

FIVE NEW SPECIES OF THE TENEBRIONIDAE FROM  
JAPAN AND HER ADJACENT REGIONS, WITH A NEW  
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THE SENKAKU ISLANDS (COLEOPTERA)

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RECORD OF *GONOCEPHALUM COENOSUM* KASZAB  
FROM THE SENKAKU ISLANDS (COLEOPTERA) <sup>1)</sup>

By

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*Gonocephalum senkakuensis* sp. nov.

Elongate-oval, weakly convexed, dark brown to black, epipleura, apical part of tibia and tarsus brown. Head transverse, eye nearly rounded. Frons very weakly deflexed forwards; densely rugoused; front margin narrowly inflexed, deeply sinuated; frontal line visible; preocular area comparatively narrowly expanded outwards; interocular area 3.5 times of eye, weakly convexed. Antennae comparatively short; 1st nearly 3 times of 2nd, 3rd nearly equal to 1st, 4th slightly longer than 5th, 5th to 10th nearly equal to each other in length, 8th to 10th transverse, apical one nearly rounded and nearly equal to 4th, 8th to apical one loosely clubbed. Apical segment of maxillary palpus typically securiformed.

Pronotum transverse, rugoused and coarsely granulated, moderately convexed, with sides broadly flattened; front margin widely sinuated, apical corner obtused, side margin roundly expanded, widest at 2/5 from base, hind corner very feebly expanded but with obtuse apex; basal margin shallowly sinuated at outer 1/5, middle 3/5 roundly expanded basally. Scutellum transverse, roughly carved.

Elytra convexed, with shallow 10 striae, 1st basally, 10th makes marginal groove; interstices weakly convexed, rugouse, coarsely granulated, with pale brown short scale hairs erected; base wider than pronotal one; side margin narrowly depressed, invisible from above, widest at middle. Epipleura coarsely granulated, widest at base, gradually narrowed towards apex but not reached to apex.

Gular densely granulated. Prosternum roughly granulated, rugouse, with

<sup>1)</sup> Contribution Ser. 2, No. 46, Hikosan Biological Laboratory, Kyushu University, Hikosan.

coarse and short pubescence ; prosternal process weakly convexed between coxal cavities, weakly widened and depressed backwardly, not projected. Mesosternum with thick V-shaped protuberance, coarsely pubescent. Metasternum coarsely granulated, with coarse and short pubescence, with shallow submarginal groove in front of hind coxal cavity. Abdominal sternites with scarce granules, coarsely and similarly pubescent, middle part of 1st to 2nd shallowly depressed in male, apical one densely granulated.

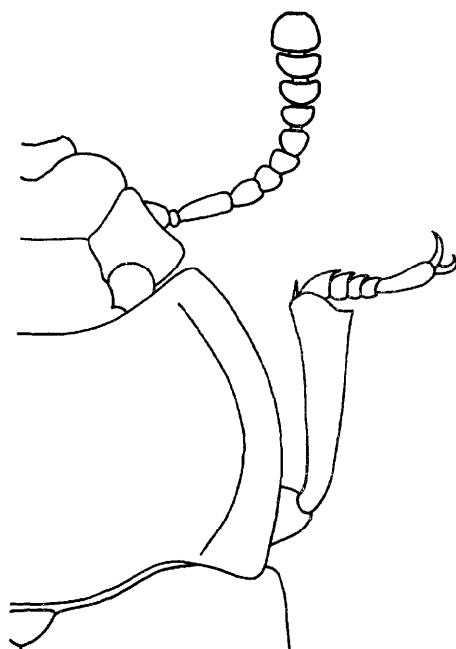


Fig. 1. *Gonocephalum senkakuensis* sp. nov.

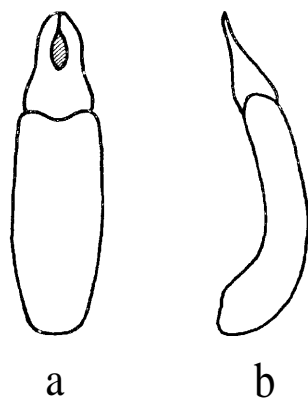


Fig. 2. Male genitalia of *Gonocephalum senkakztensis* sp. nov.  
a: dorsal view. b: lateral view.

All trochanters rugoused, pubescent. Front femur comparatively thick, densely granular, with pubescence, femoral grooves extremely shallow; middle femur a little flat, moderately granular, scarsely pubescent; hind tarsus nearly similar to middle one. Front tibia dilated towards apex, roughly granular, with dense bristles and hairs, specially dense near apical incorner, apex obliquely truncate, and outer margin near apex sinuated; outcorner nearly right angle, both sides serrated with thick and short setae; middle tibia slenderer than frontal one, very weakly dilated towards apex, covered with dense bristles and short hairs, apex oblique, hind tarsus slenderer and longer than middle one, densely covered with bristles and short hairs, Front tarsus coarsely covered with short hairs,

1st a little longer than 2nd, 2nd nearly equal to 3rd, 4th feebly smaller than 3rd, apical one nearly equal to 1st to 4th united together; middle tarsus slenderer than frontal one, with hairs and bristles, 1st a little longer than 2nd, 3rd nearly equal to 2nd, 4th slightly smaller than 3rd, apical one nearly equal to 1st to 3rd united together; hind tarsus slender, with dense hairs and bristles, 1st 2.5 times of 2nd, 3rd nearly equal to 2nd, apical one nearly equal to 1st.

Length : 7.1-8.1 mm. Width : 3.5-4.1 mm.

Type materials : Holotype ♂ (Type No. 2006, Kyushu Univ.), Uotsuri-jima, Senkaku Isls., 14. xii. 1970, Y. Matsumoto leg. ; Paratypes 8 ♂♂, 4 ♀♀, same data as holotype ; 3 ♂♂, 1 ♀, Uotsuri-jima, Senkaku Isls., 14. xii. 1970, K. Tsuji leg. ; 1 ♂, Uotsuri-jima, Senkaku Isls., 10. xii. 1970, E. Matsuo & T. Furukawa leg.

Type depository : Holotype is preserved in the Entomological Laboratory, Kyushu Univ.

Distribution : Senkaku Islands (location : lat. ca. 25°5', N, and long. ca. 123°5', E.).

This species is closely related to *G. coriaceum* Motschulsky, 1857, but distinguishable from it by the following characters: 7th antennal segment nearly round, scutellum broader, front and middle tibiae simple, and so on.

### *Plamius convexus* sp. nov.

Elongate-oval, shining dark rosin brown, with four dark red maculae on humeral and subapical part, strongly convexed. Frons nearly flat, frontal margin gently rounded, with buff-like surface, frontal suture shallow but visible. Pre-ocular area gently rounded, very weakly convexed; interocular area a little broader than 4 times of eye; head gradually convexed backwardly, surface rugoused. Eye conical, strongly prominent outwardly. Antennae slender, not reached to basal margin of pronotum, with dense hairs; 1st thick, a little longer than 2nd, 3rd nearly equal to 1st, 4th slightly longer than 5th, 5th nearly equal to 6th, 7th thicker than 6th, 8th thicker than 7th, 8th to 10th nearly equal to each other, apical one rounded.

Pronotum transverse, frontal 3/4 moderately convexed, surface very coarse; front margin wholly and shallowly sinuated; front corner rounded, lateral parts broadly flat, lateral margin feebly waved at frontal 3/4, basal 1/4 strongly narrowed towards base, basal corner obtused; basal margin with double shallow sinuations. Scutellum triangle, very weakly aciculated.

Elytra strongly convexed, highest at central part, basal half gently dilated and then narrowed towards apex, apex obtuse, with very short pubescence, shallowly punctate-striate, interstices nearly flat, side with narrow and reflexed margin.

Gular suture deep. Prosternum very rough; prosternal process comparatively wide, convexed between front coxal cavities, margin wholly keeled, apex obtuse. Epipleura sparsely punctured, narrowed towards apex, reduced near apex. Mesosternum with V-shaped protuberance. Metasternum widely depressed along

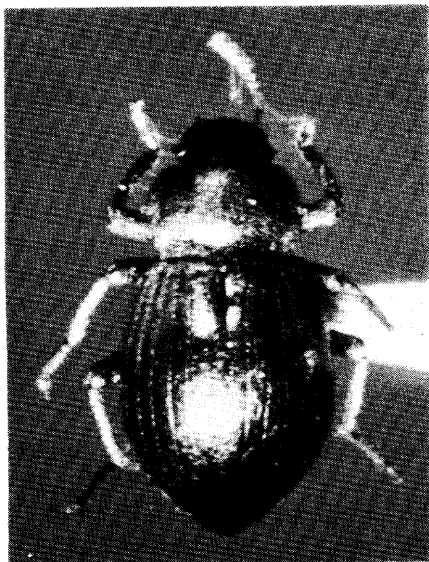


Fig. 3. *Plamius convexus* sp. nov.

middle coxal cavities, convexed along hind coxal cavities, median line depressed, with rough surface. Visible abdominal sternites with dense punctures at median  $1/3$ , with sparse pubescence. Every femur club-shaped, densely punctured, with very short pubescence. All tibiae densely rugous, apex oblique, very weakly curved inwardly, with short pubescence, densely pubescent on inside of apex. All tarsi with sparse pubescence on upper surface, very dense on other side, apical segment nearly equal to another segments taken together.

Length : 5.1 mm. Width : 2.7 mm.

Type material : Holotype ♀ (Type No. 2007, Kyushu Univ.), Lam Tsuen Valley, nr. Pak Ngau Shek, Hong Kong, 30. v. 1965, K. Morimoto leg. (Japan-U. S. Co-op. Sci. Programme).

Type depository : Holotype is preserved in the Entomological Laboratory, Kyushu Univ.

Distribution : Hong Kong.

This species is closely allied to *P. quadrimaculatus* (Gebien), 1941, from Formosa. But it is separated from the latter by the following characters:

*P. convexus* sp. nov.

Brown coloured.

Preocular area gently rounded.

Length to width of pronotum = 3 : 5.

Elytra strongly convexed, median part to apex strongly narrowed.

*P. quadrimaculatus* (Gebien)

Black coloured.

Preocular area slightly angulated.

Length to width of pronotum = 3 : 6.

Elytra gently convexed, median part to apex gently narrowed.

*Oedemutes hirashimai* sp. nov.

Body oblong oval, strongly convexed, similarly black with shiny copper tinge. Head rather transverse, feebly convexed, irregularly and roughly punctate; front margin widely but shallowly sinuated and deflexed, frontal suture visible; inner submarginal area of eye deeply grooved; inter ocular area 3 times of eye. Eye transverse, weakly prominent outwardly. Antennae with last 5 segments loosely clubbed; with pale yellow pubescence becoming denser towards apex; 1st thick, 2nd shortest, 3rd 2 times of 2nd, 4th  $2/3$  of 3rd, 5th a little shorter than 4th, 6th nearly equal to 5th, 7th to 10th transverse and densely punctate at outer  $1/3$  of both sides, apical one nearly equal to 3rd, very densely and strongly punctate, nearly rounded. Maxillary palpus with 4 segments, 1st very short, 2nd 2 times of 3rd, apical one nearly equal to 2nd and typically securiformed. Gular suture deep.

Pronotum moderately convexed and punctate; with narrowly but strongly reflexed margin except for middle  $1/3$  of base; front very shallowly but widely sinuated, side evenly expanded, base backwardly expanded in middle  $1/3$ ; front corner rounded, basal one obtused but not rounded. Scutellum very small, triangular, surface undulating.

Elytra strongly convexed, highest in central part; with 10 punctate-striae, 1st very short with 3 or 4 punctures, 10th makes submarginal groove; interstices not convexed, extremely finely punctate; base nearly as wide as pronotal one; side very narrowly emarginated, strongly dilated towards middle part and then narrowed towards apex; apex obtuse.

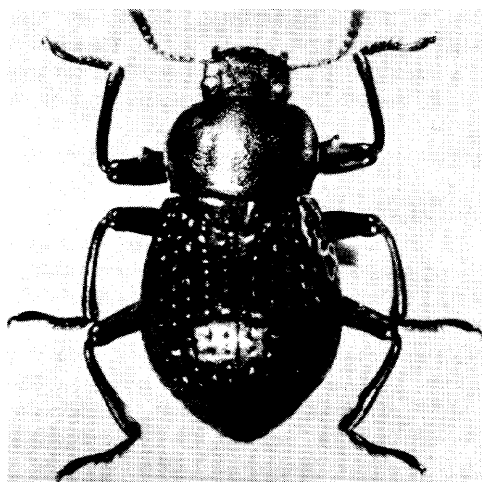


Fig. 4. *Oedemutes hirashimai* sp. n

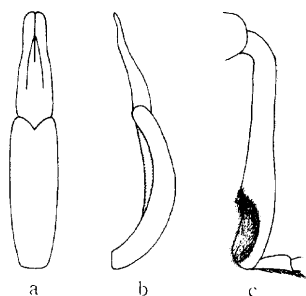


Fig. 5. Parts of *Oedemutes hirashimai* sp. nov. a: dorsal view of male genitalia. b: lateral view of male genitalia. c: dorsal view of male hind tibia.

Prosternum strongly aciculated ; hypopharyngeal prosternal process with shallow median groove, weakly narrowed towards mesosternum, apex obtuse. Mesosternum with protuberance deeply depressed in V-shape. Metasternum with  $\wedge$ -shaped shallow depression in basal  $2/3$ , with submarginal deep groove along coxal cavity. Abdomen densely and evenly punctate, 1st visible abdominal sternite longest, 2nd a little shorter than apical one, 3rd slightly shorter than 2nd, apical one a little shorter than basal one. Each trochanters with an erect hair, front trochanter larger, middle and hind ones very small. Every femur finely and moderately punctate, with shallow femoral groove at apical  $1/2$ ; in front one upper margin of femoral groove expanded forwards and makes dental projection at  $2/3$  from base. Each tibia densely punctate on outer surface, rugoused inside, with two short and thick spines at inner apex, outer apex diagonal, with a narrow keel along inside; front tibia with pubescence scarce but very dense, long at inside of apical  $1/3$ , very feebly curved inwards,  $2/5$  from base very feebly and apical  $1/3$  strongly expanded inwardly; middle one feebly curved inwardly, gently dilated towards apex; hind one nearly equal to middle one in female, in male apical  $1/3$  of inside gouged, with short and scarce pubescence except for gouged part, gouged part with long and dense hairs. Every tarsus with light brown pubescence, scarcely pubescent at upper surface and densely at underneath; in apical segment 1st nearly twice of 2nd, 3rd nearly equal to 2nd, 4th very slender but nearly equal to 2nd, apical one slightly shorter than basal four taken together; middle one nearly equal to front one in structures ; basal segment of hind one slightly longer than 2nd and penultimate one put together, apical one a little shorter than basal three segments taken together. All claws stout, crooked downwards.

Length : 11.0-12.5 mm. Width : 5.2-6.0 mm.

Type materials : Holotype ♂ (Type No. ZOOS, Kyushu Univ.), Sonai, Yonaguni I., Ryukyus, 6-8. vii. 1970, H. Makihara leg. ; Paratypes 1 ♂, 1 ♀, Yonaguni I., Ryukyus, 26. viii. 1969, H. Makihara leg.; 1 ♂, Sonai, Yonaguni I., Ryukyus, 25529. viii. 1969, H. Makihara leg.; 1 ♂, Sonai, Yonaguni I., Ryukyus, 6-8. vii. 1970, H. Makihara leg.

Type depository : Holotype is preserved in the Entomological Laboratory, Kyushu Univ.

Distribution : Yonaguni Island (Ryukyus).

This species is related to *O. tumidus* Pascoe, 1862, but easily separated from the latter through the following characters: colour darker, same coloured throughout, much larger, antennae longer, tibiae comparatively longer, pronotum wider, and so on.

NOTE: Seven species belonging to the present genus have been known from the Philippines, Ceylon and Viet-Nam. A new species which was described above, however, was discovered by Mr. H. Makihara on Yonaguni Island located between Iriomote Island, the southmost island of the Ryukyus, and Formosa. *Oedemutes* is closely allied to *Phaedis*, but the gouged part covered with tomentoes at apical  $1/3$  of hind tarsus is characteristic, and by this *Oedemutes* is separable from *Phaedis*.

*Phaedis (Phaedis) senkakuensis* sp. nov.

Body oblong-oval, strongly convexed, dark chestnut coloured throughout, shining. Head rather transverse; frons very weakly convexed, with moderately scattered punctures, frontal line visible; preocular area roundly narrowed towards apex, not expanded, with a large but shallow depression; head coarsely punctured, gradually convexed towards base; around eye narrowly grooved. Eye transverse, very weakly projected.

Antennae comparatively stout, reaching middle part of pronotum, 1st strongly thickened towards apex, 1st to 6th very sparsely haired, 7th to apical one very densely haired and clubbed; in length 1st nearly twice of 2nd, 3rd nearly equal to 1st, 4th shorter than 3rd but a little longer than 2nd, 4th to 6th nearly equal to each other in length and width, 7th a little broader than 6th, 8th to 10th a little broader but nearly equal to 7th each other, apical one nearly equal to 10th in width but nearly twice in length.

Pronotum very strongly convexed, transverse (4:5), strongly but sparsely punctured; front margin weakly and roundly expanded forwards, not emarginated; front corner widely rounded; side margin undulating outwardly, narrowly emarginated; hind corner obtused; base expanded backwardly, emarginated hind margin gradually widened from hind corner to middle part. Scutellum triangular, very small; surface undulating, without puncture.

Elytra strongly convexed; with 10 punctate-striae, 10th makes marginal groove; interstices strongly convexed, without puncture; base narrowly emarginated at outer 1/5; side strongly expanded, very narrowly but distinctly emarginated

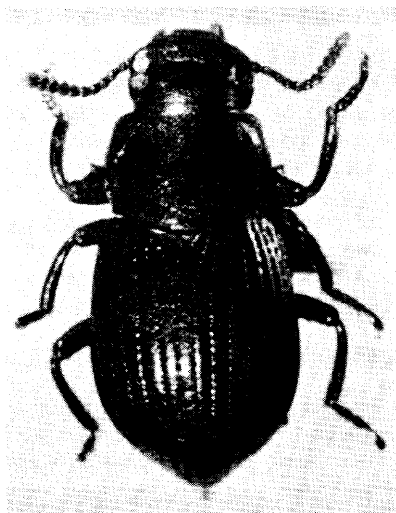


Fig. 6. *Phaedis (Phaedis) senkakuensis* sp. nov.



throughout. Gular with several transversal grooves, with  $\wedge$ -shaped groove basally.

Prosternum rugoused, prosternal process with a median deep groove. Mesosternum with protuberance deeply depressed in V-shape, bottom of depression rugoused. Metasternum with short sutures rectangularly running from front margin, subbasally grooved along coxal cavity, with shallow and wide longitudinal groove at  $3/5$  of median line. Visible abdominal sternites with segments 1st to 4th and basal half of apical one scarsely and strongly punctured; frontal half of apical one scarsely and finely punctured. Every trochanters with a short hair each other. Front femur very scarsely and finely punctured, with femoral groove at apical  $2/3$ , bottom very smooth, upper margin of femoral groove forwardly projected and makes a dental projection, apex not sharp; middle femur a little slenderer and shorter than frontal one; hind femur a little longer than frontal one; every femur with hairs very short and scarce, thickest at  $1/3$  from apex. Front tarsus weakly curved inwardly at basal  $4/5$ , at apical  $1/5$  rather strongly curved, scarsely aciculated, with golden short hairs at frontal  $2/3$  of inside, very dense at apex, inside very narrowly keeled, weakly dilated towards apex, outside of apex cut diagonally; middle and hind one nearly equal to each other in structure. Front tarsal segments 1st to 3rd nearly equal to each other in structure, 4th nearly equal to 3rd in length but slenderer, apical one a little shorter than 1st to 4th put together, upper surface scarsely haired, bottom with dense hairs.

Length : 8.5 mm. Width : 3.7 mm.

Type material : Holotype ♀ (Type No. 2009, Kyushu Univ.), Uotsuri-jima, Senkaku Isls., 11. xii. 1970, Y. Matsumoto leg.

Type depository : Holotype is preserved in the Entomological Laboratory, Xyushu Univ.

Distribution : Senkaku Islands (location : lat. ca.  $25^{\circ}5'$ , N. and long. ca.  $123^{\circ}5'$ , E.).

This species is closely related to *Phaedis* (*Phaedis*) *helopioides* (Pascoc), 1856, but separated from the latter by the following characters: antennae thicker; punctures on the head, gena, pronotum and legs sparser and weaker; striate-punctures on the elytra larger, the interstices without puncture; median groove of the prosternal process wider, and so on.

NOTE: This interesting new species was collected by a member of Kyushu University Expedition Club and was offered to me by Prof. T. Shirôzu, head of the club, The Senkaku Islands are located on the north of Sakishima Group.

### *Phaedis* (*Phaedis*) *formosanus* sp. nov.

Oblong oval, light brown with purple tinge, moderately convexed. Head gently convexed, frons weakly deflexed forwards, roughly punctured, frontal suture visible, margin of preocular area rounded, preocular area with triangular depression in front of eye, sparsely punctured, interocular area approximately four times of eye. Eye nearly rounded but inner front weakly expanded, moderately prominent outwards.

Antennae not reaching basal margin of pronotum, each antennal segments with ratio as follows (base to apex) : 3 : 2 : 4 : 3 : 3 : 2.5 : 3 : 3 : 3 : 3 : 5.5 ; 1st thick, 7th to 10th transverse, apical one oblong oval, 7th to apical one forming a loose club, 6th to apical one densely pubescent, apical half of apical one pale coloured.

Pronotum gently convexed, sparsely punctured ; frontal margin nearly straight, outer 1/7 narrowly emarginated; front corner rounded ; side gently rounded, narrowly emarginated ; hind corner nearly rectangular; hind margin a little broader than frontal one, expanded basally, narrowly emarginated except for median 2/7. Scutellum very small, triangular, smooth. Elytra strongly convexed, highest at 3/7 from base, with striate-punctures large and deep, interstices smooth, very feebly convexed; base a little wider than base of pronotum; basal corner rounded, weakly reflexed, narrowly emarginated ; side narrowly emarginated except for apex, gently and roundly expanded, middle part widest; apex obtuse. Gular with several and shallow transversal sutures. Prosternum with longitudinal short sutures basally ; prosternal process hypopharyngeal, apex a little sharpened, with longitudinal median groove shallow and broad, surface sparsely aciculated. Mesosternum with convexed protuberance deeply depressed in V-shape. Metasternum convexed in middle 4/5, outer 2/5 with irregular sutures, submarginally depressed behind middle coxal cavity, also submarginally grooved in front of hind coxal cavity, with shallow median line at about basal 1/2. First visible abdominal sternite sparsely punctured, 2nd to apical one

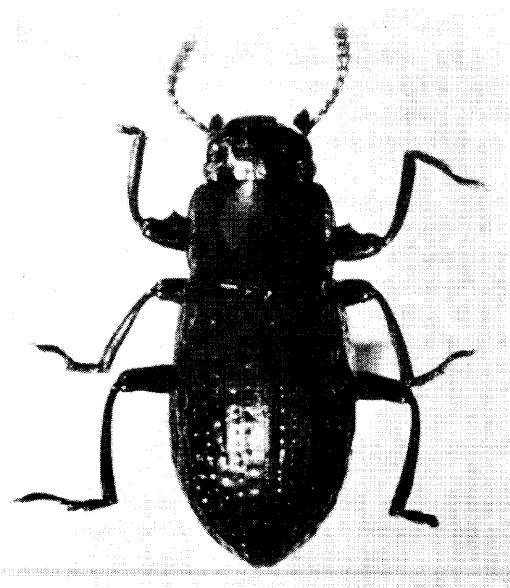


Fig. 7. *Phaedis (Phaedis) formosanus* sp. nov.

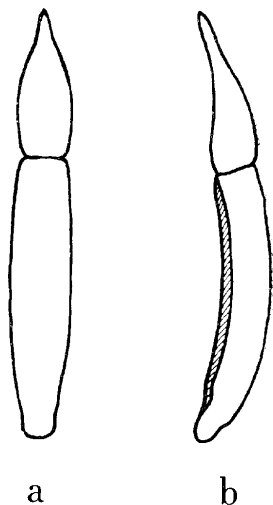


Fig. 8. Male genitalia of *Phaedis (Phaedis) formosanus* sp. nov. a: dorsal view, b: lateral view.

densely punctured.

Each femur nearly smooth, with very sparse and very short pubescence; front femur very thick, with a dental projection at  $2/3$  from base, apex of dental projection obtuse, very weakly bent downwards, femoral groove in apical  $2/3$  very shallow; middle one a little flattened, with very shallow femoral groove in nearly apical half,  $2/3$  from base thickest; with very shallow femoral groove in apical  $2/5$ , middle part thickest. Every tibia dilated towards apex, moderately aciculated, inside very feebly ridged; frontal one weakly curved inwardly, with dense pubescence inside of apical  $3/7$ , with two spines at inner apex; middle one with dense pubescence at inside of apical  $5/7$ , hind one weakly curved inwardly, with dense pubescence at inside of apical  $1/3$ . Front tarsus with 1st to 4th segments densely pubescent on underside, in apical one sparse pubescence columned, apical one a little shorter than 1st to 4th taken together. Middle tarsus with hairs similar to front one, apical segment much shorter than 1st to 4th put together. Hind tarsus with hairs similar to front and middle ones, basal segment 2 times of 2nd, 3rd slightly longer than 2nd, apical one much longer than basal one, 1st + 2nd a little shorter than 3rd + apical one. Claw bifurcated, sharply bent downwards, with two long hairs on underside basally.

Length: 9.0 mm. Width: 3.8 mm.

Type material: Holotype ♂ (Type No. 2010, Kyushu Univ.), Chungshan, Chiai Hsien, Formosa, 26. vi. 1968, M. Tomokuni leg.

Type depository: Holotype is preserved in the Entomological Laboratory, Kyushu Univ.).

Distribution: Formosa.

This species closely allied to *P. (P.) magnipunctatus* M. T. Chûjô, 1966, described from the Iriomote Island, but separated from the latter by the following characters: punctures much sparser, the head and pronotum flatter, tibiae comparatively longer, apical segment of the antennae longer, apex of the male genitalia exceedingly slender, and so on.

NOTE: H. Gebien recorded one species of the genus *Phaedis* (as *Gnesis*) from Formosa in his paper, 1913, Arch. fur Naturg., A, 9: 39. His note is as follows: *Gnesis helopioides* Pasc. Ein Exemplar von Taihorinsho VIII. 1909. Das Exemplar ist länger und grösser als die von Japan, doch finde ich keinen wesentlichen Unterschied, der die Aufstellung einer neuen Art rechtfertigen würde. This was the only one record of this genus from Formosa. The second species, *formosanus*, is much different from that was recorded by Gebien.

### A new locality record of *Gonocephalum coenosum* Kaszab

Until today *Gonocephalum coenosum* Kaszab, 1952, has been known from China, Formosa, Japan proper and Ryukyus (Ishigaki I., Iriomote I. & Miyako I.). A new locality is recorded here as follows: 1 sp., Uotsuri-jima, Senkaku Isls., 11. xii. 1970, Y. Matsumoto leg. This specimen was collected with many specimens of *Gonocephalum senkakuensis* sp. nov., mentioned above.

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