Two new species of the net-winged beetle genus *Flagrax* from the Albertine Rift Mountains, Central Africa (Coleoptera: Lycidae)

Два новых вида жуков-краснокрылов рода *Flagrax* из рифтовой долины Альбертин, центральная Африка (Coleoptera: Lycidae)

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Two new species of net-winged beetles, *Flagrax ziminae* **sp. nov.** and *F. vanschuytbroecki* **sp. nov.**, are described from the Albertine Rift (Rwanda and eastern Democratic Republic of the Congo). General view and aedeagi of these new species and of *F. grandis* (Kleine, 1942) as well as the aedeagus of *F. auberti* (Bourgeois, 1881) are illustrated. A key to the *Flagrax* species with uniformly testaceous elytra is provided.

Описываются два новых вида жуков-краснокрылов, *Flagrax ziminae* **sp. nov.** и *F. vanschuytbroecki* **sp. nov.**, из рифтовой долины Альбертин (Руанда и восток Демократической Республики Конго). Проиллюстрированы общий вид и эдеагусы новых видов и *F. grandis* (Kleine, 1942), а также эдеагус *F. auberti* (Bourgeois, 1881). Составлена определительная таблица видов *Flagrax* с одноцветно рыжими надкрыльями.

Key words: net-winged beetles, taxonomy, Afrotropical region, Coleoptera, Lycidae, new species

Ключевые слова: жуки-краснокрылы, таксономия, Афротропическая область, Coleoptera, Lycidae, новые виды

INTRODUCTION

The genus *Flagrax* Kazantsev, 1992, along with *Phaneros* Kazantsev, 1992 and *Aferos* Kazantsev, 1992, was established for the African representatives previously attributed to the Australian genus *Stadenus* Waterhouse, 1878, which in fact turned out to be absent on the African continent, and was transferred from Metriorrhynchini to Erotini (Kazantsev, 1992). Later, *Flagrax* and *Phaneros* were transferred from Erotini to Dictyopterini, and the subtribe Flagraxina was erected for these genera with *Flagrax* as its type genus (Kazantsev, 2004). In 2006 members of *Flagrax* along with the other Afrotropical dictyopterines were reviewed, and a key to all, but one, of its species was presented (Kazantsev, 2006); at that time, eight species were recognized in the genus. Three additional species were described in *Flagrax* several years later (Kazantsev, 2013). Of all *Flagrax* taxa, only two species were known to possess uniformly testaceous elytra, the typical pattern being elytra testaceous proximally and black distally. These two were *F. auberti* (Bourgeois, 1881), the most widespread and common species, which usually is of the regular *Flagrax* coloration pattern and only very rarely has uniformly testaceous elytra, and *F. grandis* (Kleine, 1942). However, in a series of *Flagrax* collected during Sergey and Svetlana Kurbatov's expedition to Nyungwe Forest in southwestern Rwanda, several specimens were discovered that could be referred neither to *F. auberti*, nor to *F. grandis*. A careful examination of the material has revealed

that two new species with uniformly testaceous elytra have yet to be described. The description of these new species is given below, and illustrations of the other two members of the group, *F. auberti* and *F. grandis*, are also provided. To make discrimination of the new species easier, a key to the four species with such coloration pattern is given, although they do not necessarily constitute a natural lineage.

MATERIAL AND METHODS

The studied specimens were glued on cardboard plates. For a detailed examination they were relaxed in water; then the detached ultimate abdominal segments were treated for several hours in 10% KOH at room temperature, then, with the extracted genitalia, placed in microvials with glycerin.

MSP-1 zoom stereoscopic dissecting microscope with x8–x80 magnification range was used. Photographs were taken with a Canon EOS 6D camera and a Canon MP-E 65 mm lens.

The following acronyms are used in the paper: CSK, collection of S.V. Kazantsev (Moscow); IRSN, Institut Royal de Sciences naturelles de Belgique (Bruxelles).

TAXONOMY

Subfamily **EROTINAE** Leconte, 1881

Tribe **DICTYOPTERINI** Houlbert, 1922

Subtribe **FLAGRAXINA** Kazantsev, 2004

Genus ***Flagrax*** Kazantsev, 1992

Type species *Stadenus auberti* Bourgeois, 1881, by original designation.

Diagnosis. *Flagrax* is easily distinguished from other flagraxine genera by the invaginated ultimate male abdominal segments and the structure of the aedeagus which is with free parameres and not fused with the median lobe.

Distribution. The distribution area of *Flagrax* is split into four parts: the first (one species) in Guinea and Sierra Leone; the second (ten species) in the Biafra Gulf and the Congo Basin, it also includes Biafra Gulf islands, such as Bioko (Fernando Poo) and Sao Tome, as well as Uganda and Rwanda in the Albertine Rift; the third (two species) in eastern Tanzania; and the fourth (one species) in South Africa (Natal and Transvaal). *Flagrax auberti*, which occurs in Guinea and Sierra Leone, is also distributed in the second, most species-rich part of the generic area.

Remarks. Bocák & Bocáková (2008) treated *Flagrax* as a member of the tribe Slipinskiini, which is quite different from Dictyopterini in many morphological characters, including the strongly asymmetric phallobase and, unique in the family, conspicuous elytral epipleura (Kazantsev, 2004; 2005). As this treatment was made without any substantiation or explanation whatsoever, it is very questionable and cannot be accepted.

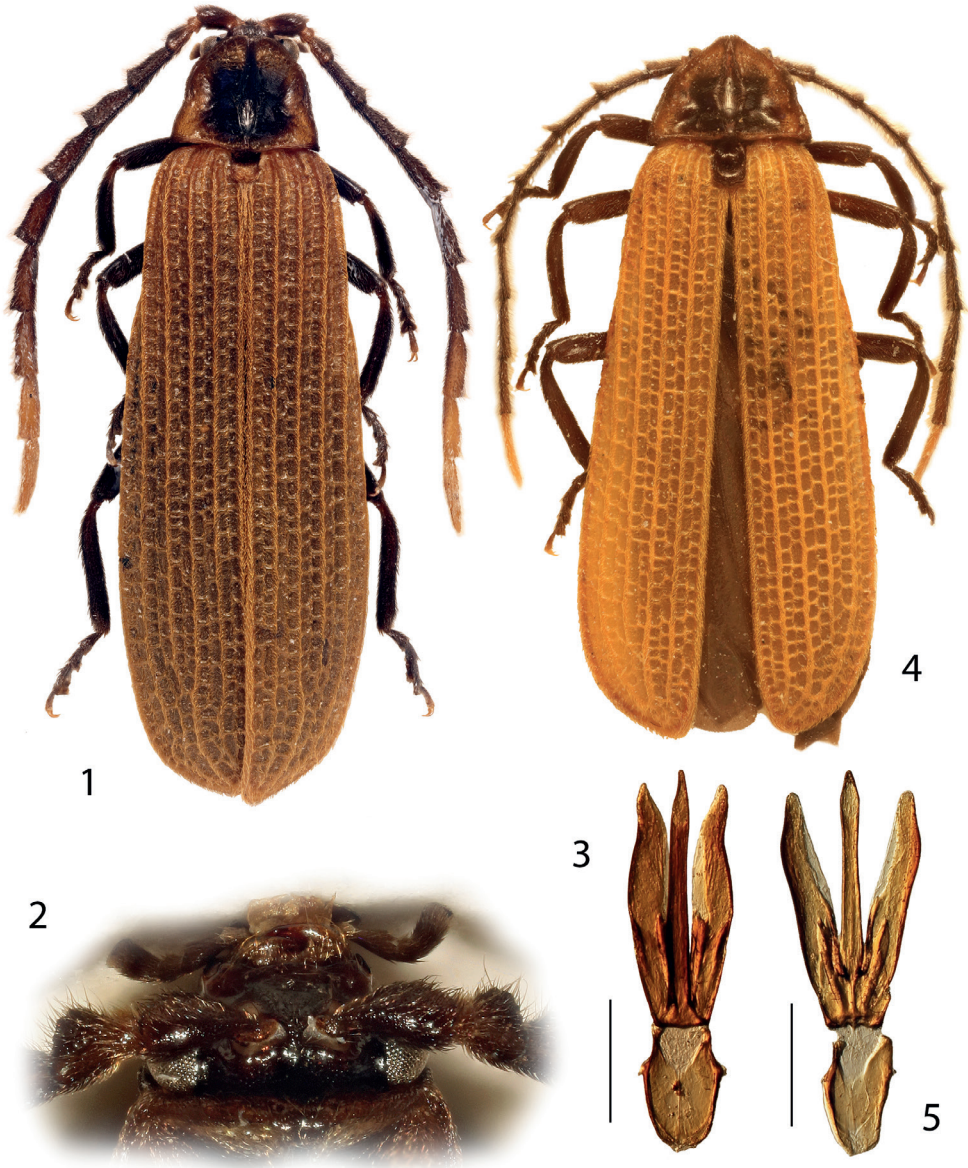
Flagrax ziminae sp. nov.
(Figs 1–3)

Holotype. Male, **Rwanda**, Nyungwe N.P., 1800–2000 m, beating, 4–16.VII.2014, coll. S. Kurbatova (CSK).

Paratypes. Male, **Rwanda**, Nyungwe N.P., Karamba Trail, 1900 m, FIT, 4–16.VII.2014, coll. S. Kurbatov (CSK); female, same data as for holotype (CSK).

Description. Male. Black; scapus proximally, pedicel, antennomere 9, pronotal margins, scutellum distally and elytra light brown; antennomeres 10–11 yellowish.

Vertex flat, scarcely punctate, with transverse impression behind antennal prominence. Eyes small, interocular distance approximately 2.2 times as long as eye diameter. Labrum transverse, well sclerotised, anteriorly rounded and noticeably incised medially. Ultimate palpomeres conspicuously widened distally, oblique and glabrous at apex. Mandibles relatively robust, evenly rounded. Antennal sockets separated by minute lamina, wider at lower edge. Antennae attaining to elytral three



Figs 1–5. *Flagrax*, male holotypes. **1–3,** *F. ziminae* **sp. nov.**; **4, 5,** *F. vanschuytbroecki* **sp. nov.** 1, 4, general view; 2, head; 3, 5, aedeagus. Dorsal view (1, 4), antero-dorsal view (2), ventral view (3, 5). Scale bar: 0.5 mm.

fourths, narrow, feebly dentate; antennomere 3 about three times as long as antennomere 2 and about 0.6 times as long as antennomere 4; pubescence short and semierect (Figs 1, 2).

Pronotum transverse, about 1.3 times as wide as long, trapezoidal, with slightly concave sides, acute posterior and rounded anterior angles; anteriorly triangularly produced forward and narrowly medially emarginate, bisinuate at posterior margin; with oval, relatively narrow median areole, closed both anteriorly and posteriorly; lateral transverse carinae relatively long,

strongly curved; pubescence short and decumbent. Mesothoracic spiracle hoodless, oval at apex, not protruding beyond coxa. Scutellum elongate, parallel-sided, rounded and minutely medially notched at apex (Fig. 1).

Elytra long, 3.5 times as long as wide at humeri, inconspicuously widened distally, with prominent, equally developed primary costae; interstices with regular double rows of mostly elongate cells; pubescence along costae relatively dense and decumbent. Femora and tibiae straight, relatively narrow; tarsomeres 2–4 moderately widened, tarsomeres 3 and 4 combined about 0.7 times as long as tarsomere 5 and subequal in length to tarsomere 2; tarsomeres 1 and 2 with apical plantar pad (Fig. 1).

Ultimate ventrite elongate, densely punctate, with long asymmetric spiculum gastrale; spiculum gastrale slightly longer than relevant ventrite. Aedeagus elongate, with long, narrow, pointed apically, not widened proximally and attaining to parameral bases median lobe; parameres diverging in proximal half; phallobase with median suture and short, but noticeable lateral processes (Fig. 3).

Female. Similar to male, but antennae attaining only to elytral half.

Length 9.0–9.6 mm, width (at humeri) 2.1–2.2 mm.

Comparison. *Flagrax ziminae* **sp. nov.** may be distinguished from the similar in the aedeagal structure *F. grandis* by the brownish pronotal margins, yellow ultimate antennomeres, conspicuously incised labrum and divergent parameres with slightly more robust median lobe of the aedeagus (Figs 1–3). It may be separated from the similarly coloured specimens of *F. auberti* by the structure of the labrum (only moderately concave in *F. auberti*) and conspicuously more elongate aedeagus.

Etymology. The new species is named after Ms. S. Kurbatova (Zimina), one of the collectors of the type series.

Distribution. Known from Rwanda (Albertine Rift Mountains).

Flagrax vanschuytbroecki sp. nov.
(Figs 4, 5)

Holotype. Male, **Congo Belge**: P.N.A., Massif Ruwenzori, Kikyo près Kalonge, 2180 m, 30.VII.1952, P. Vanschuytbroeck & J. Kekenbosch (IRSN).

Description. Male. Black; pronotal margins dull reddish brown; antennomere 11 and elytra orange testaceous.

Vertex flat, scarcely punctate, with shallow triangular impression behind antennal prominence. Eyes small, interocular distance about 2.3 times as long as eye diameter. Labrum transverse, well sclerotized, anteriorly rounded and slightly medially incised. Ultimate palpomeres conspicuously widened distally, oblique and glabrous at apex. Mandibles relatively robust, evenly rounded. Antennal sockets separated by minute lamina, wider at lower edge. Antennae attaining to elytral three fourths, narrow, feebly dentate; antennomere 3 about 3.8 times as long as antennomere 2 and about 0.7 times as long as antennomere 4; pubescence short and erect (Fig. 4).

Pronotum transverse, ca. 1.4 times as long as wide, trapezoidal, with slightly concave sides, acute posterior and rounded anterior angles; anteriorly triangularly produced forward, slightly bisinuate at posterior margin; with oval, relatively narrow median areole, closed both anteriorly and posteriorly; lateral transverse carinae distinguishable only near areole; pubescence short and decumbent. Mesothoracic spiracle hoodless, oval at apex, not protruding beyond coxa. Scutellum elongate, parallel-sided, rounded at apex (Fig. 4).

Elytra long, 3.1 times as long as wide at humeri, slightly widened distally, with prominent, equally developed primary costae; interstices with regular double rows of subquadrate or elongate cells; pubescence along costae relatively dense and decumbent. Femora and tibiae straight, relatively narrow; tarsomeres 2–4 moderately widened, tarsomeres 3 and 4 combined subequal in length to tarsomere 5 and about 1.2

times as long as tarsomere 2; tarsomeres 1 and 2 with apical plantar pad (Fig. 5).

Ultimate ventrite elongate, densely punctate, with long asymmetric spiculum gastrale; spiculum gastrale noticeably longer than relevant ventrite. Aedeagus elongate, with long, narrow, pointed apically, slightly widened proximally and not attaining to parameral bases median lobe; parameres diverging; phallobase without median suture, with inconspicuous lateral processes (Fig. 5).

Female. Unknown.

Length 10.0 mm, width (at humeri) 2.6 mm.

Comparison. *Flagrax vanschuytbroecki* **sp. nov.** may be separated from the similar in the general appearance *F. auberti* by the more elongate aedeagus, with the noticeably narrower and less widened proximally median lobe (Fig. 5).

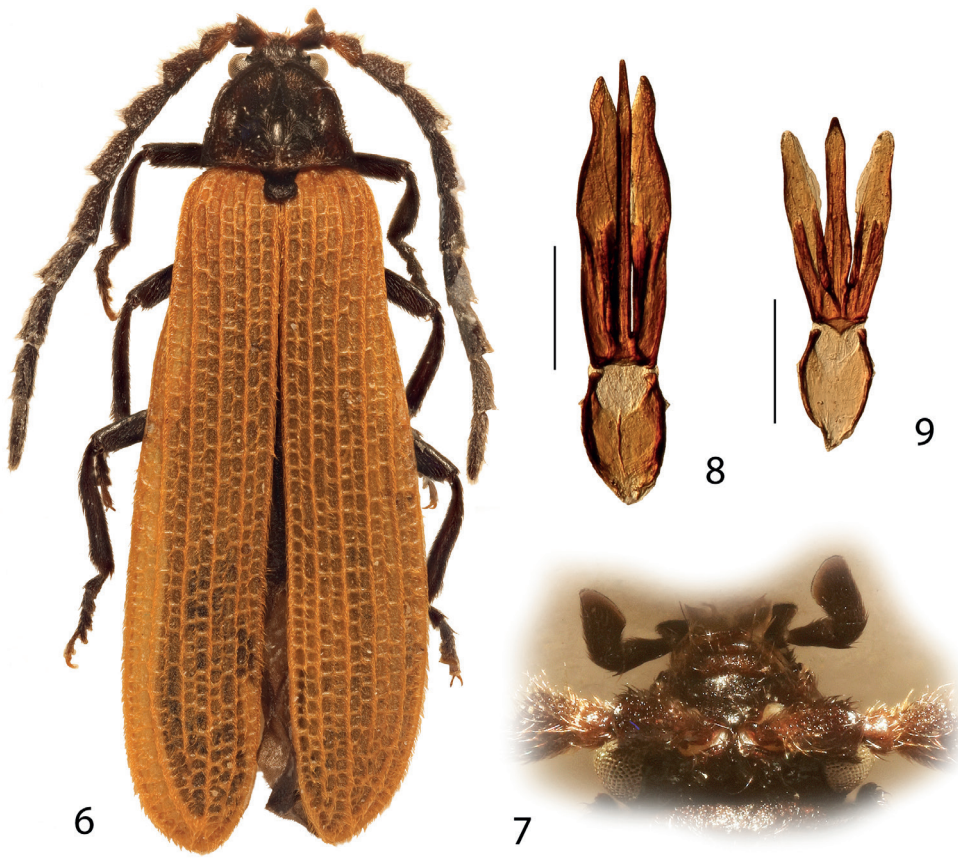
Etymology. The new species is named after Dr P. Vanschuytbroeck, one of the collectors of the type specimen.

Distribution. Known from the eastern Democratic Republic of the Congo (Albertine Rift Mountains).

Remarks. Illustration of the aedeagus of *F. grandis* given by Kazantsev (2006) should actually be referred to this new species (see below).

Flagrax grandis (Kleine, 1942)
(Figs 6–8)

Material examined. **Rwanda**: 2 females, Nyungwe N.P., Karamba Trail, 1900–2100 m, FIT, 3–16.VII.2014, coll. S. Kurbatov (CSK);



Figs 6–9. *Flagrax*, males. **6–8**, *F. grandis*; **9**, *F. auberti*. 6, general view; 7, head; 8, 9, aedeagus. Dorsal view (6), antero-dorsal view (7), ventral view (8, 9). Scale bar: 0.5 mm.

male, same data, but 1800–2000 m, 3–16. VII.2014, coll. S. Kurbatova (CSK); 1 male, 1 female, Nyungwe N.P., Karamba Trail, 2300–2500 m, 3–16.VII.2014, coll. S. Kurbatova (CSK).

Description of male. Similar in habitus to female, but noticeably smaller (length 9.2–10.7 mm) and with antennae slightly narrower. Median lobe of aedeagus (Fig. 8) narrow, with parameres nearly parallel in proximal half.

Distribution. Known from the eastern Democratic Republic of the Congo not far from the border with Rwanda, and Rwanda.

Remarks. *Flagrax grandis* was described from a female from the eastern Congo (Kleine, 1942), and until recently no male specimens of this taxon were known. An illustration of the aedeagus of *F. grandis* given earlier (Kazantsev, 2006) was taken from the male different from the original description and the available females in the yellow ultimate antennomere. At that time it was assumed that antennae in female are uniformly black, whereas in male their coloration may be different. However, all males of *F. grandis* collected in Rwanda in 2014 have antennae uniformly black, similar to those in females. These males completely agree with the original description, but their aedeagus (Fig. 8) proved to be different from that illustrated previously (Kazantsev, 2006); the latter should actually be referred to *F. vanschuytbroecki* **sp. nov.**

A key to the species of *Flagrax* with uniformly testaceous elytra

1. Median lobe of aedeagus widened basally, not reaching proximally bases of parameres; phallobasal median suture absent or inconspicuous (Figs 5, 9) 2
– Median lobe of aedeagus not widened basally, reaching proximally bases of parameres; phallobasal median suture conspicuous (Figs 3, 8) 3
2. In most cases ultimate and half penultimate antennomeres yellowish. Aedeagus relatively short and robust; median lobe robust, conspicuously widened basally (Fig. 9). From West Africa (Guinea, Sierra Leone, Cameroon, etc.) through the Congo (DRC) to Uganda . . . . . ***F. auberti*** (Bourgeois, 1881)
– Only ultimate antennomere distinctly yellowish (Fig. 4). Aedeagus more elongate; median lobe narrower, slightly widened basally (Fig. 5). Eastern Congo (DRC) . . . . . ***F. vanschuytbroecki* sp. nov.**
3. Pronotum and ultimate antennomeres uniformly black (Fig. 6). Anterior margin of labrum nearly truncate anteriorly (Fig. 7). Antennae shorter, attaining approximately to elytral two thirds; antennomere 3 about 0.8 times as long as antennomere 4 (Fig. 6). Median lobe of aedeagus narrow, with parameres nearly parallel in proximal half (Fig. 8). Eastern Congo (DRC), Rwanda . . . . . ***F. grandis*** (Kleine, 1942)
– Pronotum with brownish margins; two ultimate antennomeres yellowish (Fig. 1). Anterior margin of labrum conspicuously incised (Fig. 2). Antennae longer, attaining approximately to elytral three fourths; antennomere 3 about 0.6 times as long as antennomere 4 (Fig. 2). Median lobe of aedeagus broader, with parameres diverging in proximal half (Fig. 3). Rwanda . . . . . ***F. ziminae* sp. nov.**

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