

SYNOPSIS OF THE FLAVIPES-GROUP OF THE BEE GENUS CERATINA OF EASTERN ASIA (HYMENOPTERA, ANTHOPHORIDAE)

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SYNOPSIS OF THE FLAVIPES-GROUP OF THE BEE GENUS CERATINA OF EASTERN ASIA (HYMENOPTERA, ANTHOPHORIDAE)^{1),2)}

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Abstract

The *flavipes*-group of ***Ceratina* (*Ceratinidia*)** is revealed to contain 3 species, 2 of which, ***takasagona*** and ***maai***, are described as new, from Taiwan and Fukien, respectively.

The subgenus *Ceratinidia* Cockerell and Porter of the genus *Ceratina* Latreille is an Oriental element which occurs from India to New Guinea (westernmost district only) and from Indonesia to Japan and as far north as Ussuri and the Maritime Province of Siberia (Hirashima, 1971). Species of this subgenus are medium-sized to small, usually robust, shining black bees and they are usually richly decorated with yellow. *Ceratinidia* is divided into 3 species groups, i.e., the *compacta*-, *bryanti*- and *flavipes*-groups. The latter was proposed by Yasumatsu and Hirashima (1969) to include only a single species *C. (Ceratinidia) flavipes* Smith known from Japan and northern China. Our recent study on *Ceratinidia* reveals that this species group is composed of 3 species, 2 of which are described as new species in this paper.

The material on which the present paper is based is derived from the Bishop Museum, Honolulu, and Kyushu University, Fukuoka, in addition to Shiokawa's private collection.

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One of us (Hirashima) wishes to thank the Ministry of Education, Science and Culture, Japan for the grant (No. 404142), by the support of which some of the type material of *takasagona*, new species, were collected in Taiwan in 1979.

***Ceratina (Ceratinidia) takasagona*, new species**

This is known from the mountainous regions only of Taiwan. This is a small species, being macrocephalic in the female when 7 mm long. The new species is characterized in having the distinct preoccipital carina in both sexes. This is more richly decorated with yellow than in *flavipes* Smith and *maai*, new species.

Male : Length 4.5-5.5 mm.

Sixth metasomal sternum (Fig. 1, A) : a pair of projections or denticles close together, very slender, sharp, subparallel ; medio-apical portion narrowly and deeply incised leaving two large lobes, apical margins of which almost transverse (straight) ; medio-apical depression of sternum well marked with distinct basal margin even in the middle ; space basal to denticles flat, not concave.

Genitalia (Fig. 1, B) : small; distal part of gonocoxite bending inwardly at about right angle to basal part; penis valves narrower basally than in *maai* with spatha more projected basally, about 1.3 times as broad as long.

Hind femur (Fig. 1, C) : rather thick as seen from above; posterior face broad and flat, anterior face distinctly convex; basal tuft of decumbent golden hairs not well arranged in a compact fringe.

Seventh metasomal tergum : apical margin only weakly produced apically in the middle; latero-apical portions coarsely sculptured as in the rest of the same tergum.

Black, shining, with yellow markings or portions as follows: mandibles except reddened apices, labrum except a pair of lateral spots, clypeus except upper and latero-upper margins, lateral face mark, large transverse mark on supraclypeal area, apical spot of scape in front, a pair of small and close marks on frons (rarely absent), stripe on genal area (often interrupted below), band on pronotum which extends to tubercle, four longitudinal short lines on mesoscutum (these are variable and sometime absent), large mark on scutellum (notched in the middle basally), spot on tegula, small marks on basal sclerites of fore wing, small mark on mesepisternum behind tubercle, apical transverse bands on 6 basal terga, tibiae and tarsi of all legs, and apices of all femora. Yellow bands on 3rd to 6th terga narrowly interrupted medially in the holotype.

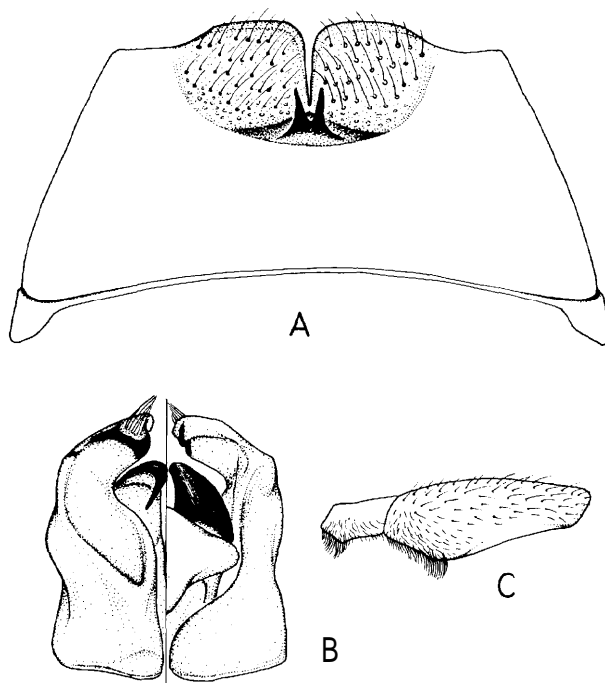


Fig. 1. Male of *Ceratinatakasagona*, new species. A : 6 th sternum. B: Genitalia. C: Lateral view of hind trochanter and femur.

Female : Length 5.0-7.0 mm.

Clypeus with a median longitudinal ridge (although weak) ; punctures on vertex, frons, lower paraocular area and clypeus not dense; lower paraocular area with 5-10 punctures; mesoscutum with spaces lateral to parapsidal furrow impunctate ; basal area of propodeum with a weak median longitudinal ridge (Fig. 6).

Black, shining, with yellow markings or portions as follows: a reversed T-mark on clypeus (Fig. 3), lateral stripe of face which is enlarged inwardly at apex, transverse mark on supraclypeal area, a pair of rather large and close marks on frons, stripe on genal area (often enlarged above), band on pronotum which extends to tubercle, four stripes on mesoscutum (the lateral ones usually short), large mark on scutellum (notched in the middle basally as in male), small band on metanotum, spot on tegula, small marks on basal sclerites of fore wing, mark on mesepisternum behind tubercle, entire apical bands on five basal terga, most parts of all tibiae, and apices of all femora.

In the macrocephalic form, genal area very broad, especially on upper portion.

TYPE MATERIAL : Holotype male (Type No. 2383, Kyushu Univ.), 10 paratype males and 7 paratype females, Meishan, 864 m, Taiwan, 9. IX. 1979

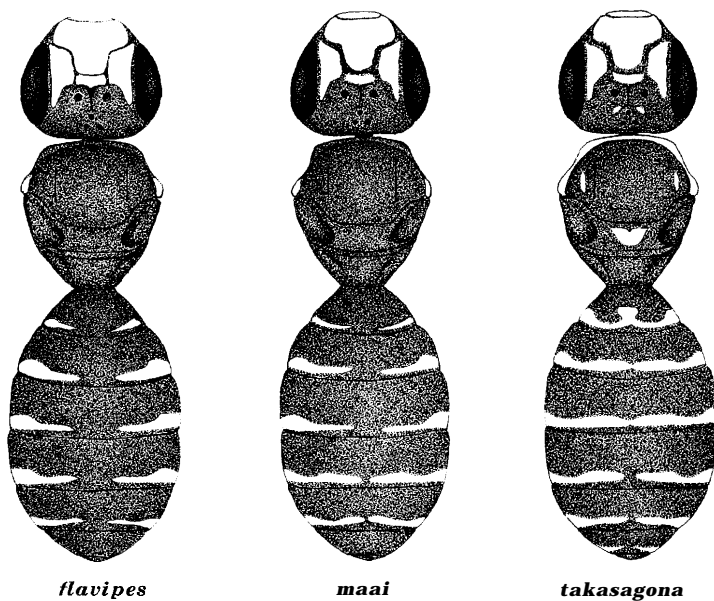


Fig. 2. Male marking patterns of three species of the *flavipes*-group.

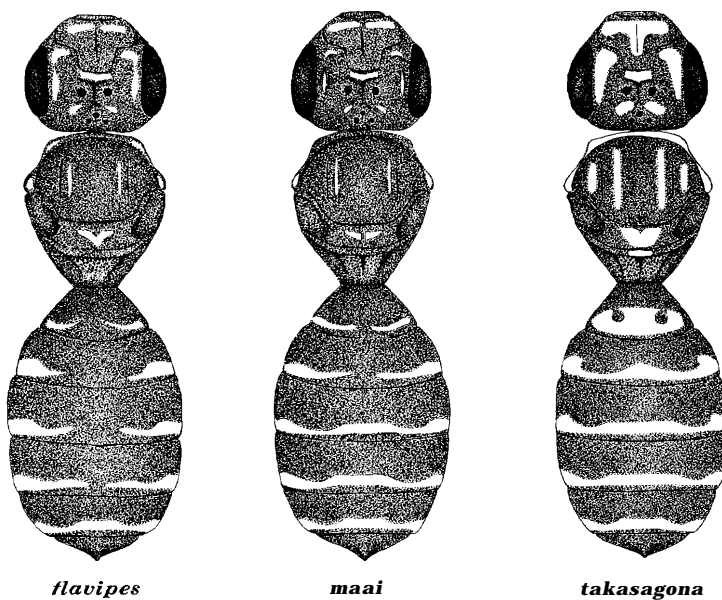


Fig. 3. Female marking patterns of three species of the *flavipes*-group.

(Y. Hirashima) ; 37 paratype males and 9 paratype females, Wushe, Nantow County, Taiwan, 24-27. IV. 1974 (M. Shiohawa).

DISTRIBUTION : Taiwan (Formosa).

FLOWER RECORD: Most of the above mentioned specimens were taken on *Bidens pilosa* var. *albiflora* (Jap. name : Shirobana-sendangusa) .

***Ceratina (Ceratinidia) maai*, new species**

The new species is very similar to *flavipes* Smith of Japan and northern China, and is separable decidedly from the latter by the male characters only.

Male : Length 5.5-6.5 mm.

Sixth metasomal sternum (Fig. 4, A) : a pair of denticles slightly more widely separated each other than in *flavipes*, each denticle more twisted and more robust basally than in *flavipes*; basal margin of apical depression more angulate laterally than in *flavipes* and widely U-shaped; apical lobes longer and more angulately produced apically in the middle.

Hind trochanter : median projection weaker than in *flavipes*.

Hind femur (Fig. 4, C) : subbasal tuft of golden decumbent hairs long, very compact, smaller than in *flavipes*.

Black, shining, with yellow markings or portions as follows : mandibles except red apices (sometimes with basal black spots), labrum except 2 or 3 pale spots, clypeus except upper and latero-upper margins, transverse mark

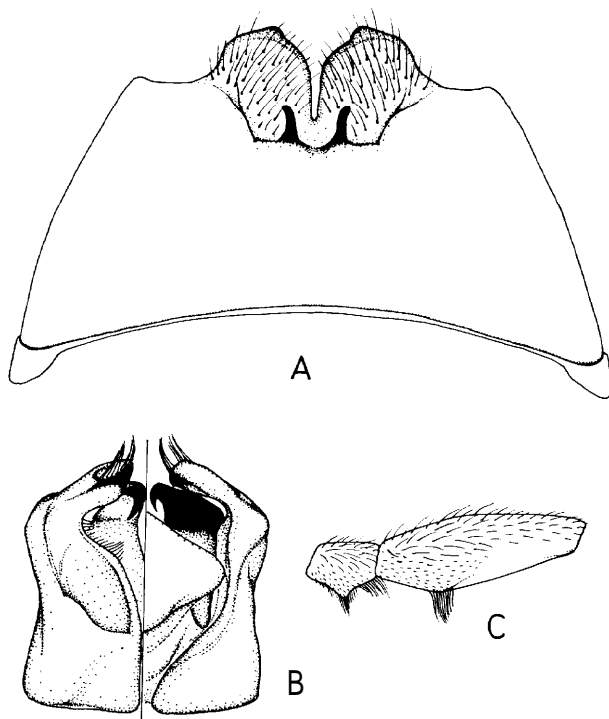


Fig. 4. Male of *Ceratina maai*, new species. A: 6 th sternum. B: Genitalia. C: Lateral view of hind trochanter and femur.

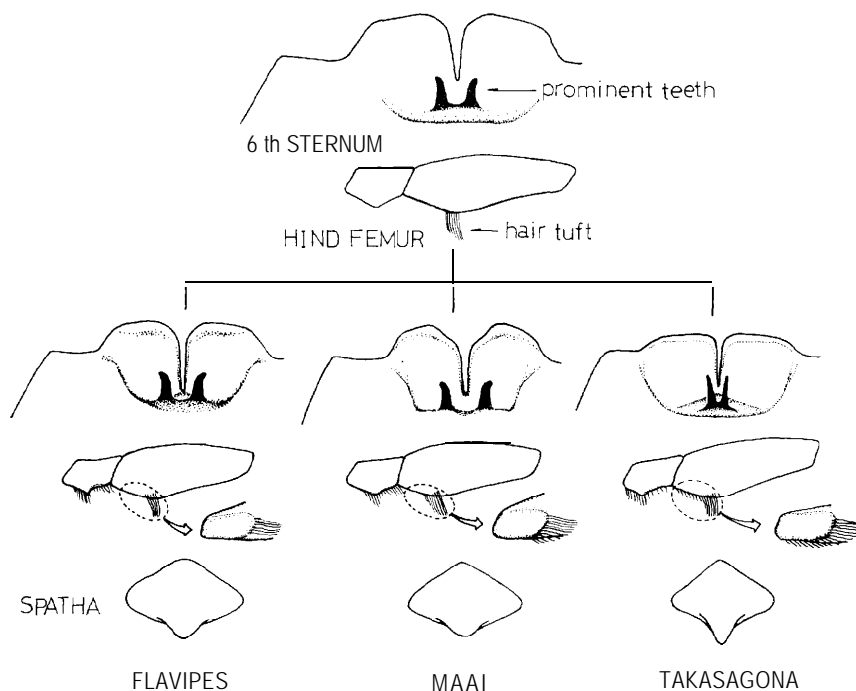


Fig. 5. Pictorial key to the males of three species of the *flavipes*-group.

on supraclypeal area, lateral face mark, spots on both extremities of scape, narrow and evanescent stripe (usually short) on genal area, mark on tubercle, small mark on lateral portion of mesoscutum close to tegula (often absent), a pair of evanescent small marks on scutellum (often absent), apical band on 5 basal terga (usually interrupted), tibiae and tarsi of all legs, broad marks on fore femora and apices of mid and hind femora.

Genitalia (Fig. 4, B) similar to *flavipes* but spatha slightly different in shape.

Female : Length 7.0-8.0 mm.

Preoccipital carina absent; head and thorax with fewer yellow markings and yellow bands on metasomal terga slightly more developed than in *flavipes* (Fig. 3) ; clypeus with an indication of median longitudinal ridge (absent in *flavipes*).

TYPE MATERIAL : Holotype male (BISHOP 12567), Chaowu, Tachuland, Fukien, China, 20. IV. 1943 (T. C. Maa); 3 paratopotype males, IV.-V. 1943 (T. C. Maa); 1 paratype male, Chungang: Tsiliohiao, 1,000 m, 29. IV. 1942 (T. C. Maa); 5 paratopotype females, IV.-VI. 1942 (T. C. Maa); all in the collection of the Bishop Museum, Honolulu.

This is named in honor of Dr. T. C. Maa who is one of the distinguished

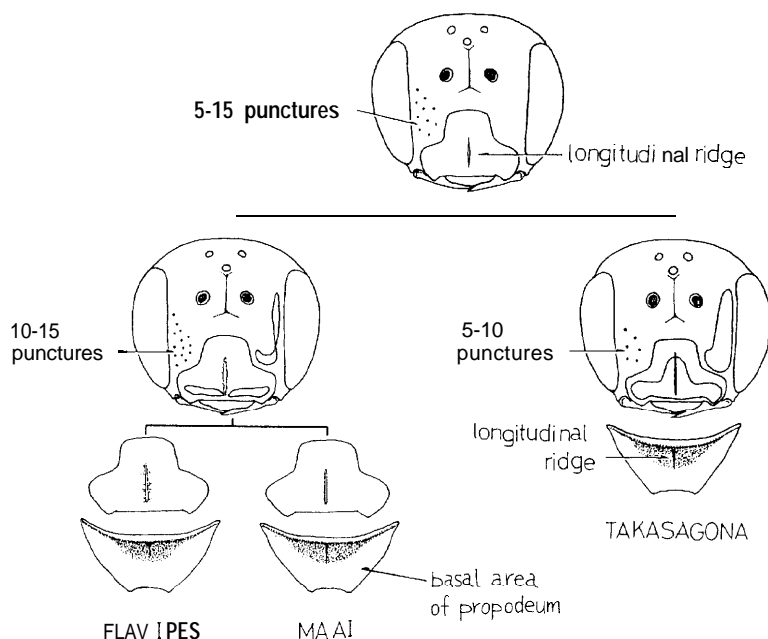


Fig. 6. Pictorial key to the females of three species of the *flavipes*-group.

entomologists in Taiwan.

DISTRIBUTION : China (Fukien) .

KEY TO THE SPECIES OF THE *flavipes*-GROUP

MALES

- Preoccipital carina low but distinct; 7th tergum with apical margin only slightly produced apically in the middle, latero-apical portions coarsely sculptured as in the rest of the same tergum; hind femur rather thick with anterior face distinctly convex; subbasal tuft of decumbent golden hairs not arranged in a compact fringe; 6th sternum with a pair of denticles very close; small, length less than 5.5mm **takasagona**, new species
- Preoccipital carina weak or absent; 7th tergum with apical margin distinctly produced apically in the middle, latero-apical portions broadly smooth and shining; hind femur not thick; subbasal tuft of golden decumbent hairs long and well arranged in a compact fringe; 6th sternum with a pair of denticles robust and broadly separated; larger species 2
- Sixth sternum with apical lobes rounded apically, basal margin of apical depression rounded in outline; hind trochanter with a sharp projection ventrally **flavipes** Smith
- Sixth sternum with apical lobes produced apically in the middle, basal margin of apical depression angulate laterally and widely U-shaped; hind trochanter with a ventral triangular projection smaller **maai**, new species

FEMALES

1. Preoccipital carina low but distinct ; clypeus not coarsely sculptured, rather smooth, shining, with a median longitudinal ridge ; head, thorax and metasoma with rich yellow markings; yellow mark on clypeus large, reverse T-shaped; lower paraocular area with very small and sparse punctures; small species ...
..... **takasagona**, new species
- ~ Insects not as above 2
2. Preoccipital carina weak but often well recognizable ; basal area of propodeum usually without a median ridge ; metasomal yellow bands, especially those on three basal terga, not well developed; clypeus rather coarsely sculptured, without median ridge **flavipes** Smith
- ~ Preoccipital carina absent ; basal area of propodeum with a median longitudinal ridge (although weak) ; metasomal yellow bands well developed; clypeus rather coarsely sculptured with an indication of median ridge
..... **maal**, new species

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