

## A STUDY ON THE GENUS MEGACHILE LATREILLE FROM CHINA WITH DESCRIPTIONS OF FOURTEEN NEW SPECIES (APOIDEA, MEGACHILIDAE)

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**Abstract** Fourteen new species of *Megachile* Latreille, 1802 belonging to 7 subgenera, are described and illustrated: *Megachile* (*Eutricharaea*) *laminopeds* sp. nov., *Megachile* (*Amegachile*) *alboplumula* sp. nov., *Megachile* (*Xanthosaurus*) *plumatus* sp. nov., *Megachile* (*Xanthosaurus*) *hei* sp. nov., *Megachile* (*Xanthosaurus*) *silvapis* sp. nov., *Megachile* (*Pseudomegachile*) *eurycephala* sp. nov., *Megachile* (*Pseudomegachile*) *nigropectoralis* sp. nov., *Megachile* (*Pseudomegachile*) *sphenapis* sp. nov., *Megachile* (*Callomegachile*) *gigas* sp. nov., *Megachile* (*Callomegachile*) *rhysalus* sp. nov., *Megachile* (*Lagella*) *hubeiensis* sp. nov., *Megachile* (*Lagella*) *trizonata* sp. nov., *Megachile* (*Chelostomoda*) *nigroapicalis* sp. nov., *Megachile* (*Chelostomoda*) *crabipedes* sp. nov., which collected from Yunnan, Hainan, Hubei, Sichuan and Guizhou Provinces. All the type specimens are kept in the Institute of Zoology, Chinese Academy of Sciences.

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

### 1 *Megachile* (*Eutricharaea*) *laminopeds* sp. nov. (Figs. 1-3)

**Male.** 7.8 mm long. Black; all tibiae yellow-brown. Width of head 2 times as length; clypeal margin with median emargination; mandible 2-toothed; 1<sup>st</sup> flagellum shorter than 2<sup>nd</sup>, last flagellum flattened; fore basitarsi yellow, lamina-form; mid and hind femora swollen; abdominal tergites with dense small punctures; apical margin of T2-T4 shagreened; subapical margin of T6 with 8 small teeth, the center two truncated, lateral pointed; with 4 exposed sternites. Black; antennae and tegula brown; wings hyaline, stigma and veins yellow-brown; spurs and claws yellow-brown. Clypeus and paraocular area with dense long yellow hairs; vertex and mesonotum with yellowish hairs; apical margin of T2-T4 with yellow vestitutes; T5 with sparse yellow hairs; pubescens on T6 orange-yellow; hairs on legs white, on outer surface of fore legs, on mid femora, tibiae and basitarsi and on outer surface of hind femora and inner surface of tarsi long.

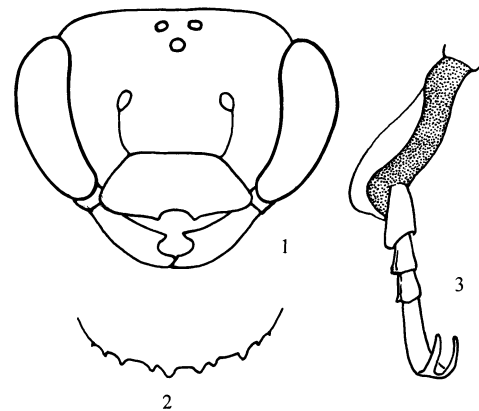
**Holotype**, Yunnan, Xishuangbanna, Mengna (21.5° N, 100.5° E), 17 Nov. 1950, collected by MENG Xu-Wu.

**Female:** unknown.

Similar to *M. (E.) rixator*, main differences: fore basitarsi lamina-form, femora yellow; carina of T6 with 8 small teeth, not 6 teeth; surface of T6 covered with long yellow hairs.

ered with long yellow hairs.

**Etymology.** Named after the fore basitarsi lamina-form.



Figs. 1-3. *M. (E.) laminopeds* sp. nov. 1. Head. 2. Apical margin of T6. 3. Fore tarsus.

### 2 *Megachile* (*Amegachile*) *alboplumula* sp. nov. (Figs. 4)

**Female.** 9-10 mm long. Black, face with white pubescens. Head broad; width of clypeus two times as length, apical margin emarginated, punctures on clypeus sparser than on frontclypeal area; mandible 4-toothed, 3<sup>rd</sup>-4<sup>th</sup> tooth thin; 1<sup>st</sup> flagellum shorter than 2<sup>nd</sup>; width of genae narrower than eye, margin carinated; IOD < OOD; vertex, genae mesonotum and scutellum with dense punctures; T2-T4 with gradulus, pregradular or postgradular area smooth, almost with-

out punctures, but lateral sides with dense punctures; punctures on T5-T6 dense, apical margin of T5 smooth; metasoma with weak bronze metallic. Black, surface of antennae yellow-brown; 1<sup>st</sup> and 2<sup>nd</sup> mandiblar tooth dark-brown; tegula and metasoma black; wings hyaline, outer margin darker; stigma and veins yellow-brown; legs black-brown; spurs yellow. Lateral of clypeus, area around antennal socket and paraocular area covered with dense white hairs; front, vertex and mesonotum with black-brown hairs; mesopleuron, scutellum, lateral of propodeum and T1 with white hairs; lateral margin of T1-T4 with white hair-marks; scopa yellow-brown; legs with white hairs, inner surface of basitarsi with yellow fringe.

Holotype Yunnan, Xishuanbanna, Xiaomengyang (22.0°N, 100.8°E), 850 m, 20 Oct. 1957, collected by WANG Shu-Yong. Paratypes: 1, same data as holotype; 1 Hainan Baoting (18.6°N, 109.7°E), 80 m, 19 Sep. 1980, collected by LI Suo-Fu.

Male: unknown.

Etymology. Named after body covered with white hairs mostly.

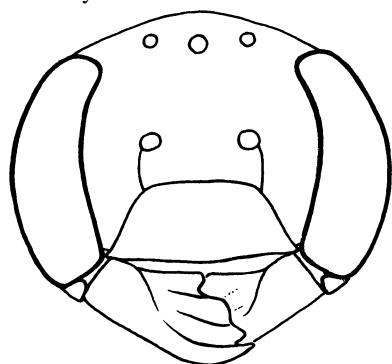


Fig. 4. *M. (A.) alboplumula* sp. nov., head.

### 3 *Megachile (Xanthosaurus) plumatus* sp. nov. (Fig. 5)

Female. 14-15 mm long. Black; face and mesosoma covered with long yellow pubescens; abdominal tergites with yellow-brown pubescens; scopa vulpine-red, basal part paler. Mandible 4-toothed, 2<sup>nd</sup> interspace with cutting edge; apical margin of clypeus tooth-like, surface with dense punctures, disk sparser; 2<sup>nd</sup> flagellum longer than 1<sup>st</sup>; genae 2 times wider than eye; vertex and genae with dense punctures; punctures on mesosoma and metasoma as on clypeus; apex of mid tibiae with a flat pojection and a short spine; hind basitarsi broad and equal to width of tibiae. Face, vertex, genae, mesonotum and propodeum covered with dense yellow-brown long hairs; ventral surface of

mesosoma with yellowish hairs; upper surface of all tibiae with short black hairs, inner surface with yellowish one; all tarsi with yellow-brown hairs; spur vulpine-red; metasoma without fasciae, but covered with vulpine-red hairs, on T5-T6 the longest, T2-T4 sparser; scopa vulpine-red, basal part paler. Black, antennae, legs and tegulae black-brown; wings hyaline, stigma and veins black-brown.

Male: unknown.

Holotype Sichuan, Xiangcheng, Caike (28.9°N, 99.8°E), 3 000 m, 20 June 1992, collected by WANG Shu-Yong. Paratype 1, Yunnan, Lijiang, Yuhu (26.8°N, 100.2°E), 2 150 m, 24 Nov. 1984, collected by WANG Rei-Qi.

Similar to *M. (X.) simlaensis* Cameron, the main differences: body black, tegulae black-brown, not brownish; legs and apical margin of sternites black, not red; pubescens yellow-brown; scopa vulpine-red, without black hairs.

Etymology. Named after the whole body covered with long hairs.

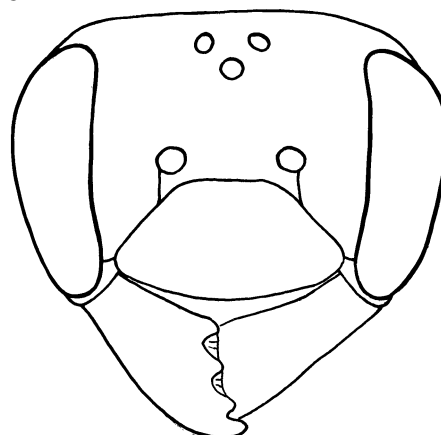


Fig. 5. *M. (X.) plumatus* sp. nov., head.

### 4 *Megachile (Xanthosaurus) hei* sp. nov. (Figs. 6-14)

Female. 12.5 mm long. Black. Head, mesosoma and T1 covered with dense yellow pubescens; apical margin of T2-T5 with yellow fasciae. Head rather broad; clypeus 3 times as wide as long, with dense punctures and a basal longitudinal smooth line, apical margin smooth, lateral tooth-like; 1<sup>st</sup> flagellum 1/2 of 2<sup>nd</sup> in length; genae narrower than eye; punctures on genae, vertex, mesonotum and scutellum smaller than on clypeus; triangle area of propodeum shagreened, lateral with punctures; T2-T5 with gradulus, postgradular area with large and sparse punctures. Apex of mandible, flagellum and legs all dark-brown; 5<sup>th</sup> tarsi and claws yellow-brown; wings hyaline; tegulae,

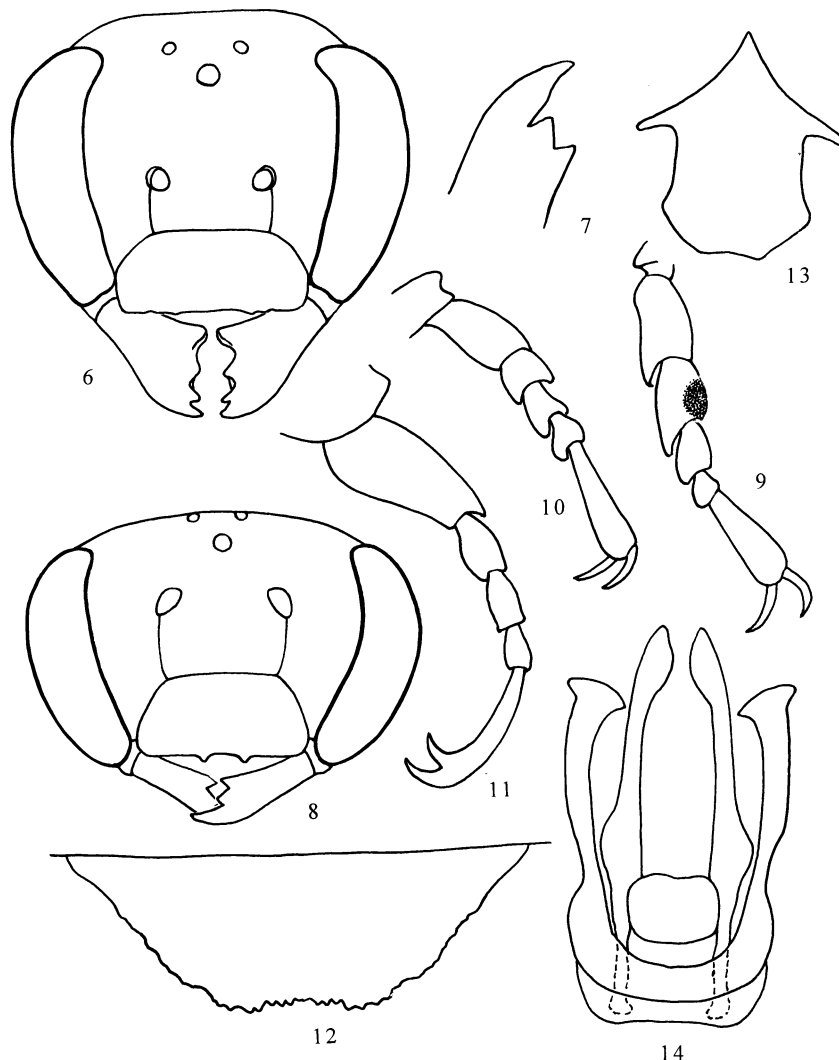
stigma and veins yellow-brown; spurs red-yellow. Lateral sides of clypeus, paraocular area, front, pronotum, mesonotum (except disk) and pleuron, lateral part of propodeum and T1 all covered with yellow pubescens; T2-T4 and lateral sides of T5 with yellow fasciae; T2-T3 with sparse yellow hairs; T4-T6 with black hairs; legs with black hairs; inner surface of basitarsi with red-yellow hairs; ST1-ST3 and center of ST4 with yellow hairs, the other black.

Male. 10-11 mm long. Black. Most part of femora and all fore tarsi orange-yellow. Head broad; clypeus broad with median emargination; mandible 4-toothed, apical one pointed; width of genae narrower than eye; fore coxa with long truncate spine; fore basitarsi broad, 1<sup>st</sup>-2<sup>nd</sup> segment asymmetrical, excavated deeply at apex; 2<sup>nd</sup>-4<sup>th</sup> segments of mid tarsi broad and short; hind basitarsi flattened, 2<sup>nd</sup>-4<sup>th</sup> segments slender; T2-T4 with gradulus; subapical margin of T6

rounded, surface with a median emargination. Apex of fore femora, 1/3 apical part of mid femora and 1/5 apical part of hind femora all orange-red; fore tarsi yellow, inner surface of 2nd segment with a black mark; mid tarsi yellow-brown; hind tarsi black-brown. Clypeus, paraocular area and front covered with yellowish long hairs; mesonotum and T1 with yellow-brown pubescens.

Holotype , Hainan (19.2 °N, 109.7 °E), 21 Mar. 1934, collected by HE Qi. Paratypes: 2 , Hainan, Tongshi (18.7 °N, 109.5 °E), 30 July 1960, collected by ZHANG Xue-Zhong, 1 , 21 June 1960, collected by LI Suo-Fu, 1 , 4 Aug. 1960, collected by LI Suo-Fu.

Closed to *M. (X.) maritima manchurica* Hedicke, the main differences: ST1-ST3 and center of ST4 of scopa with yellowish hairs, others black, not ST6 black; apical margin of T1-T3 with yellow fasci-



Figs. 6-14. *M. (X.) hei* sp. nov. 6-7. . 6. Head. 7. Mandible. 8-14. . 8. Head. 9. Fore tarsus. 10. Mid tarsus. 11. Hind tarsus. 12. T6. 13. ST8. 14. Genitalia.

ae, not T2-T4 with white fasciae. Male: subapical margin of T6 bilobed; not zigzagged; hind femora and tarsi normal, not swollen.

Etymology. Named after a memory to Prof. HE Qi.

**5** *Megachile* (*Xanthosaurus*) *silvapis* sp. nov. (Fig. 15)

Female. 10-11 mm long. Head broad and short; mandible 4-toothed, apical one pointed, interspace between 2<sup>nd</sup> and 3<sup>rd</sup> with cutting edge, the 3<sup>rd</sup> interspace broad; width of clypeus 2 times of the length, margin toothlike, surface with dense punctures, disk rather sparse; front slightly convex; width of genae narrower than eye; 1<sup>st</sup> flagellum longer than pedicel, but equal to 2<sup>nd</sup> flagellum; apex of fore and mid tibiae truncate, outer surface with a small tooth; hind basitarsi equal to the width of tibiae; T2-T4 with gradulus, surface with dense punctures. Front, mesosoma, propodeum and T1 covered with black pubescens; genae and ventral surface of mesosoma with white pubescens; inner surface of fore and mid tarsi with white hairs; scopa white, apical sternite black.

Holotype ♀, Yunnan, Xishuangbanna, Menglun (21.9°N, 101.2°E), 580 m, 1 Apr. 1994, collected by XU Huan-Li. Paratypes: 1 ♀, 22 Apr. 1994, 1 ♀, 10 Apr. 1993, same as holotype.

Similar to *M.* (*X.*) *hei*, but body smaller; pubescens yellow-brown, not yellow; T2-T5 black, with black hairs, without fasciae; scopa white, apex black, not yellow and S T5-S T6 black.

Male: unknown.

Etymology. Named after the specimens collected from rain forest area in Yunnan.

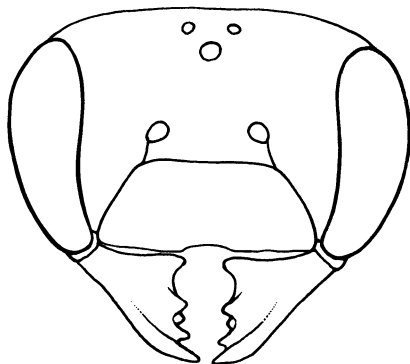


Fig. 15. *M.* (*X.*) *silvapis* sp. nov. ♀, Head.

**6** *Megachile* (*Pseudomegachile*) *eurycephala* sp. nov. (Figs. 16-22)

Female. 12-13 mm long. Black, mesosoma covered with dense yellow-brown pubescens; wings dark. Head broad (1.0-0.7); mandible 4-toothed, 3<sup>rd</sup> and

4<sup>th</sup> tooth small; width of clypeus 2 times as length, apical margin denticulate, interspace between the center two teeth shallow emarginated, surface with dense punctures; punctures on genae and vertex coarse; 2<sup>nd</sup> flagellum slightly longer than 1<sup>st</sup>; width of genae equal to eye; margin of genae weakly carinated; puncture on metasomal tergites dense, T2-T5 with deep gradulus; lateral of postgradular area with coarse connected punctures; apical margin of T1 smooth, T2-T5 with small and dense punctures. Black, antennae black; tegulae yellow-brown; stigma and veins black-brown; basal part of wings hyaline, but 2/3 part purple; spurs black. Clypeus with short black-brown hairs; front, paraocular area, genae and vertex with very sparse yellow-brown hairs; mesonotum, propodeum and basal lateral side of T1 with long yellow-brown hairs; T2-T5 almost without hairs; T6 with black short hairs; legs with white short sparse hairs; inner surface of basitarsi yellow-brown.

Male. 9-10 mm long. Differs from female by: clypeal margin with long white hairs; frontoclypeal area and paraocular area with dense long white hairs; under surface with short white hairs; apical margin of T6 rounded, with median weak emargination.

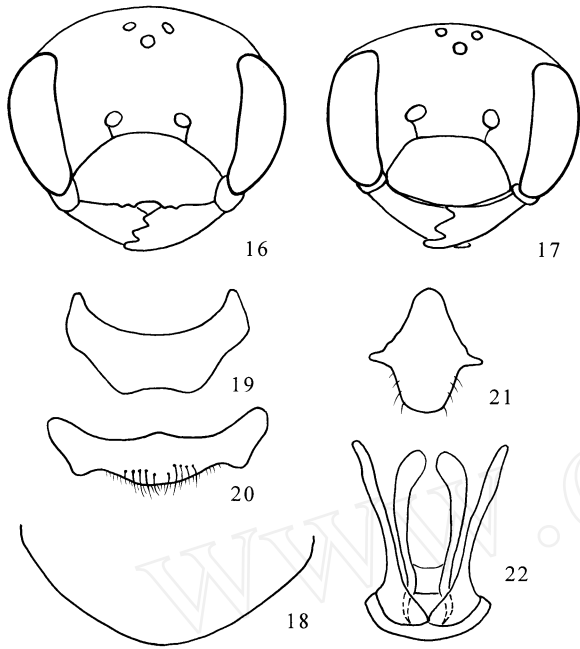
Holotype ♀, Yunnan, Yongsheng Liude (26.7°N, 100.7°E), 2 400 m, 1 Aug. 1984, collected by FAN Jian-Guo. Paratypes same as holotype, 1 ♀, collected by FAN Jian-Guo; 2 ♀, 4 Aug. 1984, collected by FAN Jian-Guo; 2 ♀, Yongsheng Liude, 2 200 m, 8 July 1984, collected by WANG Rui-Qi; 2 ♀, Zhongdian, Xiaquoto, 1 800 m, 6 Aug. 1984, collected by FAN Jian-Guo; 6 ♀, Sichuan, Miyi, 1 200 m, 4 Aug. 1984, collected by WANG Shu-Yong; 2 ♀, Xiangcheng, 1 700 m, 27 June 1982, collected by WANG Shu-Yong.

Closely allied to *M.* (*P.*) *lanata*, the main differences: metasoma black, without white fasciae, the basal lateral sides of T1 with yellow-brown hairs only; basal part of scopa white, apical part black.

Etymology. Named after the head broad.

**7** *Megachile* (*Pseudomegachile*) *nigropectoralis* sp. nov. (Fig. 23)

Female. 16 mm long. Head broad; mandible broad, 5-toothed; width of clypeus 3 times as length, apical margin with small teeth, surface with large and dense punctures; OOD > IOD; width of genae broader than eye; vertex and genae with small punctures; 1<sup>st</sup> flagellum slightly shorter than 2<sup>nd</sup>; punctures on mesoscutum and scutellum same as on genae; apico-



Figs. 16-22. *M. (P.) eurycephala* sp. nov. 16. Head. 17-22. . 17. Head. 18. Apical margin of T6. 19. ST6. 20. ST7. 21. ST8. 22. Genitalia.

outer surface of fore and mid tibiae with horn-form projection. Wings hyaline, apex darker; tegulae, stigma and veins black-brown; claws red-brown. Clypeus with long black hairs; paraocular area and front with greyish long hairs; genae, mesonotum, scutellum, fore leg, mid and hind trochanter and femora with black hairs; pronotum lobe, mesopleuron, apical margin of scutellum, lateral side of propodeum and T1 covered with long yellow pubescens; apical margin of T1, T2-T5 with yellow-brown vestitutes; yellow hairs on T6 sparse; scopa yellow-brown.

Holotype , Yunnan, Jingdong (27.7° N, 99.7° E), 27 June 1974, collected by LIAO Ding-Xi.

Closely allied to *M. (P.) lanata*, main differences: mesonotum with black hairs, not red-brown; metasomal tergites with yellow-brown hairs, without yellow fasciae; scopa yellow-brown, without black hairs.

Male: unknown.

Etymology. Named after the mesonotum with black hairs.

**8** *Megachile (Pseudomegachile) sphenapis* sp. nov. (Figs. 24-26)

Male. 11 mm long. Black, T1-T3 with yellow-brown hairs. Head broad; mandible 3-toothed, apical one pointed; width of clypeus 2 times as length, surface with dense punctures, apical margin straight; width of genae equal to width of eye; 2<sup>nd</sup> flagellum 2

times as long as 1<sup>st</sup>; 2<sup>nd</sup> flagellum equal to 3<sup>rd</sup>; under surface of flagella wave-form, last flagellum sphen-form; every tarsi flattened, symmetrical; hind femora swollen, basitarsi broad; 4 sternites exposed, 4<sup>th</sup> sternite with yellow-brown hairs; apical margin of T6 rounded with a deep median concavity. Apical tooth, flagellum, apical part of tibia dark red; fore tarsi red-brown; apical margin of ST1-ST3 with yellow-brown long fringe; T4-T6 with short black hairs; outer surface of all tarsi with long yellow-brown fringe.

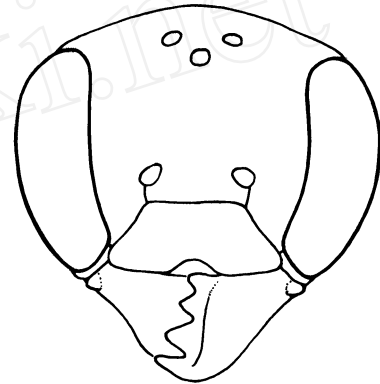


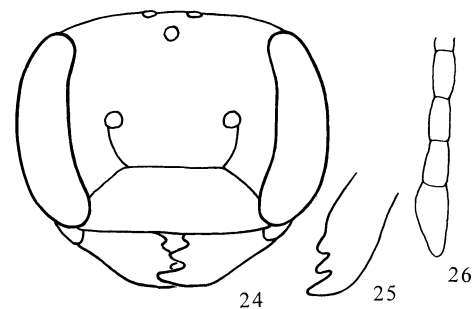
Fig. 23. *M. (P.) nigropectoralis* sp. nov., head.

Holotype , Yunnan, Xishuanbanna, Menglung (21.9° N, 101.2° E; 650 m), 2 Aug. 1958, collected by ZHANG Yi-Ran.

Closely allied to *M. (P.) lanata*, main differences: mandible 3-toothed, not 4-toothed; last flagellum sphen-form, under surface of all flagellum wave-form; tarsi flattened.

Female: unknown.

Etymology. Named after the last flagellum sphen-form.

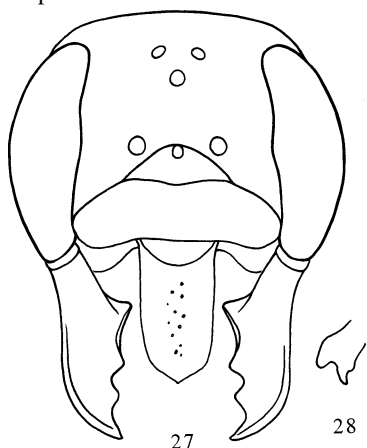


Figs. 24-26. *M. (P.) sphenapis* sp. nov. . 24. Head. 25. Mandible. 26. Apex of antenna.

**9** *Megachile (Callomegachile) gigas* sp. nov. (Figs. 27-28)

Female. 23-24 mm long. Black, covered with vulpine-red pubescens. Head broad; width of clypeus 2.5 times as length, apical part oblique, with dense punctures, apical margin smooth, lateral sides smooth

and shining; mandible 4-toothed; 1<sup>st</sup> flagellum short, equal to 2<sup>nd</sup> flagellum; frontoclypeal area convex, with dense small punctures and a median pit; punctures on paraocular area small and dense; width of genae slightly narrow than eye, punctures larger than on vertex, becoming striate, margin carinated; OOD > IOD; punctures on mesoscutum and scutellum as on vertex; triangle area of propodeum large, shagreened; inner tooth on outer apex of fore and mid tibiae flattened, outer one lamina-form, apex sharp curved and furcated; abdominal tergite shagreened, with small punctures; 4 exposed sternites. Teeth and flagellum brown; wings yellowish and hyaline; stigma and veins yellow-brown; spurs black-brown; apical margin of sternites yellow transparent. Paraocular area, pronotum lobe and T1 with dense black pubescens; genae and vertex with black sparse hairs; short black hairs on legs, lateral sides of tarsi with long black fringe, inner surface of basitarsi with pale long fringe; T2-T6 covered with vulpine-red vestitutes; apical margin of T2-T5 fasciated; scopa vulpine-red.



Figs. 27-28. *M. (C.) gigas* sp. nov. . 27. Head.  
28. Apex of fore tibia.

Holotype , Yunnan, Xishuangbanna, Xiaomengyang (22°N, 100.8°E), 850 m, 6 Sep. 1957, collected by ZANG Ling-Chao. Paratypes: 1 , Tonkin, Hoa-Binh (?), 1 Aug. 1939, A. D. Cooman; 2 , Vinh-Quang (?), collected by L. Cornille.

Similar to *M. (C.) sculpturalis* Smith, main differences: mandible 4-toothed, not 3-toothed; apical part of clypeus obliqued, punctures dense, apical margin smooth, without carina; head, mesosoma and T1 covered with black pubescens, not yellow-brown; T2-T6 with red-vulpine vestitutes, not yellow-brown; scopa vulpine-red, not S T2-S T3 yellow, S T4-S T6 black.

Male: unknown.

Etymology. Named after the body is rather large.

**10** *Megachile (Callomegachile) rhyssalus* sp. nov. (Fig. 29)

Male. 15 mm long. Black, metasoma covered with vulpine-red pubescens. Head broad; mandible 4-toothed, teeth short; width of clypeus two times as length, punctures on surface wrinkle-form, with longitudinal carina, apical margin notched with small teeth; frontoclypeal area convex, punctures coarse and irregular, row-formed or sparse; genae and vertex carinated; width of genae equal to eye; IOD > OOD; mesoscutum and scutellum with large and coarse punctures, net-formed; mesopleuron coarsely net-formed; triangle area of propodeum shagreened, lateral with dense punctures; punctures on T1 thin, apical margin broad and shagreened; deep gradulus of T2-T3 with dense punctures; gradulus of T4 shallow. Black, apex of teeth, flagellum and tegulae black-brown; wings hyaline, stigma and veins yellow-brown. Paraocular area, pronotum lobe and lateral of propodeum with dense black hairs; genae, vertex, mesopleuron and T1 with sparse black pubescens; apical margin of T2-T5 with vulpine-red fasciae; T3-T6 with dense vulpine-red vestitutes, T3-T4 sparser, T5-T6 denser; legs with short black hairs, inner surface of all tarsi with vulpine-red fringe; scopa vulpine-red.

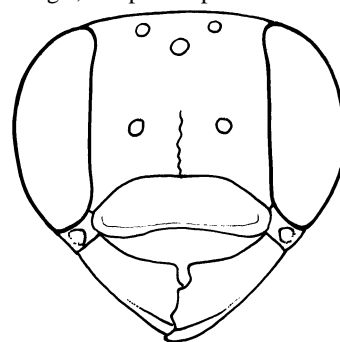


Fig. 29. *M. (C.) rhyssalus* sp. nov. , head.

Holotype , Yunnan, Xishuangbanna, Menglun (21.9°N, 101.2°E), 600 m, 22 Apr. 1994, collected by YANG Long-Long.

Female: unknown.

Similar to *M. (C.) umbripennis*, but differs in: apical margin of clypeus straight, not notched; T1 with sparse black hairs, not red; T3-T6 with red hairs, without white fasciae.

Etymology. Named after the mesopleuron with coarse wrinkles.

**11** *Megachile (Lagella) hubeiense* sp. nov. (Fig. 30)

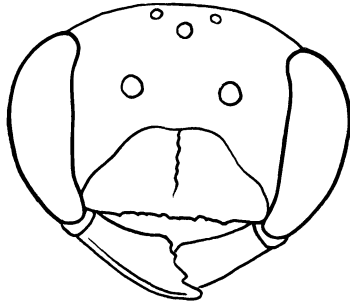


Fig. 30 *M. (L.) hubeiense* sp. nov. , head.

Female. 13 mm long. Black, mesosoma covered with dense grey-yellow pubescens. Mandible 4-toothed, apical margin obliqued; apical margin of clypeus zizaged, surface with longitudinal carina, punctures coarse; 1<sup>st</sup> flagellum shorter than 2<sup>nd</sup>; width of genae equal to eye; punctures on genae dense; basal part of T2-T3 with shallow gradulus, postgradular area with large punctures, punctures on T4-T6 smaller; hind basitarsi long, about the total length of 2<sup>nd</sup>-4<sup>th</sup> segments. Scape, tegulae and legs yellow-brown; wings yellowish and hyaline, apex darker with purple metallic lustre; stigma and veins yellowish-brown;

clypeus with sparse yellow hairs; paraocular area with dense yellow hairs; head, mesosoma and T1 with sparse grey-yellow hairs; T2-T5 with short black hairs; center of scopa yellowish, lateral black, ST4-ST6 black.

Holotype , Hubei, Lichuan Xingdoushan (30.3°N, 108.9°E), 800 m, 21 July 1989, collected by YANG Long-Long.

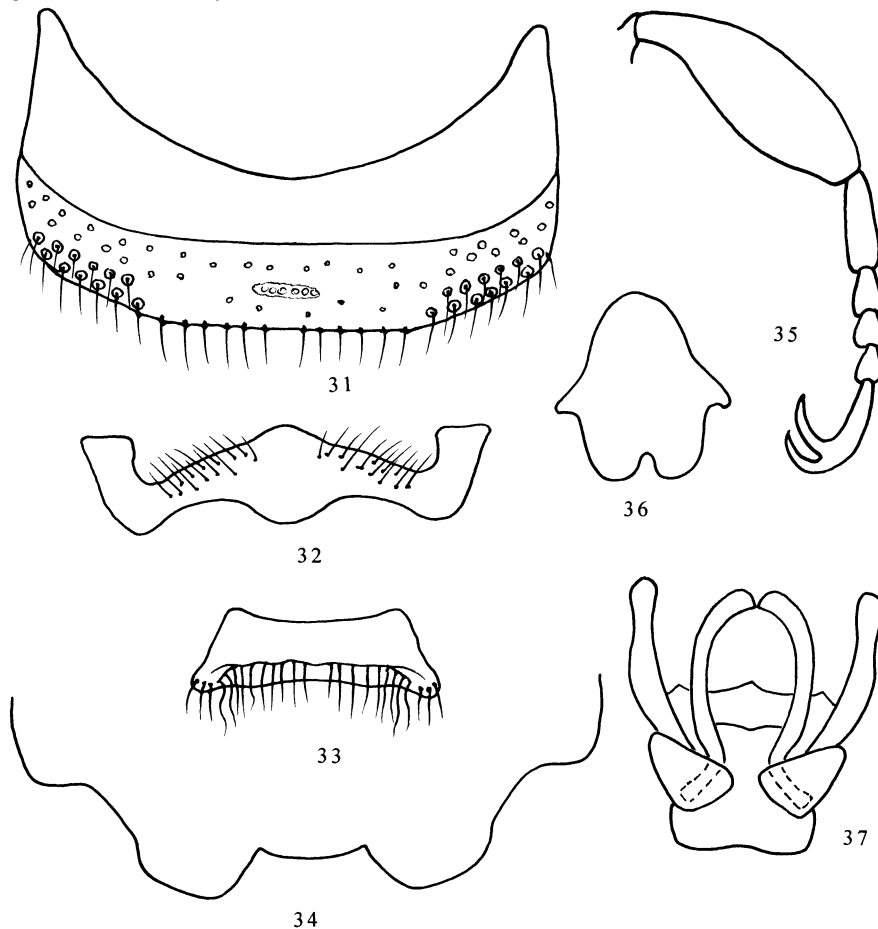
unknown.

Similar to *M. (Lagella) velutina*, but mesosoma and T1 covered with grey-yellow hairs, not yellow-brown; apical part (2/3) of fore wing dark, with purple metallic lustre; legs yellow-brown, not femora, tibiae and tarsi black-brown with golden-yellow hairs.

Etymology. Named after the specimens collected from Hubei Province.

**12** *Megachile (Lagella) trizonata* sp. nov. (Figs. 31-37)

Female. 15-16 mm long. Black, mesosoma with dense yellow-brown hairs; apical margin of T1-T3 with white fasciae; most part of legs ferruginous.



Figs. 31-37. *M. (L.) trizonata* sp. nov. . 31. ST5. 32. ST6. 33. ST7. 34. T6. 35. Hind tibia and tarsus. 36. ST8. 37. Genitalia.

Mandible 4-toothed, cutting edges in 2<sup>rd</sup>-3<sup>rd</sup> and 3<sup>rd</sup>-4<sup>th</sup> interspaces; clypeus with coarse and large punctures, with a median carina, not attaining to apex; 1<sup>st</sup> flagellum equal to pedicel, 2<sup>nd</sup> flagellum 2 times as long as 1<sup>st</sup>; width of genae slightly wider than eye, margin carinated, surface with coarse punctures; mesopleuron shining, with regular punctures; apex of fore and mid tibiae with 3 tooth-like projections; T2-T3 with shallow gradular, all tergites with coarse punctures. Scape yellow-brown; flagellum red-brown; all legs ferruginous, except coxae and trochanters of fore and mid legs black; hind tarsi black-brown; tegular, stigma and veins yellow-brown; wings yellowish, hyaline. Body's hair mainly yellow-brown; clypeus with sparse yellow hairs; mesosoma, under tegular area on mesopleuron, propodeum and T1 covered with dense yellow-brown hairs; mesopleuron with white hairs; T1-T3 with white fasciae; T4-T6 with short black hairs.

Male. 13-14 mm long. Differs from female: mandible 3-toothed; T1 with long yellow hairs; basal part of T2 with short yellow hairs; T4-T6 with black hairs, hairs on T6 longer; apical margin of T1-T3 with white fasciae; T6 bilobed, apical margin with deep median emargination; apical margin of T7 with a small median tooth; ST1-ST3 smooth with large punctures, apical margin with yellowish fimbria; ST4 smooth with sparse punctures, apical margin semicircled, with a median emargination; middle of hind tarsi slightly swollen, black-brown.

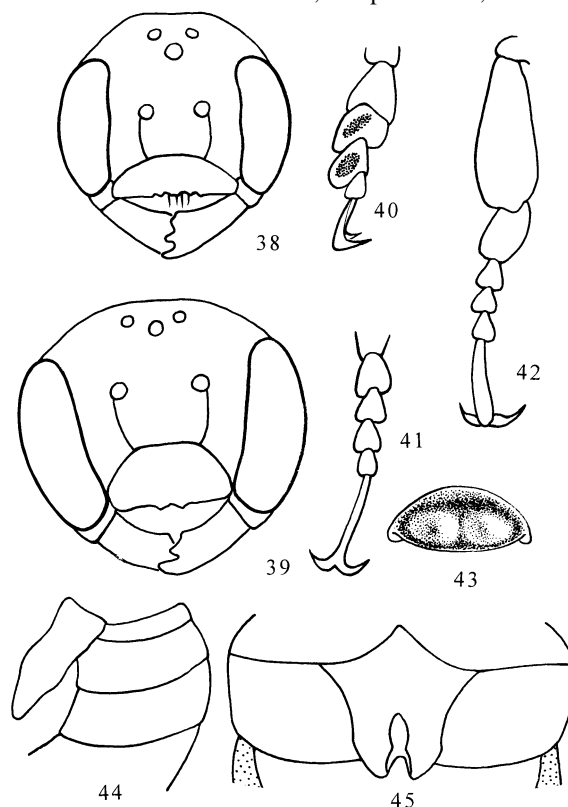
Holotype ♀, Guizhou, Shiqian Jinxin (27. 5°N, 108.2°E), 600 m, 21 July 1988, collected by YANG Long-Long. Paratypes: same as in holotype, 1 ♀, 700 m, 24 Aug. 1988, collected by YANG Long-Long; 1 ♀, 350 m, 19 Aug. 1988, collected by LIU Houg; 1 ♀, Jianxi, Dayu, 450 m, 14 July 1985, collected by FAN Jian-Guo; 2 ♀, Hubei, Lichuan Xingdoushan, 800 m, 21 July 1989, collected by YANG Long-long; 1 ♀, Lichuan, 800 m, collected by YANG Long-Long.

Similar to *M. (Lagella) velutina*, the main differences: antennae and legs red-brown, not black; T1-T3 with white fasciae; ST1-ST3 yellow, ST4-ST6 black. median emargination of T6 of male deeper than *M. velutina*; T1-T2 with yellow hairs, not yellow-brown; apical margin of T1-T3 with white fasciae; ST1-ST4 with yellow hairs, ST5-ST6 with black hairs, not scopa black.

Etymology. Named after the metasoma with 3 white fasciae.

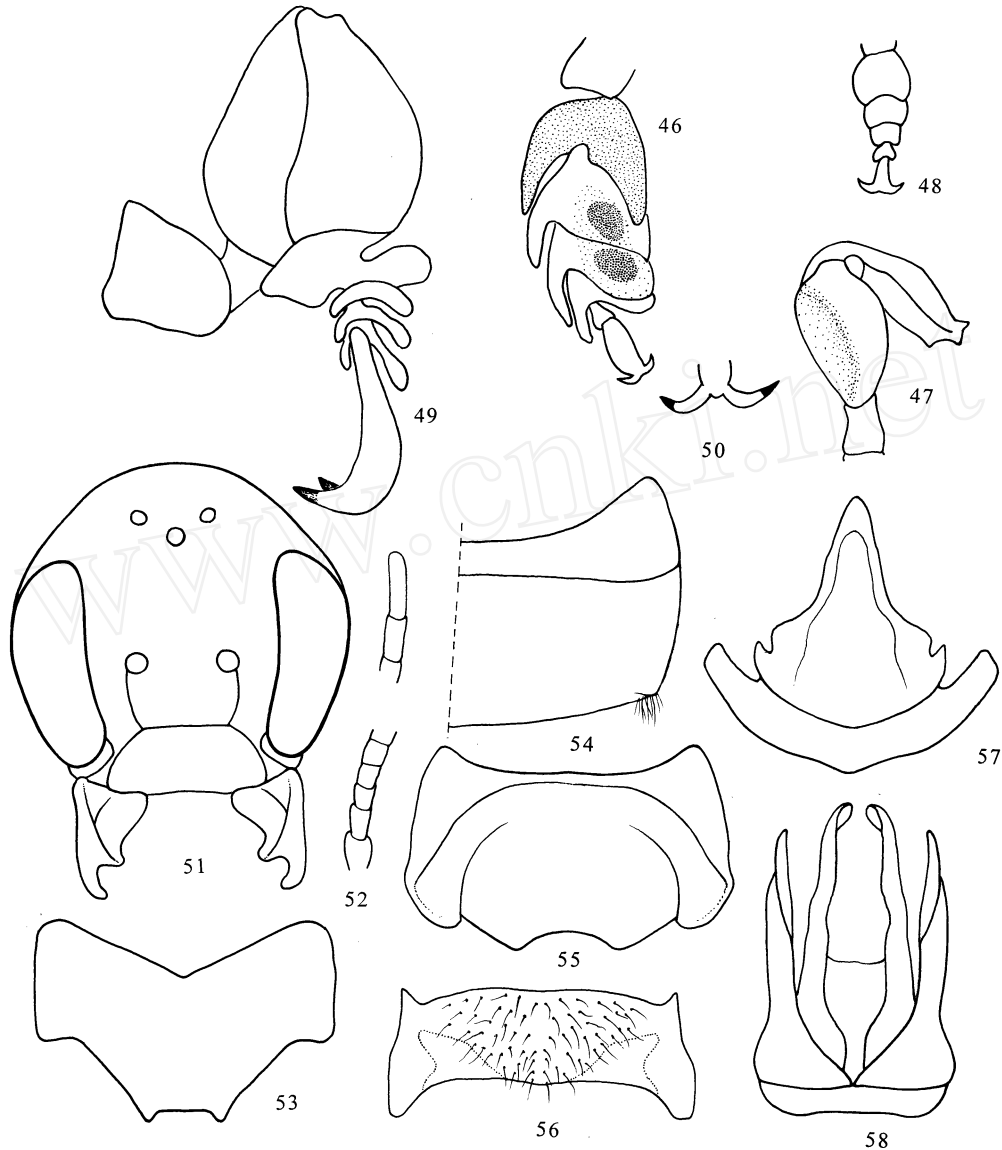
**13** *Megachile (Chelostomoda) nigroapicalis* sp. nov. (Figs. 38-45)

Female: 7-8 mm long. Black, lateral side of metasoma parallel, apical margin of T1-T5 with narrow white fasciae. Mandible 5-toothed, 2<sup>nd</sup> interspace with cutting edge; clypeal margin rounded, with two median protuberances; clypeus and gena with coarse punctures; punctures on frons large; 1<sup>st</sup> and 2<sup>nd</sup> flagellum broad, 1<sup>st</sup> flagellum slightly longer than 2<sup>nd</sup>, 3<sup>rd</sup> flagellum obviously longer than 2<sup>nd</sup>; widest width of gena equal to widest width of eye; punctures on vertex and genae smaller than on clypeus; mesoscutum, mesopleuron and scutellum smaller and more irregular than on vertex; T2-T5 with deep and wide gradulus, postgradular area with coarse punctures; punctures on T1 and T6 very dense; T3-T5 sparser; legs normal, hind basitarsi flattened. Black, flagellum black-brown; wings hyaline, tegulae, stigma and veins black-brown. Pubescens white. Apical margin of clypeus with median 4 yellow setae-tuft; clypeus and mesopleuron with sparse hairs; paraocular area, pronotum lobe and lateral side of metanotum with dense long white hairs; gena with short white hairs; scopa white, ST6 with



Figs. 38-45. *M. (C.) nigroapicalis* sp. nov. 38. Head. 39-45. . 39. Head. 40. Fore tarsus. 41. Mid tarsus. 42. Hind tibia and tarsus. 43. T6. 44-45. Ventral surface of metasomal protuberance (lateral view, frontal view).





Figs. 46-58. *M. (E.) crabipedes* sp. nov. 46. Fore tarsus. 47. Mid femur and tibia. 48. Mid tarsus. 49. Hind leg. 50. Claw. 51. Head. 52. Antenna (basal and apical part). 53. T7. 54. ST4. 55. ST5. 56. ST6. 57. ST7-ST8. 58. Genitalia.

short black hairs; ST2-ST4 with lateral white fasciae.

Male. 7-8 mm long. Head rounded; antennae extending to propodeum; flagellum yellow-brown; upper surface of fore femora, tibiae and tarsi red-brown; apical part of mid tibiae and tarsi red-brown; apical part of hind femora and tarsi brown, 5<sup>th</sup> tarsus dark brown; fore tarsi flattened, asymmetrical lamina-form, inner surface of 2<sup>nd</sup>-3<sup>rd</sup> segments with black spot, outer surface with long white fringe; mid femora and tibiae swollen, tarsi narrow than fore tibiae, outer surface with long white fringe; hind basitarsi flattened, 2<sup>nd</sup>-4<sup>th</sup> segments broad, 5<sup>th</sup> segment long; 4<sup>th</sup>-5<sup>th</sup> sternites with median emargination, red-yellow; apical margin of T6 rounded, with median emargination, subapical margin carinated; ST7-ST8 and genitalia see as in Figs. 57-58.

Holotype ♀, Yunnan, Xishuanbanna, Menglun (21.9°N, 101.2°E; 650 m), 31 Mar. 1994, collected by YANG Long-Long. Paratypes: 1 ♀, same data as holotype; 1 ♀, 1 ♂, 3 Apr. 1994, collected by XU Huan-Li; 1 ♀, 21 Apr. 1994, collected by XU Huan-Li; 3 ♀, 22 Apr. 1994, collected by XU Huan-Li; 1 ♀, 22 Apr. 1994, collected by YANG Long-Long, 1 ♀, Damenglong, 650 m, 12 Oct. 1958, collected by CHEN Zhi-Zi; 1 ♀, 13 May 1958, collected by CHEN Zhi-Zi; 1 ♀, 16 Apr. 1958, collected by ZHANG Yi-Ran.

Similar to *M. (Ch.) saphira*, main differences: all the legs different; ST4-ST5 with median emargination, red-yellow; ST7-ST8 and genitalia different from *M. (Ch.) saphira*.

**Etymology.** Named after the ST6 with black

fringe.

**14** *Megachile* (*Chelostomoda*) *crabipedes* sp. nov. (Figs. 46-58)

Male. 8-9 mm long. Black, large part of legs red-brown or yellow; fore, mid and hind legs modified. Ratio of width and length of head: 6/5; antennae attending to metanotum; 1<sup>st</sup> flagellum slightly shorter than 2<sup>nd</sup>, 2<sup>nd</sup> flagellum equal to 3<sup>rd</sup>; the following segments longer than their own width; mandible 2-toothed; genae narrower than eye; margin of vertex carinated; punctures on face, vertex and genae coarse; punctures on mesosoma and T1 as on head; legs modified, fore femora swollen, tibiae normal, tarsi 2-4 obviously expanded and deeply excavated, inner surface of 2<sup>nd</sup>-3<sup>rd</sup> segments with brown spots; mid femora swollen, tibiae swollen as triangle-form, with a longitudinal carina, mid tarsi flattened; hind femora and tibiae swollen, basitarsi expanded, 5<sup>th</sup> segment long, 4 times as length as 1<sup>st</sup>-4<sup>th</sup> segments together. T2-T4 with deep gradulus, punctures on pregradular area sparse, postgradular area smooth, with large punctures; T5-T6 with coarse punctures; subapical margin of T6 semicircle smooth carinated, center under carina with emargination; T7, ST4-ST8 and genitalia see as in Figs. 53-57. Black, antennae black-brown; apical part of fore femora and tibiae yellow-brown, tarsi yellow (or red-yellow); mid tarsi yellow-brown, carina black-brown; tarsi yellowish; hind femora and inner surface of tibiae yellow-brown; 2<sup>nd</sup>-3<sup>rd</sup> joint of tarsi yellow-brown, 4<sup>th</sup>-5<sup>th</sup> black-brown. Body covered with white pubescens; face and gena with dense white hairs; lateral of mid tibiae with long white fringe and outer side longer than inner side; inner surface of hind tarsi with dense long white fringes and longer than inner side.

Holotype ♂, Yunnan, Xishuangbanna, Menglun (21.9°N, 101.2°E), 22 Apr. 1994, collected by XU Huanli. Paratypes: 3 ♂, same data as in holotype; 1 ♀, Damenglung, 650 m, 4 May 1958, collected by ZHANG Yi-Ran.

Similar to *M. (E.) rigicaudata* (Cameron), the main differences: fore tibiae obviously expanded, mid femora, hind femora and tibiae swollen or flattened; ST6-ST8 and genitalia different.

Etymology. Named after the fore tarsi expanded like the pincers of crab.

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## 中国切叶蜂属十四新种记述 (蜜蜂总科, 切叶蜂科)

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**摘要** 记述切叶蜂科切叶蜂属 *Megachile* Latreille 7 亚属 14 新种: *Megachile* (*Eutricharaea*) *laminopeds* sp. nov., *Megachile* (*Amegachile*) *alboplumula* sp. nov., *Megachile* (*Xanthosaurus*) *plumatus* sp. nov., *Megachile* (*Xanthosaurus*) *hei* sp. nov., *Megachile* (*Xanthosaurus*) *silvapis* sp. nov., *Megachile* (*Pseudomegachile*) *eurycephala* sp. nov., *Megachile* (*Pseudomegachile*) *nigropectoralis* sp. nov., **关键词** 蜜蜂总科, 切叶蜂科, 切叶蜂属, 新种, 中国.  
**中图分类号** Q969.557.7

*Megachile* (*Pseudomegachile*) *sphenapis* sp. nov., *Megachile* (*Callomegachile*) *gigas* sp. nov., *Megachile* (*Callomegachile*) *rhysalus* sp. nov., *Megachile* (*Lagella*) *hubeiensis* sp. nov., *Megachile* (*Lagella*) *trizonata* sp. nov., *Megachile* (*Chelostomoda*) *nigroapicalis* sp. nov., *Megachile* (*Chelostomoda*) *crabipedes* sp. nov.。采自云南、海南、湖北、四川、贵州等地。模式标本均保存于中国科学院动物研究所。