

**A review of the genus *Macrocheilus* HOPE (Coleoptera: Carabidae: Helluonini) of China, with descriptions of seven new species**

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**ABSTRACT.** In the present paper a review of the genus *Macrocheilus* HOPE, 1838 (Coleoptera: Carabidae: Helluonini) of China is provided, with descriptions of seven new species, viz. *M. parvimaculatus* sp. nov., *M. gigas* sp. nov., *M. fuscipennis* sp. nov., *M. solidipalpis* sp. nov., *M. cheni* sp. nov., *M. quadratus* sp. nov., and *M. sinuatilabris* sp. nov.. A key to all species found in China is also given. In addition, *M. asteriscus* White is reported from Laos, Indonesia and India for the first time.

**KEY WORDS:** Coleoptera, Carabidae, Helluonini, *Macrocheilus*, review, new species, China.

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INTRODUCTION

*Macrocheilus* HOPE, 1838 is the largest genus within the tribe Helluonini. Forty-eight species of the genus have been reported so far (LORENZ 2005), with thirty-four from the Afro-tropical Region, twelve from the Oriental Region and two from the Palaearctic Region. The Oriental fauna of *Macrocheilus* have been treated by ANDREWES (1920) and JEDLIČKA (1963). Up to now only four species of *Macrocheilus* are known from China (ANDREWES, 1930, CSIKI 1933, JEDLIČKA 1963, HŮRKA 2003). The first record of *Macrocheilus* from China was *M. asteriscus* from Hong Kong (WHITE 1844). BATES (1892) reported the occurrence of *M. bensoni* HOPE, 1838 from Hong Kong too. ANDREWES (1920) described *M. vitalisi* from China but its type locality was not given. Then, ANDREWES and SCOTT (1924) recorded *M. chaudiroidi* ANDREWES, 1919 (= *M. trimaculatus* CHAUDOIR, non OLIVIER) from Macao.

## MATERIAL AND METHODS

Majority of the materials studied were from the Insect Collection of South China Agricultural University, Guangzhou (SCAU) and the rest were from Muséum National d'Histoire Naturelle, Paris (MNHN), the National History Museum, London (NHML), and Guangxi Agricultural Academy of Sciences (Nanning, China).

Dissection of specimens was made following the standard technique described by Lindroth (1974). Observations and measurements were made under stereo microscope (Leica, MZ125).

Abbreviations of measurements used in the text are as follows:

Length of head (HL): linear distance from apex of labrum to posterior transverse margin;

Width of head (HW): maximum distance across head including eyes;

Length of pronotum (PL): linear distance from anterior to posterior margin, measured along the midline;

Width of pronotum (PW): greatest transverse distance;

Length of elytra (EL): linear distance from base to apex, through elytral suture;

Width of elytra (EW): greatest linear transverse distance across both elytra.

### Genus *Macrocheilus* HOPE, 1838

*Macrocheilus* HOPE, 1838: 166. Type species: *Macrocheilus bensoni* HOPE, 1838. JEANNEL, 1949: 1041.

*Acanthogenius* REICHE, 1842: 334. Type species: *Helluo impictus* WIEDEMANN, 1823.

### Diagnosis

Medium sized (length from 8.0 to 17.0 mm), elongate, whole body coarsely punctate and pubescent, except for labrum and middle region of ventral side of head (Figs 31-45). Head with two supraorbital setae on each side; ligula fairly wide, deeply impressed beneath at sides of base; mentum deeply emarginate, with a long and slender tooth; palpi varies in form; labrum extraordinarily or well developed; mandibles dorsally covered by labrum or not covered; antennae stout and flat, densely pubescent from antennomere 5. Pronotum truncate-cordiform or quadrate, basal margin more or less produced backwards in middle; lateral margin with two setae, one just before middle, and the other at hind angle. Elytra with deep striae and setiferous pores; intervals slightly or rather convex, interval 8 usually wide and quite obsolete. Metepisterna elongate and very narrow in all species. Tarsomere 4 emarginate. Wings developed. No externally visible sexual dimorphic characters present. The median lobe of aedeagus varies in form. Parameres of aedeagus are quite similar, elongate, the left one larger than the right one.

### Habits

No record about the life-history and habits of the members of *Macrocheilus* exists. ANDREWES (1920) noted that *M. trimaculatus* OLIVIER (= *M. bensoni* HOPE) came to light and specimens had also been taken under stones and on grasses. All specimens in SCAU were collected at light traps.

### Key to species of Chinese *Macrocheilus*

1. Maxillary palpomere 4 not flattened dilated, lateral lobes of mentum round on outer margin, mandibles not exposed, lateral margin of labrum round, front margin of clypeus not or slightly emarginated in middle, elytron with one or two spots .....**2**
  - Maxillary palpomere 4 strongly and flattened dilated, lateral lobes of mentum sinuate behind middle or on anterior one-third, mandibles exposed, lateral margin of labrum distinctly sinuate on anterior one-third, front margin of clypeus deeply and widely emarginate in middle, elytron with one spot .....**7**
2. Elytron with one spot, labrum with anterior setae on upper surface.....**3**
  - Elytron with two spots, labrum with anterior setae on apical margin or ventral surface....**4**
3. Elytral spot cruciform; labrum with basal margin almost parallel; ligula strongly dilated, apex narrow, apical margin almost straight; median tooth of mentum narrow.....  
.....*M. asteriscus* WHITE
  - Elytral spot almost round; labrum with basal margin widened towards middle; ligula not dilated, nearly rectangular, apical margin slightly rounded; median tooth of mentum triangular.....*M. vitalisi* ANDREWES
4. Maxillary palpomere strongly dilated; anterior setae of labrum on apical margin; ligula strongly thickened.....**5**
  - Maxillary palpomere 4 slightly or strongly dilated; anterior setae of labrum on ventral surface; ligula weakly thickened.....**6**
5. Body and elytral spots larger; labrum large and wide, with the intermediate setae at a short distance from margin, apex widely rounded; maxillary palpomere 4 entirely dilated.....*M. gigas* sp. nov.
  - Body and elytral spots smaller; labrum small, with the intermediate setae close to margin, apex narrowly rounded; maxillary palpomere 4 strongly dilated on anterior half portion.....*M. parvimaculatus* sp. nov.
6. Maxillary palpomere 4 hardly dilated; pronotum with sides of basal margin weakly obliquely truncated; larger size.....*M. bensoni* HOPE
  - Maxillary palpomere 4 strongly dilated; pronotum with sides of basal margin strongly obliquely truncated; smaller size.....*M. chaudoir* ANDREWES
7. Elytral spots larger, nearly rectangular.....**8**
  - Elytral spots smaller, not rectangular .....**10**

8. Brown in color; labrum without additional setae apart from three pairs of labral setae, apex pointed rounded; mandibles obtuse at apices; median tooth of mentum with lateral margin not sinuate.....*M. fuscipennis* sp. nov.
- Black in color; labrum with a pair of additional setae apart from three pairs of labral setae, apex widely rounded; mandibles sharp at apices; median tooth of mentum with lateral margin sinuate.....**9**
9. Labrum with additional setae located between the anterior and intermediate setae; median tooth of mentum with lateral margin sinuate in middle; mandibles less sharp at apices.....*M. solidipalpis* sp. nov.
- Labrum with additional setae located before the anterior setae; median tooth of mentum with lateral margin sinuate on anterior one-third; mandibles more sharp at apices.....*M. cheni* sp. nov.
10. Labrum with anterior and intermediate setae located at a distance from each other, apex pointed rounded; mandibles sharp at apices; median tooth of mentum sharp at apex; pronotum almost quadrate.....*M. quadratus* sp. nov.
- Labrum with anterior and intermediate setae close to each other, apex widely rounded; mandibles obtuse at apices; median tooth of mentum strongly obtuse at apex; pronotum nearly cordiform.....*M. sinuatilabris* sp. nov.

***Macrocheilus asteriscus* WHITE, 1844**

(Figs 1, 12, 23, 30, 31, 50)

*Macrocheilus asteriscus* WHITE, 1844: 422; BATES, 1892: 389; ANDREWES, 1919: 180; 1920: 500; 1924: 470; 1930: 206; CSIKI, 1932: 1573; WU, 1937: 188; JEDLIČKA, 1963: 470; HŮRKA, 2003: 407; LORENZ, 2005: 512.

*Planetes crucifer* REDTENBACHER, 1867: 4.

**Diagnosis**

Black; moderate sized; labrum (Fig. 1) parallel at sides, apex prominent, all three pairs of setae on upper surface; mandibles stout and obtuse at apex, not exposed; maxillary palpomere 4 (Fig. 23) almost more dilated in middle; ligula strongly thickened, lateral margin arcuate, apex narrowed and apical margin almost straight; mentum (Fig. 12) with one seta on each side close to tooth, median tooth very narrow; pronotum with sides of basal margin roundly truncate; elytron with a large cruciform spot. Median lobe of aedeagus (Figs 30, 31) elongated, hardly dilated, deeply sinuate near base on lower margin, apical lamella rounded. Left gonopod of female genitalia (Fig. 50) with several setae on ventral surface, apex sharp.

### Remarks

*M. asteriscus* differs from *M. vitalisi* mainly in the presence of cruciform elytral spot, the narrowed median tooth of mentum and narrowed apex of ligula. However, in latter, the elytral spot rounded, median tooth of mentum wide, ligula wide at apex.

### Specimens examined

2 males, 1 female, "Hongkong" (MNHN); 2 males, "Hainan, Oct. 1979, Shaoming Zhuo leg." (SCAU); 2 males, "Guangdong: Zhanjiang, Jul. 1982" (SCAU); 1 male, 1 female, "Guangdong: Zhanjiang, May, 1983" (SCAU). 1 male, 1 female, "Annam, Phuc-Son, Nov. to Dec., H. Fruhstorfer", Central Vietnam (MNHN); 1 male, "Tonkin, P. Lemée, 1903-1906", North Vietnam (MNHN); 1 male, "Laos. Mouhot" and "Janson Acq. 1884" (MNHN); 2 males, "Java, Preanger", Indonesia (MNHN); 1 female, "Nilgherries" and "Ex. Musaeo H. W. Bates, 1892", India (MNHN).

### Distribution

China (Guangdong, Hainan, Hongkong), Vietnam, Laos, Myanmar, Indonesia and India. It is reported from Laos, Indonesia and India for the first time.

### *Macrocheilus vitalisi* ANDREWES, 1920

(Figs 2, 13, 24, 51)

*Macrocheilus vitalisi* ANDREWES, 1920: 500; ANDREWES, 1930: 208; CSIKI, 1932: 1575; WU, 1937: 188; JEDLIČKA, 1963: 470; HŮRKA, 2003: 407; LORENZ, 2005: 512.

### Diagnosis

Black; moderate sized; labrum (Fig. 2) with sides of base contracted, all three pairs of setae on upper surface; mandibles not exposed, obtuse at apex; maxillary palpomere 4 (Fig. 24) roundly dilated; ligula nearly rectangular, front margin slightly rounded; mentum (Fig. 13) glabrous at base, median tooth triangular and with several setae at basal half; pronotum with sides of basal margin obliquely truncate; elytron with a rounded spot. Left gonopod of female genitalia (Fig. 51) dilated behind middle, four setae on dorsal margin, sharp at apex.

### Remarks

*M. vitalisi* is very similar to *M. binotatus* ANDREWES, 1931 from Sumatra, ANDREWES (1931) noted that the latter differs from the former by "the coloured are darker, the elytral spot oblong and red; the upper surface generally is more sharply to the neck, the sides of the prothorax are less sinuate behind, the elytral intervals more convex, with puncturation along the side more widely spaced and coarser". In addition, according to our examination, *M. binotatus* with front seta close to front margin, maxillary palpomere 4 cylindrically dilated.

### Specimens examined

The holotype, female, "China, Bowring 63-47\*, 986 27/2/53" (NHML); 1 female, "Tonkin, Région de Hoa-Binh", "Museum Paris, 1932, A. de Cooman" (MNHN).

### Distribution

China, Laos, Vietnam, Borneo (ANDREWES, 1930; CSIKI, 1932; JEDLIČKA, 1963).

### *Macrocheilus gigas* sp. nov.

(Figs 3, 14, 25, 32, 33)

Holotype: male, Guangdong: Zhanjiang, Jun.1983, deposited in SCAU. Paratypes: 1 male, Guangdong: Zhanjiang, Oct.1982, Zhichang Tan leg., deposited in SCAU; 2 males, Guangdong: Zhanjiang, July 1982, deposited in SCAU and MNHN.

### Description

Length 15.6-17.0 mm, width 5.5-6.0 mm.

Coloration: Black; palpi, antennomeres 5-11 and legs (except for femora) dark reddish; vertex spot orange; femora and elytral spots yellow.

Head: Convex, coarsely and densely punctate, HL/HM = 1.38; frontal foveae shallow and frontoclypeal suture very faint; clypeus not wrinkled, front margin almost straight; labrum (Fig. 3) somewhat transverse, convex anteriorly, slightly narrowed at base, apex widely rounded, anterior seta on front margin, intermediate one at a short distance from margin, posterior one close to margin; mandibles short and obtuse, not exposed; maxillary palpomere 4 (Fig. 25) distinctly dilated; mentum (Fig. 14) densely setose at base, median tooth shorter than lobes, densely and irregularly setose, lateral margin sinuate behind middle, lateral lobes with outer margin arcuate and apex obtuse; ligula wide and rather thickened, median impression wide but shallow, apex well emarginate in middle, outer apical angles semi-circled, two pairs of setae along the sides of median ridge.

Pronotum: Convex, PW/HW = 1.37, PL/PW 0.73, widest at one-fourth from anterior; apical transversal impression distinct, median impression distinct at base, basal foveae deeply depressed; lateral margin distinctly sinuate near hind angle; front angle rounded, hind one nearly rectangular, deeply and widely emarginate, with a small but obtuse tooth; the sides of basal margin obliquely truncate, but roundly close to hind angles.

Elytra: Elongate, parallel at sides, EW/PW = 1.56, EL/EW = 1.68; punctate-striate; intervals rather convex, with two rows of irregular setiferous pores which becoming three rows near apex; anterior spot large and rounded, just before middle, covering intervals 3-7, posterior one close to apex, nearly rectangular, covering intervals 1-4 or 1-6.

Male genitalia: Median lobe of aedeagus (Figs 32, 33) robust, strongly dilated, expanded ventrally, bisinuate on lower margin, apical lamella long and sharp at apex.

Female: Unknown.

### Etymology

The specific name is an adjective from Latin word “*gigas*” meaning very large, referring to the large size of the species.

### Remarks

*M. gigas* sp. nov. is related to *M. bensoni*, but distinctly differs from the latter by larger size, placement of anterior labral setae on front margin and intermediate one at a short distance from margin (beneath and on front margin respective in *M. bensoni*), strongly dilated maxillary palpi (hardly dilated in *M. bensoni*), more thickened ligula (normally thickened in *M. bensoni*), and very large and dilated aedeagus (smaller in *M. bensoni*).

### Distribution

Guangdong (Zhanjiang).

### *Macrocheilus parvimaculatus* sp. nov.

(Figs 4, 15, 26, 34, 35)

Holotype: male, Guangxi: Liuzhou: Luzhai, 26 May 1980, Shaozhou Ruan leg., by light trap, deposited in SCAU. Paratype: 1 male, same data as holotype, deposited in SCAU.

### Description

Length 10.7-11.0 mm, width 3.0 mm.

Coloration: Black; palpi, ligula, antennae, legs and vertex spot reddish brown; elytral spot and femora yellow.

Head: Convex, very densely and coarsely punctate, even on vertex, HL/HW 1.0; frontal foveae well marked but frontoclypeal suture faint; front margin of clypeus almost straight, not wrinkled; labrum (Fig. 4) strongly convex anteriorly, lateral margin almost parallel at base, apex prominent, anterior seta minute and located on front margin, intermediate and posterior one close to margin; mandibles short and obtuse at apex, not exposed; maxillary palpomere 4 (Fig. 26) rounded and dilated at anterior half portion; mentum (Fig. 15) densely and irregularly setose at base, median tooth shorter than lobes, apex triangular, with several irregular setae at basal half, lateral lobes with outer margin arcuate and apex obtuse; ligula rather shiny, wide and thickened, with shallow median impression, apex emarginate in middle, apical outer margin rounded, a pair of setae near apex.

Pronotum: Convex, PW/HW = 1.0, PL/PW = 0.73, widest at three-fourths from base; apical transversal impression shallow, median impression distinct at base, basal foveae deeply depressed; lateral margin distinctly sinuate before hind angle; front angle rounded, hind angle obtuse and emarginate, with a small and sharp tooth; the sides of basal margin obliquely truncate.

Elytra: Elongate, parallel at sides, EW/PW = 1.12, EL/EW = 2.16; punctate-striate; intervals slightly convex, a row of regular setiferous pores along each stria, but irregular towards apex; anterior spot rather small, before middle, covering intervals 4-6, posterior spot slightly larger than anterior one, close to inner apical angles, on intervals 1-4.

Male genitalia: Median lobe of aedeagus (Figs 34-35) slender, contracted near base, expanded ventrally at middle, bisinuate on ventral margin, apical lamella pointed.

Female: Unknown.

### Etymology

The specific epithet, “*parvimaculatus*”, is an adjective, combined from Latin prefix “*parvus*” meaning small, and word “*macula*” meaning mark or spot, in reference to the small spots on elytra.

### Remarks

This new species is easily distinguished from other species of *Macrocheilus* by its labrum strongly convex and with intermediate seta close to margin, maxillary palpomere 4 dilated in apical half portion and elytra with rather small spots are the main characteristics of the species.

### Distribution

Guangxi.

### *Macrocheilus bensoni* HOPE, 1838

(Figs 5, 16, 27, 36, 37, 52)

*Macrocheilus bensoni* HOPE, 1838: 166; CHAUDOIR, 1872: 212; BATES, 1892: 389; HELLER, 1900: 3; ANDREWES, 1919: 176, 202; HŮRKA, 2003: 407; LORENZ, 2005: 512.

*Carabus trimaculatus* OLIVIER, 1790: 347 (non VILLERS, 1789); ANDREWES, 1919: 129, 176; 1920: 502; 1930, 208; CSIKI, 1932: 1574; WU, 1937: 188; JEDLIČKA, 1963: 470.

*Helluo quadrimaculata* GUÉRIN-MENÉVILLE, 1840: 38; CHAUDOIR, 1872: 212.

*Helluo tripustulata* sensu GUÉRIN-MENÉVILLE, 1843: 34 (non DEJEAN, 1825); ANDREWES, 1923: 460.

*Macrocheilus quadripustulatus* SCHMIDT-GÖBEL, 1846: 65.

*Acanthogenius infuscatus* BATES, 1892, 389; ANDREWES, 1920: 493.

### Diagnosis

Black; moderate sized; labrum (Fig. 5) with sides of base slightly contracted, apex wide, anterior seta minute and located on lower surface near apex, intermediate one on front margin; mandibles not exposed, slightly obtuse at apex; maxillary palpomeres (Fig. 27) not dilate; ligula normally thickened, front margin deeply emarginate in middle; mentum irregularly setose at base, median tooth triangular and round at apex, setose at basal two-thirds; pronotum with sides of basal margin almost obliquely truncate; elytron with two

spots. Median lobe of aedeagus (Figs 36, 37) not dilate in lower surface, apical lamella long and round at apex. Left gonopod of female genitalia (Fig. 52) with three pairs of setae on dorsal surface, apex less sharp.

### Remarks

Closely related to *M. chaudi* with two pairs of elytral spots, but differs in larger size, narrower median tooth of mentum, hardly dilated maxillary palpomere 4 and slightly obliquely truncated sides of basal margin of pronotum. In *M. chaudi*, the size smaller, median tooth of mentum more wider, maxillary palpomere 4 gradually roundly dilated towards apex, sides of basal margin of pronotum strongly obliquely truncate.

### Specimens examined

1 male, "Guangdong: Zhanjiang, Oct.1982, Zhichang Tan leg." (SCAU); 2 males, "Guangdong: Yingde, 27 Mar.2003, Danyang Zhao leg." (SCAU and MNHN); 1 male, "Guangxi, Dec.1983" (SCAU); 1 male, "Yunnan: Jinghong, Jul. 1985" (SCAU); 1 female, "Hainan: Diaoluoshan, 26 Nov.1963" (SCAU); 1 male, "North China, 1884, Janson"(MNHN); 1 male, "North India, Coll. Benson, Ex-Musaeo H.W. Bates, 1892" (MNHN); 1 male, "Ind. Angl., Coimbatore D<sup>t</sup>, Siruveni, VI. 1937" (MNHN); 1 female, "Ind. Angl., Mysore" (MNHN).

### Distribution

China (Fujian, Jiangxi, Guangdong, Guangxi, Guizhou, Yunnan, Hongkong, Hainan), Laos, Vietnam, Myanmar, India and Sri Lanka (ANDREWES, 1930; CSIKI, 1932; JEDLIČKA, 1963).

### *Macrocheilus chaudi* ANDREWES, 1919

(Figs 6, 17, 28, 38, 39, 53)

*Macrocheilus chaudi* ANDREWES, 1919: 130; 1920: 502; 1924: 470; 1930: 207; CSIKI, 1932: 1573; JEDLIČKA, 1963: 470; LORENZ, 2005: 512.

*Acanthogenius trimaculatus* sensu CHAUDOIR, 1872: 171 (non OLIVER).

*Macrocheilus ruficollis* HELLER, 1923: 296; ANDREWES, 1926: 258.

### Diagnosis

Slightly brownish black, small sized, less punctate than other species; labrum (Fig. 6) parallel at base, apex widely rounded, anterior seta minute and located on lower surface near apex, intermediate one on front margin; mandibles not exposed, slightly sharp at apex; maxillary palpomere 4 (Fig. 28) gradually roundly dilated towards apex; ligula normally thickened, front margin deeply emarginate in middle; mentum (Fig. 17) irregularly setose at base, tooth wide and triangular, round at apex, several setose at basal part; pronotum with sides of basal margin strongly oblique truncate; elytron with two large spots. Median lobe

of aedeagus (Figs 38, 39) dilated in middle of lower surface, apical lamella sharp at apex. Left gonopod of female genitalia (Fig. 53) more slender, with three pairs of setae on dorsal margin, sharp at apex.

### Remarks

CHAUDOIR (1872) wrongly identified the species with the name *Acanthogenius (Macrocheilus) trimaculatus*. Then ANDREWES (1919) proposed the name *M. chaudiroidi* instead of CHAUDOIR'S *M. trimaculatus* (non OLIVIER) and simply described it in 1920.

### Specimens examined

The holotype, female, labeled "Ex-Musaeo Chaudoir; *Macrocheilus Chaudiroidi* Andr., H.S. Andrewes det.; *3-maculatus* Chaud., Deccan, Coll. Jeakes" (MNHN). 1 male, "Maison, Sakrabail, IX 1897" (MNHN); 1 female, "Museum Paris, Cochinchine, Harmand 1872" (MNHN); 1 female, "Java" and "Museum Paris, Lakhon, Harmand 1878" (MNHN); 1 female, "Jnsl. Phiip." and "Thorey" (MNHN).

### Distribution

China (Macao), Cambodia, Laos, Vietnam, the Philippines, Sumatra and India (ANDREWES 1930, CSIKI 1932, JEDLIČKA 1963).

### *Macrocheilus fuscipennis* sp. nov.

(Figs 7, 18, 29, 40, 41)

Holotype: male, "Guangxi: Napo, 10 Oct.1970, by light trap", deposited in SCAU.

### Description

Length 10.8 mm, width 4.3 mm.

Coloration: Brown; palpi, antennomere 1, femora and elytral spots yellow, pale yellow.

Head: Rather convex, coarsely and densely punctate, sparsely on vertex, HL/HW = 0.93; frontal foveae shallow, frontoclypeal suture deep and well marked; clypeus with front margin deeply and widely emarginate in middle; labrum (Fig. 7) convex on disc, with lateral margin sinuate on apical one-third and prominent outwards on basal one-third, apex rounded and pointed, all three pairs of labral setae at a short distance from margin; mandibles stout, exposed dorsally, rather obtuse at apex; maxillary palpomeres 3-4 (Fig. 29) strongly and flattened dilated, labial palpomere 3 triangularly, distinctly dilated inwards; mentum (Fig. 18) with several irregular setae, median tooth nearly as long as lateral lobes, triangular, round at apex, irregularly setose at basal half, lateral lobes sinuate behind middle on outer margin; ligula thin, apex thickened and front margin rounded, bisetose near apex.

Pronotum: Convex, PW/HW = 1.0, PL/PW = 0.69, widest at about four-fifths from base; front transversal impression distinct, median impression shallow at base, basal foveae

deeply depressed; lateral margin broad, slightly sinuate near hind angle; front angle rounded, hind one obtuse, with a big and sharp tooth, deeply emarginated before the tooth; the sides of basal margin obliquely truncate.

Elytra: Elongate, parallel at sides, EW/PW = 1.68, EL/EW = 1.62; punctate-striate; intervals slightly convex, with two rows of regular setiferous pores; elytral spots rectangular, front margin on basal one-fourth, hind margin at about middle of elytra and covering intervals 3-7.

Wrinkles: Clypeus with distinct transverse wrinkles.

Male genitalia: Median lobe of aedeagus (Figs 40, 41) slender and hardly dilated, lower margin deeply and evenly sinuate, apical lamella moderately long, slightly expanded at apex.

Female: Unknown.

### Etymology

The Latin prefix “*fuscus*-” means brown, and word “*pennis*” means elytra, referring to the brown elytra.

### Remarks

Related to *M. solidipalpis* sp. nov. and *M. cheni* sp. nov. with the larger elytral spot, but easily distinguishable from both by labrum without additional setae, mandibles rather obtuse at apex, median tooth of mentum with lateral margin not sinuate and body brownish in color. However, in latter two new species, labrum with a pair of additional setae, mandibles sharp at apex, median tooth of mentum with lateral margin sinuate and body black.

### Distribution

Guangxi (Napo).

### *Macrocheilus solidipalpis* sp. nov.

(Figs 12, 17, 27, 42)

Holotype: male, “Guangxi: Dibei, Oct.1980, Xiuzhen Mao leg., by light trap”, deposited in SCAU.

### Description

Length 12.3 mm, width 5.1 mm.

Coloration: Black, shiny; palpi, labrum, antennae and legs dark reddish, elytral spots pale orange.

Head: Convex, coarsely and densely punctate, but sparsely on vertex, HL/HW = 1.7; frontal foveae almost evanescent, frontoclypeal suture well marked; clypeus with front margin strongly and widely emarginate in middle; labrum (Fig. 8) rather convex on disc, lateral margin sinuate on apical one-third, apex widely rounded, apart from the three pairs

of labral setae present at a distance from margin, with a pair of additional setae between anterior and intermediate setae; mandibles long and acute at apex, exposed; palpi as above; mentum (Fig. 19) with several setae at base, median tooth slightly shorter than lobes, lateral margin sinuate in middle, irregularly setose on basal half, lateral lobes with outer margin sinuate on apical one-third and with apex sharp; ligula wide, not thickened, nearly rectangular, apex rounded, with a pair of setae near apex, and several minute setae at sides.

Pronotum: convex,  $PW/HW = 1.36$ ,  $PL/PW = 0.63$ , widest at about four-fifths from base; front transversal impression distinct, median impression almost evanescent, basal foveae deeply depressed; lateral margin rather sinuate and emarginate near hind angle; front angle rounded, hind one obtuse and with a big and sharp tooth; sides of basal margin slightly and obliquely truncate; median line distinct.

Elytra: Elongate, wide, parallel at sides,  $EW/PW = 1.57$ ,  $EL/EW = 1.56$ ; punctate-striate; intervals flat, with irregular setiferous pores; elytral spot large and nearly rectangular, anterior margin of spot located at one-fourth from base, posterior margin in middle, covering intervals 3-8.

Wrinkles: Clypeus with strong transverse wrinkles.

Male genitalia: Median lobe of aedeagus (Figs 42, 43) broad, lower margin evenly sinuate, apical lamella long and evenly narrow towards apex.

Female: Unknown.

### Etymology

The specific is an adjective from Latin, referring to the form of the stout palpi.

### Remarks

Closely related to *M. cheni* sp. nov. but easily distinguishable from the latter by labrum with additional setae between the anterior and anterior setae (before the anterior seta in *M. cheni*), median tooth of mentum with lateral margin sinuate in middle (sinuate on apical one-third in *M. cheni*), median lobe larger, with apical lamella long and evenly narrowed towards apex (whereas, median lobe narrow at base, with apical lamella short and broad in *M. cheni*).

### Distribution

Guangxi (Dibei).

### *Macrocheilus cheni* sp. nov.

(Figs 9, 20, 44, 45)

Holotype: male, "Guangxi: Tengxian, Oct.1980", deposited in SCAU.

### Description

Length 11.0 mm, width 4.4 mm.

Coloration: Black; palpi, labrum, clypeus, legs (except femora) and antennomere 4-11 brown; antennomeres 1-3, elytral spots, femora, metasternum and abdominal ventrites yellow.

Head: Convex, coarsely and densely punctate, sparsely on middle area, HL/HW = 1.0; frontal foveae almost evanescent, frontoclypeal suture well marked; clypeus with deeply and widely emarginated front margin; labrum (Fig. 9) convex along longitudinal median line, lateral margin sinuate on apical one-third, apex rounded, apart from three pairs of labral setae located at a distance from the margin, with a pair of small additional setae just before anterior seta and close to margin; mandibles exposed, long and very sharp at apex; maxillary as above; mentum (Fig. 20) sparsely setose, median tooth nearly as long as lobes, with lateral margin sinuate on apical one-third, apex almost triangular, setose at basal half, lateral lobes sinuate behind middle and with apex sharp; ligula wide, apex rounded and with a pair of setae near apex.

Pronotum: Convex, PW/HW = 1.17, PL/PW = 0.68, widest at about four-fifths from base; front transversal impression distinct, median impression deep at base, basal foveae deeply depressed; lateral margin distinctly sinuate near hind angle; front angle rounded, hind one obtuse, deeply emarginate and with a big and sharp tooth; the sides of basal margin obliquely truncate.

Elytra: Elongate, parallel at sides, EW/PW = 1.68, EL/EW = 1.63; punctate-striate; intervals convex, with irregular setiferous pores; elytral spot large and rectangular, with front margin at one-fourth from base and hind margin in middle, covering intervals 3-7.

Wrinkles: Clypeus with strong transverse wrinkles.

Male genitalia: Median lobe of aedeagus (Figs 44, 45) short and small, slightly dilated behind middle, lower margin almost straight, apical lamella very short and broad.

Female: Unknown.

### Etymology

The new species is named in honor of Prof. Shoujian Chen (SCAU).

### Remarks

Allied to *M. solidipalpis* sp. nov. and differences have been mentioned above.

### Distribution

Guangxi (Tengxian).

***Macrocheilus quadratus* sp. nov.**

(Figs 10, 21, 46, 47)

Holotype: male, labeled "Guangxi: Cangwu, 1980, in paddy field", deposited in SCAU.

**Description**

Length 12.1 mm, width 4.7 mm.

Coloration: Black but slightly reddish; palpi, mandibles (except for apices black), labrum, antennomeres 1-3, and legs reddish yellow; ventral surfaces of thoraces and abdominal ventrites, and elytral spots yellow; clypeus and antennomeres 4-11 reddish brown.

Head: Rather convex, coarsely and densely punctate, sparsely on middle area, HL/HW = 1.0; frontal foveae short and faint, frontoclypeal suture well marked; clypeus with front margin deeply emarginate in middle; labrum (Fig. 10) strongly convex along longitudinal median line, lateral margin sinuate on apical one-third, apex evidently protruded, all three pairs of setae at a distance from margin; mandibles long and exposed, apex sharp; palpi as above; mentum (Fig. 21) irregularly setose, median tooth shorter than lobes, triangular, apex slightly triangular, two pairs of setae at base, lateral lobes sinuate behind middle and with apex rounded; ligula wide, apex rounded and bisetose near apex.

Pronotum: Convex, transverse and nearly quadrate, PW/HW = 1.11, PL/PW = 0.647, widest at three-fourths from base; apical transversal impression distinct, median impression deep at base, basal foveae deeply depressed; lateral margin slightly sinuate near hind angle; front angle rounded, hind angle obtuse, with a small but sharp tooth, not emarginated; sides of basal margin straightly truncate; median line distinct.

Elytra: Elongate, parallel at sides, EW/PW = 1.72, EL/EW = 1.66; punctate-striate; intervals convex, with irregularly setiferous pores; elytral spot small, placed in the anterior one-third, covering intervals 3-7, extending forwards in interval 5.

Wrinkles: Clypeus with strong wrinkles.

Male genitalia: Median lobe of aedeagus (Figs 46, 47) stout, lower margin slightly sinuate, apical lamella long, and rounded at apex.

Female: Unknown.

**Etymology**

The specific name is an adjective from Latin, in reference to the square shape of pronotum.

**Remarks**

This new species is easily distinguished from other species by the shape of pronotum.

**Distribution**

Guangxi (Cangwu).

***Macrocheilus sinuatilabris* sp. nov.**

(Figs 11, 22, 48, 49)

Holotype: male, labeled "Guangxi: Fenghuangcheng, Sep.1981, by light trap", deposited in SCAU.

**Description**

Length 11.7mm, width 4.7 mm.

Coloration: Black; labrum, antennomere 1, elytral spot, ventral side of metathorax and abdominal ventrites yellow; clypeus, palpi, remaining antennomeres, legs and ventral side of pro- and mesothoraces reddish brown.

Head: Convex, coarsely and sparsely punctate, HL/HW = 0.87; frontal foveae almost evanescent, frontoclypeal suture well marked; clypeus with front margin deeply and widely emarginate in middle; labrum (Fig. 11) convex on disc, with lateral margin sinuate on apical one-third, apex widely rounded, with three pairs of labral setae located at a distance from margin (anterior and intermediate setae close to each other); mandibles long and exposed, apex slightly obtuse; palpi as above; mentum (Fig. 22) setose, median tooth slightly longer than lobes, wide and with apex obtuse, sparsely setose at basal area, lateral lobes sinuate behind middle and with apex rounded; ligula wide, with rounded apical margin and several setae near apex.

Pronotum: Convex, PW/HW = 1.18, PL/PW = 0.77, widest at about three-fourths from base; front transversal impression distinct, median impression shallow at base, basal foveae deeply depressed; lateral margin distinct sinuate near base, then biemarginated close to hind angles; front angle rounded, hind one nearly rectangular, with two big teeth, anterior one obtuse, posterior one sharp; sides of basal margin distinctly and obliquely truncate; median line distinct.

Elytra: Elongate, parallel at sides, EW/PW = 1.79, EL/EW = 1.62; punctate-striate; intervals convex, with a row of irregular setiferous pores; elytral spot rather small, placed at one-third from the base of elytra, covering intervals 3-7.

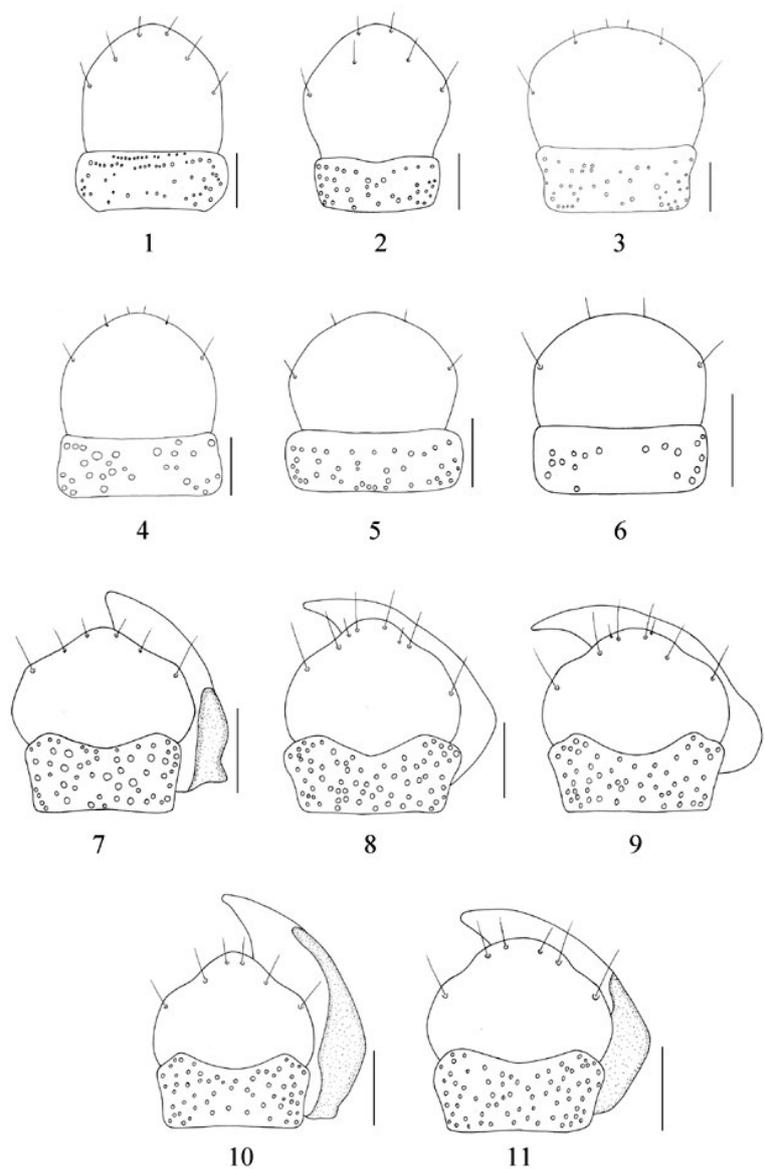
Wrinkles: Clypeus with distinct wrinkles.

Male genitalia: Median lobe of aedeagus (Figs. 48, 49) quite slender, hardly dilated in middle, lower margin evenly sinuate, apical lamella moderately long and slightly enlarged at apex.

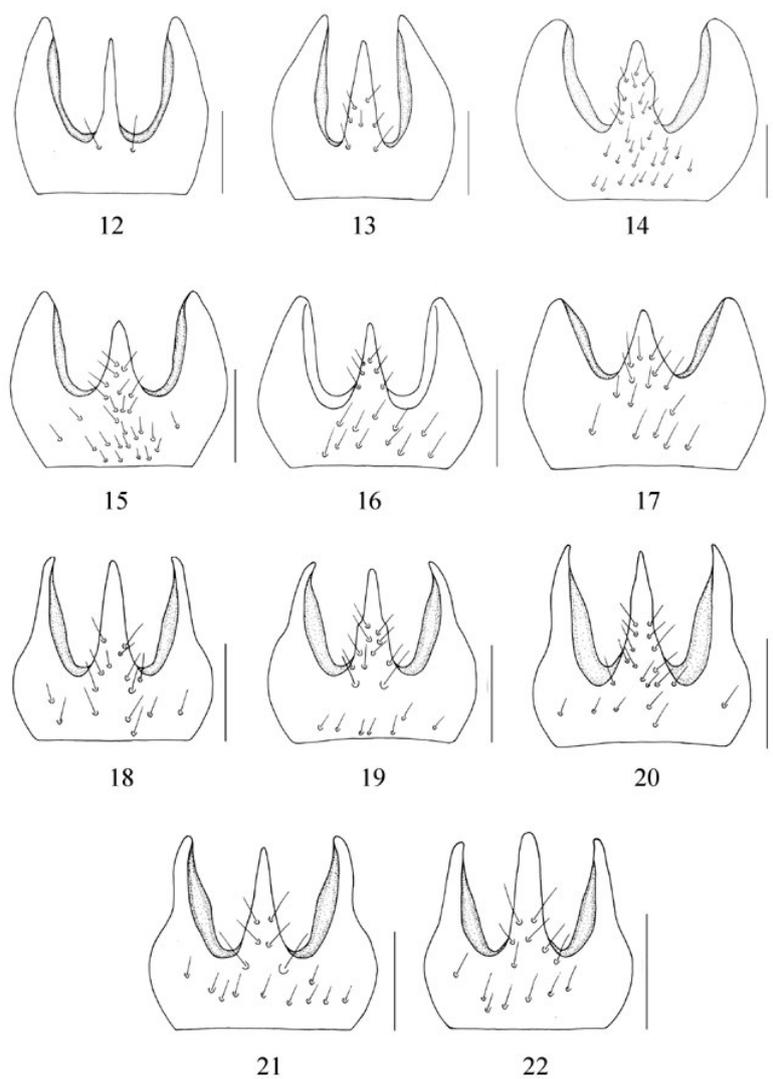
Female: Unknown.

**Etymology**

The specific name is an adjective from Latin, referring to the undulated shape of labrum.



**Figs 1-11.** Labrum (dorsal view): 1 – *M. asteriscus* (male), 2 – *M. vitalisi* (holotype), 3 – *M. gigas* sp. nov. (holotype), 4 – *M. parvimaculatus* sp. nov. (holotype), 5 – *M. bensoni* (male), 6 – *M. chaudoiri* (holotype), 7 – *M. fuscipennis* sp. nov. (holotype), 8 – *M. solidipalpis* sp. nov. (holotype), 9 – *M. cheni* sp. nov. (holotype), 10 – *M. quadratus* sp. nov. (holotype), 11 – *M. sinuatilabris* sp. nov. (holotype). Scale bar: 0.5 mm.



**Figs 12-22.** Mentum (ventral view): 12 – *M. asteriscus* (male), 13 – *M. vitalisi* (holotype), 14 – *M. gigas* sp. nov. (holotype), 15 – *M. parvimaculatus* sp. nov. (holotype), 16 – *M. bensoni* (male), 17 – *M. chaudiroi* (holotype), 18 – *M. fuscipennis* sp. nov. (holotype), 19 – *M. solidipalpis* sp. nov. (holotype), 20 – *M. cheni* sp. nov. (holotype), 21 – *M. quadratus* sp. nov. (holotype), 22 – *M. sinuatilabris* sp. nov. (holotype). Scale bar: 0.5 mm.

### Remarks

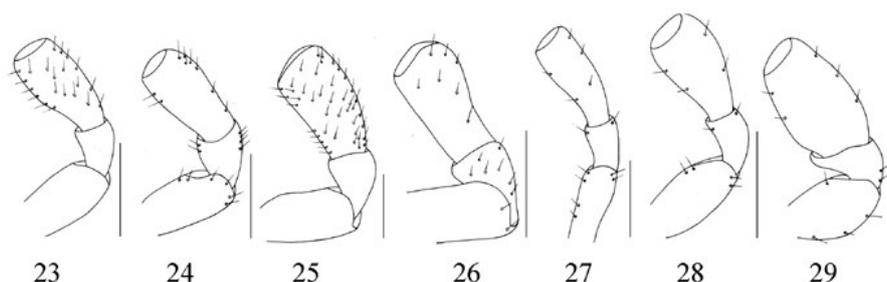
*M. sinuatilabris* sp. nov. is closely related to *M. quadratus* sp. nov. in having three pairs of labral setae on labrum and the small elytral spot. However, it differs from the latter by its rather smaller elytral spot, median tooth of mentum wide and obtuse at apex, apex of labrum widely rounded, close positioning of front and intermediate labral setae, and rather slender median lobe of aedeagus.

### Distribution

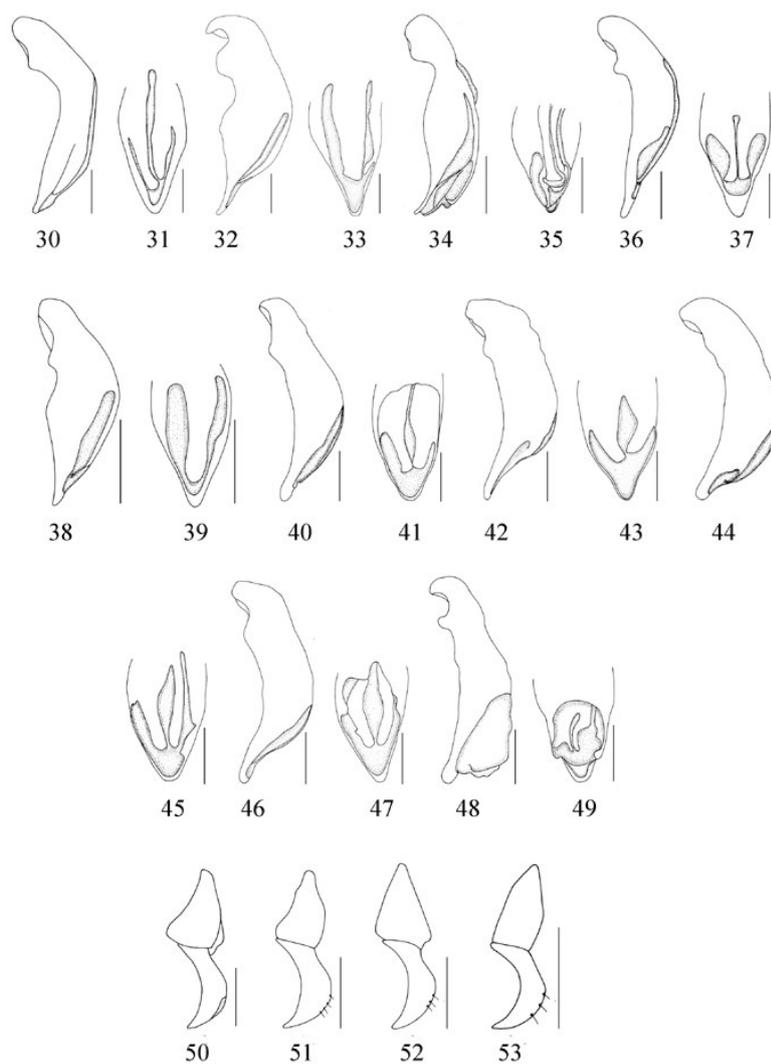
Guangxi (Fenghuangcheng).

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**Figs 23-29.** Maxillary palpi (ventral view): 23 – *M. asteriscus* (male), 24 – *M. vitalisi* (holotype), 25 – *M. gigas* sp. nov. (holotype), 26 – *M. parvimaculatus* sp. nov. (holotype), 27 – *M. bensoni* (male), 28 – *M. chadoiri* (holotype), 29 – *M. fuscipennis* sp. nov. (holotype). Scale bar: 0.5 mm.



**Figs 30-53.** Genitalia. Figures 30-49. Median lobe of aedeagus (left lateral view and dorsal view): 30 – , 31 – *M. asteriscus* (male), 32, 33 – *M. gigas* sp. nov. (holotype), 34, 35 – *M. parvimaculatus* sp. nov. (holotype), 36, 37 – *M. bensoni* (male), 38, 39 – *M. chaudoiri*, 40, 41 – *M. fuscipennis* sp. nov. (holotype), 42, 43 – *M. solidipalpis* sp. nov. (holotype), 44, 45 – *M. cheni* sp. nov. (holotype), 46, 47 – *M. quadratus* sp. nov. (holotype), 48, 49 – *M. sinuatilabris* sp. nov. (holotype). Figures 50-53. Left gonopod of female genitalia (dorsal view); 50 – *M. asteriscus*, 51 – *M. vitalisi* (holotype), 52 – *M. bensoni*, 53 – *M. chaudoiri*. Scale bar: 0.5 mm.

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