



Recognition, reallocation and redescription of *Colaspis dunali* Montrouzier, 1861 (Coleoptera: Chrysomelidae: Eumolpinae) from New Caledonia

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Abstract

In the course of a recent visit to the Entomology collection of the Royal Belgian Institute of Natural Sciences, I have come across one Eumolpinae (Chrysomelidae) specimen from Albert Fauvel's collection that fits at perfection the species described as *Colaspis dunali* Montrouzier, 1861. Xavier Montrouzier's type was unknown and this specimen, a male from Ile Art, is selected here as neotype and the species redescribed, including a description of male genitalia. The species is tentatively placed in the genus *Samuelsonia* Jolivet, Verma et Mille, 2007 based on similarities with species currently classified under this name.

Keywords: neotype, *Samuelsonia*, taxonomy

Samenvatting

Tijdens een recent bezoek aan de Entomologie-collectie van het Koninklijk Belgisch Instituut voor Natuurwetenschappen ben ik één exemplaar Eumolpinae (Chrysomelidae) tegengekomen uit de collectie van Albert Fauvel dat perfect past bij de soort die wordt beschreven als *Colaspis dunali* Montrouzier, 1861. Het type van Xavier Montrouzier was onbekend en dit exemplaar, een mannetje van Ile Art, wordt hier geselecteerd als neotype en de soort wordt opnieuw beschreven, inclusief een beschrijving van de mannelijke geslachtsorganen. De soort is voorlopig geplaatst in het geslacht *Samuelsonia* Jolivet, Verma & Mille, 2007 gebaseerd op overeenkomsten met soorten die momenteel onder deze naam zijn geënclassificeerd.

Résumé

Lors d'une récente visite de la collection d'entomologie à l'Institut royal des Sciences naturelles de Belgique, j'ai découvert un spécimen d'Eumolpinae (Chrysomelidae) de la collection d'Albert Fauvel qui correspond parfaitement à l'espèce décrite comme *Colaspis dunali* Montrouzier, 1861. Le type de Xavier Montrouzier était inconnu et ce spécimen, un mâle de l'Ile Art, est sélectionné ici comme néotype. L'espèce est ici redécrite, y compris les genitalia mâles. L'espèce est provisoirement placée dans le genre *Samuelsonia* Jolivet, Verma et Mille, 2007, sur la base de similitudes avec les espèces actuellement classées sous ce genre.

Introduction

Apart from their enormous diversity, one of the main challenges about working with New Caledonian Eumolpinae is making sense of the species described in the first taxonomic attempts at the fauna of Coleoptera in the archipelago. Species descriptions were not particularly detailed and did not include references to genitalia or comparative analyses, they were not based on the concept of types, and the material used for the descriptions was often damaged, dispersed or lost. This could be the case of a small Eumolpinae originally found in Île Art, the largest of the Belep Islands, off the north shores of Grande Terre (Fig. 1), and described as *Colaspis dunali* by Xavier MONTROUZIER (1861). The beetle, 3 mm long, was referred as a common species and described as follows: "*tête et corselet jaune-testacé, lisse; élytres criblées de points enfoncés, avec la bordure, la suture et une large bande longitudinale sur le limbe noires; poitrine, abdomen, extrémité des antennes et genoux également noirs, pattes jaune-testacé.*" This description includes some useful clues for the recognition of the species in the context of the known diversity of New Caledonian Eumolpinae, including the dark stripes on elytra, which are not that common among these beetles. The surviving part of the collection assembled by Montrouzier is expected to be in the Muséum national d'Histoire naturelle in Paris, however this characteristic type has not been localized (A. Mantilleri, pers. comm., February 2020), and could be considered as good as lost (JOLIVET *et al.*, 2007a), which has been the unfortunate fate of a significant part of Montrouzier's material, particularly in the case of representatives of small species (A. Doué *in* MONTROUZIER, 1860).

In the course of a scientific visit to the entomology collection of the Royal Belgian Institute of Natural Sciences, I examined some of the material originally from the collection of Albert Fauvel, and possibly coming from the collection assembled by Émile Deplanché in New Caledonia. One of the specimens in the collection, a small male specimen seemingly from Ile d'Art, and thus possibly collected in Deplanché's second visit to New Caledonia, when he travelled on board of the schooner *la Fine* to some islands north of Grande Terre (VIEILLARD, 1876), perfectly fits the description of *C. dunali* Montrouzier, 1861. In fact, it was tentatively identified as such by Fauvel, according to the transcription in the accompanying label, and considered it part of a genus, "Dumbea", which he never described formally (Fig. 2b). I think Fauvel's assessment was sound and, accepting that the original type material for the species was lost, in this work I propose to select this specimen as neotype for this taxon. Moreover, I will discuss the affinities of this species with other known species and redescribe it below.

Material and methods

The specimen used to represent the Linnean name *Colaspis dunali* Montrouzier, 1861 was found in the entomology collection of the Royal Belgian Institute of Natural Sciences (RBINS). The description of the specimen was based on the observation of external features at a maximum of 60x magnification using a Leica M80 Stereo Microscope, and photographs were taken using a Leica DFC420 Digital Camera, and stacked with CombineZP (Alan Hadley, distributed by the author). The copulatory organ was dissected after softening the specimen in hot distilled water with a drop of detergent for 15 minutes.

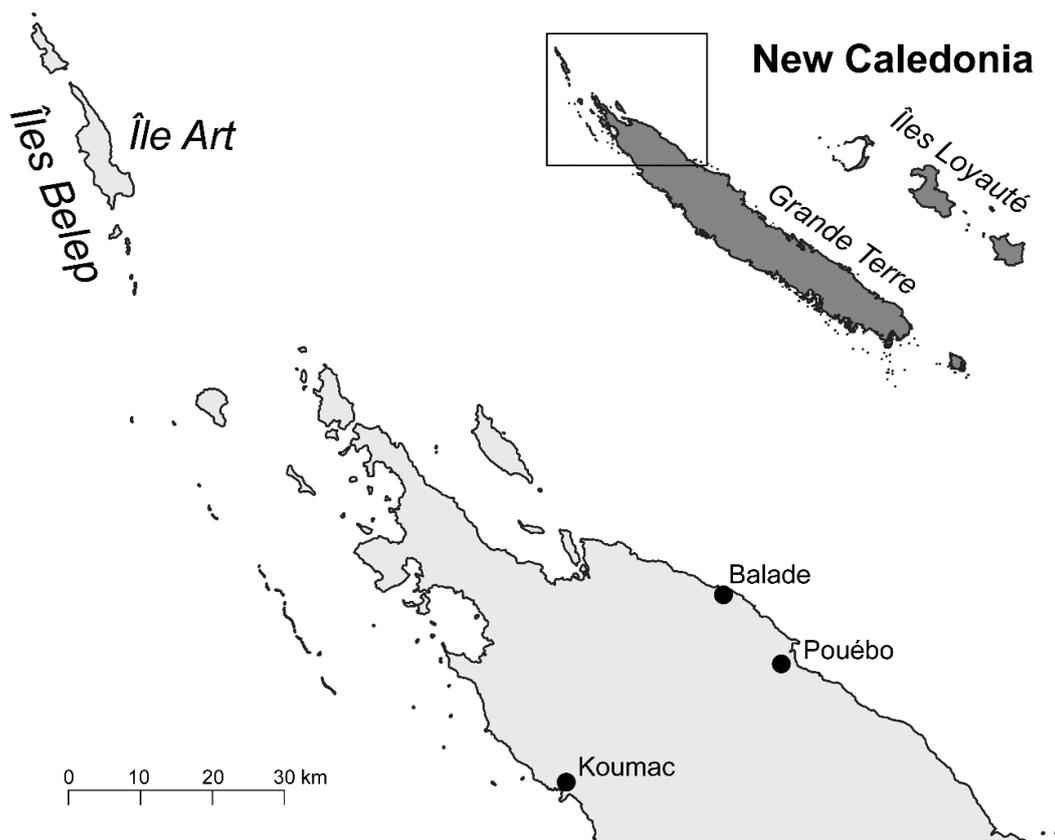


Fig. 1. Location of Belep Islands and Île Art, the type locality of *Samuelsonia dunali* (Montrouzier, 1861).

Results

Redescription of taxon

For want of a better alternative, the species was tentatively placed in the genus *Colaspis* FABRICIUS, 1801 either by Montrouzier himself or by any of the reputed European entomologists who tried to fit his species or species descriptions in the system of the time (A. Doué *in* MONTROUZIER, 1860). CLAVAREAU (1914) and HELLER (1916), likely unable to see any specimen of this taxon, kept this original attribution in their catalogs, but with doubts. If one considers the specimen in Fauvel's collection as our best guess of what Montrouzier had before his eyes when he described the species, this species shares a number of characteristics with species presently classified as *Samuelsonia* JOLIVET, VERMA ET MILLE, 2007b. In particular, it could be related to the group of *S. histrio* (PERROUDET MONTROUZIER, 1864), *S. bicolor* JOLIVET, VERMA ET MILLE, 2007b, *S. pardalis* JOLIVET, VERMA ET MILLE, 2007b and *S. turgida* JOLIVET, VERMA ET MILLE, 2007b, based on their relatively small size (2–4.5 mm), convex, typically smooth pronotum with marked angles and regularly curved sides, and bicolour elytra, among others. There is phylogenetic evidence hinting at *Samuelsonia* being a polyphyletic group (PAPADOPOULOU *et al.*, 2013), and the meaning and limits of this species group name will need to be revised. However, for the purposes of the current work, and until a formal revision of the meaning of *Samuelsonia* is available that may prove otherwise, I suggest placing *Colaspis dunali* Montrouzier, 1861 in this genus, since it will allow relating this species to the names used in contemporaneous literature.

***Samuelsonia dunali* (MONTROUZIER, 1861) comb. nov.**

(Figs 2a–e)

Colaspis dunali Montrouzier, 1861. *Ann. Soc. ent. Fr.*, ser. 4, 1, p. 302.

Neotype, by present designation (Fig. 2a–b): 1♂, Ile d'Art, Coll. et det. A. Fauvel, *Dumbea dunali* Montr., R.I.Sc.N.B. 17.479, NEOTYPUS *Colaspis dunali* Montrouzier, 1861 (RBINS). Specimen was originally glued on card with detached left median leg and both posterior legs, and it lacks left antennae (except for scape) and left metaonychium.

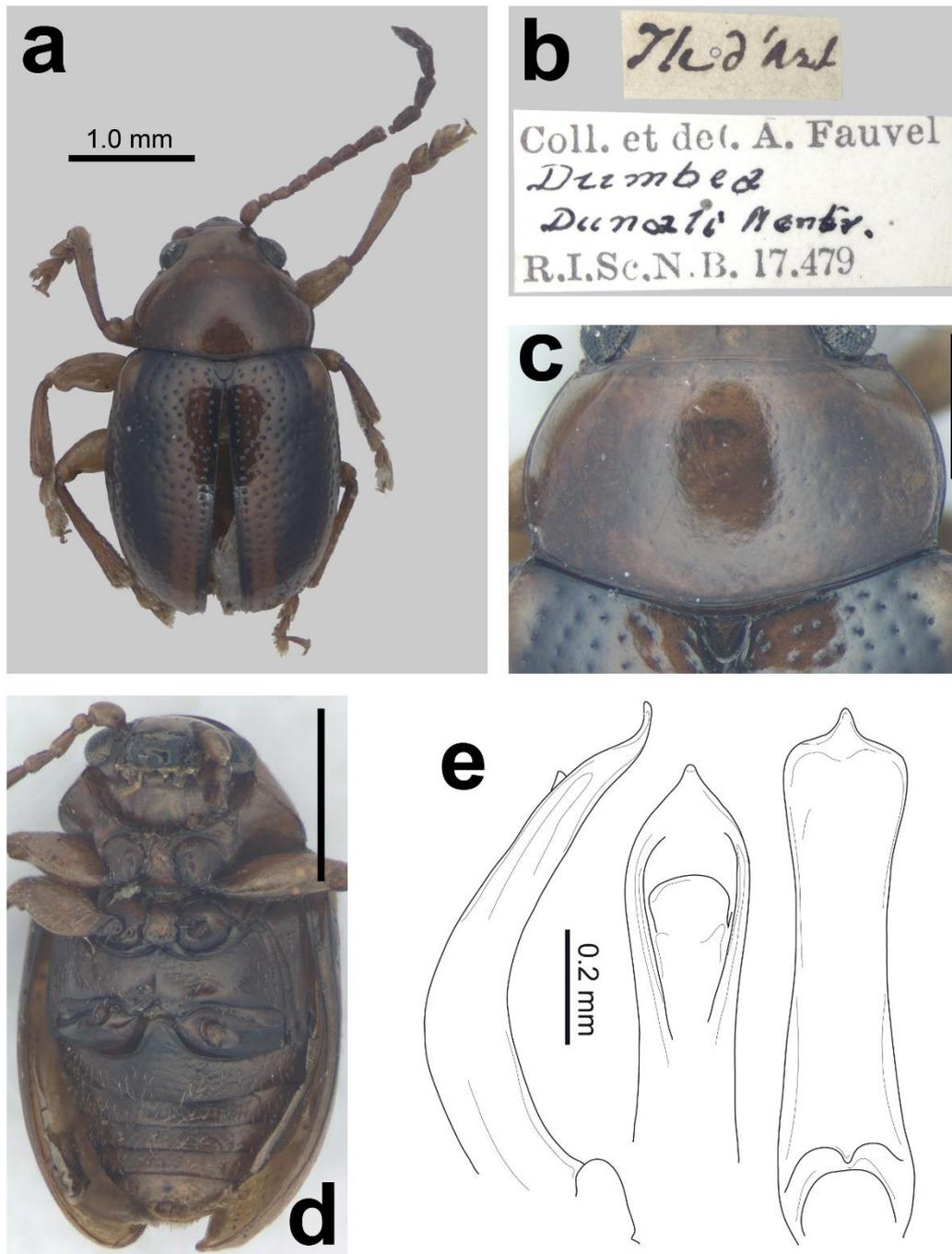


Fig. 2. Neotype of *Samuelsonia dunali* (Montrouzier, 1861) (a); with details of labels (b); pronotum, scutellum and base of elytra [scale bar = 0.5 mm] (c); ventral structures (d); schematic drawings of lateral, dorsal and ventral views of its penis (e). © Jesús Gómez-Zurita.

Shape of body elliptical, oblong, about $1.7\times$ longer than broad, moderately convex, slightly depressed dorsally. Head, four basal antennomeres, pronotum, humeri, longitudinal stripes on disc of elytra, hypomera, base of tibiae and ventral pro- and mesothoracic parts, including coxae brown; mandibles, apical antennomeres, scutellum, sutural, discal and lateral stripes on elytra, and ventral surfaces of metathorax dark reddish brown; most of legs orange-brown. Length: 3.2 mm; width: 1.6 mm.

Head broad, hypognathous, deeply inserted into prothorax up to posterior border of eyes; frons weakly convex, smooth, glabrous and unpunctured, wider than twice transverse diameter of eye, with fine longitudinal impression medially. Clypeus almost flat, about as long as wide at apex, slightly alutaceous apically, with small semicircular emargination at anterior border. Labrum short, transverse, with round anterior angles and weak median emargination. Mandibles relatively small, acute. Eyes not particularly large, slightly longer than wide, convex and weakly emarginate at inner border. Genae shorter than transverse diameter of eye, smooth, glabrous. Antennae long, reaching middle of elytron, thickened; scape cylindrical, thick, relatively short, about twice as long as wide, weakly bent posteriorly, smooth; pedicel thick, nearly as wide as long, about half as long and slightly narrower than scape; third antennomere slender, slightly clavate and nearly as long as scape, smooth, with sparse pubescence; fourth antennomere nearly as long as third, slightly thicker; fifth antennomere $1.25\times$ longer than third, thicker and more densely pubescent, widened towards apex; sixth antennomere slightly longer than third and seventh $1.3\times$ longer than third; antennomeres 8–10 subequal to fifth, thickened towards apex; eleventh antennomere longest, about $1.5\times$ longer than third, acute at apical $1/3$.

Pronotum transverse (Fig. 2c), $1.6\times$ wider at base than long at middle; anterior border nearly straight, slightly advanced over frons, very finely margined, with margin slightly enlarged and feebly raised towards angles, with trichobothria and posteriorly oriented setae on anterior border, slightly before angle; anterior angles obtuse, and sides regularly round, widest behind middle of pronotum, finely margined; posterior angles obtuse, projecting tiny lateral expansion with adjacent trichobothrium, on posterior border; posterior border at wide obtuse angle, broadly round at middle, finely margined, wider than anterior border; surface smooth, shiny, with few, nearly imperceptible fine shallow puncture-like impressions posteriorly near sides, noticeably sloping towards anterior angles, thus appearing much narrower at anterior than at posterior part. Hypomera broad, with anterior border straight, flat on disc and nearly at straight angle with margin of pronotum, finely alutaceous, unpunctured (Fig. 2d). Prosternum short, slightly longer than longitudinal diameter of procoxae; anterior border concave, finely margined; surface finely alutaceous, unpunctured; prosternal process flat at anterior half, narrower than transverse diameter of procoxae, glossy, with few punctures and sparse long, erect, fine yellowish setae; posterior half strongly deflexed, expanded laterally at apex, as wide as transverse diameter of procoxae, unpunctured, glabrous (Fig. 2d).

Scutellum triangular with broad blunt apex, about as long as wide at base, very faintly alutaceous, unpunctured (Fig. 2c). Mesoventral process shorter than and as wide as prosternal process between procoxae; glossy, unpunctured, with few scattered, short pale yellowish setae (Fig. 2d). Mesepimera, mesanepisterna and metanepisterna finely shagreened, matt, unpunctured. Metaventrite short, about as long medially as mesoventrite, and about $1/3$ longer at anterior angles, advanced to reach middle of mesocoxae; anterior angles blunt, slightly acute, with thick margins; anterior process short, at wide obtuse angle, and posterior border cut at similar angle, with deep median notch; surface finely alutaceous, glossier at middle, unpunctured, with sparse fine, posteriorly recumbent pale yellowish setae (Fig. 2d).

Elytra elongate, about $2.3\times$ longer than wide at middle, slightly depressed on disc; humeral angles round, with humeri callous, marked by faint longitudinal depression interiorly; sides

margined, feebly curved to reach maximum width around middle, and curved at apical third to regular round apex; surface smooth, shiny, glabrous, with large punctures unordered on disc, smaller and forming eight regular striae at apical third, relatively aligned at base of elytra, and forming complete sutural, premarginal and marginal striae, with marginal striae divergent from margin below humerus; dark vittae present on sutural and 4–6 intervals, and narrowly on marginal striae, reaching base of elytra. Epipleura relatively wide in humeral area and progressively narrowing reaching sutural angle; surface smooth, shiny, unpunctured and glabrous. Membranous wings fully developed. Femora robust, fusiform, enlarged at middle, smooth with very fine punctures and short, appressed golden setae; pro- and metatibiae about as long as corresponding femora and metatibiae neatly shorter; tibiae nearly straight, gradually expanded towards apex, with two outer longitudinal edges sharp; pro- and metatarsi clearly shorter than corresponding tibiae and mesotarsi nearly as long as mesotibiae; first pro- and mesotarsomeres slightly expanded laterally; claws divaricate, appendiculate. First abdominal ventrite about 1/3 longer than metaventrite at middle, with relatively long intercoxal process at acute angle, broadly round and margined at apex; surface glossy, very finely microreticulate, with shallow imprecise punctures and sparse, posteriorly recumbent fine long whitish setae, glabrous at middle and on process; ventrites 2–4 half as long as metaventrite at middle, finely shagreened and with sparse whitish pubescence throughout; last abdominal ventrite longer than previous. broadly emarginate at apex, with surface finely alutaceous, shiny, unpunctured and glabrous (Fig. 2d). Pygidium with marked median longitudinal furrow.

Penis slender, moderately curved and thicker at base in lateral view, nearly straight and dorsoventrally flattened in apical half, slightly compressed laterally at middle in ventral view, with apical 1/3 slightly enlarged, sides smoothly curved; distal end gradually narrowed to acute sharp median tooth, with tip bent dorsally; ostium arched, with short, apically curved dorsal flap (Fig. 2e).

Diagnosis. To my knowledge, *Samuelsonia dunali* (Montrouzier, 1861) is the only vittate species among the small species of Eumolpinae in New Caledonia with smooth pronotum. Of the other taxa of *Samuelsonia* mentioned above, it can be mainly distinguished by all of them (except *S. pardalis*) having their pronotum black and irregular dark markings on the elytra; in the case of *S. pardalis*, pronotum is pale but the head was described as black, while both are pale in *S. dunali*. I have examined the Eumolpinae in the collection of the Museum of Natural History of the University of Wrocław (MNHW, Wrocław, Poland), one of the largest collections of these beetles from Grande Terre, the main, largest island in New Caledonia. I have not found in this collection any specimen that matches the type of *S. dunali*, although there are several superficially similar species with vittate elytra. However, in these specimens vittae are not well delimited or occupy different intervals (e.g., sutural interval is rarely darkened), or most typically have punctate pronotum and head, or denser, unordered punctation on elytra. At present, based on this information, *S. dunali* could be considered endemic to the Belep Islands.

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References

- CLAVAREAU H., 1914. - Chrysomelidae: 11, Eumolpinae. *Coleopterorum Catalogus*, Pars 59. W. Junk, Berlin, 215 pp.
- FABRICIUS I.C., 1801. - *Systema Eleutheratorum, secundum Ordines, genera, species, adiectis synonymis, locis, observationibus, descriptionibus. Tomus I.* Impensis Bibliopolii Academici Novi, Kiliae, 504 pp.
- HELLER K.M., 1916. - Die Käfer von Neu-Caledonien und den benachbarten Inselgruppen. In: SARASIN F. & ROUX J. (eds). - *Nova Caledonia, Zoologie*, Vol. II, L. III. C. W. Kreidels Verlag, Wiesbaden, 229–364.
- JOLIVET P., VERMA K.K. & MILLE C., 2007a. - New species of Eumolpinae from the genera *Dematochroma* Baly, 1864 and *Taophila* Heller, 1916 from New Caledonia (Coleoptera, Eumolpidae). *Revue française d'Entomologie*, 29: 33–47.
- JOLIVET P., VERMA K.K. & MILLE C., 2007b. - New genera and species of Eumolpinae from New Caledonia (Coleoptera, Chrysomelidae). *Revue française d'Entomologie*, 29: 77–92.
- MONTROUZIER X., 1860. - Essai sur la faune entomologique de la Nouvelle-Calédonie (Balade) et des îles des Pins, Art, Lifu, etc. *Annales de la Société entomologique de France*, ser. 3, 8: 229–308.
- MONTROUZIER X., 1861. - Essai sur la faune entomologique de la Nouvelle-Calédonie (Balade) et des îles des Pins, Art, Lifu, etc. *Annales de la Société entomologique de France*, ser. 4, 1: 265–306.
- PAPADOPOULOU A., CARDOSO A. & GÓMEZ-ZURITA J., 2013. - Diversity and diversification of Eumolpinae (Coleoptera: Chrysomelidae) in New Caledonia. *Zoological Journal of the Linnean Society*, 168: 473–495.
- PERROUD B.-P. & MONTROUZIER X., 1864. - Essai sur la faune entomologique de Kanala (Nouvelle-Calédonie) et description de quelques espèces nouvelles ou peu connues. *Annales de la Société Linnéenne de Lyon*, 11: 46–257.
- VIELLARD E., 1876. - Notice sur la vie et les travaux d'Émile Deplanche. *Bulletin de la Société Linnéenne de Normandie*, sér. 2, 10: 341–350.
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