

Research Article

New species of the genus *Phaleria* Latreille (Tenebrionidae: Diaperinae) from northern coast of Peru

Nueva especie del género *Phaleria* Latreille (Tenebrionidae: Diaperinae) de la costa norte del Perú

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Abstract. A new species of the genus *Phaleria* Latreille from northern Peruvian coast is described and illustrated: *Phaleria psammatea* **nov. sp.** Diagnostic characters are discussed in relation to Western Hemisphere species, particularly those of the Pacific coast of South America.

Key words: Darkling beetles, sandy beaches, South American Pacific coast, systematics.

Resumen. Una nueva especie del género *Phaleria* Latreille de la costa norte de Perú es descrita e ilustrada: *Phaleria psammatea* **sp. nov.** Se discuten los caracteres diagnósticos en relación con las especies del Hemisferio Occidental, en particular aquellas de la costa Pacífica de América del Sur.

Palabras clave: Costa Pacífica de Sudamérica, playas arenosas, sistemática, tenebriónidos.

Introduction

The genus *Phaleria* Latreille includes more than 60 species found on oceanic sandy beaches around the world, with exception of Arctic and Antarctic regions (Triplehorn & Watrous 1979). These detritivores are found buried in supratidal sand, frequently associated to stranded remains of algae or marine animals (Doyen 1976). Different ecological issues of *Phaleria* species has been studied around the world, for instance: population dynamics in Brazil (Caldas & Almeida 1993), interactions between sympatric species in Italy (Fallaci *et al.* 2002) and impact of anthropogenic disturbances in Chile (Gonzalez *et al.* 2014).

In Triplehorn (1991) treatment of Western Hemisphere species of *Phaleria*, five species are cited for Pacific coast of South America: *P. gayi* Laporte, 1840, *P. maculata* (Kulzer, 1959), *P. manicata* Boheman, 1858, *P. pacifica* Champion, 1886 and *P. subparalella* Chevrolat, 1878. Previously, Kaszab (1970) described *P. ecuadorica* Kaszab, 1970 and recorded *P. insularis* Champion, 1886 from Ayangue Bay in Ecuador. The latter was synonymized under *P. debilis* LeConte, 1866 according to Triplehorn & Watrous (1979). Recently, *P. beechei* Vidal & Guerrero, 2017 was described of Antofagasta and Atacama provinces in Chile (Vidal & Guerrero 2017). In recent collecting trips to the northern coast of Peru, unusual specimens of the genus *Phaleria* were found. After detailed morphological comparisons it was

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possible to recognize a new species for the Peruvian fauna. The purpose of the present work is to describe a new species of the genus *Phaleria* and distinguish it from other New World species.

Materials and Methods

Abbreviations. Hungarian Natural History Museum, Budapest, Hungary (HNHM); Instituto Argentino de Investigaciones de las Zonas Áridas, Mendoza, Argentina (IADIZA); Museo de Entomología Klaus Raven Büller – Universidad Nacional Agraria La Molina, Lima, Perú (MEKRB); Muséum National d'Histoire Naturelle, Paris, France (MNHN); Museo de Historia Natural – Universidad Nacional Mayor de San Marcos, Lima, Perú (MUSM). Type specimens of the new species were deposited in entomological collections of IADIZA, MEKRB and MUSM. Triplehorn & Watrous (1979) and Triplehorn (1991) were followed for morphological terminology, diagnostic characters and description of most species. Kaszab (1970) and Vidal & Guerrero (2017) provided original descriptions of *P. ecuadorica* and *P. beechei* respectively. A reference collection including specimens of *P. gayi*, *P. maculata*, *P. testacea* Say, 1824 and *P. subparalella* was available at MEKRB. Additional comparisons were possible with images of: *P. debilis* (= *insularis*), *P. ecuadorica* and *P. manicata* specimens housed at HNHM (O. Merkl), *P. pacifica* specimens housed at MNHN (D. Gonzales) and Central American type specimens housed at MCZ (MCZ 2010).

Genitalia drawings were made by impressions of photographs, observations with stereomicroscope and improvements with graphic design software. The geographical distribution was mapped using the free access program SimpleMappr (Shorthouse 2010).

Results and Discussion

Phaleria psammatea Giraldo-Mendoza, **nov. sp.**
(Figs. 1a, b, c, d)

Diagnosis. Ventral eye separation equals to one eye diameter, with eye margins distinctly separate from submentum; antenna with a six segmented club; pronotal margins devoid of setae; hypomeral setae absent; prosternal process horizontal; prosternal setae forming an anterior tuft; elytral interneurs finely punctated; epipleural setae absent; outer apical angle of protibia not lobed; aedeagus with unfused parameres.

Description. Holotype, male (genitalia dissected). Habitus (Fig. 1a). Elongate oval, moderately convex, light brown to testaceous dorsally, alutaceous, head darker. Head finely and densely punctured on frons, punctures separated by 1-2 puncture diameters, punctures coarser on vertex, more fine and dense along epistomal margin; labrum transverse with golden setae on anterior margin, longer on apical angles; anterior clypeal margin subtruncate; eyes large, reniform, ventral interocular distance equals to eye diameter (Fig. 1b), with margins distinctly separate from submentum; antennae reaching the middle of pronotum, with antennomeres arranged as follows: 1st longer than wide, 2nd shorter and narrower than 1st, 3rd slightly longer than 2nd (piriform), 4th-5th subquadrate, 6th-10th broader than long, 11th oval, with six apicals forming a club. Pronotum transverse, 1.88 times as wide as long, maximum width at posterior half, lateral margins subparallel in posterior two thirds and convergent in anterior third, entire perimeter with fine but distinct marginal bead; lateral margins glabrous; apex concave, base subrectilinear; apical angles obtuse, basal angles nearly right; punctuation fine, punctures separated by one or two puncture diameters; hypomera concolorous with dorsum, shiny, glabrous; prosternum beaded along anterior margin, with a tuft

of four long, conspicuous and golden setae arising immediately behind marginal bead; prosternal process shiny, glabrous, with horizontal apex. Mesothorax, metathorax and abdominal sterna darker than dorsum, shiny, finely and densely punctuated (Fig. 1b). Tibiae with conspicuous spines on outer and inner margins; protibia dilated apically, with outer apical angle feebly lobed; mesotibia and metatibia narrow, notoriously longer than wide (Fig. 1c). Scutellum broadly triangular, with scattered punctures on basal half. Metathoracic wings reduced. Elytra moderately long, 1.3 times as long as wide; with thin and dark brown sutural stripe from scutellum to apex; interneurs with fine punctures in grooves; intervals slightly convex, extremely finely punctured; epipleura without setigerous punctures. Pygidium coarsely and densely punctured. Aedeagus with unfused parameres, penis with diverging apices, penis rods span 4/5 of basal piece length, and basal piece turned to right proximally (Fig. 1d). Measurements: Length: 4.2 mm; width: 2.2 mm. (Length/width ratio: 1.90).

Variation. The sexes are indistinguishable externally. The color pattern is constant in the three populations examined. Measurements (n = 44): Length: 3.9-4.6 mm; width: 2.0-2.25 mm. (Length/width ratio: 1.96).

Etymology. The specific name refers to Psammate, goddess of the beach sand in Greek mythology.

Type material. Male holotype from PERU, Lambayeque, Chiclayo, Puerto Eten, Naylamp beach, under blue-footed booby carcass (*Sula nebouxii* Milne-Edwards, 1882), 06°55'31.57"S 79°52'20.38"W, 26-X-2018, A. Giraldo (MEKRB). Eighteen paratypes from the same locality (2 IADIZA, 14 MEKRB, 2 MUSM). Twenty paratypes from Piura, Talara, Los Órganos, Los Órganos beach, under magnificent frigatebird carcass (*Fregata magnificens* Mathews, 1914), 04°10'34.43"S 81°07'50.40"W, 25-X-2018, A. Giraldo (2 IADIZA, 18 MEKRB). Five paratypes from Tumbes, Contralmirante Villar, Zorritos, Zorritos beach, under green turtle carcass (*Chelonia mydas* (Linnaeus, 1758)), 03°40'38.10"S 80°40'20"W, 19-IX-2018, A. Giraldo (MEKRB).



Figure 1. *Phaleria psammatea* nov. sp. a. Habitus, b. Ventral view, c. Lateral view, d. Aedeagus, lateral and dorsal view, pe = penis, pa = paramere, pr = penis rod, bp = basal piece. Scale bar: 1 mm.

Differential diagnosis. In Triplehorn (1991), *P. psammatea* nov. sp. is keyed to *P. panamensis* Champion distributed from Mexico to Panama. Also both species have aedeagus with unfused parameres. However, *P. panamensis* differs externally in body shape, color pattern and a narrower ventral interocular distance (MCZ 2010). Further, aedeagus has parameres with wider separation and basal piece almost straight along its entire length (Triplehorn 1991) (Figs. 6-7).

Phaleria debilis (Fig. 2a) can be distinguished by eyes closer than submentum width, setae on epipleura and pubescent patches on male abdominal sterna, whereas *P. ecuadorica* (Fig. 2b) differs in more elongated body shape, dark chestnut brown dorsal coloration and shortened antennae that not attain the middle of pronotum.

Five Pacific South American species namely *P. beechei*, *P. gayi*, *P. maculata*, *P. manicata* (Fig. 2c) and *P. subparalella* are notoriously different from the species described here. All of them are notoriously different from the new species, since these have an elongated body, conspicuous setae on lateral margins of pronotum, outer apical angle of protibia strongly lobed and aedeagus with fused parameres (Triplehorn 1991; Vidal & Guerrero 2017).

In *P. pacifica* (Fig. 2d) ventral interocular distance is narrower, pronotal and elytral punctuation are extremely minute, and prosternal setae are absent.

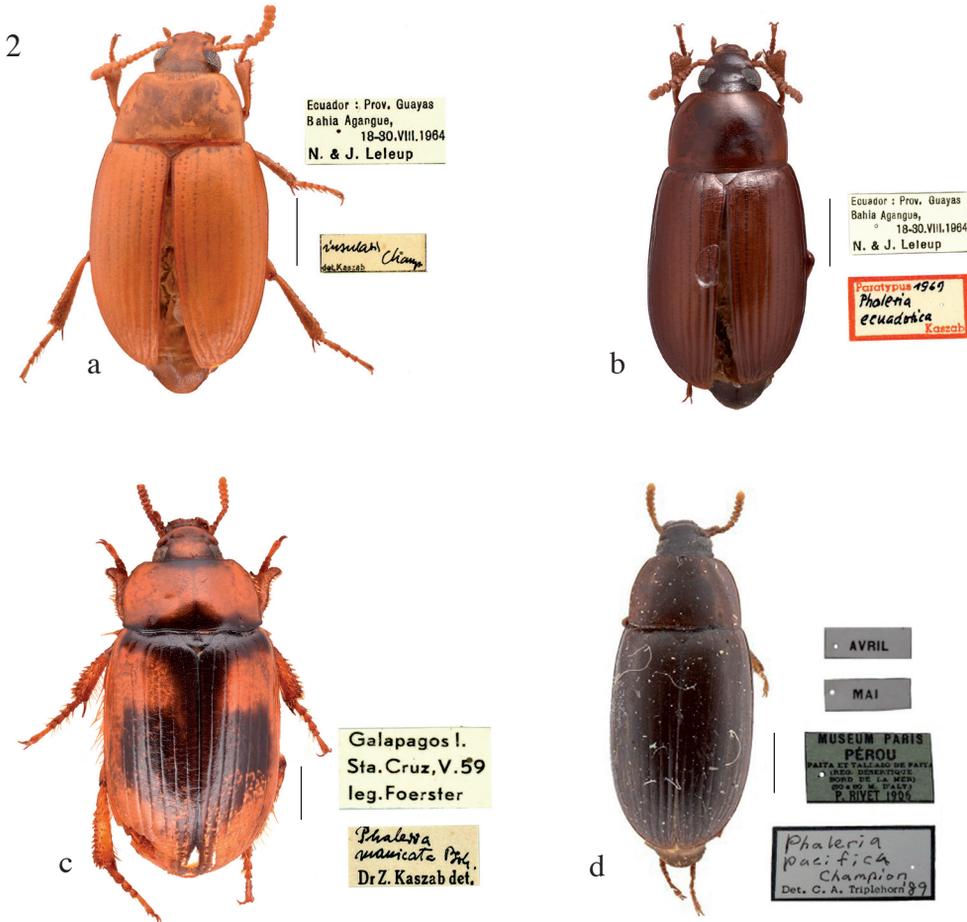
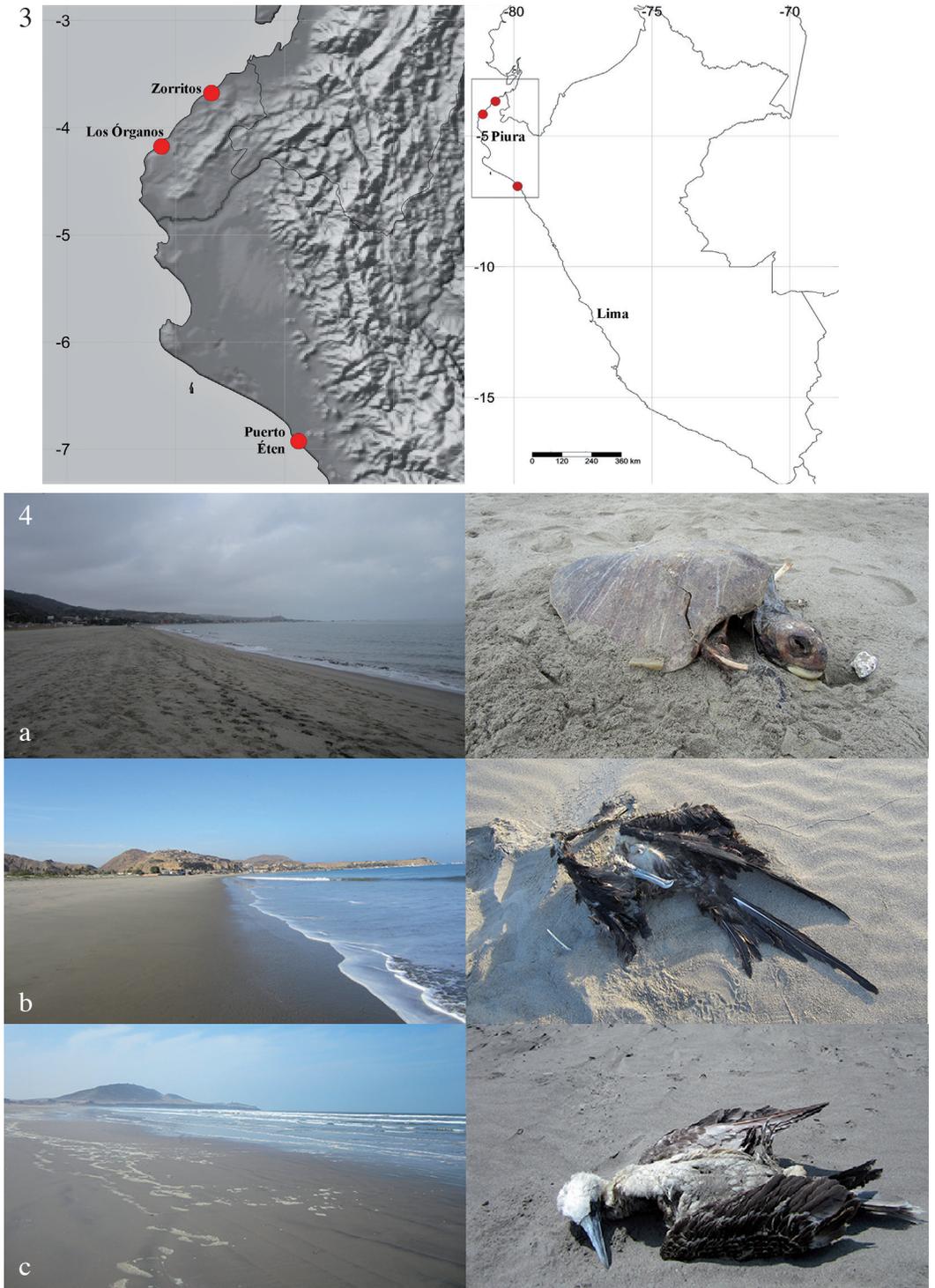


Figure 2. Habitus of four South American *Phaleria* species: a. *P. debilis* (= *insularis*), b. *P. ecuadorica*, c. *P. manicata*, d. *P. pacifica*. Scale bars: 1 mm.



Figures 3-4. 3. Distribution map of *Phaleria psammatea* **nov. sp.** in northern coast of Peru. 4. Collecting sites of *Phaleria psammatea* **nov. sp.** a. Tumbes (Zorritos beach), landscape and carcasse of green turtle (*Chelonia mydas* (Linnaeus, 1758)), b. Piura (Los Órganos beach), landscape and carcasse of magnificent frigatebird (*Fregata magnificens* Mathews, 1914), c. Lambayeque (Naylamp beach), landscape and carcasse of blue-footed booby (*Sula neboxii* Milne-Edwards, 1882).

Distribution. Only known from coasts of Tumbes, Piura and Lambayeque in northern Peru (Fig. 3).

Ecology. Specimens were found in supratidal sand, under marine vertebrate carcasses of green turtle, magnificent frigatebird and blue-footed booby (Figs. 4a, b, c). At Naylamp beach (Lambayeque), specimens were cohabiting with *P. subparalella*.

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