Three new species of *Cryptochetum* Rondani from China (Diptera, Cryptochetidae)

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**ABSTRACT**

The following three species of the genus *Cryptochetum* Rondani from China are described as new to science: *Cryptochetum shaanxiense* sp. nov., *Cryptochetum yunnanum* sp. nov., and *Cryptochetum zalatilabium* sp. nov. A key to the known species of *Cryptochetum* from China is presented.

Key words. Diptera, Cryptochetidae, Cryptochetum, new species, China

**INTRODUCTION**

Cryptochetidae is a small family with 41 known species from the world. The genus *Cryptochetum* Rondani includes 40 species (Malloch 1927; Thorpe 1941; Ghesquière 1943; Menon 1949; Foote and Arnaud 1958; Yang and Yang 1996, 1998a, 1998b, 2001). This genus is characterized by the following characteristics: body stubby and compact, shining and brownish black with a metallic blue-green luster; ocellar triangle shining black with metallic luster; frons without setae, orbital setae lacking; first flagellomere large, without arista; scutellum large, approximately triangular; wing hyaline with greenish and purplish reflections; veins brown, costa extending to end of R₄₊₅ or M₁₊₂ (Yang and Yang 1996). Sixteen species are known from the Oriental region (Meijere 1916; Bezzi 1919; Thorpe 1941; Yang and Yang 1996) and eight species from the Palearctic region (Séguy 1948; Yang and Yang 1996, 1998b). Twelve species are known to occur in China (Yang and Yang 1996, 1998a, 1998b, 2001). In the present paper, three species of the genus from China are described as new to science. A key to the known species of *Cryptochetum* from China is presented.

**TAXONOMY**

**Key to species (males) of Cryptochetum from China**

1. Ocellar triangle small, not reaching antennal base; costa extending to end of M₁₊₂ . . . . . . . . 2
— Ocellar triangle large, reaching antennal base; costa extending to end of R4+5 or slightly beyond apex of wing. ........................ 3

2 dm-cu curved inward ............................... C. curratum
— dm-cu perpendicular .............................. C. deltatum

3 R4+5 terminating at apex of wing. .................. 4
— R4+5 terminating before apex of wing, which is close to R4+5 or located between R4+5 and M1+2 .............................. 6

4 M1 between r-m and dm-cu longer than dm-cu ........................................ 5
— M1 between r-m and dm-cu as long as dm-cu .............................. C. tianmuense

5 M4 between r-m and dm-cu 2 times longer than dm-cu; first flagellomere slightly rounded apically .............................. C. acutulum
— M4 between r-m and dm-cu 1.4 times longer than dm-cu; first flagellomere slightly acute apically .............................. C. zalatilabium sp. nov.

6 Costa extending beyond end of R1+2; M1 between r-m and dm-cu nearly as long as dm-cu .............................. C. kunmingense
— Costa extending to end of R4+5; M1 between r-m and dm-cu shorter than dm-cu ........................................ 7

7 Apex of wing at middle of R4+5 and M1 ............. 8
— Apex of wing approaching R4+5 and far away from the end of M1 .............................. 10

8 M1 between r-m and dm-cu as long as CuA1 (the part beyond dm-cu) ... C. fanjingshanum
— M1 between r-m and dm-cu shorter than CuA1 (the part beyond dm-cu) .............................. 9

9 Distal position of Cu1 (the part beyond dm-cu) 3 times longer than dm-cu; dm-cu slightly curved .............................. C. shaanxiense sp. nov.
— Distal position of Cu1 (the part beyond dm-cu) 1.7 times longer than dm-cu; dm-cu nearly straight .............................. C. maolanum

10 Middle of dm-cu appreciably curved .............................. 11
— Middle of dm-cu perpendicular .............................. 12

11 First flagellomere wide and flat, margin inclined apically .............................. C. yunnanum sp. nov.
— First flagellomere slightly narrow and short, margin blunt and rounded apically .............................. C. nonagintaseptem

12 Ocellar triangle approximately in equilateral triangle .............................. 13
— Ocellar triangle approximately in isosceles triangle .............................. 14

13 Apex angle of ocellar triangle slightly wider than distance between antennae; body slightly small (body length 1.5 mm) ... C. medianum
— Apex angle of ocellar triangle slightly narrower than distance between antennae; body slightly large (body length 3.5 mm) ........ C. sinicum

14 Apical angle of ocellar triangle slightly wider than distance between antennae; first flagellomere acute apically .............................. C. acuticornutum
— Apical angle of ocellar triangle nearly equal to distance between antennae; first flagellomere with apical margin obviously inclined inward .............................. C. beijingense

Cryptochetum shaanxiense sp. nov.
Figs. 1, 2, 7, 10-13
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Diagnosis — Ocellar triangle approximately in equicrural triangle, apical angle slightly acute. Surstylus slightly narrowed and blunt apically.

Description — Male. Body length 1.8 mm; wing length 1.7 mm.

Head black; ocellar triangle shining black with metallic luster, apex slightly acute, approximately in isosceles triangle; lunule strap-shaped, narrowed, sooty black. Eye darkish red, bare, 2.1 times as high as long, gena approximately one-eleventh of eye height. Setae and setulae on head black; ocelli yellowish red, placed close together. Ocellar triangle with short setulae; frons without setae, orbital setae lacking; postvertical setae erect, considerably stouter and longer than rest setulae on vertex. Antenna blackish brown with
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microtomentum, large, shorter than face; scape and pedicel with black setulae at middle and margin; first flagellomere with pubescence, irregularly rectangular, front margin straight, apical margin inclined inward, 0.4 mm long, 0.2 mm wide, apical angle with a stout conical tubercle, nearly as long as surrounding setulae. Proboscis inflated and short, yellowish brown, with short sparse black setulae, labellum slightly wide. Palpus very short, kidney-shaped, apically enlarged and rounded, dark brown with short dense black pubescence, margin with short sparse setulae.

Thorax shining, blackish brown with metallic luster; scutellum shining, blackish brown. Setae and setulae on thorax black, punctures at bases of setulae deep and numerous; scutellum large, approximately triangular, broadly rounded apically, 0.5 times as long as thorax. Apical setae longer and stouter than other setae. Anepisternum blackish brown with setulae; katepisterum and anepimeron darkish brown, bare. Legs slender, blackish brown except tarsi dark yellow. Setae and setulae on legs black. Wing hyaline, unspotted, 2.2 times longer than wide; veins brown; costa extending to end of R\textsubscript{4+5} and terminating before apex of wing; Sc weak, not angulated; R\textsubscript{i} curved, not angulated; R\textsubscript{2+3} and R\textsubscript{4+5} parallel for four fifths along their lengths, then diverging to margin; r-m short; M\textsubscript{i} between r-m and dm-cu 1.4 times longer than dm-cu, dm-cu slightly curved; distal portion of Cu\textsubscript{i}, 3 times longer than dm-cu. In Cryptochetum oocerum, M\textsubscript{i} between r-m and dm-cu is slightly arched, the distal portion of Cu\textsubscript{i} is about 2 times as long as dm-cu (Thorpe 1941).

Etymology — The specific name refers to the type locality Shaanxi Province.

Cryptochetum yunnanum sp. nov.

Figs. 3, 4, 8, 14-17

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Diagnosis — Ocellar triangle approximately in equilateral triangle, apex blunt and rounded, a little narrower than distance between antennae. Surstylus slightly blunt apically; cercus rather large, with setulae.

Description — Male. Body length 1.8 mm; wing length 2.0 mm. Head black; ocellar triangle shining black with metallic luster, approximately in equilateral triangle, apex blunt and rounded, narrower than distance between antennae; lunule strap-shaped, very narrow, sooty black. Eye darkish red, bare, 2 times as high as long, gena approximately one-fifteenth of eye height. Setae and setulae on head black; ocelli yellowish red, placed close together. Ocellar triangle with short setulae, punctures at bases of setulae obvious; frons without setae, orbital setae lacking; postvertical setae erect, considerably stouter and longer than other setulae on vertex. Antenna blackish brown with microtomentum, large, a little longer than face; scape and pedicel with black setulae at middle and margin; first

Material examined — Holotype male, Shaanxi, Ningshan, Guanghuojie (33° 45" 56.46'" N, 108° 46" 34.43'" E), 1,258 m, 2013. VIII. 11, Yuqiang Xi. Paratypes 11 males, Guangxi, Tianlin, Dalongping (24° 29" 33.09'" N, 106° 23" 53.40'" E), 1,876 m, 2013. V. 24, Yuqiang Xi; 1 male, Yunnan, Mangshi, Zhefang (24° 15" 20.14'" N, 98° 15" 33.42'" E), 792 m, 2013. VII. 12, Wei Zhang; 1 male, Guizhou, Maolan, Banzhai (25° 15"36.67'" N, 108° 03" 21.65'" E), 620 m, 2013. X. 13, Ding Yang.

Distribution — China (Shannxi, Guangxi, Guizhou, Yunnan).

Remarks — This new species is somewhat similar to Cryptochetum oocerum Thorpe, but may be separated from the latter by M\textsubscript{i} between r-m and dm-cu 1.4 times longer than dm-cu, dm-cu slightly curved; distal portion of Cu\textsubscript{i}, 3 times longer than dm-cu. In Cryptochetum oocerum, M\textsubscript{i} between r-m and dm-cu is slightly arched, the distal portion of Cu\textsubscript{i} is about 2 times as long as dm-cu (Thorpe 1941).
flagellomere with pubescence, wide and flat, front margin straight, apical margin inclined inward, 0.3 mm long, 0.2 mm wide, apical angle with a stout conical tubercle, longer than surrounding setulae. Proboscis short, yellowish brown, with short sparse black setulae. Palpus very short, small rod-like and slightly rounded apically, dark brown with short dense black pubescence, margin with short sparse setulae.

Thorax shining, brownish black with a metallic blue-green luster; scutellum brownish black. Setae and setulae on thorax black, punctures at bases of setulae deep and numerous; scutellum large, approximately triangular, blunt and rounded apically, 0.5 times as long as thorax. Apical setae longer and stouter than other setae. Anepisternum brownish black and with setulae; katepisternum and anepimeron dark brown, bare. Legs slender, blackish brown except tarsi darkish yellow. Setae and setulae on legs black. Wing hyaline with greenish and purplish reflections, unspotted, slightly 2 times longer than wide; veins brown; costa extending beyond R_{4+5} and terminating before apex of wing; Sc weak; R_{1} with a distinct angle; R_{2+3} and R_{4+5} parallel for four-fifths along their lengths, then diverging to wing margin; r-m short and inclined; M_{1} between r-m and dm-cu 1.5 times longer than dm-cu, dm-cu a little inclined, distal portion of Cu_{1} (the part beyond dm-cu) 2 times longer than dm-cu. Calpter brown, with brownish microtrichae, margin with brownish setulae. Knob of halter darkish brown.

Abdomen brownish black with a metallic blue-green luster, wide and slightly flattened. Setae and setulae on abdomen black. Male genitalia: epandrium reduced to a band dorsally, with few setulae; surstylus slightly blunt apically; cercus rather large, with setulae. Hyandrium n-shaped; gonopods lobate and symmetric; phallus relatively straight, distipallus slightly circular.

Female. Unknown.

Material examined — Holotype male, Yunnan, Diqing, Xianggelila (27° 49′ 59.66″ N, 99° 41′ 59.09″ E), 3,280 m, 2012. VI. 12, Yuyu Wang. Paratype 1 male, Zhejiang, Lin’an, Tianmushan (30° 19′ 16.09″ N, 119° 25′ 47.68″ E), 442 m, 2013. VII. 8, Feiyang Liang.

Distribution — China (Yunnan, Zhejiang).

Remarks — This new species is somewhat similar to Cryptochetum kunmingensis Yang et Yang, but can be easily separated from it by the proboscis short; M_{1} between r-m and dm-cu 1.5 times longer than dm-cu. In Cryptochetum kunmingense, the proboscis is relatively longer and stouter; M_{1} between r-m and dm-cu is about 1.1 times as long as dm-cu (Yang and Yang 1996).

Etymology — The specific name refers to the type locality Yunnan Province.

Cryptochetum zalalabium sp. nov.
Figs. 5, 6, 9, 18-21
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Diagnosis — Ocellar triangle approximately in equicrural triangle, apical angle nearly as long as distance between antennae. Surstylus slightly curved and blunt apically.

Description — Male. Body length 1.9 mm; wing length 2.1 mm.

Head black; ocellar triangle shining black with metallic luster, approximately in isosceles triangle, apex blunt and approximately as long as distance between antennae; lunule strap-shaped, narrow, sooty black. Eye darkish red, bare, 1.8 times as high as long, gena approximately one-eighth of eye height. Setae and setulae on head black; ocelli brownish yellow, placed close together. Ocellar triangle with short setulae, punctures at at bases of setulae obvious; frons without setae, orbital setae lacking; postvertical setae erect, considerably stouter and longer than rest of setulae on vertex. Antenna blackish brown with microtomentum, large, a little longer than face; scape and pedicel with black setulae at middle and margin; first flagellomere with pubescence, flat and slightly acute apically, front margin straight, other margin gradually incurved, 0.6 mm long, 0.3 mm wide, apical angle with a stout conical tubercle, longer than surrounding setulae. Proboscis stout, yellowish brown, with short sparse black setulae, labellum slightly wide. Palpus short, slightly thick and rounded apically, dark brown with short dense black pubescence, margin with short sparse setulae.

Thorax shining, brownish black with a metallic blue-green luster; scutellum brownish black.
Setae and setulae on thorax black, punctures at bases of setulae deep and numerous; scutellum large, approximately triangular, broadly rounded apically, 0.6 times as long as thorax. Apical setae longer and stouter than other setae. Anepisternum brownish black and with setulae; katepisterum and anepimeron dark brown, bare. Legs slender, blackish brown except tarsi darkish yellow. Setae and setulae on legs black. Wing hyaline with greenish and purplish reflections, unspotted, 2.5 times longer than wide; veins brown; costa extending beyond \( R_{4+5} \), \( R_{4+5} \) terminating at apex of wing; \( Sc \) weak; \( R_1 \) slightly angulate; \( R_{2+3} \) and \( R_{4+5} \) parallel for three quarters along their lengths, then diverging to wing margin; \( r-m \) short; \( M_1 \) between \( r-m \) and dm-cu 1.6 times longer than dm-cu, dm-cu almost straight and meeting Cu approximately at right angle, distal portion of Cu (the part beyond dm-cu) 1.7 times longer than dm-cu. Calpter yellow, with brownish microtrichae, margin with brownish setulae. Knob of halter darkish brown.

Abdomen brownish black with a metallic blue-green luster, wide and slightly flattened. Setae and setulae on abdomen black. Male genitalia: epandrium reduced to a band dorsally, with few setae; surstylius slightly arched and blunt apically; cercus rather large, with dense setulae. Hypandrium conical; gonopods lobate and asymmetric; phallus relatively straight, distipallus slightly wide.

Female. Unknown.

Material examined — Holotype male, Yunnan, Lvchun, Yakou (22° 51′ 34.94″ N, 101° 43′ 25.56″ E), 1,890 m, 2012. VI. 6, Jinying Yang. Paratype 1 male, same data as holotype; 4 males, Yunnan, Tengchong, Zizhuhe (25° 46′ 18.31″ N, 98° 37′ 54.76″ E), 1,640 m, 2012. V. 8, Feiyang Liang.

Distribution — China (Yunnan).

Remarks — This new species is most similar to Cryptochetum nonagintaseptem Yang and Yang, but may be separated from the latter by the costa extending slightly beyond \( R_{4+5} \) and terminating at the apex of the wing, \( M_1 \) between \( r-m \) and dm-cu 1.6 times longer than dm-cu, and dm-cu almost straight and meeting Cu approximately at right angle. In Cryptochetum nonagintaseptem, the costa is extending to \( R_{4+5} \) and before the apex of the wing; \( M_1 \) between \( r-m \) and dm-cu is about 1.4 times as long as dm-cu, dm-cu is slightly curved at middle (Yang and Yang 1998a).

Etymology — The specific name refers to the wide labrum.

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References


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Figures 1–6. Male heads. 1. Cryptochetum shaanxiense sp. nov., lateral view; 2. Cryptochetum shaanxiense sp. nov., dorsal view; 3. Cryptochetum yunnanum sp. nov., lateral view; 4. Cryptochetum yunnanum sp. nov., dorsal view; 5. Cryptochetum zaratilabium sp. nov., lateral view; 6. Cryptochetum zaratilabium sp. nov., dorsal view. Scale bars = 0.1 mm.
Figures 7–9. Male wings. 7. *Cryptochetum shaanxiense* sp. nov.; 8. *Cryptochetum yunnanum* sp. nov.; 9. *Cryptochetum zalatalabium* sp. nov.. Scale bars = 0.1 mm.