

## METOPIINAE (Hymenoptera : Ichneumonidae) OF THE RYUKYU ARCHIPELAGO<sup>1</sup>

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*Abstract* : This article treats 21 species and subspecies of ichneumon flies of the subfamily Metopiinae occurring in the Ryukyus. Fifteen species are described as new to science, and 5 species and subspecies are newly recorded from the islands.

In a recent paper on a synopsis of the Ichneumonidae of the Ryukyus by Momoi (1970, *Pacif. Ins.* 12 (2) : 327-399) there was listed the vast majority of the Ichneumonidae known to occur in the Ryukyu Archipelago. This article, the first supplement to that paper, concerns the subfamily Metopiinae which was not included in that paper.

Only one taxon of the subfamily, *Colpotrochia* (*Colpotrochia*) *pilosa okinawana* Momoi, has hitherto been recorded from the Ryukyus. This article enumerates 21 species and subspecies belonging to 6 genera and subgenera, including 15 new species and 5 species and subspecies which are new to the fauna of the islands.

A large part of the material studied was collected in 1963-1964 by Japanese and American entomologists under the auspices of a project of Japan-U. S. Cooperative Science Program. Specimens from other sources are also included. The types designated herein after and other specimens are housed in the following collections and institutions.

Bishop Museum (BISHOP) : Specimens collected by G. Bohart, J. L. Gressitt, J. Harrell, G. A. Samuelson and C. M. Yoshimoto.

Entomological Laboratory, Ehime University : Specimens collected by Y. Arita.

Entomological Institute, Hokkaido University (SAPPORO) : Specimens collected by K. Kamiyo, K. Kusigemati and H. Takada.

Entomological Laboratory, Kagoshima University : Some duplicate specimens collected by K. Kamiyo, K. Kusigemati and H. Takada.

Entomological Laboratory, Kobe University (Momoi) : Specimens collected by H. Kuroda and K. Okamoto. Also some duplicate specimens collected by other collectors.

Entomological Laboratory, Kyushu University : Specimens collected by Y. Hirashima, S. Miyamoto, T. Shirozu and S. Ueno.

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  2. Entomological Laboratory, Faculty of Agriculture, Kobe University, Kobe, Japan.
  3. Entomological Laboratory, Faculty of Agriculture, Kagoshima University, Kagoshima, Japan.

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#### KEY TO RYUKYU SPECIES AND SUBSPECIES OF METOPIUS

- Interantennal process with a median longitudinal carina. Tergite 1 with no sublateral carina, virtually smooth dorsolaterally. Tergites black, each with a broad pale band at apex. .... **rufus browni**
- Interantennal process with no median longitudinal carina. Tergite 1 with a sublateral carina, heavily sculptured dorsolaterally. Tergites 1-4 black, each with a narrow pale band at apex, the band often strongly reduced. Tergite 5 and following tergites entirely black. .... **dissectorius**

#### 1. *Metopius (Metopius) rufus browni* Ashmead, 1905\*

AMAMI : ♂, Hentona, Tokunoshima, 23.VII.1963, Yoshimoto.

SAKISHIMA : ♀, ♂, Sonai, Iriomote, 6.X.1962, ♂, Shirahama, Iriomote, 3.X.1963, Ueno. 2 ♀♀, Ohara, Iriomote, 3.X.1963, Miyamoto. 2 ♂♂, Ohara, Iriomote, 13.III.1963, Shirozu. ♂, Ohara, Iriomote, 15.XI.1963, 2 ♂♂, ♀, Shirahama, Iriomote, 2 & 14.XI.1963, Samuelson. ♀, Maesatoyama, Ishigaki, 11. X. 1963, ♂, Kannonzaki, Ishigaki, 12. X. 1963, Hirashima. ♂, Yarabu, Ishigaki, 27.III.1962, Arita. ♂, Ishigaki, 20-30.XI.1952, Bohart. 2 ♂♂, Yae-yama, 25.VII. 1963, Okamoto.

DISTRIBUTION : China, Formosa, Hong Kong, India, Japan, Korea, Philippines, and Ryukyus.

#### 2. *Metopius (Ceratopius) dissectorius* (Panzer, 1805)\*

AMAMI : ♂, Amami-Oshima, 1.V.1959, Kamiyo.

DISTRIBUTION : China, Europe, Taiwan (Formosa), Japan, Korea, Ryukyus, Sakhalin.

#### KEY TO RYUKYU SPECIES OF TRICLISTUS (♀)

1. Costula present ..... **aitkini**  
 Costula absent ..... 2
2. Tergites almost entirely reddish brown ..... **dimidiatus**  
 Tergites black, sometimes partly blackish brown ..... 3
3. Hind leg light brown and dark brown. Dorsomedian longitudinal carinae of propodeum almost evanescent except for extreme basal and apical parts. Tergite 1 with fine punctures dorsolaterally. .... 4  
 Hind leg entirely light brown to light reddish brown. Dorsomedian longitudinal carinae of propodeum moderately weak, almost same thickness from base to apex. Tergite 1 with a few fine punctures apicolaterally ..... 5

\* Species is new to the Ryukyus.

4. Hind tibia with apical 0.3 blackish brown. Fore and mid femora light brown. .... **kamijoi**  
 Hind tibia with apical 0.5-0.6 blackish brown. Fore and mid femora largely blackish  
 brown. .... **nigripes**
5. Hind femur about 2.4 as long as wide. Temple weakly convex, about as long as eye in  
 lateral view of head. Metapleurum with ca. 8 or 9 widely scattered hairs. .... **pallipes**  
 Hind femur about 2.0 as long as wide. Temple almost exactly flat, longer than eye in  
 lateral view. Metapleurum almost exactly hairless. .... 6
6. Flagellum with 17 segments. Tergite 2 with rather sparse hairs except for mesal 1/3-2/3.  
 Tergite 3 with rather sparse hairs except for mesal 1/3 ..... **planus**  
 Flagellum with 21 segments. Tergite 2 and 3 with a few widely scattered hairs laterally.  
 ..... **glabrosus**

3. **Triclistus aitkini** (Cameron, 1897)\*

AMAMI : ♀, Amami-Oshima, 13.III.1964, Takada.

DISTRIBUTION : Taiwan (Formosa), India, and Ryukyus.

4. **Triclistus dimidiatus** Morley, 1916\*

AMAMI : ♂, Yuwan, Amami-Oshima, 31.VII.1963, Hirashima.

OKINAWA : 3 ♀♀, Shoshi, Okinawa, 23.III.1964, Yoshimoto & Harrell. ♀, Nagodake, Okinawa, 19.III.1965. Kuroda,

SAKISHIMA : ♀, Takeda, Ishigaki, 24.III.1962, Arita. ♀, Ishigaki, 20-30.XI.1952, Bohart.

DISTRIBUTION : Burma, Taiwan (Formosa), Micronesia, and Ryukyus.

5. **Triclistus pallipes** Holmgren, 1873\*

OKINAWA : ♀, Yona, Okinawa, 24-25.III.1964, Yoshimoto & Harrell.

DISTRIBUTION : Europe, Taiwan (Formosa), North America, Japan, and Ryukyus.

6. **Triclistus planus** Momoi & Kusigemati, new species

♀. Flagellum with 17 segments, segment 1 about 1.7 as long as segment 2. Lateral ocellus distant from eye by ca. 1.6 its diameter. Temple almost exactly flat, about 1.2 as long as eye in lateral view of head, with rather sparse hairs, those on median area sparser or nearly absent. Vertex almost straight sloped backward in lateral view of head. Face mat, with rather coarse punctures that are mostly distant from one another by about, or less than, their diameter. Occipital carina complete. Mesoscutum rather coarsely punctate, interspaces between punctures slightly more than diameter of a puncture. Mesopleurum with medium-sized to rather large, strong punctures, its hind 1/2 almost impunctate except below. Metapleurum almost completely hairless. Costula absent. Dorsomedian longitudinal carinae of propodeum weak but almost complete, area defined by carinae (combined area of basal area and areola) subparallel-sided in basal 1/3, weakly convexly broadened in apical 2/3. Combined 1st and 2nd lateral areas with sparse hairs except for mesal part. Propodeal spiracle short oval. Tergite 1 about 1.3 as long as wide at apex, with a few punctures apicolaterally, its dorsomedian carina present in basal 1/2. Tergite 2 about 0.84 as long as wide at apex, with rather sparse punctures and hairs, its mesal 1/3-2/5 virtually hairless. Tergite 3 with rather sparse hairs except for mesal 1/3. Apical notch of subgenital plate about 0.4 as long as wide. Nervulus distad of basal vein by about 0.5 its length. Hind femur about 2.0 as long as wide. Fore wing 2.8 mm long.

Black. Palpi and tegula light brown. Mandible reddish brown. Interantennal process, subtegular ridge and upper end of mesepimeron stained with brown. Antenna light reddish brown, slightly infusate apically. Legs light brown to light reddish brown. Wings hyaline. Stigma fuscous brown.

Holotype ♀ (BISHOP 9158), Izumi-gogayama, Okinawa, 22.III.1964, Yoshimoto & Harrell.

#### 7. *Triclistus glabrosus* Momoi & Kusigemati, new species

♀. Flagellum with 21 segments, segment 1 about 1.4 as long as segment 2. Lateral ocellus distant from eye by about 1.5 its diameter. Temple almost exactly flat, not buccate above and below, about 1.4 as long as eye in lateral view of head, with sparse hairs next to eye and occipital carina, otherwise almost hairless. Vertex almost straight sloped backward in lateral view. Face mat, with rather coarse weak punctures which are mostly distant from one another by about, or slightly more than, their diameter. Occipital carina complete. Mesoscutum with medium-sized to coarse shallow punctures. Mesopleurum with rather coarse, sparse punctures, its hind 1/2 almost impunctate except below. Metapleurum almost completely hairless. Costula absent. Dorsomedian longitudinal carinae of propodeum obtuse and weak but almost complete, area defined by carinae subparallel-sided in basal 1/3, convexly broadened in apical 2/3. Combined 1st and 2nd lateral areas with sparse hairs except for mesal part. Propodeal spiracle short oval. Tergite 1 about 1.3 as long as wide at apex with a few hairs apicolaterally, its dorsomedian carinae present on basal 1/2. Tergite 2 about 0.9 as long as wide at apex, with a few widely scattered hairs laterally. Tergite 3 with some hairs laterally. Apical notch of subgenital plate about 0.5 as long as wide. Nervulus distad of basal vein by about 0.7 its length. Hind femur about 2.0 as long as wide. Hind tarsal segment 2 about 2.5 as long as wide. Hind tarsal segment 5 with a subapical tooth beneath. Fore wing 3.8 mm long.

Black. Palpi and tegula light brown. Interantennal process, humeral angle of pronotum, subtegular ridge and upper end of mesepimeron stained with reddish brown. Subgenital plate apically reddish brown. Antenna fuscous brown, reddish brown basally beneath. Legs light reddish brown. Wings hyaline. Stigma fuscous brown.

Holotype ♀ (SAPPORO), Amami-Oshima, Amami, 21.III.1964, Takada.

#### 8. *Triclistus kamijoi* Momoi & Kusigemati, new species Fig. 1.

♀. Flagellar segment 1 about 1.5 as long as segment 2. Lateral ocellus distant from eye by about 1.3 its diameter. Temple almost flat, about 1.3 as long as eye in lateral view, with rather evenly dense hairs. Vertex almost straight sloped backward in lateral view. Face mat, with dense weak punctures that are mostly distant from one another by about, or slightly less than, their diameter. Occipital carina moderately strong, complete. Mesoscutum with weak medium sized rather evenly dense punctures that are mostly distant from one another by slightly more than their diameter. Mesopleurum with punctures similar to those on mesoscutum, its hind 1/2 almost impunctate except below. Metapleurum almost hairless. Dorsomedian longitudinal carinae of propodeum almost evanescent except for basal and apical pairs of short stubs. Costula absent. Combined 1st and 2nd lateral areas with rather sparse short hairs, their inner part hairless. Propodeal spiracle rather large, short oval. Tergite 1 about 1.2 as long as wide at apex, densely punctate and hairy dorsolaterally, its dorsomedian carinae present on basal 2/5. Tergite 2 about 0.75 as long as wide at apex, with rather regularly dense hairs and punctures except for mesal 1/3 and on apex. Tergite 3 with numerous hairs laterally and basomedially, hairs becoming much sparser on apical portion. Apical notch of subgenital plate about 0.36 as long

as wide. Nervulus distad of basal vein by about 0.5 its length, strongly inclivous. Hind femur about 2.3 as long as wide. Hind tarsal segment 2 about 2.2 as long as wide. Hind tarsal segment 5 with a subapical tooth beneath. Fore wing 5.2 mm long.

Black. Palpi and tegula light brown. Mandible, interantennal process in part, humeral angle of pronotum, subtegular ridge, scutellum apically, postscutellum, hind lower corner of mesopleurum and metapleurum, and upper end of mesepimeron brown or stained with brown. Fore and mid legs light brown to light reddish brown. Hind leg dark brown to blackish brown. Tip of hind coxa, hind trochanters and basal 0.7 of hind tibia light brown. Hind tarsus infusate reddish brown. Flagellum fuscous brown above, reddish brown beneath. Scape and pedicel light reddish brown. Wings subhyaline. Stigma fuscous brown.

Holotype ♀ (SAPPORO), Amami-Oshima, Amami, 2.V.1959. Kamijo.

9. *Triclistus nigripes* Momoi & Kusigemati, new species

Fig. 2.

♀. Flagellum with 26 segments, segment 1 about 1.5 as long as segment 2. Lateral ocellus distant from eye by about 1.0 its diameter. Temple very weakly convex, about 1.2 as long as eye in lateral view of head, with long rather evenly sparse hairs. Vertex rather straight, sloped backward in lateral view. Occipital carina moderately strong, complete. Face weakly mat, with punctures distant from one another mostly by much more than their diameter. Mesoscutum with weak medium-sized punctures that are mostly distant from one another by much more than their diameter, notaulus absent. Mesopleurum with punctures similar to those on mesoscutum, its hind 1/2 almost impunctate except below. Metapleurum almost entirely hairless. Dorsomedian longitudinal carinae of propodeum evanescent except for basal and apical pairs of short stubs. Costula absent. Combined 1st and 2nd lateral areas with rather sparse hairs, their inner part hairless. Propodeal spiracle rather large, short oval. Tergite 1 about 1.2 as long as wide at apex, with dense punctures dorsolaterally, its dorsomedian carinae present on basal 0.4. Tergite 2 about 0.77 as long as wide at apex, with punctures and hairs laterally and basomedially, hairs becoming much sparser on hind portion. Tergite 3 with moderately dense hairs, hairs becoming much sparser on apicomedian portion. Tergite 4 with rather evenly sparse hairs. Apical notch of subgenital plate about 0.29 as long as wide. Nervulus distad of basal vein by about 0.5 its length, inclivous. Hind femur about 2.3 as long as wide. Hind tarsal segment 2 about 2.2 as long as wide. Hind tarsal segment 5 with a subapical tooth beneath. Fore wing 5.1 mm long.

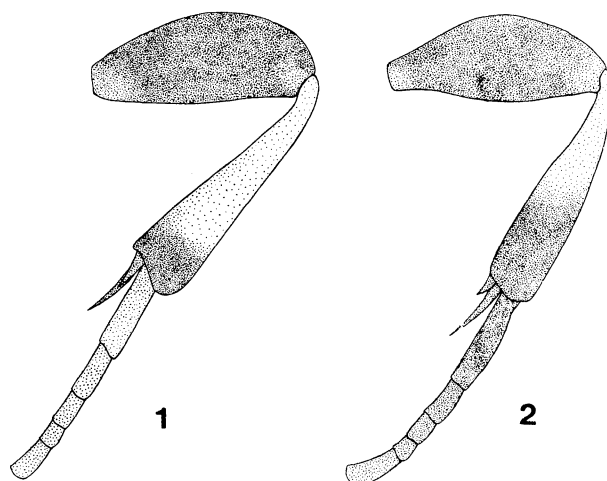


Fig. 1-2. Hind left leg: 1, *Triclistus kamijoi*; 2, *Triclistus nigripes*.

Black. Palpi and tegula light brown. Mandible at apex reddish. Interantennal process partly, subtegular ridge, upper end of mesepimeron, hind lower corner of mesopleurum and metapleurum, apices of tergites, ventral portion of apical tergites, apical sternites including sub-

Black. Palpi and tegula light brown. Mandible at apex reddish. Interantennal process partly, subtegular ridge, upper end of mesepimeron, hind lower corner of mesopleurum and metapleurum, apices of tergites, ventral portion of apical tergites, apical sternites including sub-

genital plate, and ovipositor sheath reddish brown or stained with brown. Legs light brown. Mid and hind coxae, all femora, apical 0.6 of hind tibia, a line on upper face of mid tibia, hind tibial spurs, and hind tarsus blackish brown or dark brown. Fore femur light brownish apically. Antenna fuscous brown, light brownish basally beneath, its scape entirely light brown. Wings subhyaline. Stigma fuscous brown.

Holotype ♀ (SAPPORO), Amami-Oshima, Amami, 16.III.1964, Takada.

10. *Colpotrochia (Colpotrochia) pilosa okinawana* Momoi, 1967

No new material is available.

DISTRIBUTION: Ryukyus.

KEY TO RYUKYU SPECIES OF HYPsicERA

- |   |                    |
|---|--------------------|
| 1. Fore and mid tarsal claws simple. ....   | 2                  |
| Fore and mid tarsal claws pectinate. ....   | 5                  |
| 2. Areola separated from basal area. ....   | 3                  |
| Areola confluent with basal area. ....  | 4                  |
| 3. Flagellum with 18 or 19 segments. Dorsomedian carinae of tergite 1 extending to near apex of tergite. Sublateral longitudinal keel of tergite 2 absent. ....   | <b>brevicornis</b> |
| Flagellum with 37-39 segments. Dorsomedian carinae of tergite 1 present on basal 0.6-0.7 of tergite. Sublateral longitudinal keel of tergite 2 present. ....  | <b>carinata</b>    |
| 4. Sublateral longitudinal keel of tergite 2 absent. Flagellum with 30 or 31 segments, light reddish brown. ....  | <b>incarinata</b>  |
| Sublateral longitudinal keel of tergite 2 present. Flagellum with 37 segments, fuscous brown. ....  | <b>nigribasis</b>  |
| 5. Areola separated from basal area behind costula. ....  | <b>watanabei</b>   |
| Areola confluent with basal area. ....  | 6                  |
| 6. Hind leg entirely blackish brown (♂) or dark reddish brown and with blackish brown markings (♀). Second lateral area about as long as wide. ....   | <b>bicolor</b>     |
| Hind leg almost entirely light brown to light reddish brown. Second lateral area longer than wide. ....   | 7                  |
| 7. Antennal scrobe of frons strongly concave, unsculptured and polished, thus distinctly differentiated from other areas of frons in structure and sculpture. Sublateral longitudinal keel of tergite 2 obtuse, becoming an obtuse round ridge posteriorly. ... | <b>yoshimotoi</b>  |
| Antennal scrobe of frons not or weakly differentiated in structure and sculpture. Sublateral longitudinal keel of tergite 2 sharp throughout. ....  | 8                  |
| 8. Second lateral area almost entirely hairless. Flagellum blackish brown, slightly lighter beneath. ....   | <b>intermedia</b>  |
| Second lateral area sparsely hairy. Flagellum light reddish brown, sometimes scarcely infuscate. ....   | <b>harrelli</b>    |

11. *Hypsicera bicolor* Momoi & Kusigemati, new species      Fig. 6.

Flagellum with 40 or 41 segments, segment 1 about 1.8 (♀) or 1.3 (♂) as long as segment 2, and about 1.7 (♀) or 2.3 (♂) as long as wide. Lateral ocellus distant from eye by about 0.8 its diameter. Occipital carina very weak but present laterally above. Malar space about 1.3-1.5 as long as basal width of mandible. Frons mat, finely striate-punctate, its antennal scrobe strongly concave, virtually unsculptured and polished. Face with coarse and very dense punctures, punctures mostly tending to be confluent on upper portion and becoming a little

finer and sparser on lower portion. Clypeus with quite distant punctures, apicomediaally unsculptured. Head of ♀ about 0.75 as long as high in lateral view. Scutellum weakly convex. Propodeum short for a member of *Hysicera*, its dorsal face about 1.1 as long as hind face. Propodeal spiracle large, linear. Areola confluent with basal area, the combined area subparallel-sided behind costula, weakly narrowed forward before costula, its hind part (part behind costula) a little wider than long or nearly as long as wide. Costula strong like other propodeal carinae. Second lateral area subparallel-sided, sparsely hairy, about as long as wide, its outer edge about 1.2 as long as inner edge and about 0.8 as long as front edge. Apicomedian longitudinal carinae of propodeum arising from outer 0.3 of hind rim of 2nd lateral area. Metapleurum almost entirely hairless in ♀, with sparse hairs dorsally in ♂. Tergite 1 about 1.2 as long as wide at apex, densely hairy and punctate dorsolaterally. Tergite 2 about 0.6 as long as wide at apex, densely hairy and punctate, but medially punctures very sparse or absent, with an obtuse sublateral longitudinal keel. Hind femur of ♀ about 2.2 as long as wide. Fore and mid tarsal claws densely pectinate. Male genital clasper moderately broad. Penis with no subapical spine. Fore wing 6.0-7.5 mm long.

Black. Palpi, top of face and tegula light brown. Mandible apically light brownish. Subtegular ridge with an indistinct brownish tinge. Antenna blackish brown, its scape and pedicel light brownish beneath. Legs of ♀ rather evenly dark reddish brown, with hind tarsus and base and apex of hind tibia blackish brown. Fore and mid legs of ♂ dark reddish brown, light brownish in variable extent. Usually mid coxa of ♂ blackish brown. Hind leg of ♂ blackish brown, sometimes tibia reddish brown with base and apex blackish brown. Wings a little infumate. Stigma blackish brown.

Holotype ♀ (SAPPORO), Amami-Oshima, Amami, 28.VI.1959, Kamiyo.

Paratypes. Amami: ♀, 2 ♂♂, same data as type. Okinawa: ♂, Yona, Okinawa, 24.III. 1964, Yoshimoto & Harrell.

## 12. *Hysicera yoshimotoi* Momoi & Kusigemati, new species Fig. 3 & 9.

♀. Flagellum with 35-37 segments, segment 1 about 2.0 as long as segment 2 and about 2.2 as long as wide. Lateral ocellus distant from eye by about 0.8 its diameter. Occipital carina weak but present dorsally. Malar space about 1.8 as long as basal width of mandible. Frons mat, with fine punctures, its antennal scrobe strongly concave, unsculptured and polished. Face subrugulose punctate, punctures becoming a little sparser on lower portion and on clypeus, clypeus almost impunctate apicomediaally. Head about 0.85 as long as high in lateral view. Scutellum flat. Metapleurum almost entirely hairless. Propodeal spiracle large, linear. Propodeum almost flat on dorsal face which is about 2.4 as long as hind face. Areola confluent with basal area, the combined area slightly broadened at base and at costula, weakly narrowed backward behind costula, its hind part about 1.2 as long as wide. Second lateral area sparsely hairy, weakly broadened backward, about 2.0 as long as wide at base, its outer edge about 1.1 as long as inner edge and about 1.5 as long as front edge. Apicomedian longitudinal carinae of propodeum arising from outer 0.4 of hind rim of 2nd lateral area. Tergite 1 about 1.1 as long as wide at apex, with rather dense punctures and hairs dorsolaterally. Tergite 2 about 0.67 as long as wide at apex, with rather dense punctures and hairs but medially almost impunctate and hairless, with a sublateral longitudinal keel which is ridge-shaped and very obtuse posteriorly. Fore and mid tarsal claws pectinate. Hind femur about 2.4 as long as wide. Fore wing 4.4-4.7 mm long.

Black. Palpi, top of face, humeral angle of pronotum and tegula light brown. Mandible light brownish. Antenna fuscous brown, slightly lighter beneath, its scape and pedicel light brownish beneath. Legs light brown to light reddish brown. Wings subhyaline. Stigma

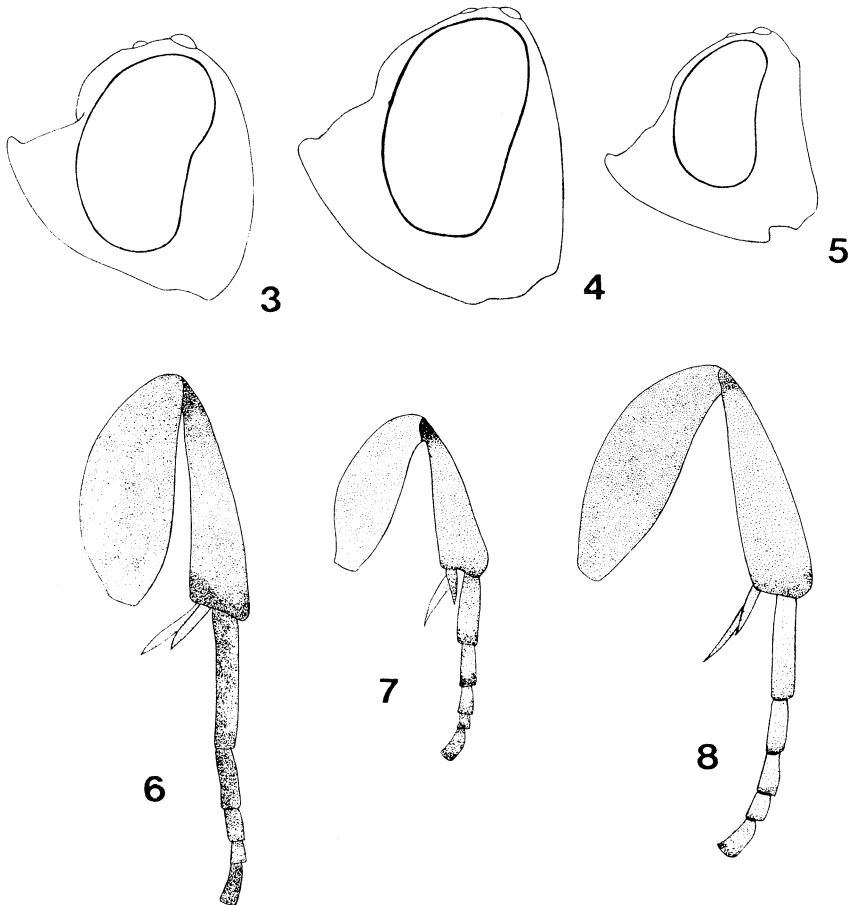


Fig. 3-5. Head in lateral aspect: 3, *Hysicera yoshimotoi*; 4, *Hysicera intermedia*; 5, *Hysicera harrelli*. Fig. 6-8. Hind left leg: 6, *Hysicera bicolor*; 7, *Hysicera watanabei*; 8, *Hysicera incarinata*.

fuscous brown.

Holotype ♀ (BISHOP 9159), Karayama, Ishigaki, Sakishima, 14-18.III.1964, in Malaise trap, Yoshimoto & Harrell.

Paratypes. Amami: 2 ♀♀, Yuwandake, Amami-Oshima, 150 m, 18.III.1963, Yoshimoto. Sakishima: ♀, Banna, Ishigaki, 70 m, 21-22.V.1964, in Malaise trap, Gressitt. ♀, same data as type.

This species is very similar to *femoralis* Fourcroy, 1785. However, *yoshimotoi* has the median area of propodeum slightly narrower, and the apicomedian carinae of propodeum arising from the outer 0.4 of the hind rim of the 2nd lateral area, while in *femoralis* the apicomedian carinae of propodeum arises from the outer 0.25 of the hind rim of the 2nd lateral area.



13. *Hysicera intermedia* Momoi & Kusigemati, new species Fig. 4.

♀. Flagellar segment 1 about 1.7 as long as segment 2 and about 1.8 as long as wide. Lateral ocellus distant from eye by about 0.8 its diameter. Occipital carina absent. Frons mat, with fine punctures, its antennal scrobe weakly concave, virtually smooth and polished at bottom. Face subrugulose punctate above, a little more sparsely punctate on lower portion. Clypeus with sparse punctures, apicomediaally almost impunctate. Head about 0.9 as long as high in lateral view. Scutellum almost flat. Propodeal spiracle large, elongate. Propodeum flat on dorsal face which is about 1.9 as long as hind face. Areola confluent with basal area, the combined area subparallel-sided, a little broadened at costula, its hind part slightly longer than wide. Costula of moderate strength like other propodeal carinae. Second lateral area almost entirely hairless, subparallel-sided, longer than wide, its outer edge about 1.1 as long as inner edge and about 1.5 as long as front edge. Apicomedian longitudinal carinae of propodeum arising from outer 0.25 of hind rim of 2nd lateral area. Metapleurum almost entirely hairless. Tergite 1 about 1.2 as long as wide at apex, with a few fine punctures in apicolateral corner. Tergite 2 about 0.6 as long as wide at apex, with fine dense punctures and dense hairs on basal 1/3 and on lateral portion, its apical 2/3 of median 1/3 almost unsculptured and hairless, with a sharp sublateral longitudinal keel. Fore and mid tarsal claws densely pectinate. Hind femur about 2.2 as long as wide. Fore wing 5.3 mm long.

Black. Palpi, top of face, humeral angle of pronotum and tegula light brown. Mandible brown. Antenna fuscous brown, dark reddish brown beneath. Legs light reddish brown to light brown. Wings a little infumate. Stigma fuscous brown.

Holotype ♀ (BISHOP 9160), Yuwandake, Amami-Oshima, Amami, 16-17.VII.1963, Yoshimoto.

14. *Hysicera watanabei* Momoi & Kusigemati, new species Fig. 7 & 10.

♂. Flagellum with 40 segments, segment 1 about 1.4 as long as segment 2 and about 2.2 as long as wide. Lateral ocellus distant from eye by about 0.7 its diameter. Occipital carina present laterally. Frons mat, with fine punctures, slightly prominent medially above, its antennal scrobe weakly concave, virtually smooth and polished. Face with strong dense punctures, punctures very dense and mostly not confluent on upper portion, becoming slightly sparse on lower portion. Clypeus with sparse punctures. Head about 0.76 as long as high in lateral view. Scutellum weakly convex. Metapleurum with numerous hairs along upper margin and in front upper corner. Propodeum weakly convex on dorsal face which is about 1.5 as long as hind face. Areola separated from basal area slightly behind costula, slightly longer than wide, almost subparallel-sided. Basal area slightly broadened at costula. Propodeal carinae strong except for a transverse carina separating basal area from areola, the transverse carina weak and often incomplete. Second lateral area with sparse hairs, its outer edge about 1.1 as long as inner edge and about 1.0 as long as front edge. Apicomedian longitudinal carinae of propodeum arising from outer 0.25 of hind rim of 2nd lateral area. Tergite 1 about 1.4 as long as wide at apex, with rather dense punctures and hairs dorsolaterally behind spiracles. Tergite 2 about 0.7 as long as wide at apex, with rather evenly dense punctures and hairs, punctures a little sparser towards apex and medially. Male genital clasper rather broad. Penis with no subapical spine. Fore and mid tarsal claws with 2 or 3 small teeth basally. Hind femur about 2.7 as long as wide. Fore wing 5.1-5.5 mm long.

Black. Palpi, mandible, top of face, under side of scape and pedicel, and tegula light brown. Humeral angle of pronotum stained with brown. Legs light brown to light reddish brown. Hind tibia black at extreme base. Hind tarsal segments more or less darkened at the apex. Wings a little infumate. Stigma blackish brown.

Holotype ♂ (SAPPORO), Yuwan, Amami-Oshima, Amami, 6.V.1966, Kusigemati.

Paratypes. Amami: ♂, same data as type, ♂, Yuwandake, Amami-Oshima, 8.V.1966, Kusigemati.

15. *Hypsicera harrelli* Momoi & Kusigemati, new species Fig. 5 & 11.

♀. Flagellum with 34 or 35 segments, segment 1 about 1.7 as long as segment 2 and about 1.5 as long as wide. Lateral ocellus distant from eye by about 1.4 its diameter. Occipital carina absent. Malar space about 2.1 as long as basal width of mandible. Frons mat, with fine dense punctures, rather evenly convex, with no antennal scrobe differentiated in structure and sculpture. Face densely, transversely striate-punctate. Clypeus polished, with a few punctures. Head about 1.0 as long as high in lateral view. Scutellum almost flat. Metapleurum entirely hairless. Propodeum almost flat on dorsal face which is about 1.7 as long as hind face. Areola confluent with basal area, the combined area broader at costula, gradually narrowed forward and backward from the position of costula, its hind part about as long as wide. Second lateral area with sparse hairs, virtually subparallel-sided, longer than wide, its outer edge about 1.4 as long as inner edge and about 1.8 as long as front edge. Apicomedian longitudinal carinae of propodeum arising from outer 0.15 of hind rim of 2nd lateral area. Propodeal spiracle large, elongate. Tergite 1 about 1.4 as long as wide at apex, with sparse punctures and hairs dorsolaterally. Tergite 2 about 0.73-0.74 as long as wide at apex, with rather dense punctures and hairs basally and laterally, its apical 2/3 of median 1/3 almost impunctate and hairless, with a sharp sublateral longitudinal keel. Hind femur about 2.6 as long as wide. Fore and mid tarsal claws with 3 or 4 small teeth. Fore wing 3.3-3.9 mm long.

Black. Palpi and tegula light brown. Mandible, top of face, humeral angle of pronotum and antenna reddish brown. Legs light brown to light reddish brown. Wings subhyaline. Stigma fuscous brown.

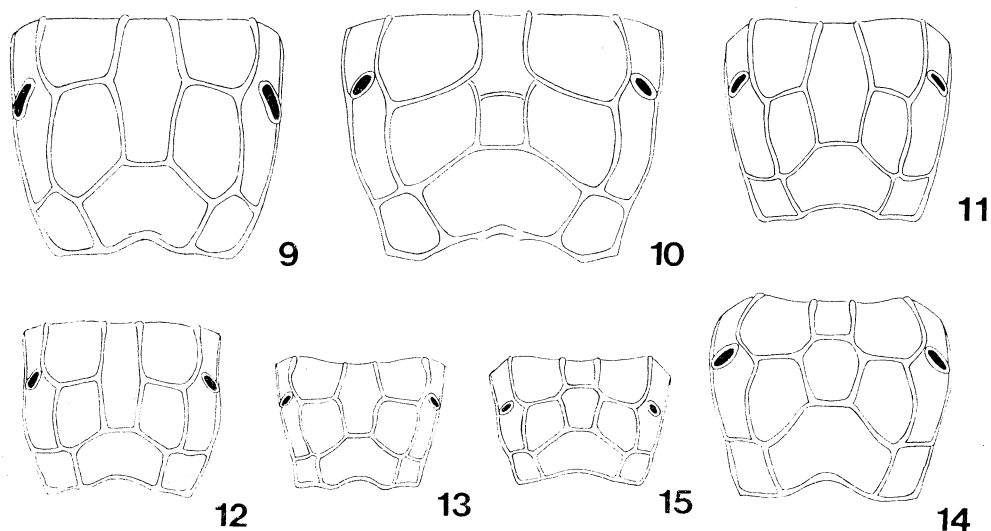


Fig. 9-15. Propodeum in dorsal aspect: 9, *Hypsicera yoshimotoi*; 10, *Hypsicera watanabei*; 11, *Hypsicera harrelli*; 12, *Hypsicera nigribasis*; 13, *Hypsicera incarinata*; 14, *Hypsicera carinata*; 15, *Hypsicera brevicornis*.

Holotype ♀ (BISHOP 9161), Karayama, Ishigaki, Sakishima, 14-18.III.1964, in Malaise trap, Yoshimoto & Harrell.

Paratypes. Amami: ♀, Oyama, Okinoerabu, 27-30.VII.1963, in Malaise trap, Yoshimoto. Okinawa: ♀, Shoshi, Okinawa, 23.III.1964, Yoshimoto & Harrell, Sakishima: 3 ♀♀, same data as type.

16. *Hysicera nigribasis* Momoi & Kusigemati, new species Fig. 12.

♂. Flagellum with 35-37 segments; segment 1 about 1.2 as long as segment 2 and about 1.8 as long as wide. Lateral ocellus distant from eye by about 0.6 its diameter. Occipital carina absent. Frons with fine dense punctures, very weakly protuberant medially above, its antennal scrobe weakly concave, virtually smooth and polished at bottom. Face with strong dense punctures, on upper portion punctures becoming trans-striae. Clypeus with sparse punctures. Head about 0.73-0.76 as long as high in lateral view. Scutellum weakly convex. Metapleurum with hairs along upper rim and in hind upper corner. Propodeal spiracle medium-sized, elongate oval. Propodeum weakly convex on dorsal face which is about 1.8 as long as the hind face. Areola confluent with basal area but an obscure ridge present between costulae, the combined area narrow, about 0.7 as wide as 2nd lateral area, a little broadened at costula, gradually and very weakly narrowed forward and backward from position of costula, its hind part about 1.4 as long as wide. Second lateral area with sparse hairs, subparallel-sided, slightly longer than wide, its outer edge about 1.1 as long as inner edge and front edge. Apicomedian longitudinal carinae of propodeum arising from outer 0.35 of hind rim of 2nd lateral area. Tergite 1 about 1.4 as long as wide at apex, with some punctures and hairs apicolaterally. Tergite 2 about 0.66-0.70 as long as wide at apex, with rather dense punctures and hairs, its median 1/3 except for base and apex almost unsculptured and hairless, with a sharp sublateral longitudinal keel. Fore and mid tarsal claws not pectinate. Hind femur about 2.7 as long as wide. Fore wing 3.8-4.0 mm long.

Black. Palpi and tegula light brown. Top of face and humeral angle of pronotum stained with reddish brown. Antenna fuscous brown, with lower face of scape and pedicel light brownish. Legs light brown. Hind coxa basally in part somewhat darkened. Hind tibia black at base. Wings subhyaline. Stigma fuscous brown.

Holotype ♂ (Momoi), Okinawa, 10.III.1965, Kuroda.

Paratypes. Okinawa: ♂, same data as the type. ♂, Hentona, Okinawa, 25.III.1964, Yoshimoto.

17. *Hysicera incarinata* Momoi & Kusigemati, new species Fig. 8 & 13.

♂. Flagellum with 30 or 31 segments, the segment 1 about 1.2 as long as segment 2 and about 2.3 as long as wide. Lateral ocellus distant from eye by about 0.8 its diameter. Occipital carina absent. Frons with fine dense punctures, weakly protuberant medially above, its antennal scrobe weakly concave, virtually unsculptured at bottom. Face subrugulose punctate, punctures becoming slightly sparser and quite distant on lower portion. Clypeus with a few punctures. Scutellum weakly convex. Metapleurum with some hairs on upper rim posteriorly. Propodeal spiracle medium sized, elongate oval. Dorsal face of propodeum about 1.7 as long as hind face. Areola confluent with basal area, the combined area slightly broader at costula, about 0.8 as wide as 2nd lateral area, its hind part slightly longer than wide and almost parallel-sided for considerable distance. Second lateral area subparallel-sided, with sparse hairs, its outer edge about 1.3 as long as inner edge and about 1.1 as long as front edge. Apicomedian longitudinal carinae of propodeum arising from outer 0.2 of hind rim of 2nd lateral area.

Tergite 1 about 1.4 as long as wide at apex, with sparse punctures and hairs apicolaterally. Tergite 2 about 0.7 as long as wide at apex, with rather dense punctures and hairs but medially almost impunctate, with no sublateral longitudinal keel or ridge. Male genital clasper rather broad. Penis with a pair of small spines at apex beneath. Fore and mid tarsal claws not pectinate. Hind femur about 2.6 as long as wide. Fore wing 3.1 mm long.

Black. Palpi and tegula light brown. Top of face, antenna and humeral angle of pronotum light reddish brown. Mandible apically light brown, basally reddish brown. Legs light brown to light reddish brown. Base of hind tibia blackish brown. Wings subhyaline. Stigma light fuscous brown.

Holotype ♂ (ВГШОР 9162), Banna, Ishigaki, Sakishima, 70 m, 20.V.1964, Gressitt.

Paratypes. Sakishima: ♂, Karayama, Ishigaki, 14-18.III.1964, in Malaise trap, Yoshimoto & Harrell, ♂, Ishigaki, 25-30.XI.1952, Bohart, 2 ♂♂, Ushikumori, Iriomote, 3-7.XI.1963, in Malaise trap, Samuelson.

This species is very similar to *seta* Chiu, 1962. It may be, however, distinguished from the latter by the complete absence of its occipital carina, the shorter ocello-ocular space and the presence of a dark spot at the base of the hind tibia. This species is rather peculiar in having the sublateral longitudinal keel or ridge of tergite 2 absent. It is uncertain, from the description, whether *seta* has such a peculiar feature or not.

#### 18. *Hypsicera carinata* Momoi & Kusigemati, new species Fig. 14.

♂. Flagellum with 37-39 segments, segment 1 about 1.5 as long as segment 2 and about 2.6 as long as wide. Lateral ocellus distant from eye by about 0.7 its diameter. Occipital carina absent. Frons with fine dense punctures, weakly protuberant medially above, its antennal scrobe weakly concave, smooth at bottom. Face with punctures mostly distant from one another by about, or less than, their diameter, becoming subrugulose punctate on and near the top. Clypeus with fine sparse punctures. Head about 0.66 as long as high in lateral view. Scutellum weakly convex. Metapleurum hairy on upper rim and in hind upper corner. Dorsal face of propodeum about 1.1 as long as hind face. Propodeal spiracle large, elongate. Areola separated from basal area, hexagonal, about 1.3 as long as wide, with costula slightly before middle. Basal area transverse, a little narrowed backward. Second lateral area with sparse hairs, its outer edge about 1.6 as long as inner edge and about 1.5 as long as front edge. Apico-median longitudinal carinae of propodeum arising from outer 0.1-0.15 of hind rim of 2nd lateral area. Tergite 1 about 1.8 as long as wide at apex, with sparse punctures and hairs dorsolaterally behind spiracle. Tergite 2 about 0.87 as long as wide at apex, with rather dense punctures and hairs but medially and towards apex almost impunctate and hairless, with a sharp sublateral longitudinal keel. Male genital clasper slender. Penis with no apical spines. Fore and mid tarsal claws simple. Hind femur about 3.0 as long as wide. Fore wing 3.7-4.1 mm long.

Black. Palpi and tegula light brown. Top of face, mandible and humeral angle of pronotum reddish brown to light brown. Antenna fuscous brown, its scape beneath and pedicel at apex light brown. Legs light brown to light reddish brown. Hind tibia a little darkened at base. Wings subhyaline. Stigma fuscous brown.

Holotype ♂ (SAPPORO), Amami-Oshima, Amami, 24.V.1965, Takada.

Paratype. Okinawa: ♂, Yona, Okinawa, 27.XI.1963, Samuelson.

19. *Hypsicera brevicornis* Momoi & Kusigemati, new species Fig. 15.

♂. Flagellum with 18 or 19 segments, segment 1 about 1.4 as long as segment 2 and about 3.3 as long as wide. Lateral ocellus distant from eye by about 1.1 its diameter. Occipital carina weak but present dorsolaterally. Frons convex, weakly protuberant medially below middle, finely and densely punctate, its antennal scrobe small, smooth at bottom. Face densely transrugulose, with some punctures. Clypeus polished, with sparse punctures. Head about 0.7 as long as high in lateral view. Scutellum weakly convex. Metapleurum almost hairless. Dorsal face of propodeum about 1.6 as long as hind face. Areola separated from basal area, hexagonal, sparsely hairy, slightly longer than wide, with costula near basal 1/3, its hind part subparallel-sided for considerable distance. Basal area weakly transverse, a little narrowed backward. Second lateral area sparsely hairy, subparallel-sided, its outer edge about 1.2 as long as inner edge and front edge. Apicomedian longitudinal carinae of propodeum arising from outer 0.2 of hind rim of 2nd lateral area. Tergite 1 about 1.2 as long as wide at apex, rather densely punctate and hairy dorsolaterally, with dorsomedian carinae extending to near apex (in other species the carinae present only on basal 0.6-0.7 of tergite). Tergite 2 about 0.64 as long as wide at apex, with rather evenly sparse hairs, its sublateral longitudinal keel or ridge absent. Male genital clasper broad. Fore and mid tarsal claws simple. Hind femur about 2.6 as long as wide. Fore wing 2.5-2.7 mm long.

Black. Palpi and tegula light brown. Mandible apically light brown or reddish brown. Top of face and humeral angle of pronotum stained with reddish brown. Tergites somewhat brownish at apex or much more extensively. Male genital clasper brown. Legs light brown to light reddish brown. Hind coxa blackish brown except for lower face and apex. Hind femur apically somewhat darkened. Hind tibia weakly darkened at base. Antenna fuscous brown, somewhat paler beneath, extensively yellowish basally. Wings subhyaline. Stigma fuscous brown.

Holotype ♂ (SAPPORO), Amami-Oshima, Amami, 1.V.1959, Kamiyo.

Paratype. ♂, Amami-Oshima, Amami, 2.III.1964, Takada.

## KEY TO RYUKYU SPECIES OF EXOCHUS

- Body black, with pale markings. .... **ornatus**  
 Body yellow, with black markings. .... **affinis**

20. *Exochus ornatus* Momoi & Kusigemati, new species Fig. 16.

♀. Flagellum with 30 or 31 segments. Temple very weakly convex. Frons prominent medially, with a median weak and short longitudinal keel at bottom of antennal scrobe. Apical margin of clypeus very weakly concave in median 1/3. Malar space about 0.7 as long as basal width of mandible. Face with weak punctures that are distant mostly from one another by about their diameter. Lateral ocellus distant from eye by about 1.0 its diameter. Occipital carina present dorsally and laterally. Notaulus a triangular pit at base, extending backward as a short shallow groove. Scutellum rather long, flat, not carinate laterally. Prepectal carina complete, reaching front end of subtegular ridge. Metapleurum unsculptured, polished, with or without a few hairs in extreme hind part. Propodeum long for a member of *Exochus*. Propodeal spiracle elliptic, barely distant from dorsolateral carina of propodeum and metapleural carina. Costula present. Areola confluent with basal area, the combined area about 4.2 as long as wide at base, with costula slightly basad of middle, weakly narrowed forward and almost subparallel-sided or scarcely narrowed backward from position of costula. Second

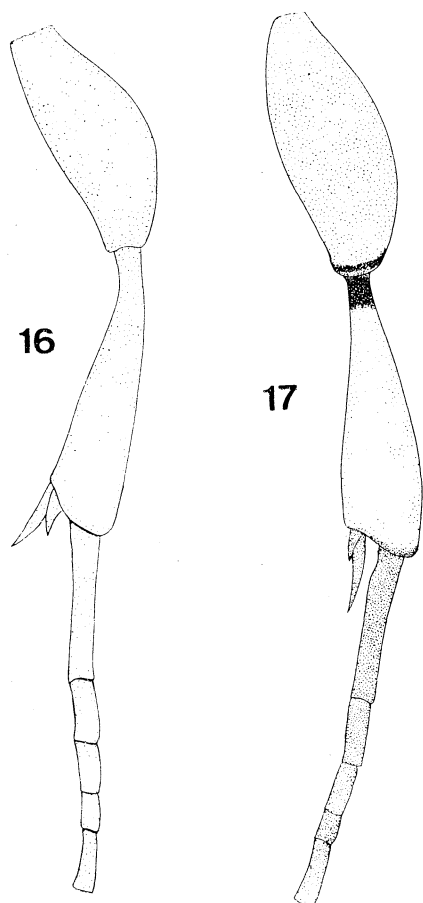


Fig. 16-17. Hind left leg: 16, *Exochus ornatus*; 17, *Exochus affinis*.

wide at the apex, and the presence of whitish marking on the orbit of the frons extending onto top of the head.

lateral area with sparse hairs on outer part. Tergite 1 about 1.4 as long as wide at apex, with moderately dense hairs and punctures dorsolaterally, its spiracle at basal 0.3. Tergite 2 about as long as wide at apex, with moderately dense punctures and hairs but medially narrowly and apically almost impunctate and hairless. Epipleurum 3 broad, its inner rim rounded. Intercubitus slightly shorter than distance between intercubitus and 2nd recurrent vein. Fore wing 3.7-3.9 mm long.

Black. Face, orbit of frons onto top of head, cheek, lower temple, clypeus, mouth parts, upper part of pronotum, scutellum except for base, post-scutellum, tegula, and subtegular ridge yellowish white. Mandible dark reddish brown apically. Face with a pair of brownish spots on lower portion. Hind lower corners of pronotum and of meso- and metapleurum tinged with yellowish brown. Tergites somewhat brownish in part, tinged with yellowish brown at extreme apices. Flagellum fuscous brown, somewhat paler beneath. Scape blackish brown, yellowish brown to dark brown beneath. Pedicel dark brown basally, yellowish brown apically. Legs light brown (in paratype hind coxa, hind femur basally, and hind tibia at base and apically, somewhat brownish). Wings subhyaline. Stigma fuscous brown.

Holotype ♀ (SAPPORO), Amami-Oshima, Amami, 6.V.1959, Kamiyo.

Paratype. Amami: ♀, Amami-Oshima, 16.III. 1964, Takada.

This species is related to *suishanus* Uchida, 1932. It differs from the latter by having its complete costula, tergite 2 about as long as

21. *Exochus affinis* Momoi & Kusigemati, new species Fig. 17 & 18.

Flagellum with 41 or 42 segments. Temple weakly convex. Lateral ocellus distant from eye by about 0.7-0.8 its diameter. Frons with a median protuberance, which is not keel-shaped at top, no keel between protuberance and interantennal process. Interantennal process not extending onto frons. Face with coarse punctures which are mostly distant from one another by less than their diameter. Apical margin of clypeus weakly concave in median 1/3. Clypeal fovea close to eye. Malar space about 0.6 as long as basal width of mandible. Occipital carina weak but present dorsally and laterally. Notaulus a triangular pit at base, extending backward as a short shallow groove. Scutellum flat, precipitate at apex and on each side, not carinate laterally. Metapleurum unsculptured, polished, almost hairless. Propodeum short for

a member of *Exochus*, its dorsal face about 1.2 as long as hind face. Areola weakly separated from basal area at costula, almost quadrangular, subparallel-sided, slightly transverse. Basal area transverse, weakly narrowed forward. Second lateral area hairless, slightly broader than areola. Propodeal carinae obtuse and moderately strong except for carinae separating areola from basal area and from 2nd lateral area, these carinae weak and often incomplete. Propodeal spiracle large, elliptic, almost touching dorsolateral carina of propodeum and metapleural carina. Tergite 1 about 1.0 as long as wide at apex, with fine rather dense punctures and hairs except for basomedian portion, its dorsomedian carinae extending to spiracles. Tergite 2 about 0.63-0.68 as long as wide at apex, with fine rather evenly dense punctures and hairs. Epipleurum 3 narrow at base, its inner rim almost straight on basal 0.7. Intercubitus slightly shorter than distance between intercubitus and 2nd recurrent vein. Fore wing 4.4-5.0 mm long.

Yellow and yellowish brown. Bottom of antennal scrobe, stemmaticum, a transverse band on occiput along occipital carina, a broad band on pronotum just behind pronotal collar extending backward to near hind rim over epomia, 3 broad longitudinal stripes on mesoscutum, a transverse prescutellar band, extreme lateral rim of mesoscutum from tegula to base of notaulus, upper part of mesopleurum around subtegular ridge, a large hind spot on mesopleurum, alar concavity, first lateral area and basal area of propodeum, apex of petiolar area, basal 1/2 of tergite 1, bases of tergites 2-4 in variable extent, tergites 6 and 7 of ♂, and base of hind tibia black or blackish brown. Hind trochanters above, extreme apex of hind femur, extreme apex of hind tibia and entire hind tarsus dark brown. Antenna fuscous brown to blackish brown, somewhat paler beneath and apically, the scape and pedicel yellow beneath. Wings subhyaline. Stigma fuscous brown.

Holotype ♂ (SAPPORO), Satamisaki, Kagoshima, Japan, 26.IV.1963, Takada.

Paratypes. Amami : 2 ♀♀, ♂, Oyama, Okinoerabu, 28-30.VII.1963, in Malaise trap, Yoshimoto. Sakishima : ♂, Inaba, Iriomote, 10.III.1964, Yoshimoto & Harrell. ♀, Komi, Iriomote, 12.IV.1962, Arita.

This species differs from *longicaudis* Chiu, 1962, in having the areola of the propodeum separated from the basal area and slightly transverse.

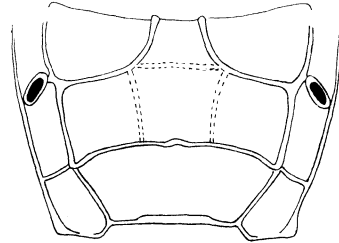


Fig. 18. Propodeum in dorsal aspect, *Exochus affinis*.

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