

A new species of *Galerita* Fabricius, 1801 from Peru (Coleoptera: Carabidae: Galeritini)

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Abstract. A new species of carabid beetle is described and illustrated on the basis of specimens collected in Peruvian tropical rainforest: *Galerita heterocarinata* sp. nov. Morphological affinities of the new species are discussed and comparisons are performed with superficially resemblant species lacking carinulae, or bearing heterogeneously developed carinae.

INTRODUCTION

The genus *Galerita* Fabricius, 1801 is pantropical in distribution, with several tens of described species occurring in the Ethiopian, Neotropical and Oriental regions (Reichardt 1965, 1967). Until the systematic revision by Reichardt (1967), 51 species placed in ten species group were known from North, Central and South America. After that, the same author described one Venezuelan species in the *costulata* group (Reichardt 1971) and one Mexican species in the *striata* group (Reichardt 1976). More recently, four Neotropical representatives of the genus were added, one Bolivian species in the *carbonaria* group (Hovorka 2012), one Panamanian species in the *unicolor* group (Hovorka 2016) and two Panamanian species in the *jelskii* group (Hovorka 2017).

According to available checklists and reviews, the following eight *Galerita* species have been recorded from Peru (Reichardt 1967, Erwin et al. 2015): *G. affinis* (Dejean, 1831), *G. brachinoides* Perty, 1830, *G. costulata* Liebke, 1939, *G. inca* Reichardt, 1967, *G. jelskii* Chaudoir, 1877, *G. occidentalis* (Olivier, 1795), *G. simplicicarinata* Reichardt, 1967 and *G. unicolor* Latreille & Dejean, 1823.

In the present study, a new species of the genus *Galerita* is described based on specimens collected in Peruvian tropical rainforest. Also, its morphological affinities and superficial resemblance with other species in the genus are discussed.

MATERIAL AND METHODS

Abbreviations:

MEKRB Museo de Entomología Klaus Raven Büller, Universidad Nacional Agraria La Molina, Lima, Peru (Clorinda Vergara);

MUSM	Museo de Historia Natural Javier Prado, Universidad Nacional Mayor de San Marcos, Lima, Peru (Mabel Alvarado);
SENASA	Laboratorio de Sanidad Vegetal, Servicio Nacional de Sanidad Agraria, Lima, Peru (Norma Nolasco).

Taxonomic placement of specimens was made using recent available keys to tribes and genera of Neotropical Carabidae (Martinez 2005, Roig-Juñent 2021). In addition, a dichotomous key to genera, species groups and species of American Galeritini was employed (Reichardt 1967). Relevant morphological characters for the genus *Galerita* were obtained from descriptions and images available in Reichardt (1967, 1971, 1976), Martinez (2005) and Hovorka (2012, 2016, 2017). Specimens housed in Peruvian entomological collections (MEKRB, MUSM, SENASA) were employed as comparative material.

The following measurements and body proportions were applied to specimens based on Reichardt (1967) and Hovorka (2017): Total length (TL), from the tip of mandibles to apex of elytra, excluding the pygidium; head length/width (HL/HW), length from clypeal apex to constriction behind the eyes, not including the neck, width at the widest point, including the eyes; eye length/occiput length (EyL/OcL), eye length measured longitudinally, occiput measured parallel to the longitudinal axis, from the posterior margin of eye to beginning of neck; pronotum length/width (PL/PW), length along the median line, width at widest point; elytra length/width (EL/EW), length from base to apex, along suture, width at widest point.

The holotype and paratypes were indicated by red and yellow printed labels respectively, bearing the status of the specimens, name of species, name of the author, and year of the designation. Type specimens were housed at entomological collection of MUSM.

Type specimens were photographed with a Canon® EOS Rebel T5i DSLR, equipped with macro lens. Photos were edited using Combine ZP (Hadley 2006) and Adobe Photoshop software. Parameres were extracted, treated for 10 minutes in 20% KOH, washed with distilled water and adhered to a small piece of cardboard. Drawings were made with a lucid camera and then improved with Adobe Photoshop software. The distribution map was elaborated using SimpleMappr (Shorthouse 2010).

DESCRIPTION

Tribe Galeritini Jedlicka, 1941

Genus *Galerita* Fabricius, 1801

Galerita heterocarinata sp. nov.

(Figs. 1-9)

Type material. Holotype (♂): PERU, Loreto, Requena, zona reservada Sierra del Divisor, 07°12'01.39"S 74°46'44.93"W, 216 m, 16-19-ii-2009, C. Espinoza (MUSM). Paratypes (1 ♂, 4 ♀♀), same data as for holotype (MUSM).

Description. TL = 21.5-23.5 mm. Dorsal habitus (Figs. 1, 2). Elongated, flattened, head, pronotum, scutellum and elytra dorsal surfaces black; frons with two red spots on interocular space; mouthparts, clypeus, antennomeres 1-4 and epipleura black to dark reddish; antennomeres 5-11 rufous.

Head large, longer than wide ($HL/HW = 1.21$); occiput well developed behind the eyes, constricted posteriorly forming a distinct neck (Fig. 3). Mandibles flattened; each mandible with dorsal condylar tooth elongated and widened; basal labial palpomere with spiniform setae; mandibular and labial apical palpomeres securiform. Labrum trapezoidal, apically widened and concave, smooth, with six setigerous punctures on anterior margin, and lateral tufts of minute setae. Clypeus rectangular, rugose-punctate, with six setigerous punctures on anterior margin. Frons and occiput with a rugose-punctate depression, along each side of the median carina; punctures are dense, even anastomosed, bearing hirsute golden setae. Occiput as long as the diameter of one eye ($EyL/OcL = 1.03$). Eyes well developed and prominent, with two supra-orbital setae. Antennae filiform, long, almost reaching the middle of elytra; first antennomere (scape) large, twice as wide at apex than on base, shorter than combined length of antennomeres 2-3; antennomere 2 shorter than 3; antennomere 3 longest; antennomeres 4-11 subequal in length, slightly decreasing in thickness towards apex; apical antennomere rounded at apex; all antennomeres densely pubescent, with longer and hirsute golden setae on antennomeres 1-4.

Pronotum flat, as long as wide ($PL/PW = 1.06$), wider than head ($PW/HW = 1.41$), widest before the midpoint, with basal constriction, sides divergent behind the constriction (Fig. 4). Anterior angles rounded and blunt, posterior angles obtuse and protruding, lateral margins beaded, anterior and posterior margins not beaded. Disc raised, with median, longitudinal sulcus; with two pairs of marginal setae, one at widest point, the second at posterior constriction. Punctuation coarse and dense on disc, fine and dense along each side of disc, somewhat sparse on one specimen. Hypomeron with coarse and dense punctuation on anterior third, smooth on posterior two thirds. Scutellum large, triangular, with dense punctuation on anterior two thirds.

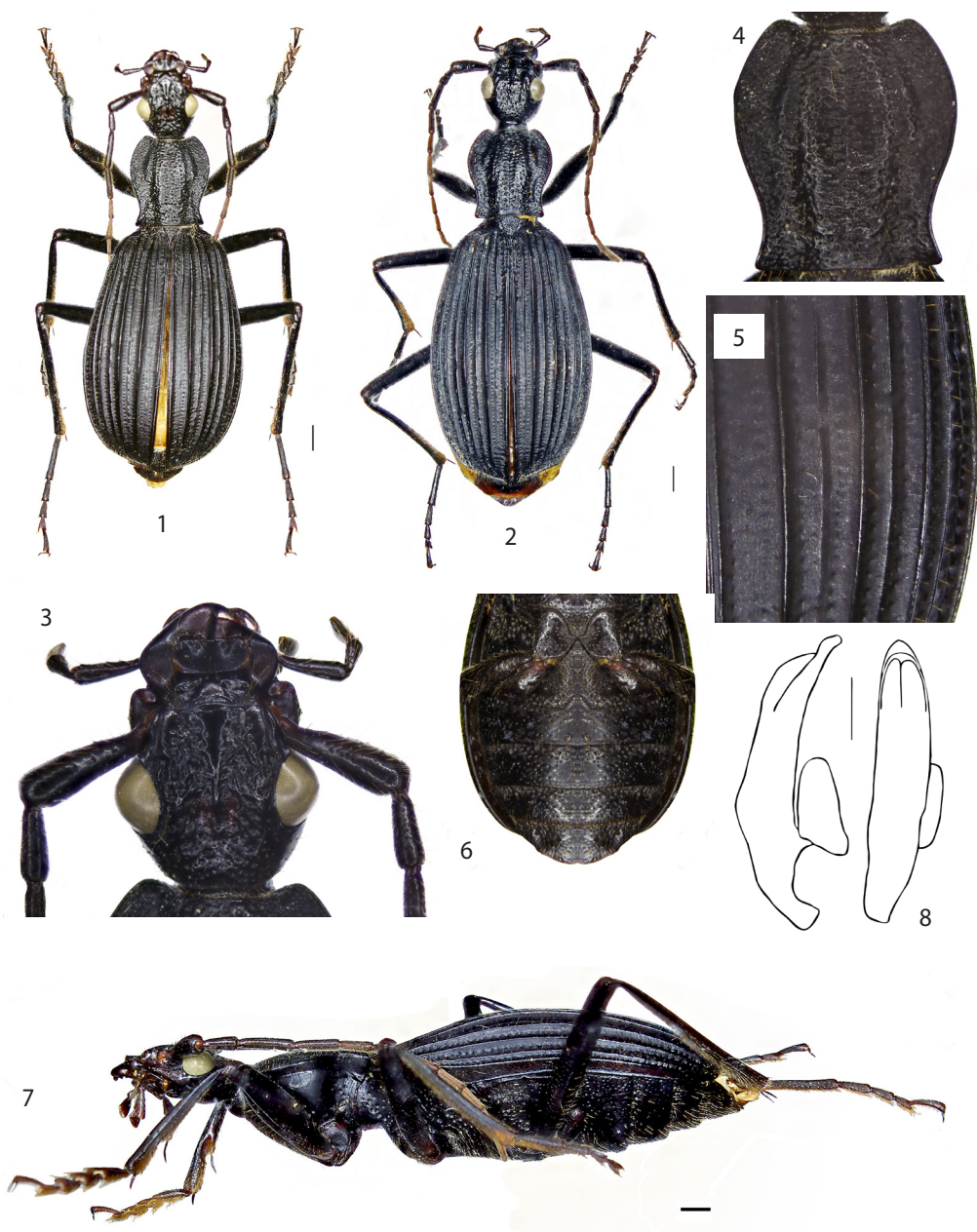
Elytra elongate-ovate, 1.5 times as long as wide ($EL/EW = 1.52$) and nearly twice as wide as pronotum ($EW/PW = 1.98$), widest at midpoint; with reduced humeri; carinate, truncate apically. Each elytron with carinae 1, 3, 5, 7 and 8 strong, sharper and higher, carinae 2, 4, 6 and 9 faint or evanescent; scutellar carina adjacent, but not joining the first carina; carinal interstices with carinulae completely evanescent, a single row of punctures bearing isolated hirsute golden setae, and surface transversely rugulose (Fig. 5). Lateral margin as sharp as the strongest carinae. Epipleura progressively narrowed towards the apex, 1.5 times wider at the base. Metathoracic wings completely reduced.

Prosternum, mesosternum, metasternum, metepisterna and abdominal sterna 1-6 with coarse and dense punctuation (Fig. 6). Metepisterna 1.5 times longer than wide. All ventral surfaces bearing hirsute golden setae.

Legs elongated, slender. Femora longer than tibiae; tibiae longer than tarsi (Fig. 7). Femora, tibiae and tarsi covered with hirsute golden setae on ventral surface. Male protarsomeres 1-4 asymmetrically dilated, ventrally covered with rows of elongate sensorial squamulae. Tarsal claws simple.

Aedeagus (Fig. 8) with median lobe fusiform; apex blunt and shortly protruding, directed to the left in dorsal view, slightly curved downward in lateral view.

Differential diagnosis. A large black *Galerita* species; head longer than wide, frons with two red spots on interocular space, frons and occiput with rugose-punctate depressions, occiput as long as the diameter of one eye; pronotum as long as wide, anterior angles



Figs. 1-9. *Galerita heterocarinata* sp. nov.: 1- male dorsal habitus; 2- female dorsal habitus; 3- head; 4- pronotum; 5- elytra, detail of structure; 6- abdominal sternites; 7- lateral view; 8- median lobe of aedeagus, left lateral view and dorsal view of apex; 9- distribution map. Scale bars = 1 mm.



rounded and blunt, posterior angles obtuse and protruding, disc raised with coarse and dense punctuation; elytra with nine carinae, 1, 3, 5, 7 and 8 strong, 2, 4, 6 and 9 faint, carinulae absent; metathoracic wings completely reduced; aedeagus with median lobe fusiform, apex blunt and shortly protruding.

Morphological affinities. Based on the dichotomous key and descriptions presented by Reichardt (1967), the new species would be placed in the *orbigny* species group, exhibiting the following characters: large body size; large head, well developed and prominent eyes; occiput as long as the diameter of one eye; frons and occiput very rugose, with a depression prolonged anteriorly along each side of the median frontal carina; pronotum constricted posteriorly, with sides divergent behind the constriction; elytral carinae well developed and scutellar carina not joining the first carina. The new species and *G. simplicicarinata* share the absence of

carinulae and reduction of metathoracic wings, but the latter has sparse pronotal punctuation and its elytra are abruptly widened behind the humeri. Because *G. simplicicarinata* was described based on a single female, its aedeagus is currently unavailable for comparison. However, and despite many other body differences, the aedeagi of *G. heterocarinata* and *G. orbigny* Brullé, 1837 are quite similar to each other (Reichardt 1967, fig. 134).

The absence of carinulae is a character state previously observed only in seven Neotropical *Galerita* species and correlated with the loss of flying abilities, these are *G. balli* Reichardt, 1976, *G. brasiliensis* Dejean, 1826, *G. carbonaria* Mannerheim, 1837, *G. corumbana* Liebke, 1932, *G. simplex* Chaudoir, 1852, *G. simplicicarinata* and *G. stenodera* Chaudoir, 1854 (Reichardt 1967, 1976). As mentioned in the previous paragraph, *G. heterocarinata* is morphologically related to *G. simplicicarinata* based on a combination of characters, while the other five species differ in several diagnostic characters and clearly belong to other species groups.

Regarding the heterogeneous development of the elytral carinae, this condition has been previously observed in a few species of the genus. From species treated by Reichardt (1967), the author noted that *G. microcostata* Darlington, 1934 has faint carinae, often almost evanescent on the disc and otherwise, *G. unicolor* has higher carinae on the disc. Similarly,

three species recently described, *G. colonensis* Hovorka, 2016, *G. haeckeli* Hovorka, 2017 and *G. similis* Hovorka, 2017 have lateral carinae higher and sharper than the inner (discal) carinae. The configuration of the elytral carinae observed in *G. heterocarinata* is distinct and it seems so far remarkably singular.

Etymology. From Latin “hetero” and “carinata”. The specific name refers to uneven development of the elytral carinae, that besides the absence of carinulae, are the most obvious characters that distinguish it from other known species.

Distribution and habitat. The new species was collected in the Sierra del Divisor protected area in the Requena Province in the tropical rainforest of northern Peru (Fig. 9). No further details about the biology of species are available from the label data.

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