

**New species of diving beetles  
in the subgenus *Platynectes* s. str. from the Guiana Shield  
(Coleoptera: Dytiscidae: Agabinae)**

Grey T. GUSTAFSON<sup>1,2</sup>), Andrew E. Z. SHORT<sup>2</sup>) & Kelly B. MILLER<sup>1</sup>)

<sup>1</sup>)Department of Biology and Museum of Southwestern Biology, University of New Mexico, Albuquerque, NM 87131, USA; e-mails: [gtgustafson@gmail.com](mailto:gtgustafson@gmail.com), [kbmiller@unm.edu](mailto:kbmiller@unm.edu)

<sup>2</sup>)Division of Entomology, Biodiversity Institute, University of Kansas, Lawrence, KS 66045, USA and Department of Ecology and Evolutionary Biology University of Kansas, Lawrence, KS, 66045, USA; e-mail: [aezshort@ku.edu](mailto:aezshort@ku.edu)

**Abstract.** The Neotropical species of *Platynectes* Régimbart, 1879 sensu stricto (Coleoptera: Dytiscidae: Agabinae: Platynectini) are arranged into three newly proposed species groups based on the coloration of the venter: the *P. submaculatus* species group, the *P. agallithoplotes* species group, and the *P. nigerrimus* species group. The species of the *P. submaculatus* group and *P. agallithoplotes* group are treated in detail including the description of five new species: *P. agallithoplotes* sp. nov. (Venezuela), *P. elaskanaima* sp. nov. (Venezuela), *P. garciai* sp. nov. (Venezuela, Guyana), *P. meru* sp. nov. (Venezuela) and *P. tafelbergensis* sp. nov. (Suriname). The lectotype is designated for *Agabus decemnotatus* Aubé, 1838, and the species is, together with *Platynectes submaculatus* (Laporte, 1835) redescribed based on the recently collected material. For each species of the *P. agallithoplotes* group and *P. submaculatus* group a dorsal habitus, illustration of the median lobe of the aedeagus, distribution maps, and habitat photos are figured. Keys to the species groups and species of the *P. submaculatus* group are included. A checklist to the species of Neotropical *Platynectes* sensu stricto is provided.

**Key words.** Coleoptera, Dytiscidae, aquatic beetle, new species, description, taxonomy, French Guiana, Suriname, Venezuela, Neotropical Region

### Introduction

The genus *Platynectes* Régimbart, 1879 currently contains 50 species divided among three subgenera which are found in the Neotropical, Oriental, Palearctic, and Austral Regi-

ons (NILSSON 2015). The first major revision of this genus was by GUÉORGUIEV (1972) who initially erected four subgenera within the group. The Neotropical *Platynectes* species were placed in the newly proposed subgenus *Hypoplatynectes* Guéorguiev, 1972. Apparently by mistake, the type species of *Platynectes*, *Agabus decemnotatus* Aubé, 1838, was included as a member of this subgenus. GUÉORGUIEV (1972: 34) was clearly aware this species had been designated as the type of *Platynectes* by GUIGNOT (1946). This error was noticed and corrected by VAZIRANI (1976) via synonymization of *Hypoplatynectes* with *Platynectes* s. str., and only Neotropical species were maintained as its constituents. Next LAWRENCE et al. (1987) also synonymized the subgenus *Australonectes* Guéorguiev, 1972 with *Platynectes* s. str., uniting the Neotropical species with Australian species. Phylogenetic analysis by RIBERA et al. (2008) first demonstrated *Platynectes* as currently defined to be paraphyletic, with the Australian species resolved as sister to *Agаметrus* Sharp, 1882 and *Leuronectes* Sharp, 1882, and the Neotropical species forming a clade with the genera *Hydrotrupes* Sharp, 1882 and *Agabetes* Crotch, 1873 (the latter in Laccophilinae). The most recent phylogenetic analysis by TOUSSAINT et al. (2016) confirmed *Platynectes* as currently defined is paraphyletic with *Leuronectes* and *Agаметrus* nested well within it, and subsequently synonymized the former genera, retaining *Agаметrus* as a subgenus. Interestingly, the species from the Guiana Shield region, representing *Platynectes* sensu stricto, were found to form an isolated clade diverging early in the evolution of the newly circumscribed Platynectini (TOUSSAINT et al. 2016).

It should be pointed out that the study by RIBERA et al. (2008) included a “*Platynectes* sp. 2” from Costa Rica, which came out sister to *Agаметrus* + *Leuronectes*. The authors have yet to encounter a true *Platynectes* sensu stricto species from Central America, and we suspect that this specimen is a member of the *Platynectes* subgenus *Agаметrus*. We similarly suspect that the enigmatic *Platynectes rodriguezi* Severin, 1890 is also, again as members of *Platynectes* sensu stricto do not appear to be found in Central America. It is clear the subgenera of *Platynectes* will require revision based on morphology as informed by the most recent phylogeny by TOUSSAINT et al. (2016). Fortunately, the species from the Guiana Shield region will remain unaffected as part of the nominotypical subgenus.

The Old World species have received considerable taxonomic work: Palaearctic and Oriental species have been treated by SATÔ (1982), NILSSON (1998), HENDRICH & BALKE (2000), ŠŤASTNÝ (2003), BRANCUCCI (2008), BRANCUCCI & VONGSANA (2010), Australian species by GUÉORGUIEV (1978), WATTS (1978, 1985), GUÉORGUIEV & ROCCHI (1993), HENDRICH & ŠŤASTNÝ (2014). The Neotropical fauna have not received specific taxonomic attention since the work of GUÉORGUIEV (1972). Recent sampling in Suriname and Guyana by the second author, and extensive sampling in Venezuela by the second and third authors, revealed four new species from the Guiana Shield region, with a fifth identified among older Venezuelan museum holdings. The purpose of this study is to arrange members of the Neotropical *Platynectes* s. str. into species groups, provide a taxonomic framework for the present and future works, describe five new species, and redescribe the two previously known from the Guiana Shield region.

## Material and methods

A total of 246 specimens was examined in this study, housed in the following institutions:

- MALUZ Museo de Artrópodos, Universidad del Zulia, Maracaibo, Venezuela (J. Camacho);  
 MIZA Museo del Instituto de Zoología Agrícola Francisco Fernández Yépez, Universidad Central de Venezuela, Maracay, Venezuela. (L. Joly);  
 MNHN Muséum National d'Histoire Naturelle, Paris, France (A. Mantilleri);  
 MSBA Museum of Southwestern Biology, Arthropod Division, University of New Mexico, Albuquerque, NM, USA (K. Miller);  
 NZCS National Zoological Collection of Suriname, Paramaribo, Suriname (P. Ouboter);  
 SEMC The Snow Entomological Collection, University of Kansas, Lawrence, KS, USA (A. E. Z. Short);  
 ZSMG Zoologische Staatssammlung München, Munich, Germany (M. Balke).

Measurements were taken using an ocular scale on a Zeiss Discovery V8 stereomicroscope. Measurements taken follow LARSON et al. (2000) for WC/WS and HENDRICH & ŠTASTNÝ (2014) for TL and TL-H. For each taxon an attempt was made to measure the largest and smallest specimens available for each sex.

Specimens for dissections and imaging were relaxed by placing them in lightly boiling water.

The aedeagus was then dissected from relaxed males and placed in warm 10% KOH for about five minutes. Following removal from KOH the aedeagus was placed in vinegar to neutralize the base and washed in water. Genitalia were drawn while in water and kept in glycerin. After dissection and/or illustration, aedeagi and abdomens were placed in microvials attached to the pin with the original specimens.

Images of the median lobe were first taken on a Zeiss AX10 Imager A2 microscope with attached AxioCam 506 mono camera, then traced in Adobe Illustrator. Dorsal habitus were taken using a Visionary Digital BK+ light imaging system (www.visionarydigital.com, R. Larimer). Habitus images were then edited using Adobe Photoshop to add scale bars, gray backgrounds, drop-shadows, and improve clarity and color.

## Taxonomy

### Key to the South American *Platynectes* s. str. species groups

- 1 Venter mostly pale colored, at most infusate medially on metaventricle, metacoxal wings, and abdomen. Northern South America. .... 2
- Venter dark colored, mostly black to brown except on the prosternum and epipleura. Brazil and Argentina. .... ***P. nigerrimus* species group**
- 2 Venter not infusate, reddish-orange throughout. .... ***P. submaculatus* species group**
- Venter distinctly infusate, usually with metaventricle, metacoxal wing, and abdomen medially infusate. .... ***P. agallithoplotes* species group**

### *Platynectes submaculatus* species group

This species group has members with an entirely lightly colored venter, typically light red to orange in color, and lacking distinctly infusate regions. There are some specimens with

darker metaventral and abdominal regions, but they differ significantly from the infusate regions exhibited in *P. agallithoplotes* sp. nov., the sole member of the eponymous species group. We suspect that this current grouping could be further subdivided based on size and maculate pattern, but for now we take a conservative approach, erecting this species group to unite most of the northern South American species with light colored venters.

### Key to the species of the *P. submaculatus* species group

- 1 Elytra with 10 distinct yellow maculae (Fig. 1). ..... 2
- Elytra with fewer than 10 distinct yellow maculae (Fig. 4). ..... 5
- 2 Dorsal habitus robust and broadly oval (Fig. 2); body length usually greater than 6.6 mm; aedeagus with apex strongly pointed and triangular. Suriname and French Guiana. ....  
..... *P. decemnotatus* (Aubé, 1838)
- Dorsal habitus narrower and relatively elongate oval (Fig. 1); body length less than 6.6 mm, rarely more than 6.5 mm; aedeagus with apex rounded or flatly-rounded, not triangular. .... 3
- 3 Total body length at most 5.0 mm, often smaller; WC/WS = 5. Venezuela (Amazonas State). ..... *P. meru* sp. nov.
- Total body length greater than 5.0 mm; WC/WS = 4. .... 4
- 4 Body form parallel-sided and elongate (Fig. 3); larger, body length 6.1–6.5 mm; antennae filiform. Venezuela (Bolivar State). ..... *P. elaskanaima* sp. nov.
- Body form more evenly rounded and not elongate (Fig. 5); smaller, body length 5.3–5.9 mm; antennae subserrate. Suriname and French Guiana. ....  
..... *P. submaculatus* (Laporte, 1835)
- 5 Larger, body length 6.6–6.7 mm; brown, usually with two distinct parascutellar maculae (Fig. 6). Venezuela (Bolivar State) and Guyana (Kaieteur National Park). ....  
..... *P. garciai* sp. nov.
- Smaller, body length 5.8–6.5 mm; less brown, darker, never with parascutellar maculae (Fig. 4). Suriname. .... *P. tafelbergensis* sp. nov.

### *Platynectes (Platynectes) decemnotatus* (Aubé, 1838)

(Figs 2, 10, 15, 17, 18)

*Agabus decemnotatus* Aubé, 1838: 319 [original description].

*Platynectes decemnotatus*: SHARP (1882): 538 [new combination by indication to species 768 in Group 3].

*Platynectes (Hypoplattynectes) decemnotatus*: GUÉORGUIEV (1972): 39 [new combination; synonymy by VAZIRANI (1976): 170].

*Platynectes (Platynectes) decemnotatus*: VAZIRANI (1976): 170 [new status].

**Type material examined.** LECTOTYPE (here designated): ♀ (MNHN), by present designation: “Cateneur [?] Cayenne” [green and roundish handwritten label], “10 notatus Aubé” [white and handwritten label], “Lectotype *Agabus decemnotatus* Aubé Gustafson, Short & Miller des. 2016” [red printed label].

**Additional material examined** (91 spec.). **FRENCH GUIANA:** “KAW MOUNTAIN RESERVE, Kaw River Boat launch, N4°29'54.8" W52°03'05.6", 20 m, 8–18.ii.2005, leg. KB Miller” (2 spec. MSBA); same as previous except: N4°32'57.8" W52°12'49.7", 286 m, forest pools nr Amazone Lodge (2 spec. MSBA). **SURINAME:** SIPALIWINI DISTRICT: CSNR: Tafelberg Summit, nr Augustus Creek Camp, N3°55.600' W56°11.300', 600 m, 17.viii.2013, leg. Short & Bloom, small stream on trail to Caiman Creek Camp, SR13-0817-02A, SEMC1080669, SEMC1080670, SEMC1080671, SEMC1080675, SEMC1080681, SEMC1080682 (6 spec. SEMC); same as previous except: nr

Caiman Creek Camp, N3°53.942' W56°10.849', 733 m, 18.viii.2013, leg. Short & Bloom, small streams with lots of plants & leaf litter, SR13-0818-03A, SEMC1233862, SEMC1233863 (2 spec. SEMC); same as previous except: 19.viii.2013, pools in forest, SR13-0819-05B, SEMC1233914 (1 spec. SEMC); same as previous except: forest detrital pools, SR13-0819-05C, SEMC0966146, SEMC0966147, SEMC1080493 (3 spec. SEMC); same district



Figs 1–6. Dorsal habitus of *Platynectes* species. 1 – *P. meru* sp. nov. 2 – *P. decemnotatus* (Aubé, 1838). 3 – *P. elaskanaima* sp. nov. 4 – *P. tafelbergensis* sp. nov. 5 – *P. submaculatus* (Laporte, 1835). 6 – *P. garciai* sp. nov. Scale bar = 2 mm.

except: Camp 4 (high), Kasikasima, N2°58.613' W55°24.683', 400 m, 24.iii.2012, leg. Short, main seepage area, SR12-0324-01C 2012 CI-RAP Survey, SEMC1087462, SEMC1087466, SEMC1088132–SEMC1088137 (8 spec. SEMC); same as previous except: rocky pools at base of seep, SR12-0324-01D 2012 CI-RAP survey, SEMC1088360, SEMC1088362, SEMC1088366–SEMC1088369, SEMC1088373, SEMC1088376–SEMC1088382, SEMC1088384, SEMC1088386, SEMC1088387, SEMC1088389–SEMC1088392 (21 spec. SEMC); same district except: Camp 2, on Sipaliwini River, N2°10.973' W56°47.235', 210 m, 29–30.viii.2010, leg. Short & Kadose, inselberg, SR10-0829-01A 2010 CI-RAP survey, SEMC0913037–SEMC0913039, SEMC0913041–SEMC0913045, SEMC0914529, SEMC0914532, SEMC0914535–SEMC0914540, SEMC0914542, SEMC0914544, SEMC0914545, SEMC0914547, SEMC0914549, SEMC0914551, SEMC0914552, SEMC0914554, SEMC0914555, SEMC0914557–SEMC091559, SEMC0914561–SEMC0914563, SEMC0914567, SEMC0914568, SEMC0914570–SEMC0914575, SEMC0914577, SEMC0914580, SEMC0914581, SEMC0914586, SEMC0914587, SEMC0914858 (45 spec. SEMC, NZCS). “Amer mer.” [white handwritten label], “decemnotatus Aubé” [white handwritten label] (1 spec. MNHN).

**Diagnosis.** Larger in size (6.6–7.7 mm in length), body robust and broadly oval, elytron with five well-demarcated yellow spots.

**Redescription.** Size. Male: TL = 7.2–7.7 mm, TL-h = 6.6–7.0 mm, TW = 4.32–4.7 mm; female: TL = 6.6–7.7 mm, TL-h = 6.2–7.2 mm, TW = 4.1–4.8 mm.

Body robust, and broad, broadly oval, lateral margins evenly curved and continuous between pronotum and elytron (Fig. 2).

Coloration (Fig. 2). Head orange grading into diffuse, light yellow region medially on frons and testaceous to black mediad and posteriad of eyes, in some specimens extending anteriorly around eye to lateral margin of frons. Pronotum broadly black or testaceous medially along anterior and posterior margins, black regions meeting medially in lighter, testaceous transverse band; posterolateral margins of pronotum narrowly black, lateral surfaces yellow, extending medially to dark region; scutellum testaceous. Elytron dark testaceous, with small, diffuse pale region at humeral angle and five well-demarcated yellow spots, one parascutellar, one slightly anterior of middle near suture, one slightly posterior of middle near lateral margin, and one anteapically which, in some specimens, extends anteriorly and posteriorly along margins. Appendages of head, legs and ventral surfaces, including elytral epipleuron, pale orange to reddish, somewhat darker on thoracic sterna and metacoxae; last abdominal tergite yellow.

Structure and sculpture. Head broad and short, anterior clypeal margin broadly rounded; anterior surface of frons and clypeus with fine, dense punctation, posterior surface of head with fine microreticulation of irregular cells, most cells also with fine punctures. Pronotum broad and short; lateral bead distinct and broad, evenly curved, about width of antennomere V; surface shiny, covered with fine microreticulation of large, irregular cells, cells with fine punctures, additional punctation consisting of a row of large coarse punctures on anterior and posterior margins, punctures separated by ca. 1–2× diameter of a puncture anteriorly, ca. 1–3× diameter of a puncture posteriorly, absent medially. Elytron broad, lateral margins evenly curved to slightly angulate apex, lateral epipleural carina distinctly visible throughout length; surface covered with weakly impressed, but distinct microreticulation of large irregular cells, most cells also with fine punctures; elytral epipleuron slender, evenly tapered to apex. Prosternum medially moderately long, longitudinally swollen; prosternal process broad, lateral margins broadly curved to somewhat pointed apex, surface flat to slightly curved, smooth. Metaventricle with anterior process broad, with broadly curved emargination for reception of prosternal process; lateral wings broad, WC/WS = 4.5; surface smooth, weakly impressed reticulation composed of elongate cells, fairly even covering of fine punctation, punctures

separated by ca. 1–2× diameter of a puncture. Fore- and midlegs slender, surfaces punctate, protibial apices with several spines about length of protarsomeres I+II; mesotibial apices with few spines shorter than length of mesotarsomeres I+II, mesotarsal spurs elongate slender, slightly sinuate, as long as mesotarsomeres I+II; metacoxae smooth, fine reticulation composed of round cells, fine and weakly impressed punctation present, punctures separated by ca. 3–4× metacoxal lines distinct, broadly divergent anteriorly; hind legs slender, smooth, metafemur with fine reticulation composed of elongate cells, almost imperceptible, weakly impressed punctation, few setigerous punctures on anterior surface of metatibia and metatarsomere I, metatrochanter apically spinous, metatibial spurs slender, longer than metatarsus I. Abdominal ventrites broad, smooth and unmodified, with fine reticulation composed of elongate cells, fine weakly impressed punctation, punctures separated by ca. 3–4× diameter of a single puncture.

Male genitalia (Fig. 10). Median lobe in left lateral view strongly curved, apex weakly expanded, strongly acute, dorsal surface covered in pores in apical 2/3; ventral groove in right lateral view strongly narrowed apically, greatly widened in basal 2/3.

Sexual dimorphism. There does not appear to be any noticeable sexual dimorphism aside from the normal pro- and mesotarsal dimorphism.

**Variation.** There is quite a bit of size variation, with some populations having very large and broad individuals, while others have smaller and somewhat more parallel-sided individuals.

**Differential diagnosis.** *Platynectes decemnotatus* is most similar to *P. submaculatus* in terms of elytral maculation pattern, having five yellow well-demarcated spots on each elytron, but is much larger in body size (6.6–7.7 mm) and more broadly rounded (Fig. 2). The large size, broadly oval body form, with five well-demarcated yellow spots on each elytron should prevent its confusion with any other species within the *P. submaculatus* group.

**Natural history.** This species has been collected in many stream and seep-associated habitats. Most collections are from small, forested streams with abundant detritus. A few collections were made in pools formed in or below seepages from granite inselbergs or other similar rocky outcrops (Figs 17–18).

**Distribution.** The species is currently known from French Guiana and Suriname (Fig. 15).

**Discussion.** In a small box of historical *Platynectes* specimens lent by the late Dr. Michel Brancucci from the Muséum national d'Histoire naturelle, Paris, several years ago L. Hendrich identified two historical specimens of *P. decemnotatus*. According to the label data the one female should be a syntype from Aubé collection. As the number of syntypes is not specified in the original description, we designate here the lectotype to fix the identity of the species.

### *Platynectes (Platynectes) elaskanaima* sp. nov.

(Figs 3, 8, 15)

**Type material.** HOLOTYPE: ♂, “GUAYARACA / Auyantepui, BO / VENEZUELA / 1100 m 17.iv 56 [beige label, typed black ink, except handwritten 17]”, “F.Fernandez Y / C. J. Rosales / Cols. [beige label, typed black ink]”, “MIZA0002807 / UCV-Venezuela [white label with barcode, typed black ink]” (MIZA). PARATYPES (4 spec.): same data as holotype, but: MIZA0002803–MIZA0002806 (4 spec. MIZA, SEMC).

**Diagnosis.** Medium sized (6.1–6.5 mm in length), elongate oval and strongly parallel-sided in dorsal habitus, elytron with five well-demarcated yellow spots.

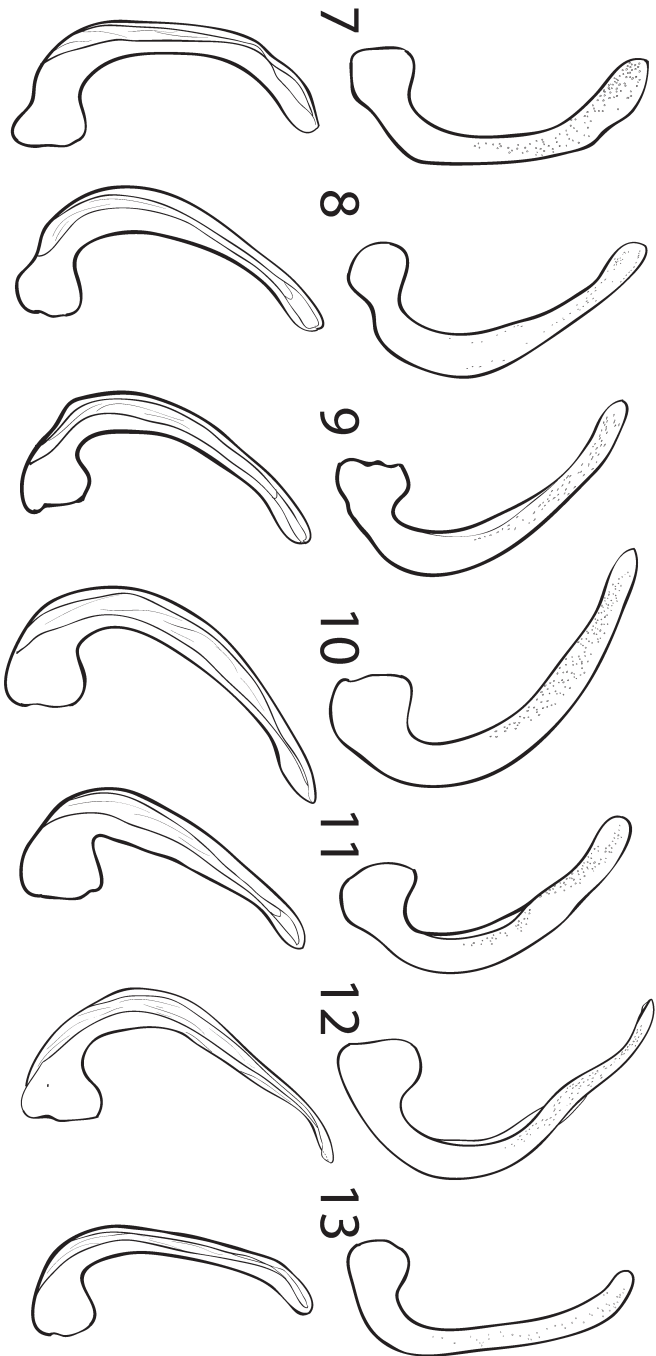
**Description.** Size. Male: TL = 6.2–6.5 mm, TL-h = 5.8–6.0 mm, TW = 3.6–3.7 mm; female: TL = 6.1–6.5 mm, TL-h = 5.8–6.0 mm, TW = 3.5–3.7 mm.

Body elongate oval and narrow, lateral margins parallel sided for much of their length (Fig. 3).

Coloration (Fig. 3). Head orange grading into diffuse, light yellow region medially on frons and testaceous to black medially and posteriad of eyes, in some specimens extending anteriorly around eye to lateral margin of frons. Pronotum broadly black or testaceous medially along anterior and posterior margins, black regions meeting medially in lighter, testaceous transverse band; posterolateral margins of pronotum narrowly black, lateral surfaces yellow, extending medially to dark region; scutellum testaceous. Elytron testaceous, with five yellow spots, one rounder parascutellar, one humeral, one slightly anterior of middle near suture, one slightly posterior of middle near lateral margin, and one anteapically, all transverse in shape. Appendages of head, legs and ventral surfaces, including elytral epipleuron, pale orange to reddish, somewhat darker on thoracic sterna and metacoxae; last abdominal tergite yellow.

Structure and sculpture. Head broad and short, anterior clypeal margin broadly rounded; entire dorsal surface of head with small highly irregular cells, each cell with fine punctures, additional irregular covering of fine punctation throughout. Pronotum broad and short, medially with small shallow dimple; lateral bead distinct and broad, evenly curved, about width of antennomere V; surface shiny, covered with fine microreticulation of irregular cells, cells with fine punctures, additional punctation consisting of a row of large coarse punctures on anterior and posterior margin, punctures separated by ca. 1–2× diameter of a puncture anteriorly, posterior row mostly effaced by reticulation medially, laterally punctures separated by ca. diameter of 1 puncture. Elytron with lateral margins un-evenly curved, basally mostly straight, apical 1/3 curved to slightly angulate apex, lateral epipleural carina distinctly visible throughout length; surface covered with weakly impressed, but distinct microreticulation of large irregular cells, cells also with fine punctures; elytral epipleuron slender, evenly tapered to apex. Prosternum medially moderately long, longitudinally swollen; prosternal process broad, lateral margins broadly curved to somewhat pointed apex, surface flat to slightly curved, smooth. Metaventricle with anterior process broad, with broadly curved emargination for reception of prosternal process; lateral wings broad, WC/WS = 4; surface smooth, microreticulation very weakly impressed, composed of short, irregular cells laterally, and more elongate cells medially, punctation nearly imperceptible. Fore- and midlegs slender, surfaces punctate, protibial apices with largest spine longer than protarsomeres I+II; mesotibial apices with longest spine shorter than length of mesotarsomeres I+II, extending 1/2 mesotarsomere II length, mesotarsal spurs elongate slender, slightly sinuate, just longer than mesotarsomere I; metacoxae smooth, microreticulation weakly impressed, composed of short, rectangular cells laterally, and more elongate rectangular cells medially, punctation irregular, nearly imperceptible, metacoxal lines distinct, broadly divergent anteriorly; hind legs slender, smooth, metafemur with fine weakly impressed reticulation composed of elongate cells, almost imperceptible weakly impressed punctation, setigerous punctures on anterior surface of metatibia and metatarsomere I, metatrochanter apically spinous, metatibial spurs slender, anterior 2/3 length as metatarsus I, posterior spur as long as metatarsus I. Abdominal ventrites broad, smooth and unmodified, with fine weakly impressed reticulation, composed of irregular elongate cells, punctation nearly imperceptible.





Figs 7–13. Median lobe of aedeagus of *Plinyneetes* species, top row left lateral view, bottom row right lateral view. 7 – *P. submaculatus* (Laporte, 1835). 8 – *P. elaskanathina* sp. nov. 9 – *P. meru* sp. nov. 10 – *P. decemnotatus* (Aubé, 1838). 11 – *P. gurevai* sp. nov. 12 – *P. tufelbergensis* sp. nov. 13 – *P. agallithophlores* sp. nov.

Male genitalia (Fig. 8). Median lobe broad, in left lateral view strongly curved, apex strongly expanded and broadly rounded, pores of apical 2/3 small, weakly impressed; ventral groove in right lateral view strongly narrowed at half length, abruptly widened in apical 1/4 with exceptionally large apical cavity, apex weakly bifid.

Sexual dimorphism. There appears to be no sexual dimorphism evident from the limited number of specimens studied.

**Variation.** Only five specimens were available for study, all were similarly sized.

**Differential diagnosis.** *Platynectes elaskanaima* sp. nov. is most similar to *P. submaculatus* in elytral maculation pattern, having five yellow well-demarcated spots, but differs in being larger (body length = 6.1–6.5 mm) and much more parallel-sided and elongate oval in dorsal habitus (Fig. 3). The elongate oval and highly parallel-sided shape should prevent its confusion with any other species within the *P. submaculatus* group.

**Etymology.** The specific epithet is a combination of *elas-* from the Greek *elasis* meaning to drive away or banish and from the Pemon people's word *kanaima* meaning evil spirit, thus the name *elaskanaima* means *kanaima* ("evil spirit") banisher. Noun in apposition.

**Distribution.** Only known from the type locality on Auyán-tepui in southeastern Venezuela (Fig. 15).

### *Platynectes (Platynectes) garciai* sp. nov.

(Figs 6, 11, 15, 16)

**Type material.** HOLOTYPE: ♂, "VENEZUELA: Bolivar State / 4°31'19.1"N, 61°31'34.0"W, 860 m / Gran Sabana, E Pauji, Salto Catedral / 16.vii.2010; leg. Short, Tellez, Arias / marsh/stream; VZ10-0716-03A [white label, typed black ink]", "SEMC0909157/ KUNHM-ENT [white label with barcode, type black ink]" (MIZA). PARATYPES (18 spec.): same a holotype except: 1 km E Pauji: trib. Of Rio Pauji, N4°28.782' W61°34.904', 853 m, 16.vii.2010, along stream, VZ10-0716-01A, SEMC0906675 (1 spec. SEMC); same as previous except: Pauji: Esmeraldes, N4°28.233' W61°35.559', 867 m, 16.vii.2010, detrital pools by forested stream, VZ10-0716-02A, SEMC0908246, SEMC0908253, SEMC0908282 (3 spec. SEMC); same state as previous except: Rio Aponwao, N5°50'49.2" W61°28'2.4", 1340 m, 31.vii.2008, leg. A.Short, M.Garcia, small streamlet, AS-08-060b, SM0830156 (1 spec. SEMC); "Venezuela: Bolivar, Gran Sabana, Pauji: Esmeraldes, 867 m, 16.vii.2010, 4°28.233'N 61°35.559'W, Short, Arias, Tellez (VZ10-0716-02A (ABTC-02189)", "MB 6288" (1 spec. ZSMG), "GUYANA: Region XIII, 5°10.514'N, 59°28.970'W, 400 m, Kaieteur Nat'l Park, trail by guest house; small forest stream, leg. A. Short; 15.iii.2014, GY14-0315-03A, SEMC1329009–SEMC1329012, SEMC1329014–SEMC1329016, SEMC1329020, SEMC1329022, SEMC1329025 (10 spec. SEMC); same as previous except: rock savanna, large seepage area; leg. A. Short, 16.iii.2014: GY14-0316-01C, SEMC1313872–SEMC1313873 (2 spec. SEMC).

**Diagnosis.** Larger in size (6.6–6.7 mm in length), evenly oval in dorsal habitus, elytron with very subdued maculae, at most four yellow spots present on elytron, two most evident being parascutellar, others variously developed, especially humeral spots.

**Description.** Size. Male: TL = 6.6–6.7 mm, TL-h = 6.0–6.1 mm, TW = 4.1–4.2 mm; female: TL = 6.6 mm, TL-h = 6.0 mm, TW = 4.2 mm.

Body evenly oval, lateral margins evenly curved and continuous between pronotum and elytron (Fig. 6).

Coloration (Fig. 6). Head orange grading into diffuse, light yellow region medially on frons and testaceous to black mediad and posteriad of eyes, in some specimens extending anteriorly around eye to lateral margin of frons. Pronotum broadly black or testaceous medially

along anterior and posterior margins, black regions meeting medially in lighter, testaceous transverse band; posterolateral margins of pronotum narrowly black, lateral surfaces yellow, extending medially to dark region; scutellum darkly colored, often black. Elytron testaceous, with narrow, lateral diffuse pale band and four variously developed yellow spots, one parascutellar most evident, one humeral least evident, one slightly posterior of middle near lateral margin, one anteapically. Appendages of head, legs and ventral surfaces, including elytral epipleuron, pale orange to reddish, somewhat darker on thoracic sterna and metacoxae; apical abdominal tergite yellow.

Structure and sculpture. Head broad and short, anterior clypeal margin broadly rounded; entire dorsal surface of head with small highly irregular cells, each cell with fine punctures, additional irregular covering of fine punctation throughout. Pronotum broad and short; lateral bead distinct and broad, evenly curved, about width of antennomere V; surface shiny, covered with fine microreticulation of irregular cells, cells with fine punctures, additional punctation consisting of a row of large coarse punctures on anterior and posterior margin, punctures separated by ca.  $0.5-1 \times$  diameter of a puncture anteriorly, posteriorly mostly effaced by reticulation, punctures irregularly present posterolaterally, absent medially. Elytron with lateral margins evenly curved to slightly angulate apex, lateral epipleural carina distinctly visible throughout length; surface covered with weakly impressed, but distinct microreticulation of large irregular cells, cells also with fine punctures; elytral epipleuron slender, evenly tapered to apex. Prosternum medially moderately long, longitudinally swollen; prosternal process broad, lateral margins broadly curved to somewhat pointed apex, surface flat to slightly curved, smooth. Metaventricle with anterior process broad, with broadly curved emargination for reception of prosternal process; lateral wings broad,  $WC/WS = 4$ ; surface smooth, microreticulation mostly effaced, punctation nearly imperceptible. Fore- and midlegs slender, surfaces punctate, protibial apices with largest spine longer than protarsomeres I+II; mesotibial apices with longest spine shorter than length of mesotarsomeres I+II, extending  $1/2$  mesotarsomere II length, mesotarsal spurs elongate slender, slightly sinuate, nearly as long as mesotarsomere I+II; metacoxae smooth, microreticulation exceptionally weakly impressed, composed of short, irregular cells, punctation nearly imperceptible, metacoxal lines distinct, broadly divergent anteriorly; hind legs slender, smooth, metafemur with fine weakly impressed reticulation composed of elongate cells, almost imperceptible weakly impressed punctation, setigerous punctures on anterior surface of metatibia and metatarsomere I, metatrochanter apically spinous, metatibial spurs slender, anterior spur shorter than metatarsus I, posterior spur as long as metatarsus I+II. Abdominal ventrites broad, smooth and unmodified, with fine weakly impressed reticulation, composed of irregular elongate cells, punctation nearly imperceptible.

Male genitalia (Fig. 11). Median lobe broad, in left lateral view weakly curved, apex expanded, dorsal surface weakly sinuate, apex broadly rounded, covered in pores in apical  $2/3$ ; ventral groove in right lateral view strongly narrowed at half length, abruptly widened in apical  $1/4$ .

Sexual dimorphism. Only one female was available for study, which was similar in size to the other males.

**Variation.** Only six specimens were available for study, all were similarly sized.

**Differential diagnosis.** *Platynectes garciai* sp. nov. is most similar to *P. tafelbergensis* sp.

nov. in elytral maculation, having a very subdued maculation pattern with less than five yellow spots on each elytron, but differs in being larger (body length = 6.6–6.7 mm), more evenly rounded, and having distinct parascutellar maculae (Fig. 6). Having distinct parascutellar maculae with up to three other subdued yellow spots should generally prevent its confusion with any other species within the *P. submaculatus*-group.

**Etymology.** The specific epithet honors our aquatic beetle worker and Venezuelan colleague Mauricio García for his passionate work to better understand the aquatic beetle fauna of Venezuela.

**Natural history.** All collecting events for this species were stream-associated, either along the margins of small streams among detritus, or in small detrital pools alongside small creeks (Fig. 16).

**Distribution.** This new species is known from the Gran Sabana region of southeastern Venezuela and from Kaieteur National Park in central Guyana (Fig. 15).

***Platynectes (Platynectes) meru* sp. nov.**

(Figs 1, 9, 15)

**Type material.** HOLOTYPE: ♂, “VENEZUELA: Amazonas State / 5°23.207'N, 67°36.922'W, 125 m / Tobogan de la Selva; 14.i.2009 / Detrital rock pools / leg. K. Miller; VZ09-0114-01E [white label, typed black ink]”, “SM0846231 / KUNHM-ENT [white label, type black ink with bar code]” (MIZA). PARATYPES (13 spec.): same as holotype except: SM0846222, SM0846237, SM0846238, SM0846249, SM0846261, SM0846263, SM0846265, SM0846268 (9 spec. SEMC); same data as holotype except: leg. Short & Miller, partly shaded wet rock w/ algae, VZ09-0114-01G, SEMC0879600 (1 spec. SEMC); “Venezuela: Amazonas, Tobogan de la Selva, 125 m, 14.i.2009, 5°23.207'N 67°36.922'W, K. Miller (VZ09-0114-01E)”, “MB 6292”, “MB 6293” (2 spec. ZSMG); “Venezuela: Estado Amazonas, Tobogan de la Selva, 24.-25.i.2004, M. Balke & M. Garcia”, “DNA M Balke 0648” (1 spec. ZSMG).

**Diagnosis.** Small sized (4.8–5.0 mm in length), elongate oval in dorsal habitus, elytron with five well-demarcated yellow spots.

**Description.** Size. Male: TL = 4.8–5.0 mm, TL-h = 4.3–4.4 mm, TW = 2.9–3.0 mm; female: TL = 4.8–4.9 mm, TL-h = 4.2–4.4 mm, TW = 2.8–2.9 mm.

Body elongate oval, lateral margins evenly curved and continuous between pronotum and elytron (Fig. 1).

Coloration (Fig. 1). Head orange grading into diffuse, light yellow region medially on frons and testaceous to black mediad and posteriad of eyes, in some specimens extending anteriorly around eye to lateral margin of frons. Pronotum broadly black or testaceous medially along anterior and posterior margins, black regions meeting medially in lighter, testaceous transverse band; posterolateral margins of pronotum narrowly black, lateral surfaces yellow, extending medially to dark region; scutellum testaceous. Elytron testaceous, with five yellow spots, one round parascutellar, one round humeral, one transverse slightly anterior of middle near suture, one transverse slightly posterior of middle near lateral margin, and one transverse anteapically. Appendages of head, legs and ventral surfaces, including elytral epipleuron, pale orange to reddish, somewhat darker on thoracic sterna and metacoxae; last abdominal tergite yellow.

Structure and sculpture. Head broad and short, anterior clypeal margin broadly rounded; entire dorsal surface of head with small highly irregular cells, each cell with fine punctures, additional irregular covering of fine punctation throughout. Pronotum broad and short, me-

dially with small shallow dimple; lateral bead distinct and broad, evenly curved, about width of antennomere V; surface shiny, covered with fine microreticulation of irregular cells, cells with fine punctures, additional punctation consisting of a row of large coarse punctures on anterior and posterior margin, punctures separated by ca.  $0.5\text{--}1\times$  diameter of a puncture anteriorly, posterior row mostly effaced by reticulation medially, laterally punctures separated by ca.  $1\text{--}2\times$  diameter of a puncture. Elytron with lateral margins evenly curved to slightly angulate apex, lateral epipleural carina distinctly visible throughout length; surface covered with weakly impressed, but distinct microreticulation of large irregular cells, cells also with fine punctures; elytral epipleuron slender, evenly tapered to apex. Prosternum medially moderately long, longitudinally swollen; prosternal process broad, lateral margins broadly curved to somewhat pointed apex, surface flat to slightly curved, smooth. Metaventrite with anterior process broad, with broadly curved emargination for reception of prosternal process; lateral wings broad, WC/WS = 5; surface smooth, microreticulation very weakly impressed, composed of short, irregular cells laterally, and more elongate cells medially, dense weakly impressed punctation medially, punctures separated by ca.  $2\text{--}3\times$  diameter of a puncture. Fore- and midlegs slender, surfaces punctate, protibial apices with largest spine longer than protarsomeres I+II, reaching  $1/2$  length of protarsomere III; mesotibial apices with longest spine just shorter than length of mesotarsomeres I+II, mesotarsal spurs elongate slender, as long as mesotarsomere I+II; metacoxae smooth, microreticulation weakly impressed, composed of short, round cells laterally, and more elongate rectangular cells medially, punctation fine and weakly impressed, punctures separated by  $2\text{--}3\times$  diameter of a puncture, metacoxal lines distinct, broadly divergent anteriorly; hind legs slender, smooth, metafemur with fine weakly impressed reticulation composed of elongate cells, almost imperceptible weakly impressed punctation, setigerous punctures on anterior surface of metatibia and metatarsomere I, metatrochanter apically spinous, metatibial spurs slender, anterior  $2/3$  length as metatarsus I, posterior spur as long as metatarsus I. Abdominal ventrites broad, smooth and unmodified, with fine weakly impressed reticulation, composed of irregular elongate cells, punctation nearly imperceptible.

Male genitalia (Fig. 9). Median lobe broad, in left lateral view strongly curved, apex strongly expanded and narrowly rounded, apical  $2/3$  small covered in pores; ventral groove in right lateral view consistent in width, no narrowing apically, apical opening relatively broad.

Sexual dimorphism. There appears to be no sexual dimorphism evident from the specimens studied.

**Variation.** Very little variation was observed, all specimens similarly sized.

**Differential diagnosis.** *Platynectes meru* sp. nov. is most similar to *P. submaculatus* in elytral maculation pattern, having five yellow well-demarcated spots, but differs in being smaller (body length = 4.8–5.0 mm), and more regularly oval in dorsal habitus (Fig. 1). The aedeagus (Fig. 9) will unambiguously separate the two species as the median lobe of *P. meru* sp. nov. is strongly curved whereas that of *P. submaculatus* is relatively straight.

**Etymology.** This species is named after the Pemon word for waterfall, “*meru*”. This is also in reference to the fact that this is the type locality for the family Meruidae. Noun in apposition.

**Natural history.** The larger series for this species was taken in a densely forested detrital pool that was adjacent to a forested creek. These pools were formed by depression in the granite

bedrock that is exposed around the site. One specimen was collected in a small detritus and algal covered seepage flowing into the creek.

**Distribution.** Only known from the type locality at Tobogan de la Selva in southwestern Venezuela (Fig. 15).

*Platynectes (Platynectes) submaculatus* (Laporte, 1835)

(Figs 5, 7, 15)

*Colymbetes submaculatus* Laporte, 1835: 102 [original description].

*Agabus submaculatus*: AUBÉ (1838): 321 [new combination].

*Platynectes submaculatus*: SHARP (1882): 766 [new combination by suggestion].

*Platynectes (Hypoplatynectes) submaculatus*: GUÉORGUEV (1972): 38 [new combination].

*Platynectes (Platynectes) submaculatus*: VAZIRANI (1976): 170 [new status by indication].

**Material examined** (20 spec.). **GUYANA: REGION XIII:** 5°0.571'N, 59°38.202'W, 524 m, Upper Potaro Camp I (c. 7 km NW Chenapau), Potaro margin trail; small side seepage/stream over roots & detritus; leg Salisbury & La Cruz; 11.iii.2014, GY14-0311-05B, SEMC1314189 (1 spec. SEMC). **SURINAME: SIPALIWINI DISTRICT:** CSNR: Tafelberg Summit, nr Augustus Creek Camp, N3°55.600' W56°11.300', 600 m, 17.viii.2013, SR13-0817-03A, SEMC0966096–SEMC0966099 (4 spec. SEMC); same as previous except: leg. Short & Bloom, small stream on trail to Caiman Creek Camp, SR13-0817-02A, SEMC1080673 (1 spec. SEMC); same district except: Camp 4 (high), Kasikasima, N2°58.613' W55°24.683', 400 m, 24.iii.2012, leg. A. Short, main seepage area, SR12-0324-01C 2012 CI-RAP Survey, SEMC1087465, SEMC1087468, SEMC1087469, SEMC1088431 (4 spec. SEMC); same as previous except: rocky pools at base of seep, SR12-0324-01D 2012 CI-RAP survey, SEMC1088354, SEMC1088356, SEMC1088457, SEMC1088361, SEMC1088371, SEMC1088374, SEMC1088375, SEMC1088383, SEMC1088385 (9 spec. SEMC, NZCS); same district except: Brownsberg Nature Park, N4°56.871' W55°10.911', 462 m, 4.viii.2012, leg. Short, Maier, McIntosh, forested stream with lots of detritus, SR12-0804-01A, SEMC1114113 (1 spec. SEMC).

**Diagnosis.** Small sized (5.3–5.9 mm in length), elongate oval and parallel-sided in dorsal habitus, elytron with five well-demarcated yellow spots.

**Redescription.** Size. Male: TL = 5.4–5.9 mm, TL-h = 4.8–5.3 mm, TW = 3.1–3.4 mm; female: TL = 5.3–5.9 mm, TL-h = 4.8–5.4 mm, TW = 3.0–3.4 mm.

Body elongate oval, lateral margins mostly-evenly curved and continuous between pronotum and elytron (Fig. 5).

Coloration (Fig. 5). Head orange grading into diffuse, light yellow region medially on frons and testaceous to black medially and posteriad of eyes, in some specimens extending anteriorly around eye to lateral margin of frons. Pronotum broadly black or testaceous medially along anterior and posterior margins, black regions meeting medially in lighter, testaceous transverse band; posterolateral margins of pronotum narrowly black, lateral surfaces yellow, extending medially to dark region; scutellum testaceous. Elytron testaceous, with five yellow mostly round spots, one parascutellar, one humeral, one slightly anterior of middle near suture, one slightly posterior of middle near lateral margin, and one anteapically. Appendages of head, legs and ventral surfaces, including elytral epipleuron, pale orange to reddish, somewhat darker on thoracic sterna and metacoxae; last abdominal tergite yellow.

Structure and sculpture. Head broad and short, anterior clypeal margin broadly rounded; entire dorsal surface of head with small highly irregular cells, each cell with fine punctures, additional irregular covering of fine punctation throughout, antennae with antennomeres V–IX subserrate. Pronotum broad and short, medially with small shallow dimple; lateral bead distinct

and broad, evenly curved, about width of antennomere V; surface shiny, covered with fine microreticulation of irregular cells, cells with fine punctures, additional punctation consisting of a row of large coarse punctures on anterior and posterior margin, punctures separated by ca. 0.5–1× diameter of a puncture anteriorly, posterior row mostly effaced by reticulation medially, laterally punctures separated by ca. 1–2× diameter of a puncture. Elytron with lateral margins mostly evenly curved, basally somewhat straight, apically coming to slightly angulate apex, lateral epipleural carina distinctly visible throughout length; surface covered with weakly impressed, but distinct microreticulation of large irregular cells, cells also with fine punctures; elytral epipleuron slender, evenly tapered to apex. Prosternum medially moderately long, longitudinally swollen; prosternal process broad, lateral margins broadly curved to somewhat pointed apex, surface flat to slightly curved, smooth. Metaventricle with anterior process broad, with broadly curved emargination for reception of prosternal process; lateral wings broad, WC/WS = 4; surface smooth, microreticulation very weakly impressed, composed elongate, irregular cells, weakly impressed punctation, punctures separated by ca. 3–4× diameter of a puncture. Fore- and midlegs slender, surfaces punctate, protibial apices with largest spine longer than protarsomeres I+II, reaching 1/2 length of protarsomere III; mesotibial apices with longest spine about length of mesotarsomeres I+II, mesotarsal spurs elongate slender, as long as mesotarsomere I+II; metacoxae smooth, microreticulation weakly impressed, composed of elongate irregular cells, punctation very fine and weakly impressed, punctures separated by ca. 3× diameter of a puncture, metacoxal lines distinct, broadly divergent anteriorly; hind legs slender, smooth, metafemur with fine weakly impressed reticulation composed of elongate cells, almost imperceptible weakly impressed punctation, setigerous punctures on anterior surface of metatibia and metatarsomere I, metatrochanter apically spinous, metatibial spurs slender, anterior 2/3 length as metatarsus I, posterior spur as long as metatarsus I. Abdominal ventrites broad, smooth and unmodified, with fine weakly impressed reticulation, composed of irregular elongate cells, punctation nearly imperceptible.

Male genitalia (Fig. 7). Median lobe broad, in left lateral view weakly curved, medially parallel-sided, apex strongly expanded and irregularly shaped, apical 2/3 small covered in pores; ventral groove in right lateral view narrow, constricted preapically, then strongly expanded, followed by a significant narrowing at apex.

Sexual dimorphism. On average the larger specimens were females, suggesting some sexual dimorphism. However, females were not particularly variable in size.

**Variation.** There is some significant size variation relative to other species, but specimens have a similar shape in dorsal aspect.

**Differential diagnosis.** *Platynectes submaculatus* is most similar to *P. elaskanaima* sp. nov. and *P. meru* sp. nov. in elytral maculation pattern, having five yellow well-demarcated spots, but differs in being smaller (body length at most 5.9 mm) and less parallel-sided in dorsal habitus (Fig. 5) than *P. elaskanaima*, but larger in body size (smallest specimen studied = 5.3 mm) and more parallel-sided in dorsal habitus than *P. meru*. The maculae of *P. submaculatus* are also much more rounded than those of *P. elaskanaima* and *P. meru*, which have several more transverse maculae. *Platynectes submaculatus* also has antennomeres V–IX subserrate, which helps distinguish it from the other two species. The aedeagus (Fig. 7) unambiguously separates *P. submaculatus* from the other two species as the median lobe of *P. submaculatus*

is very weakly curved and parallel-sided medially with an irregularly shaped apex.

**Natural history.** The habitat of this species appears to be very similar to *P. decemnotatus*, with which it has been collected on several occasions.

**Distribution.** Described from French Guiana and now known from Suriname and Guyana (Fig. 15).

**Discussion.** The type specimen(s) could not be located among the Laporte material held at the Victoria Museum's Entomology Collection (S. Hinkley pers. comm.) and may be lost.

***Platynectes (Platynectes) tafelbergensis* sp. nov.**

(Figs 4, 12, 15, 18, 19)

**Type material.** HOLOTYPE: ♂, "SURINAME: Sipaliwini District / N3°53.942' W56°10.849', 733 m / CSNR: Tafelberg Summit, near / Caiman Creek Camp, small / streams with lots of plants & / leaf litter; leg. Short & Bloom / 18.viii.2013; SR13-0818-03A [white label printed black ink]", "SEMC1233879 / KUNHM-ENT [white label with barcode at top, printed black ink]" (NZCS). PARATYPES (41 spec.): Same as holotype except: SEMC1233864, SEMC1233865, SEMC1233867, SEMC1233868, SEMC1233870–SEMC1233875, SEMC1233877–SEMC1233878, SEMC1233883–SEMC1233885 (15 spec. SEMC, NZCS); same as previous except: forest detrital pools, SR13-0818-2A, SEMC1080445 (1 spec. SEMC); same as previous except: 19.viii.2013, SR13-0819-02A, SEMC0966150–SEMC0966157 (8 spec. SEMC); same as previous except: pooled up detrital forest stream, SR13-0819-05A, SEMC1080404 (1 spec. SEMC); same as previous except: pools in forest, SR13-0819-05B, SEMC1233916–SEMC1233922, SEMC1233924 (8 spec. SEMC); same as previous except: forest detrital pools, SR13-0819-05C, SEMC1080494 (1 spec. SEMC); same as previous except: CSNR: Tafelberg Summit, nr Augustus Creek Camp, N3°55.600' W56°11.300', 600 m, 17.viii.2013, leg. Short & Bloom, small stream on trail to Caiman Creek Camp, SR13-0817-02A, SEMC1080668, SEMC1080676, SEMC1080678 (3 spec. SEMC); same as previous except: CSNR: Tafelberg Summit near South Rim, N3°53.359' W56°10.052', 879 m, 20.viii.2013, leg. Short & Bloom, small seep / streamlet, SR13-0820-01D, SEMC0930785, SEMC0930786 (2 spec. SEMC); "Suriname: Sipaliwini, Central Suriname Nature Reserve: Tafelberg Summit, near Caiman Creek Camp, 733 m, 18.viii.2013, 3° 53' 56.5188"N 56° 10' 50.9406"W, Short & Bloom (SR13-0818-03A)", "MB 6296", "MB 6299" (2 spec. ZSMG).

**Diagnosis.** Medium sized (5.8–6.5 mm in length), evenly oval in dorsal habitus, elytron with three yellow spots, two well-demarcated apically, one humeral variably developed.

**Description.** Size. Male: TL = 5.8–6.4 mm, TL-h = 5.3–5.8 mm, TW = 3.4–3.7 mm; female: TL = 5.9–6.5 mm, TL-h = 5.4–5.8 mm, TW = 3.6–3.8 mm.

Body evenly oval, lateral margins mostly evenly curved and continuous between pronotum and elytron, slightly laterally expanded at posterior 1/3 (Fig. 4).

Coloration (Fig. 4). Head orange grading into diffuse, light yellow region medially on frons and testaceous to black mediad and posteriad of eyes, in some specimens extending anteriorly around eye to lateral margin of frons. Pronotum broadly black or testaceous medially along anterior and posterior margins, black regions meeting medially in lighter, testaceous transverse band; posterolateral margins of pronotum narrowly black, lateral surfaces yellow, extending medially to dark region; scutellum darkly colored, often black. Elytron testaceous to dark testaceous, with narrow, lateral diffuse pale band and two well-demarcated yellow spots, one slightly posterior of middle near lateral margin, and one antepically, there is a third humeral spot that is variously developed, most often it is round and smaller than more apical spots, rarely irregularly shaped and equally well developed, and rarely so small as to be nearly absent. Appendages of head, legs and ventral surfaces, including elytral epipleuron, pale orange to reddish, somewhat darker on thoracic sterna and metacoxae; last abdominal tergite yellow.



Structure and sculpture. Head broad and short, anterior clypeal margin broadly rounded; entire dorsal surface of head with irregular cells, each cell with fine punctures, additional even covering of fine punctation throughout. Pronotum broad and short; lateral bead distinct and broad, evenly curved, about width of antennomere V; surface shiny, covered with fine microreticulation of large, irregular cells, cells with fine punctures, additional punctation consisting of a row of large coarse punctures on anterior and posterior margin, punctures separated by ca.  $0.5\text{--}1\times$  diameter of a puncture anteriorly, ca.  $2\text{--}3\times$  posteriorly, absent medially. Elytron with lateral margins mostly evenly curved to slightly angulate apex, lateral epipleural carina distinctly visible throughout length; surface covered with weakly impressed, but distinct microreticulation of large irregular cells, cells also with fine punctures; elytral epipleuron slender, evenly tapered to apex. Prosternum medially moderately long, longitudinally swollen; prosternal process broad, lateral margins broadly curved to somewhat pointed apex, surface flat to slightly curved, smooth. Metaventrite with anterior process broad, with broadly curved emargination for reception of prosternal process; lateral wings broad,  $WC/WS = 5$ ; surface smooth, microreticulation weakly impressed, composed of elongate cells, fairly even covering of fine punctation, puncture separated by ca.  $1\text{--}2\times$  diameter of a puncture. Fore- and midlegs slender, surfaces punctate, protibial apices with several spines about length of protarsomeres I+II; mesotibial apices with longest spine just shorter than length of mesotarsomeres I+II, mesotarsal spurs elongate slender, slightly sinuate, as long as mesotarsomeres I; metacoxae smooth, fine reticulation composed of round cells, punctation fine and weakly impressed, punctures separated by ca.  $4\text{--}5\times$  diameter of a puncture, metacoxal lines distinct, broadly divergent anteriorly; hind legs slender, smooth, metafemur with fine reticulation composed of elongate cells, almost imperceptible weakly impressed punctation, setigerous punctures on anterior surface of metatibia and metatarsomere I, metatrochanter apically spinous, metatibial spurs slender, anterior spur shorter than metatarsus I, posterior spur longer than metatarsus I. Abdominal ventrites broad, smooth and unmodified, with fine reticulation composed of elongate cells, punctation fine, punctures separated by ca.  $3\text{--}4\times$  diameter of a puncture.

Male genitalia (Fig. 12). Median lobe narrow, in left lateral view strongly curved, apex very weakly expanded, dorsal surface sinuate, gradually constricted preapically, apex narrow, covered in pores in apical  $2/3$ ; ventral groove in right lateral view strongly narrowed apical  $1/3$ , widened to  $2\times$  apical width in basal  $2/3$ , apex with distinct flap.

Sexual dimorphism. Females appear to be slightly larger, both longer and broader, than males.

**Variation.** There is relatively little variation in size and shape, most being associated with sexual dimorphism.

**Differential diagnosis.** *Platynectes tafelbergensis* sp. nov. is most similar to *P. garciai* sp. nov. in elytral maculation pattern, having a relatively subdued maculation pattern with fewer than five yellow spots on each elytron, but differs in being smaller (body length =  $5.8\text{--}6.5$  mm), somewhat more parallel sided, and having much stronger apical maculae on the elytra (Fig. 4). Having three elytral maculae, with the basal most pair situated at the humeral region while lacking parascutellar maculae, should generally prevent its confusion with any other species within the *P. submaculatus* group.

**Etymology.** This new species is named for the tepui, Tafelberg, in Suriname where the species

was collected. Adjective.

**Natural history.** All collecting events from which this species is known were from stream-associated habitats. Most specimens are from densely forested creeks and adjacent forest pools that contained a heavy load of detritus (Figs 18–19).

**Distribution.** Only known from a few localities on the summit of Tafelberg in Suriname (Fig. 15). Tafelberg is the easternmost as well as the most isolated of the Guiana Shield's sandstone tepui formations.

### *Platynectes agallithoplotes* species group

This new species group is currently monotypic containing the newly described species below. Members of this species group are distinguished by a distinctly infusate venter.

#### *Platynectes (Platynectes) agallithoplotes* sp. nov.

(Figs 13–15, 20, 21)

**Type material.** HOLOTYPE: ♂, “VENEZUELA: Bolivar State/ 7°29'47.3"N, 65°51'44.8"W, 45 m / 2 km E Rio Chucivero, 6.viii.2008 / leg. A.Short, M.Garcia, L.Joly / AS-08-075; rock outcrop seeps [white label, type black ink]” “SM0831494 / KUNHM-ENT [white label, typed black ink, with barcode]” (MIZA). PARATYPES (53 spec.): same holotype except: SM0828782–SM0828784, SM0831467–SM0831472, SM0831474–SM0831493 (29 spec. SEMC, MIZA, MALUZ); same state as holotype except: outcrop ca. 15 km NE Pijiguaos, N6°57.904' W66°36.392', 51 m, 9.vii.2010, leg. Short, Tellez, Arias, seeps, VZ10-0709-01A, SEMC0909219, SEMC0909228 (2 spec. SEMC); same as previous except: Los Pijiguaos at rock outcrop, N6°35.617' W66°49.238', 80 m, 9.vii.2010, leg. Short, Tellez, Arias, seeps and stream at night, VZ10-0709-03A, SEMC0908746, SEMC0908750, SEMC0909094 (3 spec. SEMC); same as previous except: seep scrubbing, VZ10-0708-01C, SEMC0908718 (1 spec. SEMC); same as previous except: outcrop morichal, small stream on outcrop, VZ10-0708-01B, SEMC0907909, SEMC0907910, SEMC0907914, SEMC0907916, SEMC0907920–SEMC0907923, SEMC0907925–SEMC0907928 (12 spec. SEMC); same state as previous except: Rock outcrop by morichal, N6°52.196' W66°35.450, 75 m, 9.vii.2010, leg. Short, Tellez, Arias, seeps on outcrop, VZ10-0709-02A, SEMC0911056, SEMC0911061, SEMC0911063 (3 spec. SEMC); “Venezuela: Bolivar, Los Pijiguaos, outcrop/morichal, 60-80 m, 8.vii.2010, 6° 35' 37.0212"N 66° 49' 14.2788"W, Short, Arias, Tellez (VZ10-0708-01B) (ABTC2163)”, “MB 6289”, “MB 6290”, “MB 6291” (3 spec. ZSMG).

**Diagnosis.** Small sized (5.2–5.8 mm in length), broadly oval, elytron with up to three yellow spots and a broad mostly apical lateral band.

**Description.** Size. Male: TL = 5.2–5.4 mm, TL-h = 4.8–5.2 mm, TW = 3.4–3.5 mm; female: TL = 5.4–5.8 mm, TL-h = 5.0–5.3 mm, TW = 3.4–3.6 mm.

Body broadly oval, lateral margins evenly curved and continuous between pronotum and elytron (Fig. 14).

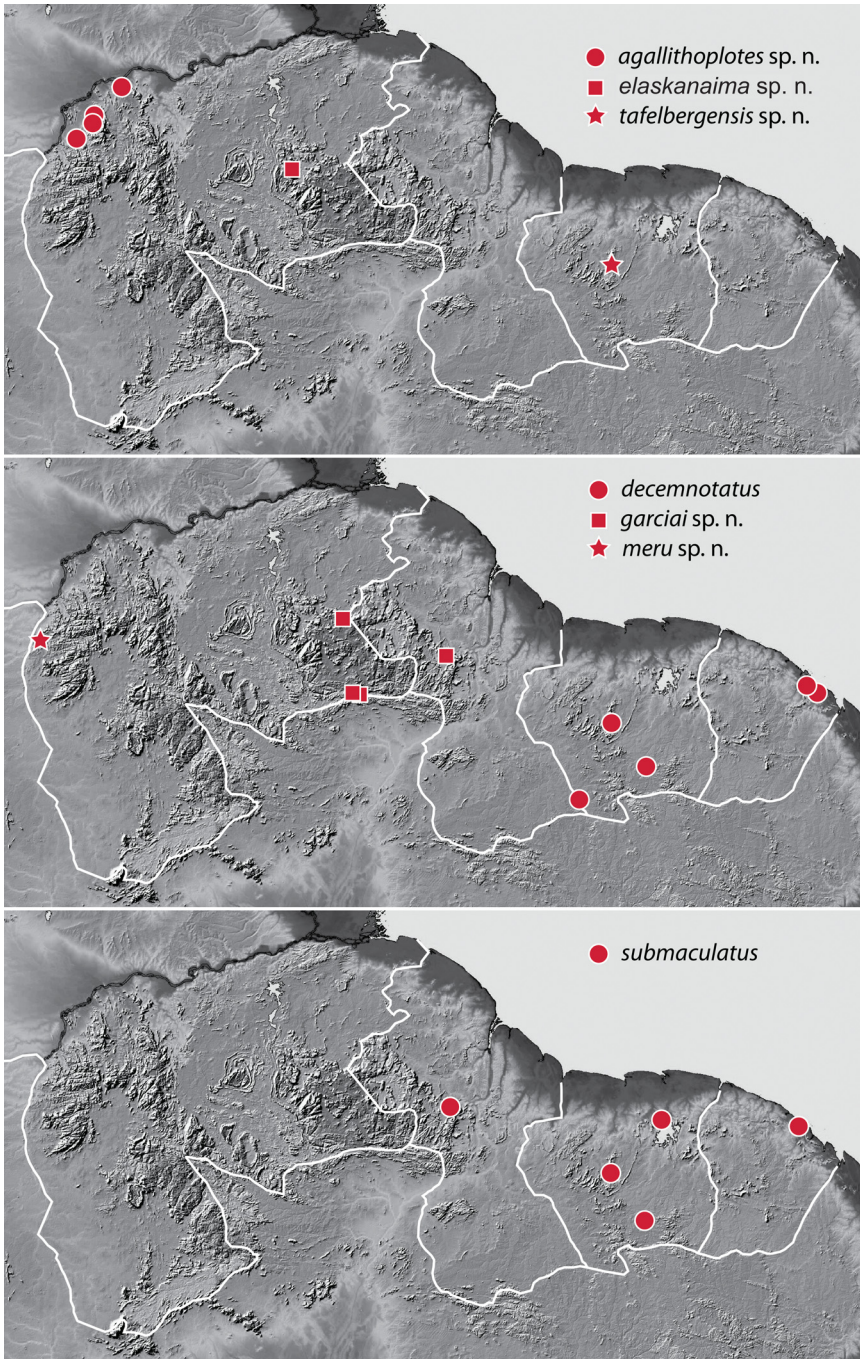
Coloration (Fig. 14). Head orange grading into diffuse, light yellow region medially on frons and testaceous to black medially and posteriad of eyes, in some specimens extending anteriorly around eye to lateral margin of frons. Pronotum broadly black or testaceous medially along anterior and posterior margins, black regions meeting medially in lighter, testaceous transverse band; posterolateral margins of pronotum narrowly black, lateral surfaces yellow, extending medially to dark region; scutellum testaceous. Elytron dark testaceous dorsally, diffuse pale region at humeral angle which becomes continuous with apical pale band in some specimens, in others associated only with humeral yellow spot, additional less pale band present laterally, in less pale band dark spots evident representing elytral serial punctures, other

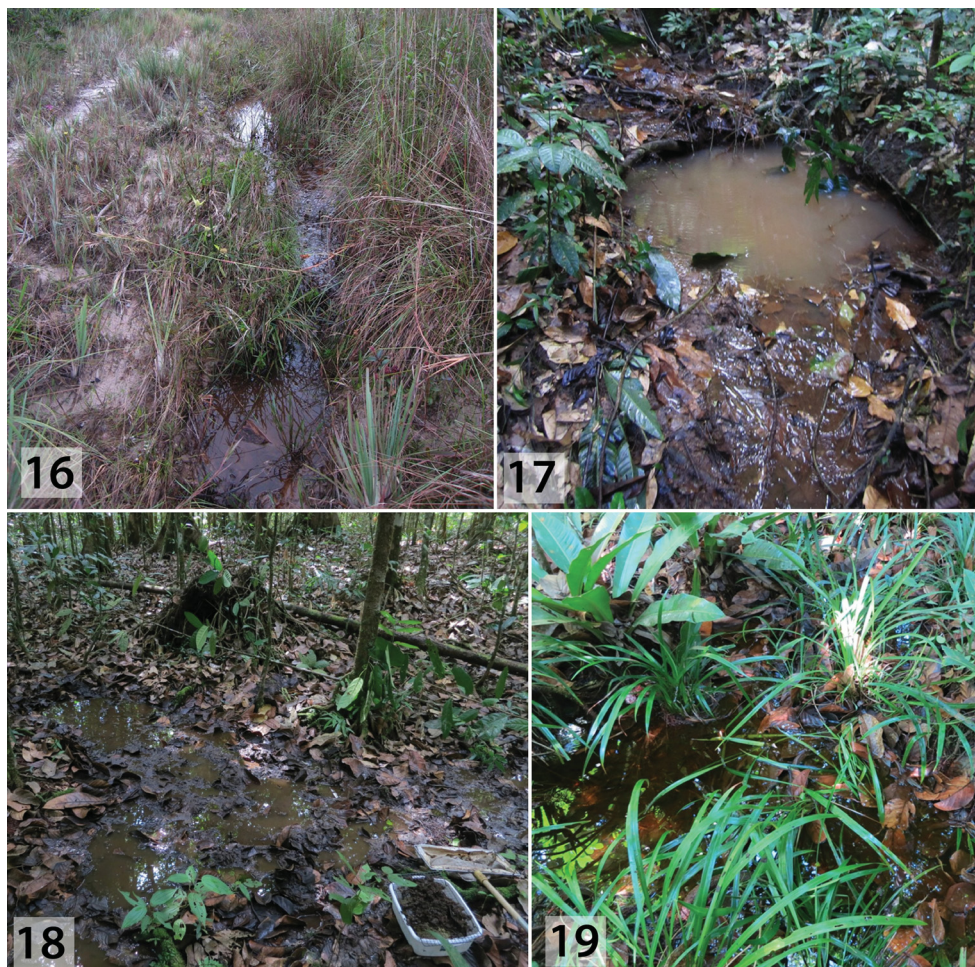


Fig. 14. Dorsal habitus of *P. agallithoptes* sp. nov.  
Scale bar = 2 mm.

elytral serial punctures more or less evident beneath testaceous region as dark spots, two well-demarcated yellow spots, one round parascutellar, one irregular humeral most often associated with lateral humeral pale band, one highly variously developed yellow spot slightly posterior of middle near lateral margin, often absent in most specimens, when present normally round, rarely transverse, apical band normally present often starting in apicolateral half of elytron, extending to apex, effaced prior to suture, replaced by testaceous band, in some specimens lateral pale band encompassing entire lateral region of elytra, joining with humeral pale band, rarely apical pale band reduced to irregular antepical spot. Appendages of head, and much of ventral surface, including elytral epipleuron, pale orange to yellow, tibia and tarsus of all legs darker in color, often light red, metaventrete, metacoxal wing, and abdomen distinctly infuscate.

Structure and sculpture. Head broad and short, anterior clypeal margin broadly rounded; anterior surface of frons and clypeus with fine, dense punctation, posterior surface of head with fine microreticulation of irregular cells, most cells also with fine punctures, antennae with antennomeres V–IX subserrate. Pronotum broad and short, medially often with small shallow dimple; lateral bead distinct and broad, evenly curved, about width of antennomere V; surface shiny, covered with fine microreticulation of large, irregular cells, cells with fine punctures, additional punctation consisting of a row of large coarse punctures on anterior and posterior margins, punctures separated by ca. 1–1.5× diameter of a puncture anterior, ca. 1–3× diameter of a puncture posteriorly, absent medially. Elytron broad, lateral margins evenly curved to slightly angulate apex, lateral epipleural carina distinctly visible throughout length; surface covered with weakly impressed, but distinct microreticulation of irregular cells, cells also with fine punctures; elytral epipleuron slender, evenly tapered to apex. Prosternum medially moderately long, longitudinally swollen; prosternal process broad, lateral margins broadly curved to somewhat pointed apex, surface flat to slightly curved, smooth. Metaventrete with anterior process broad, with broadly curved emargination for reception of prosternal process; lateral wings broad, WC/WS = 5; surface smooth, microreticulation weakly impressed, composed of short, irregular cells laterally, and more elongate cells medially, punctation nearly imperceptible. Fore- and midlegs slender, surfaces punctate, protibial apices with largest spine about as long as protarsomeres I–III combined; mesotibial apices with longest spine just shorter than mesotarsomeres I–III combined, mesotarsal spurs

Fig. 15. Distribution map of *Platynectes* species of northern South America.



Figs 16–19. Habitat of *Platynectes* species. 1 – Collecting Event AS-08-060b, Venezuela, Bolivar State: Rio Aponwao (*P. garciai*). 2 – Collecting Event SR10-0829-01A, Suriname, Sipaliwini District, along Sipaliwini River (*P. decemnotatus*). 3 – Collecting Event SR13-0819-05B, Suriname, Sipaliwini District, Tafelberg Tepui summit (*P. decemnotatus*, *P. tafelbergensis*). 4 – Collecting Event SR13-0819-02A, Suriname, Sipaliwini District, Tafelberg Tepui summit (*P. tafelbergensis*).

elongate slender, just longer than mesotarsomeres I+II; metacoxae smooth, fine reticulation composed of elongate cells, weakly impressed punctation present, punctures separated by ca. 1–2× diameter of a puncture, metacoxal lines distinct, broadly divergent anteriorly; hind legs slender, smooth, metafemur with fine reticulation composed of elongate cells, almost imperceptible weakly impressed punctation, few setigerous punctures on anterior surface of metatibia and metatarsomere I, metatrochanter apically spinous, metatibial spurs slender, anterior just shorter than metatarsus I, posterior longer than metatarsus I. Abdominal ventrites broad, smooth and unmodified, with fine reticulation composed of elongate cells, fine weakly



Figs 20–21. Type locality and habitat of *Platynectes agallithoplotes*. 20 – Collecting Event AS-08-075 (Venezuela, Bolivar State, 2 km E Rio Cuchivero) showing seepage habitat on a granite outcrop. 21 – Same event, close-up of rock face with adult specimen swimming in the thin film of water.

impressed punctation, punctation nearly imperceptible.

Male genitalia (Fig. 13). Median lobe in left lateral view weakly curved, strongly parallel-sided, apically not expanded, slightly curved to rounded apex, dorsal surface with very small and weakly impressed pores, nearly imperceptible; ventral groove in right lateral view very narrow, even in width throughout its length.

Sexual dimorphism. There is noticeable sexual dimorphism with females on average larger and more elongate than males.

**Variation.** There was noticeable size variation, in general females were larger in size, but the largest male was comparable to the smallest female.

**Differential diagnosis.** *Platynectes agallithoplotes* sp. nov. is unique in terms of elytral maculation pattern having an apical pale transverse band in addition to three variously developed yellow spots (Fig. 14). The distinctly infusate metacoxal process will also prevent confusion with any members of the *P. submaculatus* group as well as the *P. nigerrimus* group from more southern distributions in South America.

**Etymology.** The specific epithet is composed of *agal-* from the Greek *agalliasis* meaning great joy or exultation, *-litho-* Greek for stone, and *-plotes* being a noun derived from the Greek *plotos* meaning to swim: thus the specific epithet *agallithoplotes* meaning joyful-rock-swimmer. This is in reference to the elytral maculae resembling a “smiley face” and hygropetric swimming behavior of specimens.

**Natural history.** This species has a more unusual habitat compared to the other known Guiana Shield species of the genus: all specimens have been collected in association with seepages on granite outcrops (e.g. Figs 20–21). During the day, individuals have been found hidden under detritus and rocks on the seepages, while adults have been observed swimming openly on the seepages. The putative larva of this species has also been collected on the seeps as well. In most cases, these seepages are seasonal and go completely dry for part of the year.

**Distribution.** The species is currently known from southern Venezuela (Fig. 15).

### *Platynectes nigerrimus* species group

This group is newly erected here for the Brazilian *Platynectes* species exhibiting a venter that is nearly entirely dark. While Brazilian specimens were not specifically examined for this study, the key and descriptions from GUÉORGUIEV (1972) allow these species to be separated from those of the *P. submaculatus* group and the *P. agallithoplotes* group by their distinctly dark venters. The species within this group are indicated in the checklist below.

### Checklist of the Neotropical *Platynectes sensu stricto* species

#### *Platynectes agallithoplotes* species group

*Platynectes agallithoplotes* sp. nov. Central Venezuela

#### *Platynectes submaculatus* species group

*P. decemnotatus* (Aubé, 1838)

**French Guiana, Suriname**

*P. elaskanaima* sp. nov.

**Venezuela:** SE part: Ayuán-tepui

*P. garciai* sp. nov.

**Guyana:** Central part, **Venezuela:** SE part

*P. meru* sp. nov.

**Venezuela:** SW part

*P. submaculatus* (Laporte, 1835)

**Guyana, French Guiana, Suriname**

*P. tafelbergensis* sp. nov.

**Suriname:** Tafelberg tepui

#### *Platynectes nigerrimus* species group

*P. nigerrimus* (Aubé, 1838)

**Brazil:** Minas Gerais

*P. ornatifrons* Sharp, 1882

**Brazil:** Paraná

*P. parananus* Sharp, 1882

**Brazil:** São Paulo; **Argentina:** Paraná

*P. undecimguttatus* (Aubé, 1838)

**Brazil**

### Acknowledgements

We wish to thank our collaborators who assisted with field work including Mauricio Garcia (MALUZ), Luis Joly (MIZA), Jesus Camacho (MALUZ), Quintin Arias (MIZA), Monica Tellez, Devin Bloom, Crystal Maier, and Clay McIntosh. We wish to especially thank Antoine Mantilleri and Simon Hinkley for assistance in trying to track down type specimens. Fieldwork in Suriname was funded by Conservation International and grant #9286-13 from the National Geographic Society Committee for Research and Exploration to AEZS. Portions of this work were funded by #DEB-1353426 (KBM, PI), #DEB-0845984 (KBM, PI), #DEB-0816904 (AEZS, PI; KBM coPI).

### References

- AUBÉ C. 1838: Hydrocanthares et gyriniens. In: DEJEAN P. F. M. A.: *Species général des coléoptères de la collection de M. le Comte Dejean*. Méquignon Père et Fils, Paris, xvi + 804 pp.
- BRANCUCCI M. 2008: The genus *Platynectes* Régimbart, 1879 in Laos, with the description of a new species (Coleoptera, Dytiscidae). *Entomologica Basiliensia et Collectionis Frey* **30**: 21–25.

- BRANCUCCI M. & VONGSANA K. 2010: Distributional notes on the genus *Platynectes* Régimbart, 1879, in Laos with the description of new species (Coleoptera: Dytiscidae). *Entomologica Basiliensia et Collectionis Frey* **32**: 1–6.
- GUÉORGUIEV V. B. 1972: Notes sur les Agabini (Coleoptera: Dytiscidae). II Révision des genres *Platynectes* Régimbart et *Colymbinectes* Falk. *Izvestiya na Zoologicheskaya Institut s Muzei* (Sofia) **34**: 33–62.
- GUÉORGUIEV V. B. 1978: Dytiscidae cavernicoles de Papouasie (Résultats zoologiques de la Mission spéléologique britannique en Papouasie-Nouvelle-Guinée, 1975, 1). *International Journal of Speleology* **9** (1977–1978): 267–272.
- GUÉORGUIEV V. B. & ROCCHI S. 1993: Contributo alla conoscenza dei Dytiscidae della Nuova Guinea (Coleoptera). *Frustula Entomologica* **15**: 147–166.
- GUIGNOT F. 1946: Génotypes des Dytiscoidea et des Gyrinoidea. *Revue Française d'Entomologie* **13**: 112–118.
- HENDRICH L. & BALKE M. 2000: The genus *Platynectes* Régimbart in the Moluccas (Indonesia): taxonomy, faunistics and zoogeography (Coleoptera: Dytiscidae). *Koleopterologische Rundschau* **70**: 37–52.
- HENDRICH L. & ŠŤASTNÝ J. 2014: Taxonomic revision of Australian *Platynectes* Régimbart, 1879 (part I) – four new species from Queensland (Coleoptera: Dytiscidae). *Zootaxa* **3795**: 25–37.
- LAPORTE F. L. N. 1835: *Études entomologiques. Première partie*. Mèquignon-Marvis Père et Fils, Paris, 159 pp.
- LARSON D. J., ALARIE Y. & ROUGHLEY R. E. 2000: *Predaceous diving beetles (Coleoptera: Dytiscidae) of the Nearctic Region, with an emphasis on the fauna of Canada and Alaska*. National Research Council of Canada, Ottawa, xiv + 982 pp.
- LAWRENCE J. F., WEIR T. A. & PYKE J. E. 1987: Haliplidae, Hygrobiidae, Noteridae, Dytiscidae and Gyrinidae. *Zoological Catalogue of Australia* **4**: 321–366.
- NILSSON A. N. 1998: Dytiscidae: V. The genus *Platynectes* Régimbart in China, with a revision of the dissimilis-complex (Coleoptera). Pp. 107–121. In: JÄCH M. A. & JIL. (eds): *Water Beetles of China. Vol. 2*. Zoologisch-Botanische Gesellschaft in Österreich and Wiener Coleopterologenverein, Wien, 371 pp.
- RÉGIMBART M. 1879: Étude sur la classification des Dytiscidae. *Annales de la Société Entomologique de France* **5** (8): 448–466.
- RIBERA I., VOGLER A. P. & BALKE M. 2008: Phylogeny and diversification of diving beetles (Coleoptera: Dytiscidae). *Cladistics* **24**: 563–590.
- SATŌ M. 1982: Two new *Platynectes* from the Ryukyus and Formosa (Coleoptera, Dytiscidae). *Special Issue in Memory of Retired Emeritus Professor Michio Chujo* **1982**: 1–4.
- SHARP D. 1882: On aquatic carnivorous Coleoptera or Dytiscidae. *Scientific Transactions of the Royal Dublin Society* **2** (2): 179–1003.
- ŠŤASTNÝ J. 2003: Dytiscidae: X. Review of *Platynectes* subgen. *Gueorguievtes* Vazirani from Southeast Asia (Coleoptera). Pp. 217–259. In: JÄCH M. A. & JIL. (eds): *Water Beetles of China Vol. III*. Zoologisch-Botanische Gesellschaft in Österreich and Wiener Coleopterologenverein, Wien, vi + 572 pp.
- TOUSSAINT F. A., HENDRICH L., HÁJEK J., MICHAT M., PANJAITAN R., SHORT A. E. Z. & BALKE M. 2016: Evolution of Pacific Rim diving beetles sheds light on Amphipacific biogeography. *Ecography*: doi 10.1111/ecog.02195.
- VAZIRANI T. G. 1976: Contributions to the study of aquatic beetles (Coleoptera). 15. Subgeneric classification of *Platynectes* Régimbart (Dytiscidae). *Records of the Zoological Survey of India* **71**: 169–173.
- WATTS C. H. S. 1978: A revision of the Australian Dytiscidae (Coleoptera). *Australian Journal of Zoology, Supplementary Series* **57**: 1–166.
- WATTS C. H. S. 1985: A faunal assessment of Australia Hydradephaga. *Proceedings of the Academy of Natural Sciences Philadelphia* **137**: 22–28.