

## NINE NEW SPECIES OF THE TRIBE ANTHIDIINI FROM CHINA (APOIDEA, MEGACHILIDAE, ANTHIDIINI)

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**Abstract** Nine new species of the tribe Anthidiini from China are described and illustrated. Which are: *Bathanthidium* (*s. str.*) *circinatum* sp. nov., *Bathanthidium* (*s. str.*) *emeiense* sp. nov., *Anthidium* (*s. str.*) *furcatum* sp. nov., *Anthidium* (*s. str.*) *bicolor* sp. nov., *Anthidium* (*s. str.*) *striatum* sp. nov., *Anthidium* (*s. str.*) *moganshanensis* sp. nov., *Anthidium* (*Proanthidium*) *hdianthinum* sp. nov., *Trachusa* (*Paraanthidium*) *coronum* sp. nov., *Trachusa* (*Paraanthidium*) *cornopes* sp. nov. All the type specimens are kept in the Institute of Zoology, Chinese Academy of Sciences, Beijing, China.

**Key words** Apoidea, Megachilidae, Anthidiini, new species, China.

### 1 *Bathanthidium* (*s. str.*) *circinatum* sp. nov. (Fig. 1)

Female Length 7 mm; clypeus broader than long, with punctures on clypeus; punctures on face, vertex and genae larger and denser; frons with dense wrinkle-like punctures; 1<sup>st</sup> flagellum slightly longer than 2<sup>nd</sup>; mesopleural carina not conspicuous; mesonotum and scutellum with coarse and dense punctures; margin of scutellum overhanging above metanotum; hind basitarsi nearly triangular, apex 2 times as basal part's width; basal margin of T1 with carina; apical margin of T1-T4 with gradulus; punctures on middle of T1-T5 large, basal and apical punctures smaller; T6 with wrinkle like punctures. Head black, mandible (apical tooth black), clypeus (middle with circle marking), paraocular area and laterale angle of vertex with long yellow markings; pronotum lobe, lateral angle of mesonotum, axillae and scutellum yellow; 1/3 basal part of tegulae yellow, others yellow-brown and transparent; apex of femora, tibiae and tarsi yellow; wings pale-brownish, marginal cell and apex darker; T1-T5 with lateral oval yellow markings, distance between two markings of basal part wider than apical part; T6 black without yellow marking. Pubescence sparse; face, mesosoma and legs covered with short, sparse white hairs; scopa white.

Male: unknown.

Holotype ♀, Xinjiang, Yanqi (42.0° N, 86.5° E), 6, 7 July 1958, LI Chang-Qing.

Similar to *Bathanthidium* (*s. str.*) *bifoveolatum*

(Alfken), but differs in: paraocular area with rectangle large yellow margin, not striate-like and extending to apex of eye; clypeus yellow, middle with circle black mark; lateral angle of vertex with a large yellow mark; T1-T5 with lateral yellow marks, T3-T5 without yellow fasciae.

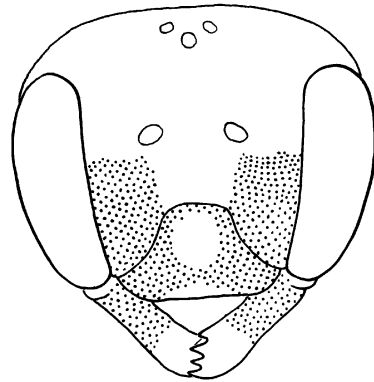


Fig. 1. *Bathanthidium* (*s. str.*) *circinatum* sp. nov., ♀ head.

**Etymology.** Named after the clypeus with a circle black mark.

### 2 *Bathanthidium* (*s. str.*) *emeiense* sp. nov. (Fig. 2)

Female. Length 7 mm. Head quadrate; mandible with 2 teeth; 1<sup>st</sup> antennal flagellum short and thickened, slightly longer than 2<sup>nd</sup> flagellum; width of clypeus 2 times as length, punctures on clypeus and supraclypeal area dense, punctures on paraocular area, genae, vertex and frons larger and sparser than clypeus; puncture

on mesonotum, pleuron and scutellum as on vertex; T1-T5 with coarse and sparse punctures, apical part smaller; T6 with dense punctures. Body black, paraocular area with a triangular yellow mark; tegulae brown, anterior part with a yellow mark; margin of scutellum with median lateral transverse yellow mark; basal lateral angle of T1-T2 with a yellow marks; T3-T4 with interrupted yellow striae; basal part of T6 with yellow striae. Body with white sparse hairs; face, mesopleuron, scutellum and legs covered with dense white hairs; inner surface of basitarsi yellow; scopa white.

Holotype ♀, Sichuan, Mt. Emei (29.5° N, 103.3° E), 550-750 m, 23 May 1964, WU Yan Ru. Paratypes 2 ♀♀, same as holotype.

Male: unknown.

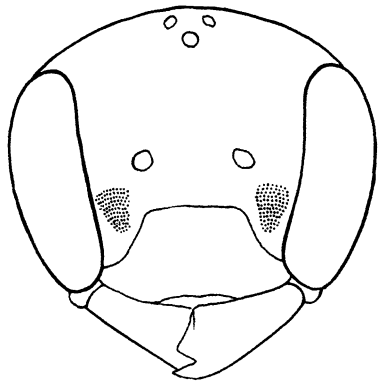


Fig. 2. *Bathanthidium* (*s. str.*) *emeiense* sp. nov., head.

Allied to *Bathanthidium* (*Stenanthidium*) *sibiricum* (Eversmann), apex of scutellum with two long yellow marks, not all black; basal part of tegulae yellow; basal part of T5 with yellow striae, not interrupted.

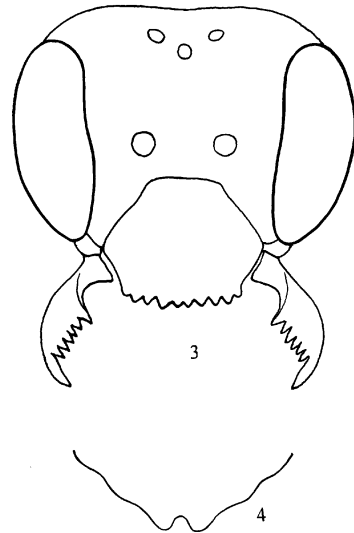
**Etymology.** Named after the specimens collected from Mt. Emei, Sichuan.

**3** *Anthidium* (*s. str.*) *furcatum* **sp. nov.** (Figs. 3-4)

Female. Length 10 mm. Mandible 7 toothed; middle of clypeus slightly convex, subapical part with emargination, apical margin zigzag; head and mesosoma with dense punctures; 1<sup>st</sup> antennal flagellum longer than 2<sup>nd</sup> flagellum, but shorter than 2<sup>nd</sup> + 3<sup>rd</sup>; punctures on basal part of T1-T5 larger and sparse than mesosoma, apex with small and dense punctures; most part of T6 with wrinkle, apex with smooth emargination, apical margin bilobed; body black; T2-T5 with median yellow striae (T2-T3 interrupted). Pubescence

on body grey yellow; area around antennal socket and mesopleuron with grey-white hairs; vertex and mesosoma covered with yellowish hairs; scopa golden yellow.

Male: unknown.



Figs. 3-4. *Anthidium* (*s. str.*) *furcatum* sp. nov. 3. ♀ head. 4. T6

Holotype ♀, Yunnan, Lijiang, Baishui (26.8° N, 100.2° E), 19 July 1988, FAN Jiar Guo. Paratype 1 ♀, Sichuan, Markam, 2700 m, 17 Aug. 1983, WANG Rui Q.

Closed to *Anthidium* (*s. str.*) *amurense* Radzowski, but differs in apical margin of T6 bilobed; T1-T4 with yellow striae, without marks.

**Etymology.** Named after T6 bilobed.

**4** *Anthidium* (*s. str.*) *bicolor* **sp. nov.** (Fig. 5)

Male. Length 8 mm. Mandible 3-toothed; 1<sup>st</sup> antennal flagellum short and thick, slightly shorter than 2<sup>nd</sup> flagellum; clypeus and paraocular with sparse punctures, becoming longitudinal row; punctures on supraclypeal area, frons, vertex and genae denser than clypeus; punctures on mesonotum, mesopleuron and scutellum as on vertex; punctures on T1-T5 as on clypeus. Body black with yellow striae; mandible (apex black), clypeus, paraocular area (above antennal socket) all yellowish; lateral angle of vertex with yellow striae; mesosoma black; tegulae yellow brown and transparent, wings pale brownish, hyaline, vein brown, stigma yellow-brown; apex of femora, most part of anterior tibiae (outer with a long black marking), mid, hind tibiae and all tarsi yellow brown; spurs yellow; T1 with narrow interrupt yellow band; T2-T3 with lateral large yellow marks; T5-T6 with narrow interrupt orange yellow band. Body cov-

ered with white or yellowish hairs; face, genae and mesopleuron with white hairs; vertex, mesonotum with yellowish hairs; hairs on legs white, inner surface of all basitarsi golden yellow.

Female: unknown.

Holotype ♂, Sichuan, Kangding (30°N, 101.9°E), 2 400-2 700 m, 15 July 1963, MAO Jir Long.

Similar to *Anthidium* (*s. str.*) *striatum* sp. nov., but differs in paraocular yellow marking extending to apex of eye, not extending to antennal socket; clypeus with a median small black mark, without circle

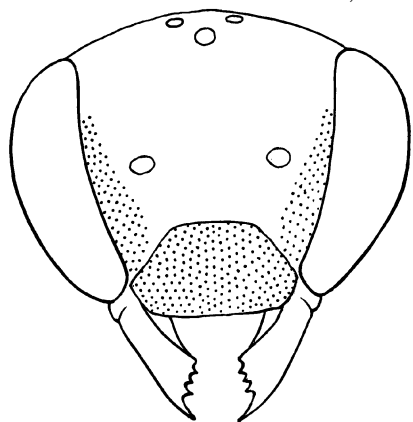


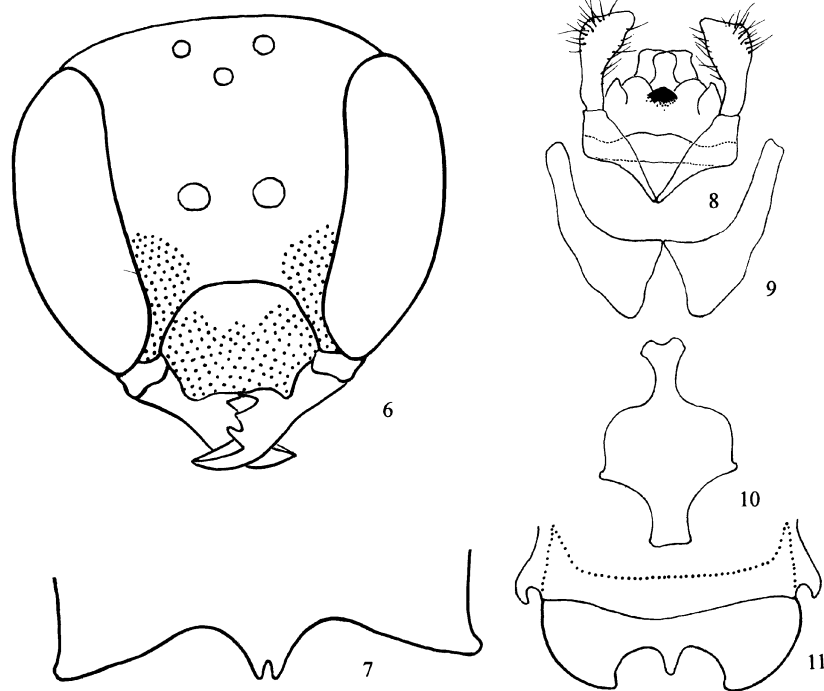
Fig 5. *Anthidium* (*s. str.*) *bicolor* sp. nov. ♀, head.

mark; T1-T3 with lateral yellow marks, T4-T5 with interrupt orange yellow marks, not T1-T5 with uneven yellow striae.

Etymology. Named after the body with black and yellow colours.

5 *Anthidium* (*s. str.*) *striatum* sp. nov. (Figs. 6-11)

Male. Length 10-11mm. Mandible 3-toothed; clypeus hexagon, margin straight, lateral angle-form; head with coarse, large punctures, punctures on genae dense, weak; 1<sup>st</sup> antennal flagellum slightly longer than 2<sup>nd</sup> flagellum; punctures on mesonotum and pleuron denser than on clypeus; basal part and apical part of T2-T5 with tiny and dense punctures, middle with large and sparse one; T6 with lateral tooth; T7, ST6-ST8 and genitalia as in Figs. 6-11. Body black with yellow marks: mandible (except apical tooth), most part of clypeus (basal part with a median black mark, lateral margin black), paraocular area (below antennal socket); T2-T3 with lateral two yellow marks on each side; T3-T5 with yellow striae. Body with rather rich hairs; face, outer surface of anterior femora, mesopleuron, lateral part of T1 with white hairs; metasomal sternites with long white hairs.



Figs 6-11. *A.* (*s. str.*) *striatum* sp. nov. 6. Head. 7. ST6. 8. Genitalia. 9. ST7. 10. ST8. 11. T6-T7.

Female: unknown.

Holotype ♂, Yunnan, Weixipantiange (27. 1°N, 99. 2° E), 1 250 m, 21 July 1987, ZHANG Xue-Zhong.

Similar to *Anthidium* (*s. str.*) *furcatum* sp. nov., but differs in basal part of clypeus with nearly circle black mark; not "U" -form; T1-T5 with uneven yellow striae, not T1-T4 with regular yellow striae.

Etymology. Named after T3-T5 with narrow yellow striae.

**6** *Anthidium* (*s. str.*) *moganshanensis* sp. nov. (Fig. 12)

Male. Length 8.5 mm. Mandible 3-toothed; middle of clypeus slightly convex; clypeus, paraocular area and vertex with rather coarse punctures; punctures on mesosoma slightly larger than on head; Apical margin of scutellum slightly produced; punctures on metasomal tergites shallow and sparser than on mesosoma; basal and apical part of T2-T4 with small and sparse punctures, middle rather dense; T7, ST7-ST8 and genitalia as in Fig. 12. Body black with yellow marks: clypeus, most part of mandible (apex black) paraocular (below antennal socket), each T2-T5 with two yellow marks; wings pale-brownish. Body with white sparse hairs; hairs on frons and genae denser; metasomal sternites with sparse white hairs.

Female: unknown.

Holotype ♂, Zhejiang, Moganshan (30. 6° N, 119. 8° E), 30 May 1936, O. Piel.

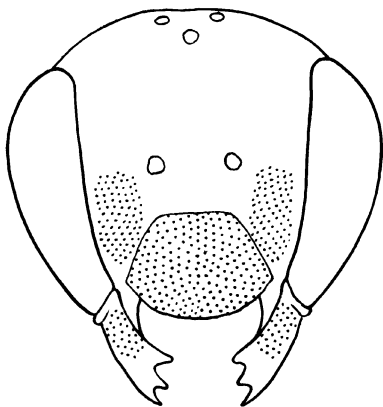


Fig. 12. *A. (s. str.) moganshanensis* sp. nov., ♂ head.

Close to *Anthidium* (*s. str.*) *flavotarsum* Wu, but differs in T2-T5 with orange yellow mark; tarsi black, not yellow.

Etymology. Named after specimen collected from Moganshan, Zhejiang Province.

**7** *Anthidium* (*Proanthidium*) *helianthinum* sp. nov. (Figs. 13-19)

Female. Length 8.5-9.0 mm. Head broader than long; mandible 6 toothed; 1<sup>st</sup> antennal flagellum equal to 2<sup>nd</sup> flagellum; clypeus broader than long (3.4: 2.2). Apical margin raised, lateral with 3 small teeth, surface with large and dense punctures, apical part with a median longitudinal smooth band; frons and supraclypeal area dense, smaller, becoming wrinkle; genae, mesonotum, mesopleuron, scutellum with dense punctures becoming wrinkle; margin of scutellum rounded, with median emargination; punctures on T1-T5 large and regular, apex dense, smaller; T6 with lateral tooth; outer surface of fore and middle femora with apical small tooth. Body black, with rich yellow marks. Head, mandible (apex black), clypeus, paraocular area (below antennal socket), large round mark on frons, striae on lateral angle of vertex (middle black) extending to genae all yellowish; pronotum lobe yellow; anterior angle of mesonotum with a large mark, axillae, scutellum (middle black) yellowish; outer surface of fore and mid femora yellow, outer surface of tibiae and basitarsi yellowish; apex of hind femora, tibiae (inner surface with black mark), basitarsi yellowish; 2<sup>nd</sup>-4<sup>th</sup> segments of all tarsi and claw yellow brown; upper part of tegulae yellow, lower part yellow brown, hyaline; margin of marginal cell pale brownish; each T1-T6 with two large yellow marks. Body with sparse white hairs; area around antennal socket, mesopleuron, hind tarsi with dense long hairs; scopa white.

Male. 8.5 mm. Main differences from female: frons without yellow mark; vertex yellow mark smaller; yellow mark on anterior angle of mesonotum and scutellum smaller than female's; T6 with basal lateral sharp tooth; apical margin of T7 with 3 teeth; ST7-ST8 and genitalia as in Figs. 13-19.

Holotype ♀, Xinjiang, Kashi (39. 4° N, 75. 9° E), 28 July 1974, LIU Jur-Peng. Paratypes: 2♀ ♀, same data as holotype; Urumqi, 19 June 1974, 2♀ ♀, 1 ♂; LIU Jur-Peng; Manas, 400-550 m, 28 Aug. 1952, 1 ♀, TIAN A-Fu; 7 June 1957, 1 ♀, HONG Chur-Pei; Hotan, 1300 m, 3 June 1959, 1 ♀, WANG Shu-Yong; Usu, 3400 m, 24 June 1957, 1 ♀, WANG Guang; Changqi, 680 m, 1, 27 Aug. 1957, 1 ♀, TIAN A-Fu; Suidin, 300-600 m, 31 July 1957, 1 ♀, HONG Chur-Pei; Burqin, 480 m, 27, 28 Aug. 1960, 2♀ ♀, WANG Shu-Yong; Yopurga, 9 June 1959, 1 ♀, TIAN A-Fu; Turpan, 20100 m, 1

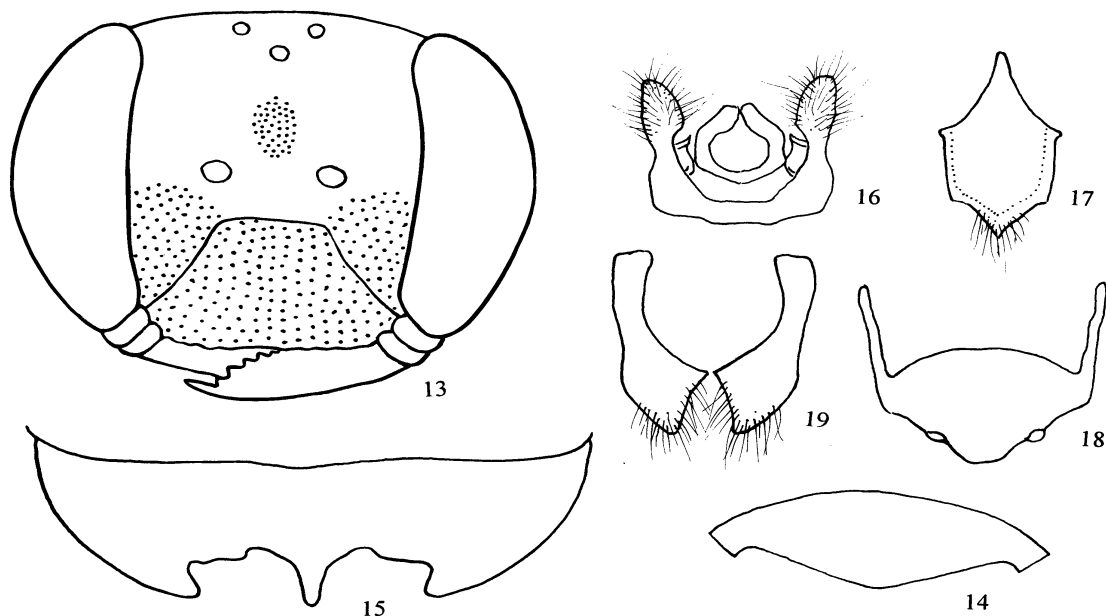
June 1958, 1 ♀, LI Chang Qing; Barkol, 1 ♀, MA Shi Jun, XIA Kai Ling, CHEN Yong Lin; Kansu, Zhangye, 1 450 m, 14 Aug. 1957, 2 ♀ ♀, ZHANG Yi-Ran; Sichuan, Ludin Dewei, 1 280 m, 21 June 1981, 1 ♀, WANG Shu-Yong.

Pollinating plant: sunflower.

Similar to *Anthidium* (*s. str.*) *florentinum* Lepelletier, but differs in body smaller; female: mandible

6-toothed; mesonotum with lateral yellow striae, without curved striae on basal lateral angle; T6 with 2 yellow marks, not yellow at all. Male: T7 with lateral broad truncate, apex sharp and short, median project sharp; ST7-ST8 and genitalia different.

Etymology. Named after the specimens collected on sunflower.



Figs 13-19. *Anthidium* (*Proanthidium*) *helianthinum* sp. nov. 13. ♀ head. 14. ♀ T6, ♂. 15. T7. 16. Genitalia. 17. ST8. 18. ST6. 19. ST7.

**8** *Trachusa* (*Paraanthidium*) *coronum* sp. nov. (Fig. 20)

Female. Length 6.5 mm. Head slightly broader than long; mandible 4-toothed; clypeus two times broader than long, punctures on surface large, sparse and shallow; supradypeal area slightly convex, with large and dense punctures; punctures on frons, vertex and genae as on supradypeal area; 1<sup>st</sup> antennal flagellum longer than 2<sup>nd</sup> flagellum; punctures on mesonotum, scutellum as on vertex; mesopleuron with dense punctures; margin of scutellum round, overhanging above meta-notum; mesopleuron carina conspicuous; apex of hind femora broad; basitarsi flattened; T2-T4 with gradulus; middle of each tergite with large and sparse punctures, basal and apical part with dense, smaller punctures. Body black with yellow marks: upper part of mandible, apex 1/3 of clypeus and lateral with mark, paraocular area (below antennal socket), with mark; legs black-brown; outer surface of anterior femora with median small yellow mark, outer surface

with long yellow mark; all tarsi yellow; wings pale brownish; veins and stigma brown. Body with sparse hairs, apical margin of clypeus with a row of golden yellow hairs; face with short, sparse, white hairs; hairs on mesopleuron rather dense; legs with short, sparse, white or yellow hairs; scopa golden yellow.

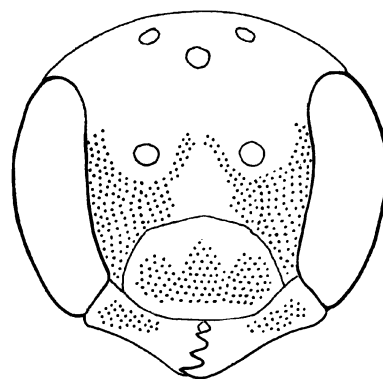


Fig. 20. *T.* (*P.*) *coronum* sp. nov., ♀ head.

Male: unknown.

Holotype ♀, Yunnan, Mengla (21.4° N, 101.5° E), 23 June 1982, HUANG Chun Mei.

Closed to *Trachusa (Paraanthidium) yunnanensis* (Wu), but differs in most part of mandible yellow, clypeus with crown like yellow mark; T1-T5 with lateral yellow marks; T4-T5 with yellow band, T6 yellow; not T2-T5 with lateral yellow marks; scopa golden yellow, not white.

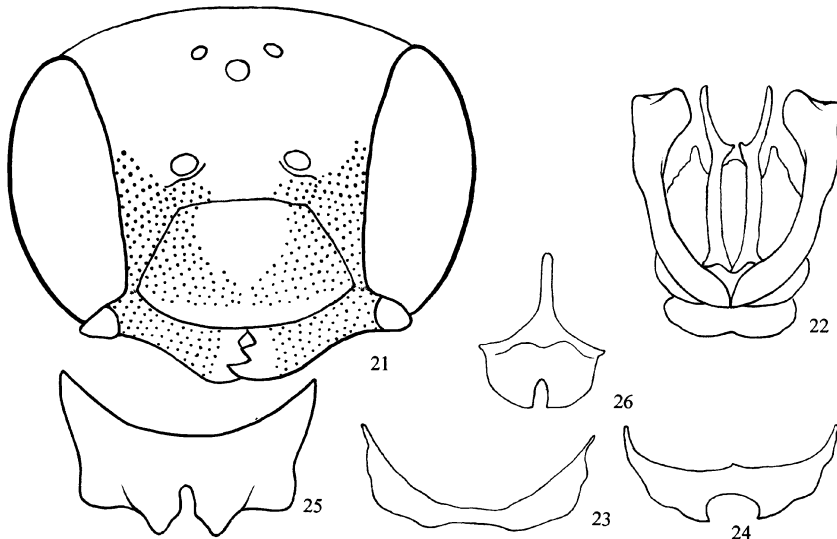
Etymology. Named after the clypeus with crown like yellow mark.

9 *Trachusa (Paraanthidium) cornopes* sp. nov. (Figs. 21-26)

Male. Length 15 mm. Mandible 3 toothed; clypeus 2 times broader than long, punctures regular and dense; punctures on paraocular area and frons as on clypeus; punctures on vertex and genae larger than on clypeus; 1<sup>st</sup> antennal flagellum 2 times longer than 2<sup>nd</sup>; mesonotum with dense and small punctures; parapsidal line conspicuous; basal part of median mesoscutal line groove-like, apical part carinated; axillae rounded, with conspicuous dense and small punctures; scutellum with median groove, margin straight, middle weak emarginated, overhanging above metasoma; legs thickened, inner and outer surface of apex of femora, outer surface of basal part of tibiae with horn like projection; subapical part of fore and mid tibia with horn like projection; T2-T5 with gradulus; each tergite with dense punctures, punctures on gradular groove smaller; basal part of T6 with a median triangular convexity, margin rounded, with median

emargination; margin of T7 with median shallow emargination; ST7-ST8 and genitalia see in Figs. 21-26; T2-T5 with marginal emargination. Head black with yellow marking: mandible (apex black), clypeus (basal with median black marking) lateral part of supraclypeal area with quadrate mark, paraocular area (below antennal socket), apical part of 1<sup>st</sup> antennal flagellum yellow or yellow-brown, others brown; mesonotum with lateral long-triangular yellow mark; axillae yellow; most part of scutellum yellow, middle of basal part black; tegulae yellowish-brown; wings pale brownish; veins brown; legs ferruginous, basal part black; apical part with yellow mark; most part of hind femora black, tibiae and tarsi ferruginous, outer surface of hind tibiae with oval black-brown mark; metasoma black; subapical part of T1-T5 with yellow striae; sternites black-brown. Face and genae with yellowish hairs; vertex, mesonotum and scutellum with golden yellow hairs; mesopleuron with yellowish hairs; legs with white hairs; metasomal tergites bare, emargination of ST2-ST3 covered with regular yellow hairs.

Female. Length 13-15 mm. Mandible 6 toothed; clypeus broader than length (2.5: 1.5); with dense, thin punctures, apex and apical margin with median emargination; 1<sup>st</sup> antennal flagellum conspicuous longer than 2<sup>nd</sup>; frons, vertex and genae, mesonotum with dense, thin punctures; surface of scutellum convex, with a longitudinal deep groove, scutellum slightly produced above metasoma; axillae convex; coxa swollen; tibiae and tarsi broad; outer surface of fore



Figs. 21-26. *T. (P.) cornopes* sp. nov. 21. Head. 22. Genitalia. 23. T7. 24. ST6. 25. ST7. 26. ST8.

femora with apical projection; metasomal tergites with dense, thin punctures. Body black, pronotal lobe, basal-lateral angle of mesonotum and lateral part, axillae, scutellum convex, tegula yellow; antennal flagellum red-brown; legs red-brown, basal part of femora black-brown, especially darker on hind femora and tarsi; wings pale brownish, hyaline; metasoma black; T1-T5 with apical marginal yellow bands. Clypeus with golden yellow, short hairs; frons and vertex with long hairs; yellowish; genae with dense white hairs; pronotum tubercle and mesonotum covered with dense yellowish hairs; lateral part denser; mesopleuron and lateral of propodeum covered with dense grey-white hairs; basal part of scopa yellowish, apical part black.

Holotype ♂, Hubei, Lichuan Xingdaoshan (30.3°N, 108.9°E), 800 m, 21 July 1989, YANG Long-Long. Paratypes: 1 ♀, Shanxi, Changan, 29 June 1968, CHEN Yong-Lin; 1 ♀, Qunling Fuping, 31 Aug. 1973, LIAO Ding-Xi.

Similar to *Trachusa (Paraanthidium) formosanum* (Friese) but differs in body smaller; basal part of clypeus of male with a median round black mark; lateral margin of mesosoma of male and female each with a longitudinal broad yellow marking, not black at all; subapical margin of T1-T5 with narrow, yellow band, not middle of T1-T3 with narrow yellow striae (3<sup>rd</sup> interrupted); margin of T7 of male rounded, with median emargination, forming two lobes, not lateral margin round, middle truncate.

Etymology. Named after the apex of fore and mid tibiae with a horn-like projection.

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## 中国黄斑蜂族九新种记述 (蜜蜂总科, 切叶蜂科, 黄斑蜂族)

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摘要 记述中国黄斑蜂族 3 属 9 新种。新种是: 圆斑伟黄斑蜂 *Bathanthidium* (*s. str.*) *circinatum*, 峨眉伟黄斑蜂 *Bathanthidium* (*s. str.*) *emaiense*, 叉黄斑蜂 *Anthidium* (*s. str.*) *furcatum*, 双色黄斑蜂 *Anthidium* (*s. str.*) *bicolor*, 纹黄斑蜂 *Anthidium* (*s. str.*) *striatum*, 莫干山黄斑蜂 *An-*

*thidium* (*s. str.*) *moganshanensis*, 向日葵黄斑蜂 *Anthidium* (*Proanthidium*) *hdianthinum*, 皇冠准黄斑蜂 *Trachusa* (*Paraanthidium*) *coronum*, 角足准黄斑蜂 *Trachusa* (*Paraanthidium*) *cornopes*。模式标本保存于中国科学院动物研究所。

关键词 蜜蜂总科, 切叶蜂科, 黄斑蜂族, 新种, 中国.

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