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Three new species of the genus *Nothochodaeus* Nikolajev, 2005 from Java, Greater Sunda Islands (Coleoptera: Scarabaeoidea: Ochodaeidae)

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- ZooBank : <http://zoobank.org/AD63F3ED-5BCD-499C-8A10-DD29EA962CA4>

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Nothochodaeus;
Taxonomy;
Indonesia;
Greater Sunda islands.

Abstract. – Three new species of the genus *Nothochodaeus* are described from Java, illustrated and compared with the most morphologically closely related species. Distribution maps of the new species herein described as well as an updated catalogue of the *Nothochodaeni* Nikolajev inhabiting the island of Java are provided.

Huchet J-B., 2022. – Three new species of the genus *Nothochodaeus* Nikolajev, 2005 from Java, Greater Sunda Islands (Coleoptera: Scarabaeoidea: Ochodaeidae). *Faunitaxys*, 10(61): 1 – 10.

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Introduction

The genus *Nothochodaeus* Nikolajev, 2005 is an exclusively Asian genus of the family Ochodaeidae, with representatives in East India, East and Southeast Asia, Malaysia, Indonesia and the Philippines. While several distinct genera occupy the continental part of Asia (*Ochodaenus* Dejean, 1821, *Codocera* Eschscholtz, 1821, *Mimochodaenus* Nikolajev, 2009 and *Nothochodaenus* Nikolajev, 2005), the Sunda islands fauna is much less diversified, with only the genus *Nothochodaenus* being represented there. Like the Philippines, the Sunda Islands include a relatively large number of species, which are all endemic, namely: *N. hirtus* (Wiedemann, 1823) and *N. xanthomelas* (Wiedemann, 1823) from Java, *N. marsupialis* Paulsen, 2020, *N. okadai* Ochi, Kon & Masumoto, 2013 and *N. sumatrensis* Ochi, Kon & Masumoto, 2013 from Sumatra, *N. nigricollis* (Heller, 1914) from Bali, *N. borneensis* Ochi, Kon & Masumoto, 2013 and *N. decoratus keikoe* Ochi, Kon & Masumoto, 2013 from Borneo.

Among the 17 extant genera of Ochodaeidae currently described, the genus *Nothochodaenus* alone includes 49 distinct taxa (namely 45 species and four subspecies, including the three new species described in this paper) and alone represents nearly 31 % of the world's fauna. This number does not include the four Filipino species formerly placed within the genus *Nothochodaenus* but recently included in the genus *Ceratochodaenus* Huchet, 2017 (Huchet, 2019). The only comparatively equivalent genus, in terms of total number of species, is *Ochodaenus* Dejean, 1821 that includes nearly 24 % of the ochodaeid species described until now.

The genus *Nothochodaenus* differs from the other Ochodaeidae genera by a series of morphological characters, as follows: medium to large size

(5.2–12 mm), elytra and pronotum frequently with coloured spots, tergite VII (propygidium) with a median trapezoidal interlocking mechanism longitudinally carinated in the middle (Fig. 1), mesocoxae widely separated, 10 elytral striae (usually 9 in the genus *Ochodaenus*), external proximal protibial tooth very reduced and spiniform. Male genitalia: endophallus copulatory pieces usually with one to several tightly curved toothed endophallites or sclerotized setae, unarmed in few species. Female genitalia: gonopod IX dimeric, lacking terminal stylus (Huchet, 2021). A special tribe, *Nothochodaeni* was proposed by Nikolajev (2015) to accommodate all the species belonging to the genus *Nothochodaenus*. The species belonging to the Filipino endemic genus *Ceratochodaenus* were recently included within this tribe (Huchet, 2019).

The study of unidentified material from Indonesia deposited in the various museums and private collections listed below led us to discover three new species of the genus *Nothochodaenus*, which are described below.

Materials and Methods

Specimens and taxonomic material. – The specimens described during this study originated from the following institutions and collections:

- CJBH: Jean-Bernard Huchet collection, Bordeaux, France;
- CSJP: Stanislav Jakl collection, Czech Republic;
- IRSNB: Institut Royal des Sciences Naturelles de Belgique, Brussels;
- MNHN: Muséum national d'Histoire naturelle, Paris, France.

The label data of holotypes are presented *verbatim*, with each label denoted by a letter (a, b, etc.), and each line of text being separated by a slash.

Reviewers:

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Genitalia treatment. – After removal of the entire abdomen to avoid any damage to the genital structures and other useful features, the genital apparatus was treated with 10% potassium hydroxide solution (KOH) to dissolve and remove the unneeded soft tissues, disassociate the aedeagus from the genital segment (urite IX) and reveal the inner copulatory sclerites of the endophallus (male), or the sclerotized terminalia of the urite IX (female). The cleaned genital parts were then placed in 10% acetic acid to neutralize the effects of the KOH, rinsed with ethanol, and stored in a small glycerol vial pinned under the specimen. Finally, the abdomen was moved back to its original position and retained in the original anatomical position using a small drop of hydrosoluble glue. Terminology of the male genitalia follows Génier (2019).

Illustrations. – Digital images of the habitus were taken at the Entomology building (UGC Arthropodes terrestres, MNHN, Paris) with a Canon EOS 6D digital camera and MP-E 65 mm lens mounted on a Kaiser RTx column. The z-stepper was controlled through the focus stacking software Helicon Remote 3.8.6 w and images were processed using Helicon focus 8. The digital images were finally imported into Adobe Photoshop CC 2019 for post-processing, labeling and plate composition.

Taxonomic Treatment

Description of new species

Ochodaecidae Streubel, 1846: 960

Ochodaecinae Streubel, 1846: 960

Nothochodaecini Nikolajev 2015: 25

Genus ***Nothochodaeus*** Nikolajev, 2005: 219

[= *Notochodaeus* Nikolajev, 2005]

Nothochodaeus trigonatus Huchet, new species

(Fig. 1-8)

ZooBank: <http://zoobank.org/9A3C07A4-4FB0-48A3-BEFA-7CA0088DFD28>

Holotype, ♂. – MNHN, glued on card, labeled:

a) Coll. F. C. Drescher / Java, Preanger. N.O.I. / Radjamandala / mt. Pantjalikan / 9.II.1926 – 400m.

b) rectangular, white paper, vertical handwritten text: RP / red / 39.

c) rectangular, white: ♂.

d) rectangular, red paper: TYPE.

e) rectangular, red paper: *Nothochodaeus / trigonatus* n. sp. / HOLOTYPE / J.-B. Huchet det. 2022. Genitalia stored in a small glycerol vial, pinned under the specimen.

Other specimens examined. – We associate with this species a female specimen bearing the following labels: Djember, Res. Besoeeki [= Residencies of Besoeeki], 1900–2500', 189? [sic!], (Möllinger) / Ex Musaeo N. Van De Poll / Muséum Paris 1936, Coll. A. Boucomont (MNHN).

Diagnosis. – This species has the body robust, moderately convex, densely pubescent dorsally, roughly bicolored a chestnut-brown, with the sides of the pronotum a lighter orange; the head is stretched anteriorly with a strong raised triangular horn projecting forward. The underside is predominantly orange-brown, the legs are bicolored, the femora yellow-orange, and the tibiae reddish-brown. A stridulatory peg is present (located on sternite VI).

Description of the holotype (Fig. 1-8)

Length. – 9.6 mm (from the apex of the mandibles to the apical part of abdominal tergite VIII).

Width. – 5.1 mm (width measured across the maximum width of the elytra).

Head. – Transverse, sub-hexagonal in outline, dark reddish-brown, strongly constricted behind the eyes, the temples obsolete. – *Vertex* concave. Surface slightly shiny, bearing long pubescence, the setae sparse, testaceous, obliquely oriented backwards. Surface strongly punctate, the punctuation consisting of transverse, slightly concave, sharply delimited wrinkles; between these wrinkles the tegument appears etched; a few unclearly defined rounded tubercles present on the area close to the inner edge of the eye. – *Labrum* very transverse, the anterior margin straight, the anterior edges rounded, slightly prominent, with long pubescence; surface convex dorsally, the tegument as punched, with few very large sunk setose punctures. Anterior clypeal membrane transverse, trapezoidal, in thin tegumentary plate contiguous to the labrum. – *Eyes* prominent, globose, strongly produced laterally. – *Clypeus* strongly raised, vertically sloping forward, arched posteriorly, surmounted by a strong sub-pyramidal horn, which is abruptly truncated at apex (Fig. 2, 4 & 5). In dorsal view, the truncation delineates a transverse, slightly concave, triangular area with a strong, irregular, punctuation (Fig. 4). Each of the converging clypeal carinae constituting the anterior triangle with a blunt dorsal tubercle at its base. – *Mandibles* very prominent, subequal, falciform, subplanar dorsally with two to three small subparallel longitudinal carinae, the apex and outer edge distinctly darkened. – *Mentum* oblong, subtrapezoidal, the base margined, the edge forming a furrow along the base, the sides distinctly concave, surface of the disc microreticulate, with a shallow longitudinal groove from the base to the anterior edge. – *Gula* bright yellow, strongly convex, the surface finely microreticulated. – *Antenna* 10-segmented, 3-segmented club, testaceous.

Pronotum. – Very transverse ($2 \times$ as wide as long), strongly convex, entirely margined, the edge forming a furrow on each side and along the

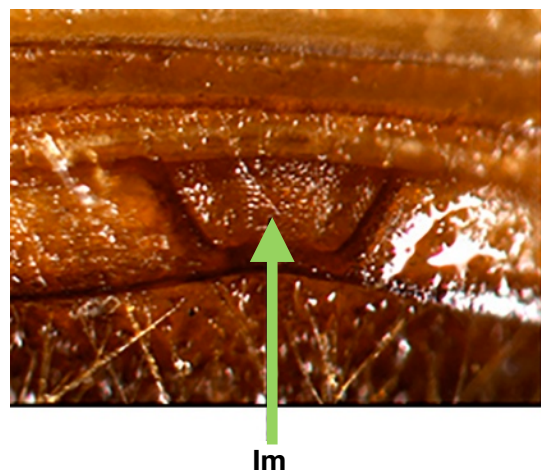
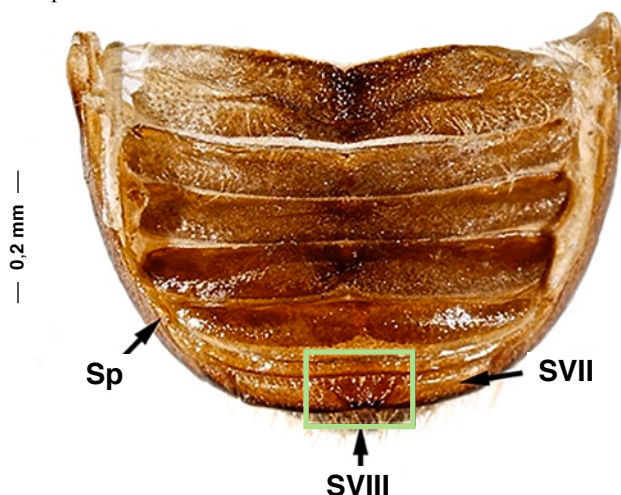


Figure 1. Abdominal tergites of the genus *Nothochodaeus* Nikolajev (*N. trigonatus* n. sp., holotype), dorsal view, showing the median trapezoidal interlocking mechanism (**Im**) located on tergite VII (propygidium).

Im. Interlocking mechanism. **SVII.** Sternite VII. **SVIII.** Sternite VIII (pygidium). **Sp.** Stridulatory peg.



Figures 2-8. *Nothochodaeus trigonatus* Huchet, new species, ♂.

2-5. Holotype. **2.** Habitus, dorsal view. **3.** Labels. **4.** Close-up of the head in dorsal view showing the distinct triangular-topped clypeal horn (specimen missing right antenna, illustrated with transparent shading). **5.** Head, lateral view showing the distinctive triangular-topped clypeal horn.

6-8. Genitalia. **6.** Aedeagus in dorsal view, the endophallus evaginated. **7.** **a, b, c, d, e.** Detailed view of the endophallites. **8.** Genital segment (urite IX) in dorsal view.

base; in the middle of the base the edge expands slightly, forming a small acute lobe in front of the scutellum. A small darkened fovea, slightly depressed, in the middle of each side. – *Anterior margin* barely emarginate behind the head, with a thin hyaline membrane in front. – *Front angles* obtuse, projecting forward, the posterior ones regularly rounded. – *Punctuation* very dense, scaly, consisting of tightly packed elongated tight guttiform granules, the granules more rounded and more widely spaced on the sides and in the middle of the base. A median longitudinal groove running from the base to the front edge, relatively indistinct in the basal third, as a narrow smooth longitudinal stripe in the middle of the disc.

Elytra. – Subquadrangular (width/length ratio: 1), $2.2 \times$ longer than pronotum length, slightly shiny, entirely margined except for the area in front of the humeral callus; a thin darkened carina, originating from the elytral suture, running along the scutellum and extending along the base to the level of the 5th stria. – *Elytral colour* somewhat lighter than that of the pronotum, orange-brown, with few longitudinal spots clearly visible at the base of the elytra at the level of intervals 3 and 5, these spots extending from the anterior edge to a little beyond the apical edge of the scutellum (similar but barely perceptible longitudinal spots, located on the same intervals are present on the central part of the elytra), the sloping part of the elytra located at the level of the humeral callus is also lightened. – *Surface punctuation* strong, scaly, densely covered by numerous small elongated setiferous granules tightly packed together; intervals almost flat; elytral striae consisting of sunken medium-sized points, separated by 1 to $1.5 \times$ their diameter. – *Humeral callus* present, feebly marked. – *Scutellum* black, triangular, elongate, lateral edges finely marginate, darkened, surface covered by a coarse rasp-like punctuation.

Abdomen. – Strongly convex with six visible ventrites (III–VIII). – *Surface ventrites* smooth, shiny, setose on their lower margin, the pubescence more extensive on ventrites VI and VII. – *Anterior margin* of ventrites with large, widely separated setose granules separated by 2 to $4 \times$ their diameter. – *Tergite VIII* (pygidium) darkened, slightly convex, pubescent, the punctuation dense, double, consisting of small close setose granules mixed with small punctures. – *Tergite VII* (propygidium) with trapezoidal interlocking mechanism. – *Metasternal plate* punctate, the punctuation simple consisting of medium-sized punctures separated by 1 to $2 \times$ their diameter, the sides smooth; mesocoxae widely separated.

Legs. – *Protibia* tridentate externally, the basal tooth very reduced, spinose, pointed (nota: the type specimen exhibits an additional median tooth on the outer edge of the right tibia); a curved acute pollex directed anteriorly; a distinct serrated longitudinal carina originating from the base and extending forward to immediately before the insertion of the protarsus. – *Femur* without accessory teeth, surface with two parallel rows of setose punctures. Upper spur of metatibia as long as first metatarsomere.

Genitalia (Fig. 6–8). – *Parameres* short, widely divergent apically. – *Endophallus* including five serrate endophallites heterogeneous in size and shape (Fig. 6 & 7). – *Genital segment* (urite IX) (Fig. 8).

Sexual dimorphism. – If the female specimen we attribute to this species proves to be conspecific, clear differences are present on the head: clypeus with a simple curved elevated carina instead of the strong sub-pyramidal clypeal horn present in male.

Etymology. – Name derived from the Greek τρίγωνος, trigōnos ("three-cornered") + *atus* (Latin suffix meaning "provided with"), referring to the triangular shape of the clypeus.

Distribution. – Western Java, but possibly a wider distribution on the island as suggested by a female specimen, most likely conspecific, originating from the eastern part of the island (Fig. 27).

Remarks. – From the very unusual conformation of the clypeus (strongly keeled in the shape of a strong cephalic horn quite similar to that existing in males of the genus *Ceratochodaeus* Huchet), the strong post-ocular constriction of the head making the genae obsolete, the eyes very large, strongly produced laterally, the unusual cephalic and pronotal punctuation (raspy, consisting of granules stretched longitudinally in the form of elongated drops), *N. trigonatus* appears to be a distinctive species within the genus *Nothochodaeus*, and consequently cannot be confused with any other species of the genus. Other unusual morphological characteristics have recently been noted on another species from the Sunda Islands, namely *N. marsupialis* Paulsen, 2020, which presents unique abdominal modifications

(median part of ventrites 2 and 3 possessing enlarged tubercles and a cavity behind shield-like process) (Paulsen, 2020). The Sunda Islands represent the southern distributional limit of the genus *Nothochodaeus*, with all species occurring there being endemic. These morphological specificities highlight a notable phenotypic plasticity within the taxa inhabiting the Indonesian Archipelago.

Nothochodaeus drumonti Huchet, new species

(Fig. 9–17)

ZooBank: <http://zoobank.org/3829ACF1-D19E-41CA-B599-9C9BEE0A4C40>

Holotype, ♂. – IRSNB, glued on card, labeled:

- both printed and handwritten: "Leg. H. LUCHT / G. Rageng, Java / "Bajoekidoel" / 450 – 700 Mr. / II. 1933";
- rectangular, handwritten and printed: "*Ochodaeus* / *xanthomelas* / R. Paulian det. ";
- rectangular, red paper: "TYPE";
- rectangular, red paper: "*Nothochodaeus* / *drumonti* n. sp. / HOLOTYPE ♂ / J.-B. Huchet det. 2022". Genitalia stored in a small glycerol vial, pinned under the specimen.

Diagnosis. – Small-sized species, body short, robust, strongly convex, and densely pubescent. Bicolored, the head yellowish, the sides and clypeus brownish-black, pronotum yellowish with two brownish-black paramedian stripes and a basal median spot extending narrowly on either side along the base, merging laterally with the paramedian stripes. Elytra orange-brown, the humeral callus and two transverse elytral stripes brown-black. Underside brown-black, except for the anterior part of pronotum and gula, yellow-orange. Legs bicolored, the femora orange-brown, the tibiae darkened. The stridulatory peg is present.

Description of the holotype (Fig. 9 & 11–17)

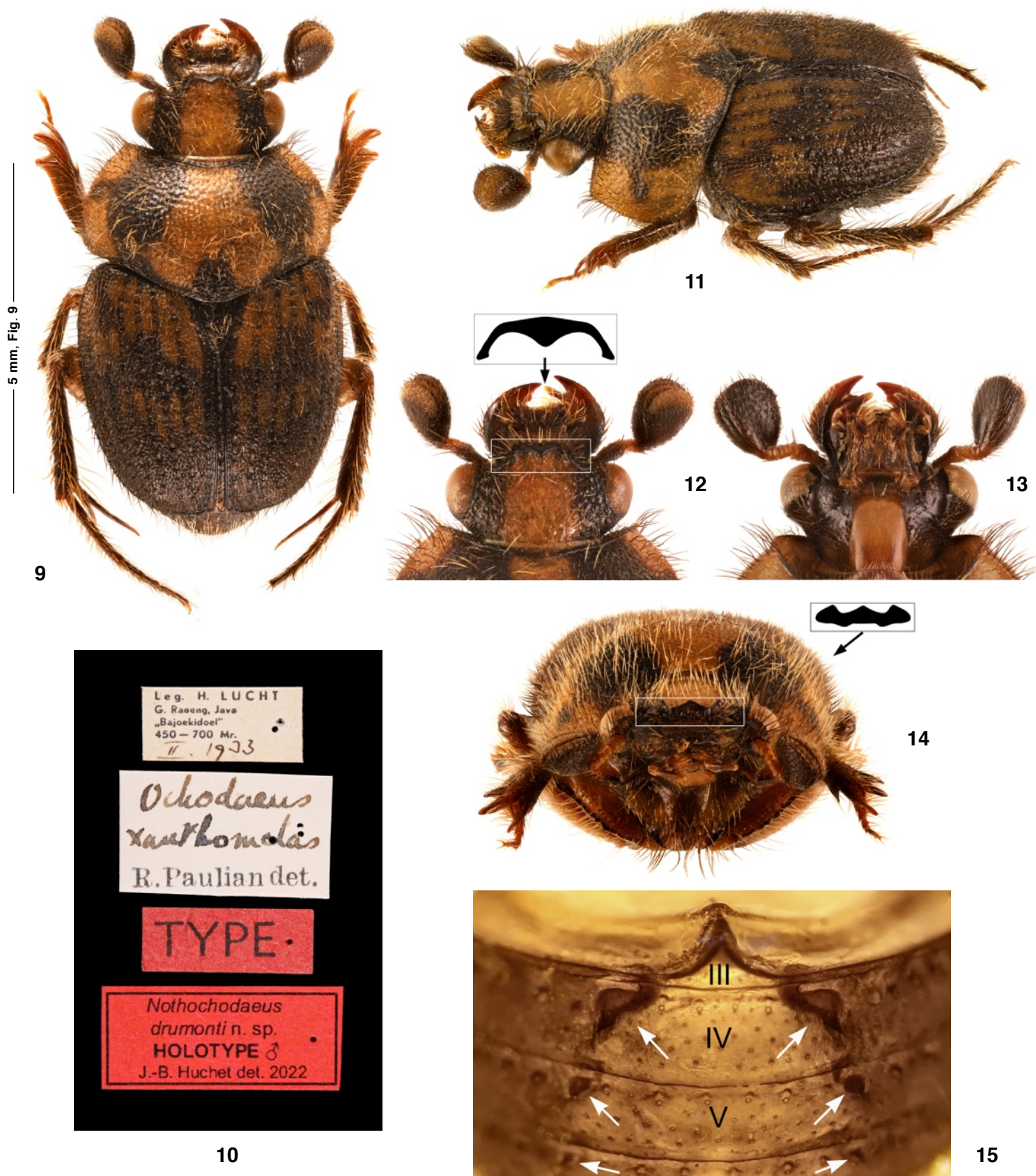
Length. – 7.5 mm (from the apex of the mandibles to the apical part of the tergite VIII).

Width. – 3.8 mm.

Head. – Transverse, sub-hexagonal in outline, surface shiny, evenly punctate with medium setose granules close together but not tangent to one another, the granules more widely spaced in the median area of the disc. – *Clypeus* transverse, subtrapezoidal, slightly declivous in front, the anterior margin denticulated, ciliate, with short testaceous bristles oriented anteriorly, the postclypeal area weakly declivous posteriorly; *clypeal carina* tridentate consisting of an m-shaped carina with a distinct acute tubercle on either side and a flattened, posteriorly pointing median horn (Fig. 12, 14); *clypeal marginal membrane* transverse, hyaline, reaching the labrum forward. – *Labrum* very transverse, slightly emarginate in front, the anterior edge setose; disc slightly raised, with a few large sunken setose punctures and a thin transverse carina raised in the middle. – *Eyes* large, prominent, globose, strongly produced laterally. – *Mandibles* subequal, falciform, subplanar dorsally, apically pointed, the sides distinctly raised. – *Mentum* quadrangular, transverse, the base straight; discal area longitudinally convex in the middle, weakly declivous in front, the sides distinctly concave. – *Antenna* bicolored, the scape brown-black, the pedicel and funicle testaceous, the club with short pubescence, brown-black, except for the distal third of the outer club segment coated with yellowish-brown microsensillae.

Pronotum. – Transverse ($1.83 \times$ as wide as long), strongly convex, entirely margined, the edges with long setae; front angles obtuse, projecting anteriorly, the posterior angles obtusely rounded. – *Anterior margin* not emarginate behind the head, the front hyaline membrane very narrow. A distinct darkened fovea on both sides, and a weak longitudinal furrow at base. – *Pronotal surface* quite similar to that of the head, evenly punctate, the granules setose with long setae of variable colours, testaceous yellow on the disc, orange-brown on the anterior angles and sides and with a few others scattered on the disc.

Elytra. – Shiny, slightly transverse (width/length ratio: 1.05), $1.9 \times$ longer than pronotum length, densely pubescent; interstriae subplanar. –



Figures 9-15. *Nothochodaeus drumonti* Huchet, new species.

9-13. ♂ holotype. 9. Habitus, dorsal view. 10. Labels. 11. Habitus, laterodorsal view. 12. Head, dorsal view, inset illustrating the clypeal horn. 13. Head, ventral view.

14. Habitus, frontal view, inset illustrating the clypeal horn.

15. Abdomen, ventral view, detail of ventrites III to V showing modified tubercles and cavity behind shield-like process suspected to be mycangia or related structure.



Figures 16-17. *Nothochodaeus drumonti* Huchet, new species, ♂ genitalia.

16. Aedeagus in different views, the endophallus not everted (**a.** Left lateral. **b.** Ventral. **c.** Dorsal. **d.** Right lateral), inset illustrating the endophallites A and B in schematic view.

17. Genital segment (urite IX), dorsal view.

Punctuation of interstriae strong and tight consisting of small setose granules; elytra punctato-striate, striae well impressed, consisting of a single row of sunken large punctures separated by 0.5 to $1 \times$ their diameter; juxtasutural interstria distinctly depressed, darkened. – *Elytral tegument* orange-brown, a median darkened transverse strip, consisting of staggered spots, extending from interstriae 2 to 7; a second transverse strip at the apical third, complete, extending laterally on the sides and merging with the median strip. – *Humeral callus* present, well-marked, distinctly darkened. – *Scutellum* black, triangular and elongate, narrowly bordered, surface slightly concave with coarse setose punctures.

Abdomen. – Convex, shiny, orange-brown, the median area lightened, the surface with a few small scattered punctures and with short setae. On both sides of the median area the upper edge of the ventrites has a series of large aligned granules separated by 1 to $2 \times$ their diameter; these granules decreasing in size from ventrite IV to ventrite VIII. – *Ventrites IV to VII* with paired paramedian cavities, including a shield-like modification on ventrites IV-V overlying these cavities (Fig. 14). – *Tergite VII* (propygidium) transverse, the posterior margin distinctly sinuate below the trapezoidal interlocking mechanism. – *Tergite VIII* (pygidium) convex, strongly punctate, the punctuation double, consisting of small and medium setose punctures unevenly distributed on rough tegumentary background. – *Metasternal process* transverse, convex, with a distinct longitudinal groove; the disc with sparse small punctures with short setae. – *Stridulatory peg* (sternite VI) present.

Legs. – *Protibia* tridentate externally, the basal tooth very reduced, spinose. – *Femora* smooth, surface with two parallel rows of setose punctures. Upper spur of metatibia slightly longer than the first metatarsomere.

Genitalia (Fig. 16). – *Parameres* short, widely divergent apically. – *Endophallus* including four serrate endophallites heterogeneous in size and shape, basal sclerite (endophallus not everted) massive, very elongated (Fig. 16A). – *Endophallus membranous* with folds, the surface locally covered with numerous raspulae and fine spicules. – *Genital segment* (urite IX) (Fig. 17).

Sexual dimorphism. – Unknown.

Etymology. – This species is cordially dedicated to my friend and colleague Alain Drumont, curator at the Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium.

Distribution. – Only known from the type locality: East Java, Bajoekidoel [= Baju-kidul] (Fig. 27). From its location, in the extreme east of the island, it would not be surprising that the species also occurs in Bali.

Remarks. – Like *N. marsupialis*, recently described by Paulsen (2020), *N. drumonti* Huchet n. sp. possesses paired paramedian cavities on ventrites IV to VII, including a shield-like modification on ventrites IV-V overlying these cavities and into the form of a large hollow-based tubercle on ventrites VI to VII (Fig. 15). These structures are however less developed in *N. drumonti* Huchet n. sp. than in *N. marsupialis*. According to Paulsen (2020), these abdominal structures could correspond to mycangia, suggesting symbiotic relationships with basidiomycetes. Both species present quite similar genital structure, with an internal sac with four endophallites.

Differential diagnosis. – Due to its reduced size, cephalic, pronotal, and elytral coloration patterns, *N. drumonti* Huchet n. sp. cannot be confused with any of the other six species of *Nothochodaeus* inhabiting Java. The morphologically closest taxon is *N. decoratus keikoe* described from Borneo (Sarawak, Sabah). The two species differ in cephalic structures, and notably, in *N. drumonti* Huchet n. sp., by a tridentate clypeal carina (the clypeal carina lacking tubercle, being simply arched along the anterior margin of clypeus in *N. decoratus keikoe*).

***Nothochodaeus pithecanthropus* Huchet, new species**

(Fig. 18-23 & 25-26)

ZooBank: <http://zoobank.org/3829ACF1-D19E-41CA-B599-9C9BEE0A4C40>**Holotype**, ♂ (Fig. 18 & 20). – MNHN, glued on card, labeled:

- a) rectangular, white paper, framed: “Java / Mts. Djampang”.
- b) rectangular, red paper: “*Nothochodaeus* / *pithecanthropus* n. sp. / Holotype / J.-B. Huchet det. 2022”;
- c) rectangular, red paper: “TYPE”;
- d) rectangular, white: “♂”. Genitalia stored in a small glycerol vial, pinned under the specimen.

Paratypes, 9 ex.:

- 1 ♀, *idem* HT, MNHN;
- 1 ♂, Java, Boucomont det. 1933, *Ochodaes hirtus* Wied, MNHN;
- 1 ex., unsexed, Java, Preanger. Mts. Djampang, MNHN;
- 1 ex., unsexed, Indonesia, E. Java prov., Argopuro Mts, 1200 m, Bermi vill. Env., VI. 2002, *local collector leg.* / St. Jákli collection, Prague, Czech republic, CSJP;
- *idem*, 1 ♂, VI. 2004, CJBH;
- 1 ♂ & 2 ♀, Indonesia, East Java Pr., Mt Argopuro, 1000 m, Bermi vill. env., XII. 2018, *local collector leg.*, CJBH;
- 1 ♀, Indonesia, East Java Pr., Mt Argopuro, 1000 m, I. 2016, *local collector leg.*, CJBH.

Diagnosis. – Medium-sized species, the body robust, strongly convex, densely pubescent. Bicolored, the head bright yellow on the disk, the sides brownish-black; pronotum brownish-black, the sides yellow, a thin longitudinal yellowish spot in the middle of the disk. Elytra brownish-black, except a basal yellowish transverse strip consisting of staggered spots, extending from interstriae 2 to lateral margin; humeral callus brown-black. Underside orange-brown, except for the anterior part of pronotum, gula and maxillary endites yellow-orange. Legs dark brown. The stridulatory peg is present.

Description of the holotype (Fig. 18, 20, 21, 23, 25 & 26)

Length. – 11.2 mm (from the apex of the mandibles to the apical part of the tergite VIII).

Width. – 5.7 mm.

Head. – Transverse, sub-hexagonal in outline, surface shiny, subplanar, weakly concave on vertex, the tegument bright yellow on the disc, darkened on the sides. – *Punctuation* consisting of closely set medium setose granules which are not tangent to one another. – *Clypeus* transverse, subtrapezoidal, slightly declivous anteriorly, the anterior margin slightly denticulate, ciliate, with short testaceous bristles oriented anteriorly; *clypeal carina* slightly arched anteriorly, the edge darkened, reaching the lateral margin at the level of the anterior edge of the eye; one pair of small, blunt-topped tubercles located behind this carina, on either side of the middle (Fig. 21); *clypeal marginal membrane* transverse, hyaline, sub-hexagonal in outline, reaching the labrum anteriorly. – *Labrum* transverse, bilobed, deeply emarginate and pubescent in front; disc slightly convex, with a few setose punctures and a thin transverse carina raised in the middle. – *Eyes* large, prominent, globose, strongly produced laterally. – *Mandibles* subequal, falciform, strongly concave dorsally, bidentate apically. – *Mentum* subquadrangular, weakly declivous in front; discal area smooth, the surface microreticulate with few scattered setose punctures at base; palpigers well sclerified, visible from below, in the shape of subtriangular hyaline blades. – *Antenna* bicolored, the scape brown-black, the pedicel and funicle bright yellow, the club with short pubescence, brown-black, except for the distal third, yellowish.

Pronotum. – Transverse, strongly convex, entirely margined; a short median longitudinal groove at base, interrupted before the middle of the disc anteriorly. – *Anterior margin* deeply emarginate behind the head, with a thin hyaline orange membrane in front. – *Anterior angles* obtuse, projecting forward, the posterior ones regularly rounded. – *Pronotal surface* strongly granulate; *granules* shiny, very closely set, but not tangential, setose, the setae testaceous; surface slightly shiny, black, the sides largely yellow at with the exception of a small darkened central shallow pit, the lateral edge entirely black.

Elytra. – Transverse, slightly shiny, punctato-striate, entirely margined except for the area in front of the humeral callus; *elytral punctuation* strong and tight consisting of small elongate setose granules forming a slightly scaly network, the setae oriented backward; *elytral striae* consisting of sunken medium-sized points, separated by 1× their diameter; juxtasutural interstria distinctly depressed. – *Humeral callus* present, well marked. – *Scutellum* black, triangular and elongate, lateral edges finely marginate, the disk with a distinct median longitudinal groove; *punctuation* strong consisting of small elongated setose granules.

Abdomen. – Strongly convex with six visible ventrites (III-VIII); surface shiny, smooth with few minute setose punctures on ventrites III-V, the punctuation stronger and tighter on ventrites VI-VIII; a row of small setose granules along the anterior edge, the granules separated by 3 to 4 × their diameter. – *Tergite VIII* (pygidium) pubescent, the punctuation strong, consisting of small close setose granules embedded on a microreticulate background. – *Tergite VII* (propygidium) transverse, the surface covered with medium-sized sunken punctures on either side of the median notch, the punctures distinctly more closely set along the base. – *Metasternal process* flat with a thin longitudinal median groove, the disk surface finely granulate with few scattered setae; mesocoxae widely separated. – *Stridulatory peg* (sternite VI) well developed, extending posteriorly in the form of a narrow apophysis. (Fig. 23).

Legs. – *Protibia* tridentate externally, the basal tooth very reduced, with short, acute pollex directed anteriorly, with a long bristle on its dorsal surface. – *Femora* without accessory teeth, surface with two parallel rows of setose punctures. Upper spur of metatibia as long as first metatarsomere.

Genitalia (Fig. 25 & 26). – *Parameres* short and broad, apically rounded and widely divergent. – *Endophallus* including five serrate endophallites of distinct size and shape (Fig. 25). – *Genital segment* (urite IX) (Fig. 26).

Sexual dimorphism. – Feebly marked, restricted to the head: a pair of raised transverse tubercles located laterally on either side behind the clypeal carina in male; the tubercles are lacking in the female.

Etymology. – In reference to the fossil Hominid *Pithecanthropus erectus* (later designated as *Homo erectus*) described from Java by the Dutch paleoanthropologist Eugène Dubois in 1894.

Distribution. – Known both from the western and eastern part of the island of Java (Fig. 27).

Variation. – *N. pithecanthropus* Huchet, new species, exhibits notable variations in the dorsal colour patterns (except for the thin longitudinal median spot of the pronotum, present in all the specimens studied). The yellowish area on both sides on the pronotum is sometimes split into two distinct spots. Additionally, the longitudinal yellowish spots located in the anterior third of the elytra are rather variable in shape and number.

Remarks. – This species appears morphologically similar to *N. sumatrensis* Ochi, Kon & Masumoto, 2013, an endemic species inhabiting central Sumatra, particularly because of the flattened, predominantly bright yellow head. It differs by the presence, in males, of a raised transverse tubercle located on either side behind the clypeal carina (the posterior portion of clypeal carina lacks tubercles in *N. sumatrensis* of both sexes) (Fig. 21). In addition, the color patterns of the pronotum and elytra are very distinct: in *N. pithecanthropus* new species the pronotum is dark brown with the sides predominantly yellowish, and with a distinct central darkened fovea in the middle, whereas in *N. sumatrensis* the pronotum is unicolorous black to yellowish brown, sometimes with an obscure longitudinal brownish broad band in the middle). Female: clypeal transverse carina gently curved anteriorly, weakly raised in *N. pithecanthropus* new species, strongly raised and distinctly arcuate in *N. sumatrensis*. Finally, notable differences occur in the shape of the stridulatory peg (Fig. 23 & 24).

Biological data. – A recent study (Huchet *et al.*, 2022) documented the mycetophagous habits of a representative of the genus *Ochodaes* Dejean, 1821 (*O. berytensis* Petrovitz, 1965) whose adults feed on the edible ectomycorrhizal truffle *Tuber aestivum* in Northern Israel. The examination of the mid-and hindgut contents of



Figures 18-22. *Nothochodaeus pithecanthropus* Huchet, **new species**.

18-20. ♂ holotype. 18. Habitus, dorsal view. 19. Labels. 20. *Idem*, habitus, latero-dorsal view.

21-22. Sexual dimorphism, head. 21. ♂ holotype, the transverse tubercles located on either side behind the clypeal carina indicated by white arrows. 22. ♀, paratype.

Figures 23-24. *Nothochodaeus* sp., stridulatory peg (sternite VI).

23. *N. pithecanthropus* Huchet, **new species**, holotype. 24. *N. sumatrensis* Ochi, Kon & Masumoto, 2013, paratype (inset illustrating the stridulatory peg, schematic view).

Figures 25-26. *Nothochodaeus pithecanthropus* Huchet, **new species**, ♂ genitalia.

25. Aedeagus in lateral view, the endophallus not everted. 26. Genital segment (urite IX), dorsal view.

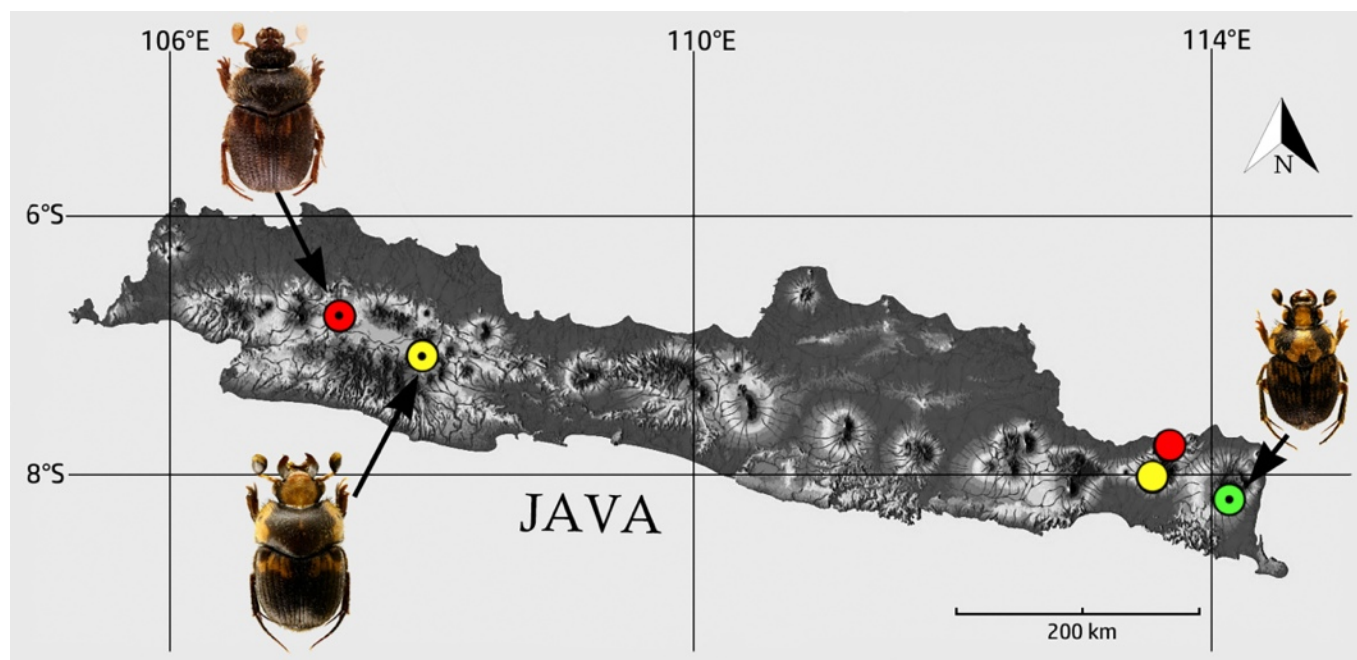


Figure 27. Geographic distribution of *Nothochodaeus trigonatus* Huchet, **new species** (red dots), *N. drumonti* Huchet, **new species** (green dot), and *N. pithecanthropus* Huchet, **new species** (yellow dots), in Java island (the type locality with a black spot).

some specimens of *N. pithecanthropus* new species revealed the presence of spherical translucent spores of a subterranean mycorrhizal fungus, providing further evidence that the representatives of this genus are also mycetophagous.

Updated catalogue of Nothochodaeni inhabiting the island of Java

Nothochodaeus Nikolajev, 2005: 219 [= *Notochodaeus*]

- *N. drumonti* Huchet, **new species**
- *N. hirtus* (Wiedemann, 1823)
- *N. nigricollis* (Heller, 1914)*
- *N. pithecanthropus* Huchet, **new species**
- *N. trigonatus* Huchet, **new species**
- *N. xanthomelas* (Wiedemann, 1823)

* **New island record:** Described from Bali, this species also occurs in Java (1 specimen from “Oriental Java” in MNHN).

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Résumé

Huchet J-B., 2022. – Trois nouvelles espèces du genre *Nothochodaenus* Nikolajev, 2005 de Java, grandes îles de la Sonde (Coleoptera : Scarabaeoidea : Ochodaenidae). *Faunitaxys*, 10(61) : 1 – 10.

Trois nouvelles espèces du genre *Nothochodaenus* sont décrites de Java, illustrées et comparées aux espèces les plus proches morphologiquement. Une carte de distribution des nouvelles espèces décrites ici ainsi qu'un catalogue actualisé des *Nothochodaeni* Nikolajev présents sur l'île de Java sont donnés.

Mots-clés. – Coleoptera, Scarabaeoidea, Ochodaenidae, *Nothochodaenus*, taxonomie, Indonésie, Greater Sunda islands.

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SOMMAIRE

Trois nouvelles espèces du genre *Nothochodaeus* Nikolajev, 2005 de Java, grandes îles de la Sonde (Coleoptera : Scarabaeoidea : Ochodaeidae).

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Three new species of the genus *Nothochodaeus* Nikolajev, 2005 from Java, Greater Sunda Islands (Coleoptera: Scarabaeoidea: Ochodaeidae).

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Illustration de la couverture :

Gravure portugaise des alentours de 1540 tirée du *Códice Casanatense* montrant un couple javanais.

Crédits :

Jean-Bernard Huchet : Fig. 1-26.

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