

Notes on the Genus *Paratrichius* (Coleoptera, Scarabaeidae) from Taiwan

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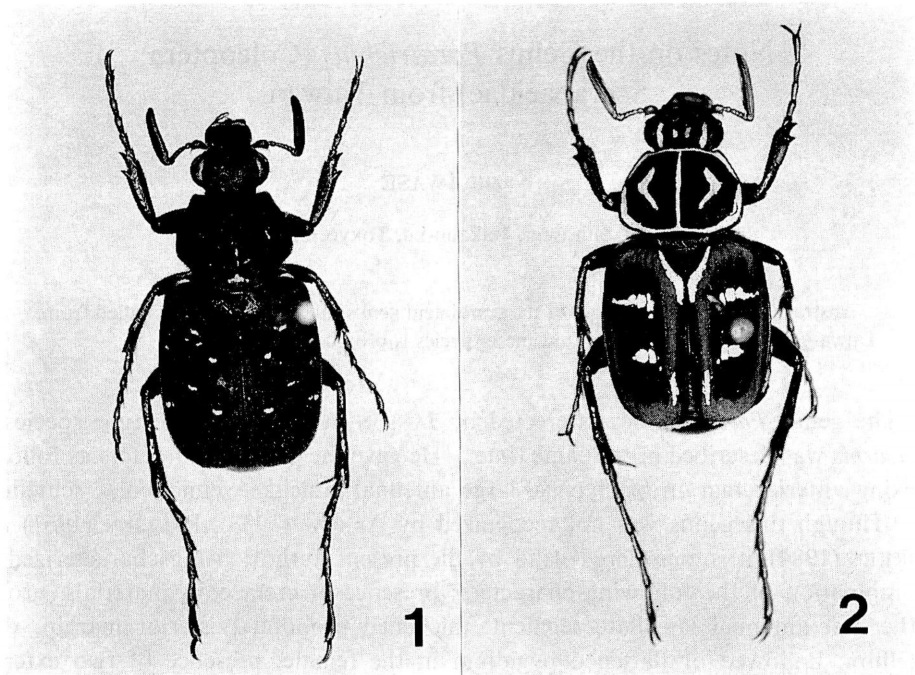
Abstract Two new species of the scarabaeid genus *Paratrichius* are described from Taiwan, and a key to the five Taiwanese species is provided.

The genus *Paratrichius* was erected by JANSON in 1881, and the type species *P. longicornis* was described at the same time. He gave the generic characters as follows: reflexing anterior margin of clypeus, large antennal lamellae, semicircular scutellum, etc. Though this genus was not recognized by ARROW (1938), PAULIAN (1961) and KRIKKEN (1984), it is considered valid by the present author, being characterized by a combination of the following characters: presence of cretaceous materials, groove of the first antennal lamellate segment, thickened pronotal posterior margin, wide scutellum, hollowed or flattened pygidium in the female, presence of two external teeth on anterior tibia in both sexes, lack of terminal spur of anterior tibia in the male, and so on.

In Taiwan, three endemic species have hitherto been recorded, and two new species are added now to the fauna.

Key to the Species of the Genus *Paratrichius* from Taiwan

1. Anterior femur with a longitudinal serrated carina on the anterior face; female: pygidium hollowed near apex.....2.
- Anterior femur without longitudinal serrated carina on the anterior face; female: pygidium without hollow, flattened in apical half4.
2. Male: frons opaque, simply and rather sparsely punctured medially, antennal lamellae shorter than footstalk, dorsal surface generally black with elytra decorated with red longitudinal bands, the cretaceous markings of pygidium longitudinal; female: hollow of pygidium transversely elliptical.....
.....*P. vittatus* SAWADA.
- Male: frons feebly shining, reticulate medially, antennal lamellae longer than footstalk; female: hollow of pygidium more or less longitudinal.....3.
3. Male: dorsal surface black, disc of elytra densely setose, the cretaceous markings undeveloped on ventral surface; female: hollow of pygidium small and shallow, occupying about one-fifth to one-fourth of the whole length of pygidium....
.....*P. guttatus* n. sp.



Figs. 1-2. Dorsal aspect. — 1, *P. guttatus* n. sp.; 2, *P. taiwanus* n. sp.

- Male: dorsal surface generally blood-red, rarely black, disc of elytra very sparsely setose; female: hollow of pygidium deep and long, about a half the whole length of pygidium.....*P. diversicolor* (BOURGOIN).
- 4. First segment of antenna generally darkened; greater part of posterior leg black; male: anterior margin of clypeus weakly reflexed and weakly but distinctly emarginate medially, pronotum with long hairs along lateral margin, scutellum black; female: pronotum with long hairs near posterior angle, pygidium flattened at the narrow middle portion.....*P. nomurai* TESAR.
- First segment of antenna brown; greater part of posterior leg brown; male: anterior margin of clypeus strongly reflexed and nearly straight, pronotum without long hair, scutellum with the middle part brown; female: pronotum without long hair, pygidium widely flattened.....*P. taiwanus* n. sp.

***Paratrichius vittatus* SAWADA**

(Figs. 3, 6)

Paratrichius vittatus SAWADA, 1939, p. 44.

Distribution. Liukuēi, Kaohsiung Hsien; Puli, Nantou Hsien; Paling, Taoyuan Hsien; Lalashan, Taoyuan Hsien.

Paratrichius guttatus n. sp.

(Figs. 1, 5, 8)

Male. Black with antennal footstalk except for the first segment dark brown, decorated with white cretaceous markings as follows: a short middle line, a pair of small discal spots and a short posterior marginal line before scutellum on pronotum, seven short bars on each elytron, a pair of large transverse markings on pygidial base, each spot along the outer margin of mesothorax, metacoxa and second to fifth abdominal sternites, each middle transverse band on third to sixth sternites; feebly shining, pronotum except margins and elytra except shoulders opaque; elongate oval, legs slender.

Clypeus wider than long ($L/W=0.75$), widest at the middle, lateral margins arcuate, anterior angle rounded, anterior margin feebly emarginate, clypeal surface reticulate, feebly depressed at sides, raised along lateral margins, thickened along anterior margin; frons reticulate anteriorly, coarsely punctured posteriorly. Antennal club 1.5 times as long as footstalk, inner surface of first lamellate segment with a longitudinal groove.

Pronotum lightly convex, nearly circular, wider than long ($L/W=0.88$), widest between posterior angles, anterior angle obtuse but slightly produced anteriorly, lateral margin curved behind the middle, sinuate anteriorly, posterior angle rounded, posterior margin widely rounded, anterior and lateral margins narrowly marginate, posterior margin widely marginate and thickened before scutellum; surface rather densely and strongly punctured, bearing short grayish setae, setae becoming longer near anterior and posterior angles, median groove inconspicuous, shallowly depressed behind the middle.

Scutellum semicircular, wider than long ($L/W=0.57$), densely punctured laterally, impunctured medially.

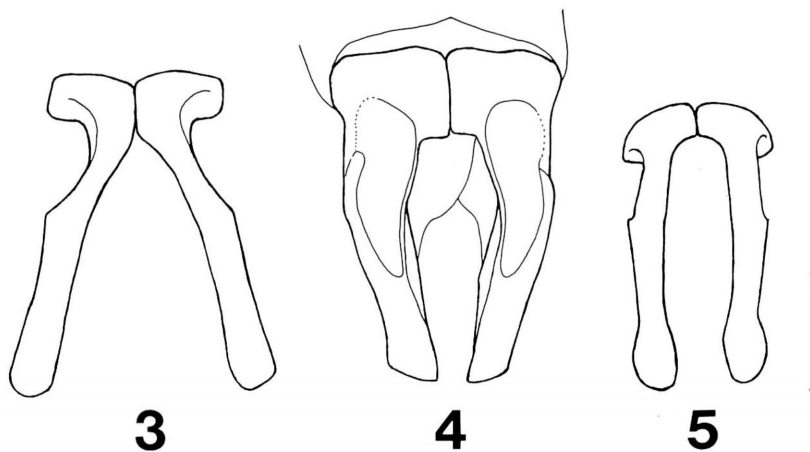
Elytra feebly convex, longer than wide ($L/W=1.18$), widest before the middle, lateral margin arcuate, posterior angle rounded, each elytron with posterior margin rounded; surface of elytron with five striae between suture and shoulder, densely clothed with short setae, striae with a row of horseshoe-shaped punctures, intervals feebly convex, shoulder prominent.

Pygidium wider than long ($L/W=0.65$), strongly convex behind the middle, concentrically aciculate, densely clothed with short setae.

Metasternum very convex but flattened medially, clothed with pale yellow long hairs, densely punctured medially, aciculate laterally. Abdomen transversely aciculate, clothed with short hairs.

Anterior femur with a longitudinal serrated carina on the anterior face; anterior tibia with two external teeth, terminal spur absent; posterior tarsus twice as long as tibia.

Female. Different from male as follows: pronotum feebly shining, lacking cretaceous marking; cretaceous markings on ventral surface almost undeveloped;



Figs. 3–5. Caudal view of male parameres. — 3, *P. vittatus* SAWADA; 4, *P. diversicolor* (BOURGOIN); 5, *P. guttatus* n. sp. (Scale: 1 mm.)

antennal club shorter than footstalk, pronotal middle groove more distinct, pygidium with a longitudinal groove near the apex; front tibia with a strong terminal spur.

Length. Male: 10.5–13 mm, female: 11–14 mm.

Holotype: ♂, 20–VI–1990, Paling, Taoyuan Hsien; allotype: ♀, 15–V–1979, Lalashan, Taoyuan Hsien, L. F. HANG leg.; paratypes: 2 ♀♀, 12–VI–1989, Paling, Taoyuan Hsien (in IWASE coll.); 1 ♀, 12–VI–1989, Lalashan, Taoyuan Hsien (in IWASE coll.); 1 ♂ 1 ♀, 1989, Paling, Taoyuan Hsien (in IWASE coll.); 1 ♂ 1 ♀, 15–V–1979, Lalashan, Taoyuan Hsien, L. F. HANG leg. (in MIYAKE coll.); 3 ♂ 3 ♀, 21–VI–1985, Lalashan, Taoyuan Hsien, C. LO leg. (in SAKAI coll.).

The holotype and allotype will be preserved in the National Science Museum (Nat. Hist.), Tokyo (NSMT).

This new species is different from the allied species as follows: head almost reticulate and feebly shining; cretaceous markings of pygidium transverse; pygidial hollow small and longitudinal in the female.

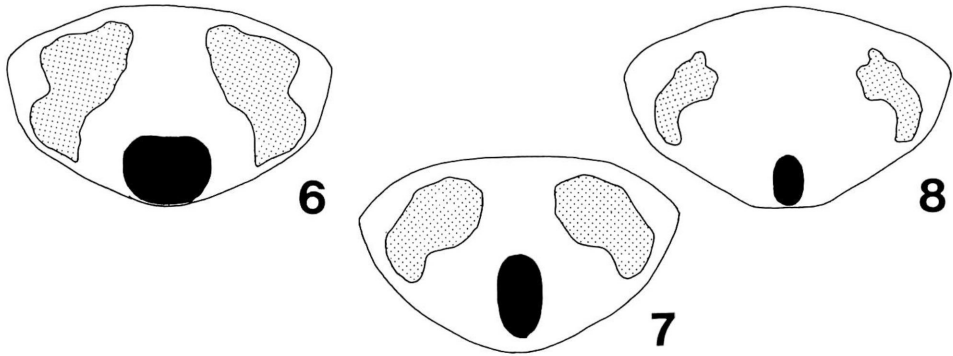
Paratrichius diversicolor (BOURGOIN)

(Figs. 4, 7)

Trichius (?) *diversicolor* BOURGOIN, 1915, p. 177.

Paratrichius diversicolor: SAWADA, 1939, p. 46.

Distribution. Liukuei, Kaohsiung Hsien; Nanshanchi, Nantou Hsien; Lishan, Taichung Hsien; Paling, Taoyuan Hsien; Lalashan, Taoyuan Hsien.



Figs. 6–8. Caudal view of female pygidium (dotted: whitish cretaceous markings, darkened: apical depressed area). — 6, *P. vittatus* SAWADA; 7, *P. diversicolor* (BOURGOIN); 8, *P. guttatus* n. sp.

***Paratrichius nomurai* TESAR**

(Fig. 9)

Paratrichius nomurai TESAR, 1941, p. 69.

Paratrichius pilosonotus YAWATA, 1943, p. 6.

Paratrichius takasagonus YAWATA, 1943, p. 8.

Paratrichius duplicatus pilosonotus: SAWADA, 1950, p. 12.

Paratrichius duplicatus nomurai: MIYAKE, 1955, p. 19.

Distribution. Tattaka, Nantou Hsien; Kuantoushan, Nantou Hsien; Tapang, Taichung Hsien; Piluchi, Nantou Hsien.

***Paratrichius taiwanus* n. sp.**

(Figs. 2, 10)

Closely similar in shape and colour to the males of *P. doenitzi* (LEWIS), *P. itoi* TAGAWA and *P. kyushuensis* MIYAKE, all from Japan, and moderately so to *P. nomurai* TESAR from Taiwan.

Male. Ventral surface black with seventh (distal) abdominal sternite brown, shining, almost covered with yellow opaque cretaceous materials, middle part of metasternum and seventh abdominal sternite without cretaceous material, and almost clothed with yellow hairs, hairs long on breast, short on abdomen including seventh sternite; clypeus brown and shining, frons black and opaque with two pair of cretaceous spots posteriorly, antenna brown; pronotum black and tomentose with yellow cretaceous materials as follows: middle line, a pair of discal V-shaped markings, and all margins; scutellum dark brown with margins darkened, opaque; each elytron brown with large black longitudinal band medially, and more or less darkened at suture, lateral margins and apex, opaque, decorated with cretaceous markings as fol-

lows: short longitudinal bands near base and apex along suture, two transverse bands on the large black band; pygidium brown with basal and lateral portions darkened, shining, decorated with cretaceous materials on basal and lateral portions; legs brown with ventral surface of anterior femora, dorsal surface of middle femora and tibia and that of posterior femora and tibia more or less darkened. All the cretaceous markings mentioned above variable.

Body oblong, strongly convex ventrally weakly convex dorsally; legs slender.

Clypeus wider than long ($L/W=0.73$), widest behind the middle, lateral margin arcuate, anterior margin rounded, surface rugose and sparsely clothed with short hairs, strongly reflexed anteriorly, sides declined externally; frons rugose, rather densely clothed with short hairs anteriorly and laterally, densely punctured posteriorly, weakly depressed anteriorly; antennal club 1.7 times as long as footstalk, proximal segment of lamellae with a longitudinal groove on the inner surface.

Pronotum lightly convex, wider than long ($L/W=0.85$), widest between the lateral angles, rather strongly narrowed before them, and very weakly narrowed or paralleled behind them, anterior angle either rectangular or obtuse, posterior angle rounded, posterior margin rounded, surface sparsely, rather strongly punctured, sparsely clothed with short hairs, hairs becoming denser near anterior angle, lateral margin finely marginate, anterior and posterior margins broadly marginate; yellow painted portions, middle line, a pair of discal V-shape and margination more or less depressed.

Scutellum semicircular, wider than long ($L/W=0.65$), smooth medially, sparsely punctured laterally.

Elytra weakly convex, longer than wide ($L/W=1.14$), widest before the middle, lateral margin weakly arcuate, posterior angle rounded; each elytron with five punctured striae between suture and shoulder, punctures rounded or horseshoe-shaped, intervals weakly convex, sparsely clothed with minute setae, second interval rather flattened with a few punctures near base; side of elytron with five rows of punctures, shoulder prominent, rather densely punctured.

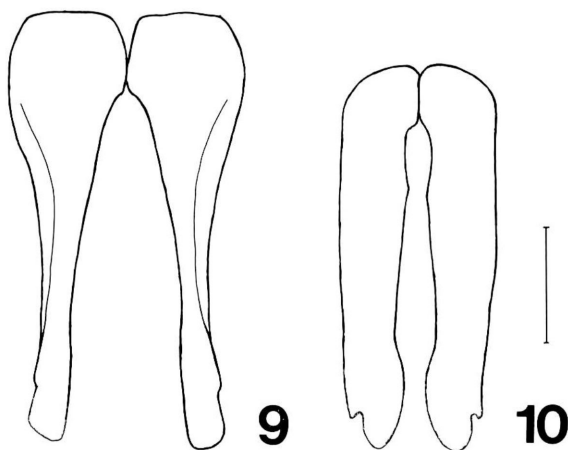
Pygidium rather strongly convex, wider than long ($L/W=0.62$), rather densely aciculate, densely clothed with short hairs.

Metasternum weakly depressed medially with a longitudinal line, rather strongly punctured and densely clothed with long hairs; abdomen densely clothed with short hairs, second sternite feebly raised ventrally, seventh (distal) sternite flattened medially.

Anterior tibia bidentate, without terminal spur; middle tibia weakly curved inwards, rather sparsely bearing short setae on the inner surface.

Each paramere of male genitalia with a distinct notch near apex.

Female. Coloration and cretaceous maculation similar to those of the male, but the ground colour of abdomen and pygidium is almost black; clypeus wider than long ($L/W=0.67$), anterior margin distinctly emarginate, antennal lamellae about as long as footstalk; pronotum broad ($L/W=0.78$), anterior angle obtuse; pygidium very broad ($L/W=0.56$), transversely aciculate, widely flattened medially; cretaceous



Figs. 9–10. Caudal view of male parameres. — 9, *P. nomurai* TESAR; 10, *P. taiwanus* n. sp. (Scale: 1 mm.)

markings undeveloped on ventral surface, abdomen weakly convex; terminal spur of anterior tibia present.

Length. Male: 12.5–13.5 mm, female: 13–15 mm.

Holotype: ♂, Lalashan, Taoyuan Hsien, VI-1968 (in coll. NSMT); allotype: ♀, Formosa, V-1974 (in coll. NSMT); paratypes: 2 ♂♂, Formosa, V-1974 (in coll. NSMT); 2 ♂♂, Lalashan, 12-VI-1889; 1 ♂, Taiheizan, Formosa, 8-VI-1939, A. KIRA leg.; 1 ♂, Paling, 900 m, Taoyuan Hsien, 30-IV-1985, K. SAKAI leg.; 1 ♀, Lalashan, 20-VI-1941, S. HIRAYAMA leg. (in coll. NSMT).

This new species differs from the allied species by the following characteristics: first segment of antenna not darkened dorsally; posterior tibia and tarsus not darkened in both sexes; pygidium brown and free from the cretaceous materials medially in the male; parameres of male genitalia notched near apex; pygidium very broad in female.

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I wish to thank Dr. S.-I. UÉNO for the permission to examine the National Science Museum collection, Dr. Y. KUROSAWA for the mediation to the Museum, and also T. AOKI, M. FUJIOKA, K. INADA, Y. MIYAKE, R. MURAMOTO and K. SAKAI for various helps given in the course of this study.

要 約

岩瀬一男：台湾産 *Paratrichius* 属について。——台湾に産する *Paratrichius* 属の2新種を記載し、3既知種を含む検索表を示した。新たに与えた名称は、*P. guttatus* および *P. taiwanus* である。

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