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A contribution to knowledge of the Asiatic *Microjulistus* Reitter, 1889 and *Flavojulistus* Majer, 1990, with descriptions of four new species (Coleoptera, Cleroidea, Dasytidae)

by **Robert Constantin**

Abstract. Four new species of the genus *Flavojulistus* Majer, 1990 are described: *Flavojulistus muehlei* sp.nov. (Yemen), *Flavojulistus klapperichi* sp.nov. (Jordan), *Flavojulistus holzschuhi* sp.nov. (Oman), *Flavojulistus afghanisticus* sp.nov. (NE Afghanistan). *Microjulistus rubricollis* (Abeille de Perrin, 1907) is re-examined and transferred to the genus *Flavojulistus*. *Microjulistus olivaceus* Pic, 1931 is redescribed. The main characters and the genitalia are illustrated and a key to the *Flavojulistus* species is provided.

Key words. Coleoptera – Cleroidea – Dasytidae – *Flavojulistus* – taxonomy – new species – Asia – Arabic peninsula

Introduction

The present note is a contribution to knowledge of the genera *Flavojulistus* Majer, 1990 and *Microjulistus* Reitter, 1889. These insects belong to the Rhadalinae (Dasytidae, previously Melyridae; cf. MAJER 1994) and include some of the smallest representatives of the subfamily. The first species to be discovered, *Microjulistus fulvus* Reitter, 1889, was described from Kazakhstan. Soon afterwards, several species were described from North Africa and the eastern Mediterranean region by BOURGEOIS (1894), PIC (1994, 1895, 1899, 1927), CHOBOUT (1898), PEYERIMHOFF (1931), and a unique representative was found in South Africa (PIC 1903). The most recent list was drawn up by PEACOCK (1987). The genus *Flavojulistus* was established by MAJER (1990) for *Flavojulistus melanocephalus* Majer, 1990, a new species for Iran.

In material recently collected by Carolus Holzschuh, Johann Klapperich, Hans Mühle and Walter Wittmer, several new species have been recognised from the Arabian peninsula and Asia. Two peculiar species *Microjulistus rubricollis* (Abeille de Perrin, 1907) from Aden and *M. olivaceus* Pic, 1931 from Ethiopia, of similar appearance, are re-described and drawings are provided.

Redefinition of *Flavojulistus* Majer, 1990

MAJER (1990), when describing his new *Flavojulistus*, supplied a number of differential characters from *Microjulistus* (antenna serrate from the 4th or 5th joint, not forming a compact club, eyes prominent with coarse facets, a higher degree of sexual dimorphism, hind angles of the pronotum with several straight bristles, second labial palp joint more elongate, last maxillary joint elongate and hatchet-shaped, inner tarsal claw denticulate at base, male genitalia with tegmen dorsally open almost to the apex and phallobase indiscernible).

Taking into account the new additions here proposed, some of these should be set aside. Accordingly the valid generic characters for *Flavojulistus* are redefined as: longer antennae, serrate from 4th or 5th joint and forming a loose club, more developed spicular fork and tegmen, and more slender legs with denticulate or bifid claws.

Abbreviations

NHMB	.....	Naturhistorisches Museum, Basel, Switzerland
MNHN	.....	Muséum national d'Histoire Naturelle, Paris
BMNH	.....	The Natural History Museum, London
CRCO	.....	Robert Constantin private collection, Saint-Lô, France

Measures

AL	.....	antennal length	EL	.....	joint elytral width at base
HW	.....	head width	FT	.....	front tibia length
IOW	.....	interocular width	Ft	.....	front tarsus length
PL	.....	pronotum length	HT	.....	hind tibia length
PW	.....	pronotum width	Ht	.....	hind tarsus length
EL	...	elytral length from shoulder to apex			

Key to the species of *Flavojulistus* (males)

1. Body dark olive brown, first three antennal joints and legs yellow.
..... ***muehlei* sp.nov.**
- Body pale yellow. 2
2. Antennal joints VI–IX as long as wide, their inner side convex. Front claws feebly denticulate in the middle. 3
- Antennal joints VI–IX wider than long, their inner side strongly denticulate before apex. 5
3. Frons narrow, interocular space as wide as the length of one eye.
..... ***melanocephalus* Majer, 1990**
- Frons wider, interocular space 1.5 times wider than the length of one eye.
..... 4
4. Head and pronotum pale yellow, lustrous with umbilicate punctures.
..... ***klapperichi* sp.nov.**
- Head and pronotum red-brown, areolate with reticulation of thin meshes.
..... ***holzschuhi* sp.nov.**
5. Pronotum widest toward base. ***rubricollis* (Abeille de Perrin, 1907)**
- Pronotum more parallel, widest beyond centre. ... ***afghanistanicus* sp.nov.**

***Flavojulistus muehle* sp.nov.** (Figs 4, 6, 14, 16, 17, 19, 23)

Type material. Holotype male: Yemen, "Yemen, Sana'a, Hadda, 30.v.1987, leg. H. Mühle, deposited in NHMB. 4 paratypes (3 males, 1 female), same date (CRCO).

Description. Holotype male: Length 2.8 mm. Body elongate, subparallel, dark brown to dark olive, first three antennal joints yellow, remainder brown, legs dark yellow. Sparsely covered with thin, recumbent, greyish-white setae (Fig. 4).

Head feebly convex, rather short, eyes prominent. Integument lustrous with very small umbilicate punctures. Antenna 1 mm long, first three joints slender, the following triangular subserrate, joints VII–IX 1.2 times longer than wide, their inner side convex (Fig. 6). Pronotum transverse 0.63×0.78 mm. Lateral sides regularly convex, widest in the middle, posterobasal edges with a small flat area and a few bristles directed outwards. Surface lustrous, with small umbilicate punctures, each puncture surrounded by six or seven minute impressions. Head and pronotum covered in sparse, thin, recumbent, greyish-white setae. Elytra long, apices narrowed, elongate and dehiscent. Joint width at base: 1.02 mm, length from shoulder to apex: 1.96 mm. Elytral surface punctate, interspaces rimmed, covered in thinner and more adpressed setae. Legs with slender tibiae and tarsi: FT: 0.5; Ft: 0.45; HT: 0.69; Ht: 0.67 mm. Claws of both front and middle tarsi thin and divided in the apical third, hind claws denticulate before middle. Abdomen brown. Pygidium with long basal arms and extended apical cuticular fold enlarged at centre (Fig. 14). Sternite VIII small and short. Spicular fork with wide apical expansions (Fig. 17). Tegmen straightened in the apical quarter, large and subparallel in its basal part, with a large, round hole dorsally, near the base. Median lobe with straight and thin dorsal lever (Figs 19, 23).

Paratypes, male dimensions (variation of 3 specimens, in mm.): TL: 2.9–3.4; AL: 0.98–1.2; HW: 0.61–0.69; IOW: 0.9–0.41; PL: 0.65–0.76; PW: 0.8–0.96; EL: 1.92–2.35; EW: 1–1.2.

Female: Length 3.4 mm. Differs from the male in thinner antennal joints, flatter eyes, subquadrate pronotum. Pygidium with apical cuticular fold excavate at centre (Fig. 16). Ovipositor without sclerification around the apical opening (vulva *sensu* SNODGRASS 1935: 627, oviporus *sensu* MAJER 1987). AL: 0.92; HW: 0.65; IOW: 0.43; PL: 0.76; PW: 0.88; EL: 2.31; EW: 1.21 mm.

Distribution. Yemen. The type locality "Sana'a, Hadda" is located $15^{\circ}17'N$, $44^{\circ}07'W$, 15 km WSW of Sana'a, a rocky place with shrubs and fields.

Etymology. Dedicated to Dr. Hans (and Mrs Angela) Mühle, München, long-established world specialist in Buprestidae, who discovered this species.

Differential diagnosis. In the vicinity of *Flavojulistus rubricollis*, from which it differs in the dark olive brown coloration, the larger size, the peculiar microsculpture and the male genitalia.

***Flavojulistus klapperichi* sp.nov.** (Figs 1, 7, 18, 22)

Type material. Holotype male: Jordan: "Jordanien, Zerkatal b. Romana, 4.x.1966, J. & S. Klapperich / Naturhistor. Museum Basel coll. W. Wittmer". 13 female paratypes, same data. Holo- and 9 paratypes preserved in NHMB, 4 paratypes in CRCO.

Description. Holotype male: Length 2.55 mm. Body elongate, subparallel, orange-yellow with black eyes and the final six antennal joints yellow-brown. Coated in fine, adpressed, whitish-yellow setae (Fig. 1).

Head moderately elongate, subrostrate. Frons and vertex flattened, with dense, whitish-yellow setae. Surface matt, microreticulate. Labial palpi with joint II elongate 0.049×0.024 mm. Maxillary palpi with last joint spindle-shaped 0.088×0.029 mm. Antenna 0.82 mm, not exceeding pronotal base, antennal joints V–XI feebly serrate, forming a loose club (Fig. 7). Pronotum slightly transverse, 0.59×0.71 mm; basal and apical edges nearly straight, lateral convex, regularly rounded, weakly crenulate, covered in adpressed, basally-directed setae except for a small fringe of long bristles at the posterobasal edge directed outwards. Upper surface microreticulate, central region near the apical border with small, umbilicate punctures. Elytra elongate, subparallel and regularly rounded in the apical quarter. Joint width at base: 0.96 mm; length from shoulder to apex: 1.72 mm. Surface alutaceous with small punctures and covered in whitish-yellow setae thinner than those of head and pronotum. Legs with slender tibiae and tarsi, inner and outer claws very thin and feebly denticulate before centre. FT: 0.49 mm; Ft: 0.43 mm; HT: 0.69 mm; Ht: 0.61 mm. Abdomen brown, sternite VII apically straight. Pygidium finely bordered along the apical border. Spicular fork with apical expansions. Tegmen wide, flattened and bowed, fully open neither dorsally nor ventrally. Median lobe with straight and thin dorsal lever (Figs 18, 22).

Females (13 paratypes). Length 3.0–4.1 mm. Differs from the male in body oval, head more elongate. Antennae moderately shorter: 0.79–0.82 mm. with joints VI–X wider and inner side convex. Prothorax 1.16 to 1.27 (mean 1.24) times wider than long. Elytra wider, slightly enlarged in the apical third, with pygidium more exposed. EL/EW = 1.13 in basal part and 1.23 in apical third. Front tarsus shorter. Pygidium and sternite VIII finely bordered. Ovipositor without apical sclerification.

Distribution. Jordan. The type locality, now Nahr az Zarqa [$32^{\circ}14'N-35^{\circ}50'E$], is located near Ar Rummän, 40 km NNW of Amman.

Etymology. The species is dedicated to its discoverer, Johann Klapperich, who collected (with Mrs. Sybille) a rich body of material during their long stay in Amman, cf. LUCHT (1988), and made it available for study.

Remark. Although adult *Flavojulistus* are usually found in spring, this species was collected in October.

Differential diagnosis. Close to *Flavojulistus melanocephalus*, from which it differs in the antennal joints, the pronotum laterally more convex and the shape of the aedeagus.

Flavojulistus afghanisticus sp.nov.

(Figs 3, 8, 24, 25)

Type material. Holotype male: “Afghanistan, Djurm, 1700 m, 16.vii.1953, J. Klapperich”, preserved in NHMB. 26 paratypes, same label (8 in CRCO, 18 at NHMB). 1 paratype. “Afghanistan, Faizabad, 2.iii.1953, J. Klapperich”, NHMB. 1 paratype “Afghanistan, Sarekanda, Badakschan, 28.vii.1953, J. Klapperich”, NHMB. 28 paratypes “Afghanistan NE, Schau, 2000 m, Kokschatal, 19.vii.1953, J. Klapperich” (9 in CRCO, 19 in NHMB).

Description. Holotype male: Length 2.3 mm. Body testaceous yellow. Head testaceous, eyes brown. Penultimate and ultimate antennal joints dark yellow. Integument finely punctate, covered in thin, adpressed, whitish-yellow setae (Fig. 3).

Head subrostrate, matt with fine microsculpture. Eyes prominent. Antennae elongate, serrate from joint IV, joints V–IX wider than long, forming a loose club (Fig. 8). Pronotum slightly transverse, 0.59×0.71 mm., 1.4 times wider than long, feebly vaulted, widest just beyond centre; surface with small, umbilicate punctures, interspaces almost lustrous; posterobasal edges flat with a small fringe of long setae directed outwards. Elytra punctate, interspaces wider than the diameter of the punctures and slightly microreticulate. Legs slender, front tarsal claws denticulate near apex, middle and hind tarsal claws with a small denticule near the base. Pygidium with wide basal arms and a narrow cuticular fold in the centre part of the apical edge;. Spicular fork large with apical expansions. Tegmen wide at the base, flattened. Median lobe with narrowed apex; dorsal lever with short apical part (Figs 24, 25).

Measures in mm: AL= 0.94; HW= 0.57; IOW= 0.36; PL= 0.53; PW= 0.76; EL= 1.72; EW= 0.96; FT= 0.45; Ft= 0.37; HT= 0.59; Ht= 0.55. Male paratypes, length 2.4–2.7 mm.

Females. Length 2.4–3.1 mm. Differs in shorter antennae, smaller eyes, wider frons. Elytra wider, subparallel. Pygidium simple, without apical fold. No apical sclerification on the ovipositor.

Distribution. North-east Afghanistan, Badakhshan province: Faizabad, Koksha valley, Jorm [$36^{\circ}50'N-70^{\circ}49'E$] and Sarekanda. From a major study trip to Afghanistan made in 1953 by J. Klapperich, these localities are also *terra typica* for many other insect species.

Etymology. From the country of the type series.

Differential diagnosis. Close to *Flavojulistus melanocephalus*, from which it differs in antennae more serrate, smaller eyes, larger pronotum and form of the male genitalia.

***Flavojulistus holzschuhi* sp.nov.**

(Figs 2, 9, 15, 27)

Type material. Holotype male “Oman, Muscat 50 m, Madinat Qaboos, $23^{\circ}36'N/58^{\circ}26'E$, 2.iv.1985, C. Holzschuh”, kept at NHMB. 5 paratypes (2 males, 3 females), same labelling, 3 at NHMB, 2 in CRCO. 3 paratypes (1 male, 2 females) “Oman, Fanjah, Wadi Fanjah, $23^{\circ}27'N/58^{\circ}08'E$, 9.iv.1985, C. Holzschuh”, kept at NHMB.

Description. Holotype male: Length 2.3 mm. Body red-brown, first four antennal joints and legs dark yellow, elytra yellow-brown, covered in thin, adpressed, whitish-yellow setae (Fig. 2).

Head short, eyes prominent, frons 1.6 times wider than the length of one eye, surface areolate with a reticulation of thin meshes. Antennae elongate, joint IV very small, V–VI serrate, VII–XI wider than long, forming a loose club (Fig. 9). Pronotum transverse, 1.5 times wider than long, feebly convex, posterobasal edges with a small fringe of longer setae. Surface dull, areolate. Elytra subparallel, short, 1.75 longer than

wide at the base, finely punctate, interspaces almost lustrous. Legs slender, tarsal claws with minute denticulation near the base. Pygidium with wide and short basal arms, without cuticular fold on the apical edge. Spicular fork apically widened. Tegmen large with small apical opening. Median lobe with a long apical extremity and dorsal lever thin and straight (Figs. 26, 27). Measures in mm.: AL= 0.59; HW= 0.5; IOW= 0.33; PL= 0.43; PW= 0.65; EL= 1.47; EW= 0.84; FT= 0.35; Ft= 0.25; HT= 0.51; Ht=0.41. Paratypes male: Length 1.8–2.3 mm.

Females: Length 2.2–2.8 mm. Differs in shorter antennae, less convex eyes, elytra apically wide, the apical part more curved. Pygidium with long, parallel basal arms and complete fold alongside the apical edge (Fig. 15). Ovipositor without apical sclerification around the oviporus.

Distribution. Oman.

Etymology. Dedicated to its discoverer, Dr. Carolus Holzschuh, Villach, Austria, a renowned taxonomist of the Cerambycidae.

Differential diagnosis. In the vicinity of *Flavojulistus klapperichi* sp.nov., from which it differs in the wider, matt, strongly areolate and reticulate pronotum, shorter elytrae and form of the male genitalia.

***Flavojulistus rubricollis* (Abeille de Perrin, 1907) comb.nov.**

(Figs 5, 13, 20)

Ceralliscus rubricollis Abeille, 1907: 22–23; Pic (1908): 23–24.

Type material. Aden. Holotype female labelled “Aden (hand-written?) / *Ceralliscus rubricollis* Ab.” (hand-written by Abeille), in collection Abeille de Perrin, MHNH. One further male specimen, “Aden (hand-written as the holotype) / *Ceralliscus rubricollis* Ab. (hand-written by Pic)”, in collection Pic, MNHN. Two further female specimens “W. Aden Prot., Al Huseini near Lajeh, ca 450 ft, 26.xi.1937, on flowering Bushes and small plants/ B.M. expedition to S.W. Arabia, H. Scott & E. Britton, B. M., 1938–246”, BMNH.

Additional description. Male. Eyes very prominent with narrow frons. Slender legs, both claws denticulate from the middle (Fig. 13). Pygidium finely bordered on the apical edge. Measures in mm: TL= 2.8; AL= 0.78; HW= 0.54; IOW= 1.06; PL= 0.65; PW= 1.06; EL= 1.82; EW= 1.06.

Female. Antennae elongate, complete on the right side, with nine joints on left side, not as damaged as reported in the original description. Eyes smaller with wider frons. Ovipositor without apical sclerification. Measures in mm: TL= 3.1; AL= 0.7; HW= 0.59; IOW= 0.37; PL= 0.74; PW= 0.94; EL= 2.35; EW= 1.18.

Remark. This species was described by ABEILLE (1907) as *Ceralliscus rubricollis*. The genus was soon recognised as a synonym of *Microjulistus* (Pic 1908). It is here transferred in the genus *Flavojulistus* on the grounds of the shape of the elongate antennae, last six joints as long as wide, forming a loose club (Fig. 5), long denticulation of both claws, male spicular fork with apical expansions and male genitalia with large tegmen (Fig. 20). It differs from the other species in the shape of the antennal joints and the position of the dorsal lever, attached to the base of the median lobe.

***Microjulistus olivaceus* (Pic, 1931)** (Figs 10, 11, 12, 21)

Type material. Holotype male: Ethiopia “Museum Paris, Tigré, Schimper 1850” (printed), “11 30 50” (handwritten on a round label), general collection of MNHN. 1 paratype male, same labels, collection M. Pic, MNHN.

Additional description. Total length 2.9 mm. Body subparallel, olive brown with yellow antennae and legs, covered in thin, adpressed, whitish setae. Head short. Antennae short, 0.43 mm, with distinct club (Fig. 10). Eye flattened. Head and pronotum with marked umbilicate-branched puncturation and lustrous interspaces. Pronotum feebly convex, widest beyond centre. Side borders regularly rounded and weakly crenulate. Slender legs, tarsal claws with small denticule (Figs 11, 12). Spicular fork with apical expansions. Aedeagus with unique wide and flat dorsal lever (Fig. 21). Measures in mm: HW: 0.58; IOW: 0.37; PL: 0.70; PW: 0.90; EL: 2.04; EW: 1.04.

Remark. A remarkable species, similar to *Flavojulistus muehlei* sp.nov. in general appearance, showing characters of both *Flavojulistus* (body form, genitalia with developed spicular fork and dorsal lever) and *Microjulistus* (short antennae, reduced denticulation of the tarsal claws).

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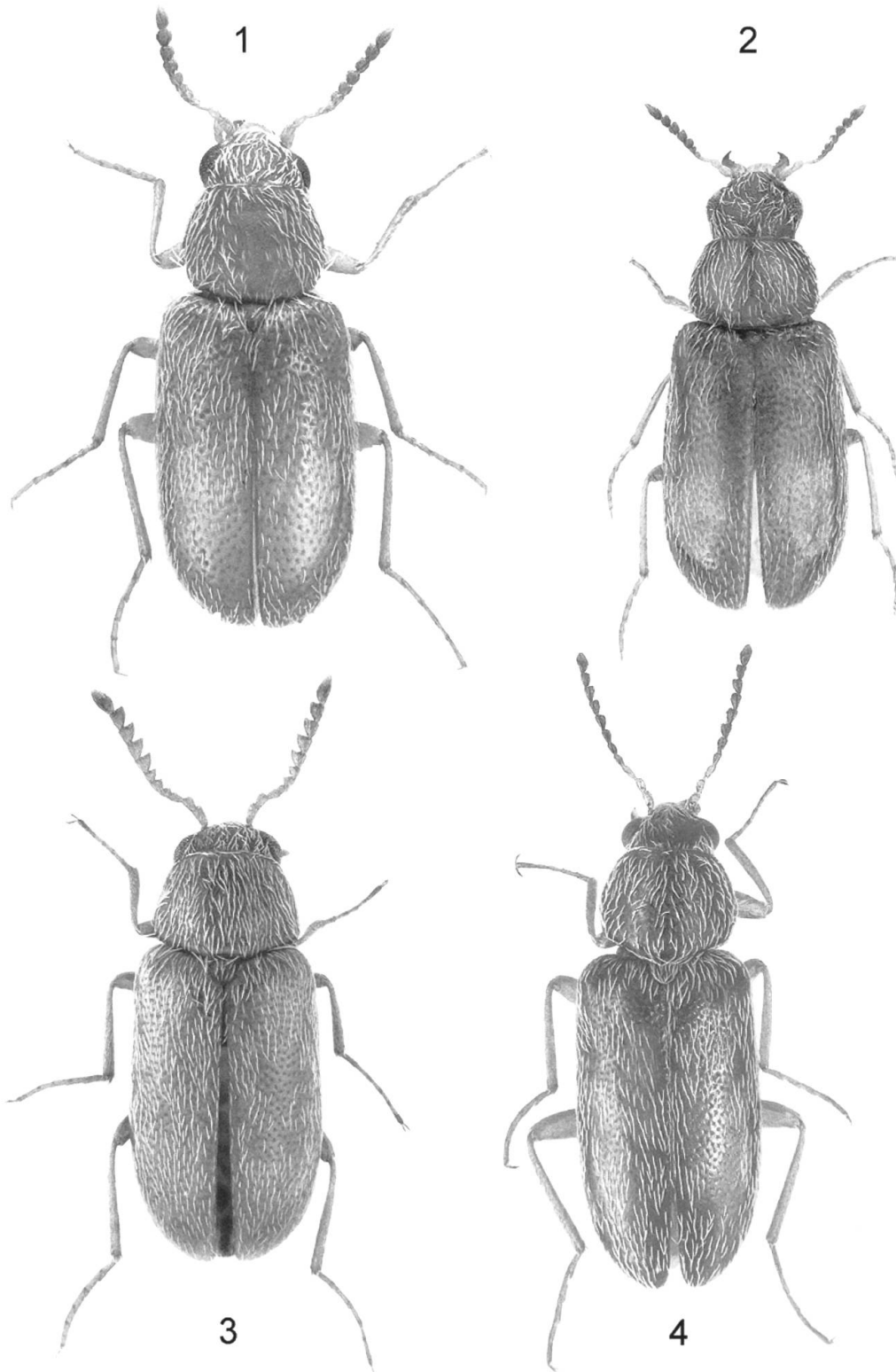
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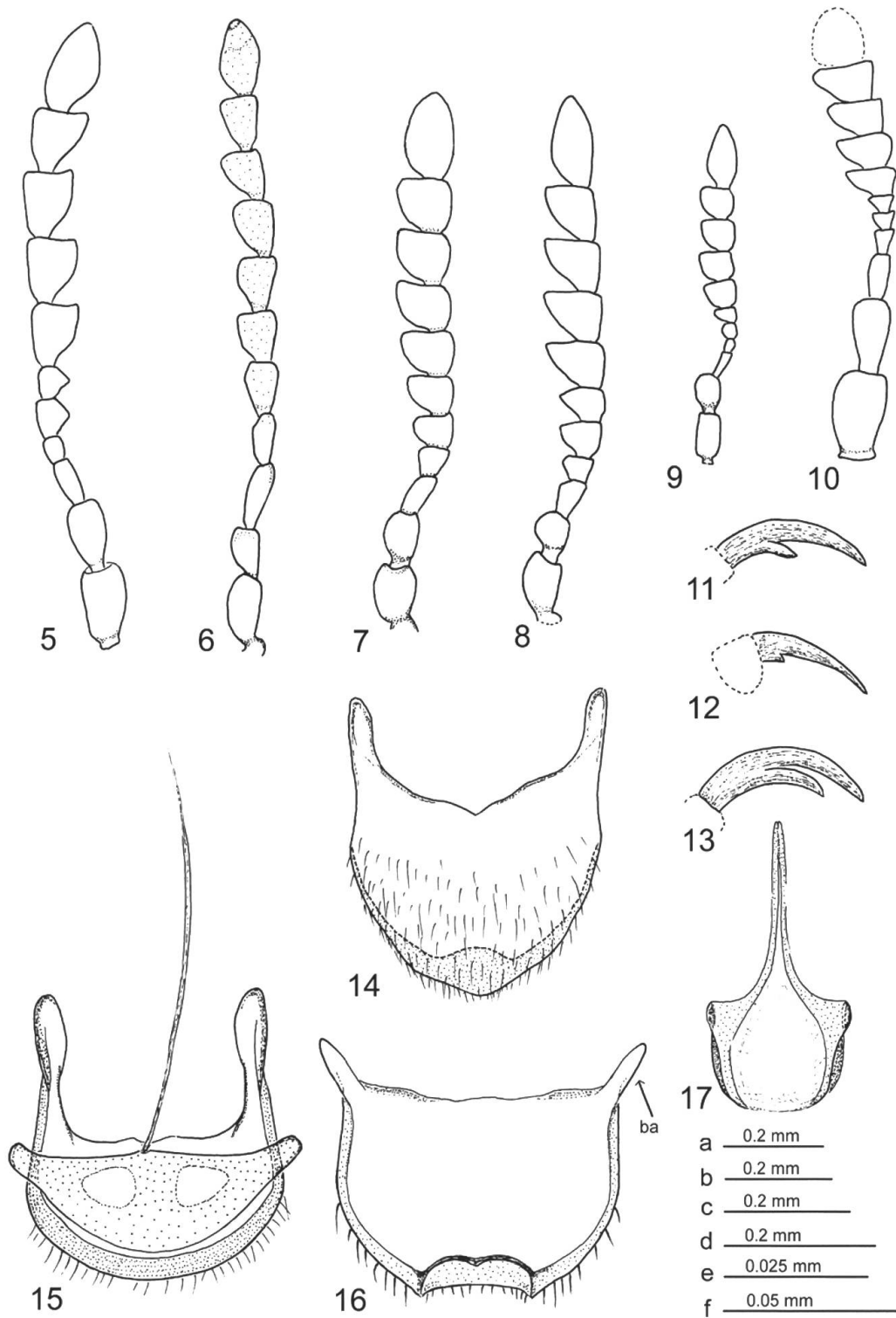
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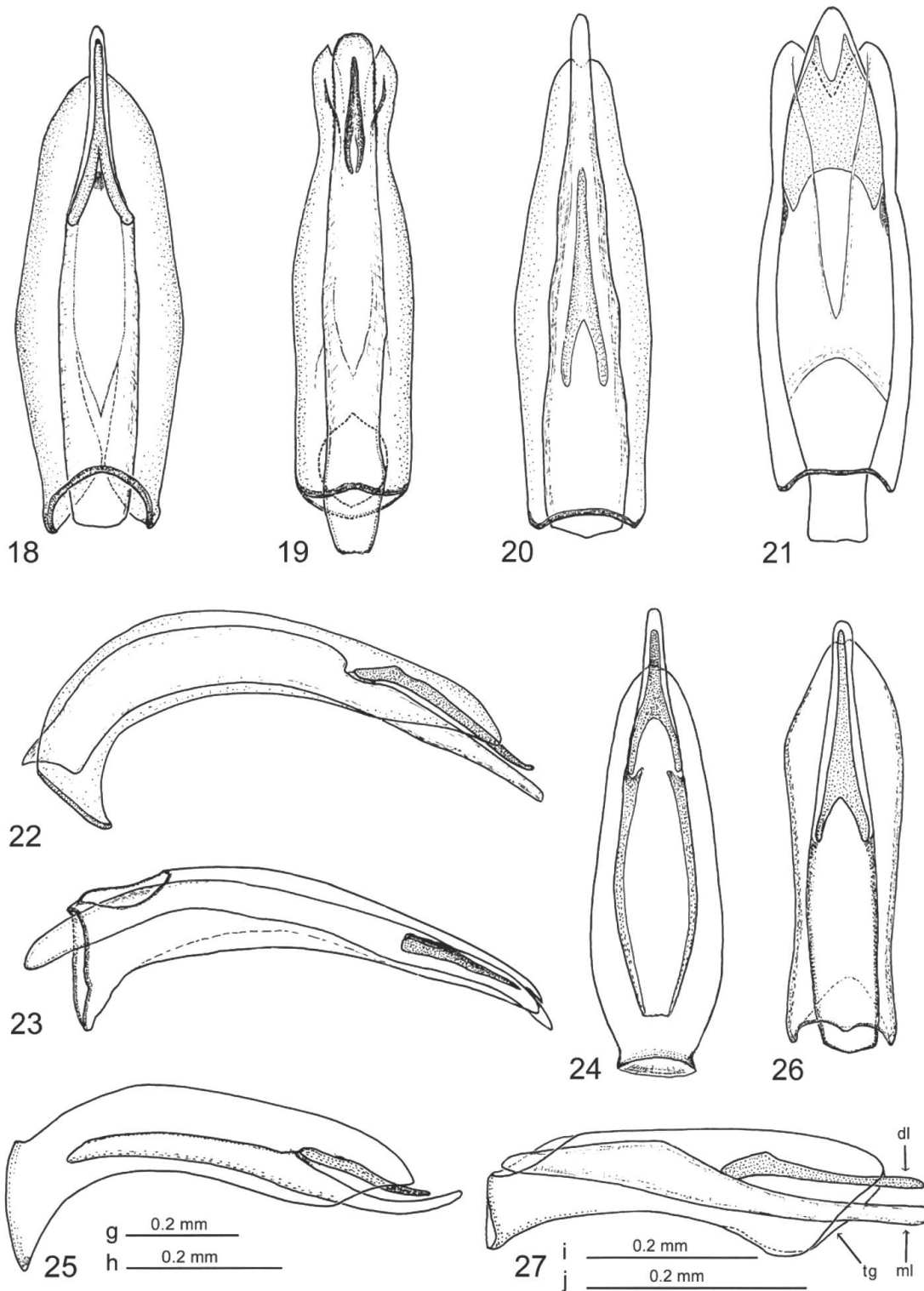
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Figs 1–4. Habitus, males: 1, *Flavojulistus klapperichi* sp.nov.; 2, *Flavojulistus holzschuhi* sp.nov.; 3, *Flavojulistus afghanisticus* sp.nov.; 4, *Flavojulistus muehlei* sp.nov.



Figs 5–17. 5, 13, *Flavojulistus rubricolis* (Abeille), male: 5, antenna; 13, front claw. 6, 14, 16, 17, *Flavojulistus muehlei* sp.nov.: 6, male antenna; 14, male tergite VIII, dorsal view; 16, female tergite VIII ventral view; 17, male spicular fork, dorsal view. 7, *Flavojulistus klapperichi* sp.nov.: male antenna. 8, *Flavojulistus afghanisticus* sp.nov.: male antenna. 9, 15, *Flavojulistus holzschuhi* sp.nov.: 9, male antenna; 15, female tergite VIII and sternite VIII, ventral view. 10–12, *Microjulistus olivaceus* (Pic): 10, male antenna; 11, male front claw, 13, ditto, hind claw. – ba: basal arm. Scale a: 10; b: 6, 8, 9, 14, 16, 17; c: 7; d: 5, 15; e: 13; f: 11, 12.



Figs 18–27. 18, 22, *Flavojulistus klapperichi* sp.nov.: 18, aedeagus, ventral view; 22, ditto, lateral view. 19, 23, *Flavojulistus muehlei* sp.nov.: 19, aedeagus, ventral view; 23, ditto, lateral view. 20, *Flavojulistus rubricollis* (Abeille): aedeagus, ventral view. 24, 25, *Flavojulistus afghanisticus* sp.nov.: 24, aedeagus, ventral view; 25, ditto, lateral view. 26, 27, *Flavojulistus holzschuhi* sp.nov.: 26, aedeagus, ventral view; 27, ditto, lateral view. 21, *Microjulistus olivaceus* (Pic): aedeagus, ventral view. – dl: dorsal lever; ml: median lobe; tg: tegmen. Scale g: 19, 23; h: 18, 20–22; i: 24–25; j: 26–27.

