

**A contribution to study of *Digenethle* Thomson, 1877
with description of new species
(Coleoptera: Scarabaeoidea: Cetoniinae: Schizorhinini: Schizorhinina)**

Stanislav JÁKL

Geologická 1218/2c, CZ 154 00, Praha 5 - Hlubočepy, Czech Republic
e-mail: stanley.jakl@seznam.cz

Taxonomy, new species, new synonymy, new records, redescriptions, Coleoptera, Scarabaeoidea, Cetoniinae, Schizorhinini, Schizorhinina, *Digenethle*, Papua New Guinea, Indonesia

Abstract. Species of *Digenethle* (Coleoptera, Cetoniinae) flying in the Indonesian part of New Guinea Island are compared with species described from Papua New Guinea. Four new species, *Digenethle cryptica* sp. nov., *Digenethle distincta* sp. nov., *Digenethle rigouti* sp. nov. and *Digenethle viridiaurata* sp. nov. are described, illustrated and compared with their congeners. Male of *Digenethle caelata* (Gestro, 1874) is firstly recorded and its brief description, illustration, including illustration of the aedeagus is given. The following synonymy is proposed: *Digenethle antoinei* Allard, 1995 (= *Digenethle allardi* Rigout, 1997 syn. nov.). Due to fragmental and insufficient original description, *Digenethle lachaumei* Allard, 1995 and *Digenethle nagaii* Allard, 1995 are redescribed. New country and provincial records are given. Updated list of all known species is provided.

INTRODUCTION

The genus was established by Thomson in 1877 with the type species *Digenethle ramulosipennis*. Eighteen species and one subspecies is recently accommodated in the genus. Majority of species have been described relatively recently by (Allard 1995). Excepting the work of latter author no other detailed study on *Digenethle* has been published, but few species have been added (Antoine 2004, Legrand 2006, Jákl, 2010).

Except *Digenethle spilophora nigerrima* Kraatz, 1885, all species inhabit the mainland of Papua New Guinea Island. Most of species are known in very small numbers, part of species is described just from one sex, sometimes from female(s). Due to the fact that the western part of the island which belongs to Indonesia and still remains relatively undercollected, most species are described from Papua New Guinea, mainly its eastern and northeastern provinces. In the present article, the author would like to compare populations occurring in western parts of the island with species flying in the east. Approximately 14 species of *Digenethle* have been collected in the Indonesian part of the New Guinea Island between 1995 and 2016. Surprisingly some species collected in western parts revealed to be identical with species flying in PNG, which is rather untypical in other groups of Cetoniinae occurring in the New Guinea Island. Generally can be said that endemics rate in *Ischiopsopha* Gestro, 1874 or *Lomaptera* Gory et Percheron, 1833 (Lomapterini), two most abundant genera of local flower beetles, seems to be much higher than in *Digenethle* (Schizorhinini). Only few species in Lomapterini have such a huge distributional areal, when the same species can be

found in westernmost and easternmost parts of the island. Unfortunately from some species only females have been collected and some of these species will be not classified (described) in this article, otherwise it will bring more confusion into already very difficult group of Cetoniinae. But in some cases completely new morphological characters in *Digenethle* females have been discovered and in such two cases author prefer to provide description based only on females.

MATERIAL AND METHODS

The following codens of institutional and private collections are used in the text:

BMNH The Natural History Museum, London, U.K.;
GBCP Gerhard Beinhundner, private collection, Euerbach, Germany;
GLCP Gilbert Lachaume, private collection, Paris, France;
JPLCP Jean-Philippe Legrand, private collection, France;
MCSN Museo Civico di Storia Naturale, Genova, Italy;
MNHN Muséum national d'Histoire naturelle, Paris, France;
PACP Philippe Antoine, private collection, Roubaix, France;
PARCP Patrick Arnaud, private collection, Saintry, France;
PPSI P. O. Box 100, 98801, Nabire, Irian Jaya, Indonesia;
RMNH Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands;
SJCP Stanislav Jákl, private collection, Praha, Czech Republic;
ZMHB Museum für Naturkunde der Humboldt-Universität, Berlin, Germany;
ZSMC Zoologische Staatssammlung, München, Germany.

Specimens of newly described species are provided with red or yellow printed labels, red for HOLOTYPUS, yellow for PARATYPUS. Each holotype or paratype label is provided with sex symbol, number of paratype (in paratype label) and words St. Jákl det. 2016. Label data are cited for the material examined, individual labels are indicated by a double slash (/ /), individual lines of every label by a single slash (/).

TAXONOMY

Digenethle Thomson, 1877

Digenethle Thomson, 1877: CLXXVI (original description); Schenkling 1921: 128 (catalogue); Allard 1995: 50, 144 (monography); Rigout 1997: 28 (new records); Sakai & Nagai 1998: 187 (iconography); Krajčák 1999: 17 (catalogue).

Digenethele Kraatz, 1880: 205 (checklist)

Type species: *Digenethle ramulosipennis* Thomson, 1877 (= *Schizorhina caelata* Gestro, 1874a).

Digenethle antoinei Allard, 1995

(Figs. 1-5)

Digenethle antoinei Allard, 1995: 52, pl. 19, fig.11 (original description); Sakai & Nagai 1998: 187, pl.17, fig.328 (iconography); Krajčik 1999 : 17 (catalogue).

Digenethle allardi Rigout, 1997: 8 (original description); Type locality. environs of Pusppenssat, 19-VIII-1995 (West Papua, Indonesia); Type material. HT m in PPSI, PT in PACP, GBCP; **syn. nov.**

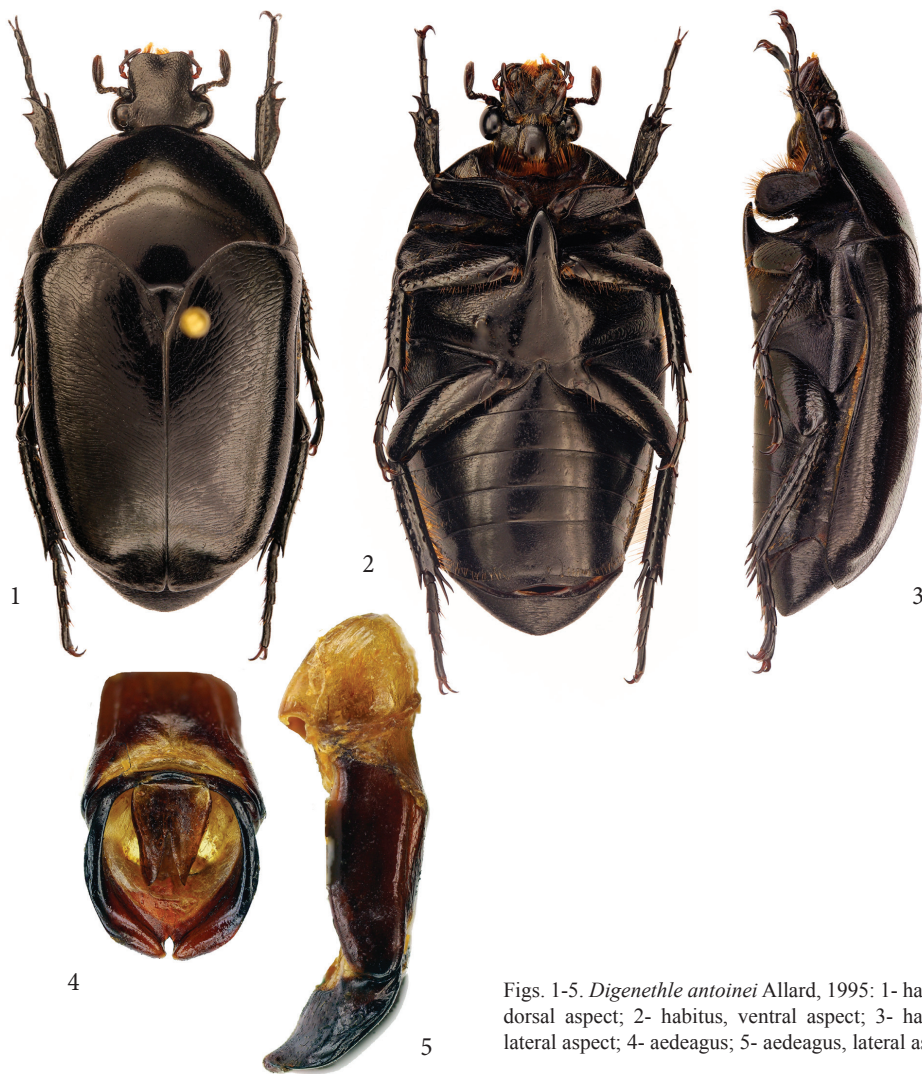
Type locality. Provenant de l'Irian Jaya, Arfak.

Type material. Holotype (♂) deposited in MNHN (examined).

Additional examined material. 1 ♂, 1 ♀ (SJCP) labelled: Indonesia, W Irian Jaya/SORONG DISTRICT, 11.1989/local collectors lgt; 1 ♂, 1 ♀ (SJCP) labelled: Indonesia, NNW Irian Jaya/ARFAK MOUNTAINS, 12.2004/local collectors lgt; 1 ♂, 1 ♀ (SJCP) labelled: Indonesia, W Irian Jaya/ARFAK MTS., 11.1999/local collectors lgt; 2 ♂♂, 3 ♀♀ (SJCP) labelled: Indonesia, NNW Irian Jaya/ARFAK MOUNTAINS, 2.2004/local collectors lgt; 3 ♂♂, 5 ♀♀ (SJCP) labelled: Indonesia, W Irian Jaya/ARFAK MTS., 3.2008/local collectors lgt; 1 ♂, 4 ♀♀ (SJCP) labelled: INDONESIA, W Papua Pr./KAIMANA env./XI.2011/local collector lgt; 8 ♂♂, 5 ♀♀ (SJCP) labelled: Indonesia, WEST PAPUA prov./KALADIRI ENV., cca 25 km S of /Nabire, 12.2007, 150-400 m/local collectors lgt; 1 ♂, 2 ♀♀ (SJCP) labelled: Indonesia, Irian Jaya/NABIRE REGION, 12. 2003/local collectors lgt; 1 ♂, 3 ♀♀ (SJCP) labelled: IND., IRIAN JAYA/WAMENA10/01/local collector; 3 ♀♀ (SJCP) labelled: IND., IRIAN JAYA/FAK REGION/local collector, 10/01; 1 ♂, 1 ♀ (SJCP) labelled: Indonesia, Irian Jaya/Schouten isls., JAPEN ISL./7.2003, local collectors lgt (new island record); 1 ♀ (SJCP) labelled:Ind., West Irian Jaya/SALAWATI ISL./local col., 8.2001 (new island record); 1 ♀ (SJCP) labelled: IND., IRIAN JAYA/BATANTA ISL./local collector lgt (new island record).

Distribution. Indonesia: New Guinea Island: West Papua and Papua Provinces including Japen, Batanta and Salawati Islands. There is also record from Numfor Island (West Papua Province) in (Sakai & Nagai, 1998).

Note. Rigout (1997) described *Digenethle allardi* from Central Highlands of West Papua (former Irian Jaya). In his differential diagnosis the author compared species with *Digenethle antoinei* and as a main characters he used more expressed elytra striolation, differently shaped apex of the mesometasternal process and fine difference in structure of male aedeagus. This diagnosis is almost matching (not in 100% of specimens) with populations of *Digenethle antoinei* occurring in Arfak Mountains in the western part of province. During the last two decades I examined numerous specimens of *D. antoinei* and *D. allardi* collected across whole New Guinean territory of Indonesia, from Sorong area in the west (including Salawati and Batanta Islands) across several localities in Arfak Mountains and Nabire region and also materials from Fak area, Kaimana and far to the east from Wamena Highlands. Examination of all specimens revealed that *Digenethle allardi* is conspecific with *Digenethle antoinei*. The species is the commonest one in the west part of New Guinea Island, with large distributional area and its populations seems to be rather variable, especially in composition and density of elytral wrinkles, in shape of mesometasternal process, punctuation of the head and pronotum and also in termination of male parameres. Otherwise numerous local populations can be described on subspecies or even species level with very vague morphological differences, which is missing in my opinion any sense.



Figs. 1-5. *Digenethle antoinei* Allard, 1995: 1- habitus, dorsal aspect; 2- habitus, ventral aspect; 3- habitus, lateral aspect; 4- aedeagus; 5- aedeagus, lateral aspect.

***Digenethle bhaskarai* Jákl, 2010**
(Figs. 6-10)

Digenethle bhaskarai Jákl, 2010: 121, figs. 14-18 (original description).

Type locality. Indonesia, SE Irian Jaya, Timika env.

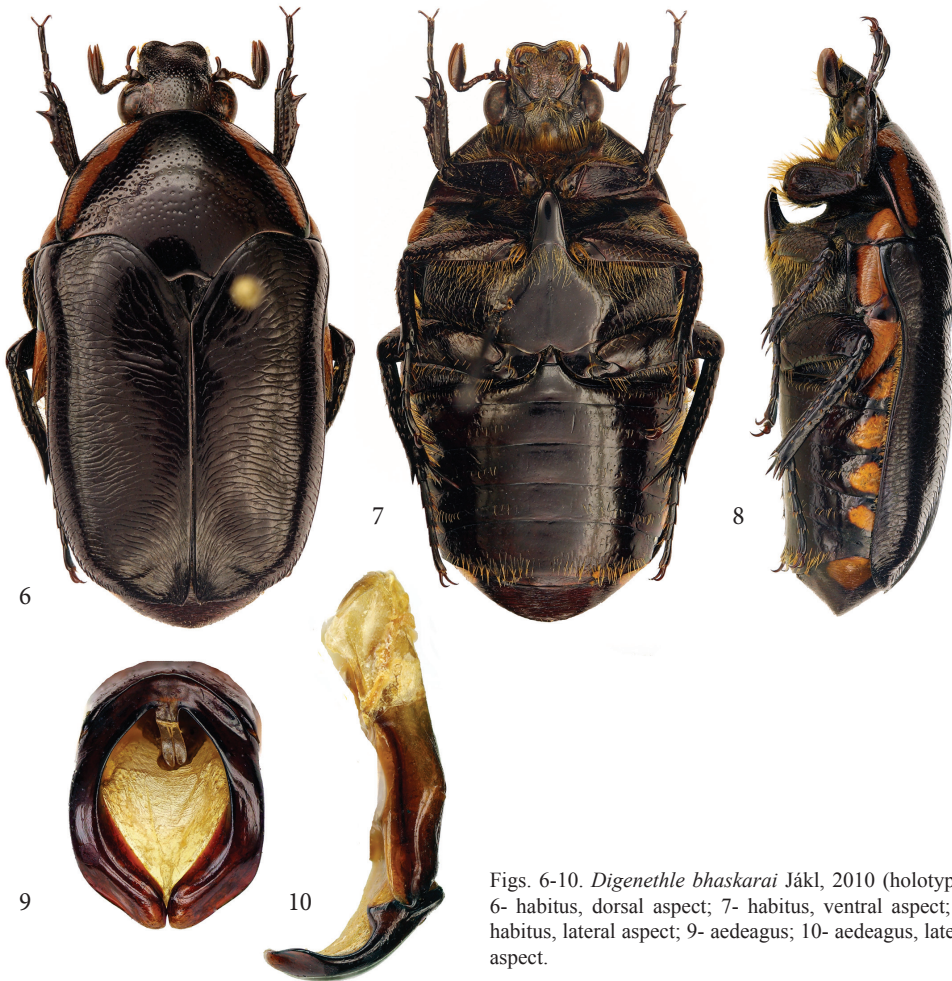
Type material. Holotype (♂) deposited in (SJCP).

Additional examined material. None.

Distribution. Indonesia: Papua Province, Timika.

Diagnosis. *Digenethle bhaskarai* is the smallest species in genus, size of holotype male is 17.7 mm (excluding pygidium). It is similar to *Digenethle cuprea* Schurhoff, 1934 and *Digenethle raffrayi* Lansberge, 1880. Dorsal side of *D. bhaskarai* bears also pronotal, marginal, yellow band, but its dorsal coloration is completely black. Density of wrinkles is much thinner. Mesometasternal process is straight, very differently shaped than in *D. cuprea*. Genitalia are closer to *D. cuprea*, but still with rather different structure.

Note. The holotype male is from Timika area in southeast of the Indonesian part of New Guinea. Paratype female is coming from Fak Fak area lying more to the west. Recently the author received series of *Digenethle* from the Fak Fak area, which are very similar



Figs. 6-10. *Digenethle bhaskarai* Jákl, 2010 (holotype): 6- habitus, dorsal aspect; 7- habitus, ventral aspect; 8- habitus, lateral aspect; 9- aedeagus; 10- aedeagus, lateral aspect.

to *Digenethle bhaskarai*. After dissection of male, species from Fak Fak revealed to be undescribed, different from *D. bhaskarai*. Therefore the single paratype female of *Digenethle bhaskarai* probably does not belong to the same species and must be excluded from type material of *Digenethle bhaskarai*. Because only single male of this species was available during the description, female of *D. bhaskarai* remains unknown at the moment.

***Digenethle caelata* (Gestro, 1874)**

(Figs. 11-15)

Schizorhina caelata Gestro, 1874: 510 (original description).

Digenethele caelata (Gestro): Kraatz 1880: 206, 1885: 87.

Digenethle caelata (Gestro): Gestro 1878: 30 (in *Digenethle*); Gestro 1891: 855 (new records); Schenckling 1921: 128 (catalogue); Allard 1995: 50, 144 (monography); Rigout 1997: 28 (new records); Krajčák 1999: 17 (catalogue).

Digenethle ramulosipennis Thomson, 1877: CLXXVI (original description); Type locality. Patria: Amberbaki (Nov.-Guinea septentr.); Type material: Lectotype female in MNHN; Thomson 1878: 18; Gestro 1878: 31 (= *D. caelata*); Allard 1995: 50, 144 (valid species); Rigout 1997: 28 (= *D. caelata*); Krajčák 1999: 17 (catalogue: valid species).

Type locality. Hab. Andai (Nova Guinea), Coll. Beccari et D'Albertis.

Type material. Lectotype (♀) deposited in MNHN.

Additional examined material. One (♂), (SJCP) labelled: Indonesia, W Irian Jaya/ARFAK MTS., 3.2006 / local collectors lgt.

Distribution. Indonesia, West Papua Province, Arfak Mountains.

Note. Male of this species remained unknown. First male specimen collected in Arfak Mountains (West Papua) is described hereunder. It is matching with characters of female, but to be completely sure a pair has to be collected or insect has to be bred. It seems impossible to distinguish females of *D. antoinei* and *D. caelata* and the male of *caelata* described here may also belong to a new species, but it seems to the author meaningful to provide this information instead of just keep specimen in collection without doing anything. Status of *Digenethle ramulosipennis* is still unknown. Krajčák (1999) listed it as a good species. It is probably a synonym, but conspecific with *D. antoinei*, not with *D. caelata*.

Description of male. Completely black, rather parallel sided, with very mild lustre. Body size (excluding pygidium 25.8 mm, humeral width 12.4 mm).

Head. Black, opaque, almost parallel sided. Setation missing. Punctuation of frons fine, much thinner than punctuation of clypeus. Lateral declivities of clypeus very steep, but visible. Clypeus apex rounded, middle part slightly emarginate. Antennae short, its colouration black to brownish, short reddish setation present mainly in pedicel.

Pronotum. Pronotum black, its anterior third sharply narrowing to apex. Lateral border present throughout total length, in anterior fourth very fine. Punctuation thin, fine and simple. Laterally with simple striolation.

Scutellum. Black, sharply triangular, base and sides with short wrinkling.



Figs. 11-15. *Digenethle caelata* (Gestro, 1874): 11- habitus, dorsal aspect; 12- habitus, ventral aspect; 13- habitus, lateral aspect; 14- aedeagus; 15- aedeagus, lateral aspect.

Elytra. Almost parallel sided, subhumeral emargination shallowly present. Coloration black, lustre very mild. Striolation developed throughout total length, except of humeral calli, its density lower in anterior half. Angle of wrinkles and sutural ridge approximately 45° , except its posterior fifth (around humeral calli) here the angle much sharper. Humeral and apical calli obtuse. Border of elytra lateral margins almost complete, reaching the level of apical calli. Sutural ridge completely flat, not protruding over elytra apex.

Pygidium. Black, with very dense wrinkles throughout whole surface. Apex sharply developed and slightly constricted.

Ventrum. Black with moderately developed reflection. Abdomen arched, sides punctured and bearing reddish setation. Each abdominal segment laterally wrinkled, punctured in middle part, except on posterior margins. Metasternum striolate, except metasternal plate. Mesometasternal process long and narrow, apically sharply terminated, heading slightly downwards. Prosternum striolate bearing setation at sides.

Legs. Black, rather short. Protibia tridentate, posterior tooth not equidistant, with two anterior teeth. Posterior margins of femurs with reddish setation, most abundant in mesofemora.

Genitalia. Parameres almost gradually widening to apex, which is terminated with fine hooks (Figs. 14-15).

Diagnosis. In colouration, size and shape looking same as *Digenethle antoinei*. It can be distinguished by an almost complete border of elytral lateral margins, which is never reaching the level of humeral calli (approximately 50 males of *D. antoinei* have been examined) and different angle of wrinkles between suture and disc. In *D. antoinei* all examined males, having the angle approximately 70°-80°, but approximately 45° in *D. caelata*. Apex of pygidium very sharply pointed and constricted in *D. caelata*, but more obtusely developed in its congener. Other difference is in the shape of clypeus, which is almost parallel sided in *D. caelata* with visible lateral declivities, but much less visible in *D. antoinei*. Dorsal reflection is more developed in *D. antoinei*, same as more glabrous ventrum bearing less setae. Finally parameres of both species are completely different.

Digenethle cryptica sp. nov.

(Figs. 16-20)

Type locality. Indonesia, West Papua Province, environs of Fak Fak.

Type material. Holotype (♂) (SJCP) labelled: INDONESIA, West Papua Pr./Fak Fak env./XI.2015/local collector leg. Paratypes: (17 ♂♂ and 51 ♀♀) (SJCP) labelled: same as holotype.

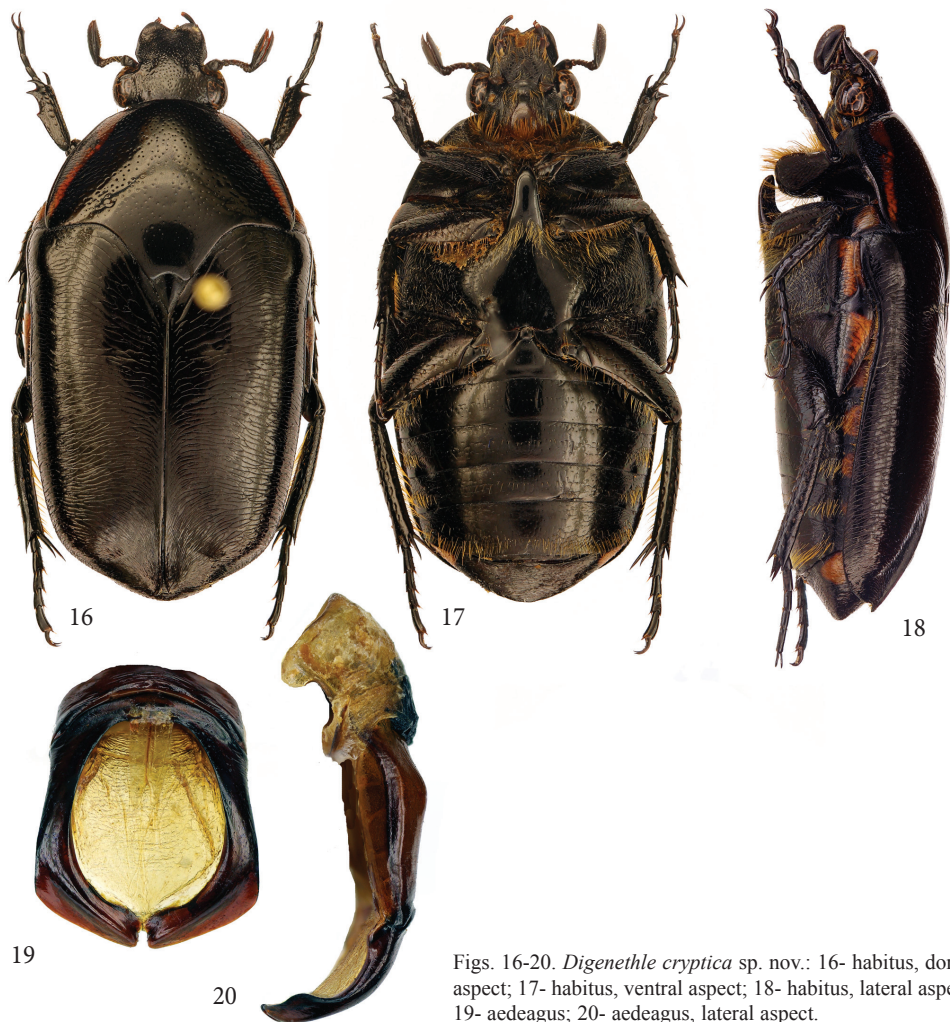
Description of holotype. Black, medium sized species with rather strong reflection. Lateral sides of pronotum with orange band, sides of pygidium, abdominal segments, metasternum and epimeron also orange. Size (excluding pygidium) 22.0 mm.

Head. Black, shining, parallel shaped. Lateral declivities visible, moderately wide. Frons and posterior half of clypeus simply, finely punctured. Anterior clypeal half finely, irregularly wrinkled. Apex with moderately deep emargination. Antennae short, its coloration brownish, club approximately same long as pedicel.

Pronotum. Black, shining, finely punctured. Lateral thirds with simple and fine striolation. Lateral margins completely bordered. Lateral thirds of anterior margin also with border. Lateral orange vitta running throughout total length.

Scutellum. Triangular, black, almost impunctate.

Elytra. Black, almost parallel running. Subhumeral emargination extremely shallow. Excepting part of apical calli, with dense striolation. Direction of striae approximately horizontally running, beside sutural ridge at angle approximately 45°, striae between



Figs. 16-20. *Digenethle cryptica* sp. nov.: 16- habitus, dorsal aspect; 17- habitus, ventral aspect; 18- habitus, lateral aspect; 19- aedeagus; 20- aedeagus, lateral aspect.

humeral calli and sutural ridge developed more sharply. Sutural ridge almost completely flat, its termination very shortly drawn out over elytral apex. Humeral calli very obtuse, apical calli more clearly expressed and covered with dense striolation. Lateral borders reaching only two anterior thirds.

Pygidium. Black with orange sides. Striolation in base and disc sparser than in apex. Shape approximately semicircular, apex not very sharp.

Ventrum. Black, medially reflected. Sides of abdominal segments, large part of metasternal sides, sides of prosternum and mentum with yellowish setation. Lateral margins of abdominal segments 1-4, sides of metasternum and epimeron orange. Abdomen arched,

almost as in females. Abdomen with fine punctation, metasternum striolate (except disc). Mesometasternal process moderately long, its coloration black; its apex curved, protruding slightly downwards. Base of mesometasternal process covered with setation, which is rather uncommon in group.

Legs. Completely black, rather short. Meso- and metafemurs with beige setation near posterior margins. Protibia tridentate, distance between posterior and medial teeth more than double than is distance between two anterior teeth. Inner sides of meso- and metatibia with setation.

Genitalia. Species with nearly quadratic parameres ending and with very short inner tongue (Figs. 19-20).

Sexual dimorphism. Size of females 22-23.5 mm. The only character differentiating females from males is in structure of protibia, which are slightly wider and more robust, tridentate with almost equidistant teeth. Density and orientation of elytra striolae, pronotal punctation, apical margin of clypeus, ventral punctation and setation - good characters in other *Digenethle* species are very similar or completely same in this newly described species.

Differential diagnosis. This new species is imitating *Digenethle bhaskarai*. Beside male parameres ending which is almost quadratic, but more or less oval shaped in its congener, there are few other characters author has found. In *Digenethle bhaskarai* epipleurae are reaching to level of apical calli, but just to two anterior thirds in new species. Coloration of pygidium is brownish in *D. bhaskarai*, but black in new species. Abdomen of male in *D. bhaskarai* is without impression as in new species, but flat, not arched. Elytral striolation is approximately two times denser in newly described species. Teeth in male protibia are almost equidistant in *D. bhaskarai*, but with posterior tooth staying far from two anterior in new species. Size of *D. bhaskarai* is smaller. From other *Digenethle* species having marginal band in pronotum new species can be distinguished by complex of following characters: size 22-24 mm, elytral striolation very dense, abdomen arched in both sexes, mesometasternal process with setation near its base, epipleurae reaching only two anterior thirds of total elytral length, sutural ridge completely flat, part of anterior margin in pronotum also with border. Quadratic shape of male parameres are easily separating males from males of other species.

Etymology. Based on the fact that at the first sight, the species is extremely similar to its congener flying also in south part of Indonesian Papua.

Distribution. Indonesia: West Papua Province, environs of Fak Fak.

Note. As author already mentioned, single paratype female of *Digenethle bhaskarai* belongs with very high probability to this newly described species, but it was not included to the type series of *Digenethle cryptica* sp. nov.

Digenethle cuprea Schurhoff, 1934

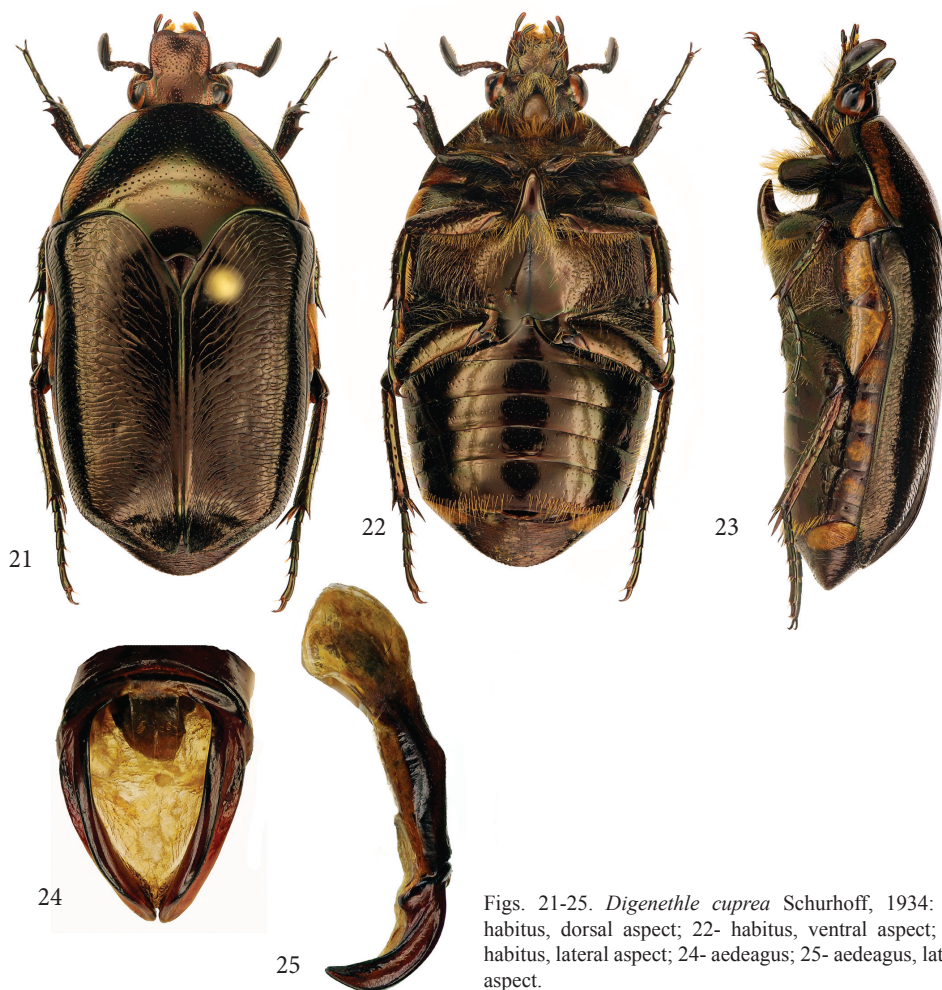
(Figs. 21-25)

Digenethle cuprea Schurhoff, 1934: 56 (original description); Allard 1995: 50, 144 (monography); Sakai & Nagai 1998: 187, fig. 330 (iconography); Krajčik 1999: 17 (catalogue).

Type locality. Patria: Finschhafen, D-Neu-Guinea.

Type material. Holotype (♀) deposited in ZSMC (ex Schurhoff collection), paratype (♀) in MNHN (ex coll. Clermont).

Additional examined material. 1 ♂ (SJCP) labelled: INDONESIA, West Papua Pr./ARFAK MTS., 1670 m alt./Maibri vill. env., 1.-20.V. 2013/Manokwari reg., St. Jákl leg.; 6 ♂♂, 2 ♀♀ (SJCP) labelled: Indonesia, Irian Jaya centr./NABIRE REGION, 12.2004/local collectors lgt; 4 ♂♂, 4 ♀♀ (SJCP) labelled: Indonesia, C Irian Jaya/



Figs. 21-25. *Digenethle cuprea* Schurhoff, 1934: 21- habitus, dorsal aspect; 22- habitus, ventral aspect; 23- habitus, lateral aspect; 24- aedeagus; 25- aedeagus, lateral aspect.

ENAROTALI env., I.2006/local collectors lgt; 1 ♂, 1 ♀ (SJCP) labelled: Indonesia, West Papua/MAPIA, 12.2004, 1200 m/local collector lgt; 1 ♂ (SJCP) labelled: IRIAN JAYA, 4.X. 96/Bomela, Jayawijaya/A.RIEDEL leg, 1800 m; 1 ♀ (SJCP) labelled: Ind., Papua/Sugapa, 5. 2007/ local collectors lgt.

Diagnosis. One of smallest species in group with size 20-24 mm, specimens from west part of distributional areal smaller. Most of specimens at least slightly bicoloured with shining brownish pronotum and dark green to brownish elytra. Pronotum with marginal, yellow band. Elytra striolae with angle 60°-75° toward sutural ridge, but almost parallel running beside apical calli. Elytral apex slightly impressed. Part of epimeron, mesepimeron, lateral sides of abdominal segments and sides of pygidium yellowish. Most of males with more or less developed abdominal impression. Male parameres simply developed, narrowing from base to apex (Figs. 24-25).

Distribution. Indonesia: New Guinea Island, West Papua (new record) and Papua Provinces; Papua New Guinea.

Note. This species was known only from eastern parts of New Guinea Island. Recent exploration of Indonesian part of island proved that the insect is widely distributed across whole area. Specimens from Indonesia, especially from Arfak Mountains and Nabire region are distinctly smaller, many males are without developed abdominal impression and parameres significantly wider and shorter.

***Digenethle dechambrei* Allard, 1995**
(Figs. 26-30)

Digenethle dechambrei Allard, 1995: 52, 146, pl.19, fig.12 (original description); Sakai & Nagai 1998: 187, pl. 16, fig. 329 (iconography); Krajčik 1999: 17 (catalogue).

Type locality. Provenant de Menyamy, Morobe Province, Papouasie-Nouvelle-Guinée.

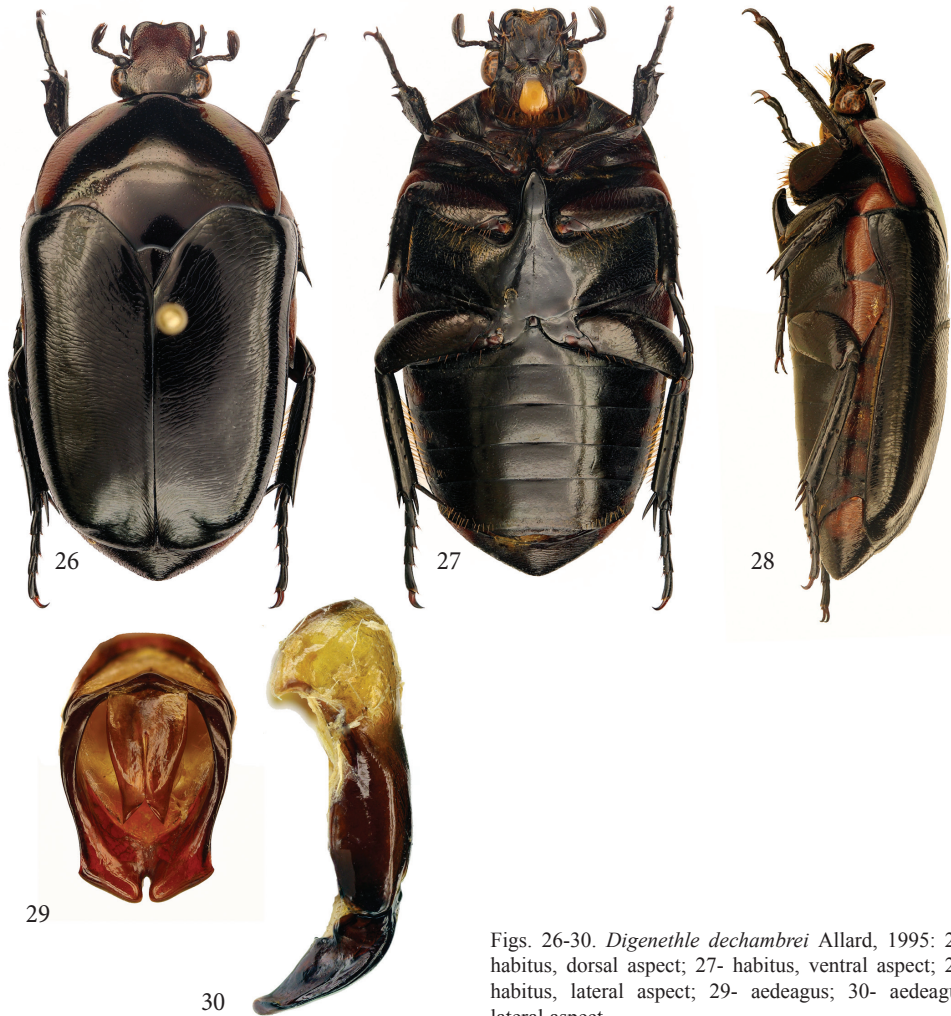
Type material. Holotype (♂) deposited in MNHN, 2 paratypes (♂♂) and one paratype (♀) from Wau, Morobe Prov. in PACP, 1 paratype (♂) from same province in MCSN, 1 (♀) from same province in ZMHB, 4 paratype 2 (♂♂), 2 (♀♀) from Bulolo, Wau, Aseki and Tekadu in GBCP.

Additional examined material. 1 ♂ (SJCP) labelled: Indonesia, Irian Jaya/Jesalema, WAPENDUMA/3.2004, local collectors lgt.

Diagnosis. Relatively similar to *Digenethle antoinei*, but pronotum with brownish, marginal band. Elytral striolation very similar to *D. antoinei*. Punctuation of pronotum finer. Mesometasternal process similar to *D. antoinei*. Genitalia rather different. Male specimen from Indonesia with yellowish part of epimeron, mesepimeron, sides of abdomen, sides of pygidium and also part of clypeus.

Distribution. Indonesia: Papua Province, Irian Jaya (new record); Papua New Guinea: Morobe Province: Bulolo, Wau, Aseki, Tekadu.

Note. Male specimen collected in west part of the island proved that the species is widely distributed and not restricted to east of PNG only. It was compared with holotype specimen deposited in Paris Museum (MNHN).



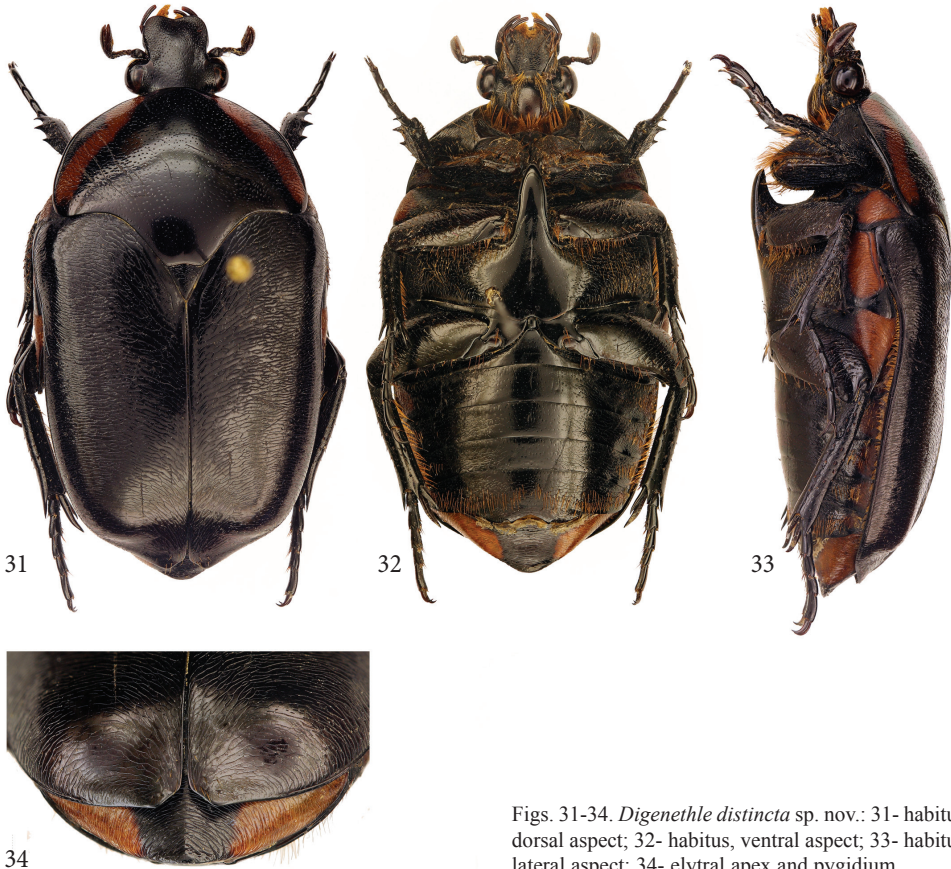
Figs. 26-30. *Digenethle dechambrei* Allard, 1995: 26- habitus, dorsal aspect; 27- habitus, ventral aspect; 28- habitus, lateral aspect; 29- aedeagus; 30- aedeagus, lateral aspect.

***Digenethle distincta* sp. nov.**
(Figs. 31-34)

Type locality. INDONESIA, West Papua Province, environs of Sorong.

Type material. Holotype (♀) (SJCP) labelled: Indonesia, West Papua /SORONG env./X. 2013/local collector leg.

Description of holotype. Large, broad and robustly looking species. Black, medially reflected. Sides of pronotum with marginal orange band. Body size (excluding pygidium) 26.1 mm, humeral width 14,0 mm.



Figs. 31-34. *Digenethle distincta* sp. nov.: 31- habitus, dorsal aspect; 32- habitus, ventral aspect; 33- habitus, lateral aspect; 34- elytral apex and pygidium.

Head. Black, almost opaque, from level of eyes widening to apex. Lateral declivities steep, but visible. Emargination of apical margin of clypeus shallow. Middle line in clypeus missing. Punctuation uniform, simple. Antennae club brown, pedicel black, both same long and bearing setation.

Pronotum. Black with lateral, orange band. Wider than long, broadly rounded. Laterally with border, which is not reaching posterolateral margins. Anterior margin missing. Except of anterolateral margins, whole sides narrowly striolate. Disc and part of sides with simple and thin punctuation, basal lobe almost impunctate.

Scutellum. Black, sharply triangular, except of apex striolate.

Elytra. Completely black, very broad. Subhumeral emargination shallow. Striation not very dense, covering whole surface. Anterior two thirds with striolae forming angle with sutural ridge approximately 45° . In posterior third striolae running more sharply toward suture, but not parallel. Apical and humeral calli very obtuse, striolation here present but thinner. Sutural ridge completely flat. Apex of each elytron unique (Fig. 34). Lateral border of elytra (epipleura) reaching elytral apex. Elytral apex with few reddish setae.

Pygidium. Basal part covered by elytral apex. Coloration orange, except of narrow part of disc. Whole surface distinctly impressed.

Ventrum. Black, shining. Lateral margins of abdomen, metasternum (except of disc) and prosternum with reddish setation. Epimeron, metasternum lateral margins and sides of abdomen with reddish maculation. Punctuation of abdomen and metasternum disc fine and thin. Metasternum sides striolate. Mesometasternal process moderately long, apex slightly heading downwards. Prosternum striolate, procoxae with long reddish setation.

Legs. Black, rather short. Femurs striolate, meso- and metafemurs with setation in posterior margins. Protibia tridentate, teeth almost equidistant. Metatibia terminal spur curved inward.

Variability and sexual dimorphism. Only holotype female was available for study.

Differential diagnosis. The newly described species can be very easily distinguished from all congeners by the complex of following characters: I. Body broad and robust, ratio between length and width distinctly smaller than in other species; II. Elytral apex very differently shaped than in all congeners (Fig. 34); III. Lateral border of elytra (epipleura) reaching elytral apex (character unknown in *Digenethle* species); IV. Coloration of pygidium orange (except the narrow middle part); V. pygidium flattened; VI. Metatibia terminal spur curved to inner side.

Etymology. Named for distinct morphological characters, exceptional in genus *Digenethle*.

Distribution. Indonesia: West Papua Province, environs of Sorong.

Digenethle hudsoni Allard, 1995

(Figs. 35-39)

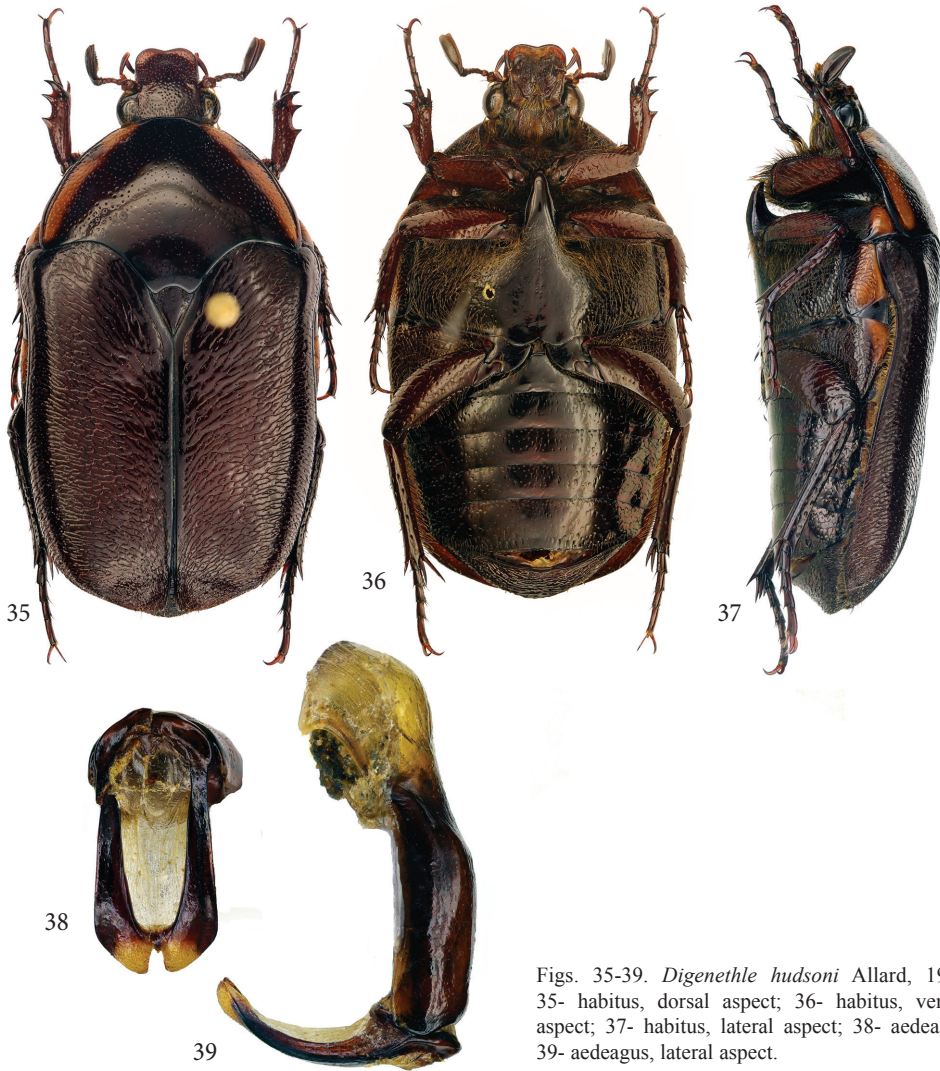
Digenethle hudsoni Allard, 1995: 51, 145, pl. 19, fig. 8 (original description); Rigout 1997: 29 (male aedeagus illustration); Krajčik 1999: 17 (catalogue).

Type locality. Provenant de Jimmy Valley, West Highlands Province, Papouasie-Nouvelle-Guinée.

Type material. Holotype (♀) deposited in MNHN, paratype (♀) coming from Kerowagi in GBCP.

Additional material examined. 1 ♂ (SJCP) labelled: Okapa/East Highland Province/PNG/II.2003 (new province record).

Diagnosis. Smaller species with size 22-25 mm. Coloration chestnut brown, shining. Head short and wider than in other species. Pronotum with marginal, yellowish band. Punctuation of pronotum very thin and simple. Elytra densely striolate, striolae density in posterior half approximately double. Composition of striolae in elytra disc reminding of crocodile scales. Elytra sides and apex with very dense striolation. Lateral border of elytra developed approximately only in two anterior thirds. Elytral apex with setation. Abdomen of males very slightly impressed. Metasternal sides completely wrinkled, covered with rather long yellowish setation. Mesometasternal process medially long, its apex sharp and slightly heading downwards. Epimeron and sides of metasternum orange. Legs moderately long,



Figs. 35-39. *Digenethle hudsoni* Allard, 1995: 35- habitus, dorsal aspect; 36- habitus, ventral aspect; 37- habitus, lateral aspect; 38- aedeagus; 39- aedeagus, lateral aspect.

their coloration chestnut-brownish. Protibia of males tridentate, teeth not equidistant. Male parameres special in the group, long and parallel running with rounded apex. Middle tongue of parameres very short, obtusely rounded in apex.

Complex of following characters separates *D. hudsoni* from other congeners: chestnut brown coloration of dorsum, ventrum and legs; elytra disc looking like scales of crocodile skin; smaller size 22-25 mm; orange lateral band of pronotum, epimeron and sides of metasternum; indistinctly impressed abdomen of males; lateral border of elytra developed only in two anterior thirds of total length; unique, elongate and almost parallel running shape of male parameres.

Distribution. Papua New Guinea: West Highlands and East Highlands Provinces.

***Digenethle lachaumei* Allard, 1995**

(Figs. 40-44)

Digenethle lachaumei Allard, 1995: 52, 146, pl.20, fig. 1 (original description); Krajčič 1999: 17 (catalogue).

Type locality. Provenant de Sambio, Morobe Province, Papouasie-Nouvelle-Guinée.

Type material. Holotype (♂) deposited in MNHN (examined), one paratype (♂) from same locality in coll. of Gilbert Lachaume, one paratype (♂) from Wau in PACP.

Additional material examined. 2 ♂♂, 2 ♀♀ (SJCP) labelled: Indonesia, West Papua/FAK reg., 3.2003/local collector lgt.

Redescription of male. Dark brown to black, parallel sided. Pronotum with brownish to orange marginal band. Rather large species 25.0-25.5 mm.

Head. Colouration black, frons black, clypeus brownish. Clypeus rather sharply narrowing to base. Punctuation medially developed, punctures diameters slightly larger in frons. Apex of clypeus rounded, slightly emarginate in middle. Longitudinal impression of clypeus rather sharp and deep, reaching almost level of eyes. Lateral sides with clearly visible declivities. Brownish antennae bearing yellowish setation, club shorter than pedicel.

Pronotum. Dark brown to black with lateral brownish band. Sides with border running throughout total length, including anterolateral margins. Basal lobe and disc finely punctured, sides striolate, some wrinkles running deep to area of disc.

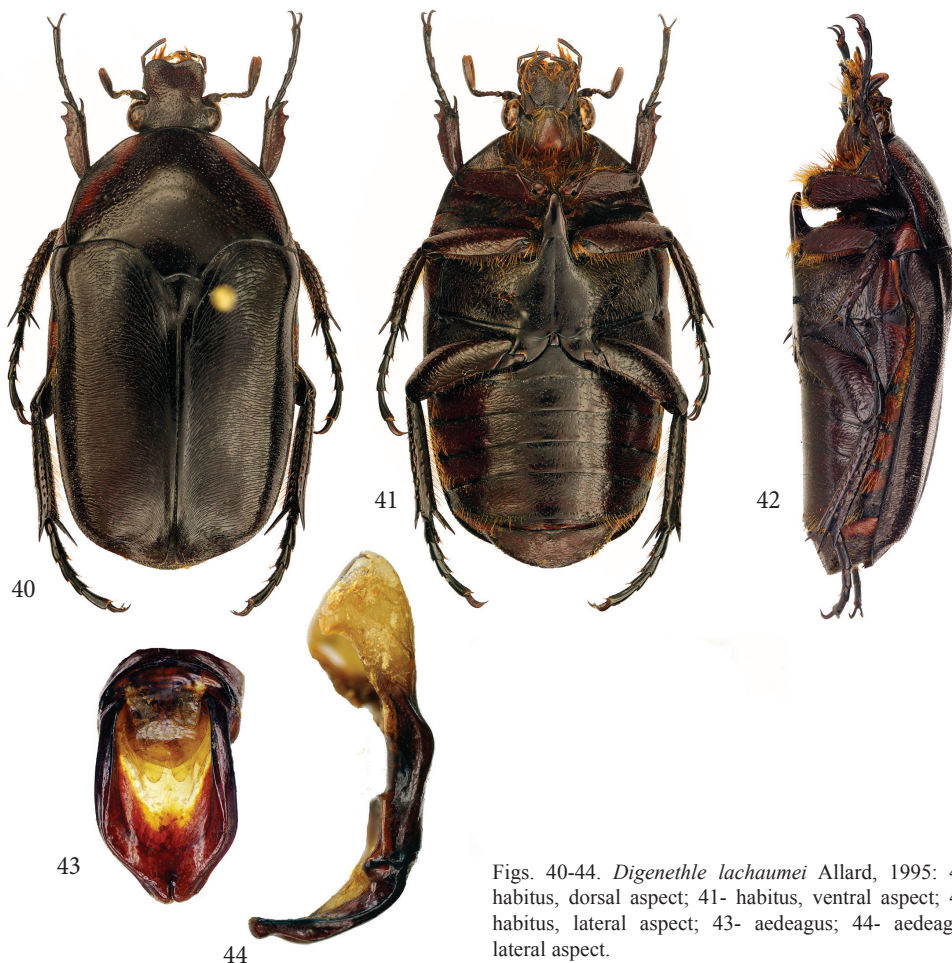
Scutellum. Triangular, black. Sides striolate, disc with micropunctuation.

Elytra. Dark brown to black, almost parallel sided, striolation developed throughout total length, except of humeral calli. Disc and sides with approximately horizontally running striolation, striolae beside sutural ridge running toward suture at angle approximately 45°-60°. Lateral border reaching approximately two anterior thirds, then running fragmentally to level of apical calli. Sutural ridge obtusely, slightly elevated, bearing fine and simple punctuation. Termination of sutural ridge very slightly protruding over elytral apex.

Pygidium. Dark brown, lateral sides with reddish macula. Pygidial striolation developed throughout total length. Shape of pygidium semioval, apex broadly developed.

Ventrum. Dark brown to black, lateral sides of abdominal segments reddish covered with rather dense yellowish setation. Abdominal impression absent. Each abdominal segment striolate, except of narrow part of disc. Metasternum black, covered with yellow setation, metasternal striolation denser than in abdomen. Sides of metasternum reddish with no setation. Mesometasternal process brown, very glabrous, its apex long and sharply terminated, heading slightly downwards. Prosternum and mentum brown to almost black, striolation here rather dense.

Legs. Longer than in other species. Femurs chestnut brown, striolate, margins with setation especially in mesofemurs. Pro- and mesotibia dark brown, metatibia more or less black. Meso- and metatibia with reddish setation on inner side. Tarsi black, slightly elongate. Protibia tridentate, teeth nearly equidistant.



Figs. 40-44. *Digenethle lachaumei* Allard, 1995: 40- habitus, dorsal aspect; 41- habitus, ventral aspect; 42- habitus, lateral aspect; 43- aedeagus; 44- aedeagus, lateral aspect.

Genitalia. Parameres more or less parallel running, from approximately anterior fourth narrowing sharply to apex (Figs. 43-44).

Sexual dimorphism. Size of females 23-24.5 mm. Coloration, punctation and striolation of head and pronotum similar to males. Scutellum almost completely striolate, excepting tiny part of disc. Elytra striolation rather different from males, its density much thinner, but striolae deeper. Orientation of wrinkles more or less same as in males. Elytral apex with yellowish setation. Pygidium apically with brush of long and abundant setation. Lateral, orange maculae in pygidium darker or almost same coloured as the rest of pygidial surface. Also laterally developed maculae in abdominal sides and metasternum darker and entirely reduced comparing with males. Abdomen more arched. Legs shorter and more robust. In all other respects quite similar.

Distribution. Papua New Guinea: Morobe Province; Indonesia: West Papua Province: Fak Fak District (new record).

Note. This species was known only from few males from far east of Papua New Guinea. Additional specimens, which were compared with holotype and collected in Fak Fak area in western part of the New Guinea Island prove that the species is distributed in much larger area.

***Digenethle nagaii* Allard, 1995**
(Figs. 45-49)

Digenethle nagaii Allard, 1995: 52, pl. 20, fig. 3 (original description); Krajčik 1999: 17 (catalogue).

Type locality. Provenant Nouvelle-Guinée, sans plus de précision.

Type material. Holotype (♂) deposited in MNHN.

Additional material examined. 1 ♂ (SJCP) labelled: Indonesia, Irian Jaya centr./Enarotali distr., MAPIA env./3.2003, local collectors lgt; 1 ♀ (SJCP) labelled: Indonesia, Irian Jaya centr./Enarotali distr., MAPIA env./11.2004, local collectors lgt; 2 ♀♀ (SJCP) labelled: Indonesia, Irian Jaya centr./Enarotali distr., MAPIA env./12.2004, local collectors lgt; 1 ♂ (SJCP) labelled: Indonesia, Irian Jaya centr./Enarotali distr., MAPIA env./1.2006, local collectors lgt; 1 ♀ (SJCP) labelled: Indonesia, C Irian Jaya/MAPIA ENV.7.2006/local collectors lgt; 2 ♂♂ (SJCP) labelled: Indonesia, C Irian Jaya/MAPIA env., 1200-1700 m/ 11.2006, local collectors; 1 ♂ (SJCP) labelled: Indonesia, C Irian Jaya/MAPIA ENV., 12.2006/local collectors lgt.

Redescription of the male. Violet to light brownish with strong reflection. Body size (excluding pygidium) 23-24.5 mm. Elytra with several impressions creating appearance of elytra with bulges.

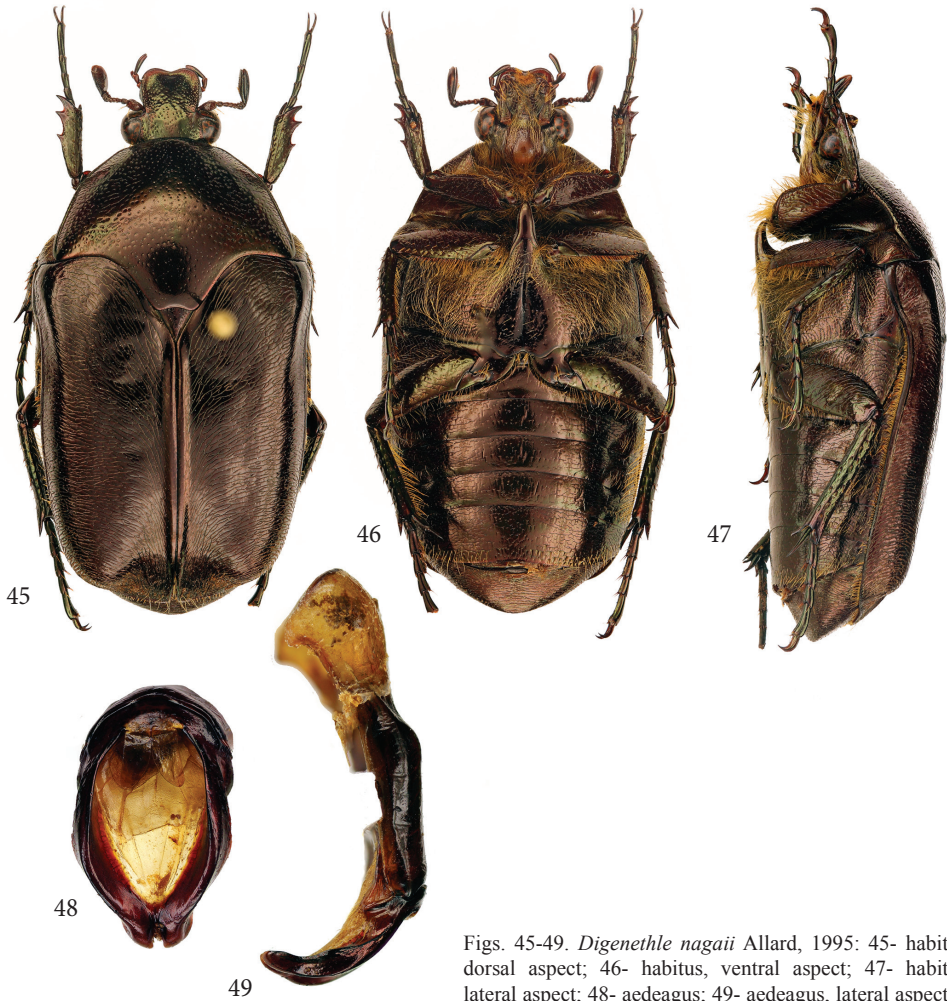
Head. Violet-brownish with strong metallic lustre. From level of eye canthus moderately widening to apex. Lateral declivities developed and visible. Sides obtusely bordered. Apex medially emarginate. Punctuation simple, diameters of punctures moderately large. Antennal pedicle reddish, club brownish. Club shorter than pedicle.

Pronotum. Violet to light brownish with strong metallic lustre. Sides gradually narrowing to apex. Laterally completely bordered, anterior margin also with low border, interrupted only in middle part. Punctuation developed throughout total length. Margins with short striolation, sides with dense punctuation. Punctures diameters large, circularly or semicircularly shaped. Punctuation of disc and basal lobe sparser, punctures more simple and finer.

Scutellum. Violet, glabrous, sides with few large punctures.

Elytra. Violet-brownish with less developed reflection. Shape almost parallel, subhumeral emargination shallowly present. Striolae running toward sutural ridge in angle more than 45°, in posterior half more sharply, in apex almost parallel with sutural ridge. Sides with horizontally developed striolation. Humeral calli glabrous, apical calli wrinkled. Elevation of sutural ridge higher than in other species. Lateral border ending in front of apical calli level. Each elytron with two smaller horizontally developed impressions. Apex of elytra with yellowish setation.

Pygidium. Brownish, semicircularly shaped, apex rounded. Striation present throughout total length. Setation reduced to very short and fine whitish setae.



Figs. 45-49. *Digenethle nagaii* Allard, 1995: 45- habitus, dorsal aspect; 46- habitus, ventral aspect; 47- habitus, lateral aspect; 48- aedeagus; 49- aedeagus, lateral aspect.

Ventrum. Brownish to plum, depending on the angle of view. Abdomen is missing central impression. Each ventrite laterally striolate, near margins bearing whitish, rather long setation. Disc of abdomen finely punctured. Metasternum with dense striolation, except middle part; its sides bearing long, dense whitish to light yellow setation. Mesometasternal process glabrous, shining, its apex heading distinctly downwards.

Prosternum and mentum wrinkled, setation here darker.

Legs. Femurs brownish to violet with metallic lustre. Tibia and tarsi cobalt to black with milder lustre. Protibia tridentate, teeth almost equidistant. Meso- and metatibia with setation on inner side.

Genitalia. Parameres ending oval, with slightly developed outer paramere rim, which is unusual in group (Figs. 48-49).

Sexual dimorphism. In size and colour similar to males. Elytral striolae sparser, but deeper. Elytral striolae in posterior half almost parallel with sutural ridge. Sides and part of disc with more or less horizontal striolation. Sutural ridge more obtuse. Abdomen more arched than in males. Protibia more robust, wider, tridentate. In other respects similar to males.

Diagnosis. Among all *Digenethle* species unique by violet-brownish coloration and small impressions in each elytron. Whitish setation of ventrum cannot be found in any of other species.

Distribution. Indonesia: New Guinea: West Papua Province: Mapia vill. env. (new record); Papua New Guinea.

Note. This species was described by single male with locality New Guinea without further details. All additional specimens are coming from central highlands of Indonesian West Papua Province. It is a mountain species flying at altitudes over 1500 m.

Digenethle rigouti sp. nov.

(Figs. 50-54)

Type locality. Indonesia, SE Irian Jaya, Timika env.

Type material. Holotype (♂) (SJCP) labelled: Indonesia, SE Irian Jaya/TIMIKA ENV., 3.2001/local collectors lgt. Paratype (1 ♂) (SJCP) labelled: same as holotype.

Description of holotype. Completely black, shining, body gently narrowing to apex. Body size (excluding pygidium) 25.2 mm.

Head. Black, sides of clypeus slightly rounded. Frons finely punctured with medially developed lustre. Clypeus microgranulate, opaque. Lateral declivities rather wide, clearly visible. Clypeus with middle line, its apical margin shallowly emarginated. Antennae short, its coloration dark brown, club shorter than pedicel.

Pronotum. Black, strongly reflected. Disc with fine punctation, lateral thirds striolate. Sides with border, which is not reaching posterolateral margins. Apical margin almost completely bordered, but border lower than at sides.

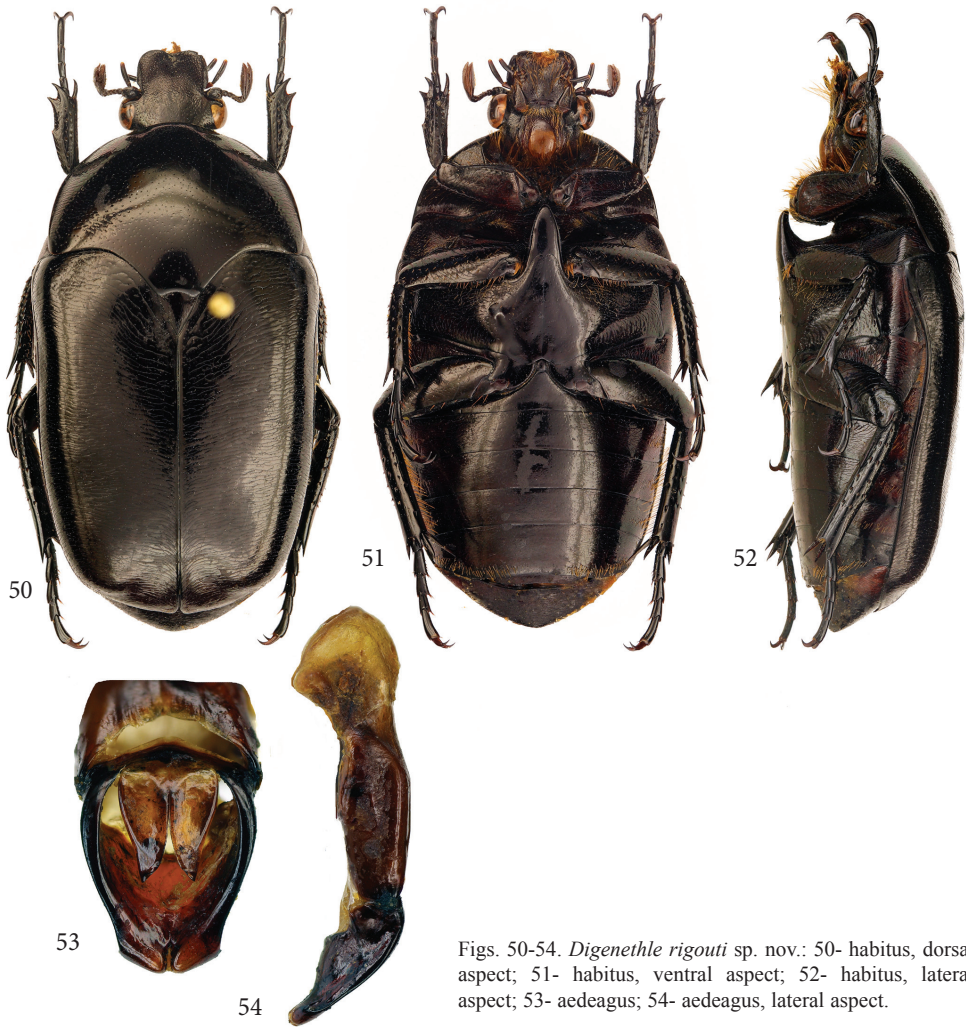
Scutellum. Black, shining, wrinkling.

Elytra. Black, shining, from base gently narrowing to apex. Lateral ridge rather steep, subhumeral emargination almost absent. Striolae in disc and sides running almost horizontally towards sutural ridge, in posterior fifth at angle of approximately 45°. Apical and humeral calli very obtuse, apical calli completely striolate. Sutural ridge slightly impressed, not protruding over elytral apex. Epipleurae not reaching level of apical calli.

Pygidium. Black, completely wrinkled, apex moderately sharp.

Ventrum. Black, shining, setation absent. Abdominal impression not developed. Sides of ventrites with reddish maculation. Metasternum striolate at sides, disc finely punctured. Mesometasternal process rather short, sharply terminated, heading straight. Prosternum and mentum striolate. Sides of prosternum and epimeron brownish.

Legs. Completely black, moderately short. Meso- and metafemurs with short, reddish setation in posterior margins. Protibia tridentate, teeth not equidistant.



Figs. 50-54. *Digenethle rigouti* sp. nov.: 50- habitus, dorsal aspect; 51- habitus, ventral aspect; 52- habitus, lateral aspect; 53- aedeagus; 54- aedeagus, lateral aspect.

Genitalia. Species with moderately elongate male parameres terminated with apical dent (Figs. 53-54)

Variability and sexual dimorphism. Paratype male is identical with holotype. Female remains unknown.

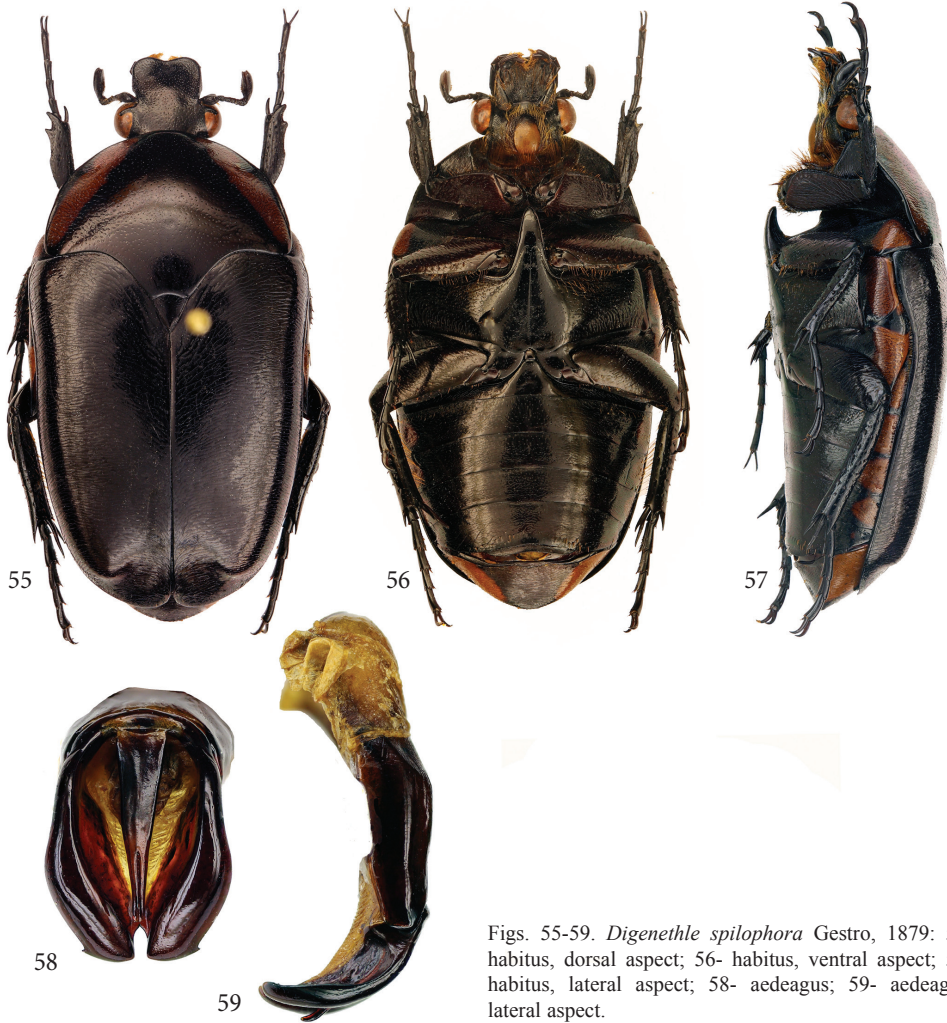
Differential diagnosis. This new species seems to be a sibling species with *D. antoinei* Allard, 1995. It has also many in common with *D. dechambrei* Allard, 1995. It differs from *D. antoinei* in shape of male parameres which are elongated and terminated with apical tooth, but obtusely rounded in *D. antoinei*. Differences in striolation, punctation, shape of mesometasternal process, shape of abdomen, male protibia are very small or do not exist.

Sides of abdomen and also epimeron and metasternum with reddish to brown maculation, which is not present in *D. antoinei*. Epipleurae in new species not reaching level of apical calli, in *D. antoinei* reaching (sometimes only fragmentally) apical calli level.

From *D. dechambrei* sp. nov. can be distinguished by absence of marginal, reddish band of pronotum, by not so abundant maculation of abdominal sides, epimeron and metasternum sides and by male parameres, which are similarly elongate in the new species, but with narrower apex and tiny lateral dents, character absent in *D. dechambrei*.

Etymology. Named after Jacques Rigout (France), who improved significantly our knowledge of the group.

Distribution. Indonesia: Papua Province, environs of Timika.



Figs. 55-59. *Digenethle spilophora* Gestro, 1879: 55- habitus, dorsal aspect; 56- habitus, ventral aspect; 57- habitus, lateral aspect; 58- aedeagus; 59- aedeagus, lateral aspect.

***Digenethle spilophora* Gestro, 1879**

(Figs. 55-59)

Digenethle spilophora Gestro, 1879: 14 (original description); Schenkling 1921: 128 (catalogue); Allard 1995: 50, 144, pl. 19, fig.3 (monography); Krajčič 1999: 17 (catalogue).

Digenethele spilophora Gestro: Kraatz 1880: 206.

Type locality. Hab. Novam Guineam merid. Ad Flumen Fly.

Type material. Holotype (♀) deposited in MCSN.

Additional examined material. 1 ♂, 3 ♀♀ (SJCP) labelled: IND., Irian Jaya/TIMIKA, 3.2001/local collector (new country record); 3 ♂♂, 4 ♀♀ (SJCP) labelled: Indonesia, SE Irian Jaya/TIMIKA ENV., 2.2005/local collectors lgt; 4 ♂♂, 3 ♀♀ (SJCP) labelled: Indonesia, SE Irian Jaya/TIMIKA ENV./local collectors lgt;

Diagnosis. Belongs to species having reddish to orange marginal band of pronotum, reddish lateral margins of abdomen, metasternum and epimeron. Elytral striolae running toward sutural ridge horizontally developed, shortly before suture running at angle 45° (unique in the group). Apex of elytron broadly rounded (also unique in the group). Male parameres widening to apex, terminated with small hook. Parameres inner tongue very long, reaching nearly parameres apex.

Distribution. Papua New Guinea: Fly River; Indonesia: Papua Province, Timika.

***Digenethle viridiaurata* sp. nov.**

(Figs. 60-62)

Type locality. Indonesia, Papua Province, Wamena.

Type material. Holotype (♀) (SJCP) labelled: IND., IRIAN Jaya/WAMENA, 10.2000/Local collector.

Description of the holotype. Green with golden reflection and marginal yellow band in pronotum. Parallel sided, rather large species, 24.5 mm (excluding pygidium), humeral width 11.3 mm.

Head. Green, mildly reflecting. Clypeus sides slightly rounded, lateral declivities nearly not visible. Punctuation fine and simple, punctuation of clypeus slightly more expressed. Lateral and anterior margins shallowly bordered. Apex of clypeus with moderately developed emargination. Antennae brownish, scape green. Club longer than pedicel.

Pronotum. Green with strong golden reflection. Sides with broad yellowish band, reaching lateral margins. Lateral border rather sharp, not reaching posterolateral margin. Punctuation in disc and basal lobe almost absent. Sides simply punctured. Middle part of lateral margins with short, simple striolation.

Scutellum. Triangular with very sharp apex, impunctate, strongly purpureously reflected.

Elytra. Green with golden-metallic lustre. From base indistinctly narrowing to apex. Subhumeral impression shallow. Apart of humeral calli completely striolate. Striolae dense, especially in posterior half. Angle of striolae with suture approximately 45°, near elytral

apex sharper. Lateral ridge obtusely rounded. Humeral and apical calli obtuse, apical calli with dense striolation. Sutural ridge almost flat, protrusion over elytral apex rather short. Apical margin of each elytron almost straight. Lateral border of elytra (epipleura) reaching two anterior thirds of total elytral length.

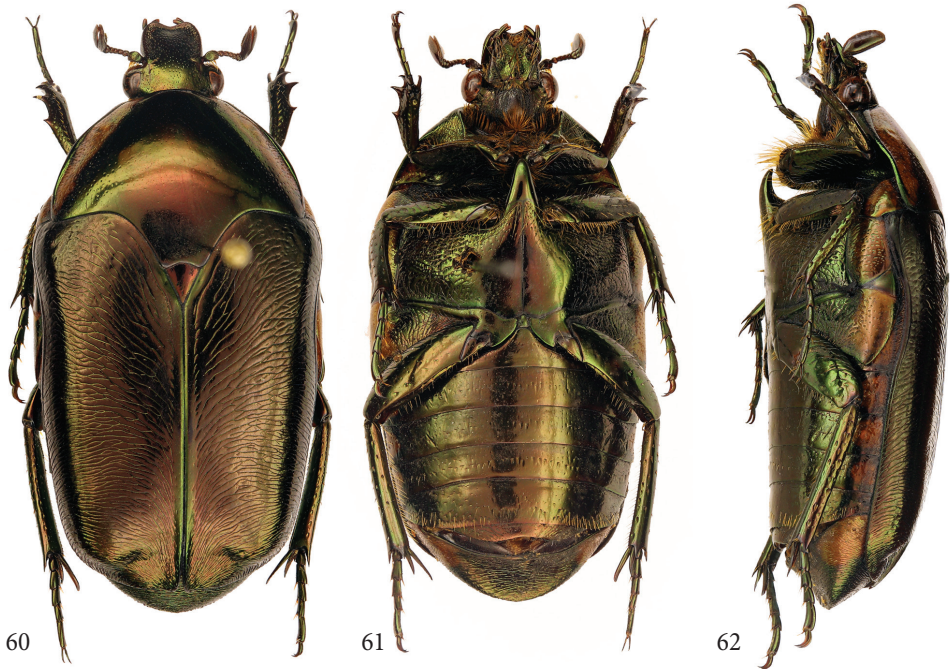
Pygidium. Green, striolate throughout total length, laterally with yellow maculae. Apex rounded.

Ventrum. Grassy green, with only mild lustre. Abdomen arched. Ventrites 1-4th, sides of metasternum and part of epimeron with yellowish maculation. Punctuation of abdomen composed of circular and horse shoe shaped punctures. Metasternum striolate, except impunctate disc. Mesometasternal process green, sharply developed, its apex curved downwards. Light, yellowish setation present only on anterior margin of metasternum and base of mesometasternal process. Prosternum and mentum striolate.

Legs. Green, reflected. Femurs with few striolae and setation near posterior margins. Setation of metafemurs more abundant. Protibia tridentate, teeth not equidistant. Meso- and metatibia with brush of setae in inner sides.

Variability and sexual dimorphism. Only the female holotype is known at the time being.

Differential diagnosis. This beautiful new species can be distinguished from other representatives of the genus by its green coloration with strong golden reflection and light



Figs. 60-62. *Digenethle viridiaurata* sp. nov.: 60- habitus, dorsal aspect; 61- habitus, ventral aspect; 62- habitus, lateral aspect.

yellow maculation of pronotum, abdominal sides, sides of metasternum and epimeron. Almost impunctate pronotum and scutellar shield is also a diagnostic character separating the species from all historically described species.

Etymology. Named after the coloration and reflection of the body.

Distribution. Indonesia: Papua Province, Baliem Valley, environs of Wamena.

UPDATED CHECKLIST

All papers containing original descriptions are cited in the References.

Digenethle Thomson, 1877: CLXXVI (type species *Schizorhina caelata* Gestro = *Digenethle ramulosipennis* Thomson)

antoinei Allard, 1995: 52

= *allardi* Rigout, 1997: 28 syn. nov.

D: Indonesia: West Papua Province including Biak, Batanta, Japen, Salawati Islands, Papua Province.

bhaskarai Jákl, 2010: 121

D: Indonesia: Papua Province, Timika.

caelata (Gestro, 1874: 510)

? -*ramulosipennis* Thomson, 1877: CLXXVI

D: Indonesia: West Papua Province, Arfak Mountains.

chaminadei Antoine, 2004: 75

D: Papua New Guinea: Morobe Province.

clarki Allard, 1995: 51

D: Papua New Guinea: East Highlands Province.

costata Allard, 1995: 51

D: Papua New Guinea: Morobe Province, Tekadu.

cryptica sp. nov.

D: Indonesia: West Papua Province: Fak Fak.

cuprea Schurhoff, 1934: 56

D: Indonesia: West Papua and Papua Province; Papua New Guinea: East Provinces.

dechambrei Allard, 1995: 52

D: Indonesia: Papua Province; Papua New Guinea: Morobe Province.

distincta sp. nov.

D: Indonesia: West Papua Province, Sorong.

hudsoni Allard, 1995: 51

D: Papua New Guinea: West Highlands and East Highlands Provinces.

juheli Legrand, 2006: 3

D: Indonesia: Papua Province, Timika.

lachaumei Allard, 1995: 52

D: Indonesia: West Papua Province: Fak Fak; Papua New Guinea: Morobe Province.

landfordi Allard, 1995: 52

D: Papua New Guinea: Morobe Province.

nagaii Allard, 1995: 52

D: Indonesia: West Papua Province, Mapia; Papua New Guinea.

raffrayi Lansberge, 1880: 128

D: Indonesia: West Papua Province, Arfak Mountains, Amberbaki, Pusppenssat.

rigouti sp. nov.

D: Indonesia: Papua Province, Timika.

spilophora Gestro, 1879: 14

D: Indonesia: Papua Province, Timika; Papua New Guinea S: Fly River.

spilophora negerrima Kraatz, 1885: 86

D: Indonesia: Moluccas: Aru Islands.

subcostata Moser, 1906: 274

D: Papua New Guinea NE.

viridiaurata sp. nov.

D: Indonesia: Papua Province, Baliem Valley, Wamena.

uhligi Allard, 1995: 51

D: Papua New Guinea NE.

ACKNOWLEDGEMENT. I am deeply obliged to Antoine Mantilleri (MNHN) and Joachim Willers (ZMHB) for loans of type material in their care. My thanks also go to Arnošt Kudrna (České Budějovice, Czech Republic) for his continuing help with digital photography.

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Received: 25.10.2016

Accepted: 10.12.2016