



Taxonomic review of the tribe Himalusini (Coleoptera: Staphylinidae: Aleocharinae), with new synonymies

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Abstract

The tribe Himalusini Klimaszewski, Pace & Center, 2010 is taxonomically reviewed based on examination of type and non-type material of its constituent genera. The species of the genus *Parabrachida* Cameron, 1939 are reassessed and the following new synonymy is proposed: *Parabrachida decipiens* Cameron, 1939 = *Himalusa thailandensis* Pace, Klimaszewski & Center, 2010, **syn. nov.** *Parabrachida* is transferred from the tribe Homalotini Heer, 1839 to Himalusini. For the taxa included in the tribe Himalusini, one generic synonym is established: *Protinodes* Sharp, 1888 = *Himalusa* Pace, 2006, **syn. nov.**, and one new combination is proposed: *Protinodes annapurnensis* (Pace, 2006), **comb. nov.** Notably, the present study demonstrates that *Parabrachida decipiens*, a species described by Cameron in 1939, was misplaced as a member of *Himalusa*, and its reassignment to *Parabrachida* based on type material highlights the critical importance of re-examining historical specimens. In total, five species in three genera are recognized in Himalusini.

Key words: Asia, rove beetle, new combination, new synonymy, redescription

Introduction

The tribe Himalusini Klimaszewski, Pace & Center, 2010 was established to accommodate the morphologically and ecologically extraordinary genus *Himalusa* Pace, 2006. One species in the tribe has been confirmed to feed on the leaves of sewer vine (Klimaszewski *et al.* 2010), an exceptionally rare feeding strategy within Aleocharinae, since other species are known to be predators, fungivores, saprophages or pollen feeders (Thayer 2016). This tribe is distinguished from other aleocharine tribes by the combination of the following character states: maxillary palpus with four palpomeres, last one with pseudosegment; ligula short, entire and in the form of a small lobe; labial palpi with two palpomeres bearing minute apical pseudosegment; and shape of parameres and morphology of median lobe of aedeagus as illustrated (Maruyama *et al.* 2014: figs. 1, 2–5). The highly derived morphology of mouthparts deviates markedly from those of other aleocharines. These extraordinary modifications in the feeding habits, specific morphology of mouthparts and genitalia led Klimaszewski *et al.* (2010) to establish Himalusini as a distinct and morphologically isolated tribe.

Currently, Himalusini comprises a small number of species found only locally in Asia. Maruyama *et al.* (2014) subsequently transferred *Protinodes* Sharp, 1888 and *Sinanarchusa* Pace, 2013 to the tribe, bringing the total to four species across three genera. Although the phylogenetic position of Himalusini remains uncertain, Maruyama & Parker (2017) suggested a close relationship with the tribes Autaliini and Homalotini, suspecting that Himalusini may belong to the HALD clade proposed by Orlov *et al.* (2020), although this placement has yet to be rigorously tested.

During an examination of type specimens of *Parabrachida* Cameron, 1939 housed at the Natural History Museum, London (BMNH), one of the authors (Hashizume) concluded that this genus also belongs to Himalusini. Interestingly, the type species of *Parabrachida*, *Pa. decipiens* Cameron, 1939, was once described as a species of *Himalusa* (as *H. thailandensis* Pace, Klimaszewski & Center, 2010). This finding highlights the enduring value of historical type specimens in revealing overlooked taxonomic relationships. Following Cameron's works (e.g., Cameron, 1920, 1939) and those of other researchers, numerous aleocharine genera were subsequently described from Asia, particularly by Pace (e.g., Pace, 1992, 2002, 2004), many of which have yet to be critically reassessed. The present study emphasizes the importance of such re-evaluations for clarifying genus-level classifications and ensuring the stability of higher-level taxonomy. Accordingly, the authors undertook a comprehensive review of the known species of Himalusini, in which new synonymies and combinations are proposed, and the tribal framework is updated.

Materials and methods

The specimens examined in the present study are deposited in the Natural History Museum (BMNH), London, UK, the Museum of Natural and Environmental History in Shizuoka, Japan (SPMN), and the Taiwan Agricultural Research Institute, Taichung, Taiwan (TARI).

The label data of the type specimen are quoted verbatim, with the text in double quotation marks (“”); a slash (/) was used to separate lines on the same label, and a double slash (//) was used to separate different labels on the same pin.

Dissected body parts were soaked in a 10% KOH solution and then heated in a hot water bath until the muscles and other soft tissues were dissolved. Later, they were embedded in Euparal and as permanent specimens on glass plates, following the procedure of Maruyama (2004b). Morphological observations were conducted using Leica S8APO microscope. Habitus photos were taken using a Sony α 7R IV digital camera with a Canon MP-E65 mm 1–5 \times macro lens. The tergites and aedeagi were photographed with a Canon EOS kiss X8i digital camera attached to an Olympus BX50 compound microscope. The photos were combined in Zerene Stacker software 3.2.0 (Zerene System LLC, USA). The line drawing was made using a Nikon ECLIPSE Ci-L microscope fitted with a Nikon Y-IDT drawing tube and the Clip Studio Paint Pro 1.04 software (Celsys, Inc., Tokyo, Japan). Figures were edited using GIMP 2.8.22 software.

The side of the median lobe of aedeagus containing the medial foramen is referred to as the ventral side; the opposite side is referred to as the dorsal side.

The following abbreviations were used for measurements:

- BL —body length from anterior margin of clypeus to posterior margin of tergite VII;
- FBL —forebody length from anterior margin of clypeus to posterior end of elytral suture;
- HW —head width, including eyes;
- PL —pronotal length;
- PW —pronotal width;
- EL —elytral length from humeral angle to posterolateral angle;
- EW —elytral width (together).

All measurements are in millimeters and are reported in the format “minimum–maximum”.

Taxonomy

Tribe Himalusini Klimaszewski, Pace & Center, 2010

(Figs. 1–3)

Himalusini Klimaszewski, Pace & Center in Klimaszewski, Pace, Center & Couture, 2010: 3 (original description; type genus: *Himalusa* Pace, 2006).

Sinanarchusini Pace, 2013: 22 (original description; type genus: *Sinanarchusa* Pace, 2013); Maruyama *et al.*, 2014: 394 (synonymized with Himalusini).

Diagnosis. Himalusini is distinguished from other aleocharine tribes by the combination of the following character states: paramere distinctive, apical lobe partially or entirely covered with fine scale-like protuberances; lacinia with several large elongate or triangular teeth near apex; labium with extremely broad ligula; labial palpus with two palpomeres; prementum transverse with elongate, delicate and thin lateral lobes of apodeme (component “r” of premental sclerite in Weide *et al.* (2014)) that converge at their apices; maxillary palpus with a pseudosegment; tarsal formula 4-4-4 or 4-4-5 (modified after Maruyama *et al.* 2014; most of these features shown in their figures 2–5).

Remarks. *Parabrachida decipiens* Cameron, 1939 (= *Himalusa thailandensis* Pace, Klimaszewski & Center, 2010, **syn. nov.**) is known to feed on the leaves of sewer vine (Klimaszewski *et al.* 2010), and is the only known leaf-feeding species of Aleocharinae, but the feeding habit of other species of this tribe remains unknown.

Genus *Protinodes* Sharp, 1888

Protinodes Sharp, 1888: 377 (original description; type species: *Protinodes puncticollis* Sharp, 1888); Maruyama *et al.*, 2014: 395 (diagnosis).

Himalusa Pace, 2006: 357 (original description; type species: *Himalusa annapurnensis* Pace, 2006). **Syn. nov.**

Diagnosis. The genus *Protinodes* is distinguished from *Parabrachida* by the transverse labrum, the ligula (Maruyama *et al.* 2014: fig. 3) not prominent medially, and the symmetrical median lobe of the aedeagus (Figs. 1D–E; Pace, 2006: figs. 75–76). This genus differs from *Sinanarchusa* in the narrow and styliiform apical lobe of the paramere of the aedeagus.

Remarks. The habitus, mouthparts, and aedeagus of the type species of the genus *Himalusa*, *Himalusa annapurnensis* Pace, 2006, suggest a close relationship with *Protinodes puncticollis* Sharp, 1888. In particular, the morphology of the mouthparts—which are often considered critical for the classification of Aleocharinae—is so similar between the two species that it does not justify their separation at the generic level. According to their original descriptions (Sharp 1888 and Pace 2006), these two species differ in the tarsal formula (*Protinodes puncticollis*: 4-4-4; *Himalusa annapurnensis*: 4-4-5), a character traditionally considered important for the generic classification within Aleocharinae. However, the hind tarsi of *Protinodes puncticollis* were previously miscounted and are in fact 5-segmented. It is worth noting that Maruyama *et al.* (2014) also mistakenly recorded the hind tarsi as 4-segmented, due to the difficulty of observing this character accurately under dry conditions. Therefore, we propose the following new synonymy and a new combination: *Protinodes* = *Himalusa* **syn. nov.**, *Protinodes annapurnensis* (Pace, 2006), **comb. nov.**

Protinodes puncticollis Sharp, 1888

(Fig. 1)

Protinodes puncticollis Sharp, 1888: 378 (original description; type locality: “Tokio”); Maruyama *et al.*, 2014: 395 (redescription).

Type material. Lectotype, here designated, male, “*Protinodes* / *puncticollis* / Type D.S. / Tokio. Japan // Type [round label with red border] // Tokio. / 25.IX.-27.IX.81. // Japan. / G. Lewis. // Sharp Coll. / 1905-313. // Lectotype / *Protinodes* / *puncticollis* Sharp, 1888 / des. Hashizume *et al.* 2025” (BMNH) (maxilla, labium, abdominal segments VIII–X and aedeagus were dissected and mounted by MM in 2011).

Additional material examined. Putative syntypes (see Remarks below): 2 females, “Suô / IV // *Protinodes* / *puncticollis* Sharp / Det. T. Shiraki” (TARI). Other specimens: 1 male, 1 female, JAPAN: Honshu: Shizuoka-ken, Susono, Suyama, Ônohara, 17 IX 2009, T. Kato leg. (SPMN).

Diagnosis. *Protinodes puncticollis* is distinguished from *Pr. annapurnensis* by the reddish body color and the relatively stout median lobe of aedeagus.

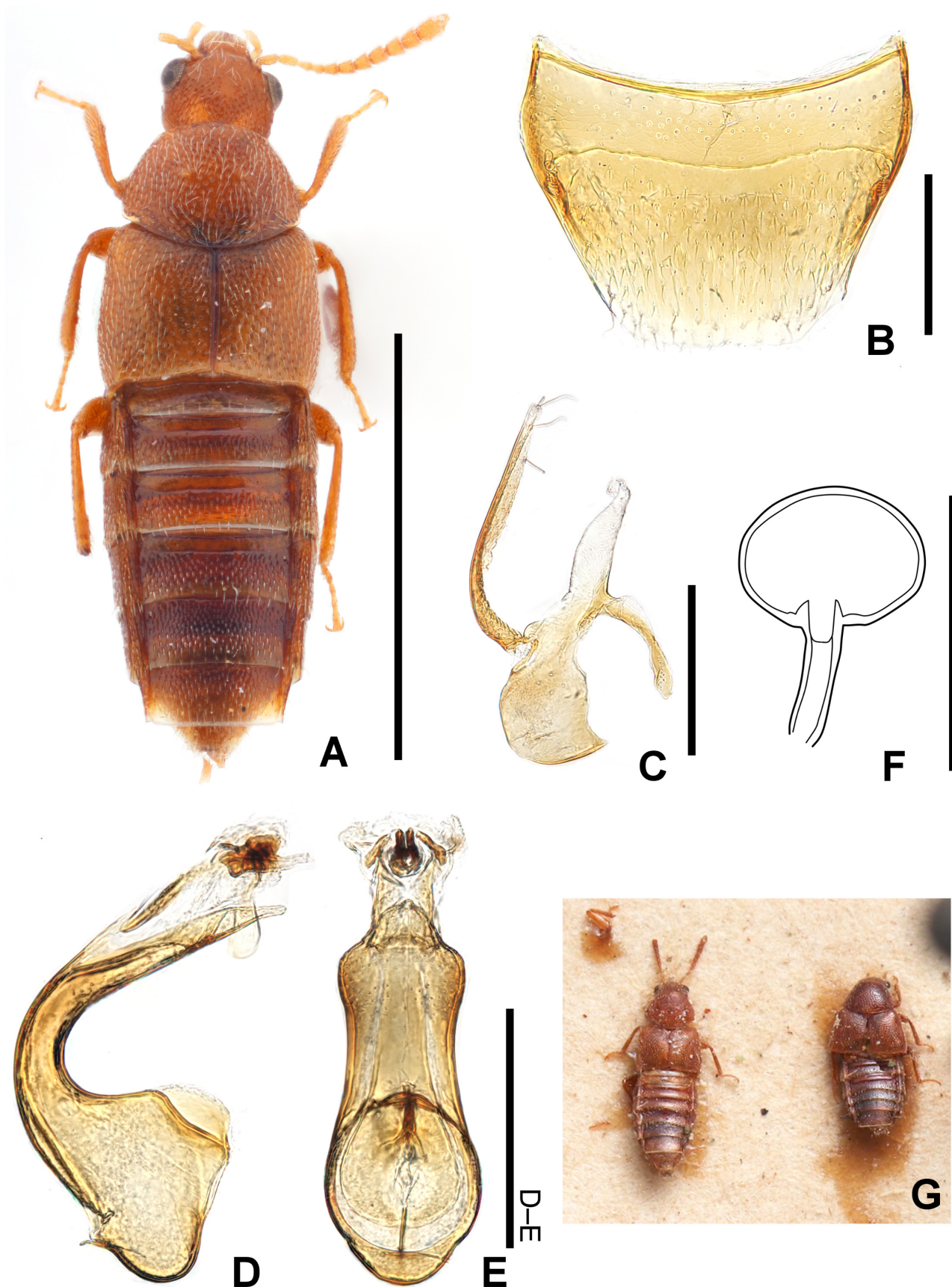


FIGURE 1. *Protinodes puncticollis* Sharp, 1888. A, Habitus; B, male tergite VIII; C, right paramere; D, median lobe of aedeagus, lateral; E, ditto, ventral; F, spermatheca; G, putative syntypes of *Protinodes puncticollis* (photo by R. Seki, used with permission). Scale bars: 1.0 mm for A; 0.2 mm for B–E; 0.1 mm for F.

Additional description. Measurements and ratios ($n = 2$). BL: 2.66–2.80; FBL: 1.28–1.30; HW: 0.44–0.48; PL: 0.50; PW: 0.69–0.71; EL: 0.64–0.65; EW: 0.88–0.89. PW/PL: 1.38–1.43; PW/HW: 1.43–1.63; EW/EL: 1.38; EL/PL: 1.28–1.30; EW/PW: 1.25–1.27.

Tarsal formula 4-4-5.

Male. Tergite VIII (Fig. 1B) not modified.

Female. Spermatheca (Fig. 1F) simple; bulbus distalis subspherical.

Distribution. Japan (Honshu).

Remarks. Maruyama *et al.* (2014) illustrated the “holotype” of this species; however, Sharp (1888) originally described it based on three specimens, indicating that this specimen is, in fact, one of the syntypes. Here, this specimen is designated as the lectotype. The other two presumed syntypes of this species are housed at TARI. A literal interpretation of the labels suggests that these specimens are not part of the type series. However, both presumed syntypes are mounted on the characteristically thick paper cards frequently used by Sharp, and the method of preparation and use of glue closely resembles those of other specimens prepared by Sharp. In these two specimens, however, this portion of the card appears to have been cut off. The so-called “Shiraki specimens” housed at TARI and other institutions are known to have significant unresolved issues (e.g., Suzuki & Minami 2008, 2015). One such issue—still under investigation—is the possibility that Dr. Tokuichi Shiraki removed a large number of the type specimens of beetles described from Asia (including some syntypes) from the British Museum (Natural History) prior to World War II, subsequently altering their labels, and encrypting them. Therefore, there remains a strong possibility that these specimens are indeed syntypes.

For a detailed redescription, see Maruyama *et al.* (2014). The habitus is shown in Fig. 1A. The paramere and median lobe of the aedeagus are as in Figs. 1C–E.

***Protinodes annapurnensis* (Pace, 2006), comb. nov.**

Himalusa annapurnensis Pace, 2006: 357 (original description; type locality: “Nepal, Annapurna Region, Umg. Dana, 1600 m NN”).

Diagnosis. *Protinodes annapurnensis* is distinguished from *Pr. puncticollis* by the black body color and the more slender median lobe of aedeagus.

Distribution. Nepal.

Genus *Parabrachida* Cameron, 1939

Parabrachida Cameron, 1939: 49 (original description; type species: *Parabrachida decipiens* Cameron, 1939).

Diagnosis. The genus *Parabrachida* is distinguished from *Protinodes* by the anteriorly prominent labrum (Klimaszewski *et al.* 2010: fig. 4), the ligula prominent medially (Klimaszewski *et al.* 2010: fig. 8), and the asymmetrical median lobe of the aedeagus (Figs. 2E–F, 3E–F). This genus differs from *Sinanarchusa* in the ligula prominent medially, the asymmetrical median lobe of the aedeagus, and the narrow and styliform apical lobe of the paramere of the aedeagus.

Remarks. *Parabrachida* has traditionally been placed in the tribe Homalotini to date (Newton 2025). Following the definition of Himalusini by Maruyama *et al.* (2014), we reassign this genus from Homalotini to Himalusini.

***Parabrachida decipiens* Cameron, 1939**

(Fig. 2)

Parabrachida decipiens Cameron, 1939: 50 (original description; type localities: “Bengal: Kalimpong, Samsingh, alt. 1800 feet”; “Burma: Ruby Mines”).

Himalusa thailandensis Pace, Klimaszewski & Center in Klimaszewski, Pace, Center & Couture, 2010: 6 (original description; type locality: “THAILAND, Lampang Province, Sop Prap District, N17°84'20.8" E99°20'33.3""); Eldredge *et al.*, 2016: 501 (larval description). **Syn. nov.**

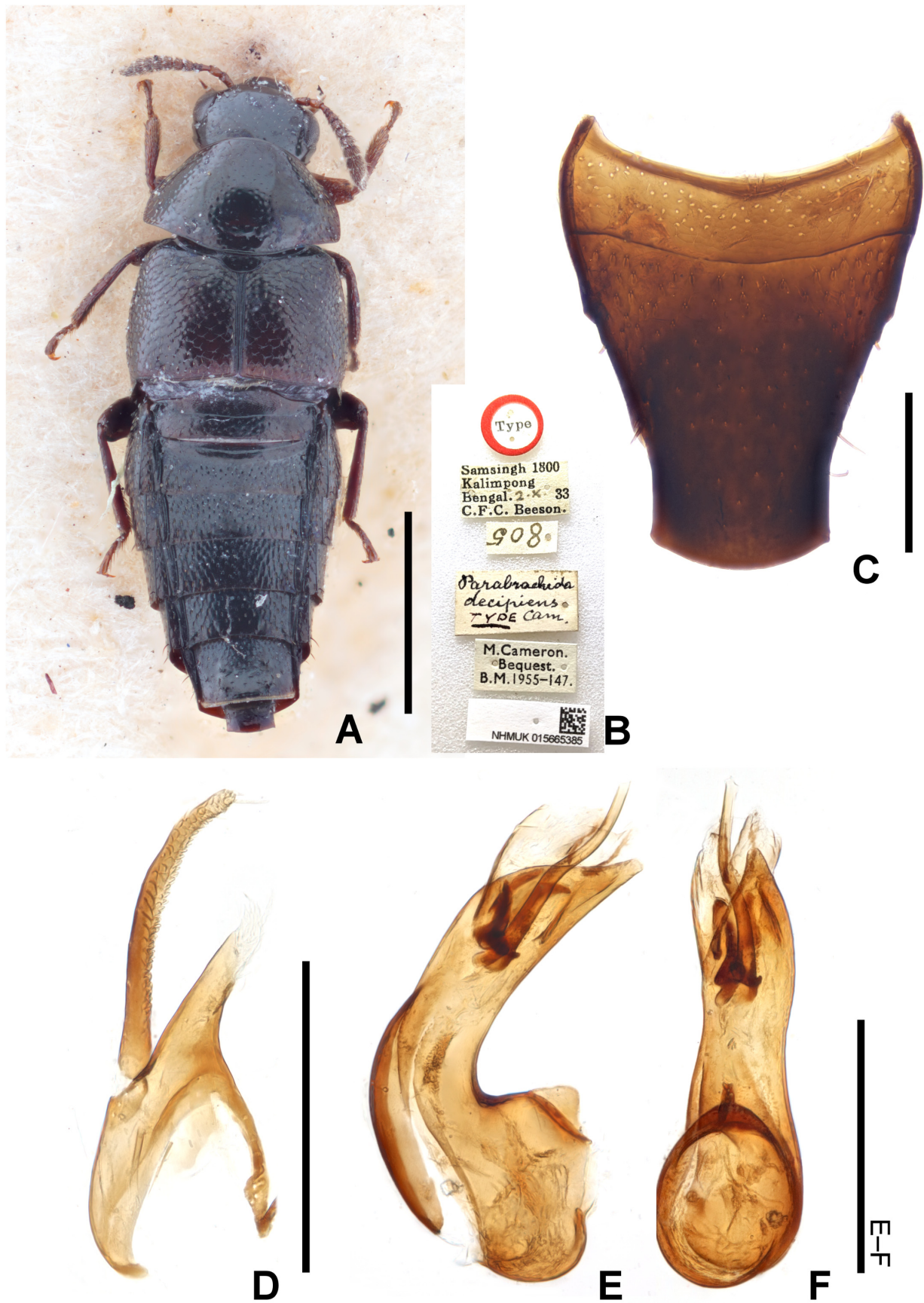


FIGURE 2. Lectotype of *Parabrachida decipiens* Cameron, 1939. A, Habitus (lectotype); B, labels of lectotype; C, male tergite VIII; D, right paramere of aedeagus; E, median lobe of aedeagus, lateral; F, ditto, ventral. Scale bars: 1.0 mm for A; 0.2 mm for C–F.

Type material examined. Lectotype, here designated, male, “Type [round label with red border] // Samsingh 1800 / Kalimpong / Bengal. 2.X.33 / C.F.C. Beeson. // 805 // Parabrachida / decipiens / TYPE Cam. // M. Cameron. / Bequest. / B.M. 1955-147. // NHMUK 015665385” (BMNH). Paralectotypes, 3 exs, Burma, Ruby Mines, Doherty leg. (BMNH).

Diagnosis. *Parabrachida decipiens* is distinguished from *Pa. persimilis* by the elongate (distinctly longer than wide) male tergite VIII, and the moderately slender median lobe and long flagellum of the aedeagus, and the Y-shaped sclerite located slightly right of the flagellum.

Measurements and ratios of lectotype. BL: 3.00; FBL: 1.40; HW: 0.64; PL: 0.57; PW: 0.98; EL: 0.70; EW: 1.10. PW/PL: 1.70; PW/HW: 1.53; EW/EL: 1.57; EL/PL: 1.22; EW/PW: 1.13.

Distribution. India, Myanmar, Thailand.

Remarks. For detailed descriptions, see Cameron (1939) and Klimaszewski *et al.* (2010) (as *Himalusa thailandensis*).

***Parabrachida persimilis* Cameron, 1944**

(Fig. 3)

Parabrachida persimilis Cameron, 1944: 158 (original description; type locality: “Cochin China” [Cochinchina; Southern Vietnam]).

Type material examined. Lectotype, here designated, male, “Cochin / China // M. Cameron. / Bequest. / B.M. 1955-147. // NHMUK 015665389” (BMNH). Paralectotypes: 2 exs, Cochin China (BMNH).

Diagnosis. *Parabrachida persimilis* is distinguished from *Pa. decipiens* by the not elongate (only as long as wide) male tergite VIII, the more slender median lobe of aedeagus (especially in ventral view), the short flagellum of the median lobe of aedeagus, and the nearly triangular sclerite located slightly right of the flagellum.

Redescription. Measurements of lectotype. BL: 2.02; FBL: 1.22; HW: 0.55; PL: 0.44; PW: 0.72; EL: 0.56; EW: 0.82.

Body (Fig. 3A) black, robust.

Head sparsely punctured; punctures shallow with short setae; microsculpture indistinct, composed of slightly transverse meshes. Antennae short and stout.

Thorax. Pronotum transverse (PW/PL: 1.64), wider than head (PW/HW: 1.31), sparsely punctured; punctures shallow with short setae; microsculpture indistinct, composed of slightly transverse meshes. Scutellum with short setae; microsculpture composed of transverse meshes. Elytra transverse (EW/EL: 1.47), longer than pronotum (EL/PL: 1.27), wider than pronotum (EW/PW: 1.14), with distinct large scale-shaped microsculpture; entire elytra also covered with fine, indistinct microsculpture composed of broken almost isodiametric to transverse meshes; setae longer than those of pronotum.

Abdomen narrowed posteriad. Abdominal tergites III–VI densely punctured, posterior half of tergite VII without distinct puncture; III–V with distinct scale-shaped microsculpture; also covered with fine, indistinct microsculpture composed of broken almost isodiametric to transverse meshes; setae as long as or shorter than those of pronotum.

Male. Tergite VIII (Fig. 3C) truncate apically. Paramere of aedeagus with long styliiform apical lobe with small protrusions; with short setae located near apical end. Median lobe of aedeagus slender, asymmetrical, and curved ventrally; with short flagellum and some indistinct sclerites; sclerite located right of flagellum nearly triangular in shape.

Distribution. Vietnam.

Remarks. In *Parabrachida decipiens*, body size varies considerably, with pronounced differences in the shape of male tergite VIII between large and small individuals (Klimaszewski *et al.* 2010). If similar body size variation occurs in *Pa. persimilis*, the shape of male tergite VIII may not be limited to what is shown here.

According to Cameron (1944), this species was described based on four specimens, but we were able to examine three of them.

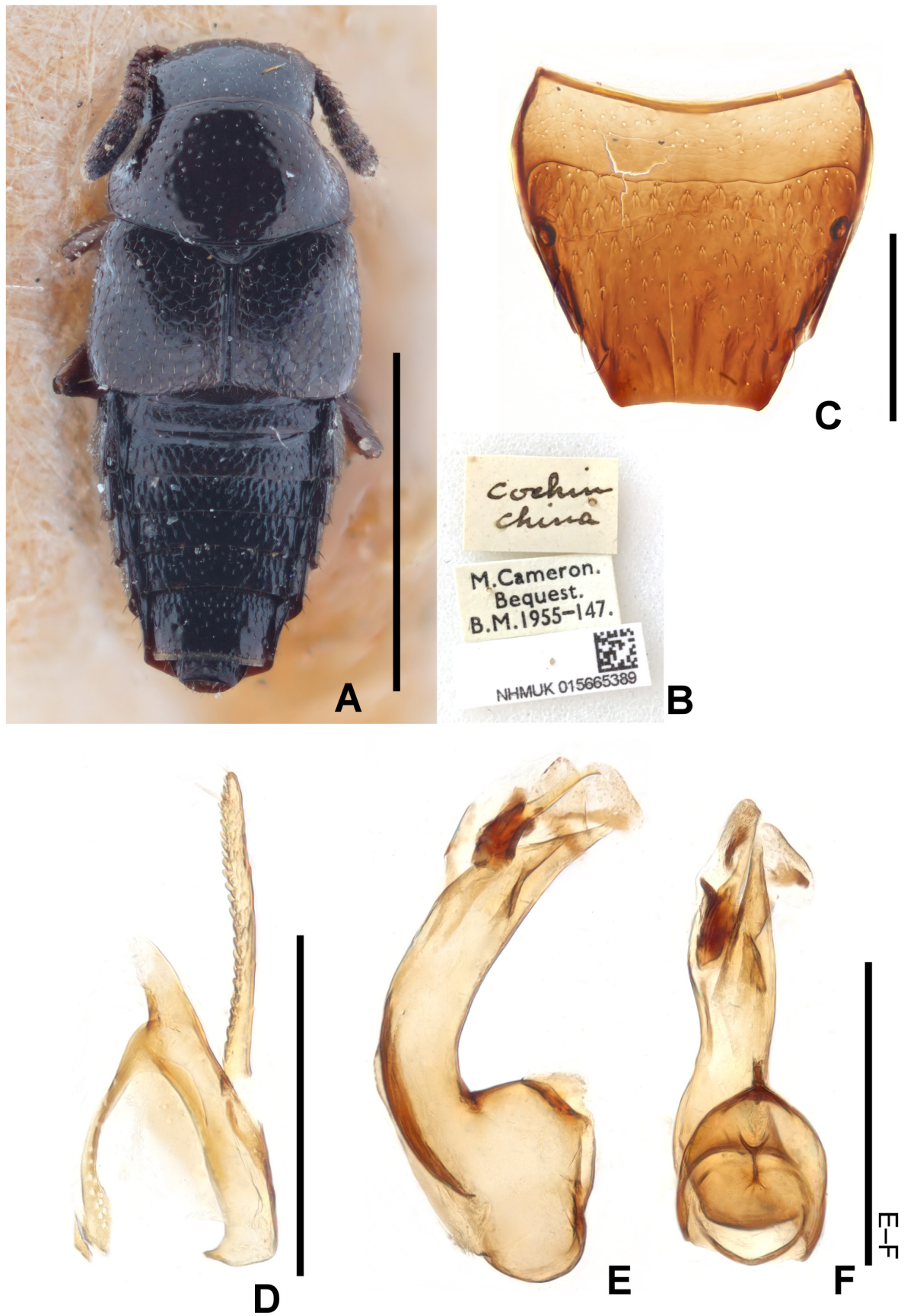


FIGURE 3. Lectotype of *Parabrachida persimilis* Cameron, 1944. A, Habitus (lectotype); B, labels of lectotype; C, male tergite VIII; D, left paramere of aedeagus; E, median lobe of aedeagus, lateral; F, ditto, ventral. Scale bars: 1.0 mm for A; 0.2 mm for C–F.

Genus *Sinanarchusa* Pace, 2013

Sinanarchusa Pace, 2013: 23 (original description; type species: *Sinanarchusa daxuensis* Pace, 2013).

Diagnosis. The genus *Sinanarchusa* is distinguished from *Protinodes* by the ligula not prominent medially, the thick and cylindrical apical lobe of paramere of aedeagus, and the almost symmetrical median lobe of aedeagus. This genus differs from *Parabrachida* in the thick and cylindrical apical lobe of paramere of aedeagus. This genus also differs from the other two genera in having a tarsal formula of 4-4-4.

Sinanarchusa daxuensis Pace, 2013

Sinanarchusa daxuensis Pace, 2013: 23 (original description; type locality: “China: Sichuan, Daxue Shan, Gongga Shan, Hailougou glacier park, 102°04'E 29°36'N, river valley, ca. 1 km above camp I, 2100 m”).

Diagnosis. *Sinanarchusa daxuensis* is distinguished from other species of Himalusini by the thick and cylindrical apical lobe of the paramere of the aedeagus and the relatively stout median lobe of the aedeagus.

Distribution. China.

Key to the genera and species of Himalusini

1. Tarsal formula 4-4-4; apical lobe of paramere of aedeagus thick, cylindrical. *Sinanarchusa* Pace
- Tarsal formula 4-4-5; apical lobe of paramere of aedeagus narrow, styliiform. *Sinanarchusa daxuensis* Pace 2
2. Labrum prominent anteriorly; ligula prominent medially; median lobe of aedeagus asymmetrical. . . *Parabrachida* Cameron . 3
- Labrum normal, transverse; ligula not prominent medially; median lobe of aedeagus symmetrical. . . *Protinodes* Sharp. 4
3. Median lobe of aedeagus moderately slender; flagellum of median lobe of aedeagus long; sclerite located slightly right of flagellum Y-shaped. *Parabrachida decipiens* Cameron
- Median lobe of aedeagus more slender, especially in ventral view; flagellum of median lobe of aedeagus short; sclerite located slightly right of flagellum nearly triangular. *Parabrachida persimilis* Cameron
4. Body light brown; median lobe of aedeagus moderately stout *Protinodes puncticollis* Sharp
- Body black; median lobe of aedeagus more slender, especially in ventral view *Protinodes annapurnensis* (Pace)

Discussion

This study revises the composition of the tribe Himalusini based on detailed morphological assessment of type specimens and other reference materials. The synonymy of *Himalusa* with *Protinodes* is supported by shared diagnostic characters, particularly in the mouthparts and genitalia, which are crucial for generic delimitation in Aleocharinae. In addition, *Parabrachida* is revealed to be a previously overlooked member of Himalusini, clarifying its tribal placement and reducing ambiguity in historical genus-level assignments.

Our findings highlight the persistence of taxonomic uncertainty where original descriptions were based on limited morphological traits, such as tarsal formulas. While Himalusini remains a small, morphologically distinctive lineage, it continues to attract attention due to its highly derived characters and rare phytophagous habit.

The phylogenetic placement of Himalusini within Aleocharinae has been examined in multiple molecular studies. Osswald *et al.* (2013) included *Himalusa thailandensis* in a broad-scale analysis and placed Himalusini within a clade that includes Homalotini and its close relatives. A similar position was recovered by Maruyama and Parker (2017) based on molecular data with a different set of taxa, placing Himalusini near Autaliini and Homalotini. This congruence across studies could provide insights into the phylogenetic placement of Himalusini, though only a single taxon from Himalusini has been included so far, and internal relationships within the tribe remain to be tested. The delicate and thin posterior premental projections are filamentously elongated, and this character is mainly seen in Aleocharini (Maruyama 2004a). Even though Himalusini is closely related to Homalotini or Autaliini, it is undoubtedly a highly distinctive group in adult morphology. The presence of fine, scale-like protuberances partially or entirely covering the apical lobe of the paramere is presumed to be one of the synapomorphies of this tribe.

In addition to molecular evidence, recent work on larval morphology also supports the phylogenetic placement of Himalusini. Eldredge *et al.* (2016) provided the first detailed description of the larva of *Parabrachida decipiens* (as *Himalusa thailandensis*), revealing the presence of a highly derived abdominal defensive gland, termed the “Homalota-type LADG.” This gland type is shared with several members of the HALD clade, such as Autaliini, Bolitocharina, Gyrophaenina, and others, and appears to carry a strong phylogenetic signal. The larval mouthparts of *Himalusa* are also unusually robust and adapted for phytophagy, further distinguishing the genus from most other Aleocharinae. These findings demonstrate that larval characters, although rarely available, can significantly inform higher-level classification and should therefore be considered in future phylogenetic studies.

Further molecular sampling is essential to fully understand the evolutionary history and internal structure of Himalusini. In particular, obtaining sequence data for *Protinodes*, *Parabrachida*, and *Sinanarchusa* will allow testing the monophyly and internal relationships of the tribe. In parallel studies, expanded documentation of larval morphology and life history traits across the tribe may yield important synapomorphies linking Himalusini to other major aleocharine lineages.

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