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***Salcedia* FAIRMAIRE, 1899 from Africa with descriptions of the two new species *S. bemereka* nov.sp. and *S. occidentalis* nov.sp. (Coleoptera, Carabidae, Scaritinae, Salcediini)**

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Abstract: Two new species of the genus *Salcedia* FAIRMAIRE, 1899 (*Salcedia bemereka* nov.sp., *Salcedia occidentalis* nov.sp.) are described from West Africa increasing the number of known species to twenty. The species are illustrated by photographs. The unknown female genitalia of *Salcedia tuberculata* BALKENOHL are described and illustrated. The identification key to the species, the tables and information on distribution provided in BALKENOHL (2019) are updated and amended, also on the basis of new records.

Key words: Coleoptera, Carabidae, *Salcedia*, Africa, new species, taxonomy

Introduction

The genus *Salcedia* FAIRMAIRE, 1899 occurs in Africa and the Oriental region. It has been revised recently with redescriptions of the formerly known nine species and descriptions of nine new species from Africa (BALKENOHL 2019). The small grey to brownish species of about 2.4 - 4 mm length appear homogenous due to their cover with dirt. However, after cleaning determination became quite uncomplicated. After the availability of the revision, some new specimens from Africa has been brought to my attention. This new material consists of specimens already described but represent new records. In addition there are specimens from West Africa representing two new species. Therefore, this contribution has the goal to describe the two new species, to update the revision regarding the identification key, the tables of measurements, and the distribution of the species in Africa.

Material and methods

Techniques, and especially the cleaning method of the specimens, equipment, magnifications, photography, measurements, calculation of ratios, mounting techniques, and the terminology are described in BALKENOHL (2019). There were 24 new specimens from Africa and Madagascar available for this update to the revision.

The complete information given on the labels is displayed in the descriptions of the species and under the new records as they appear on the labels including spelling, spacing, and punctuation. The following acronyms are used: BMNH (NHMUK): Natural

History Museum, London, United Kingdom; DNMP: Ditsong National Museum Pretoria, South Africa; OLML: Oberösterreichisches Landesmuseum, Linz, Austria; CBB: Coll. Michael Balkenohl, Bonstetten, Switzerland; CBP: Coll. Petr Bulirsch, Prague, Czech Republic; CLL: Coll. Andreas Link, Linz, Austria; CDW: Coll. Alexander Dostal, Vienna, Austria; MRACT: Musée Royal de l'Afrique Centrale, Tervuren, Belgium; L/W: ratio length divided by width (used for the pronotum, elytra, and antennomeres of the antennae); SSO: subapical setose organ (situated at the female coxostylus/gonopod IX); \bar{x} : arithmetic mean (used in Table 2 for the descriptive statistics).

Tab. 1. Terms used in the descriptions of the antennae of Salcedia species. As reference antennomere six is taken.

term used	description of term	ratio length/width of antennomere six	species
sub-moniliform	slightly wider than long	0.95-1.00	<i>procera</i> BALKENOHL
moniliform	as long as wide	1.00-1.04	<i>elongata</i> ALLUAUD <i>bembereka</i> nov.sp.
super-moniliform	slightly longer than wide	1.09-1.10	<i>africana</i> (BRITTON) <i>occidentalis</i> nov.sp.
sub-elongate	longer than wide	1.14-1.20	<i>lukulua</i> BALKENOHL <i>unifoveata</i> BALKENOHL <i>tuberculata</i> BALKENOHL
elongate	longer than 1.20 x	1.24-1.34	<i>perrieri</i> FAIRMAIRE <i>schoutedeni</i> ALLUAUD <i>nigeriensis</i> ALLUAUD <i>coquilhati</i> ALLUAUD <i>putzeysi</i> (OBERTHÜR) <i>parallela</i> BAEHR <i>matsumotoi</i> BALKENOHL <i>robusta</i> BALKENOHL <i>utetea</i> BALKENOHL <i>failliei</i> BALKENOHL
oblongo-elongate	longer than 1.35 x	1.38-1.44	<i>miranda</i> (ANDREWES) <i>baroensis</i> BALKENOHL

Tab. 2. Measurements and ratios of *Salcedia* species, updated table. N = number of specimens measured (see Material and Methods); \bar{x} = arithmetic mean; "term used" refers to the shape of the elytra and represents as well the ratio length/width of both of the elytra.

region	species	body length [mm]		width [mm]		length of elytron [mm]		ratio length/width of pronotum		ratio length/width of elytra			posterior lateral angle of head	N
		range	\bar{x}	range	\bar{x}	range	\bar{x}	range	\bar{x}	range	\bar{x}	term used		
Mada-gascar	<i>perrieri</i> FAIRMAIRE	3.22-3.59	3.47	1.1-1.22	1.18	1.95-2.19	2.09	0.65-0.71	0.69	1.71-1.82	1.78	subelongate	~125°	10
	<i>unifoveata</i> BALKENOHL	2.6-3.11	2.85	0.91-1.13	1.03	1.48-1.81	1.65	0.74-0.75	0.75	1.54-1.63	1.59	long-ovoid	obtuse, ~118°	6
	<i>faillet</i> BALKENOHL	3.06	—	0.98	—	1.83	—	0.73	—	1.89	—	elongate	128°	1
	<i>coquilhatii</i> ALLUAUD	2.37-2.76	2.52	0.95-1.13	1.03	1.41-1.75	1.56	0.55-0.59	0.57	1.48-1.55	1.51	long-ovoid	reg. convex	10
	<i>elongata</i> ALLUAUD	3.3-3.65	3.49	1.04-1.17	1.13	2.07-2.27	2.17	0.67-0.76	0.72	1.83-2.03	1.92	oblongo-elongate	135-136°	10
Continental Africa	<i>africana</i> (BRITTON)	3.32-3.97	3.63	1.00-1.2	1.1	2.01-2.28	2.16	0.67-0.76	0.72	1.87-2.04	1.97	oblongo-elongate	118-119°	10
	<i>procera</i> BALKENOHL	3.09-3.41	3.32	0.95-1.01	0.97	1.9-2.07	2.01	0.75-0.79	0.77	1.99-2.11	2.06	super-elongate	105-107°	8
	<i>occidentalis</i> nov.sp.	3.47-3.7	3.76	1.13-1.22	1.17	2.11-2.27	2.17	0.67-0.73	0.71	1.83-1.89	1.85	elongate	106-108°	6
	<i>schoutedeni</i> ALLUAUD	3.39-3.76	3.54	1.35-1.45	1.37	2.03-2.38	2.21	0.58-0.61	0.6	1.58-1.65	1.62	subelongate	108-111°	10
	<i>nigeriensis</i> ALLUAUD	3.27-3.71	3.55	1.10-1.30	1.25	2.06-2.33	2.18	0.63-0.66	0.65	1.64-1.93	1.74	subelongate	96-98°	10
	<i>baroensis</i> BALKENOHL	3.53-3.89	3.74	1.25-1.37	1.32	1.71-1.76	1.73	0.61-0.68	0.63	1.71-1.76	1.73	subelongate	~107°	10
	<i>utetea</i> BALKENOHL	3.4-3.58	3.48	1.16-1.26	1.21	2.08-2.17	2.11	0.63-0.66	0.64	1.71-1.79	1.74	subelongate	96-99°	10
	<i>lukalua</i> BALKENOHL	2.8; 2.84	—	0.89; 0.96	—	1.67; 1.72	—	0.73; 0.74	—	1.79; 1.88	—	elongate	obtuse, ~137°	2
	<i>robusta</i> BALKENOHL	3.54-4.2	3.97	1.2-1.43	1.33	2.2-2.59	2.42	0.66-0.69	0.68	1.76-1.82	1.79	subelongate	115-117°	10
	<i>tuberculata</i> BALKENOHL	3.43; 3.43	—	1.03; 1.06	—	1.99; 2.08	—	0.74; 0.75	—	1.94; 1.97	—	oblongo-elongate	118-120°	2
Oriental region	<i>putzeysi</i> (OBERTHÜR)	3.12-3.88	3.52	1.24-1.28	0.25	2.11-2.33	1.17	0.63-0.65	0.35	1.67-1.81	0.74	subelongate	120-123°	10
	<i>masumotoi</i> BALKENOHL	3.02-3.59	3.36	0.94-1.19	1.1	1.82-2.24	2.08	0.72-0.81	0.75	1.84-1.96	1.9	elongate	~122°	10
	<i>bemberekea</i> nov.sp.	3.52; 3.53	—	1.06; 1.06	—	2.11; 2.15	—	0.75; 0.76	—	1.99; 2.02	—	oblongo-elongate	120-121°	2
	<i>miranda</i> (ANDREWES)	3.75; 3.96	—	1.35; 1.47	—	2.23; 2.39	—	0.64; 0.65	—	1.63; 1.66	—	subelongate	90°	3
	<i>parallela</i> BAEHR	3.61	—	1.15	—	2.21	—	0.73	—	1.91	—	oblongo-elongate	102°	1

Taxonomy

Family *C a r a b i d a e* LATREILLE, 1802

Subfamily *S c a r i t i n a e* BONELLI, 1810

Tribe *S a l c e d i i n i* ALLUAUD, 1930

Genus *Salcedia* FAIRMAIRE, 1899 (= *Zelma* ANDREWES, 1920)

Type species: *Salcedia perrieri* FAIRMAIRE, 1899 by original designation.

New records

Salcedia perrieri FAIRMAIRE, 1899

New record: 2 specs. N MADAGASCAR, 21.-26.i.2016, Ankarana N.P., "circ.Benavony" S 12°57'30.8", E 49°07'10.5*, 128m, M. Trýzna leg. BMNH(E) 2016-44 (BMNH); 1 spec., N MADAGASCAR, 17.i.2016, Ankarana N.P., camp base, S 12°58'7.3", E 49°08'12.9", 132m, M. Trýzna leg. BMNH(E) 2016-44 (BMNH).

Occurrence: Confirmed with many records from the north and middle-western part of Madagascar.

Salcedia africana (BRITTON, 1947)

New record: 6 specs., Zambia C. 40 km N Kabwe Sungala school env. 12.11.2004 Snižek, Tichý lgt. (CLL, OLML, CBB).

Occurrence: Known from Northern Zimbabwe and the upper and lower course of the Zambezi River.

Salcedia tuberculata BALKENOHL, 2019

New record: 1♀, S.Afr; Kruger Nat. Pk PundaMariaNgotsodam 21.26 S – 31.14 E / 7.2.1994; E-Y: 2984 shorewashing leg. Endrödy-Younga / *Salcedia africana* (BRITT.) det.M.Baehr'03 (DNMP).

Remarks: *S. tuberculata* was described on the basis of one male (BALKENOHL 2019). The female was unknown until today. With the new record at hand the female coxostylus is described here, and Tab. 2 is amended.

Female genitalia (Fig. 9). Coxostylus sclerotized, slender, distinctly curved, with indistinct short carina dorsally in apical third, apex somewhat rounded, at end of basal third with one strong and seven slender nematiform setae laterally, SSO with one extremely fine microtrichium.

Occurrence: The species is known from the River Limpopo. This second find confirms the first record.

Salcedia putzeysi (OBERTHÜR, 1883)

New record: 1 spec., GHANA: Ashanti Reg. Kumasi: Nhisau 6.43 N – 1.36 W / 27.10.1967: no: 284 at light leg. Endrödi-Younga (CBP).

O c c u r r e n c e : The species occurs along the coast of West Africa but not directly at the sea shore.

***Salcedia schoutedeni* ALLUAUD, 1930**

N e w r e c o r d : 1♀, Kinchassa Waelbroeck 14 oct. 1899 (CBP).

O c c u r r e n c e : Known from the West of the Democratic Republic of the Congo along the lower course of the river Congo. The new record confirms previous finds.

***Salcedia nigeriensis* ALLUAUD, 1930**

N e w r e c o r d : 4♀♀, with labels and data: white, black printed "COLL. MUS. TERVUREN Mali: I.R.C.T.-M'Pesoba 28.IX.1970 G. Pierrard" (MRACT/CBB).

O c c u r r e n c e : The species is known from the middle course of the river Niger and its confluent in Mali and the West of Niger. The new record represent the most western finds.

New species

***Salcedia bembereka* nov.sp. (Figs 1, 3, 5, 7)**

T y p e m a t e r i a l : **H o l o t y p e :** ♂, with labels and data: white, printed in black, black framed "BENIN BEMBEREKE 2 km W of GANDO 02.-03.07.2001 A. KUDRNA JR. LGT." / white, handwritten in black ink "Coll. A. DOSTAL" (CDW). **P a r a t y p e :** 1♀, same data as holotype but 03.-04.07.2001 (CBP).

E t y m o l o g y : The name refers to the district of Bembereke in Benin, where the two specimens were found.

D i a g n o s i s : A large sized species, with oblongo-elongate outline of the elytra with nearly parallel sides with maximum width at middle and the pronotum with nearly complete lateral carinae. The pseudohumerus is slightly obtuse-angular and with an indistinct tooth. The antennomeres are moniliform. Distinguished most clearly from the most similar species *S. putzeysi* OBERTHÜR and *S. matsumotoi* BALKENOHL by the moniliform antennomeres, the different measurement ratios of the elytra, and the frons of the head with the erected tubercle. *S. occidentalis* nov.sp. is most different with the super-moniliform antennomeres, the less numerous tubercles at the lateral margin of the pronotum, and the diverging sides of the elytra with maximum width behind middle. In addition, the aedeagus is different from all other species and the female coxostylus shows a different pattern of setae.

D e s c r i p t i o n :

Measurements in Tab. 2.

Colour and surface: Anthracite grey, shiny; top of carinae on head, pronotum and elytra as well as margins of pronotum and elytra opaque, covered with pale grey pili; pronotum laterally slightly fuscous, legs and mandibles fuscous, antennae and palpi hennuleous.

Head: Three-quarters of pronotum width. Outline campanulate. Clypeus wide, straight anteriorly, fused with clypeal wings, separated from supraantennal plates by obtuse notches, with moderately raised transverse field at middle, separated from frons by broad flat transverse furrow. Frons with two raised paramedian carinae, joining anteriorly into a V-like keel, keel tubercle-like increasing anteriorly, with two small glossy teeth

bilaterally anterior to central keel, with short parallel running carina at each side paralaterally at base; frons separated from supraorbital plates by flattened broad furrows; with conspicuously deep and broad pit at front-eye level; supraantennal and supraorbital plates margined, margin of supraorbital plate distinctly raised, carina-like; supraantennal plates vaulted. Basal border with broad emargination at middle, angled laterally (angle 120-121°). Eyes large, convex, genae slightly convex, parts of eyes and genae visible from above, with indistinct rectangular shape in lateral view. Antenna with segments five to ten moniliform (L/W 1.03), densely pubescent, segments two to four scarcely pubescent, scapus with irregular to elongate reticulation. Labrum convex anteriorly. Mandible moderately short, wide, slightly arcuate at apex. Mentum small, ovoid, without tooth, with isodiametric reticulation; epilobes wide, projecting and angled anteriorly, distinctly margined anteriorly and medially, slightly posteriorly, surface covered with smaller pits and indistinct reticulation.

Pronotum (Fig. 3): Outline rectangular, transverse, a quarter wider than long. Lateral margin straight, parallel, convex to anterior and posterior angle, maximum width at middle. Lateral margin distinctly crenulated, with 12 tubercles, tubercle anterior basal angle slightly more prominent, with a notch at posterior angle. Base obliquely and slightly convex laterally, with declining distinct keel at middle pointing posteriorly. Disc convex in lateral view, with two distinctly raised paramedian carinae parallel to median line, diverging posteriorly, with slight transverse notches, with median line long, with two pits anteriorly and line-like posteriorly, with two additional carinae bilaterally at base, joining with the paramedian carinae and forming tooth-like tubercle at base pointing posteriorly, with narrow anterior extension, with inner lateral carina fine and line-like, with outer lateral carinae distinct. All carinae sub-crenulate. Lateral margin broadly wing-like bent up, with six large and deep transverse pits, all somewhat separated into two smaller pits. Space between carinae and pits smooth.

Elytron: Flattened in lateral view, convex in frontal view. Oblongo-elongate, straight laterally, maximum width at middle. Pseudohumerus with angle slightly obtuse (angle around 102°), with indistinct tooth. Apex rounded, without acute tooth at suture. Disc with interneur six sub-crenulate, interneur two running up to apex as nearly straight line, distinctly raised, reaching apex; interneur four running at middle as slightly convex line to interneur six, nearly reaching base, shortened at apex. Interneur five and six with two rows of serial pits, the latter ones distinctly merging transversally.

Hind wings: Fully developed.

Lower surface: Antennal channel of pronotum with isodiametric reticulation. Pseudoepipleura with a row of pits, transverse apically, lateral margin of elytron smooth. Metepisternum elongate, with longitudinal groove of moderate size. Metasternum, abdominal sternites three and seven with numerous irregularly situated larger pits, sternite one and two with longitudinal reticulation. Last abdominal sternites laterally with irregular reticulation. Sternum four to six slightly sulcate. Sternum seven with longitudinal flat keel laterally and at middle, apex with longitudinal suboval pit.

Legs: Profemora with surface indistinctly reticulated. Protibia with robust, slightly curved terminal spine, laterally with five teeth of decreasing size, the basal one with some distance from the others, dorsally and ventrally with two carinae. First tarsalia distinctly elongated, as long as tarsalia two to four together.

External sexual dimorphism: Not observed.

Male genitalia (Fig. 5): Median lobe long, slender, in dorsal view slightly convex in basal two thirds, evidently curved at apical third, in lateral view straight in total, with numerous scattered fine pili, apical part of moderate length, straight, in cross section nearly stick-like. Oroficiium elongated. Endophallus with two evident groups of microtrichia in apical quarter. Dorsal paramere of moderate size, nearly straight, with small elongated apophyses; ventral one shaped triangle-like, both parameres slightly distorted, both of them hyaline at apex.

Female genitalia (Fig. 7): Coxostylus moderately slender, regularly broadened to base, distinctly curved, acute at apex, with nine large nematiform setae in basal half, two of them at base, one strong one at end of basal third; SSO with one microtrichium.

Variation: On the pronotum the notches on the paramedian carinae are variable in their distinctness among the two specimens.

Distribution: Known from the district of Bembereke in the Northern part of Benin near the city of Gando (Fig. 10).

***Salcedia occidentalis* nov.sp. (Figs 2, 4, 6, 8)**

Type material: Holotype: ♂, with labels and data: white, black printed, black framed "N GUINEA-CONACRY NEAR MBOURIA N BALAKI 03.-04.07.2004 A. KUDRNA JR. LGT." (CBB). Paratypes: 1♂, 2♀♀, 2 specs., same data as holotype (OLML, CBB).

Etymology: The name refers to the most westerly occurrence of the genus in Africa.

Diagnosis: A large sized species, with elongate outline of the elytra with maximum width behind middle and the pronotum with three additional carinae of which the inner one is small and the outer lateral carina is shortened anteriorly and posteriorly. The pseudohumerus is slightly obtuse angular, slightly bent down, distinctly dentate. The antennomeres are super-moniliform. Distinguished most clearly from the similar species *S. baroensis* BALKENOHL by the lateral margin of the pronotum with the more distinct and separated tubercles and the more distinct developed inner and outer lateral carinae. From the similar species *S. elongata* ALLUAUD, it differs by the broader head which is three quarters of the width of the pronotum and the elytron with its maximum width behind middle. Distinguished from all other species by the super-moniliform antennomeres.

Description:

Measurements in Tab. 2.

Colour and surface: Anthracite grey with slight piceous shine, areas between carinae and pits shiny; mandibles and legs piceous, and antennae hennuleous, palpi leoninous.

Head: Three-quarters of pronotum width. Outline shaped like frustum of a pyramid. Clypeus wide, straight anteriorly, fused with clypeal wings, separated from supraantennal plates by distinct notches, with convex semicircular field at middle, separated from frons by moderately deep transverse furrow. Frons with two raised paramedian carinae, joining anteriorly, prolonged anteriorly into a central distinctly erected tubercle, with two small rounded glossy teeth bilaterally anterior to central tubercle, with two parallel carinae paralaterally near base; frons and clypeus separated from supraantennal and supraorbital plates by deep broad furrows, each furrow with deep slightly longitudinal pit between supraantennal plate and clypeus, with circular

conspicuously deep pit at front-eye level; supraantennal and supraorbital plates acutely margined, margin raised, carina-like, supraantennal plates slightly vaulted. Base emarginated at middle, slightly obtuse angled laterally (angle 106-108°). Eyes convex, with transverse-pentagonal shape in lateral view, with slightly concave posterior margin, with small part just visible in dorsal view; genae slightly convex, slightly higher than eyes. Antenna with segments five to ten super-moniliform (L/W 1.1), densely pubescent, segments two to four scarcely pubescent, scapus and pedicellus with longitudinal reticulation. Labrum straight anteriorly. Mandible moderately short, wide, slightly arcuate at apex. Apical segment of maxillary palpomere moderately long. Mentum small, with obtuse tooth at middle, epilobes wide, projecting and distinctly angled anteriorly, margined anteriorly, surface coriaceous.

Pronotum (Fig. 4): Outline rectangular, transverse, more than a quarter wider than long. Lateral margin slightly convex at middle, maximum width at end of second third, distinctly converging anteriorly and slightly posteriorly. Lateral margin distinctly crenulated, with ten tubercles, with distinct emargination at posterior angles. Base straight laterally, with wide notch, with decreasing keel at middle. Disc with two raised paramedian carinae parallel to median line, diverging posteriorly, with long median line ending in pits anteriorly and posteriorly, with four additional shorter carinae bilaterally, the paralateral ones joining with the paramedian carinae at base and forming tooth-like tubercle pointing posteriorly, extended anteriorly as distinctly raised paralateral carina. With two short and less raised inner and outer lateral carinae, the inner one very small and isolated. All carinae sub-crenulate. Lateral margin and space between lateral margin and paralateral carina wing-like bent up, with six large transverse pits.

Elytron: Flattened in anterior two thirds (lateral view), moderately convex in frontal view. Elongate, margin straight in anterior third but diverging, maximum width behind middle. Pseudohumerus slightly obtuse angular, slightly bent down, distinctly dentate. Apex rounded, acutely and small denticulate at suture. Disc with interneur six sub-crenulate, interneur two running to apex as slightly convex line, conspicuously raised, not reaching apex; interneur four running convex towards apex, decreasing before reaching basal area, not reaching base, not reaching apex. Interneur five and six with two rows of serial pits, pits clearly separated, merging transversally in apical sixth.

Hind wings: Fully developed.

Lower surface: Antennal channel of pronotum with isodiametric reticulation. Pseudo-epipleura with two rows of pits, the lateral one interrupted at middle, lateral margin of elytron sub-crenulate. Metepisternum distinctly elongated, with circular pits. Last visible sternum with large pit at apex, lateral pits merged longitudinally with blunt irregular carinae in between.

Legs: Profemora with dorsal surface isodiametrically reticulated. Protibia stout, with short, robust, moderately curved terminal spine, laterally with two moderately large and two small sized teeth, dorsally with one distinct and one indistinct carina. Movable spur short, length a quarter of first tarsalia. First tarsalia distinctly elongated, almost as long as tarsalia two to five together.

External sexual dimorphism: The large pit at the apex of the last visible sternum of the abdomen is slightly larger and circular in females. In males it is longitudinally developed.

Male genitalia (Fig. 6): Median lobe robust, in dorsal view regularly arcuate, distinctly arcuate in apical fifth, in lateral view continuously becoming smaller towards apex, with fine scattered pili in middle part, apex stick-like, in cross section broad-oval towards apex, directly at apex round and hollowed out convexly ventrally. Oroficius half as long as median lobe. Endophallus with group of microtrichia conspicuously densely arranged, with additional small group of finer and short trichia basally. Dorsal paramere elongated, slightly bisinuate, with elongated robust apophyses; ventral one broad triangular like; both parameres slightly distorted.

Female genitalia (Fig. 8): Coxostylus regularly broadened to base, distinctly curved, at end of basal third with one small seta, one strong and six slender nematiform setae laterally, SSO with one microtrichium.

Variation: The tubercles at the lateral margin of the pronotum vary in number from nine to ten.

Distribution: The species occurs in Conacry, West of Guinea close to the banks of the river Konkoure (Fig. 10).

Identification key to the species of the genus *Salcedia* (updated and amended key)

- 1 African species; frons of head with paramedian carinae converging anteriorly and joining into a keel or tubercle.....2
- Oriental species; head with paramedian carinae converging anteriorly but not completely joining, not forming a keel or tubercle.....19
- 2 Species from Madagascar; with or without conspicuously reduced eyes3
- Species from continental Africa; always with well-developed eyes.....5
- 3 Eyes conspicuously reduced, not visible in dorsal view, in lateral view strikingly small, embedded between lateral carinae and genae, concave; lateral margin of pronotum with 16 tubercles; interneurs of elytron with one serially row of pits; body length 2.6-3.1 mm*unifoveata* BALKENOHL
- Eyes well developed, partly visible in dorsal view, in lateral view large, convex; lateral margin of pronotum with 8-12 tubercles; interneurs of elytron with more than one row of pits4
- 4 Lateral margin of pronotum with 12 tubercles; head with raised tubercle in middle; pseudohumerus of elytron with laterally projecting tooth; body length 3.2-3.6 mm*perrieri* FAIRMAIRE
- Lateral margin of pronotum with 8-9 tubercles; head with keel at middle; pseudohumerus of elytron without projecting tooth; body length 3.1 mm*failliei* BALKENOHL
- 5 Outline of elytron in dorsal view distinctly convex; species smaller than 3.0 mm (but see exceptions *S. baroensis* at 3.7 mm and *S. matsumotoi* at 3-3.6 mm).....6
- Outline of elytron in dorsal view parallel or slightly rounded with straight or indistinctly rounded parts; species larger than 3.0 mm.....8
- 6 Pronotum conspicuously transverse with ratio length/width 0.55-0.59, with row of five transverse lateral pits, lateral margin with 9 tubercles; head reniform, posterior genae convex, without angle (dorsal view); smallest species; body length 2.4-2.8 mm*coquilhati* ALLUAUD
- Pronotum moderately transverse with ratio length/width 0.72-0.75, with row of six transverse lateral pits, lateral margin with 12-13 tubercles; head semicircular or campanulate, posterior genae with distinct angle (dorsal view), without convexity.....7

- 7 Paramedian carinae on frons of head joining V-like anteriorly and ending with minute tubercle; antenna with antennomeres five to ten sub-elongate (L/W 1.16); base of pronotum produced wing-like posteriorly, distinctly emarginated bilaterally towards middle; head obtuse angled postero-laterally (angle $\sim 137^\circ$); body length 2.8 mm *lukulua* BALKENOHL
- Paramedian carinae on frons of head joining into a distinct keel; antenna with antennomeres five to ten elongate (L/W 1.24); base of pronotum not produced posteriorly, with slight notch bilaterally towards middle; head postero-laterally with distinct angle ($\sim 122^\circ$); body length 3-3.4 mm *matsumotoi* BALKENOHL
- 8 Elytron super-elongate or oblongo-elongate, with lateral outline parallel, with interneur two parallel at middle 9
- Elytron sub-elongate or elongate, with outline slightly convex or slightly dilated posteriorly with straight or indistinctly rounded parts in basal third only, with interneur two convex at middle 13
- 9 Elytra super-elongate with lateral outline nearly parallel but slightly to indistinctly concave at middle, maximum width before and behind middle; antenna with antennomeres 5-10 sub-moniliform (L/W 0.95-1.02); body length 3.1-3.4 mm *procera* BALKENOHL
- Elytra oblongo-elongate with lateral outline parallel, straight, maximum width at middle; antenna with antennomeres 5-10 moniliform or sub-elongate 10
- 10 Base of pronotum bilaterally with distinct tubercle pointing posteriorly; elytron with distinct tubercle at base of interneur four; pronotum one fifth wider than long; body length 3.4 mm *tuberculata* BALKENOHL
- Base of pronotum without distinct tubercle; elytron without tubercle at base of interneur four; pronotum one third or one quarter wider than long 11
- 11 Pronotum a quarter wider than long; elytron with interneur four shortened at base; antenna with antennomeres 5-10 moniliform, front tibia with four teeth laterally 12
- Pronotum one third wider than long; elytron with interneur four running up to base; antenna with antennomeres 5-10 super-moniliform; front tibia with five teeth laterally; body length 3.3-4 mm *africana* BRITTON
- 12 Elytron with interneur two shortened at apex; pronotum bilaterally with two additional carinae; female coxostylus with seven long nematiform setae and two SSOs; male median lobe with apex long, slender; body length 3.3-3.7 mm *elongata* ALLUAUD
- Elytron with interneur two running up to apex; pronotum bilaterally with three additional carinae; female coxostylus with nine long nematiform setae and one SSO; male median lobe with apex of medium length and width; body length 3.5 mm *bembereka* nov.sp.
- 13 Pronotum with paramedian carinae conspicuously raised, interrupted by distinct deep notches; lateral margin of pronotum with 8-(10) tubercles; body length 3.5-4.2 mm *robusta* BALKENOHL
- Pronotum with paramedian carinae moderately raised, more or less continuing, not interrupted by distinct notches; lateral margin of pronotum with 10 to 15 tubercles 14
- 14 Antennomeres five to ten super-moniliform (ratio length/width 1.1); elytra with ratio length/width 1.85; pronotum with 10 tubercles at lateral margin; body length 3.5-3.7 mm *occidentalis* nov.sp.
- Antennomeres five to ten elongate or oblongo-elongate (ratio length/width >1.24); elytra with ratio length/width 1.62 up to 1.74; pronotum with >10 tubercles at lateral margin 15
- 15 Antenna with antennomeres five to ten oblongo-elongate (ratio length/width 1.41); elytra shorter, length 1.71-1.76 mm; elytra slightly diverging posteriorly, maximum width behind middle, interneur three developed as slightly raised carina; body length 3.5-3.9 mm *baroensis* BALKENOHL
- Antenna with antennomeres five to ten elongate (ratio length/width 1.25-1.34); elytra longer, length 2.03-2.38 mm; elytra slightly convex laterally but not diverging, with maximum width at middle, interneur three without raised carina 16

- 16 Pronotum with all three lateral carinae complete; elytron with pseudohumerus obtuse-angled (angle $\sim 97^\circ$); elytron with lateral margin (not visible in dorsal view) smooth; median lobe of aedeagus at apex spatulate in total, in cross section with concavity; female coxostylus with eight nematiform setae and with one SSO; body length 3.4–3.6 mm *utetea* BALKENOHL
- Pronotum with lateral carinae incomplete, two of the three carinae completely missing; elytron with pseudohumerus nearly right-angled; elytron with lateral margin (not visible in dorsal view) sub-crenulate; median lobe of aedeagus at apex ovoid in cross section 17
- 17 Pronotum with lateral margin regularly convex with maximum width at middle, with 10–11 tubercles; elytron with lateral outline straight at middle; head baso-laterally with obtuse angle (angle $120\text{--}123^\circ$); body length 3.1–3.9 mm *putzeysi* OBERTHÜR
- Pronotum with lateral margin either regularly convex or converging anteriorly with maximum width behind middle, with ≥ 12 tubercles; elytron with lateral outline convex or converging and with straight parts; head baso-laterally with angle $< 111^\circ$ 18
- 18 Lateral margin of pronotum convex and converging anteriorly, lateral tubercles indistinct; elytron with lateral outline with straight and almost parallel part directly posterior pseudohumerus; pseudohumerus with distinct tooth-like tubercle; median lobe of aedeagus with apex sinuate, in cross section oval; female coxostylus with six nematiform long setae and one SSO; body length 3.4–3.8 mm *schoutedeni* ALLUAUD
- Lateral margin of pronotum slightly and regularly convex, lateral tubercles distinct; elytron with lateral outline slightly convex; pseudohumerus without or with indistinct projecting tooth; median lobe of aedeagus straight, pointing dorsally, flattened preapically and in cross section oval at apex; female coxostylus with eight nematiform setae; body length 3.3–3.7 mm *nigeriensis* ALLUAUD
- 19 Elytron without laterally projecting tooth at pseudohumerus, interval between interneur four and five and five and six with two serially rows of pits; lateral margin of pronotum convex; antennomeres five to ten oblongo-elongate (ratio length/width 1.44); body length 3.8–4 mm *miranda* ANDREWES
- Elytron with distinct laterally projecting tooth at pseudohumerus, interval between interneur four and five with two serially rows of pits, and between interneur five and six with one row of serial pits; lateral margin of pronotum straight; antennomeres five to ten elongate (ratio length/width 1.22); body length 3.6 mm *parallela* BAEHR

Zusammenfassung

Zwei neue westafrikanische Arten aus der Gattung *Salcedia* FAIRMAIRE, 1899 (*Salcedia bembereka* nov.sp., *Salcedia occidentalis* nov.sp.) werden beschrieben und illustriert, wodurch sich die Anzahl der bekannten Arten auf 20 erhöht. Die bisher unbekannten weiblichen Gonocoxite der Art *S. tuberculata* BALKENOHL werden beschrieben und abgebildet. Der in BALKENOHL (2019) vorgestellte Bestimmungsschlüssel, die Tabellen und die Verbreitungsangaben werden durch die neuen Arten und die neue Funde überarbeitet und ergänzt.

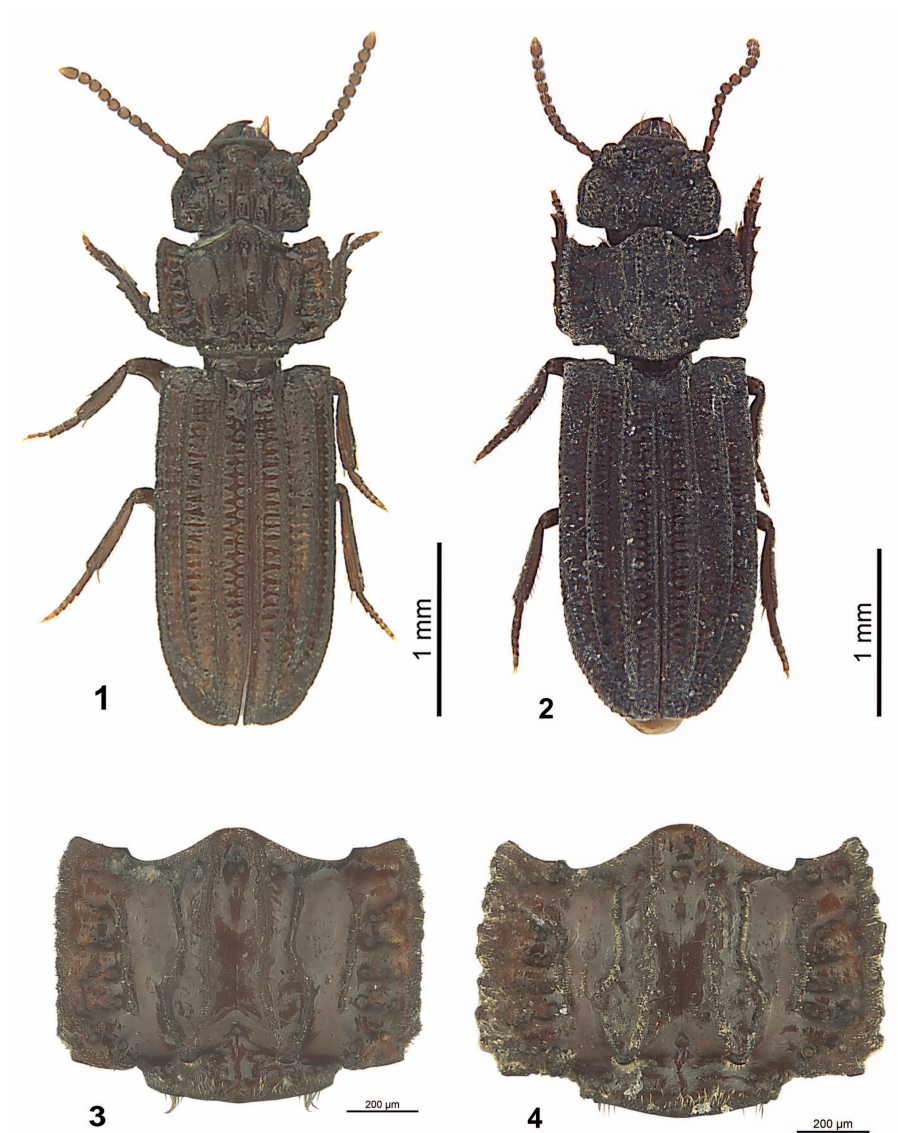
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References

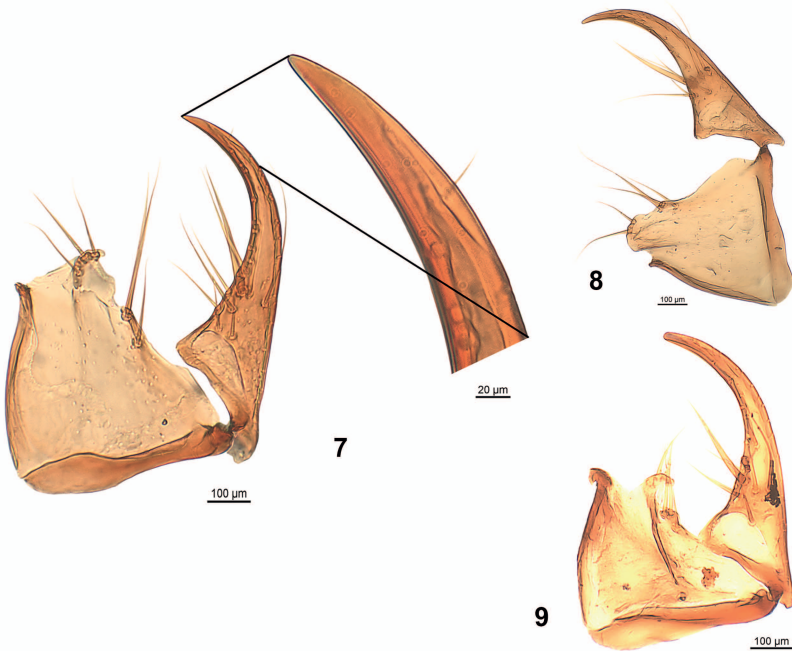
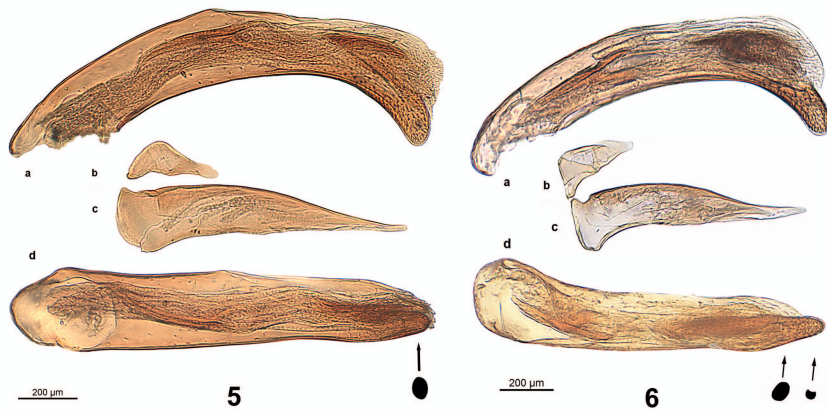
- BALKENOHL M. (2020): A genus in disguise. Revision of the genus *Salcedia* FAIRMAIRE, 1899 with descriptions of nine new species (Coleoptera, Carabidae, Scaritinae, Salcediini). — ZooKeys, manuscript in print.

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Figs 1, 2: *Salcedia* species, habitus, dorsal view, holotype. (1) *S. bembereka* nov.sp.; (2) *S. occidentalis* nov.sp.

Figs 3, 4: *Salcedia* species, pronotum, dorsal view; (3) *S. bembereka* nov.sp.; (4) *S. occidentalis* nov.sp.



Figs 5, 6: *Salcedia* species, male genitalia, dorsal view of aedeagus (a), parameres (b, c) and lateral view (d). Black small sketches are symbolizing the apex in cross section. (5). *S. bembereka* nov.sp.; (6) *S. occidentalis* nov.sp.

Figs 7-9: *Salcedia* species, female coxostyli and laterotergite IX. (7) *S. bembereka* nov.sp. with SSO magnified; (8) *S. occidentalis* nov.sp.; (9) *S. tuberculata* BALKENOHL.

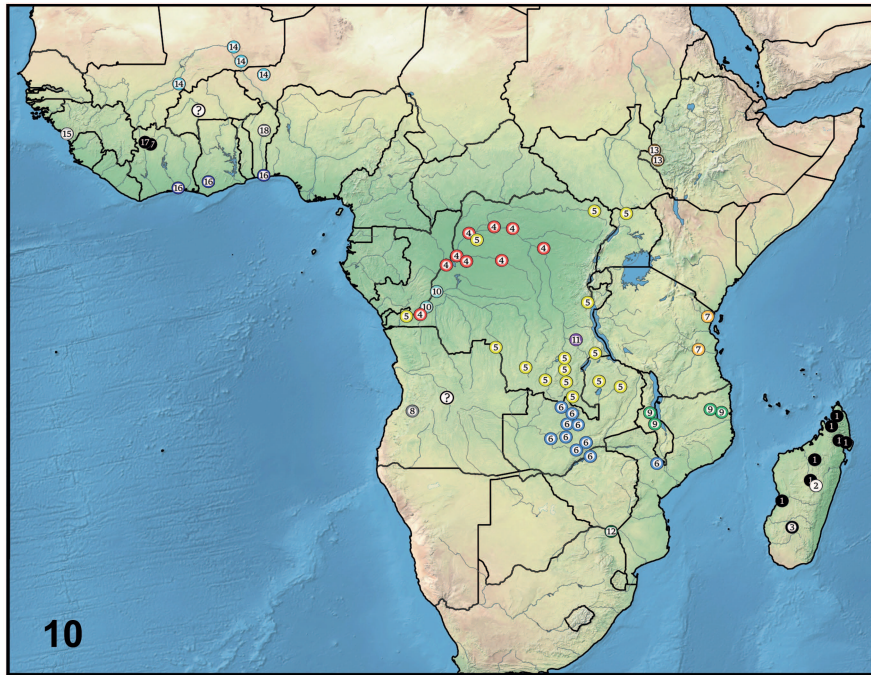


Fig. 10: Updated map of tropical Africa providing an overview on the occurrence of all African *Salcedia* species described so far (recorded localities plotted). 1 (black) *S. perrieri* FAIRMAIRE; 2 (white) *S. unifoveata* BALKENOHL; 3 (black circle) *S. faillei* BALKENOHL; 4 (red) *S. coquilhati* ALLUAUD; 5 (yellow) *S. elongata* ALLUAUD; 6 (blue) *S. africana* (BRITTON); 7 (orange) *S. utetea* BALKENOHL; 8 (grey) *S. procera* Balkenohl; 9 (light green) *S. robusta* BALKENOHL; 10 (turquoise) *S. schoutedeni* Alluaud; 11 (purple) *S. lukulua* BALKENOHL; 12 (dark green) *S. tuberculata* BALKENOHL; 13 (brown) *S. baroensis* BALKENOHL; 14 (light blue) *S. nigeriensis* ALLUAUD; 15 (light grey) *S. occidentalis* nov.sp.; 16 (dark blue) *S. putzeysi* (OBERTHÜR); 17 (black) *S. matsumotoi* BALKENOHL; 18 (dark grey) *S. bembereka* nov.sp.; ? in a circle (two times): collection locality of a single female *Salcedia* specimen of uncertain species. Basic schematic map of Africa taken from SimpleMappr.net.

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