

Two new species of the genus *Palaminus* from Makay, Western Madagascar (Coleoptera: Staphylinidae: Paederinae: Pinophilini)

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Abstract. Two new species of the genus *Palaminus* Erichson, 1839 from Makay, Western Madagascar, *P. behoranus* sp. nov. and *P. makayensis* sp. nov. are described, illustrated and distinguished from related species.

INTRODUCTION

French entomologist Benoît Gilles sent me a small collection of Staphylinidae collected in an interesting, entomologically unexplored area in western Madagascar - Massiv Makay, which contains two new species of *Palaminus* Erichson, 1839.

The Makay Massif is located in the south-west of Madagascar, in the districts of Mahabo and Beroroaha. It is bounded on the south by the Mangoky River and the city of Beroroaha, and, in the north, that of Malaimbandy. The Makay is a mountain range extending 150 km from north to south and 50 km from east to west at its widest point. Its surface approaches 400 000 hectares, and its altitude oscillates between 200 m for the bottom of the canyons and 1000 m for the plateaus.

Behora camp is located at the intersection of two watercourses steeped in a canyon. The shorelines are composed of sandy strips and agglomerates of boulders of all sizes. This typology forms sunny and warm areas, and others dark and fresh.

MATERIAL AND METHODS

Dry-mounted specimens were studied under a binocular stereomicroscope MBS 10. Habitus images were taken with a Canon EOS 700D camera in combination with a Canon MP-E65 1-5x macro lens. Images of aedeagi and male sternites were made using a Canon EOS 700D camera mounted on a Motic BA 410E-T compound microscope in diffused reflected light. Resulting images were focus stacked using Zerene Stacker and then post-processed in Paint.Net, Paint, XnView and Live Photogallery.

Measurements were taken with the above mentioned stereomicroscope using ocular scale. Measurements and indices in the descriptions are based on all type specimens. Body length was measured from the tip of closed mandibles to the end of abdomen, the length of the forebody was measured from the tip of closed mandibles to the end of elytra.

Specimens were mounted on card plates using a water-soluble glue. Males were dissected and male genitals were glued on the same plate as the specimen or embedded in a water-soluble medium.

The following abbreviations are used to indicate the depository of specimens:
JJRC private collection Jiří Janák, Rtyň nad Bílinou, Czech Republic;
MNHN Muséum National d'histoire naturelle, Paris, France.

Other abbreviations: L = length, W = width, HW = width of head, PW = width of pronotum, M = arithmetic mean, R = ratio, HT = holotype, PT = paratype.

TAXONOMY

Palaminus Erichson, 1839

Type species: *Palaminus pilosus* Erichson, 1829.

Characters. *Palaminus* is easily recognisable genus, which is distinguished by other staphylinids by typical imbricate (triangular or diamond shaped) abdominal macrosculpture (Figs. 1, 8). For detailed diagnosis and description see Herman (2010).

Diversity. The genus comprises more than 300 extant and a few still undescribed extinct species from Miocene/Oligocene Mexican and Baltic amber (Herman 2010). From Madagascar and surrounding islands 76 valid species are recognized (Lecoq 1986, 1991, 1996).

Distribution. The genus is distributed mostly in tropical and subtropical zones with a few species in temperate or semiarid regions.

Bionomics. The species are mostly found on shrubs and trees by beating or sweeping. Less often the specimens were collected in forest leaf litter, litter near streams or ground debris.

Palaminus behoranus sp. nov.

(Figs. 1-7; 15-17)

Type locality. West Madagascar, Makay Massiv.

Type material. Holotype (♂): “MADAGASCAR, MAKAY Massiv, S21.133051°, E45.416493°, BEHORA CAMP, August 2017, Benoît Gilles lgt.”, “HOLOTYPUS *Palaminus behoranus* sp. nov., J. Janák det. 2020” (MNHN). Paratype (♂): same data as holotype, but “PARATYPUS *Palaminus behoranus* sp. nov., J. Janák det. 2020” (JJRC).

Description. Body length 4.0 mm (PT) and 4.1 mm (HT), forebody length 1.6 mm (PT) and 1.7 mm (HT). Light reddish yellow, abdomen reddish brown, appendices light yellow (Fig. 1, 2).

Head about as wide as pronotum (HW/PW HT 1.01, PT 0.99), eyes very large, temples about one ninth as long as eyes (R 0.11), behind eyes very shortly slightly widened, densely and moderately coarsely punctate, punctures as wide as basal diameter of second



Figs. 1-10. 1-7- *Palaminus behoranus* sp. nov.; holotype; 8-10- *Palaminus makayensis* sp. nov. 1, 8- habitus; 2, 9- forebody; 3- male sternite VIII; 4, 10- apical part of male sternite 1/3 lateroventral; 5- aedeagus ventral; 6- aedeagus lateral; 7- aedeagus dorsal.

antennomere or slightly larger, interstices on disc about as large as diameter of punctures, shiny, without reticulation.

Pronotum moderately transverse (R HT 1.13, PT 1.16), maximal width in anterior quarter, then sides markedly narrowed behind, similarly punctate as on head, interstices except for narrow impunctate midline mostly about as large as diameter of punctures, basal impression shallow.

Elytra large, moderately longer than wide (R HT 1.16, PT 1.19), markedly longer and moderately wider than pronotum (EL/PL PT 1.89, HT 1.90; EW/PW PT 1.36, HT 1.45), slightly widened behind, punctures similarly coarse as on pronotum, but slightly more dense.

Abdomen typically shaped and sculptured as in other *Palaminus*.

Male. Aedeagus (Figs. 5-7) 0.81 mm long, left paramere in basal third with narrow inwards oriented protrusion, apically markedly widened, right paramere wide, in apical half with sharp emargination. Sternite VIII (Figs. 3, 4) slightly longer than tergite VIII, in apical third medially with elongate moderately deep impression, lateral parts of the impression near posterior margin markedly elevated, posterior margin medially slightly elevated.

Female. Unknown.

Differential diagnosis. *Palaminus behoranus* sp. nov. is externally similar to many species from Madagascar. The aedeagus shape is similar as in *P. tenuis* Lecoq, 1986 or *P. longelytratus* Lecoq, 1986, but the new species differs by the left paramere with inwards oriented protrusion and different shape of male sternite VIII with elongate impression. There are also external differences (body length, length of elytra, colour) among these species.

Etymology. The name of the species refers to the type locality, the Behora camp in the Makay Massiv.

Bionomics. The new species was found in a riverine forest (Fig. 17).

Distribution. *P. behoranus* sp. nov. is currently known only from the environs of the Behora camp in the Makay Massiv in western Madagascar (Figs. 15, 16).

***Palaminus makayensis* sp. nov.**

(Figs. 8-17)

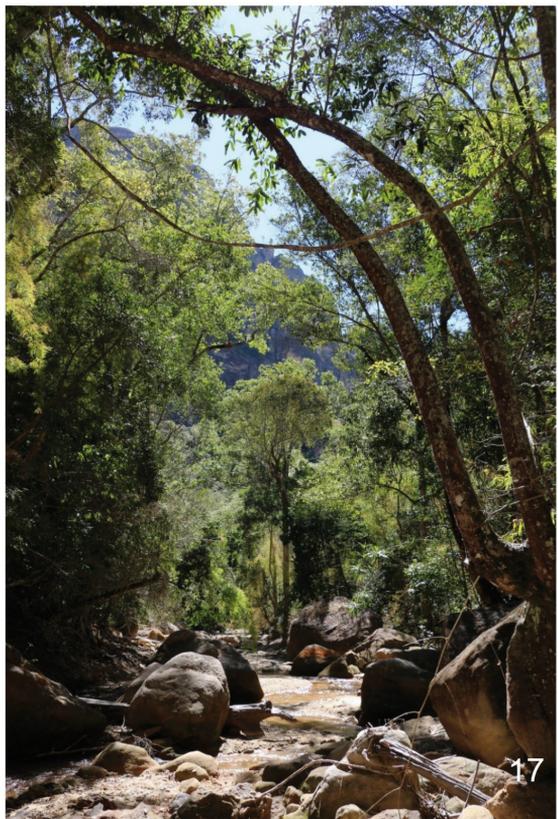
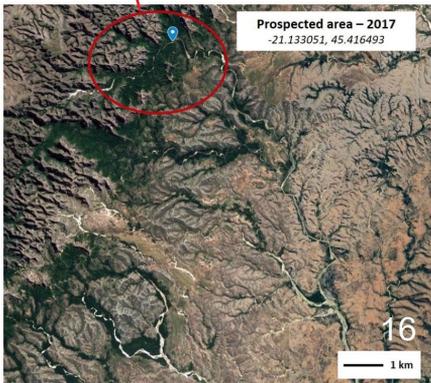
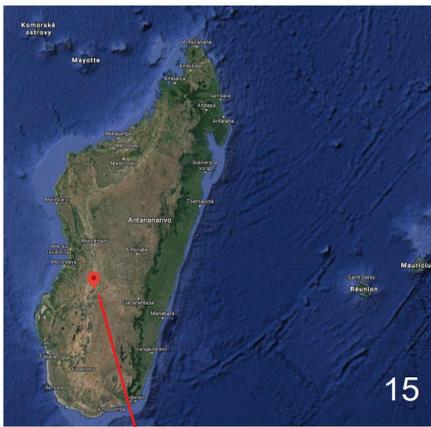
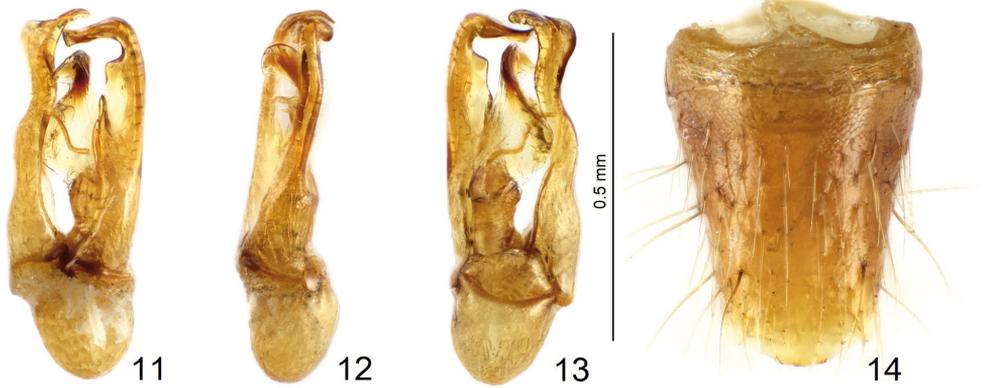
Type locality. West Madagascar, Makay Massiv.

Type material. Holotype (♂): “MADAGASCAR, MAKAY Massiv, S21.133051°, E45.416493°, BEHORA CAMP, August 2017, Benoît Gilles lgt.”, “HOLOTYPUS *Palaminus makayensis* sp. nov., J. Janák det. 2020” (MNHN).

Description. Body length 3.4 mm, forebody length 1.4 mm. Light reddish yellow, abdomen reddish brown, appendices light yellow (Fig. 8, 9).

Head markedly transverse (R 1.42), slightly wider as pronotum (HW/PW 1.04), eyes very large, temples about one seventh as long as eyes (R 0.14), behind eyes very shortly slightly widened, sparsely and moderately finely punctate, punctures as wide as maximal diameter of third antennomere, interstices on disc one and half to twice as large as diameter of punctures, shiny, without reticulation.

Pronotum moderately transverse (R 1.19), maximal width in anterior quarter, then sides markedly narrowed behind, more densely and coarsely punctate than on head, punctures as wide as basal diameter of second antennomere, interstices except for narrow impunctate midline mostly about as large as diameter of punctures, basal impression shallow.



Figs. 11-17. 11-14- *Palaminus makayensis* sp. nov., holotype; 11- aedeagus ventral; 12- aedeagus lateral; 13- aedeagus dorsal. 15-17- Makay Massiv; 15-16- prospected area; 17- type locality.

Elytra large, moderately longer than wide (R 1.15), markedly longer and moderately wider than pronotum (EL/PL 1.81, EW/PW 1.33), between deep sutural and lateral impressions markedly elevated, slightly widened behind, coarsely and densely punctured, punctures larger than on pronotum.

Abdomen typically shaped and sculptured as in other *Palaminus*.

Male. Aedeagus (Fig. 11-13) 0.60 mm long, both parameres bent apically inwards, median lobe with a long and narrow internal structure. Sternite VIII (Figs. 10, 14) slightly longer than tergite VIII, in apical quarter medially with elongate shallow impression, posterior parts of impression near posterior margin moderately elevated, posterior margin medially with rounded projection.

Female. Unknown.

Differential diagnosis. *Palaminus makayensis* sp. nov. is similar to *P. behoranus* sp. nov., but differs externally by smaller body, smaller elytra in relation to head and pronotum, but mainly by different shape of the male sternite VIII and the aedeagus. The aedeagus shape and internal structure of median lobe in the new species is similar as in *P. nossibianus* Fauvel, 1904 (Lecoq 1986: Fig. 174), but the new species differs by the shape of the apical part of the left paramere, which is narrowed inwards, by the different shape of the median lobe, which is apically curved and by the male sternite VIII, which is not truncate as in *P. nossibianus*, but with an apically rounded protrusion.

Etymology. The name of the species refers to the type locality, the Makay Massiv.

Bionomics. The new species was found in a riverine forest (Fig. 17).

Distribution. *P. makayensis* sp. nov. is currently known only from the environs of the Behora camp in the Makay Massiv in western Madagascar (Figs. 15, 16).

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