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## Two new species of *Sebastianus* IWAN, 1996 from Madagascar (Coleoptera: Tenebrionidae: Platynotini)

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ABSTRACT. *Sebastianus endrodyi* sp. nov. and *S. madagascariensis* sp. nov. are described and illustrated. The species belong to the generic group melanocratoid *Platynotina* from Madagascar. Key to species of the genus *Sebastianus* IWAN is provided.

Key words: entomology, taxonomy, new species, *Coleoptera*, *Tenebrionidae*, *Platynotini*, *Sebastianus*, Madagascar.

In my revision of the genera of Madagascan melanocratoid *Platynotina* (IWAN 1996) I established the genus *Sebastianus*. It includes seven species: *S. major* (FAIRMAIRE, 1899) (type species), *S. ovoideus* (FAIRMAIRE, 1902), *S. projectus* IWAN, 1996, *S. simplex* IWAN, 1996, *S. magnus* IWAN, 1996, plus *S. endrodyi* sp. nov. and *S. madagascariensis* sp. nov. *Sebastianus* resembles *Doyenus* IWAN and *Styphacus* FAIRMAIRE in having bordered anterior margin of the elytron and 2 denticles on the outer margin of fore tibia. *Sebastianus* differs in the structure of male mid tibia, which is slightly emarginate on the inner side (in *S. ovoideus* nearly hammer-shaped, like in the genus *Melanocratus* FAIRMAIRE) and the presence of tubercles on the male abdominal ventrites (present also in *D. uncus* IWAN).

The two new species of the genus described in the present paper have recently been discovered among the specimens sent by Sebastian ENDRÖDY-YOUNGA (Transvaal Museum of Natural History, Pretoria, Republic of South Africa).

## METHODS AND ABBREVIATIONS

Means and ratios are based on all specimens listed under “Types”. Measurements were made as follows: width of lateral pronotal border – in the middle of lateral pronotal margin; body length – from anterior margin of labrum to elytral apex; body width – maximum elytral width.

The following abbreviations have been used in the descriptions:

pl/pb – pronotum length/breadth ratio;  
el/eb – elytra length/breadth ratio;  
el/pl – length ratio elytra/pronotum;  
eb/pb – breadth ratio elytra/pronotum;  
pl/al – length ratio pronotum/antenna;  
ab/al – antenna breadth (third segment)/length ratio;  
mlc/mc – length ratio metasternum between meso- and metacoxal cavities/  
metacoxal cavity;  
mlm/av – length ratio metasternum medianly/1st abdominal ventrite;  
lbp/lap – length ratio basal/apical part of edeagal tegmen;  
c1/c2/c3/c4/c4–c3 – length ratios coxites1/coxites2/coxites3/coxites4/coxites4–  
coxites3;  
bc1/lc1 – coxites1 breadth/length ratio;  
lp/lc1 – length ratio paraproct/coxites1.

***Sebastianus madagascariensis* sp. nov.**

(figs 5, 8-11, 25, 26, 32, 33, 39, 44-46, 51, 52, 61, 63, 69, 73, 74)

## NAME DERIVATION

The species is named after its terra typica.

## LOCUS TYPICUS

Efoetsy (Madagascar, Betioky Distr.).

## DIAGNOSIS

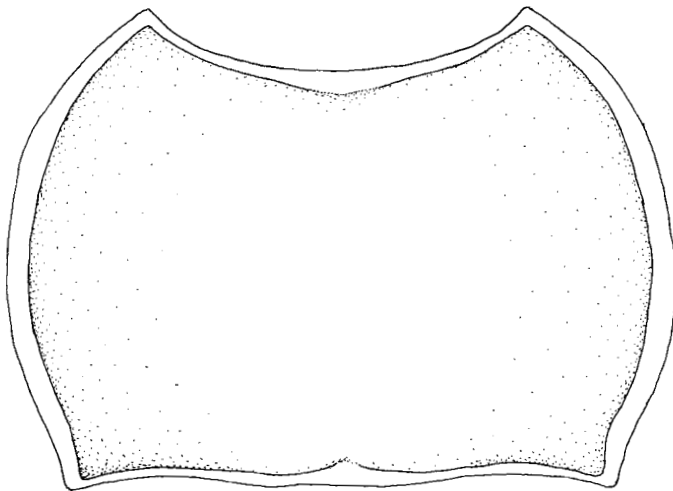
The blunt prosternal process and the presence of tubercles on the first three male abdominal ventrites place *madagascariensis* close to *simplex* and *ovoideus* (cf. figs 25 and 26, 19 and 20, and 23 and 24), while the structure of the hind tibia shows affinity with *projectus*, *magnus* and *endrodyi* (cf. figs 51 and 52, 53 and 54, 49 and 50, and 47 and 48).

*S. madagascariensis*, like *simplex* and *projectus*, has mid tibiae with two distinct dentated ridges on outer side (*magnus* and *endrodyi* with single one). The species differ in the shape of the pronotal posterior angles (strongly protruding

outwards in *projectus*, slightly protruding in *madagascariensis*, *magnus* and *endrodyi*, rounded in *simplex* and *ovoideus*) (cf. figs 3, 5, 1, 2, 4 and 7), and the structure of male abdominal ventrites (number and shape of the tubercles) (cf. figs 13 and 14, 15 and 16, 17 and 18, 19 and 20, 23 and 24, and 25 and 26).

#### DESCRIPTION

Body moderately elongate, dorsally depressed; elytra slightly tucked in posteriorly (part of intervals VIII-IX visible from underside); colour dark brown to black; length 19.7-20.4 mm,  $pl/pb = 0.64-0.65$ ,  $el/eb = 1.28-1.42$ ,  $el/pl = 2.27-2.30$ ,  $eb/pb = 1.05-1.14$ . Upperside slightly shiny, with a greasy sheen; puncturation delicate, often invisible, only head, lateral part of pronotum and elytral apex with distinct punctures. Underside shiny, puncturation sparse and weak, abdominal ventrites I-III with longitudinal wrinkles. Head as in fig. 8; genal canthus wider than eyes; clypeus deeply emarginate; fronto-clypeal suture poorly marked, but in a distinct groove; eyes narrowed laterally, between gena and tempus 2 facets visible; antennae moderately long ( $pl/al$  c. 1.4) and thick ( $ab/al$  c. 0.07), segment 3 about 2.6-3.2 x longer than segment 2; mid part of mentum with a distinct blunt convexity in the middle. Pronotum as in fig. 5, with sides rounded, widest in the middle; pronotal disc moderately convex, with shallow, longitudinal groove along lateral borders; base slightly bisinuate, narrowly bordered; anterior angles sharp, strongly produced anterad; posterior angles straight, slightly protruding outwards; lateral border narrow, ca. 0.7 x wider than antennal segment 3. Scutellum moderately wide, distance between humeral angle and scutellum ca.



1. *Sebastianus magnus*, pronotum

2.4–2.8 x scutellum width. Pronotum as in figs 45–46; prosternal process blunt, bordering interrupted. Body apterous, metasternum moderately shortened (mlc/mc c. 0.7, mlm/av c. 0.4). Anterior part of elytron as in fig. 44; upper edge of elytral base arched, bordered 1/3 from humeral angle. Elytral intervals weakly convex; striae strongly incised, punctato-sulcate, punctures poorly visible; connection of elytral striae in apical part as follows: 1–9, 2–7, 3–6, 4–5, 8–free; epipleura with sparse, transverse wrinkles; slightly bent at humeral angle, upper edge convex and, but located dorsally. The first three abdominal ventrites provided with tubercles – 1st – well developed, convex, 2nd and 2rd – smaller, more flattened (figs 25, 26). Male legs: tarsi slightly widened, with glabrous, shiny gutters on underside of all tarsomeres; fore tibia with longitudinal, shallow concavity on inner side, and 2 denticles on outer margin (figs 73, 74); mid tibia with 2 distinct, dentated ridges on outer side (figs 32, 33); hind tibia strongly bent inwards, with blunt denticle at base (figs 51, 52). Female legs: tarsi narrow; fore tibia with 2 denticles on outer margin (figs 63, 69); mid tibia as in male (fig. 39); hind tibia straight (fig. 61). Aedeagus as in figs 10, 11; apical part of aedeagus moderately long, lbp/lap c. 1.7; length ratio male body/aedeagus ca. 7.5. Ovipositor (fig. 9): lp/lc1 c. 4.8, bc1/lc1 c. 3.5, c1/c2/c3/c4 = 1.0/1.9/2.3/2.3, plate c4 not protruding above the upper margin of c3; bursa copulatrix with no sclerites, abruptly narrowed towards outlet of spermatheca and accessory gland; spermatheca with very narrow, regular, strongly sclerotized and multiple dichotomous branched ducts; length ratio female body/ovipositor ca. 7.8

#### DISTRIBUTION (fig. 80)

S Madagascar.

#### TYPES

Holotype (male); TMNH; “Madagascar I.1956 C. KOCH leg.; Efoetsy, Betioky Distr.”.

Paratype: Madagascar I.1956 C. KOCH leg.; Efoetsy, Betioky Distr. (TMNH) 1 f.

#### ***Sebastianus endrodyi* sp. nov.**

(figs 2, 13, 14, 27–31, 40, 42, 43, 47, 48, 62, 70, 71)

#### NAME DERIVATION

The species is named in honour of the late Dr. Sebastian ENDRÖDY-YOUNGA, who contributed much to this study by providing me with specimens.

#### LOCUS TYPICUS

Androka (Madagascar, Ampanihy Distr.).

## DIAGNOSIS

The prosternal process (strongly protruding backwards) (figs 42, 43), the shape of pronotal posterior angles (cf. fig. 2 and 1)) and the structure of the male abdominal ventrites (cf. figs 13, 14 and 17, 18) place *endrodyi* close to *magnus*, from which it differs in the structure of the legs (cf. figs 30, 31 and 37, 47 and 48, 49 and 50, 70 and 71, and 66, 72).

## DESCRIPTION

General appearance, colour and puncturation as in *S. madagascariensis*; length 19.0–20.5 mm, pl/pb = 0.62–0.65, el/eb = 1.20–1.36, el/pl = 2.22–2.25, eb/pb = 1.06–1.16. Head with deeply emarginated clypeus; eyes narrowed laterally, between gena and tempus 3 facets visible; antennae moderately long (pl/al c. 1.4) and thick (ab/al c. 0.09), segment 3 about 2.4–2.7 x longer than segment 2; mid part of mentum with a distinct blunt convexity in the middle. Pronotum as in fig. 2, with sides rounded, widest in the middle; pronotal disc moderately convex, with shallow, longitudinal groove along lateral borders; base slightly bisinuate, narrowly bordered; anterior angles rounded, slightly produced anterad; posterior angles distinctly protruding outwards; lateral border narrow, ca. 0.6 x wider than antennal segment 3. Scutellum moderately wide, distance between humeral angle and scutellum ca. 2.7–3.2 x scutellum width. Pronotum as in figs 42–43; prosternal process produced towards mesosternum, with border interrupted at apex. Body apterous, metasternum moderately shortened (mlc/mc c. 0.7, mlm/av c. 0.5) (fig. 29). Anterior part of elytron with arched and bordered upper edge; elytral intervals weakly convex; striae strongly incised, punctato-sulcate, punctures poorly visible; connection of elytral striae in apical part as follows: 1–9, 2–7, 3–6, 4–5, 8–free; epipleura with sparse, transverse wrinkles; slightly bent at humeral angle, upper edge convex and, but located dorsally. The first two abdominal ventrites provided with well developed tubercles, abdominal ventrite I strongly convex in middle (figs 13, 14). Male legs: tarsi slightly widened, with glabrous, shiny gutters on underside of all tarsomeres; fore tibia with longitudinal, shallow concavity on inner side, and 2 denticles on outer margin (figs 70, 71); outer side of mid tibia with one distinctly dentated and one smooth ridge (figs 30, 31); hind tibia strongly bent inwards, with denticle at base (figs 47, 48). Female legs: tarsi narrow; fore tibia with 2 denticles on outer margin (fig 62); mid tibia with 2 dentated ridges on outer side (fig 40); hind tibia straight. Aedeagus as in figs 27–28; apical part of aedeagus moderately long, lbp/lap c. 2.0; length ratio male body/aedeagus ca. 8.2. Ovipositor: lp/lc1 c. 5.1, bc1/lc1 c. 3.5, c1/c2/c3/c4 = 1.0/1.8/2.3/2.3, plate c4 not protruding above the upper margin of c3; internal female genitalia as in *madagascariensis*; length ratio female body/ovipositor ca. 8.6.

## DISTRIBUTION (fig. 80)

S Madagascar.

## TYPES

Holotype (male); TMNH; "16 km NE of Androka".

Paratypes: 16 km NE of Androka (TMNH) 1 m, 1 f.

## DISCUSSION

The diagnoses and the identification key to the species of the genus *Sebastianus* are based on a combination of 5 characters, 3 of these being exclusively male. The evolutionary tendencies of these five characters may be presented as follows:

1) posterior pronotal angle: rounded (*simplex*, *ovoideus*) → slightly protruding outwards (*madagascariensis*, *magnus*, *endrodyi*) → distinctly protruding outwards (*major*, *projectus*) (fig. 81);

2) prosternal process: blunt (*simplex*, *ovoideus*, *madagascariensis*) → slightly convex on apex (*projectus*) → distinctly produced towards mesosternum (*major*, *magnus*, *endrodyi*) (fig. 82);

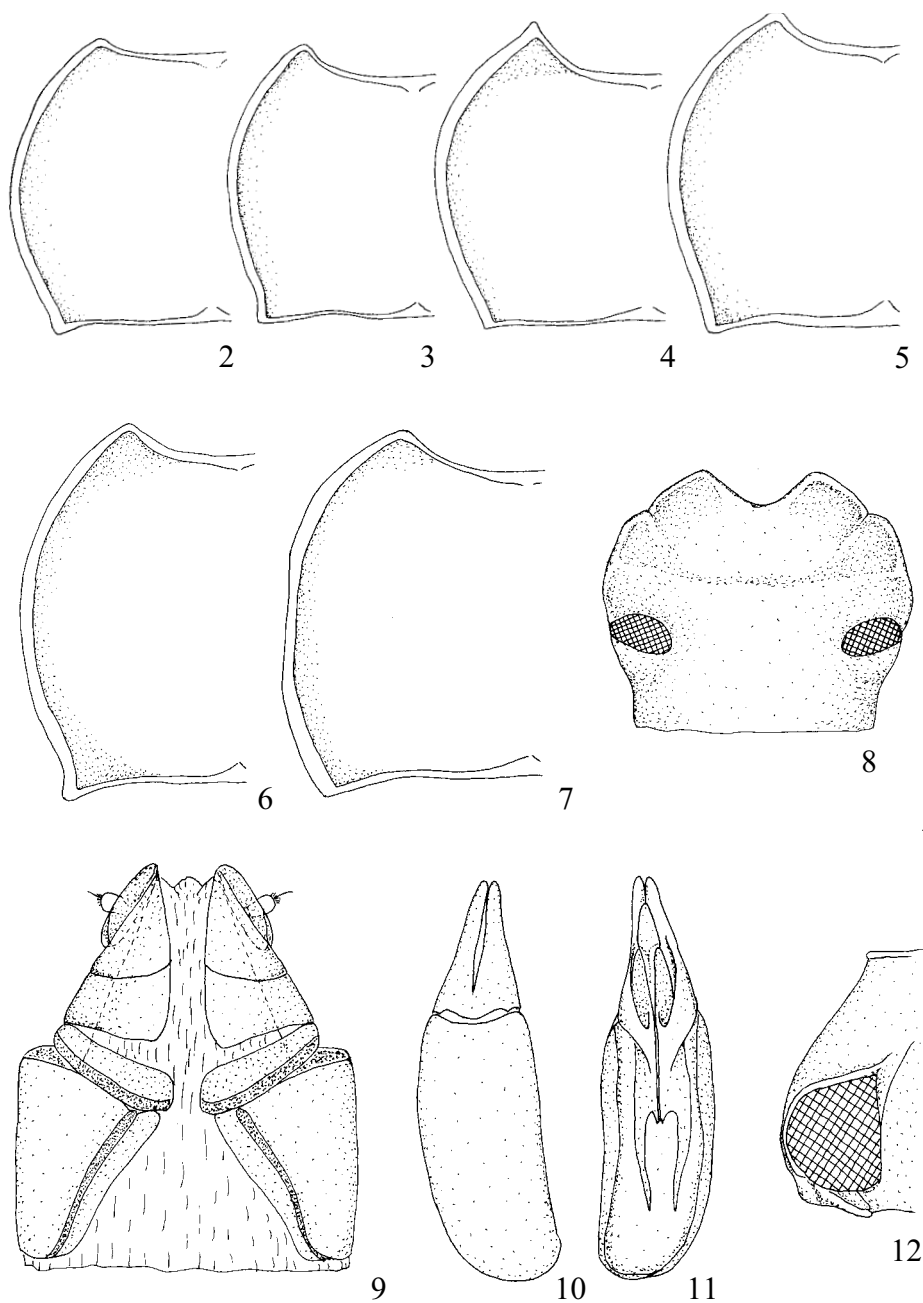
3) presence of tubercles on the male abdominal ventrites (fig. 83),  
- ventrite 1 flat, tubercles on ventrites I-III, shape of tubercles: oval, flat (*simplex*, *madagascariensis*) → keel-like elongate, convex (*ovoideus*) → transverse, convex (*projectus*)

- ventrite 1 convex medianly: tubercles on ventrite I-II (*magnus*, *endrodyi*) → tubercle on ventrite 1 (*major*);

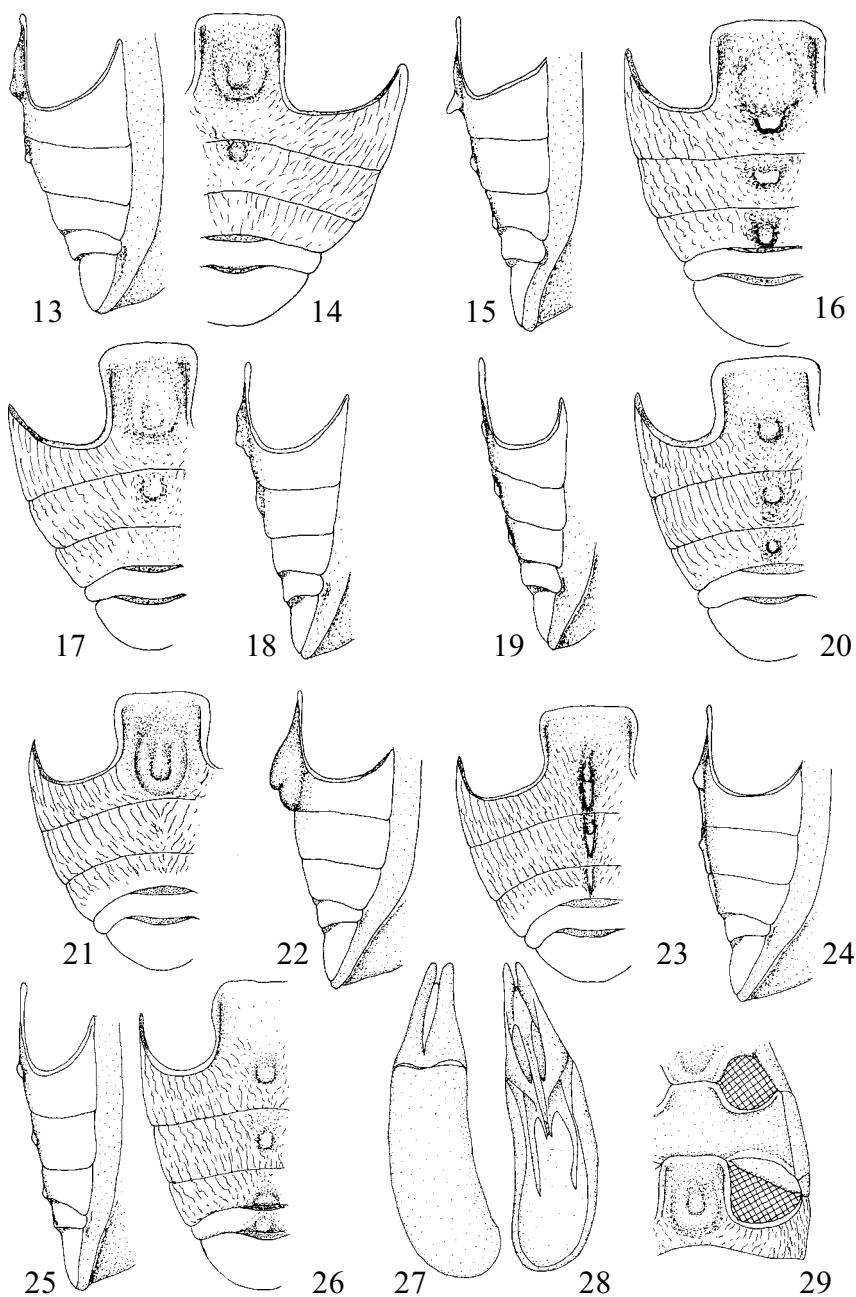
4) outer side of male mid tibia: with 2 dentated ridges, as in all females (*simplex*, *projectus*, *madagascariensis*, *major*) → with 1 dentated and 1 smooth ridges (*ovoideus*, *magnus*, *endrodyi*) (fig. 84);

5) male hind tibia: straight, simple (*simplex*) → gradually bending inwards, and developing denticle basally on inner side (*ovoideus*, *magnus*, *endrodyi*, *projectus*, *madagascariensis*, *major*) (fig. 85).

The above transformation series indicate that *simplex* has the most numerous plesiomorphic characters, while in *major* apomorphic characters are the most numerous. It follows from the distribution map of the members of *Sebastianus* that in the Ampanihy District all the species of the genus are present; likewise, all the plesiomorphic characters are represented there. It is the driest part of Madagascar, with annual precipitation below 400 mm (beetles of the genus *Sebastianus* occur practically only in the zone up to 600 mm rainfall, see figs 79, 80). The probable migration progressed westwards (*projectus*, *ovoideus* and *magnus*) and northwards (*major*). Obviously, the migration is here defined as occupying adjacent areas, with a simultaneous speciation resulting in new species with new characters appearing in the newly-invaded territories. It is difficult to estimate if and to what degree these extremely dry conditions contributed to speciation (and the later dispersal of the new species resulted in the overlap of their distribution areas), or perhaps the concentration of so many species results from the limited area where the conditions are favourable. The hypothesis that the discussed area of S Madagascar was a refugium for the ancestor of *Sebastianus*, and the taxon is at present developing, seems the most probable.

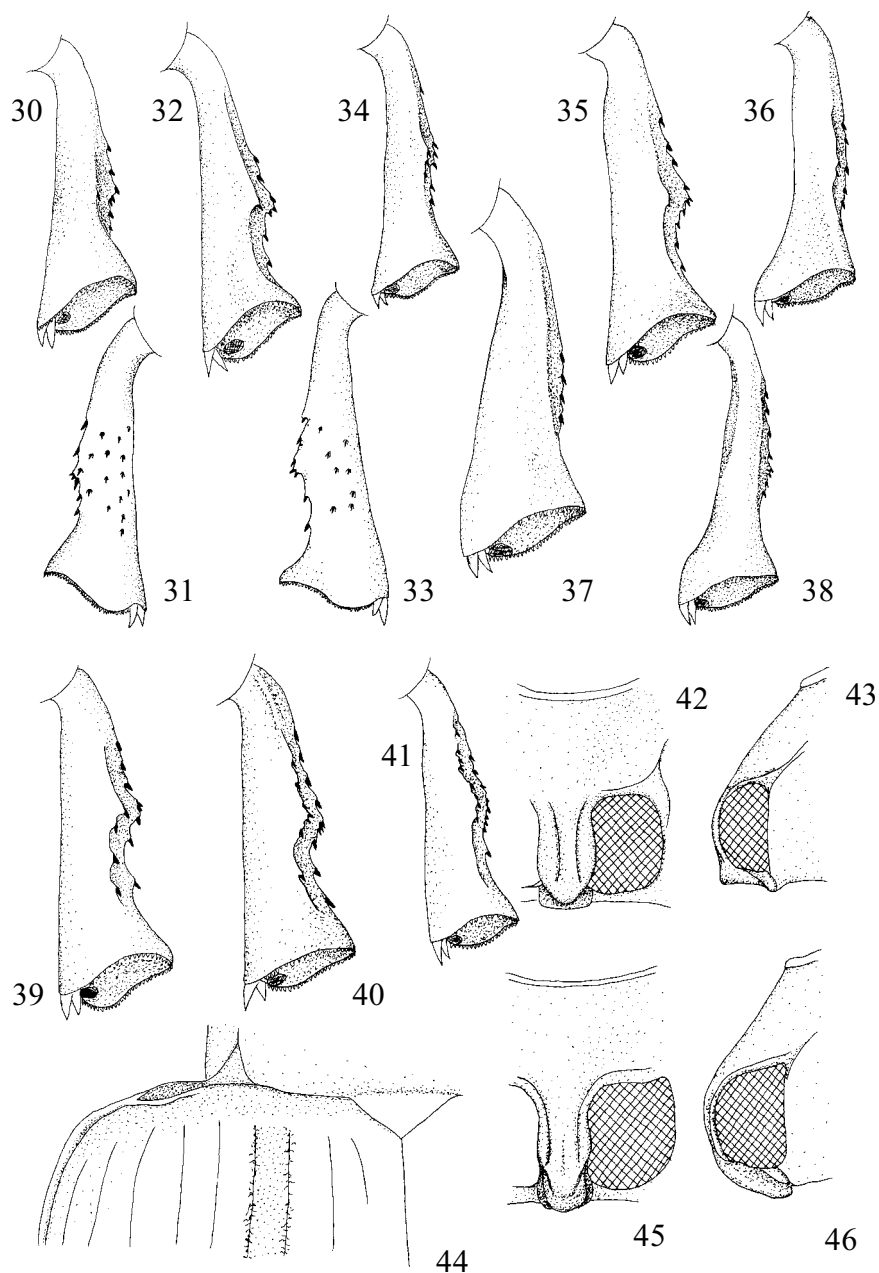


2. *Sebastianus endrodyi*. 3, 12. *S. projectus*. 4. *S. simplex*. 5, 8-11. *S. madagascariensis*. 6. *S. major*. 7. *S. ovoideus*. 3-7 - pronotum, 8 - head, 9 - ovipositor, 10 - dorsal and 11 - ventral view of aedeagus, 12 - lateral view of prosternum

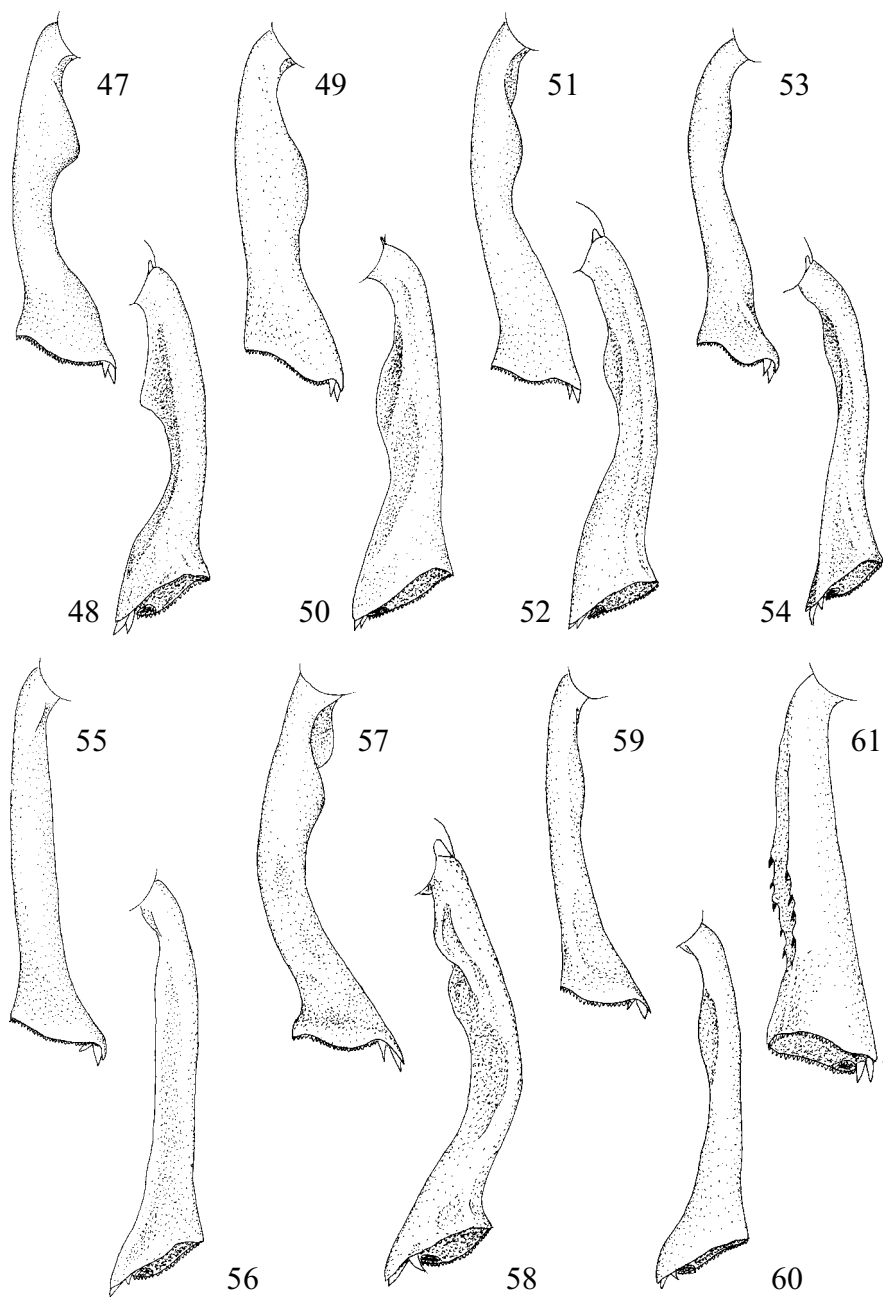


13-14, 27-29. *Sebastianus endrogyi*. 15-16. *S. projectus*. 17-18. *S. magnus*. 19-20. *S. simplex*. 21-22. *S. major*. 23-24. *S. ovoideus*. 25-26. *S. madagascariensis*. 13, 16, 17, 20, 21, 23, 26 – frontal and 14, 15, 18, 19, 22, 24, 25 – lateral view of abdomen, 27 – dorsal and 28 – ventral view of aedeagus, 29 – metasternum and 1<sup>st</sup> abdominal ventrite

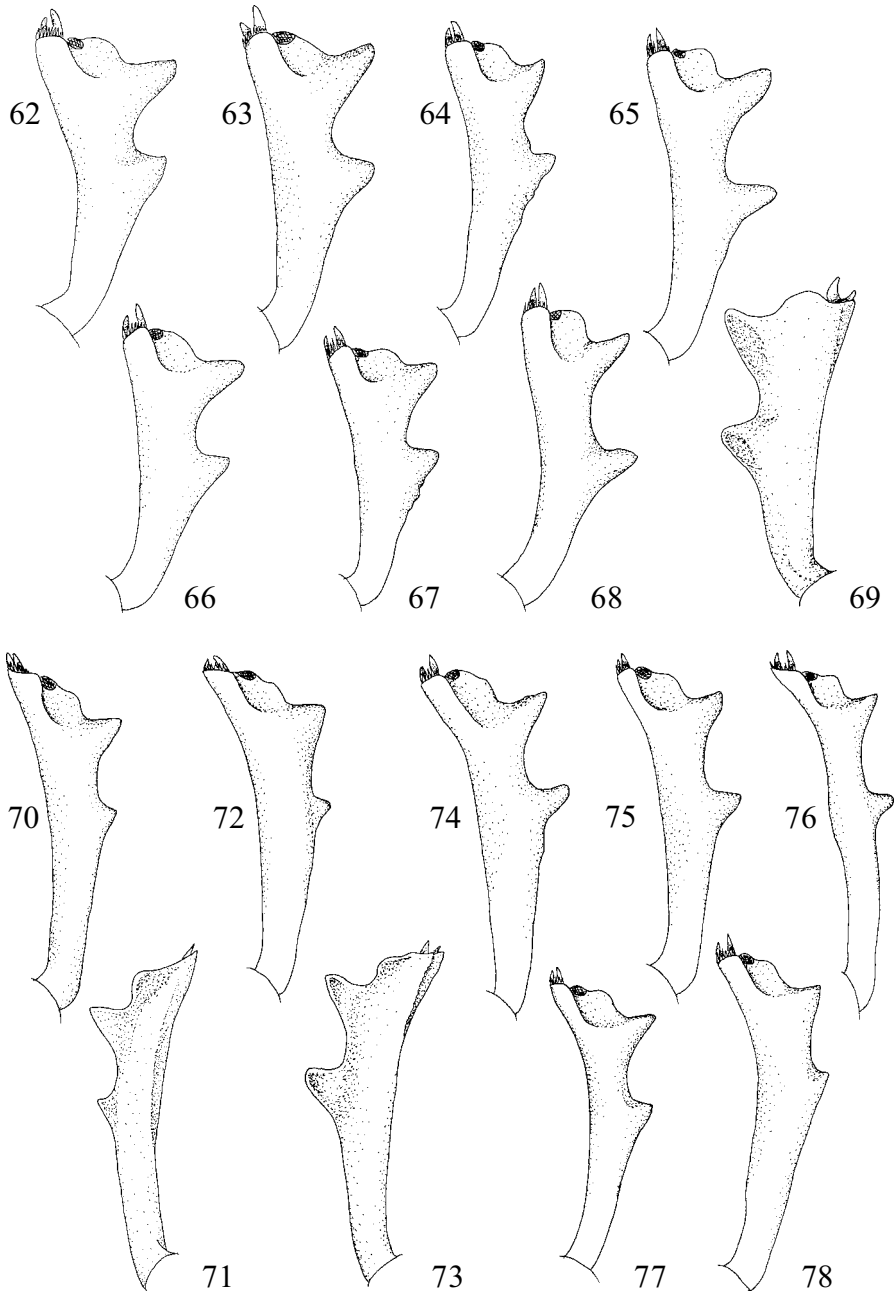




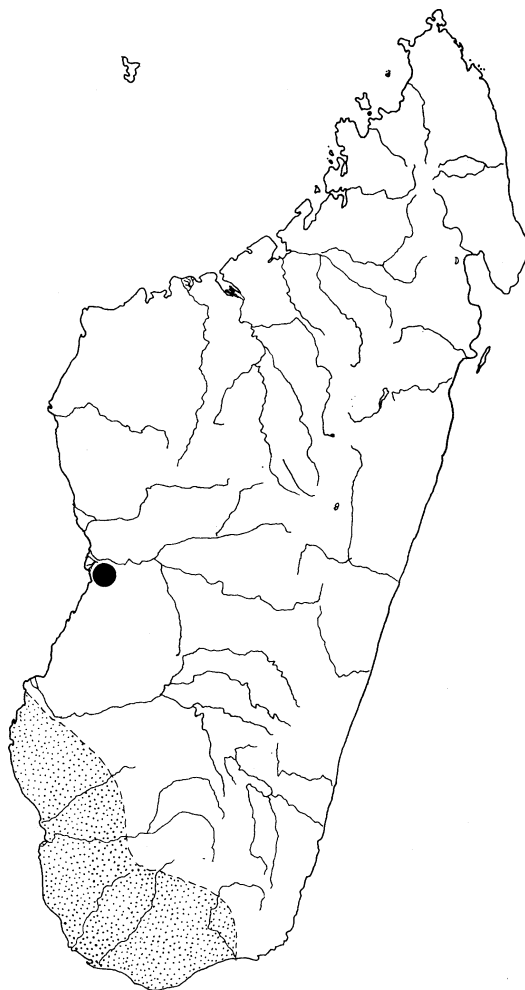
30-31, 40, 42, 43. *Sebastianus endrogyi*. 32, 33, 39, 44-46. *S. madagascariensis*. 34, 41. *S. projectus*. 35. *S. major*, 36. *S. simplex*, 37. *S. magnus*, 38. *S. ovoideus*. 30, 32, 34-38 – dorsal and 31, 33 – ventral view of male mid tibia, 39-41 – female mid tibia, 42, 45 – frontal and 43, 46 – lateral view of prosternum, 44 – anterior part of elytron



47, 48. *Sebastianus endrodyi*. 49, 50. *S. magnus*. 51, 52, 61. *S. madagascariensis*. 53, 54 *S. projectus*. 55, 56. *S. simplex*. 57, 58. *S. major*. 59, 60. *S. ovoideus*. 47, 49, 51, 53, 55, 57, 59 – ventral and 48, 50, 52, 54, 56, 58, 60 – dorsal view of male hind tibia, 61 - female hind tibia

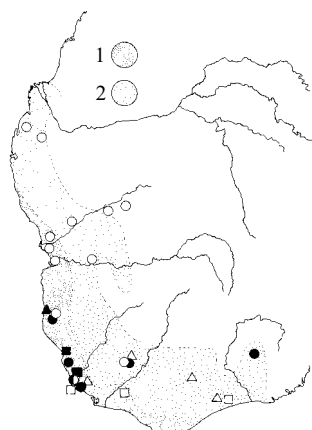


62, 70, 71. *Sebastianus endrodyi*. 63, 69, 73, 74. *S. madagascariensis*. 64, 78. *S. simplex*. 65, 75. *S. major*. 66, 72. *S. magnus*. 67, 77. *S. projectus*. 68, 76. *S. ovoideus*. 62-68 – dorsal and 69 – ventral view of female fore tibia, 70, 72, 74-78 – dorsal and 71, 73 – ventral view of male fore tibia



79. Distribution of the genus *Sebastianus* (solid circle - isolated place of *S. major*)

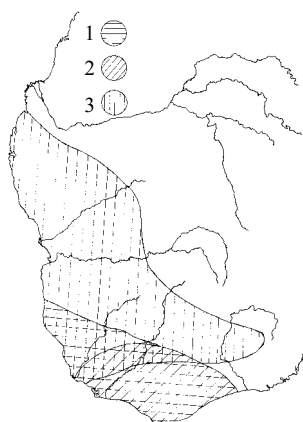
80. Distribution of *Sebastainus major* (open circle), *S. magnus* (solid circle), *S. ovoideus* (open square), *S. simplex* (solid square), *S. projectus* (open triangle), *S. madagascariensis* (solid triangle) and *S. endrodyi* (solid/open circle). Dotted area: 1 - annual precipitation under 400 mm, 2 - 400-600 mm. 81. Distribution of the character in *Sebastianus* species - pronotum shape: 1 - *ovoides*, *simplex*; 2 - *madagascariensis*, *magnus*, *endrodyi*; 3 - *major*, *projectus*. 82. Distribution of the character in *Sebastianus* species - prosternal process: 1 - *simplex*, *ovoides*, *madagascariensis*; 2 - *projectus*; 3 - *major*, *magnus*, *endrodyi*. 83. Distribution of the character in *Sebastianus* species - abdominal ventrites: 1 - *simplex*, *madagascariensis*; 2 - *projectus*; 3 - *ovoides*; 4 - *magnus*, *endrodyi*; 5 - *major*. 84. Distribution of the character in *Sebastianus* species - male mid tibia: 1 - *major*, *simplex*, *projectus*, *madagascariensis*; 2 - *ovoides*, *magnus*, *endrodyi*. 85. Distribution of the character in *Sebastianus* species - male hind tibia: 1 - *simplex*; 2 - *ovoides*; 3 - *projectus*, *madagascariensis*, *magnus*, *endrodyi*; 4 - *major*



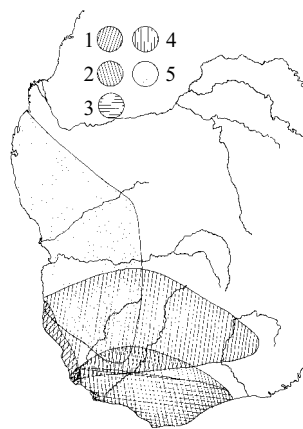
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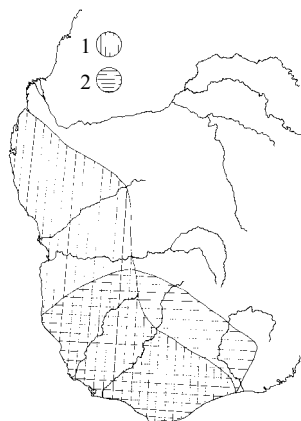
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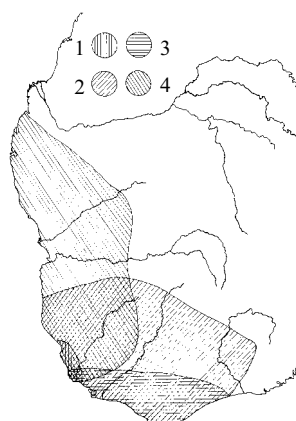
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84



85

Explanation see p. 392

## KEY TO SPECIES

1. Prosternal process blunt or slightly convex on apex (figs 12, 45, 46); male abdominal ventrites 1-3 with tubercles, 1st ventrite flat ..... 2.
- . Prosternal process produced towards mesosternum (figs 42, 43); male abdominal ventrites 1 or 1-2 with tubercles, 1st ventrite with convexity medianly ... 5.
2. Posterior pronotal angles not protruding outwards ..... 3.
- . Posterior pronotal angles protruding outwards ..... 4.
3. Pronotal sides regularly rounded (fig. 4); male mid tibia with 2 dentated ridges on outer side (fig. 36), hind tibia as in figs 55, 56; tubercles on male abdominal ventrites rounded (figs 19, 20) ..... *simplex*
- . Pronotal sides irregularly rounded (fig. 7); male mid tibia with 1 dentated and 1 smooth ridges on outer side (fig. 38), hind tibia as in figs 59, 60; tubercles on male abdominal ventrites keel-like elongate (figs 23, 24) ..... *ovoideus*
4. Prosternal process blunt (figs 45, 46); posterior pronotal angles slightly protruding outwards (fig. 5); male abdominal ventrites 1-3 as in figs 25, 26 ..... *madagascariensis*
- . Prosternal process slightly convex on apex (fig. 12); posterior pronotal angles distinctly protruding outwards (fig. 3); male abdominal ventrites 1-3 as in figs 15, 16 ..... *projectus*
5. Male abdominal ventrite 1 with tubercle (figs 21, 22); male mid tibia with 2 dentated ridges on outer side (fig. 35); male hind tibia strongly bent inwards (figs 57, 58) ..... *major*
- . Male abdominal ventrites 1-2 with tubercles (figs 13, 14, 17, 18); male mid tibia with 1 dentated and 1 smooth ridges on outer side (figs 30, 31, 37); male hind tibia slightly bent inwards (figs 47, 50) ..... 6.
6. Pronotum as in fig. 1, pl/pb = 0.66-0.67; male hind tibia with blunt denticle (figs 17, 18) ..... *magnus*
- . Pronotum as in fig. 2, pl/pb = 0.62-0.65; male hind tibia with emarginated denticle (figs 13, 14) ..... *endrodyi*

## ACKNOWLEDGEMENTS

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