

THE GENUS *MIXADERUS* COLLADO & ALONSO-ZARAZAGA, 1996 IN MADAGASCAR AND THE MASCAREIGNES ARCHIPELAGO, WITH DESCRIPTION OF THREE NEW SPECIES (COLEOPTERA: ADERIDAE)

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Abstract: A revision is made of the species of the genus *Mixaderus* Collado & Alonso-Zarazaga, 1996 (Coleoptera: Aderidae) known from Madagascar and the Mascareignes archipelago. It includes the description of three new species and multiple new placements and synonymies, and is meant to provide a framework for future taxonomic studies of this widespread African genus.
Key words: Coleoptera, Aderidae, *Mixaderus*, Réunion Island, Republic of Mauritius, Madagascar, Mascareignes.

El género *Mixaderus* Collado & Alonso-Zarazaga, 1996 en Madagascar y el archipiélago de las Mascareñas, y descripción de tres especies nuevas (Coleoptera: Aderidae)

Resumen: Se hace una revisión de las especies del género *Mixaderus* Collado y Alonso-Zarazaga, 1996 (Coleoptera: Aderidae) conocidas de Madagascar y las islas Mascareñas. Incluye nuevas asignaciones y sinonimias y la descripción de tres nuevas especies, y se propone proporcionar un marco de referencia para futuros estudios taxonómicos de este abundante género africano.
Palabras clave: Coleoptera, Aderidae, *Mixaderus*, Isla de la Réunion, República de Mauricio, Madagascar, Mascareñas.

Taxonomy/Taxonomía: *Mixaderus* Collado & Alonso-Zarazaga, 1996 = *Mixaderus* (*Perisia*) Collado & Alonso-Zarazaga, 1996 **syn. nov.** = *Mixaderus* (*Ginerosia*) Collado & Alonso-Zarazaga, 1996 **syn. nov.**; *Xylophilus rodericensis* Blair, 1935 = *Mixaderus emmerezii* (Pic, 1903), **syn. nov.**; *Mixaderus* (*Ginerosia*) *pinacotarsus* Báguena-Corella, 1948 = *Mixaderus madecassus* (Pic, 1909), **syn. nov.**; *Hylophilus superbus* v. *trinotatus* Pic, 1921 = *Mixaderus madecassus* (Pic, 1909), **syn. nov.**; *Hylophilus superbus* v. *diversus* Pic, 1924 = *Mixaderus madecassus* (Pic, 1909), **syn. nov.**; *Xylophilus snelli* Blair, 1935 = *Mixaderus snelli* (Blair, 1935), **comb. nov.**; *Hylophilus superbus* v. *angustefasciatus* Pic, 1937 = *Mixaderus angustefasciatus* (Pic, 1937), **comb. nov.**; *Hylophilus ptnomorphus* Pic, 1948 = *Mixaderus ptnomorphus* (Pic, 1948), **comb. nov.**; *Hylophilus sinuatefasciatus* Pic, 1937 = *Mixaderus sinuatefasciatus* (Pic, 1937), **comb. nov.**; *Hylophilus simplex* Pic, 1921 = *Mixaderus simplex* (Pic, 1921), **comb. nov.**; *Xylophilus cinereofasciatus* Blair, 1935 = *Mixaderus cinereofasciatus* (Blair, 1935), **comb. nov.**; *Hylophilus cariei* Pic, 1932 = *Aderus cariei* (Pic, 1932), **comb. nov.**; *Mixaderus mantillerii*, **n. sp.**; *Mixaderus poussereaui*, **n. sp.**; *Mixaderus gompyi*, **n. sp.**

Introduction

The generic and suprageneric classification of the beetle family Aderidae (Coleoptera: Tenebrionoidea) is loose and confused and awaits much systematic work (Nardi, 2008; Lawrence and Ślipiński, 2010). Despite efforts of individual researchers to propose a suprageneric framework, even taking the shape of male genitalia into account (Werner, 1990) most species remain unplaced and still belong to the original and no longer available genera *Hylophilus* Berthold, 1827 and *Xylophilus* Curtis, 1830. This situation makes the revision of regional groups particularly difficult. Several African species were described by Pic and Báguena-Corella, and parsed by the latter into various genera and subgenera (Báguena-Corella, 1948; Báguena-Corella, 1962). In the context of a survey of the Réunion Island beetles, my colleague Jacques Poussereau communicated to me a series of unidentified Aderidae, most of which looked superficially alike, but upon closer examination appear to belong to different species. A comparison to Báguena-Corella's type material led me to realize that they all belonged to the genus *Mixaderus* Collado & Alonso-Zarazaga, 1996. This prompted me to examine additional specimens from this island and to extend the survey to Mauritius and Madagascar. Pic and others have described

several species from this region (Pic, 1903; Pic, 1909; Pic, 1921; Blair, 1935; Pic, 1937; Pic, 1948). Most of these species were described as *Hylophilus* or *Xylophilus*, two genera now invalid, and have not been generically re-assigned since. I screened various museum and colleagues' collections for species akin to those I had in hand, which led me to find a total of fourteen *Mixaderus* species for this region, three of which are new. This work also led me to propose several synonymies and new placements. Most species are known by a single, or a handful of specimens. I therefore expect that more *Mixaderus* species are present in these islands, and this work should be regarded as a preliminary step for future studies on the group.

The *Mixaderus* species from Madagascar and the Mascareignes islands make a fairly homogeneous group, and I have included the study of male genitalia to facilitate species separation. These genitalic character systems are both stable within species and distinct between species, providing reliable species identification criteria. Most specimens, though, can be separated using external morphology, in particular the pigmentation pattern of the elytra and the shape of the antennae.

Material and methods: specimens were obtained from colleagues or Museum collections. Most were dissected, cleaned and re-mounted. Entire beetles, or details, were photographed on a Leica M420 Makroskop equipped with a ProgRes C5 ccd camera (Jenoptik). Stacks of images were projected into single extended depth-of-field images using the Helicon Focus software (HeliconSoft). All Images were enhanced using Adobe Photoshop.

Measurements were made using a stage micrometer that was imaged under the same conditions, or directly on a Leica MZ6 stereoscope, using an eyepiece graticule.

Information relating to material examined is listed as follow: **Country, State/Department:** Locality, collection information (Collector), date of collection: number of specimens (Current host collection acronym).

Acronyms: Museo Nacional de Ciencias Naturales, Madrid (MNCNM); Muséum d'Histoire Naturelle de Paris (MNHN); Natural History Museum, London (NHM); Muséum Histoire Naturelle de Genève (MHNG); Jacques Poussereau's collection (JPC, France: Dax); Nicolas Gompel's collection (NGC, France: Marseille).

Results and Discussion

1) Genus diagnosis

Genus **Mixaderus** Collado & Alonso-Zarazaga, 1996

Mixaderus Báguena-Corella, 1948 [nomen nudum].

Mixaderus Collado & Alonso-Zarazaga, 1996, type species: *Hylophilus simplicis* Escalera, 1941: Collado & Alonso-Zarazaga (1996). Type: MNCNM (examined).

Mixaderus (*Perisia*) Collado & Alonso-Zarazaga (1996) **syn. nov.**, type species: *Xylophilus clavicornis* Champion 1917: Collado & Alonso-Zarazaga (1996). Type: NHM.

Mixaderus (*Perisia*) Báguena-Corella, 1948 [nomen nudum].

Mixaderus (*Ginerosia*) Collado & Alonso-Zarazaga (1996) **syn. nov.**, type species: *Mixaderus infans* Báguena-Corella 1948: Collado & Alonso-Zarazaga (1996). Type: MNCNM (examined).

Mixaderus (*Ginerosia*) Báguena-Corella, 1948 [nomen nudum].

PROPOSED DIAGNOSIS: small size (around 1.3-2.4 mm), stocky to moderately elongate. Head and thorax of similar width, generally much narrower than elytra. Head, thorax and elytra covered with double pubescence: recumbent hairs emerging from punctuation and interspersed very short, silvery or golden, pruinosity. Species convex, with disc of elytra depressed. Pronotum transverse to moderately elongate, characterized in most species by a dimple on each side of the dorsal midline, near the basal edge of the pronotum (Fig. 38). These depressions are oval, with their longer axis pointing toward the anterior angles of the pronotum. The pronotum is also characterized by the presence of a few longer hairs inserted near the posterior angles and pointing outward.

Eyes large, rounded, notched anteriorly near the insertion points of the antennae in most species, their posterior edge adjacent to the rear of the head only separated from it by a narrow stripe of cuticle.

Coloration of body and appendages variable, from yellow to dark, with several species harboring a complex pattern of stripes and spots on the pronotum and elytra, and variegated legs.

Antennae variable in color and conformation, sexually dimorphic in some species.

First segment of the foretarsi enlarged in the male of several species (e.g., Fig. 41).

Male genitalia with a subarticulate base and a pointed apex, characterized in several species by paired appendages emerging from the sides, with 3-4 sensory setae at their tip. The length and shape of these appendages appears stable within species and provides a reliable criterion to separate taxa. Internal armature composed of two symmetric branches extending from the base to the apex, and often sticking out on the basal side.

RATIONALE FOR SYNONYMY: Báguena-Corella (1948) described three subgenera of *Mixaderus*: *Mixaderus* s.str., *Perisia* and *Ginerosia* (type species designated and genus names validated by Collado & Alonso-Zarazaga (1996)), based on the presence of elytral markings for the former, and dilated male foretarsi for the latter. These characters are extremely labile between species, some species carry both (e.g., *M. emmerezzi*) and their subgeneric value is questionable. For this reason, I propose to consider them both synonymous of *Mixaderus*: *Mixaderus* Collado & Alonso-Zarazaga, 1996 = *Mixaderus* (*Perisia*) Collado & Alonso-Zarazaga, 1996, **syn. nov.** = *Mixaderus* (*Ginerosia*) Collado & Alonso-Zarazaga, 1996, **syn. nov.**

I have examined the type species of *Mixaderus* Collado & Alonso-Zarazaga, 1996, *Hylophilus simplicis* Escalera, 1941, which shares most of the morphological characters of the species from Madagascar and the Mascareignes islands that are described below. Figure 15 depicts the habitus of one of the two female syntypes of this species, preserved at the MNCNM.

GENUS PLACEMENT IN THE ADERIDAE CLASSIFICATION: when he first proposed a diagnosis for *Mixaderus*, Báguena-Corella (1948) placed this genus in his tribe Aderini, in his subtribe Olotelina (currently known as Gompelina (Alonso-Zarazaga, 2010)). His definition of this subtribe is limited to the relative length of the second and third antennomeres, whereby the third would be longer than the second (Báguena-Corella, 1948; Báguena-Corella, 1962). Báguena-Corella underscores the affinity between Olotelina and Aderina, both sharing a double elytral pubescence comprising normal setae along with pruinosity. While the *Mixaderus* species treated hereafter constitute a fairly homogeneous group at the morphological level, which I am inclined to consider monophyletic, the relative length of the second and third antennomeres is variable (Fig. 16-29). It is therefore difficult to decide whether they belong in the subtribe Olotelina or not, solely based on this criterion. Also, the species placed in the genus *Olotelus* Mulsant & Rey, 1866 sensu Báguena-Corella (1948) (a genus comprising species today parsed between *Cobosia* Collado & Alonso-Zarazaga, 1996 and *Gompelia* Alonso-Zarazaga, 2010) does not share much with *Mixaderus* species. For instance, the structure of the male genitalia differs markedly between both groups: *Gompelia* species have no subarticulated base, and while male genitalia of *Cobosia* species, including its type species *C. fulvicolor* (Escalera, 1942) have a subarticulated base, they are devoid of lateral appendages often found in many *Mixaderus* (Figs. 32-37). On these bases, Báguena-Corella's work (1948) does not shed much light on the suprageneric placement of *Mixaderus*.

¹ = *Olotelus* Mulsant & Rey but not *Olotelus* Solier, 1851)

The classification of North American species of Aderidae (Werner, 1990; Chandler, 2002) is more insightful in this respect. When applied to *Mixaderus* species, the key given in Chandler (2002) leads to the vicinity of the genus *Ganascus* Casey, 1895. From a morphological standpoint, the affinity of species in this genus (e.g., *Ganascus ventricosus* (LeConte, 1875)) to the *Mixaderus* species described below are obvious. In addition to the characters given in Chandler's key (2005) separating *Ganascus* from other Nearctic genera, several species of *Mixaderus* and *Ganascus* have a similar system of pigmentation of their thorax and elytra, with combined patterns of dark and pale markings. For these reasons, I provisionally place the genus *Mixaderus* near *Ganascus*, in the tribe Phytobaenini Báguena-Corella, 1948, *sensu* Chandler (2002).

DISTRIBUTION: the genus *Mixaderus* is formally recorded only from Africa and Japan (Báguena-Corella, 1948; Nardi, 2008).

2) Species taxonomy

• *Mixaderus emmerzi* (Pic, 1903)

Fig. 1, 16, 30, 39.

Hylophilus emmerzi Pic, 1903: Pic, 1903. Type: MNHNP (examined).

Hylophilus emmerzi Pic, 1903: Pic, 1910.

Mixaderus (Perisia) emmerzi Champ. [sic!]: Báguena-Corella, 1948.

Xylophilus rodericensis Blair, 1935: Blair, 1935, **new synonymy**. Type: NHM (examined).

Mixaderus (Perisia) rodericensis Blair: Báguena-Corella, 1948, **new synonymy**.

REDESCRIPTION: *General.* — Length: 1.3-1.8 mm, oval, very convex, overall morphology variable.

Head. — Usually brown; eye large, adjacent or nearly adjacent to the rear of the head, notched, conspicuously larger in males; interocular space larger than eye diameter in female, narrower than eye diameter in male; maxillary palps orange; pruinosity is silvery, dense and woolly; punctuation fine and sparse.

Antennae. — Slender; antennomere shape variable. 1-3 short and rounded; 4-6 elongate; 7-10 transverse and progressively wider, truncated at their extremities; 11 larger, asymmetrically acuminate; color uniformly pale: yellow or orange; insertion near or in eye notch; antennae reach the base of pronotum when folded backward.

Pronotum. — Usually transverse; anterior angles rounded in dorsal view; sides straight and parallel; dark; dimples around midline present; pubescence pale, white pruinosity forming a narrow band along the base and sides, in dimples, and in an anterior patch on dorsal midline; punctuation moderately dense, coarse.

Scutellum. — Subquadrate, covered with white pruinosity.

Elytra. — Very convex, depressed on disc; sides rounded in both sexes; width/length ratio: 0.64-0.74; dark with a pattern of yellow markings as follows: one large humeral spot on each side, a W-shaped antemedial stripe, an M-shaped post-medial stripe and a broad apical stripe. In some specimens from Mauritius the yellow color is dominant and gives the impression of dark stripes on a yellow background; pruinosity of woolly texture, silvery or white on the yellow bands, yellow or orange on the dark background; pubescence yellow; punctuation density moderate to dense, coarse.

Legs. — Mostly pale, hind femora sometimes dark; foretarsi with first segment strongly enlarged in males.

Genitalia. — Figure 30. Appendages absent.

MATERIAL EXAMINED: **France, La Réunion:** Le Tampon, Plaine des Cafres, Piton Manuel, (Vinson J. leg.), 27.I.1955: 10 ex. (MNHNP); Le Tampon, Plaine des Cafres, Caverne bateau, Mimosa tree beating (Poussereau J. leg.), 27.III.2009: 1 ex. (JPC); Saint-Denis, La Roche écrite, (1900 m), foliage beating (Poussereau J. leg.), 29.IV.2003: 8 ex. (JPC), 6.VI.2003: 5 ex. (JPC); Saint-Denis, La Grande Chaloupe, foliage beating (Poussereau J. leg.), 17.II.2009: 1 ex. (JPC), 7.V.2009: 2 ex. (JPC), 20.V.2009: 1 ex. (JPC); Saint-Denis (Gomy Y. leg.), 10.I.1973: 1 ex. (MHNG); Saint-Denis, Plaine d'Affouches (Gomy Y. leg.), 19.XI.1967: 2 ex. (MHNG); Saint-Louis, Les Makes, Chemin du petit Mapou, foliage beating (Poussereau J. leg.), 21.III.2004: 1 ex. (JPC); Saint-Philippe, Forêt du Brûlé de Mare Longue, (Vinson J. leg.), 27.I.1955: 1 ex. (MNHNP); Salazie, Rempart de Bélouve, 26.I.1955: 2 ex. (MNHNP); Saint-Paul, Ravine Saint-Gilles (Gomy Y. leg.), 19.III.1965: 1 ex. (MHNG); Saint-Paul, Cormoran (Gomy Y.), 22.I.1965: 1 ex. (MHNG); Saint-Paul, Sans Souci (Poussereau J.), 5.V.2011: 2 ex. (JPC); Saint-Paul, Les Palmistes (Poussereau J.), 17.V.2011: 3 ex. (JPC); L'étang salé, Parc départemental (Gomy Y. leg.), 22.II.1972: 23 ex. (MHNG and NGC); **Republic of Mauritius:** Mon Désert, (Carié P. leg.), II.1903: 1 ex. (MNHNP); Corps de garde, (Vinson J. leg.), 10.XII.1932: 1 ex. (MNHNP), 2.XII.1934: 1 ex. (MNHNP), (Huston A.M. leg.), 4.VI.1971: 3 ex. (NHM); Roches noires, (Vinson J. leg.), 17.V.1936: 1 ex. (MNHNP); Trois Mamelles (Vinson J. leg.), 18.I.1959: 7 ex. (MNHNP and NHM), (Gomy Y. leg.), 4.II.1966: 1 ex. (MHNG); Round Island (Vinson J. leg.), 24.XI.1962: 6 ex. (MNHNP); Anse Courtois (Huston A.M. leg.), 16.VI.1971: 2 ex. (NHM); Black River (Huston A.M. leg.), 17.VI.1971: 1 ex. (NHM); Le Pouce (Huston A.M. leg.), 10.VI.1971: 1 ex. (NHM); Moka (Vinson J. leg.), XII.1935: 1 ex. (NHM); Le Chaland (Carié P. leg.) IX. 1914: 1 ex. (MNCNM).

TYPE MATERIAL: **Republic of Mauritius** (d'Emmerz leg.): inferred holotype, male specimen (MNHNP, Collection Maurice Pic), bearing the label "type" (Pic's handwriting), **presently designated as lectotype**.

• *Mixaderus snelli* (Blair, 1935), **new combination**

Fig. 14, 24.

Xylophilus snelli Blair, 1935: Blair, 1935. Type: NHM (examined)
Aderus snelli Blair: Báguena-Corella, 1948

REDESCRIPTION: *General.* — Length: 1.3 mm, oval, depressed; male unknown.

Head. — Entirely yellow; eye of medium size, rounded (not notched), adjacent or nearly adjacent to the rear of the head; interocular space in female larger than eye diameter; maxillary palps orange; hairs short; pruinosity silvery; punctuation fine, rugose and confluent.

Antennae. — Very slender; antennomere shape: 1-10 bead-shaped, about as long as wide; 11 slightly larger; color uniformly pale: yellow; insertion adjacent to the eyes; antennae reach the base of pronotum when folded backward.

Pronotum. — Strongly transverse, anterior angles rounded in dorsal view, sides straight and parallel; yellow; dimples around midline absent; pubescence yellow, pruinosity white; punctuation moderately dense, coarse.

Scutellum. — Subquadrate, covered with white pruinosity.
Elytra. — Weakly convex; sides rounded; width/length ratio 0.65; uniformly yellow, infuscated on disc; pubescence yellow; pruinosity silvery or white, silky; punctuation moderate to dense, coarse.
Legs. — Entirely yellow.

MATERIAL EXAMINED: TYPE MATERIAL: Republic of Mauritius: Rodrigues Island (H. J. Snell & H. P. Thomasset leg.), VIII-XI. 1918: female holotype (NHM).

• *Mixaderus mantillerii* n. sp.

Fig. 5, 20, 40.

DERIVATIO NOMINIS: the species is dedicated to my colleague Antoine Mantilleri (France, Paris) whose invaluable guidance through the MNHNP collection was decisive for this work.

DESCRIPTION:

General. — Length: 1.55 mm; oval, convex; male unknown.
Head. — Brown, clypeus and labrum yellow; eye large, notched, adjacent to the rear of the head; interocular space in female larger than eye diameter; maxillary palp orange; hairs short; pruinosity woolly; punctuation moderately dense, coarse.

Antennae. — Slender; antennomere shape: 1-2 thick, rounded, slightly longer than large, subequal; 3-6 equally long, but narrower than 1-2; 7-10 transverse and progressively enlarged; 11 shortly acuminate; color: yellow; insertion near or in eye notch; antennae reach the base of pronotum when folded backward.

Pronotum. — Transverse; anterior angles rounded in dorsal view; sides weakly rounded and convergent anteriorly; brown; dimples around midline present, but shallow; pubescence yellow; a frame of white pruinosity bordering the thorax; punctuation very dense of intermediate size, rugose.

Scutellum. — Subtriangular, covered with yellow pruinosity.
Elytra. — Convex, depressed on disc; sides rounded; width/length ratio 0.67; brown with a pattern of broad whitish markings as follows: one large humeral spot on each side, laterally conflated with a sinuated antemedial stripe, which extends posteriorly along the suture; an M-shaped post-medial stripe also extending posteriorly along the suture and a broad apical stripe; pubescence yellow-orange; pruinosity silvery on whitish bands, yellow on brown background; punctuation very dense, of intermediate size.

Legs. — Entirely yellow.

MATERIAL EXAMINED: TYPE MATERIAL: Madagascar, Ambilobe, Ankarana (S. W. Fowler leg.), IX.1986: female holotype (NHM).

• *Mixaderus angustefasciatus* (Pic, 1937), new combination

Fig. 3, 26, 35.

Hylophilus superbus v. nov. *angustefasciatus* Pic, 1937: Pic, 1937.
Type: MNHNP (examined).

Genus incertae sedis: *superbus* a. *angustefasciatus* Pic: Báguena-Corella, 1948.

REDESCRIPTION:

General. — Length: 1.75-2 mm; convex, elongate; morphological variability limited.

Head. — Black; eye large, notched, adjacent or nearly adjacent to the rear of the head; eye size sexually monomorphic; interocular space larger than eye diameter in female, narrower than eye diameter in male; maxillary palp orange; hair short; pruinosity dense; punctuation moderately dense, fine.

Antennae. — Thick and very hairy; thicker in males than in females; antennomere shape: 1 longer than large, rounded; 2 short and rounded, bead-like; 3 conical; 4-10 truncated on each end, variable in shape, slightly longer than large to strongly transverse; 11 larger, asymmetrical, straight on inner edge, largely rounded on outer edge; color: entirely dark; insertion near or in eye notch; antennae reach the base of pronotum when folded backward.

Pronotum. — As long as wide in dorsal view; anterior angles rounded; sides straight and weakly convergent; dark; dimples around midline present; a narrow band of white pruinosity along the base and sides and in dimples where it forms two spurs inward; pubescence pale; punctuation moderately dense, of intermediate size.

Scutellum. — Rectangular, covered with white pruinosity.

Elytra. — Depressed on disc; sides moderately rounded; width/length ratio 0.63-0.68; dark with a pattern of narrow yellow markings as follows: a weak humeral spot on each side, a W-shaped antemedial stripe and an M-shaped post-medial stripe; pubescence yellow; pruinosity woolly, silvery or white on the yellow bands, yellow or orange on the dark background; punctuation moderately dense, coarse.

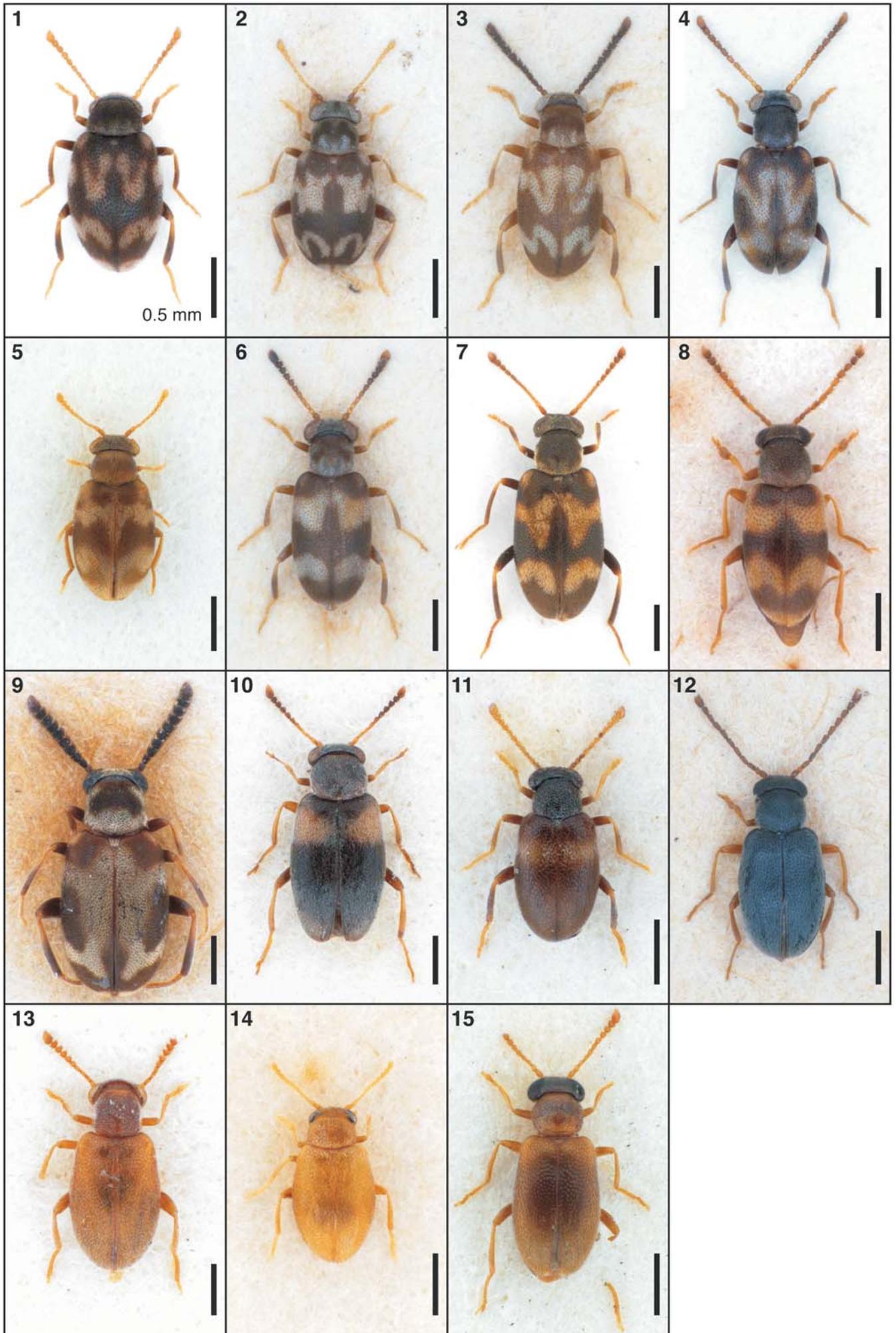
Legs. — Mostly dark, except tarsi, foretibiae, and base of mid- and hind tibiae; foretarsi with first segment enlarged in males.

Genitalia. — Figure 35. Appendages present.

MATERIAL EXAMINED: Republic of Mauritius, Chamarel (Vinson J. leg.), 23.IX.1934: 1 ex. (NHM); Macchabee Forest (Huston A.M. leg), 8.VI.1971: 2 ex. (NHM and NGC); Le Pouce (Huston A.M. leg), 10.VI.1971: 1 ex. (NHM).

TYPE MATERIAL: Republic of Mauritius, Chamarel (Vinson J. leg.), 23.IX.1934: inferred holotype, male specimen (MNHNP, Collection Maurice Pic), bearing the label "*superbus* v. nov. *angustefasciatus*" (Pic's handwriting), **presently designated as lectotype**.

► **Fig. 1.** *Mixaderus* species, habitus. **1-12,** habitus of *Mixaderus* species (scale bars: 500 µm): **1,** *M. emmerezii* (Pic): female from La Réunion (Le Tampon, Plaine des Cafres); **2,** *M. sinuatefasciatus* (Pic): lectotype (female) from Mauritius; **3,** *M. angustefasciatus* (Pic): type (male) from Mauritius; **4,** *M. poussereaui* n. sp.: paratype (male) from La Réunion (Salazie, Rempart de Bélouve); **5,** *M. mantillerii* n. sp.: holotype (female) from Madagascar; **6,** *M. gomyi* n. sp.: paratype (male) from Mauritius; **7,** *M. superbus* (Pic): (female) from La Réunion; **8,** *M. madecassus* (Pic): male (type of *Hylophilus superbus* v. *trinotatus* Pic, 1921) from Madagascar; **9,** *M. ptnomorphus* (Pic): type (female) from Mauritius; **10,** *M. basithorax* (Pic): type (female) from Madagascar; **11,** *M. cinereofasciatus* (Pic): lectotype (male) from Mauritius; **12,** *M. perrieri* (Pic): type (male) from Madagascar; **13,** *M. simplex* (Pic): type (female) from Madagascar; **14,** *M. snelli* (Blair): type (female) from Rodrigues island; **15,** *M. simplicis* Báguena-Corella: syntype (female) from Republic of Equatorial Guinea (Bata) (MNCNM).



• ***Mixaderus ptinomorphus* (Pic, 1948), new combination**
Fig. 9, 29.

Hylophilus ptinomorphus Pic, 1948: Pic, 1948. Type: MNHNP (examined).

REDESCRIPTION: General. — Length: 2.35 mm; moderately convex, elongate; male unknown.

Head. — Black; eye large, notched, adjacent or nearly adjacent to the rear of the head; interocular space in female narrower than eye diameter; maxillary palp orange; hairs short; pruinosity dense; punctuation moderately dense, fine.

Antennae. — Extremely thick and very hairy; antennomere shape: 1 large, rounded, longer than wide; 2 smaller, bead-shaped; 3 as long as 2, but conical; 4-10 very large and transverse; 11 as broad as 10, but much longer and asymmetrically acuminate.; color 1-2 and 11 brown; 3-10 black; insertion near or in eye notch; antennae reach the base of pronotum when folded backward.

Pronotum. — As long as wide in dorsal view; anterior angles rounded; sides straight and parallel; dimples around midline present; dark; pruinosity silvery along base (including dimples) and sides; disc covered with golden pruinosity; pubescence pale; punctuation moderately dense, of intermediate size.

Scutellum. — Trapezoidal, covered with white pruinosity.

Elytra. — Depressed on disc; sides nearly straight and parallel; width/length ratio 0.67; dark with a pattern of yellow markings as follows: a weak humeral spot on each side, a broad and diffuse antemedial stripe extended posteriorly in a wide domain along the suture, and a broad post-medial stripe interrupted before the suture in a bifurcation; pruinosity woolly, white on the yellow bands, orange on the dark background; pubescence yellow; punctuation coarse.

Legs. — All legs similarly colored: orange-brown with femora and apical halves of tibiae dark.

MATERIAL EXAMINED: Type material: **Republic of Mauritius**, Montagne Ory, (Vinson J. leg.), 7.XI.1936: inferred holotype, female specimen (MNHNP, Collection Maurice Pic), bearing the labels "*type*"; "*n.sp.*"; "*ptinomorphus*"; "*Hylophilus ptinoides* [sic!] *n sp*" (Pic's handwriting), **presently designated as lectotype**.

• ***Mixaderus sinuatefasciatus* (Pic, 1937), new combination**
Fig. 2, 17.

Hylophilus sinuatefasciatus Pic, 1937. Type: MNHNP (examined). Genus incertae sedis: *sinuatefasciatus* Pic: Báguena-Corella, 1948.

REDESCRIPTION: General. — Length: 1.45 mm; very convex, oval; male unknown.

Head. — Brown; eye large, notched, adjacent or nearly adjacent to the rear of the head; interocular space in female larger than eye diameter; maxillary palp orange; hairs short; pruinosity silvery, dense, woolly; punctuation moderately dense, coarse.

Antennae. — Slender; antennomere shape: 1 large and rounded; 2 shorter, as long as wide, bead-shaped; 3-7 filiform, longer than wide; 8-10 cylindrical, wider than long; 11 longer, asymmetrically acuminate; color: mostly yellow, antennomeres 1-2 brown; insertion near or in eye notch; antennae reach the base of pronotum when folded backward.

Pronotum. — Weakly transverse, anterior angles rounded in dorsal view; sides straight and parallel; dimples around midline present; dark; white pruinosity largely covering the pro-

notum, except for a large M-shaped marking resulting from golden pruinosity; pubescence pale; punctuation moderately dense, coarse.

Scutellum. — Subquadrate, covered with white pruinosity.

Elytra. — Very convex, depressed on disc; sides moderately rounded; width/length ratio 0.62-0.64; dark with a pattern of yellow markings as follows: a distinct humeral spot on each side, a broad antemedial stripe of unequal width, broadened in a large rectangle on each side on disc, interrupted at the suture, a post-medial M-shaped stripe whereby the arches of the M are made of deep loops, and an apical stripe; pruinosity woolly, silvery or white on the yellow bands, yellow or orange on the dark background; pubescence yellow; punctuation dense, coarse.

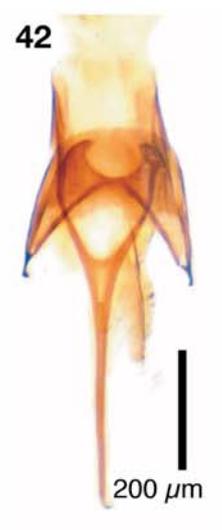
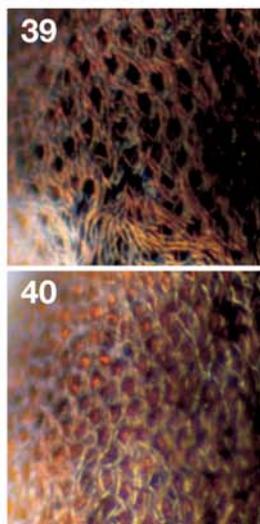
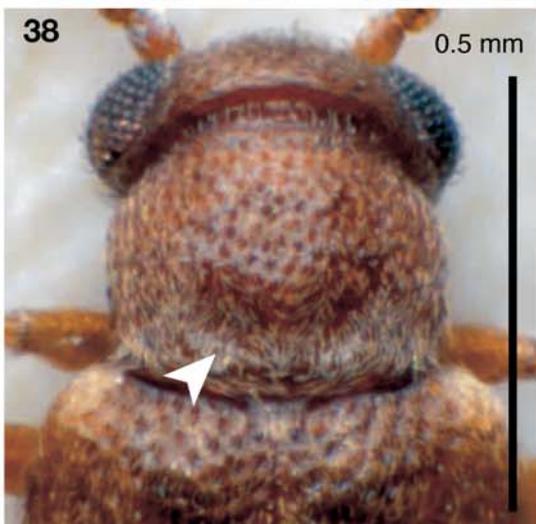
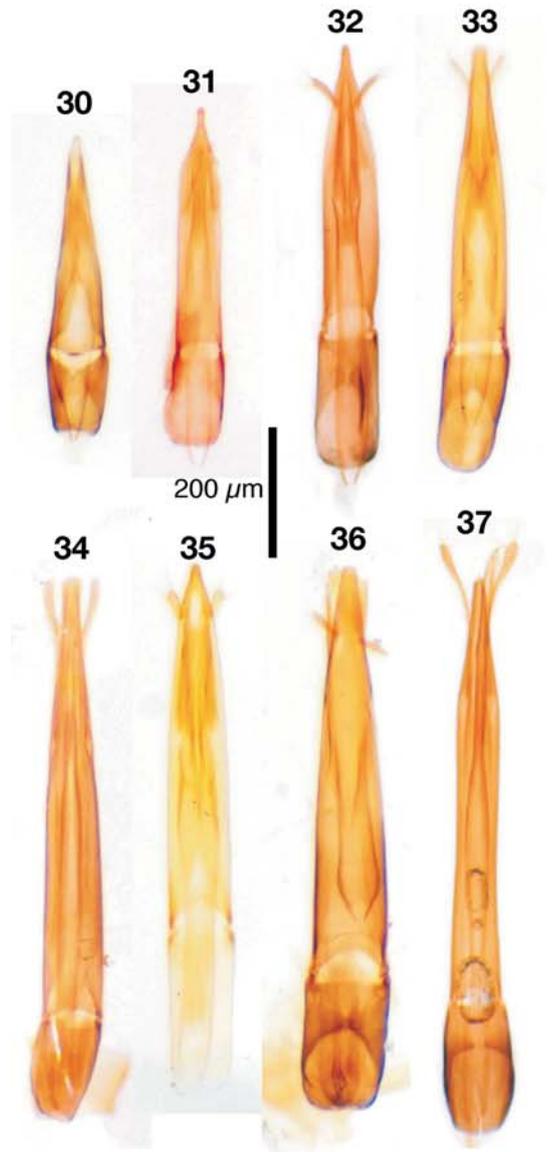
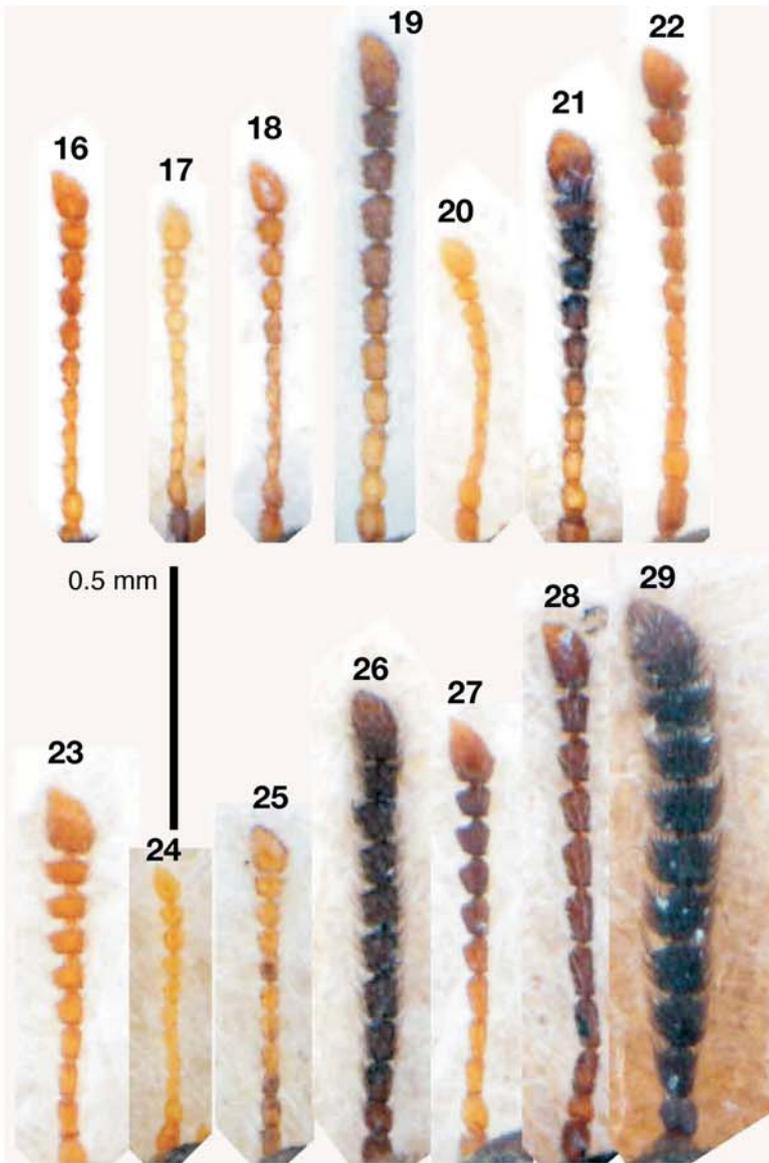
Legs. — Mostly pale, hind femora and apical halves of hind tibiae darker.

REMARK: this species is possibly a synonym of *M. emmerezii* Pic. The shape of the posterior elytral stripe is very distinct, though, and I am reluctant to change its status before examining more material, in particular males.

MATERIAL EXAMINED: Republic of Mauritius, Roches noires (Vinson J. leg.), IX.1936: 1 female (MNHNP, Collection M. Pic). Not considered part of the type material, because no such reference is made in the labels of the specimen, or the original description of the species.

TYPE MATERIAL: Republic of Mauritius, Roches noires (Vinson J. leg.), IX.1936: inferred holotype, female specimen (MNHNP, Collection Maurice Pic), bearing the labels "*type*"; "*sinuatefasciatus n sp*"; "*N°537*"; "*n sp. près superbus*" (Pic's handwriting), **presently designated as lectotype**.

► **Fig. 2.** *Mixaderus* species, antennae and male genitalia. **16-29**, antennae (scale bar: 500 µm): **16**, *M. emmerezii* (Pic): female from La Réunion (Le Tampon, Plaine des Cafres); **17**, *M. sinuatefasciatus* (Pic): lectotype (female) from Mauritius; **18**, *M. madecassus* (Pic): type (female) from Madagascar; **19**, *M. poussereaui* n. sp.: paratype (male) from La Réunion (Salazie, Rempart de Bélouve); **20**, *M. mantillerii* n. sp.: holotype (female) from Madagascar; **21**, *M. gomyi* n. sp.: paratype (male) from Mauritius; **22**, *M. superbus* (Pic): (female) from La Réunion; **23**, *M. simplex* (Pic): type (female) from Madagascar; **24**, *M. snelli* (Blair): type (female) from Rodrigues island; **25**, *M. cinereofasciatus* (Pic): lectotype (male) from Mauritius; **26**, *M. angustefasciatus* (Pic): type (male) from Mauritius; **27**, *M. basithorax* (Pic): type (female) from Madagascar; **28**, *M. perrieri* (Pic): type (male) from Madagascar; **29**, *M. ptinomorphus* (Pic): type (female) from Mauritius. **30-37**, aedeagus (scale bar: 200 µm): **30**, *M. emmerezii* (Pic): type from Mauritius; **31**, *M. cinereofasciatus* (Pic): lectotype from Mauritius; **32**, *M. gomyi* n. sp.: paratype from La Réunion; **33**, *M. perrieri* (Pic) type from Madagascar; **34**, *M. superbus* (Pic) from La Réunion; **35**, *M. angustefasciatus* (Pic): type from Mauritius; **36**, *M. poussereaui* n. sp.: paratype from La Réunion; **37**, *M. madecassus* (Pic) (type of *Hylophilus superbus* v. *trinotatus* Pic, 1921) from Madagascar; **38**, *M. madecassus* (Pic) (type of *Mixaderus* (*Ginerosia*) *pinacotarsus* Báguena-Corella), detail of prothorax showing the dimples around the midline (arrowhead) characteristic of the genus *Mixaderus*. **39-40**, pronotum punctuation on disc: **39**, *M. emmerezii* (Pic) female from La Réunion; **40**, *M. mantillerii* n. sp.: type (female) from Madagascar; **41**, foreleg with first tarsomere enlarged in a male of *M. superbus* (Pic) from La Réunion; **42**, genital segment of *M. perrieri* (Pic) type: note the structure is characteristic of all species in the genus *Mixaderus*.



• *Mixaderus poussereaui* n. sp.

Fig. 4, 19, 36.

DERIVATIO NOMINIS: the species is named after my colleague Jacques Poussereau (France, Dax) who lead me to initiate this work.

DESCRIPTION:

General. — Length: 1.65-2.05 mm; moderately convex, elongate; variability limited.

Head. — Usually black; eye large, notched, adjacent or nearly adjacent to the rear of the head; interocular space narrower than eye diameter in both sexes; maxillary palp orange; hairs short; pruinosity silvery, dense, woolly; punctuation fine and confluent.

Antennae. — Filiform but robust; antennomere shape 1-10 about as long as wide; 1-3 bead-shaped; 4-10 cylindrical with sharp truncation at each end; 11 nearly twice as big as 10, asymmetrically acuminate; color variable, uniformly brown-orange in some specimens, bicolor in others, whereby the proximal antennomeres are yellow and the distal ones brown-orange; insertion near or in eye notch; antennae reach the base of pronotum when folded backward.

Pronotum. — Usually as long as wide, anterior angles rounded in dorsal view; sides straight and weakly convergent; dimples around midline present; dark; a pattern of silvery and golden pruinosity making variable bands; dimples covered with silvery pruinosity; pubescence pale; punctuation moderately dense, coarse.

Scutellum. — Subquadrate, covered with white pruinosity.

Elytra. — Moderately convex, depressed on disc; sides weakly rounded in both sexes; width/length ratio 0.61-0.68; dark with a pattern of yellow markings as follows: one large humeral spot on each side, a W-shaped antemedial stripe and an M-shaped post-medial stripe; pruinosity woolly, silvery or white on the yellow bands, yellow or orange on the dark background; pubescence yellow; punctuation moderate to dense, coarse.

Legs. — All tarsi and foretibiae yellow; mid- and hind tibiae bicolored with yellow base and brown apex; all femora dark with yellowish apex; foretarsi with first segment enlarged in males.

Genitalia. — Figure 36. Appendages present.

MATERIAL EXAMINED: Type material: **France, La Réunion**, Saint-Philippe, Basse Vallée, on *Mimusops maxima* (Poussereau J. leg.), 25.III.2004: 1 male type (NGC); Salazie, Rempart de Bélouve, 26.I.1955: 1 male paratype (MNHNP); Saint-Denis, Plaine des Chicots, 24.I.1955: 1 male paratype (MNHNP); Saint-Denis, Plaine d’Affouches (Gomy Y. leg.), 23.IV.1967: 1 female paratype (MHNG); Saint-Paul, Sans Souci, 1.VI.2011: 1 male paratype (JPC); **Republic of Mauritius**, Trois Mamelles (Vinson J. leg.), 24.I.1959: 1 male paratype (MNHNP).

• *Mixaderus superbus* (Pic, 1909)

Fig. 7, 22, 34, 41.

Hylophilus superbus Pic, 1909: Pic, 1909. Type: MNHNP (examined).

Hylophilus superbus Pic, 1909: Pic, 1910.

Mixaderus (*subgén.?*) *superbus* Pic: Báguena-Corella, 1948.

REDESCRIPTION: *General.* — Length: 2-2.3 mm; moderately convex, elongate.

Head. — Black; eye large, strongly notched, adjacent or nearly adjacent to the rear of the head; interocular space narrower than eye diameter in both sexes; maxillary palp orange; hairs short; pruinosity silvery, dense, woolly; punctuation sparse, fine.

Antennae. — Slender; antennomere shape: 1 large and rounded; 2 shorter, as long as wide, bead-shaped; 3-6 filiform, longer than wide; 7-10 cylindrical, progressively more transverse; 11 larger, asymmetrically acuminate.; color uniformly pale: yellow or orange; insertion near or in eye notch; antennae reach the base of pronotum when folded backward.

Pronotum. — Weakly transverse, anterior angles rounded in dorsal view; sides straight and parallel; dimples around midline present; dark; a frame of white pruinosity bordering the thorax; pubescence pale; punctuation moderately dense, coarse.

Scutellum. — Subquadrate, covered with white pruinosity.

Elytra. — Convex, depressed on disc; sides weakly rounded in female, straight in male; width/length ratio 0.52-0.59; dark with a pattern of yellow markings as follows: one large humeral spot on each side, a broad ante-medial stripe extending anteriorly and posteriorly along suture (continuous along anterior extension), and a broad post-medial M-shaped stripe interrupted at the suture; pruinosity woolly, silvery or white on the yellow bands, yellow or orange on the dark background; pubescence yellow; punctuation moderate to dense, coarse.

Legs. — All tarsi and foretibiae yellow; mid- and hind tibiae bicolored with yellow base and brown apex; all femora dark with yellowish apex; foretarsi with first segment strongly enlarged in males (Fig. 41).

Genitalia. — Figure 34. Appendages present.

MATERIAL EXAMINED: **France, La Réunion**, Le Tampon, Plaine des Cafres, Notre-Dame de la Paix (Gomy Y. leg.), 31.XII.1970: 1 ex. (MHNG), 7.II.1969: 1 ex. (NGC); Saint-Paul, Les Palmistes (Poussereau J.), 17.V.2011: 2 ex. (JPC); Saint-Paul, Sans Souci, 1.VI.2011: 1 ex. (NGC).

TYPE MATERIAL: **France, La Réunion**: inferred holotype, female specimen (MNHNP, Collection Maurice Pic), bearing the labels "*I. Bourbon*"; "*Hylophilus superbus* Pic n sp." (Pic's handwriting), **presently designated as lectotype**. This specimen is heavily damaged, the head and half of the legs are missing.

• *Mixaderus gomyi*, n. sp.

Fig. 6, 21, 32.

DERIVATIO NOMINIS: the species is named after my colleague Yves Gomy (France, Nevers) who has collected an important amount of *Mixaderus* specimens, including specimens of this new species.

DESCRIPTION:

General. — Length: 1.35-2.0 mm; convex, elongate; morphological variability limited.

Head. — Usually black; eye large, notched, adjacent or nearly adjacent to the rear of the head; interocular space narrower than eye diameter in both sexes; maxillary palp orange; hairs short; pruinosity silvery, dense, woolly; punctuation sparse, fine.

Antennae. — Filiform to progressively widened at apex, robust, with developed pubescence; antennomere variable in

shape: 1-7 longer or as long as wide; 4-10 conical and truncated at each end; 8-10 transverse and progressively wider; 11 larger, asymmetrically acuminate; color variable; usually with first few antennomeres yellow, and the remaining ones orange-brown; insertion near or in eye notch; antennae reach the base of pronotum when folded backward.

Pronotum. — Subquadrate to weakly transverse, anterior angles rounded in dorsal view; sides straight and parallel; dimples around midline present; dark; a pattern of silvery and golden pruinosity making variable bands; dimples and base covered with silvery pruinosity; pubescence pale; punctuation moderately dense, coarse.

Scutellum. — Trapezoidal, covered with white pruinosity.

Elytra. — Convex, depressed on disc; sides rounded in both sexes; width/length ratio 0.58-0.68; dark with a pattern of yellow markings as follows: a narrow humeral spot on each side, often reduced or absent, a broad antemedial stripe with the shape of a flat W, and a broad post-medial stripe, with the shape of a flat M. Both stripes are generally interrupted at the suture; pruinosity silvery or white on the yellow bands, yellow or orange on the dark background; pruinosity woolly; pubescence yellow; punctuation moderate to dense, coarse; female elytra slightly wider.

Legs. — All tarsi and foretibiae yellow; mid- and hind tibiae bicolored with yellow base and brown apex; all femora dark with yellowish apex; foretarsi with first segment enlarged in males.

Genitalia. — Figure 32. Appendages present.

MATERIAL EXAMINED: Type material: **France, La Réunion**, Le Tampon, PK 14° (823 m.), 21°14' S 55°30' E, Beating *Ligustrum robustum*, (Poussereau J. leg.), 20.XII.2010: 1 male type (NGC); Saint-Denis, La Grande Chaloupe (Poussereau J. leg.), 28.I.2009: 1 male paratype (JPC); Saint-Joseph, Manapany, Kiosque, light (Poussereau J. leg.), 16.I.2009: 1 male paratype (JPC) and 1 female paratype (NGC); Sainte-Suzanne (Gomy Y. leg.), 23.IV.1967: 1 female paratype; Saint-Paul (Gomy Y. leg.), 20.II.1965: 1 female paratype; Saint-Denis, Rampe Saint-François (Gomy Y. leg.), 7.I.1967: 1 male paratype; **Republic of Mauritius**, Rose Hill (Mamet R. leg.), 8.VII.1933: 1 male paratype (MNHNP); Curepipe (Carié P.), 10.VI.1904: 1 female paratype (MNHNP).

• ***Mixaderus cinereofasciatus* (Blair, 1935)**

Fig. 11, 25, 31.

Xylophilus cinereofasciatus Blair, 1935: Blair, 1935. Type series: NHM (examined).

Mixaderus (Perisia) cinereofasciatus Blair: Báguena-Corella, 1948.

REDESCRIPTION:

General. — Length: 1.3-1.75 mm; convex, elongate.

Head. — Black; eye large, notched, adjacent or nearly adjacent to the rear of the head; interocular space narrower than eye diameter in both sexes; maxillary palp color orange; hairs short; pruinosity hardly visible; punctuation moderately dense, fine.

Antennae. — Slender; antennomere shape: 1-5 slightly longer than wide; 6-10 progressively wider, truncated on each end; 11 larger, asymmetrical, straight on inner edge, largely rounded on outer edge; color entirely dark orange; insertion near or in eye notch; antennae reach the base of pronotum when folded backward.

Pronotum. — Slightly transverse, anterior angles rounded in dorsal view; sides straight and parallel; dimples around mid-

line present; uniformly dark brown; pruinosity white; pubescence pale; punctuation moderately dense, medium.

Scutellum. — Trapezoidal, covered with white pruinosity.

Elytra. — Depressed on disc; sides moderately rounded in both sexes; width/length ratio 0.62-0.65; dark with a single broad posthumeral stripe; pruinosity white, sparse; pubescence yellow; punctuation moderately dense, coarse.

Legs. — Forelegs entirely orange; mid- and hind legs orange with femora and distal half of tibia brown; foretarsi with first segment weakly enlarged in males.

Genitalia. — Figure 31. Appendages absent.

MATERIAL EXAMINED: Two type specimens kept in the NHM collection obviously correspond to the specimens described by Blair as *X. cinereofasciatus*. However, one (a male) is labelled *X. flavicornis* and the other (a female) is unlabelled. It is likely that Blair was going to name the species *flavicornis* but discovered this name was pre-occupied by *X. flavicornis* Champion, 1890. I consider these specimens to be two of the three syntypes of *X. cinereofasciatus* Blair, 1935. The specimen represented on Fig. 11, (a male) becomes the lectotype and the other (the female) becomes a paralectotype. I have added labels to these specimens accordingly. The third type specimen, referred to in Blair's original description could not be located.

TYPE MATERIAL: Republic of Mauritius: Rodrigues Island (H. J. Snell & H. P. Thomasset leg.), VIII-XI. 1918: one male (lectotype, present designation) and one female (paralectotype, present designation) (NHM).

• ***Mixaderus perrieri* (Pic, 1909)**

Fig. 12, 28, 33, 42

Hylophilus perrieri Pic, 1909: Pic, 1909. Type: MNHNP (examined).

Hylophilus perrieri Pic, 1909: Pic, 1910.

Mixaderus (Ginerosia) perrieri Pic, 1911 [sic!]: Báguena-Corella, 1948.

REDESCRIPTION: General. — Length: 1.6-1.85 mm; mean length: 1.71 mm; convex, oval.

Head. — Black; eye large, notched, adjacent or nearly adjacent to the rear of the head; interocular space narrower than eye diameter in both sexes; maxillary palp orange; hairs short; pruinosity woolly; punctuation moderately dense, fine.

Antennae. — Filiform; antennomere shape: 1-3 short, 2 shorter than wide. 4-7 longer than wide, conical. 8-10 variable, hardly longer than wide. 11 much larger, asymmetrically acuminate; entirely orange; insertion near or in eye notch; antennae reach the base of pronotum when folded backward.

Pronotum. — As long as wide, anterior angles rounded in dorsal view; sides rounded; dimples around midline present; black; pruinosity white; pubescence white; punctuation dense, fine.

Scutellum. — Subquadrate, covered with white pruinosity.

Elytra. — Convex, weakly rounded in both sexes; width/length ratio 0.64-0.70; uniformly black; pruinosity white, woolly; pubescence white; punctuation dense, coarse.

Legs. — Entirely orange; foretarsi with first segment enlarged in males, but variable in length.

Genitalia. — Figure 33. Appendages present.

MATERIAL EXAMINED: Madagascar (Perrier H. leg.): 2 ex. (MNHNP and MNCNM).

TYPE MATERIAL: Madagascar (Perrier H. leg.): inferred holotype, male specimen (MNHNP, Collection Maurice Pic), bearing the labels "type"; "*Hylophilus Perrieri Pic*"; "*désiré*" [=desiderata]; "*Madag Perrier*" (Pic's handwriting), **presently designated as lectotype**.

• ***Mixaderus madecassus* (Pic, 1909)**

Fig. 8, 3, 37, 38.

Hylophilus madecassus Pic, 1909. Holotype: MNHNP (examined).

Hylophilus madecassus Pic, 1909: Pic, 1910.

Mixaderus (s.str.) *madecassus* Pic, 1911 [sic!]: Báguena-Corella, 1948.

Mixaderus (*Ginerosia*) *pinacotarsus* Báguena-Corella, 1948: Báguena-Corella, 1948, **new synonymy**. Type: MNHNP (examined).

Hylophilus superbus v. *trinotatus* Pic, 1921: Pic, 1921, **new synonymy**. Type: MNHNP (examined) nec *Xylophilus trinotatus* Champion, 1916.

Hylophilus superbus v. *diversus* Pic, 1924²: Pic, 1924, **new synonymy**.

Mixaderus (*Ginerosia*) *diversus* Pic: Báguena-Corella, 1948.

REDESCRIPTION:

General. — Length: 1.45-1.75 mm; mean length: 1.55 mm; convex, oval; overall morphology variable, especially pigmentation.

Head. — Brown to black; eye large, weakly notched, adjacent or nearly adjacent to the rear of the head; interocular space larger than eye diameter in both sexes; maxillary palp orange; hairs relatively long; pruinosity silvery, dense, woolly; punctuation moderately dense, fine.

Antennae. — Slender; antennomere variable in shape: 1-2 short and rounded; 4-6 slender but their width/length ratio variable; 7-10 progressively wider, truncated at their extremities; 11 larger, asymmetrically acuminate; generally orange, antennomeres 7-11 sometimes brown or dark; insertion near or in eye notch; antennae reach the base of pronotum when folded backward; antennae longer in males than females.

Pronotum. — As long as wide, anterior angles rounded in dorsal view; sides rounded; dimples around midline present; pigmentation yellowish; pruinosity silvery; pubescence pale; punctuation moderately dense, coarse.

Scutellum. — Subquadrate, covered with white pruinosity.

Elytra. — Moderately convex; sides weakly rounded in both sexes; width/length ratio 0.57-0.65; yellow with 3 stripes of brown to dark pigmentation, one basal, one medial and one pre-apical. These 3 components are variable in size, shape and intensity, from pale forms where they form discrete spots and hardly reach the elytral suture, to darker forms where they are broader and continuous, yet they remain narrower than the yellow interstripes; pruinosity white, woolly; pubescence pale; punctuation moderately dense, coarse.

Legs. — Orange; hind femora sometimes darker; foretarsi with first segment strongly enlarged in males.

Genitalia. — Figure 37. Appendages present.

MATERIAL EXAMINED: Madagascar (Decary R. leg.): 1 male (MNHNP, lectotype of *Mixaderus* (*Ginerosia*) *pinacotarsus* Báguena-Corella, 1948, **present designation**); Anta-

nanarivo, 1921 (Decary R. leg.): 2 ex. (MNHNP); Soanierana (Mathiaux A. leg.), 1905: 1 ex. (MNHNP); Pays Androy (Sud) (Alluaud Ch. leg.), 1900: 3 syntypes of *Hylophilus superbus* v. *trinotatus* Pic, 1921 (1 male, 1 female, 1 unsexed, MNHNP, Collection M. Pic); Ambovombe, Amboasary, 1956: 1 male (MNHNP).

TYPE MATERIAL: Madagascar (Perrier H. leg.): female holotype (MNHNP, Collection M. Pic).

• ***Mixaderus basithorax* (Pic, 1909)**

Fig. 10, 27.

Hylophilus basithorax Pic, 1909. Type: MNHNP (examined).

Hylophilus basithorax Pic, 1909: Pic, 1910.

Mixaderus (s.str.) *basithorax* Pic, 1911 [sic!]: Báguena-Corella, 1948.

REDESCRIPTION:

General. — Length: 2.1 mm; moderately convex, elongate; male unknown.

Head. — Brown; eye large, notched, adjacent or nearly adjacent to the rear of the head; interocular space in female larger than eye diameter; maxillary palp orange at base with last article darker; hairs short. pruinosity dense; punctuation moderately dense, fine.

Antennae. — Slender; antennomere shape: 1-2 globose, 1 larger; 3-7 conical, longer than large; 8-10 conical transverse; 11 nearly 3 times longer, asymmetrically acuminate; antennomeres 1-5 pale orange; 6-10 brown; 11 dark orange; insertion near or in eye notch; antennae reach the base of pronotum when folded backward.

Pronotum. — Slightly transverse, anterior angles rounded in dorsal view; sides weakly rounded and convergent anteriorly; dimples around midline large and shallow, barely visible; dark-brown; pruinosity silvery; pubescence pale; punctuation moderately dense, medium.

Scutellum. — Rectangular, covered with white pruinosity.

Elytra. — Largely depressed on disc; sides moderately rounded; width/length ratio 0.55; dark with a two large post-humeral triangular-shaped yellow spots; yellow markings hardly reaching the elytral suture; pruinosity silvery; pubescence yellow; punctuation moderately dense, coarse.

Legs. — Orange, posterior femora darker.

MATERIAL EXAMINED: Type material: Madagascar: inferred holotype, female specimen (MNHNP, Collection Maurice Pic), bearing the label "*Hylophilus basithorax Pic n sp*" (Pic's handwriting), **presently designated as lectotype**.

• ***Mixaderus simplex* (Pic, 1921), new combination**

Fig. 13, 23.

Hylophilus simplex Pic, 1921. Type: MNHNP (examined).

REDESCRIPTION: General. — Length: 1.95 mm; moderately convex, elongate; male unknown.

Head. — Yellow; eye small, moderately notched, adjacent or nearly adjacent to the rear of the head; interocular space in female larger than eye diameter; maxillary palp orange; hairs short; pruinosity silvery, dense, short; punctuation absent.

Antennae. — Clubbed; antennomere shape: 1 large and rounded; 2 shorter, as long as wide, bead-shaped; 3-5 filiform, longer than wide; 6-11 progressively wider, forming a club; 8-10 transverse and 11 longer, asymmetrically acuminate; entirely yellow; insertion near or in eye notch; short, do not reach base of pronotum when folded backward.

² In a loose and mysterious note, Pic (1924) indicates that the name *trinotatus* should be changed to *diversus* ("Hylophilus Harmandi Pic (1921) préoccupé, est à muter-en *subnitidus* et v. *trinotatus* Pic (1921) à muter en *diversus*"), without explaining why. The name is in fact preoccupied by a species described by Champion from Burma, *Xylophilus trinotatus* Champion, 1916.

Scutellum. — Trapezoidal, covered with white pruinosity.
Pronotum. — Longer than wide, anterior angles rounded in dorsal view; sides straight and weakly divergent; dimples around midline present, but shallow; yellow; pruinosity silvery; pubescence pale; punctuation moderately dense, coarse.
Elytra. — Moderately convex; sides rounded; width/length ratio 0.62; uniformly yellow; pruinosity white, wooly; pubescence pale; punctuation moderately dense, coarse.
Legs. — Entirely yellow.

MATERIAL EXAMINED: Type material: **Madagascar**, Forêt d'Anamala-zoatra, Forêt de la côte Est (C. Alluaud leg.), 1901: inferred holotype, female specimen (MNHNP, Collection Maurice Pic), bearing the label "*Hylophilus simplex* Pic" (Pic's handwriting), **presently designated as lectotype**.

3) Remarks and notes

A few species described by Pic from the Mascareignes archipelago currently have an ambiguous status, and call for discussion:

- *Hylophilus cariei* Pic, 1932. Type: Mauritius (MNHNP) I have examined and remounted the holotype of this species treated by Báguena-Corella (1948) as *Mixaderus*, and considered by Pic a close relative to *H. alluaudi* Pic, 1898. The shape of its thorax and antennae place this species unambiguously in the genus *Aderus* Stephens, 1829: *Aderus cariei* (Pic, 1932), **new combination**.

- the following species are recorded from Madagascar or Mauritius, but I could not locate their type material. They were collected by Ch. Alluaud, and are possibly kept in his own collection, as I could not find them in Pic's collection; yet I was not able to find an Aderidae drawer in Alluaud's collection at the MNHNP. For now, I am unable to place them with certainty based on their original descriptions. While all three likely belong to the genus *Mixaderus*, they are provisionally considered *incertae sedis*:

Hylophilus fasciatipennis Pic, 1903. Type: Madagascar: Forêt Tanala. Likely a *Mixaderus*, based on Pic's original description.

Xylophilus (? *Pseudeuglenes*) *Alluaudi* Pic, 1898. Type: Mauritius

Xylophilus (? *Pseudeuglenes*) *mauritiensis* Pic, 1898. Type: Mauritius

4) Key to species

- 1 Elytra uniformly colored, legs entirely pale 2
 – Elytra bicolor: brown or black, with patterns of pale stripes and spots 4
- 2 Head, thorax and abdomen entirely black *M. perrieri*
 – Head, thorax and abdomen entirely pale 3
- 3 Thorax transverse *M. snelli*
 – Thorax as long as wide *M. simplex*

- 4 Antennae thick, hairy and dark (fig. 26, 29)..... 5
 – Antennae thinner, not entirely dark 6
- 5 Antennomeres 4-10 transverse (fig. 29). Length >2mm .
 *M. pinomorphus*
 – Antennomeres 4-10 as long or longer than wide (fig. 26).
 Length <2mm..... *M. angustefasciatus*
- 6 Elytra dark with a single transverse yellow stripe, located
 in their anterior half 7
 – Elytra with a complex coloration involving at least two
 stripes, transverse and sinuated 8
- 7 Elytral stripe broad, reaching the humeral region laterally
 (fig. 10) *M. basithorax*
 – Elytral stripe narrower, remote from the humeral region
 (fig. 11) *M. cinereofasciatus*
- 8 Anterior elytral stripe strongly sinuated 9
 – Anterior elytral stripe broad, with weak or no sinuation
 (sometimes reduced to discrete blotches)..... 12
- 9 Thorax transverse..... 10
 – Thorax as long as wide *M. poussereaui* **n. sp.**
- 10 Anterior elytral stripe extends anteriorly and posteriorly
 along suture..... *M. mantillerii* **n. sp.**
 – Anterior stripe not extended along suture 11
- 11 Posterior stripe with a deep, loop-shaped sinuation (fig. 2)
 *M. sinuatefasciatus*
 – Posterior stripe with milder sinuation (fig. 3).....
 *M. emmerezi*
- 12 Apex of elytra yellow *M. madecassus*
 – Apex of elytra dark 13
- 13 Yellow humeral spot barely visible. Elytra less than 3.5
 longer than pronotum..... *M. gomyi* **n. sp.**
 – Yellow humeral spot distinct. Elytra 3.5 to 4 times longer
 than pronotum *M. superbus*

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