

On Scaphoxium (Coleoptera : Staphylinidea : Scaphylidiinae) from Africa and Madagascar

Autor(en): **Löbl, Ivan**

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On *Scaphoxium* (Coleoptera: Staphylinidae: Scaphidiinae) from Africa and Madagascar

IVAN LÖBL

Muséum d'histoire naturelle, rte de Malagnou 1, CH-1208 Genève, Switzerland

African and Malagasy species of *Scaphoxium* are redescribed or described. *Scaphoxium praeustum* (Reitter) and *Scaphoxium leleupi* (Pic) are new combinations, transferred from *Toxidium* LeConte, and *Toxidium evanescens* Reitter is placed in synonymy with *Scaphoxium praeustum*. The following new species are described: *Scaphoxium occidentale* and *S. mahnerti* from Ivory Coast, *S. kenyanum* from Kenya, *S. heissi* and *S. prospector* from Madagascar. A key to African and Malagasy species of *Scaphoxium* is provided.

Key words: *Scaphoxium*, Scaphidiinae, Staphylinidae, Coleoptera, taxonomy, Africa, Madagascar

INTRODUCTION

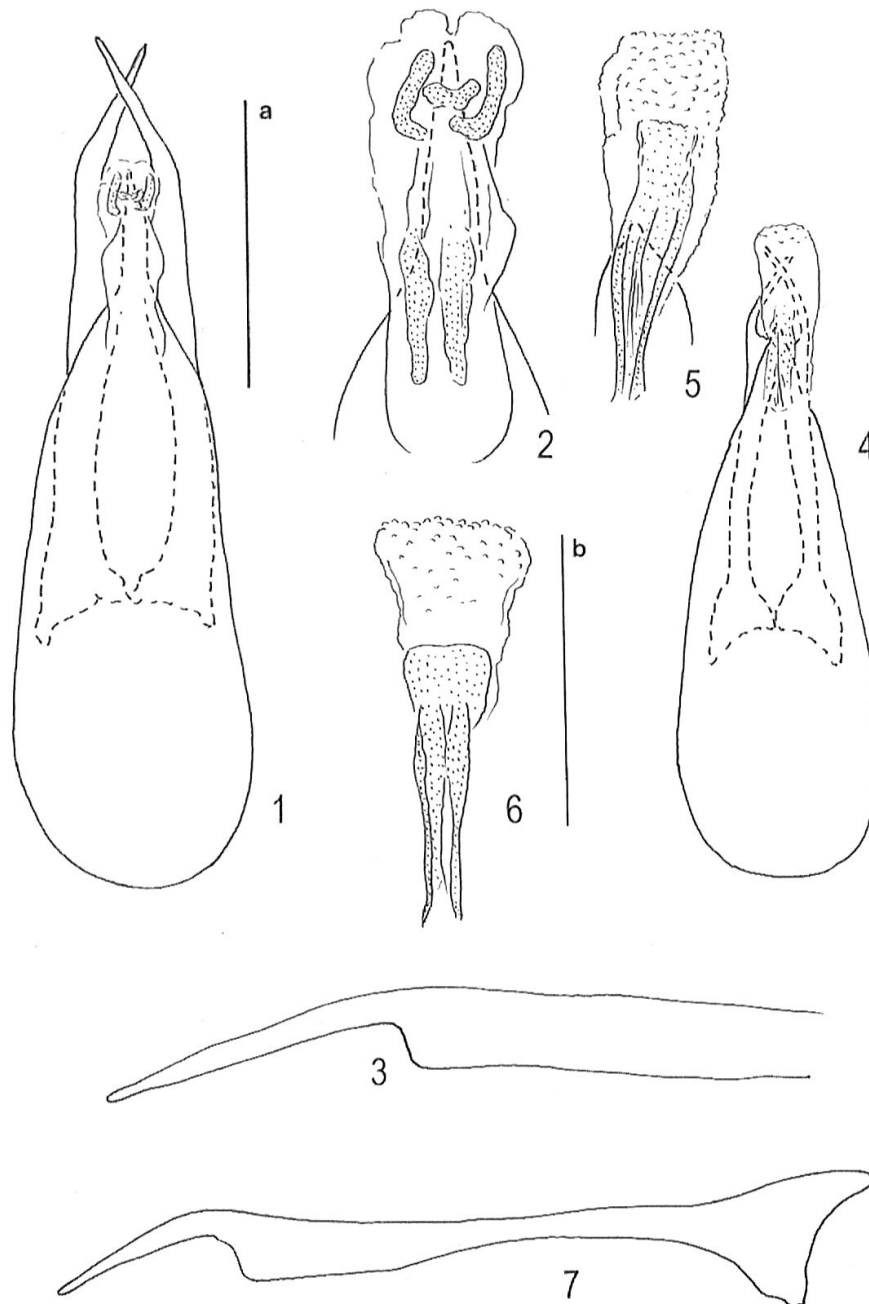
Scaphoxium Löbl, 1979 currently includes 30 described species and is widely distributed in the subtropics and tropics of the Old World, from India eastward to Japan, the Philippines and Fiji. It was reported from Africa (Löbl 1992; Leschen & Löbl 2005), based on unidentified material housed in the collections of the Geneva museum. Recent type revisions revealed that *Toxidium praeustum* Reitter, 1908 and *Toxidium evanescens* Reitter, 1908, both described from «Deutsch Ostafrika», are conspecific and members of *Scaphoxium*. *Toxidium leleupi* Pic, 1954 from «Congo» is another species to be transferred to *Scaphoxium*. The present paper provides re-descriptions of these species, and descriptions of five new Afrotropical and Malagasy species of *Scaphoxium*. Several not associated females and males in poor condition, present in the in the Geneva collections, suggest higher diversity of the genus in the Afrotropical realm but are not treated in the present paper.

MATERIAL AND METHODS

Acronyms used for collections:

MHNG: Muséum d'histoire naturelle, Genève, Switzerland
MRAC: Musée royal d'Afrique centrale, Tervuren, Belgium
NHMW: Naturhistorisches Museum, Wien, Austria

The length of specimens is measured from anterior pronotal margin to inner apical angle of the elytra. The relative length of antennomeres is measured on dry specimens.



Figs 1 to 7. Aedeagi of *Scaphoxium*, dorsal view. 1 to 3: *S. leleupi* (Pic), aedeagus (1), apex of median lobe with extruded internal sac (2), paramere without basal part (3); 4 to 7: *S. praeustum* (Reitter), aedeagus (4), apex of median lobe with extruded internal sac of the holotype of *S. praeustum* (5), extruded internal sac of the holotype of *S. evanescens* (6), paramere (7). Scale bar a = 0.2 mm (Figs 1, 4); scale bar b = 0.1 mm (Figs 2, 3, 5, 6, 7).

TAXONOMY

Scaphoxium leleupi (Pic, 1954), comb. nov.

Toxidium leleupi Pic, 1954: 38

Type material examined: ♂ (MRAC), labelled: Holotypus / Récolté dans tourbière P.H. 5 sous un bosquet / I.R.S.A.C.-Mus.Congo Katanga: Kundelungu alt.

1720 m. I-1950 N. Leleup / R. Det. N. 6535 / *Toxidium leleupi* nsp (handwritten by Pic) / *Scaphoxium leleupi* (Pic) det. Löbl, 2010.

Redescription. Length 1.70 mm, width 0.80 mm, dorsoventral diameter 0.90 mm, Body rufous, elytra darkened near apical margins, apical abdominal segments and legs lighter than body. Pronotal punctation sparse and very fine, hardly visible at 100x magnification. Scutellum overlapped by pronotal lobe. Elytral punctation almost as fine as pronotal punctation, sutural striae of elytra shallow, evanescent about 0.20 mm behind pronotal lobe. Mesoventrite impressed in middle, with oblique lateral wrinkles. Lateral areas of mesoventrite impunctate. Median area of metaventrite weakly convex, with a few distinct punctures posterior to middle. Lateral areas of metaventrite impunctate. Mesocoxal lines parabolic, finely punctate, submesocoxal areas 0.08 mm long, about as long as interval to metacoxae. Abdomen very finely punctate, ventrite 1 lacking microsculpture, following ventrites with punctulate microsculpture. Protibiae and mesotibiae straight, metatibiae curved.

Male sexual characters. Protarsi hardly widened. Aedeagus (Figs 1–3) 0.58 mm long. Median lobe abruptly narrowed to form a comparatively long apical section. Parameres wide, abruptly narrowed subapically, lacking lobes, slightly sinuate in apical part. Internal sac with a pair of parallel basal rods, an apical pair of curved rods, and a transverse sclerite. Membranes without obviously spine-like or denticulate structures.

Comments. The specimen examined is damaged, without head. The species is characterized by the convex and punctate median part of the metaventrite.

***Scaphoxium praeustum* (Reitter, 1908), comb. nov.**

Toxidium praeustum Reitter, 1908: 33

Toxidium evanescens Reitter, 1908: 34, syn. nov.

Type material examined: Holotype of *Toxidium praeustum* ♂ (NHMW), labelled: Amani / D.O.Afrika Eichelbaum 03 (printed) / Amani (printed) / D.O. Afrika Dr. Eichelbaum Amani (handwritten) / *Toxidium praeustum* m. 1907 Typ (handwritten by E. Reitter) / Holotype (red) / *T. praeustum* = *Scaphoxium praeustum* (Reitter) det. Löbl, 2010.

Holotype of *Toxidium evanescens* ♂ (NHMW), labelled: Amani / D.O.Afrika Eichelbaum 03 (printed) / Amani (printed) / Amani Afr. Or. germ. Dr. Eichelbaum (handwritten) / *Toxidium evanescens* Type (handwritten by E. Reitter) / Holotype (red) / *T. evanescens* = *Scaphoxium evanescens* (Reitter) det. Löbl, 2010.

Redescription. Length 1.35 mm, width 0.62–0.66 mm, dorsoventral diameter 0.65–0.68 mm. Body, femora and tibiae uniformly light ochraceous, apex of abdomen, tarsi and antennae lighter than body. Relative length of antennal segments III to XI as: III 7: IV 6: V 8: VI 7: VII 10: VIII 7: IX 9: X 10: XI 15 (holotype of *S. praeustum*). Pronotal punctation sparse and very fine, hardly visible at 100x magnification. Scutellum concealed. Elytra with sutural striae fairly deep, strongly shortened, not reaching anterior third of elytral length, ending about 0.35 mm behind margin of pronotal lobe. Adsutural areas slightly raised. Elytral punctation similar to pronotal, excepted a few larger, distinct punctures. Mesoventrite lacking distinct wrinkles, smooth in middle, with median impression deep, short, not extending onto intercoxal process, fairly well delimited, narrowed posteriad. Lateral areas of mesoventrite impunctate. Metaventrite slightly convex in middle, with very shallow,

minute median impression not extending onto anterior third of median length. Punctuation on metaventrite extremely fine, hardly visible at 100x magnification. Mesocoxal lines subtriangular, impunctate. Mesocoxal areas 0.04 mm long, shorter than interval to metacoxae. Abdominal punctuation extremely fine, punctulate microsculpture present on apical ventrites. Protibiae and mesotibiae straight, metatibiae slightly curved.

Male sexual characters. Segments 1 to 3 of protarsi hardly widened. Aedeagus (Figs 4–7) 0.44 mm long. Median lobe tapering, at tip abruptly narrowed. Parameres narrowed behind base, narrowest near mid-length, from mid-length gradually widened up to abruptly narrowed apical part, lacking subapical lobes, with apical part slightly arcuate. Internal sac with a single pair of rods not clearly separated, joined by apical hardly sclerotized plate. Membranes bearing very fine, scale-like structures.

Comments. This species may be easily distinguished from other Afrotropical *Scaphoxium* by the elytra with short sutural striae. Reitter (1908) stated that *T. evanescens* is smaller than *T. praeustum*, and differs from it by the colour pattern. The study of the type material did not reveal any significant differences in these or in any other characters. The differences in the structures of the internal sac as illustrated (Figs 5, 6) are obviously due to the different degree of extrusion. Reitter (1908) based each description, of *T. praeustum* as of *T. evanescens*, on a single specimen.

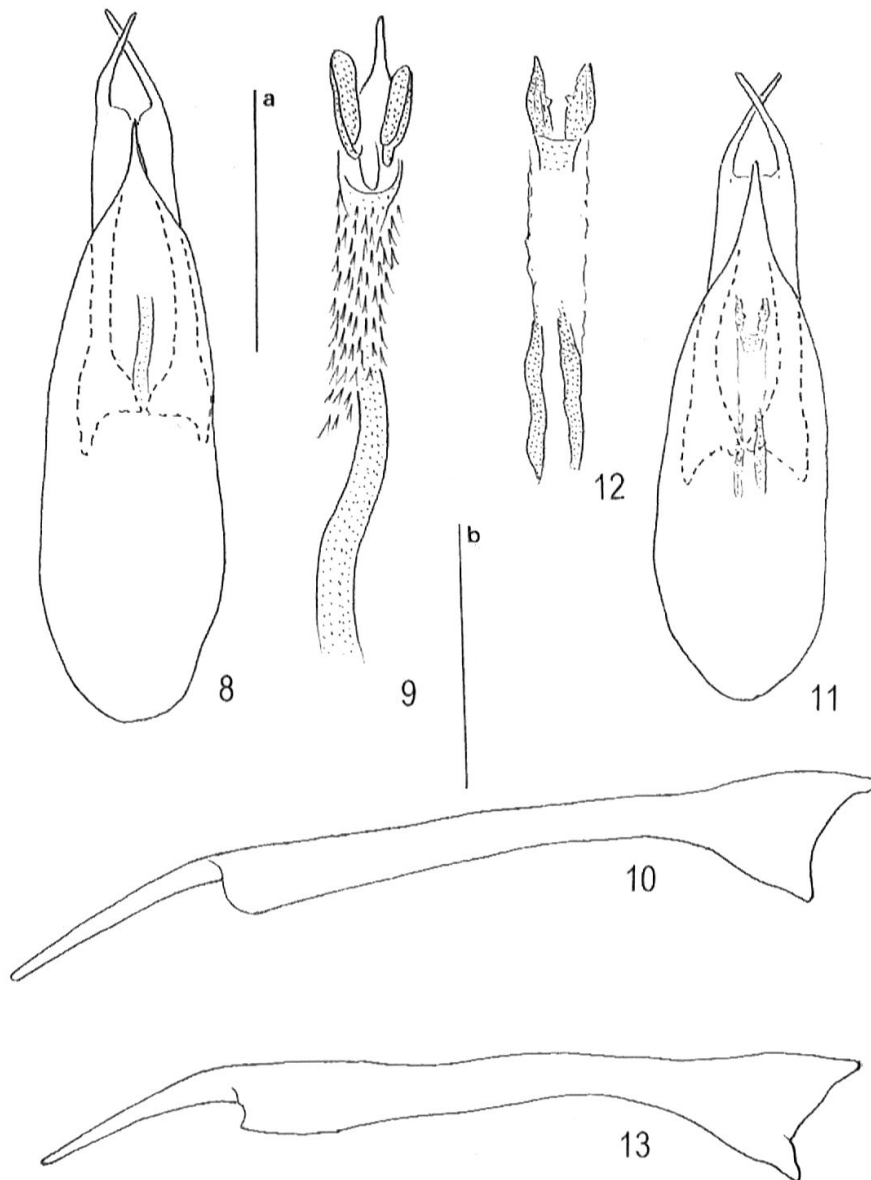
Scaphoxium occidentale sp. nov.

Holotype ♂: Ivory Coast [Agboville] Forêt de Yapo near Yapo-Gare, 21.iii.77, I. Löbl, sieved branches and leaf litter (MHNG).

Paratypes 2 ♀ ♀, with the same data as holotype; 1 ♀, Ghana E.R. Mt. Atewa rainforest 17–20.x.68 R.W. Taylor (all MHNG).

Description. Length 1.10 mm, width 0.60 mm, dorsoventral diameter 0.62 mm. Body, femora and tibiae almost uniformly light ochraceous, elytral apices darkened, apex of abdomen, tarsi and antennae lighter. Relative length of antennal segments III to XI as: III 8: IV 7: V 8: VI 6: VII 12: VIII 7: IX 10: X 10: XI 13 (holotype). Pronotal punctuation sparse and very fine, hardly visible at 100x magnification. Scutellum concealed. Adsutural areas flat. Elytra near base with punctuation about as fine as pronotal punctuation, punctuation on remaining elytral surface slightly coarser. Mesoventrite smooth in middle, lacking distinct wrinkles, with median impression well delimited, deep, narrowed toward intercoxal process. Lateral areas of mesoventrite punctate. Metaventrite flattened in middle, with very shallow median impression not extending onto intercoxal processes. Punctuation on admesal areas of metaventrite distinct, rather dense, that on lateral areas scattered and extremely fine. Mesocoxal lines arcuate, punctate. Mesocoxal areas 0.04 mm long, shorter than interval to metacoxa. Abdomen very finely punctate, with punctulate microsculpture. Protibiae and mesotibiae straight, metatibiae slightly curved.

Male sexual characters. Segments 1 to 3 of protarsi hardly widened. Aedeagus (Figs 8–10) 0.53 mm long. Median lobe apically abruptly narrowed, parallel-sided and very narrow near tip. Parameres moderately narrowed toward mid-length, lacking subapical lobe, with apical part weakly bent. Internal sac with single, sinuate basal rod, spine-like membranous structures in middle, and two apical laminar sclerites joined basally.



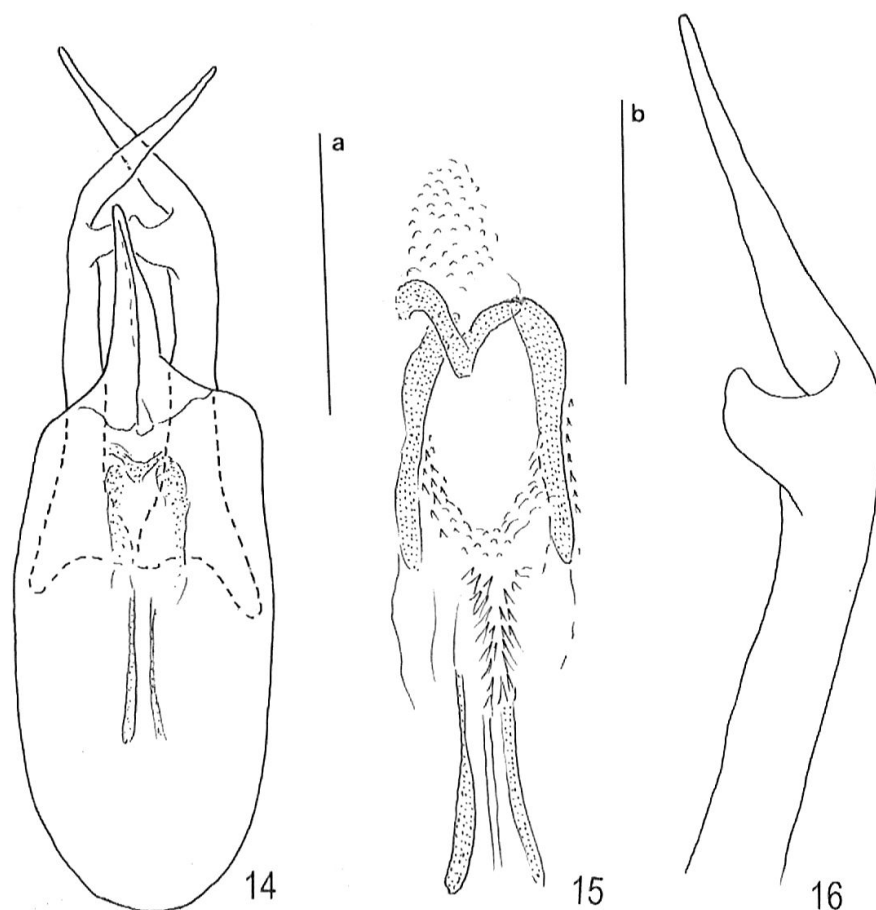
Figs 8 to 13. Aedeagi of *Scaphoxium*, dorsal view. 8 to 10: *S. occidentale* sp. nov., aedeagus (8), internal sac (9), paramere (10); 11 to 13: *S. kenyanum* sp. nov., aedeagus (11), internal sac (12), paramere (13). Scale bar a = 0.2 mm (Figs 8, 11); scale bar b = 0.1 mm (Figs 9, 10, 12, 13).

Comments. This species may be readily distinguished from both, *S. leleupi* and *S. praeustum*, by its colour pattern. Besides, it differs from them by the aedeagal characters, in particular by the internal sac with a single basal rod. It may be also easily distinguished from *S. praeustum* by the elytra with longer sutural striae and from *S. leleupi* by the smaller body.

***Scaphoxium kenyanum* sp. nov.**

Holotype ♂: Kenya, Shimla Hills [Nat. Park] 400m, Makadara Forest 30.11.74, V. Mahnert, sieved litter, nr. 55 (MHNG).

Paratypes: 2 ♀♀, with the same data as the holotype (MHNG).



Figs 14 to 16. Aedeagus of *Scaphoxium mahnerti* sp. nov., dorsal view (14), internal sac (15), paramere (16). Scale bar a = 0.2 mm (Fig. 14); scale bar b = 0.1 mm (Figs 15, 16).

Description. Length 1.20 mm, width 0.55–0.60 mm, dorsoventral diameter 0.65–0.67 mm. Body, femora and tibiae uniformly light ochraceous, apex of abdomen, tarsi and antennae slightly lighter. Relative length of antennal segments III to XI as: III 7: IV 6: V 8: VI 7: VII 10: VIII 6: IX 9: X 9: XI 12 (holotype). Pronotal punctation sparse and very fine, hardly visible at 100x magnification. Scutellum concealed. Elytra with sutural striae shallow, ending about 0.12 mm behind margin of pronotal lobe. Adsutural areas flat. Elytral punctation about as fine as pronotal punctation. Mesoventrite smooth in middle, with median impression well delimited, narrowed toward intercoxal process, lacking distinct wrinkles. Lateral areas of mesoventrite impunctate. Metaventrite flattened in middle, with shallow median impression extending onto intercoxal processes. Punctation on admesal areas of metaventrite distinct, rather dense, that on lateral areas of metaventrite scattered and extremely fine. Mesocoxal lines parabolic, impunctate. Mesocoxal areas 0.04 mm long, shorter than interval to metacoxae. Abdomen very finely punctate, with punctulate microsculpture. Protibiae and mesotibiae straight, metatibiae slightly curved.

Male sexual characters. Segments 1 to 3 of protarsi weakly widened. Aedeagus (Figs 11–13) 0.46 mm long. Median lobe gradually tapering, with pointed apex. Parameres moderately narrowed toward middle third, abruptly narrowed and angu-

late subapically, lacking subapical lobe, apical part weakly bent. Internal sac with two basal rods followed by central membranous portion bearing extremely fine spine-like structures and two apical sclerites denticulate mesally and joined by a plate basally.

Comments. This species is characterized by the parameres angulate subapically, similar to those in *S. ventrale* (Löbl, 1977) and *S. vitianum* (Löbl, 1977), in combination with the apical sclerites of the internal sac of the aedeagus denticulate mesally.

***Scaphoxium mahnerti* sp. nov.**

Holotype ♂: Ivory Coast, Man, Issoneu 6km W of Sanguiné, 12. X. 80, V. Mahnert & J.-L. Perret, sieved bamboo litter and rotten wood (MHNG).

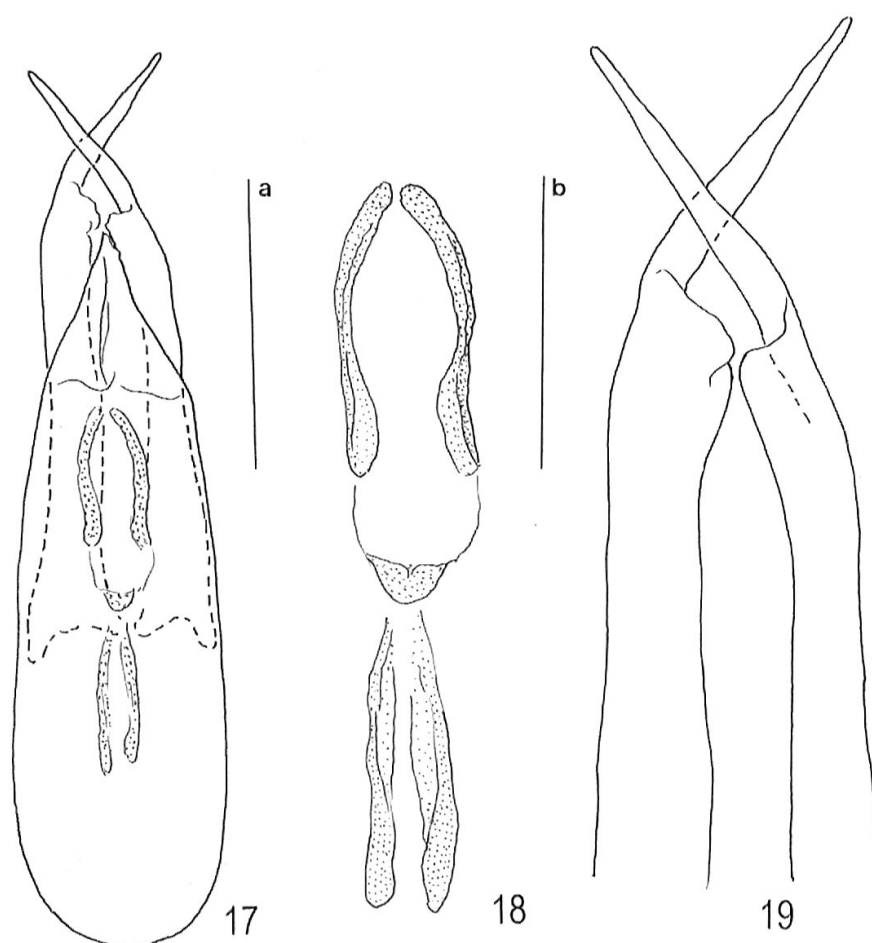
Paratypes: 1 ♀, Ivory Coast, Sassandra, Pointe Monoho at Monogaga, 15.iii.77, I. Löbl in forest litter (MHNG); 1 ♀, Ivory Coast, Agboville, Forêt de Yapo near Yapo-Gare, 21.iii.77, I. Löbl, sieved branches and leave litter (MHNG).

Description. Length 1.35–1.45 mm, width 0.70–0.80 mm, dorsoventral diameter 0.80–0.85 mm. Body, femora and tibiae ochraceous, base of pronotum and apex of elytra slightly darker, tarsi and antennae slightly lighter than body. Relative length of antennal segments III to XI as: III 7: IV 6: V 7: VI 6: VII 10: VIII 7: IX 10: X 9: XI 14 (holotype). Pronotal punctation sparse and very fine, hardly visible at 100x magnification. Scutellum concealed. Elytra with sutural striae shallow, ending 0.08–0.10 mm beyond margin of pronotal lobe. Adsutural areas flat. Elytral punctation about as fine as pronotal punctation. Mesoventrite smooth in middle, with median impression wide and deep, not clearly delimited and narrowed toward intercoxal process, lacking distinct wrinkles. Lateral areas of mesoventrite impunctate. Metaventrte impunctate in middle, with shallow median impression extending onto intercoxal processes, admesal areas weakly convex. Lateral areas of metaventrte with conspicuous, irregularly scattered coarse punctures. Mesocoxal lines parabolic, distinctly punctate. Mesocoxal areas 0.05 mm long, slightly shorter than interval to metacoxae. Abdomen very finely punctate, with punctulate microsculpture. Protibiae and mesotibiae straight, metatibiae slightly curved.

Male sexual characters. Segments 1 to 3 of protarsi weakly widened. Aedeagus (Figs 14–16) 0.62 mm long. Median lobe abruptly narrowed behind basal bulb and gradually tapering toward tip. Parameres comparatively wide, not narrowed in middle part, with large subapical lobe and oblique, gradually narrowed apical part. Internal sac with a pair of basal rods followed by spine-like structures, a pair of central rods touching apically a V-shaped sclerite, and with apical membranes very finely scale-like.

Etymology. The species is named in honour of its collector, Volker Mahnert, Geneva.

Comments. This species may be readily distinguished from its African congeners by the scattered coarse punctures on the lateral areas of the metaventrte. The wide parameres with large subapical lobe are similar to those in *S. simulans* (Löbl, 1971) from Sri Lanka, the shape of the sclerites of the internal sac is diagnostic.



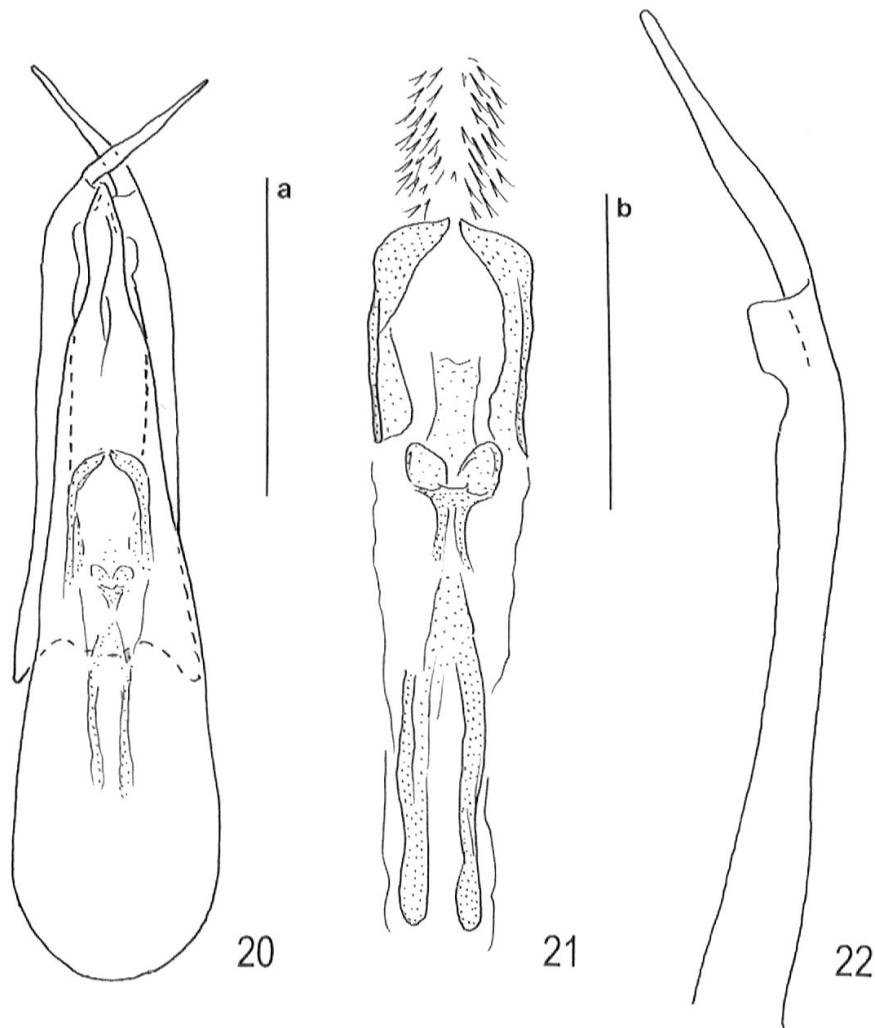
Figs 17 to 19. Aedeagus of *Scaphoxium heissi* sp. nov., dorsal view (17), internal sac (18), paramere (19). Scale bar a = 0.2 mm (Fig. 17); scale bar b = 0.1 mm (Figs 18, 19).

***Scaphoxium heissi* sp. nov.**

Holotype ♂: Madagascar, Diego Suarez Mt d'Ambre, 26–29.x.95 Heiss (MHNG).

Paratype ♀: with same data as the holotype (MHNG).

Description. Length 1.40 mm, width 0.70 mm, dorsoventral diameter 0.77 mm. Body uniformly reddish-brown, femora and tibiae slightly lighter, apex of abdomen, tarsi and antennae distinctly lighter. Relative length of antennal segments III to XI as: III 8: IV 7: V 10: VI 10: VII 12: VIII 8: IX 11: X 11: XI 15 (holotype). Pronotal punctation sparse and very fine, hardly visible at 100x magnification. Scutellum concealed. Elytra with sutural striae shallow, ending about 0.20 mm behind margin of pronotal lobe. Adsutural areas raised. Elytral punctation about as fine as pronotal punctation. Mesoventrite smooth in middle, with median impression well delimited, parallel-sided, and basal longitudinal wrinkles between mesoventral line and mesocoxae. Lateral areas of mesoventrite with few scattered, very fine punctures. Metaventrte flattened in middle, with shallow median impression extending onto mesocoxal and metacoxal processes. Punctation on metaventrte sparse and extremely fine. Mesocoxal lines parabolic, impunctate. Mesocoxal areas 0.09 mm long, about as long as interval to metacoxae. Abdomen very finely punctate, with



Figs 20 to 22. Aedeagus of *Scaphoxium prospector* sp. nov., dorsal view (20), internal sac (21), paramere (22). Scale bar a = 0.2 mm (Fig. 20); scale bar b = 0.1 mm (Figs 21, 22).

punctulate microsculpture. Protibiae and mesotibiae straight, metatibiae slightly curved.

Male sexual characters. Segments 1 to 3 of protarsi weakly widened. Aedeagus (Figs 17–19) 0.60 mm long. Median lobe gradually tapering apically. Parameres wide, with subapical lobe at level of tip of median lobe, apical narrow part weakly sinuate. Internal sac with two pairs of rods and central plate. Apical rods weakly sinuate, basal rods somewhat curved.

Etymology. The species is named in honour of its collector, Ernst Heiss, Innsbruck.

Comments. This species may be readily distinguished from the Afrotropical congeners by the subapically lobed parameres. The asymmetry in the lobes as illustrated is likely an artefact, due to the state of conservation of the sole male available for study. The aedeagal characters suggest relationship with *S. madurensis* (Pic, 1920) from South India. The latter species differs by the smaller parameral lobes and the hook-like apical sclerites of the internal sac.

Scaphoxium prospector sp. nov.

Holotype ♂: Madagascar, Maromizah rainforest S Périnet 8.x.2000 Heiss & Perner (MHNG).

Paratype ♀: with the same data as the holotype (MHNG).

Description. Length 1.35–1.40 mm, width 0.68–0.70 mm, dorsoventral diameter 0.75–0.77 mm. Body almost uniformly reddish-brown, apical part of elytra slightly darkened, femora and tibiae slightly lighter than most of body, apex of abdomen, tarsi and antennae distinctly lighter. Relative length of antennal segments III to XI as: III 8: IV 7: V 9: VI 9: VII 12: VIII 9: IX 12: X 12: XI 16 (holotype). Pronotal punctation sparse and very fine, distinct at 50x magnification. Scutellum concealed. Elytra with sutural striae fairly deep, ending about 0.15–0.20 mm behind margin of pronotal lobe. Adsutural areas flat. Elytral punctation less fine than pronotal punctation. Mesoventrite punctate in front of mesocoxal cavities, lacking distinct wrinkles, smooth in middle, with median impression well delimited, parallel-sided and deep, extending onto intercoxal process. Lateral areas of mesoventrite extremely finely punctate. Metaventrite flattened in middle, with shallow, short median impression not extending onto mesocoxal process. Punctation on metaventrite sparse and extremely fine. Mesocoxal lines parabolic, impunctate. Mesocoxal areas 0.06 mm long, shorter than interval to metacoxae. Abdomen very finely punctate, with punctulate microsculpture. Protibiae and mesotibiae straight, metatibiae slightly curved.

Male sexual characters. Segments 1 and 2 of protarsi distinctly widened. Aedeagus (Figs 20–22) 0.58 mm long. Median lobe weakly narrowed subapically, in apical portion comparatively wide. Parameres moderately wide, with subapical area emarginate followed by a lobe, apical narrow part of parameres weakly sinuate. Internal sac with a pair of basal rods joined apically, central sclerite bearing two lamina, and two apical rods curved and widened apicomeresally. Apical membranous part of internal sac bearing denticulate structures.

Comments. This species is well characterized by the shape of the parameres. It may be distinguished from *S. heissi* also by the apically darkened elytra and the metaventrite with short median impression. The aedeagal characters suggest relationship with *S. heissi*, although the parameres are significantly narrower and emarginate at lobe, and the shape of the central and apical sclerites is distinctive.

Key to the African and Malgasy *Scaphoxium*

- 1 Elytra with sutural striae short, not extending onto basal third of sutural length. Parameres conspicuously narrowed between base and mid-length *S. praeustum* (Reitter)
- Elytra with sutural striae longer, extending onto basal third of sutural length. Parameres not or weakly narrowed between base and mid-length 2
- 2 Lateral areas of metaventrite with a few scattered, coarse punctures. Parameres with large subapical lobe *S. mahnerti* sp. nov.
- Lateral areas of metaventrite impunctate or very finely punctate 3
- 3 Metaventrite not impressed in middle. Mesoventrite with basal wrinkles. Internal sac of aedeagus with two curved apical rods and a transverse sclerite situated at their mid-length *S. leleupi* (Pic)

- Metaventrite impressed in middle. Mesoventrite without distinct wrinkles. Internal sac of aedeagus different 4
- 4 Metaventrite with median impression extending onto intercoxal processes 5
- Metaventrite with median impression short, not extending onto intercoxal processes, or extending only onto metacoxal process 6
- 5 Elytra uniformly ochraceous. Aedeagus with parameres angulate at widest subapical point. Internal sac with short apical sclerites *S. kenyanum* sp. nov.
- Elytra darkened at apex. Aedeagus with parameres with rounded subapical lobes. Internal sac with long apical rods *S. heissi* sp. nov.
- 6 Body length 1.1 mm. Aedeagus with parameres not lobed subapically, internal sac with single basal rod *S. occidentale* sp. nov.
- Body length 1.35–1.4 mm. Aedeagus with parameres lobed subapically, internal sac with a pair of basal rods *S. prospector* sp. nov.

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