

A REVISION OF THE GENUS *DIATRICHALUS* KLEINE FROM THE PHILIPPINES (COLEOPTERA: LYCIDAE)

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ABSTRACT. - The Philippine representatives of the genus *Diatrichalus* Kleine, 1926 are revised. Five additional species are placed in the genus, three of them are transferred from the genus *Trichalus* Waterhouse, 1877: *Diatrichalus absonus* (Kleine, 1926), *D. clypeatus* (Kleine, 1926) and *D. luzonicus* (Kleine, 1929), two new species are described here: *Diatrichalus tigoplanus*, new species from Palawan and *D. ruficollis*, new species from Sibuyan and Luzon. The species are keyed and their main diagnostic characters are figured.

KEY WORDS. - Taxonomy, Coleoptera, Lycidae, Trichalina, *Diatrichalus*, new species.

INTRODUCTION

The genus *Diatrichalus* Kleine, 1926 has not been reported from the Philippines until now. During studies on the Philippine representatives of Trichalina I found that three species described by Kleine in the 1920's as belonging to the genus *Trichalus* Waterhouse, 1877 have to be transferred to the genus *Diatrichalus*. The genus *Diatrichalus* was proposed by Kleine, 1926 for Metriorrhynchinae beetles with one pronotal areola, shortened first elytral primary costa and missing secondary elytral costae. The relationship of genera of Trichalina is discussed in another paper (Bocák, in press) but already here it is necessary to point out that the concept of *Diatrichalus* must be changed and its definition should be based on the unique shape of male genitalia and the position of accessory vaginal glands. Consequently the former definition of *Diatrichalus* based on missing secondary elytral costae is inaccurate and the genus includes also species with well developed secondary costae. *Diatrichalus* is represented first of all in the Papuan subregion where numerous undescribed species occur. One species was found on Sumatra too, which is the northernmost record of any representative of this group.

The types of *Trichalus* species classified as *Diatrichalus* here are deposited in the Kleine's collection deposited in the Museum and Institute of Zoology of the Polish Academy of Sciences in Warsaw (Mroczkowski, 1959) and during the study of them I have recognised two species in the type series of *Diatrichalus absonus* and another new species I have found in the material collected

in the Philippines by the expedition of the Field Museum of Natural History, Chicago in 1946 - 47. Further material for this study was got from the Corporaal's collection from Zoological Museum Amsterdam. The aim of the present paper is to revise both known and new species of *Diatrichalus* in the Philippines and to provide a key for their identification.

DEPOSITORIES

The following acronyms indicate depositories for specimens used in this study:

MNH - National Museum of Natural History, Paris
FMNH - Field Museum, Chicago
ZMPA - Museum and Zoological Institute PAS,
Warszawa
ZMAN - Zoological Museum, Amsterdam
LMBC - author's collection

TAXONOMY

Diatrichalus Kleine, 1926

Diatrichalus Kleine, 1926: Nova Guinea 15(2): 167 (type species *D. xylobanoides* Kleine, 1926, by original designation)

Differential diagnosis. - Pronotum with median lanceolate areolet only, lateral costae missing, elytra with shortened primary costa 1, antennae of both sexes more or less acutely serrate, but never with long lamellae, both

labial and maxillary palpi with securiform apical segment with small papillae at apical margin, phallus stout, apical part projected, internal sac prolonged, more or less sclerotized, vaginal glands inserted laterally, spermatheca long, slim, rod-like.

Redescription. - Body medium-sized, dorsoventrally flattened. Head small, hypognathous, partly concealed by pronotum, without rostrum, eyes prominent, usually smaller than their interocular distance. Mouth parts well developed, mandibles stout, curved in right angle, more than twice longer than labrum, labrum wider than long, emarginate in distal part, labial palpi with apical segment robust, widest at apex, with irregular unpigmented papillae at apical margin, maxillary palpi stout, apical segment with similar papillae at apex. Antennae strongly compressed, serrate in both sexes or shortly flabellate in male in some species outside the Philippines. Pronotum usually wider than long, with more or less broad longitudinal areolet in the middle, lateral margins often elevated. Elytra flat, secondary costae usually irregular (sometimes completely absent in species outside the Philippines), costa 2 and 3 often fused before apex. Primary costae covered with quite dense stout setae, sparse setae also on secondary costae, bottom of elytral areolae with very tiny, short microsetae. Legs often relatively strong and short, strongly compressed.

Male genitalia uniform in all species, always with relatively very short and robust phallus, apical part ventrally projected, hiding apical opening, internal sac without pair of basal thorns, nearly always strongly sclerotized in apical part, phallobasal membrane sometimes extensive but never sclerotized. Ovipositor with slender, long valvifers, sometimes incompletely fused at base, vagina relatively short, basal part of glandular duct sometimes robust, accessory glands inserted laterally. Spermatheca slender, very long.

No apparent sexual dimorphism present, male antennae only very slightly more acutely serrate, maximum diameter of eyes smaller than interocular distance in both sexes, ratio distance/diameter by about 25 percent higher in females.

Key to the species of the genus *Diatrichalus* from the Philippines

1. Metasternum dark brown to black 2
- Metasternum orange, of the same colour as pronotum *D. ruficollis*, new species
2. Elytral suture completely dark brown to black 3
- Elytral suture at least partly yellow 4
3. Whole elytra dark brown to black, interocular distance 1.33 times longer than maximum eye diameter *D. luzonicus* (Kleine)
- Humera always yellow, sometimes only apical part of elytra and suture dark, rest of elytra yellow,

- interocular distance 1.57 times longer than maximum eye diameter *D. clypeatus* (Kleine)
4. Only apical quarter of elytra dark brown, interocular distance 1.25 times longer than maximum eye diameter, body broader, elytra 3.1 times longer than width at humeri *D. tigoplanus*, new species
- Only humeral third of elytra yellow, interocular distance 1.43 times longer than maximum eye diameter, body narrower, elytra 3.5 times longer than width at humeri *D. absonus* (Kleine)

***Diatrichalus luzonicus* (Kleine, 1929),
new combination**

(Figs. 1, 8, 12)

Trichalus luzonicus Kleine, 1929: 485.

Type material. - Holotype, male, Mt. Maquiling, Luzon, Baker. Type Nr. 927 (ZMPA). Allotypus, Los Banos, P. I., Baker. Type Nr. 928 (ZMPA).

Redescription. - male. Body medium sized, flat, pitchy dark brown to black, only lateral margins of pronotum light brown to yellow, prosternum a bit lighter than sternal parts of other thoracic segments.

Head small, a bit wider than frontal margin of pronotum, densely punctured, mat. Antennal tubercles conspicuous, apparently separated from each other, followed by transverse frontal depression. Antennae serrate, strongly compressed (Fig. 8). Mandibles long and slender. Clypeus widely emarginate, labrum tiny, very weakly emarginate at apex. Both palpi stout, apical segment of maxillary palpi obliquely cut, flat, securiform, with irregular projections. Pronotum trapezoidal, with posterior angles acutely projected backwards, widest at basal margin, lateral tubercles well marked, lateral margins apparently elevated. Median areola slightly shorter than pronotal midline, attached to frontal margin with short costa (Fig. 1). Scutellum flat, widely emarginate at apex. Elytra nearly parallel-sided, slightly diverging, costa 1 reaching one sixth of elytral length, costae 2 and 4 longer, reaching apex, costa 3 shorter but not joining any other costa, secondary costae apparently weaker, interrupted in some places. Legs strongly compressed, moderately short.

Male genitalia as figured (Fig. 12).

Measurement. - Length 7.9 - 8.6 mm, width at humeri 1.96 - 2.28 mm, length of pronotum 0.98 - 1.02 mm, width of pronotum 1.46 - 2.1.68 mm, distance of eyes in male 0.62 mm, maximum diameter of eye in male 0.46 mm.

Distribution. - Luzon Island

Other material examined. - male, Boettcher, Luzon, 2000', Mt. Banahao, 12 Aug. 1914 (paratype of *Bulenides*)

adumbratus Kleine, 1926, ZMAN).

Remarks. - *D. luzonicus* differs from similar *D. ruficollis* in the coloration of metasternum and in the size of male eyes. Two females from the type series of *Diatrichalus absonus* may belong to this species, but more extensive material is necessary for a final decision.

***Diatrichalus clypeatus* (Kleine, 1926),
new combination**
(Figs. 4, 10, 11, 13)

Trichalus clypeatus Kleine, 1926: 107

Type material - Holotype, male, Kolambugan, Mindanao, Holotype Nr. 910 (ZMPA). Paratype: male, (Mindanao), Tangcolan, Bukidnon, Baker. Type Nr. 913; 1 spec., Mindanao, Kolambugan, Nr. 911; 2 spec., Surigao, Mindanao, Baker, Nr. 914; 1 spec., Mindanao, Davao, Nr. 915; 1 spec., Butuan, Mindanao, Baker, Nr. 916 (ZMPA).

Redescription. - male. Body medium sized, flat, slightly widened backwards, black, at least lateral parts of pronotum and humeral parts of elytra light brown to yellow. Trochanters, the very bases of femora and bases of mouth parts lighter. Prosternum and mesosternum only sometimes a bit lighter than metasternum.

Head small, approximately as wide as frontal margin of pronotum, antennal tubercles well developed, separated by narrow longitudinal groove. Eyes relatively small, their interocular distance 1.57 times wider than their maximum diameter, clypeus flat, frontal margin very widely emarginate, labrum tiny, much narrower than clypeus. Palpi stout, maxillary palpi segment 4 broad, securiform, apical labial segment with variable number of projections. Antennae reach two thirds of elytral length, strongly compressed, acutely serrate (Fig. 10). Pronotum always much wider than long, widest at basal margin or in basal third where lateral tubercles are situated, tubercles always very apparent, lateral margins considerably elevated. Median areola always directly attaches to both frontal and basal margins, lentil-like, widest in middle (Fig. 4). Scutellum flat, variable in shape, usually weakly emarginate at apex. Elytra widest at apical fifth, primary costa 1 reaching one sixth of elytral length, other primary costae equal in strength, costa 2 and 3 join each other in one seventh of elytral length before apex, secondary costae apparently weaker. Legs moderately short, strongly compressed, femora and tibiae wide.

Male genitalia as figured (Fig. 13). Phallus of the holotype was broken probably by Kleine and its basal part and phallobase are missing. Female genitalia with shorter spermatheca (Fig. 11), valvifers of ovipositor firmly fused.

Other material examined. - 1 female, Mindanao, Davao Prov., E slope Mt. McKinley, 15-22 Sep. 1946, CNHM - Philippine Zool. Exped. (1946 - 47), F. G. Werner leg. (FMCH), 1 male, Mindanao, 30 km NW of Maramag, Bagongsilang, 1700 m, 13-17 May. 1996, Bolm lgt. (LMBC).

Measurement. - Length 6.55 - 8.15 mm, width at humeri 1.75 - 2.17 mm, length of pronotum 0.84 - 0.98 mm, width of pronotum 1.44 - 1.72 mm, interocular distance of eyes in male 0.62 mm, maximum diameter of eyes in male 0.39 mm.

Remarks. - *D. clypeatus* is very characteristic in his body coloration and can not be confused with any other south east Asian species.

Distribution. - This species is known from mountainous localities of Mindanao.

Variability. - The extent of black patch on elytra and pronotum is variable. The elytral suture and scutellum were blackened in all specimen studied in the whole length. In one specimen also the median part of the pronotum along the pronotal midline was black, while in other specimens the black patch on the pronotum was limited to basal half or entirely missing. The sutural black area on the elytra occupies about half the area of the first to two intercostal spaces adjacent to the suture. The extent of apical black patch varies between one quarter and one half of elytral length.

***Diatrichalus tigoplanus*, new species**
(Figs. 3, 9, 14, 15)

Type material. - Holotype, male, Brooke's point, Palawan Is., nr. sea level, 2 May. 1947, CNHM - Philippine Zool. Exped. (1946 - 47), M. Celestino leg. (FMNH); paratype: Tigoplan, Brooke's point, Palawan Prov., Palawan Is., elev. 180 ft, 29 Sep. 1947, CNHM - Philippine Zool. Exped. (1946 - 47), F. G. Werner leg., female (FMNH).

Etymology. - The specific name *tigoplanus* is derived from the locality name, where the paratype was collected.

Differential diagnosis. - *D. tigoplanus* differs from all Southeast Asian members of the genus *Diatrichalus* in the body coloration. It is the only *Diatrichalus* species belonging to the mimicry complex of *Microtrichalus communis* (Wat.) which is widespread in this region. They are so similar that for a positive identification a dissection of male genitalia is preferable. Additionally, they differ in the shape of last palpal segments which are broadly securiform in *Diatrichalus tigoplanus* but slender, nearly parallel-sided in *Microtrichalus communis*.

Description. - male. Body medium sized, flat, black to

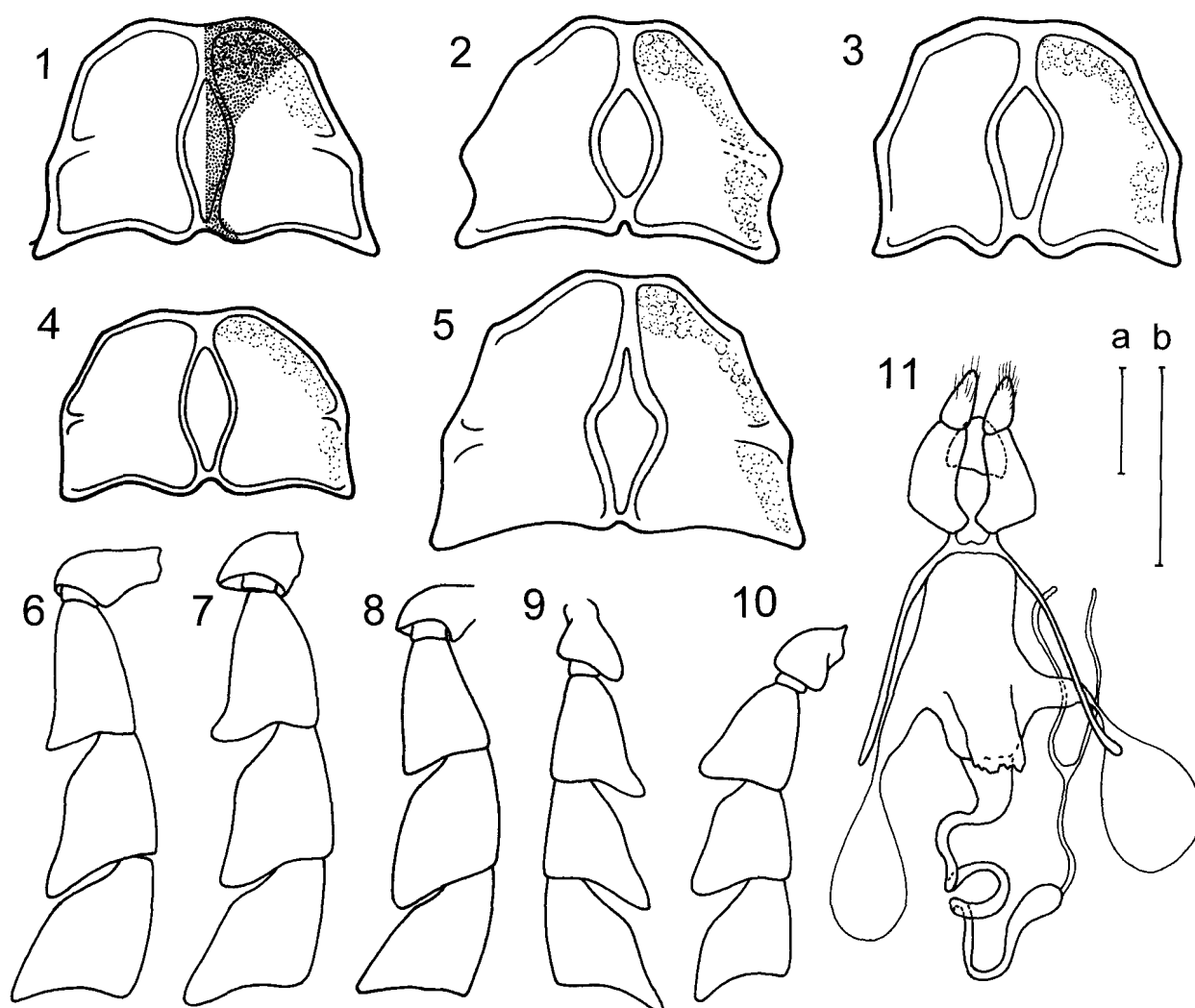
dark brown, only pronotum, scutellum and humeral two thirds to six sevenths of elytra yellow. Trochanters at least in basal part light brown.

Head small, mat, densely punctured, covered with short lighter pubescence. Eyes hemispherically prominent but widely separated in frontal part of cranium, their interocular distance 1.25 times longer than maximum diameter. Clypeus widely emarginate, labrum tiny, with small apical emargination, mandibles slender, long. Palpi stout, both palpi with irregular long projections of apical segments. Antennae reaching over elytral midlength, strongly compressed, acutely serrate (Fig. 9). Pronotum widest where lateral tubercles situated (Fig. 3), lateral tubercles very apparent. Basal margin never straight, lateral margins strongly elevated, frontal one considerably projected forwards. Median areola a bit

shorter than elytral midline, attached to frontal margin with short stout longitudinal costa. Scutellum flat, widely emarginate at apex. Each elytron nearly parallel-sided. Primary costa 1 reaching one sixth of elytral length, costae 2 and 4 reaching nearly apex and both equally strong in apical part, ending separately. Costa 3 much weaker at apex, occupying five sixths of elytral length, not joining any other costa. Transversal costae dense, secondary costae sometimes interrupted. Legs moderately short, strongly flattened, quite robust.

Male genitalia uniform within genus. Female genitalia with extremely long, slender, straight spermatheca (Fig. 14), valvifers free (Fig. 15).

Distribution. - Palawan Island.



Figs. 1-11: Pronotum: 1 - *Diatrichalus luzonicus* (Kln.), 2 - *D. absonus* (Kln.), 3 - *D. tigoplanus*, new species, 4 - *D. clypeatus* (Kln.), 5 - *D. ruficollis*, new species; Basal antennal segments of male: 6 - *D. absonus* (Kln.), 7 - *D. ruficollis*, new species, 8 - *D. luzonicus* (Kln.), 9 - *D. tigoplanus*, new species, 10 - *D. clypeatus* (Kln.); 11 - ovipositor and female genitalia of *D. clypeatus* (Kln.). Scales 0.5 mm; scale a for figs 1 - 10, b for fig. 11.

Measurement. - Length 7.6 - 8.3 mm, width at humeri 1.99 - 2.09 mm, length of pronotum 0.94 - 1.05 mm, width of pronotum 1.47 - 1.54 mm, interocular distance in male 0.56 mm, maximum diameter of eyes in male 0.45 mm.

***Diatrichalus ruficollis*, new species**

(Figs. 5, 7, 16, 17)

Type material. - Holotype, male, Island Sibuyan, Baker, Allotype Nr. 899 of *Trichalus absonus* Kleine (ZMPA). Paratypes: 2 females, the same locality data. Types Nr. 900 of *T. absonus* Kln. (ZMPA);

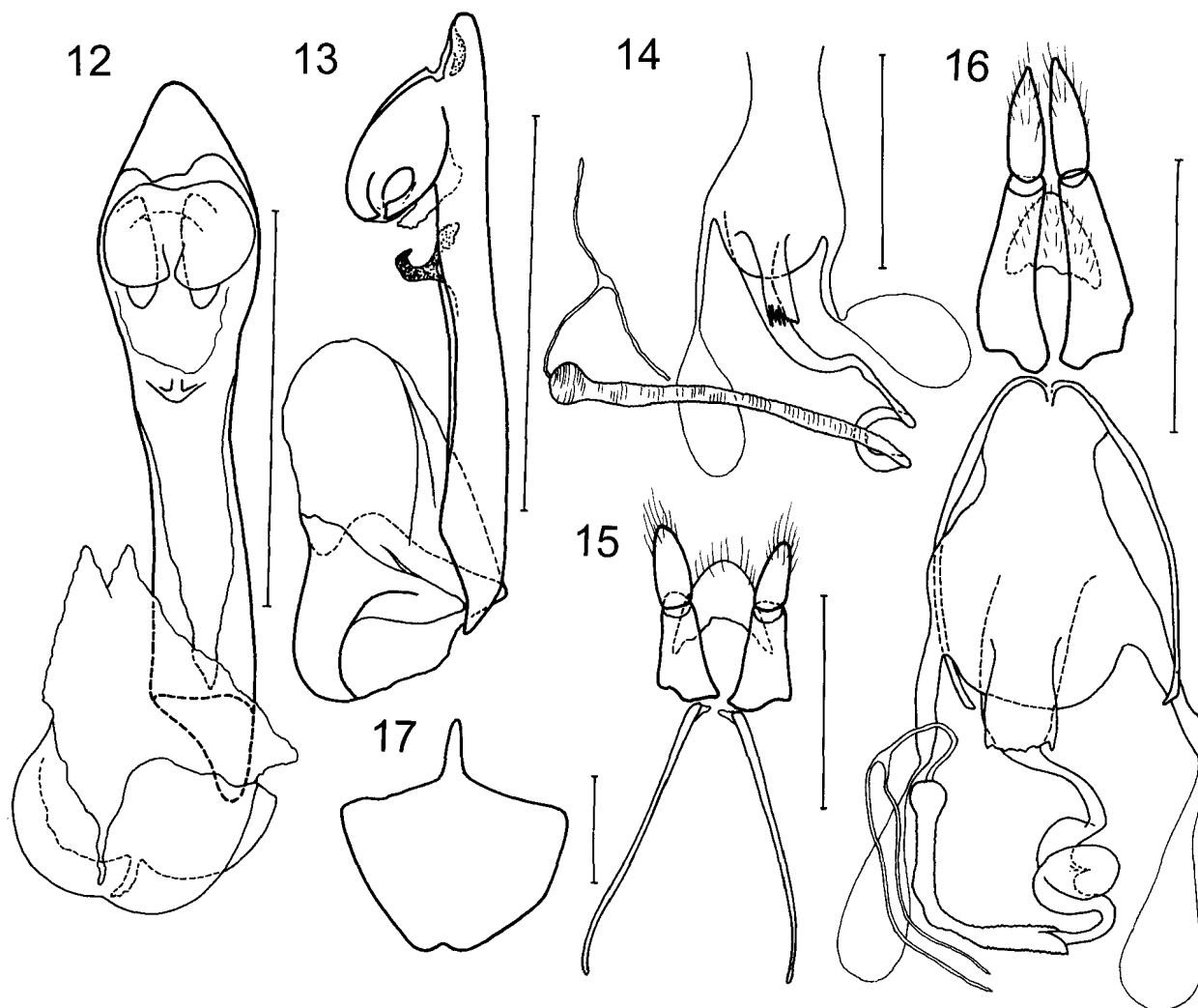
Differential diagnosis. - *D. ruficollis* differs from all Philippine species in orange coloration of sternal part of metathorax. *D. absonus* has whole metathorax black and in addition to it humeral third of elytra yellow and

considerably slender body. Elytra are 3.1 times longer than width at humeri in *D. ruficollis* and 3.5 times in *D. absonus*. Similarly coloured *D. luzonicus* has usually a black patch along pronotal midline and black meso- and metathorax. In addition it has relatively smaller eyes.

Etymology. - The specific name refers to the orange coloration of pronotum.

Description. - male. Body medium sized, flat, robust, orange, only head, elytra, antennae, apical parts of femora, tibiae and tarsi dark brown to black.

Head small, eyes less prominent, widely separated in frontal part of head, their interocular distance 1.45 times longer than their maximum diameter. Antennae robust, strongly compressed, acutely serrated (Fig. 7). Clypeus very weakly emarginate, in middle of frontal margin slightly projected, labrum tiny, emarginate at apex. Palpi



Figs. 12-17: 12 - male genitalia of *Diatrichalus luzonicus* (Kln.); 13 - ditto of *D. clypeatus* (Kln.), laterally; 14 - female genitalia of *D. tigoplanus*, new species; 15 - ovipositor of *D. tigoplanus*, new species, 16 - ovipositor and female genitalia of *D. ruficollis*, new species; 17 - Female abdominal sternum 8 of *D. ruficollis*, new species. Scales 0.5 mm.

stout, apical maxillary palpi segment considerably flattened, securiform, with short irregular projections. Pronotum trapezoidal, widest at basal margin and nearly parallel up to position of lateral tubercles, then gradually narrowed, frontal angles well marked (Fig. 5). Scutellum wide, depressed in middle, deeply emarginate at apex. Elytra flat, nearly parallel-sided, primary costa 1 reaching one sixth of elytral length, remaining primary costae equal in strength, costae 2 and 3 fused before apex, secondary costae weak, sometimes interrupted. Legs relatively short and strong, compressed.

Male genitalia correspond to the *Diatrichalus* type of aedeagus. Female genitalia with slender coxites and styli, spermatheca long, curved (Fig. 16).

Measurement. - Length 8.15 - 10.3 mm, width at humeri 1.99 - 3.00 mm, length of pronotum 1.19 - 1.46 mm, width of pronotum 1.75 - 2.27 mm, distance of eyes in male 0.67 mm, maximum diameter of eyes in male 0.46 mm.

Distribution. - Sibuyan Island

***Diatrichalus absonus* (Kleine, 1926),
new combination**
(Figs. 2, 6)

Trichalus absonus Kleine, 1926: 108; 1929: 477.

Type material. - Holotype, male, N. W. Panay, Baker. Type Nr. 898 (ZMPA); Paratype, female, Boettcher, Philippines, Masbate: Arorog, 29 Aug. '17 (ZMAN); female, Boettcher, Luzon, Lamao, 4 Jul. 1914 (ZMAN).

Redescription. - male. Body medium sized, relatively slender, black, only prothorax, mesothorax (including pronotum and scutellum), humeral part of elytra and trochanters yellow.

Head small, partly hidden by pronotum, interocular distance 1.43 times longer than maximum eye diameter. Antennae reaching over elytral half, strongly compressed, acutely serrate (Fig. 6), frontal margin of clypeus with well marked projection in middle, labrum tiny, simply rounded at apex, mandibles relatively short, stout, apical segment of maxillary palpi securiform, flattened, its margin with projections. Pronotum widest in basal third, where lateral tubercle situated, suddenly narrowed forwards (Fig. 2), frontal angles very obtuse, inconspicuous. Scutellum flat, broadly emarginate. Elytra nearly parallel-sided, primary costa 1 reaching one seventh of elytral length, remaining primary costae stout, costa 2 only slightly shorter than costae 2 and 4, later not joining each other at apex, secondary costae much weaker but well marked, seldom interrupted. Legs

quite slender and long, strongly compressed.

Male genitalia uniform within genus. Phallus of the holotype was broken probably by Kleine and its basal part and phallobase are missing.

Measurement. - Length 8.15 mm, width at humeri 1.93 mm, length of pronotum 0.98 mm, width of pronotum 1.58 mm, interocular distance in male 0.56 mm, maximum diameter of eyes in male 0.39 mm.

Distribution. - Panay Island, Masbate Island.

Remarks. - *D. absonus* differs from similar species in humeral part of elytra yellow. Related *D. luzonicus* has male antennae more acutely serrate and relatively larger eyes.

The three females forming the rest of *D. absonus* type series (1 female, Los Banos, P. I., Baker. Type Nr. 901, 1 female, Mt. Maquiling, Luzon, Baker. Type Nr. 902; both deposited in ZMPA, female, Boettcher, Luzon, Lamao, 4 Jul. 1914, deposited in ZMAN) are not conspecific with the holotype of *D. absonus* and these specimens could be lighter specimens of *D. luzonicus*. A more extensive material representing both sexes would be necessary for any final decision, if they are conspecific with *Diatrichalus luzonicus* or represent separate species.

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