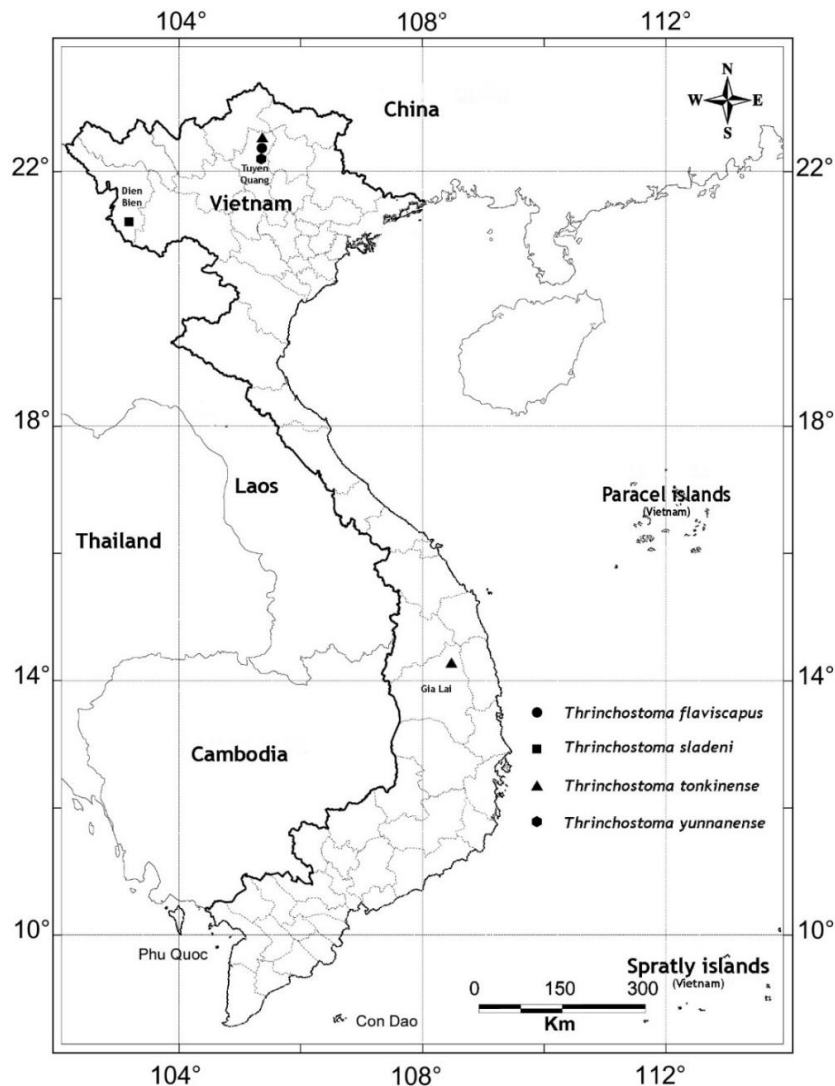


Figure 7. Distribution map of four species of the genus *Thrinchostoma* from Vietnam

*Thrinchostoma yunnanense* Niu & Zhu, 2016. *Zoology Systematics*, 41(2): 212–214, male female, figs. 23–32—“Xishuangbanna, Yunna, China” (Institute of Zoology, Chinese Academy of Sciences).

**Diagnosis.** The female disc of T1 with very sparse and fine punctures, T2 without broad orange apical margin; the male with two transverse rows of spines at basal margin of S5 (7 rows on left side and 6 rows on right side).

**Material examined.** VIETNAM: Tuyen Quang province: 2♀, Na Hang district, Na

Hang Natural Reserve, Son Phu Ranger Station, 22°21'07"N, 105°25'34.7"E, alt. 264 m, 9.vi.2015, Nguyen Thi Phuong Lien, Nguyen Dac Dai, Truong Xuan Lam leg.

**Notes.** The coloration of female specimens agrees with the original description of Niu et al. (2016) except hind coxa, hind femur and hind tibia being rust yellow (hind leg is blackish in Niu et al. (2016)).

**Distribution.** China, Vietnam (Tuyen Quang).

**Key to species of the subgenus *Thrinchostoma* s. str. from Vietnam**

(females of *T. (T.) tonkinense* and *T. (T.) flaviscapus*; males of *T. (T.) sladeni* and *T. (T.) yunnanense* are unknown)

1. Females..... 2  
 - Males..... 3
2. Clypeus convex apically (Fig. 2c); malar area shorter than the width of mandible base (Fig. 2d); second marginal crossvein with hair tuft medially (Fig. 2e); T1 without black spots medially (Fig. 2b)..... *T. (T.) sladeni* Cockerell, 1913  
 - Clypeus flat (Fig. 5c); malar area longer than the width of mandible base (Fig. 5d); second marginal crossvein without hairs tuft medially (Fig. 5e); T1 with two small round black spots medially (Fig. 5b)..... *T. (T.) yunnanense* Niu & Zhu, 2016
3. S6 apically depression deep forming to two hump laterally, which slender at apical half, disc of S6 dark brown (Fig. 2); penis valve in dorsal view with a middle horizontal groove and divided into three lobes apically, the median lobe longer than the remaining two lobes (Fig. 6e); volsella in ventral view with spine antero-lateral corner (Fig. 6f); scape dark brown except reddish brown basally and apically; clypeus dark rust yellow except dark marks laterally or blackish (Figs. 3c, 4c)..... *T. (T.) tonkinense* Blüthgen, 1926  
 - S6 apically depression shallower forming to two hump laterally, which relative round at apical half and disc of S6 rust yellow (Fig. 1g); penis valve in dorsal view without a middle horizontal groove and divided into three lobes apically, the inner lobe longer than the remaining two lobes (Fig. 6b); volsella in ventral view without sharpened antero-lateral corner (Fig. 6c); scape and clypeus entirely rust yellow (Fig. 1c)... *T. (T.) flaviscapus* Blüthgen, 1926

**CONCLUSION**

A total of four species of *Thrinchostoma* (*Thrinchostoma* s. str.) are found in Vietnam, three new country records (*T. (T.) flaviscapus* Blüthgen, 1926, *T. (T.) yunnanense* Niu & Zhu, 2016 and *T. (T.) sladeni* Cockerell, 1913) and one occurrence confirmation (*T. (T.) tonkinense* Blüthgen, 1926). Moreover, the *Thrinchostoma* species are found in other provinces belonging to Northern (except for Tuyen Quang province known before) and Central Highlands provided the information on their distributed range in Vietnam. The findings importantly contribute to the taxonomic knowledge of the bee genus *Thrinchostoma* in particular and the family Halictidae in general. The present study is a premise for heading the analysis and making clear the phylogenetic relationship on this genus in the future.

**Acknowledgements:** The authors are grateful to the editor and the anonymous reviewers for invaluable comments and suggestions to significantly improve the manuscript quality.

This work was funded by the Vietnam Academy of Science and Technology under grant number ĐLTE00.04/22-23.

**REFERENCES**

- Blüthgen P., 1926. Beiträge zur Kenntnis der indo-malayischen Halictus und Thrinchostoma Arten (Hym. Apidae, Halictini). *Zoologische Jahrbücher, Abteilung für Systematik, Geographie und Biologie der Tiere*, 51: 375–698, pls. 4–5.
- Blüthgen P., 1930. Beiträge zur Kenntnis der äthiopischen Halictinae (Hym. Apidae). - Die Gattung Thrinchostoma Saussure. *Mitteilungen aus dem zoologische Museum in Berlin*, 15: 495–542.
- Cockerell T. D. A., 1913. The bee genus *Thrinchostoma* in Asia. *The Canadian Entomologist*, 45: 35–36.
- Enderlein G., 1903. Drei neue Bienen mit rüsselartiger verlängerung des Kopfes. *Berliner Entomologische Zeitschrift*, 48: 35–40.

- Michener C. D., 2007. *The Bees of the World* (2<sup>nd</sup> Edition). The Johns Hopkins University Press. Baltimore, MD. xiv + [i] + 953 p.
- Michener C. D., Engel M. S., 2010. The bee genus *Thrinchostoma* Saussure in the Southern Asian Region (Hymenoptera: Halictidae). *Proceedings of the Entomological Society of Washington*, 112: 129–139. <https://doi.org/10.4289.0013-8797.112.1.253.129>.
- Niu Z., Yuan F., Oremek P., Liu F., Zhu C., 2016. *Thrinchostoma* Saussure, little known bee genus from China, with description of a new species (Hymenoptera: Halictidae). *Zoology Systematics*, 41(2): 207–215. <https://doi.org/10.11865/zs.201619>
- Sakagami S. F., Kato M., Itino T., 1991. *Thrinchostoma* (*Diagonozus*) *asianum* sp. nov.: Discovery of an African Subgenus of Long-malared Halictine Bees from Sumatra, with some Observations on its Oligotrophy to Impatiens. *Tropic*, 1: 49–58.
- Saussure H. de., 1890–1892. Histoire physique, naturelle et politique de Madagascar publiée par Alfred Grandidier. Volume XX. Histoire naturelle des Hyménoptères. – Imprimerie Nationale. Paris: I–XXI & 590 & plates 1–27 (1890: I–XXI & 1–176 & pates 1–20; 1892: 177–590 & pates 21–27).
- Sladen F. W. L., 1915. The bee genus *Thrinchostoma* in India. *Canadian Entomologist*, 47: 213–215.