

TEN NEW SPECIES OF THE TRIBE OSMIINI FROM CHINA (APOIDEA, MEGACHILIDAE, OSMIINI)

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Abstract Ten new species belonging to 4 genera of Osmiini are described and illustrated: *Osmia* (*s. str.*) *quadricornuta* sp. nov., *Osmia* (*s. str.*) *rufinoides* sp. nov., *Osmia* (*s. str.*) *yanbianense* sp. nov., *Osmia* (*Helicosmia*) *shaanxiense* sp. nov., *Osmia* (*Melanosmia*) *jilinense* sp. nov., *Stenosmia* *xinjiangense* sp. nov., *Chelostoma* (*s. str.*) *carinocaudata* sp. nov., *Chelostoma* (*Ceaheriades*) *longilabris* sp. nov., *Hoplitis* (*Alcidemea*) *rufotennais* sp. nov., *Hoplitis* (*Megalosmia*) *popovi* sp. nov. All the type specimens are kept in the Institute of Zoology, Chinese Academy of Sciences, Beijing.

Key words Apoidea, Megachilidae, Osmiini, new species, China.

1 *Osmia* (*s. str.*) *quadricornuta* sp. nov. (Fig. 1)

Female Length 11-12 mm. Body black with bronze green metallic. Apex of mandible broad, 4-toothed, but 3rd and 4th tooth not conspicuous; surface of clypeus concaved, smooth and shining, apical margin weak emarginated, basal part with large punctures, lateral quadrate cornuted (frontal view), apex truncated, curved behind; paraocular area, frons and genae with dense punctures; punctures on mesonotum and metanotum larger than on genae. Body black, wings pale brownish, tegulae yellow-brown, veins and stigma dark brown; spur black. Basal part of clypeus with median erect golden yellow long hairs; genae, vertex, mesonotum and T2-T5 covered with long, black-brown hairs; genae, lateral part of mesonotum, lateral part of propodeum, T1 with long yellow-brown hairs; T2-T4 with marginal white fasciae; tarsi with black hairs; scopa golden yellow.

Male. Length 9 mm. Black, head and mesosoma with blue metallic; metasoma with bronze metallic; antennae extending to metanotum; 1st antennal flagellum shorter than 2nd; mandible 2-toothed; clypeus slightly convex, surface with shallow punctures, apical margin straight; supraclypeal and paraocular area with dense punctures, but larger than punctures of clypeus; punctures on vertex, genae, mesonotum and mesopleuron larger than punctures on clypeus; metasoma with dense punctures, shallower than punctures of mesosoma; apex of T7 rounded; ST2 broad and large, with semicircle margin; T7-T8 and genitalia as in Fig. 1;

head and mesosoma with blue shiny; antennae black brown; wings yellowish; tegulae, veins and stigma brown; base 1/3 of tegulae black-brown; legs and spurs black-brown; metasoma black with bronze metallic; T1-T5 with narrow brown margin; T6 brown. Clypeus and paraocular area with dense white, long hairs and alternating few black hairs; around antennal socket, vertex and upper part of genae with black brown hairs, lower part of genae with long white hairs; frontal and middle femora with long white hairs; mesosoma with yellowish fasciae; mesopleuron, scutellum and T1 with dense and long hairs; T2-T5 with sparse black hairs; T6 with dense and narrow yellow hairs.

Holotype ♀, Yunnan, Kunming Xishan (25°N, 102.2°E), 2100 m, 23 Mar. 1958, PU Fur Ji. Paratype 1 ♂, Yunnan, Anning, 26 Mar. 1982, LIAO Sir Bai.

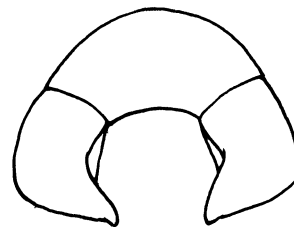


Fig. 1. *Osmia* (*s. str.*) *quadricornuta* sp. nov., projections of clypeus.

Similar to *Osmia taurus* Smith, but differs in body bronze green metallic, not dark blue; horn projection of clypeus quadrate form, apex truncate, not short horn-like and oblique; head, mesosoma and T1-

T5 with black-brown hairs, T2-T4 with white margin fasciae, without yellow hairs.

Etymology. named after the horn-like projection of clypeus quadrate.

2 *Osmia* (*s. str.*) *rufinoides* **sp. nov.** (Fig. 2)

Female. Length 12-13 mm. Black, mesonotum covered with yellow-brown hairs; mandible 3-toothed, outer one pointed, basal with groove; clypeus shiny, basal part with dense punctures, margin with two small round projections, lateral with triangular projections, apices rounded, close to each other; paracocular area, genae, vertex, frons, mesonotum and pleuron with small punctures; metasoma with thin small hair hole; apex of fore and mid tibia with small spine; flagellum, tegulae, stigma and veins black-brown; wings yellowish; upper part of marginal cell dark; 2-5 segments of tarsi yellow-brown; spurs yellow. Head covered with long black hairs, basal part and area around antennal socket with white and long, yellowish hairs; genae and lower part of mesopleuron with long yellowish hairs; legs with yellow hairs, but all tibia and tarsi with short, black hairs, lateral longer; T2-T5 with black-brown hairs; T2-T4 with yellowish margin fasciae; T6 with dense black-brown short hairs; scopa yellowish.

Male: unknown.

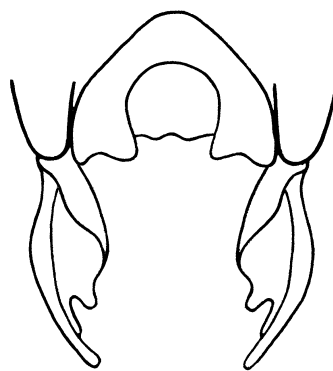
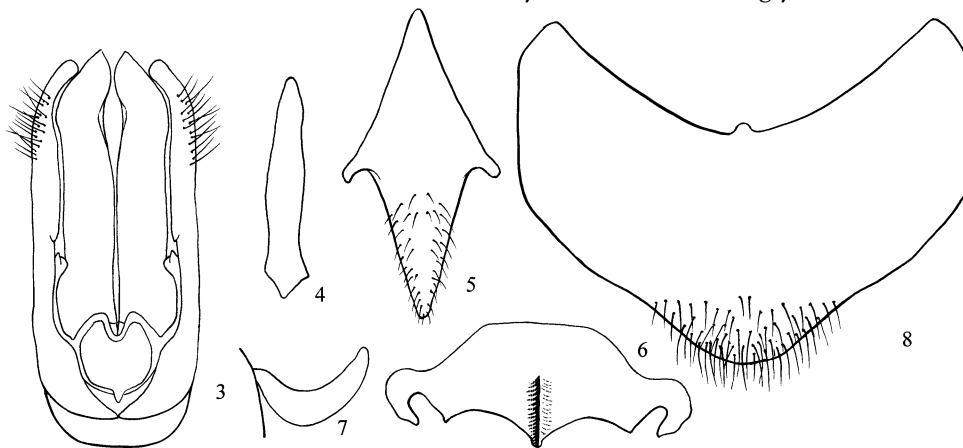


Fig. 2. *Osmia* (*s. str.*) *rufinoides* sp. nov., clypeus and mandible.

Holotype ♀, Shanghai (31. 2° N, 121. 4° E), 10 May 1932, O. Piel; **paratypes:** 4 ♀ ♀, 10 May 1932, 1 ♀, 17 Apr. 1930, 1 ♀, 24 Apr. 1930, O. Piel.

Similar to *Osmia rufina* Cockerell, but differs in distance between two projections of clypeus narrower than *Osmia rufina*, apex sharpened, not truncated; clypeus covered with black-brown long hairs, without yellow hairs; vertex with black-brown hairs, not yellow; mesosoma with yellow-brown hairs, not yellowish; hind tibiae and tarsi with black-brown hairs, inner surface of basitarsi with black-brown hairs, not yellow; T1 with long yellow hairs, others with black-



Figs 3-8. *Osmia* (*s. str.*) *yanbianense* sp. nov. 3. Genitalia. 4. Gonostylus (lateral view). 5. ST8. 6. ♀ clypeus. 7. Lateral projections of clypeus. 8. ST6.

brown hairs, not T1-T2 with long yellow hairs.

Etymology. Named after its similarity to *Osmia rufina* Cockerell.

3 *Osmia* (*s. str.*) *yanbianense* **sp. nov.** (Figs 3-8)

Female. Length 13-15 mm. Body black with

bronze metallic, covered with brownish and mixed with a few black hairs. Base of mandible with small protuberance, surface with 2 longitudinal carinae, apex with 3 teeth; clypeus smooth with a longitudinal carina, median of apical margin with a raised triangular projection, apex of which rounded, lateral horns long and curved, apex acuted; length of 1st flagellum

equal to $2^{\text{nd}} + 3^{\text{rd}}$; width of eye equal to $2/3$ of genae; head, mesosoma and abdominal tergites shagreened. Wings hyaline, upper part of marginal cell daker; stigma dark brown; tegulae black with bronze metallic; spur brown. Pubescens of body long and dense; basal part of clypeus covered with black-brown erect hairs; head rayish with long brown hairs; mesosoma and T1 with long rayish hairs; T2-T5 with long brown hairs, apical margin with white fasciae; scopa yellow, lateral part yellowish.

Male. 13-14 mm. Main differences from female: antennae longer, reaching propodeum; head covered with yellowish hairs; mesosoma and T1 with long and dense yellowish hairs; T3-T5 with yellow-brown hairs; ST2 and ST3 broad, apical margin of ST2 densely covered with yellow hairs; ST6-ST8 and genitalia as in Figs. 3, 5, 8.

Holotype ♂, Jilin, Yanbian (42.9°N , 129.5°E), May 1999, LU Long Shi; paratype 1 ♀, same data as holotype.

Similar to *Osmia longicornis* Morawitz., but differs in ♀ mandible 4-toothed, 3^{rd} tooth close to 4^{th} , not 2-toothed; clypeal horns acuted; median of apical part of clypeus carinated, median of apical margin protruding; hind tibiae of ♂ normal; gonostylus normal, not swollen.

Etymology. Named after the type locality, Yanbian Chaoxian Aut. Pr., Jiling Province.

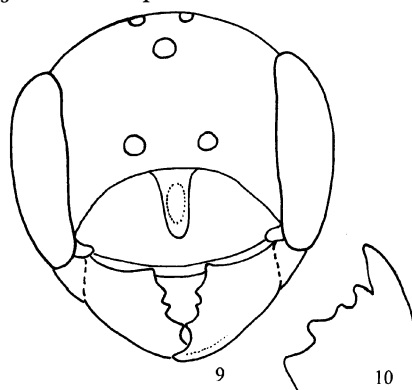
4 *Osmia* (*Helicosmia*) *shaanxiensis* sp. nov. (Figs. 9-10)

Female. Length 8 mm. Clypeus smooth, basal part with a media raise tongue-form projection, surface with median marginated; punctures of basal part sparse; mandible broad and large, 4-toothed; genae slightly broader than width of eyes; 1^{st} antennal flagellum $1/3$ longer than 2^{nd} ; vertex broad; OOD:IOD=1.0:0.8; face and vertex with dense punctures; parapsidal line punctiform; punctures on mesonotum and scutellum denser than on head; triangular area of propodeum smooth, lateral with large and sparse punctures. Head and mesosoma bronze green, metasoma black; tegulae black-brown; wings hyaline; upper margin of mandible with golden-yellow hairs; vertex with black-brown hairs alternating yellowish; thorax, metasoma and T1 with long, yellowish hairs; scopa yellow.

Male: unknown.

Holotype ♀, Shaanxi, Hanzhong Dongzhi (33°N , 107°E), 12 May 1997, ZHAO Li-Ming.

Similar to *Osmia* (*Helicosmia*) *carinoclypearis* Wu, but differs in surface differs in of clypeus with a median tongue-form projection, which with an emargination in the middle, punctures on basal part sparse; without a longitudinal carina produced as two small projections at apex.

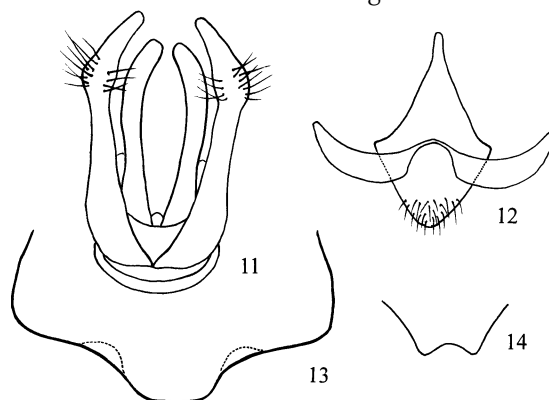


Figs. 9-10. *Osmia* (*H.*) *shaanxiense* sp. nov. 9. Head. 10. Mandible.

Etymology. Named after the type locality Shaanxi Prov.

5 *Osmia* (*Melanosmia*) *jilinense* sp. nov. (Figs. 11-14)

Female. Length 6-7 mm. Black, mesosoma covered with long red-brown hairs; mandible 3-toothed; 1st antennal flagellum equal to the length of $2^{\text{nd}} + 3^{\text{rd}}$. Punctures on clypeus rather coarse and dense; width of eye $4/5$ as width as genae; punctures of head and mesosoma dense; metasomal tergites with smooth margin. Wings hyaline, margin and upper part of marginal cell brownish; tegulae and spurs black-brown. Clypeus with dense black-brown hairs; paracocular area and frons with long yellowish hairs; vertex, mesosoma and T1 with dense long red-brown hairs,



Figs. 11-14. *Osmia* (*M.*) *jilinense* sp. nov. 11. Genitalia. 12. ST7-ST8. 13. ST6. 14. T7.

T2-T5 with sparse yellowish hairs; T6 with dense yellow hairs; scopa black brown.

Male. Length 6 mm. But differs in female: head and mesosoma with dense long yellowish hairs; ST6-ST8 and genitalia as in Figs 14-13; ST2 broad; margin of ST3-ST5 slightly emarginated.

Holotype ♀, Jilin, Changbaishan (41.4° N, 128.1° E), 1 June 1993, XU Huang-Li. Similar to *O. pilicornis* Smith, differs in frons and paraocular area with long, yellowish hairs, not black-brown; mesosoma and T1 with red-brown hairs, not yellow-brown; hind tarsi with yellowish hairs, not black-brown.

Etymology. Named after the type locality Jilin Prov.

6 *Stenosmia xinjiangense* sp. nov. (Fig. 15)

Female. Length 6.5 mm, black with white vestitutes; T2-T5 with marginal white fasciae. Ratio of width and length of head: 6:5; clypeus broad, margin rounded, surface with dense punctures, apical part with large and sparse punctures, margin smooth, with a median longitudinal smooth stria; punctures on vertex and genae thin and dense; mesonotum and scutellum with sparse and shallow punctures, distance between punctures equal to diameter of puncture; punctures on mesopleuron deeper and denser; basal area of propodeum smooth, basal margin with small wrinkles; femora conspicuously swollen; punctures on metasoma small and shallow, basal and apical margins smaller and denser, middle sparser. Antennal flagellum ferruginous; wings hyaline; tegulae and veins ferruginous; coxae, trochanters and femora brown, others black-brown; basal area of propodeum brown; margins of T1-T5 brown; sternites brown, vestitutes white; hairs on clypeus sparser; paraocular area, area around antennal socket and genae with white hairs; mesosoma and lateral with yellowish hairs; hairs on outer surface of tibiae rather dense; T1-T5 with white

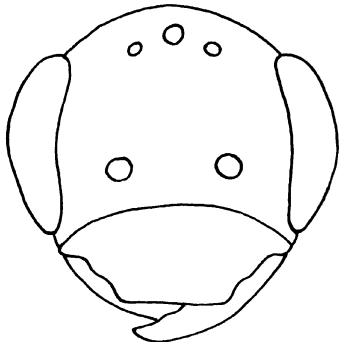


Fig. 15. *Stenosmia xinjiangense* sp. nov., ♀ head.

T6 with dense white thin hairs; scopa white.

margin fasciae; scopa white.

Male: unknown.

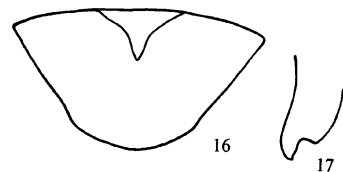
Holotype ♀, Xinjiang, Shufu (39.4° N, 79.8° E), 1200 m, 20 July 1959, TIAN A-Fu.

Closed to *Stenosmia flavicornis*, but differs in head conspicuously broad; propodeum and coxae, trochanters and femora brown, not black or black-brown; apical part of clypeus smooth, middle with a longitudinal smooth stria, without dense punctures.

Etymology. Named after the type locality Xinjiang Aut. Reg.

7 *Chelostoma* (s. str.) *carinocaudata* sp. nov. (Figs. 16-17)

Female. Length 9 mm. Body slender, black. Mandible 3-toothed; middle surface of clypeus slightly convex, margin lamella-form raised, punctures large and dense; punctures on frons, paraocular area, vertex and genae sparser than on clypeus; width of genae broader than eye's; vertex with marginal emargination; ocellar-vertex distance as 1/2 as ocellocular distance; punctures on mesosoma sparser than on vertex, distance between punctures equal to diameter of punctures; punctures on scutellum like on mesosoma, but with median longitudinal smooth line; length of parapsidal line equal to tegulae; small area of propodeum and lateral shagreened; metasoma shiny, T1 smoothed. Apical part with small and sparse punctures; T2-T3 with sparse punctures, apical part denser; punctures on T4-T5 denser than T2-T3; T6 with dense punctures; basal part of ST6 with median ridge. 1st-4th antennal flagellum red-brown, 5th-12th flagellum orange-yellow; tegulae, veins, stigma black-brown; wings brownish; tarsi black-brown. Pubescens sparse, white; clypeus with short hairs; metanotum and propodeum with long, dense white hairs; T1-T4 with white interrupt marginal fasciae; T6 with dense white thin hairs; scopa white.



Figs. 16-17. *Chelostoma* (s. str.) *carinocaudata* sp. nov. ST6. 16. Dorsal view. 17. Lateral view.

Male: unknown.

Holotype ♀, Yunnan, Zhongdian Tuiyingcun (27.7° N, 99.7° E), 2700 m, 7 Aug. 1984, FAN Jian Guo.

Similar to *Chelostoma lamellum* Wu, but differs in basal part of ST6 with median ridge; margin of clypeus lamella form raised; without lateral projections.

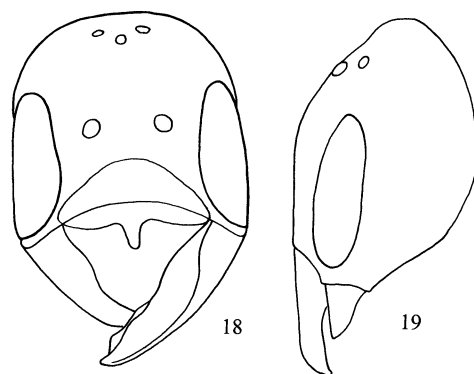
Etymology. Named after the ST6 with longitudinal ridge.

8 *Chelostoma* (*Cerihierades*) *longilabraris* sp. nov. (Figs. 18-19)

Female. Length 8.5 mm. Body slender. Head broad, vertex broad, width of genae 2 times as width of eyes; mandible long, 2-toothed; clypeus broad, width 2 times as middle length, surface smooth, with sparse punctures; middle of clypeus with curved transverse ridge, before ridge oblique, margin with a small rounded projection; labrum slender, length almost equal to mandible, apical margin thickened; frons slightly convex, punctures coarse and large; paracocular area with dense punctures; vertex, mesonotum and pleuron with regular punctures, but smaller than on frons; parapsidal line as 1/2 of tegulae; punctures of scutellum larger and sparser than on mesonotum; basal part of T1 with small and dense punctures, apical part of T1 and T2-T5 with larger and sparser punctures. Body black, mesonotum and propodeum with white hairs; T1-T5 with marginal thin white fasciae; T6 with dense short, yellowish hairs; scopa yellowish.

Male: unknown.

Holotype ♀, Xizang Mengkang (29.6° N,



Figs. 18-19. *Chelostoma* (*C.*) *longilabraris* sp. nov. head. 18. Frontal view. 19. Lateral view.

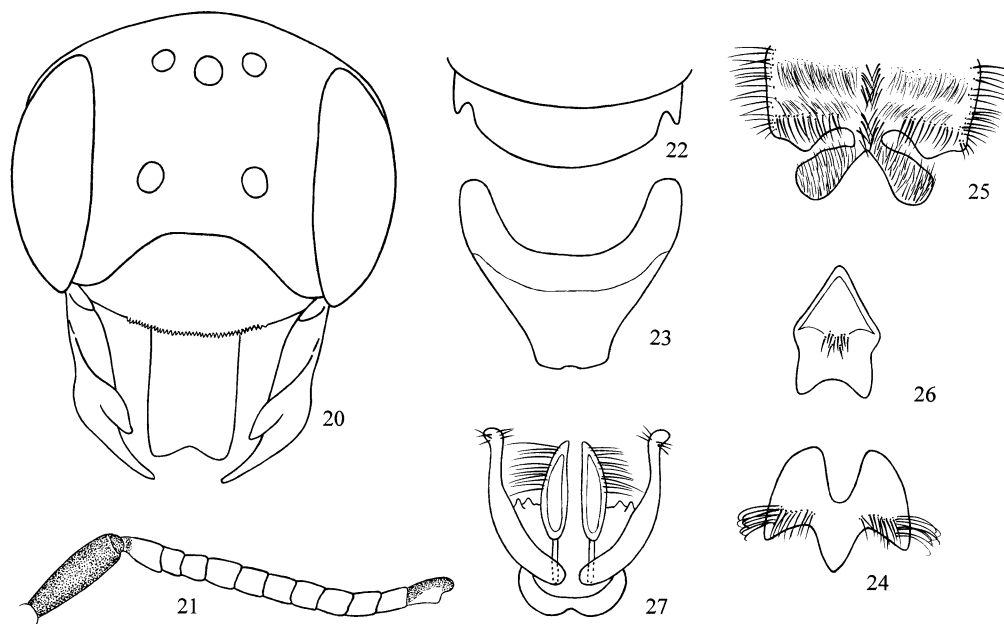
98.5°E), 3250 m, 1 Aug. 1983, WANG ShuYong.

Closed to *Chelostoma carinoclypeatum* Wu, but differs in margin of clypeus with a median rounded projection, surface smooth; not with median sharp tooth-form projection; T6 with dense yellowish short hairs; not with white hairs.

Etymology. Named after the slender labrum, at most equal to mandible of the species.

9 *Hoplitis* (*Alcidemea*) *rufoantennalis* sp. nov. (Figs. 20-27)

Male. Length 10 mm. Head broad; mandible 2-toothed; clypeal margin zigzagged, surface with dense punctures; labrum longer than broad, with irregular large punctures; punctures on vertex and genae similar to clypeus, but more sparse; flagellum flattened; 1st



Figs. 20-27. *Hoplitis* (*A.*) *rufoantennalis* sp. nov. 20. Head. 21. Antenna. 22. T6. 23. T7. 24. ST6. 25. ST7. 26. ST8. 27. Genitalia.

flagellum shorter than $2^{\text{nd}} + 3^{\text{rd}}$, others equal, apical flagellum longer and under surface concave; IOD=OOD, but slightly longer than ocellar vertex distance; punctures on mesonotum and scutellum more dense and deep than on tergites; hind femora swollen; inner spurs of hind tibiae thickened, apex curved; outer spurs smaller than inner one; T6 with lateral tooth; T7, ST7-ST8 and genitalia see in Figs. 22-27. Body black, scape, pedicel and basal part of 1^{st} flagellum and apical flagellum all black; others all red yellow; tegulae, tibial spurs, front tarsi, apex of each tibiae and tarsi all red yellow; wings hyaline, stigma and submarginal vein black brown; apical margin of T1-T6 yellow brown, each tergite black brown. Pubescence on body yellowish; head covered with long yellowish hairs; margin of mesonotum, metanotum, mesopleuron and T1 all covered with sparse yellowish long hairs; T2-T6 with short yellowish hairs; apical margin of T2-T6 with yellowish fasciae; middle of apical margin of ST4 and ST5 covered with dense white long hairs.

Female: unknown.

Holotype ♀, Kansu, Lanzhou (36.0° N, 103.7° E), 27 June 1955, MA Shi Jun, XIA Kai Ling, CHEN Yong Lin.

Similar to *Hoplitis (Alcidemea) minuta* Wu, but differs in body larger than *H. minuta*; most part of antennae red yellow, not black; under surface of last flagellum concave, black; apical margin of T7 truncated, without 3-tooth; ST7-ST8 and genitalia different.

Etymology. Named after the red antennae of the species.

10 *Hoplitis (Megalosmia) popovi* sp. nov.
(Figs. 28-30)

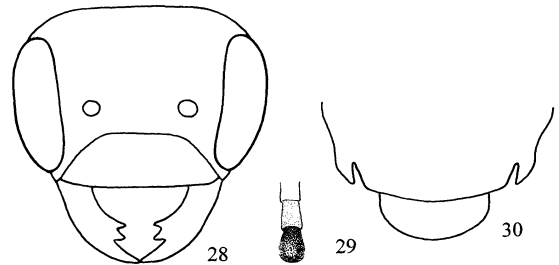
Hoplitis alashanica Popov, invalid name.

Female Length 9-10 mm. Head and mesosoma black; metasoma red yellow. Mandible 3-toothed; width of clypeus 1.5 times as length; surface with dense punctures and a longitudinal smooth zone; genae equal to eye; labial palpi 4-joints; vertex, genae mesoscutum, scutellum and metanotum with dense punctures; triangular part of propodeum smooth and shining, emargination under triangular part smoothed, lateral parts punctured; metasomal tergites with shallow small punctures. Mandible red yellow, teeth black; basal and apical part of antennae black, 2^{nd} - 9^{th} segments red yellow; wings hyaline, tegulae yellow brown, veins and stigma brown; legs black, apical

part of tibiae and all tarsi yellow brown; spur yellow; metasoma red yellow, basal part and middle of vertical part of T1 black. Clypeus with yellowish hairs; mandible, head, mesosoma and T1 with yellow brown hairs; T2-T6 with sparse yellowish hairs; legs with yellowish hairs; scopa yellowish.

Male. Length 9-10 mm. Similar to female, but differs in antennae red yellow, scape and the last segment black; head, mesosoma, fore and mid legs with long white hairs; T6 with lateral tooth, apical margin of T7 rounded; ST2 broad; ST4-ST5 with median concavity, covered with sparse yellow hairs; hind tibiae flattened; apex of 13 antennal segment broader than basal part, slightly curved.

Holotype ♀, Gansu, Zhangye (38.9° N, 100.4° E), 1700 m, 1 May 1996, YANG Long Long. Paratypes: same data as holotype, 1700-1900 m, 1-3 May 1996, 15♀♀, YANG Long Long; same data as holotype, 1 May 1996, 2♂♂, YANG Long Long; Alashan, 15-16 Apr. 1909, 1♀, 1♂, Kozlov; Nei Mongol, Xilingol L. (43.9° N, 116.0° E), 19 Aug. 1971, 1♀.



Figs. 28-30. *Hoplitis (M.) popovi* sp. nov. 28. ♀ head. 29. T6-T7. 30. Last 2 flagellum.

Similar to *Hoplitis (Megalosmia) princeps* Morawitz, but differs in metasoma in ♀ red yellow, not black; 2^{nd} - 9^{th} antennal flagellum yellow brown, not black; T2-T6 with short and sparse yellow hairs, without fasciae; ST2 in ♂ broad, without lateral round tubercle; apical margin of T7 rounded, without sharp and long projection.

Etymology. named after a memory to Prof. V. V. Popov.

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中国壁蜂族十新种记述 (蜜蜂总科, 切叶蜂科, 壁蜂族)

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摘要 记述壁蜂族 Osmiini 4 属 10 新种: 方角壁蜂 *Osmia* (*s. str.*) *quadricornuta* sp. nov., 拟红壁蜂 *Osmia* (*s. str.*) *rufinoides* sp. nov., 延边壁蜂 *Osmia* (*s. str.*) *yanbian-nense* sp. nov., 陕西壁蜂 *Osmia* (*Helicosmia*) *shaanxiense* sp. nov., 吉林壁蜂 *Osmia* (*Mdanosmia*) *jilinense* sp. nov., 新疆栉壁蜂 *Senosmia xinjiangense* sp. nov., 脊臀裂爪蜂 *Che-*

lostoma (*s. str.*) *carinocaudata* sp. nov., 长舌裂爪蜂 *Che-*
lostoma (*Ceriaheriades*) *longilabraris* sp. nov., 红角拟孔蜂
Hoplitis (*Alcidemea*) *rufotennails* sp. nov., 波氏拟孔蜂 *Hop-*
plitis (*Megalosmia*) *popovi* sp. nov.。模式标本均保存于中国
科学院动物研究所。

关键词 蜜蜂总科, 切叶蜂科, 壁蜂族, 新种, 中国。

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