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RESEARCH NOTE

New Species of the Genus *Podontia* Dalman (Coleoptera: Chrysomelidae: Galerucinae: Alticini) in the Philippines and Redescription of *Podontia flava* Baly from Sarawak

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A new species, *Podontia rustiai* Calcetas and Staines (Coleoptera: Chrysomelidae: Galerucinae: Alticini) in the Philippines, is described. The species *Podontia flava* Baly, 1865 is very similar and known from Borneo (Sarawak, Sabah) and Brunei is redescribed, and the introduced *Podontia quatuordecimpunctata* (L., 1767) is contrasted and compared. However, the endophallic median sclerite of the paramere of the male genitalia in *P. flava* is whip-like and apically tapered, whereas it is shield-like and apically rounded in *P. rustiai* new species. A key to the genus *Podontia* in the Philippines and Sarawak is provided.

Keywords: alticine, flea beetle, galerucine, leaf beetles, new species

INTRODUCTION

The genus *Podontia* (Chrysomelidae: Galerucinae: Alticini), type species *Gallecruca affinis* Gröndal (1808), was established by Dalman (1824). The species was first described from a specimen that was collected in Java, Indonesia from *Spondias dulcis* Parkinson (Anacardiaceae). The genus is a member of the *Blepharida* group within the Alticini (Prathapan and Chaboo 2011). The adults are robust and brightly colored and can be characterized by a bifurcate prosternum, a saddle-shaped mesosternum, and inwardly curved bifid tarsal claws (Furth and Suzuki 1998; Medvedev 1999; Becerra 2004; Prathapan and Chaboo 2011; Biondi *et al*. 2017). In addition, they are characterized by the emarginate anterior margin of the metatibial apex; the elongate-oval eyes; the convex, chrysomeline-like appearance of the body; and the spermathecal morphology (Lee and Yu 2021). The genus is distributed from Indonesia to Indochina, with one species occurring in northern Australia (Baly 1865; Heikertinger and Csiki 1940). Currently, there are nine valid species of *Podontia* (Medvedev 1999; Lee and Yu 2021). Recently, Lee and Yu (2021) redescribed *Podontia lutea* (Olivier, 1790) and *Podontia dalmani* Baly, 1865. The genus *Podontia* feeds on 12 host plants in four plant families – Anacardiaceae, Burseraceae, Lythraceae, and Moraceae (Prathapan and Chaboo 2011; Adorada *et al*. 2023; Calcetas *et al*. 2023).

There was no record of the genus *Podontia* in the Philippines until the introduction of the sineguelas leaf beetle (SLB), *Podontia quatuordecimpunctata* (L., 1767), in 2009 in Batangas City and 2007–2008 in Brooke's Point, Palawan (Adorada *et al.* 2023). The biology and ecology of SLB were recently studied by Calcetas *et al*. (2023) on *Spondias purpurea* L. This is the first record of an endemic species of *Podontia* in the Philippines. However, the new species is very similar to *Podontia flava* Baly, 1865 from

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Sarawak. Romantsov and Medvedev (2015) added Sabah (Borneo) and Brunei as distribution records for *P. flava*. That species was described by Joseph Sugar Baly (1816–1890), an English medical doctor and a world authority on Chrysomelidae, who described 2,219 species of leaf beetles from 217 genera and published in 102 papers (Staines and Staines 1999). In this paper, we described *Podontia rustiai* sp. nov. as a new species in the Philippines, and the key to the genus in the Philippines and Sarawak is also provided.

MATERIAL AND METHODS

Insect specimens from the Department of Agriculture, Regional Field Office-IVA, Regional Crop Protection Center (DA-RCPC-IVA) insect collections were thoroughly examined under a 6X–60X using a 10X wide view eyepiece Nikon® SMZ645 stereo zoom microscope and an Olympus® SZ61 microscope. Characters were tabulated and summarized using character matrices.

Color images of habitus, genitalia, and other morphological characters were taken using a Nikon®-D7100 DSLR (24.2 megapixel) digital camera equipped with a Nikon Micro 105 mm 1:2.8G lens and mounted on a microscope stand. The camera was attached to a Mac® computer and remotely controlled with a mouse using Helicon Remote® software and its time-lapse photography function. Lighting was provided by several units of light-emitting diode (LED) ring lights and LED bulbs mounted on a movable study lamp and covered with a Pixco® camera flash diffuser for maximum lighting. Afterward, digital photographs were combined using Helicon Remote® and Helicon Focus® stacking software, digitally enhanced and cleaned from any unwanted blemishes using Windows-based Adobe Photoshop Elements 2021® software, and stored in a TIFF format on an Apple/Mac® computer and other backup hard drives.

Digital photos of the holotype specimen along with their corresponding labels from the Natural History Museum United Kingdom (NHMUK) were also requested and cropped using Adobe Photoshop Elements 2021® software.

SYSTEMATICS

***Podontia rustiai* Calcetas and Staines new species** (Figures 1–3)

Material Examined

Holotype ♂. Philippines, no further/data; *Podontia rustiai* Calcetas and Staines, 2024 (deposited UPMNH).
Paratype ♀. 1, Philippines, no further data; *Podontia rustiai* Calcetas and Staines, 2024 (deposited UPMNH).

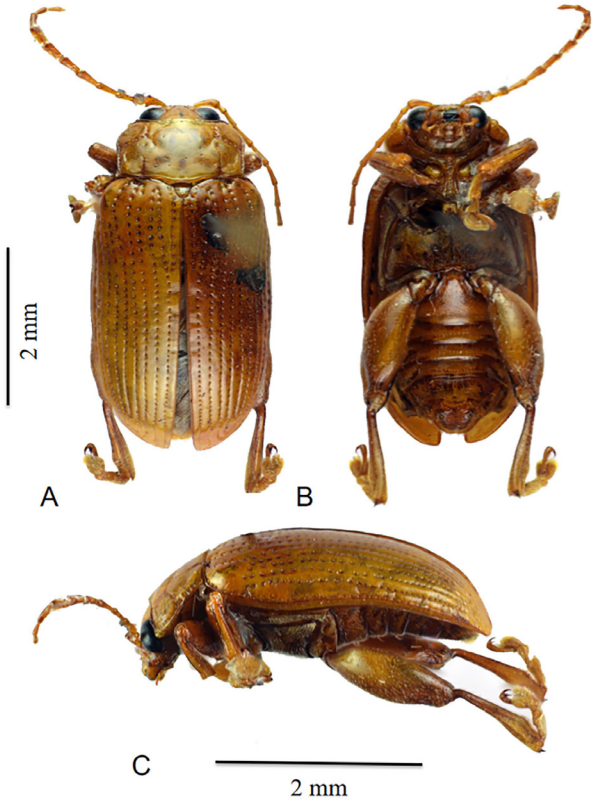

Figure 1. *Podontia rustiai* Calcetas and Staines **new species**: [A] habitus, dorsal aspect; [B] habitus, ventral aspect; [C] habitus, lateral aspect.

Description of Holotype (Male)

Form moderately elongate, convex. Body bichromatic yellowish brown; dorsal light yellowish brown, venter dark yellowish brown; labrum yellowish (Figure 1A).

Head. Small, widest between eyes; labrum yellowish, anterior margin distinctly rounded, smooth; clypeus transverse, smooth; frons not the same level with clypeus, with V-shaped elevated carinal junction with clypeus; frons minutely punctate; with preocular/interantennal groove on each side of frons; terminal antennomere without dark or blackish tinge; vertex smooth; ocular lateral margin wedge-shaped; apical maxillary palpomere pointed; distance between eyes nearly as wide as the diameter of the eye (Figure 1A).

Pronotum. Nearly quadrate; pronotal width 1.0 mm; pronotal length 1.0 mm; entire pronotal margin carinate; anterior margin deeply concave, nearly straight mesally; anterior angle roundly carinate; upper lateral margin widely rounded; lower lateral margin slightly wedge-shaped toward posterior angle; posterior angle distinctly rounded; posterior margin undulate, shortly concave mesally; with minute circular rounded punctate impression below anterior angles on each side; without depressions

Figure 2. *Podontia rustiai* Calcetas and Staines **new species**: [A] male genitalia, dorsal aspect; [B] male genitalia, ventral aspect; [C] male genitalia, lateral aspect.

near lateral margin on each side; anterolateral area smooth; transverse groove slanted, connected apically to longitudinal groove; central line surface smooth, without longitudinal groove; basal longitudinal groove short (Figure 1A).

Scutellum. First layer triangulate, whitish; second opaque or transparent layer elongate subcircular-shaped, brownish.

Elytron. Humeral margin undulate; humeral angle rounded; humeral angle and lateral margin with narrow explanate margin, disappearing toward posterior angle; posterior angle truncate; sutural angle rounded; surface with 10 interspaces of round punctures; without elevated carinae, smooth.

Legs. Metafemur ventral posterior margin distinctly rounded; tarsal claws bifid, inwardly curved (Figure 1B).

Ventral side of thorax. Prosternum bifurcate; prosternal bridge without longitudinal depression; mesosternum saddle-shaped; metasternal process triangulate, margin

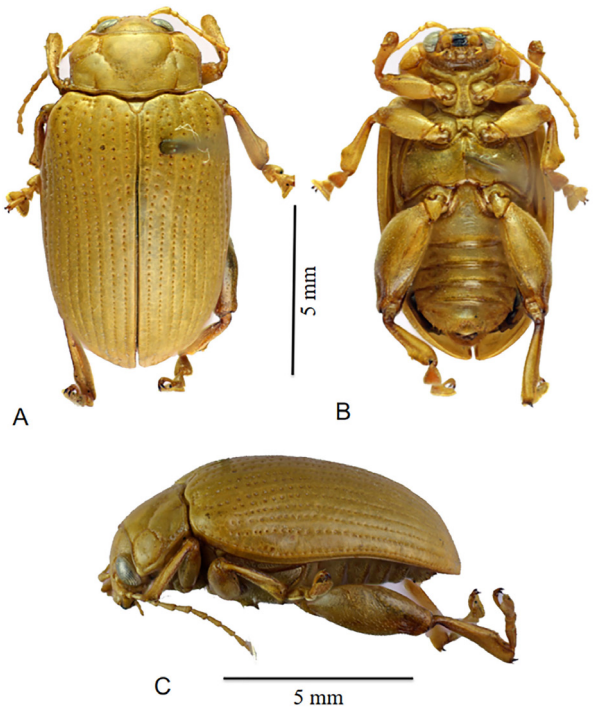

Figure 3. *Podontia rustiai* Calcetas and Staines **new species**: [A] habitus, dorsal aspect; [B] habitus, ventral aspect; [C] habitus, lateral aspect.

thickly carinate, with deep mesal depression; surface of metasternum smooth, with minute, very fine white hairs near lateral margins (Figure 1B).

Abdomen. Abdominal sternites I and II concave; sternites III and IV convex; sternite V nearly straight mesally; terminal sternite with U-shaped genital opening; abdominal sternites covered with very few short fine hairs.

Male genitalia. Paramere and phallobase elongate, 7.0 x longer than wide; nearly parallel-sided; apically broader; slightly bent at middle at lateral view; endophallic sclerites composed of two sclerites at ostium, median sclerite shield-like, apically rounded, one pair of lateral sclerites rounded basally connected with ostium, dorsal part of ostium bare (Figures 2A–C).

Body size. L = 9.0 mm, W = 5.0 mm

Female. L = 11.0 mm, W = 6.0 mm. Body yellowish. Abdominal sternites I, II, and III nearly straight mesally; sternites IV slightly convex; terminal sternite or genital opening in 5th abdominal sternite concave (Figures 3A–C).

Distribution. The Philippines

Etymology. The species was named in honor of Mr. Victorio Rustia of Sariaya, Quezon, a retired Senior Agriculturist of DA-RCPC-IVA employee from 1980–2015. He was an emphatic and passionate lecturer who

devoted his illustrious career to advocating and pioneering the importance of organic farming in terms of crop protection and crop production strategies to Filipino farmers, especially in the region of CALABARZON, the Philippines. He used his motivational skills and amusing style of lecturing farmers about minimizing the use of some harmful pesticides through the conduct of the farmers' field schools in the countryside. This was many years ago before organic farming became popular with Filipino farmers and other parts of the country as well.

Remarks. The elytron of *P. rustiai* **new species** and *P. flava* have no irregular dark spots, whereas *P. quatuordecimpunctata* has irregular dark spots. The frons is not at the same level as the clypeus, with a V-shaped elevated carinal junction in *P. rustiai* **new species**, whereas in *P. quatuordecimpunctata*, the frons is at the same level as the clypeus and without a V-shaped elevated carinal junction, and it is a continuous smooth ramp bridge connection between the clypeus and the frons. The ocular lateral margin of *P. rustiai* **new species** is wedge-shaped, whereas in *P. quatuordecimpunctata*, it is nearly parallel. The anterior margin of the pronotum is nearly straight mesally in *P. rustiai* **new species**, whereas it is evenly rounded in *P. quatuordecimpunctata.* The upper lateral margin of the pronotum is widely rounded in *P. rustiai* **new species**, whereas it is wedge-shaped in *P. quatuordecimpunctata.* The lower lateral margin of *P. rustiai* **new species** is slightly wedge-shaped toward the posterior angle, whereas it is undulate toward the posterior angle in *P. quatuordecimpunctata.* The posterior angle of *P. rustiai* **new species** is distinctly rounded, whereas it is angulate in *P. quatuordecimpunctata.* The surface of the pronotum with minute circular rounded punctate impression below the anterior angles on each side and without depressions near the lateral margin on each side in *P. rustiai* **new species**, whereas it is without a minute circular rounded punctate impression below the anterior angles on each side and with distinct mesal depressions on each side of the pronotum in *P. quatuordecimpunctata*. The scutellum of *P. rustiai* **new species** is elongate subcircular-shaped, whereas it is triangulate in *P. quatuordecimpunctata.* The scutellum of both species is double layered – the first layer is whitish triangulate, whereas the second opaque layer in *P. rustiai* **new species** is brownish elongate subcircular-shaped, and the second opaque layer for *P. quatuordecimpunctata* triangulate brownish. The humeral angle and lateral margins have narrow explanate margins disappearing toward the posterior angle in *P. rustiai* **new species**, whereas it disappears toward the posterior angle in *P. quatuordecimpunctata.* The posterior angle in *P. rustiai* **new species** is truncate, whereas it is rounded in *P. quatuordecimpunctata.* The ventral posterior margin of the metafemur is distinctly rounded in *P. rustiai* **new species**, whereas it is distinctly undulate in *P. quatuordecimpunctata.* The metasternal process margin of *P. rustiai* **new species** is thickly carinate with deep mesal depression, whereas it is not carinate and with a shallow mesal depression in *P. quatuordecimpunctata.*

The sexual dimorphic characters are as follows: males are distinctly smaller than females, the genital opening on the 5th abdominal sternite is U-shaped in males, whereas it is roundly concave in females. The metafemur is distinctly wider in females compared to males.

The discovery of the specimens was accidental by the first author while searching for other galerucine specimens of flea beetles (*Phyllotreta* spp. and *Psylliodes* spp.) and squash beetles (*Aulocophara* spp.). The specimens were from the old insect collections of the DA-RCPC-IVA, Timugan, Los Baños, Laguna, before the center was transferred to Marawoy, Lipa City, Batangas, and without any labels or ecological data whatsoever. The size is comparably small compared to the large size of SLB and without any dark spots or markings on their elytra. Thus, it was not easily recognizable.

***Podontia flava* Baly, 1865**
(Figures 4 and 5)

Podontia flava Baly, 1865, Ann Mag Nat Hist (3)XVI, p. 404 (Sarawak) BMNH

Material Examined
Holotype ♂. Sumatra: Baly Collection, NHMUK015529321. Deposited at NHMUK.

Redescription (Male)
Form moderately elongate, convex. Body bichromatic yellowish brown; dorsal light yellowish brown, venter dark yellowish brown; labrum yellowish (Figures 4A and B).

Head. Small, widest between eyes; terminal antennomere with dark or blackish tinge; vertex smooth; distance between eyes nearly three times as wide as diameter of the eye.

Pronotum. Nearly rectangulate; pronotal width 5.5 mm; pronotal length 3.0 mm. entire pronotal margin carinate; anterior margin deeply concave, nearly straight mesally; anterior angle carinate, wedge-shaped, truncate; upper lateral margin wedge-shaped; lateral upper anterior angle rounded; lower lateral margin parallel; adjacent lateral margin with short, deep longitudinal depression mesally; posterior angle minutely rounded; posterior margin nearly straight on each side, shortly concave mesally; with minute circular rounded puncture or pit adjacent posterior margin on each side submesally; surface of anterolateral area smooth; without transverse groove; central line smooth, with distinctly short longitudinal groove; with distinctly

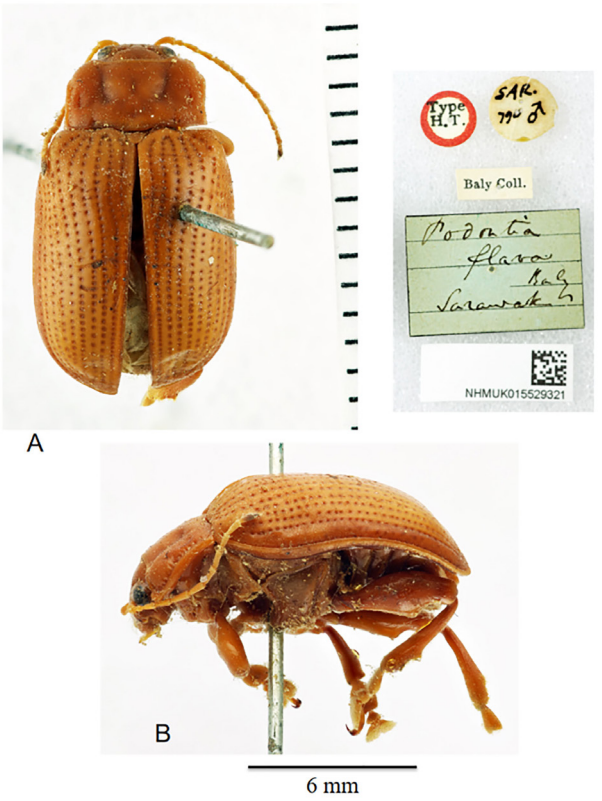

Figure 4. *Podontia flava* Baly, 1865: [A] habitus, dorsal aspect; [B] habitus, lateral aspect (photograph of the holotype from NHMUK, courtesy of Dr. Michael Geisler and Ms. Keita Matsumoto).

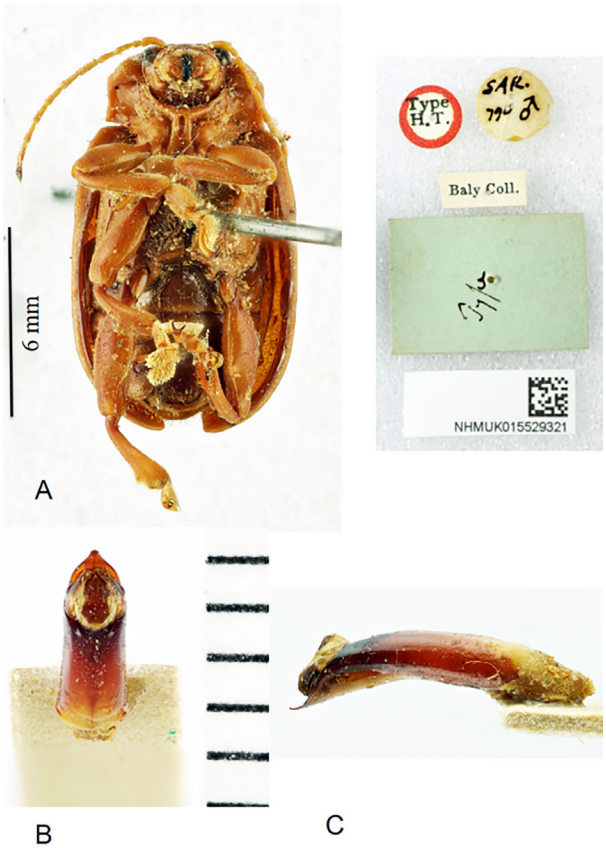

Figure 5. *Podontia flava* Baly, 1865: [A] habitus, ventral aspect; [B] genitalia, dorsal aspect; [C] genitalia, lateral aspect (photograph of the holotype from NHMUK, courtesy of Dr. Michael Geisler and Ms. Keita Matsumoto).

long, deep longitudinal groove on each side; with short, deep, wide posterior groove; basal longitudinal groove with deep pit or puncture (Figure 4A).

Scutellum. Inverted bell-shaped, smooth.

Elytron. Humeral margin nearly straight, near scutellum with a narrow, short convex margin; humeral angle rounded; lateral margin nearly parallel, undulate when viewed laterally; with a narrow explanate margin, narrowing toward the posterior angle, widening toward the sutural angle, with wide, smooth margin above explanate margin; posterior angle widely rounded; sutural angle rounded; surface with 10 interspace striae of round puncture holes; without elevated carinae, smooth.

Legs. Metafemur slender. tarsal claws bifid, inwardly curved.

Ventral side of thorax. Prosternum bifurcate; prosternal bridge with distinct, deep, longitudinal depression (Figure 5A).

Abdomen. Terminal sternite with U-shaped genital opening.

Body size. L = 12.0–13.0 mm, W = 7.5 mm

Distribution. Borneo (Sumatra, Sabah), Brunei

Male genitalia. Elongate, 3.5 x longer than wide; nearly parallel-sided; apically broader; slightly bent at middle in lateral view; endophallic median sclerite at ostium, median sclerite whip-like, apically tapered, dorsal part of ostium bare (Figures 5B and C).

Remarks. The species is very similar to *P. rustiai* **new species** with the elytra brown or yellow and the elytral interspaces flattened. However, the body length of *P. flava* is 12.0–13.0 mm, whereas it is 9.0-11.0 mm in *P. rustiai* **new species**. The pronotum of *P. rustiai* **new species** has a transverse groove, whereas there is none in *P. flava*. The posterior groove of the pronotum has a short, deep, and wide longitudinal groove in *P. flava* and is absent in *P. rustiai* **new species.** The central line of the pronotum in *P. flava* has a short longitudinal groove, whereas it is absent in *P. rustiai* **new species.** However, the basal longitudinal groove of the pronotum in *P. rustiai* **new species** is short, longitudinal, and groove-like; its pit or puncture is as in *P. flava*. The prosternum of *P. flava* has a distinct, wide longitudinal groove or cavity mesally, whereas it is absent in *P. rustiai* **new species.** The endophallic median

sclerite of the paramere of the male genitalia in *P. flava* is whip-like and apically tapered, whereas it is shield-like and apically rounded in *P. rustiai* **new species.** The new species was compared to the digital photographs of the habitus and male genitalia of the holotype of *P. flava* from the NHMUK, courtesy of Dr. Michael Geisler and Ms. Keita Matsumoto (Figures 4A and B; Figures 5A–C).

Key to the Species of *Podonti*a Dalman of the Philippines and Sarawak

1. Elytron with 9 (total of 18 independent spots) blackish irregular spots or elytra with 14 collective black spots. Pronotum with distinctly wide mesal depression on each side .... *Podontia quatuordecimpunctata* Linnaeus

Elytron without blackish irregular spots on its elytra. Pronotum without distinct and wide mesal depression on each side. 2

2. Prosternum without longitudinal groove or depression. Pronotum without transverse groove; without short, deep, and wide posterior groove; central line with distinctly short groove; basal longitudinal groove with short-like depression. Metafemur ventral posterior margin distinctly rounded. Labrum anterior margin distinctly rounded. Endophallic median sclerite of paramere of male genitalia shield-like, apically rounded. ….....…. …… *Podontia rustiai* Calcetas and Staines **new species**

Prosternum with longitudinal groove or depression. margin truncate. Pronotum with transverse groove; with short, deep, and wide posterior groove; central line with distinctly short groove; basal longitudinal groove with pit or puncture-like depression. Endophallic median sclerite of paramere of male genitalia whip-like, apically tapered. ….....…… *Podontia flava* Baly

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