Far Eastern Entomologist

Number 387: 7-32 ISSN 1026-051X August 2019

https://doi.org/10.25221/fee.387.2
http://zoobank.org/References/09E157F9-8A9E-40E5-86A7-2AC749483A60

NEW SPECIES AND NEW RECORDS OF *LICHTWARDTIA* ENDERLEIN, 1912 (DIPTERA: DOLICHOPODIDAE) FROM TROPICAL AFRICA

I. Ya. Grichanov

All-Russian Institute of Plant Protection, Podbelskiy roadway, 3, St. Petersburg, Pushkin 196608 Russia. E-mail: grichanov@mail.ru

Summary. New data on the Afrotropical species of the genus *Lichtwardtia* Enderlein, 1912 are given. *Lichtwardtia dianaensis* **sp. n.** from Madagascar, *L. oromiaensis* **sp. n.** and *L. musolini* **sp. n.** from Ethiopia, *L. nikitai* **sp. n.** from Tanzania and *L. ghanaensis* **sp. n.** from Ghana are described. New species differ from other representatives of the genus in morphology of male genitalia mainly. *L. microlepis* (Parent, 1939), **nom. resurr.** is raised from synonymy and diagnosed. *L. minuscula* (Parent, 1934) is redescribed. *L. aethiopica* (Bezzi, 1906) described originally from Eritrea is also redescribed and found for the first time in Ethiopia. *L. fractinervis* (Parent, 1929) is found for the first time in Burundi, Ethiopia, Tanzania and Zambia, *L. angularis* (Macquart, 1842) in Guinea-Bissau, *L. nikolaevae* Grichanov, 1998 in Zambia, *L. tikhonovi* Grichanov, 1998 in South Africa. A revised key for males of 23 Afrotropical *Lichtwardtia* species is compiled. Remarks are also given on the closely related *Dolichopus afroungulatus* Grichanov, 2004, the only native Afrotropical species of the mainly Holarctic genus *Dolichopus* Latreille, 1796.

Key words: Diptera, Dolichopodidae, Dolichopodinae, new species, new records, key, Africa, Madagascar.

И. Я. Гричанов. Новые виды и новые находки *Lichtwardtia* Enderlein, 1912 (Diptera: Dolichopodidae) в тропической Африке // Дальневосточный энтомолог. 2019. N 387. С. 7-32.

Резюме. Приводятся новые сведения по афротропическим видам рода *Lichtwardtia* Enderlein, 1912. Описаны новые виды *Lichtwardtia dianaensis* **sp. n.** с Мадагаскара, *L. oromiaensis* **sp. n.** и *L. musolini* **sp. n.** из Эфиопии, *L. nikitai* **sp. n.** из Танзании и *L. ghanaensis* **sp. n.** из Ганы. Новые виды отличаются от других представителей рода, главным образом, по морфологии гениталий самцов. *L. microlepis* (Parent, 1939), **nom. resurr.** восстановлен из синонимов. *L. minuscula* (Parent, 1934) переописан. *L. aethiopica* (Bezzi, 1906), описанный из Эритреи, также переописан и впервые указан для Эфиопии. *L. fractinervis* (Parent, 1929) отмечен впервые в Бурунди, Замбии, Танзании и Эфиопии, *L. angularis* (Macquart, 1842) в Гвинее-Бисау, *L. nikolaevae* Grichanov, 1998 в Замбии, *L. tikhonovi* Grichanov, 1998 в Южной Африке. Составлен новый определитель для самцов 23 видов *Lichtwardtia* тропической Африки. Приведены заметки о *Dolichopus afroungulatus* Grichanov, 2004 – единственном эндемичном афротропическом виде преимущественно голарктического рода *Dolichopus* Latreille, 1796, наиболее близкого к *Lichtwardtia*.

INTRODUCTION

Brooks (2005) relegated *Lichtwardtia* Enderlein, 1912 to a species-group of *Dolichopus* Latreille, 1796 (*i.e.*, the *Dolichopus ziczac*-group); however, this synonymy has not generally been followed by subsequent authors treating Afrotropical and Oriental species of this distinct lineage. Species of this group are easily recognised by the angular, seemingly broken, zigzag-shaped bend in wing vein M_{1+2}, with anteroproximal and posterodistal stump veins (Grichanov, Brooks, 2017), having also long hairs on the apical segment of the arista-like stylus and characteristic male genitalia. This group, with 39 known species is restricted to the Old World tropics (including 14 Oriental and 2 Australasian species) and is most diverse in the Afrotropics with 23 described species (Grichanov, 2017b, 2018; Tang *et al*., 2018; this paper). An identification key to Afrotropical species was provided by Grichanov (2004). Later a new species *Lichtwardtia aldabrensis* has been described from the Aldabra Island (Meuffels & Grootaert, 2007), new records and new illustrations for some species of the regional fauna have been published (Brooks, 2005; Grichanov *et al*., 2006; Grichanov & Urban, 2009; Grichanov, 2011a, b; Grichanov *et al*., 2011a, b; Grichanov & Brooks, 2017). *L. angularis* (Macquart, 1842) and *L. fractinervis* (Parent, 1929) have the widest distribution in the region. In Afrotropics, species of the genus occur all over the continent, on Aldabra Island (Seychelles) and Madagascar.

In this paper, five new species of *Lichtwardtia* from Ethiopia, Ghana, Madagascar and Tanzania are described, a revised key for males of 23 Afrotropical species is compiled, as well as new data on distribution and synonymy are given.

MATERIAL AND METHODS

Material cited in this work is housed at the National Museum, Bloemfontein, South Africa (BMSA), the Natal Museum, Pietermaritzburg, Kwa-Zulu Natal, South Africa (NMSA), the Natural History Museum, London (NHML), the Hungarian Natural History Museum, Budapest (HNHM), the Zoological Institute of the Russian Academy of Sciences, St. Petersburg (ZIN) and the Zoological Museum of Moscow State University, Moscow, Russia (ZMUM). Specimens have been studied and photographed with a ZEISS Discovery V-12 stereo microscope and an AxioCam MRc5 camera. Genitalia preparations have been photographed with a ZEISS Axiostar stereo microscope and an AxioCam ICc3 camera. Morphological terminology and abbreviations follow Cumming & Wood (2017) and Grichanov & Brooks (2017). The crossvein mentioned below as *m-m* is most probably a basal part of M_2. The relative lengths of the antennomeres and podomeres should be regarded as representative ratios and not measurements. Body length is measured from the base of antenna to the tip of abdominal segment 6. Wing length is measured from the base to the wing apex. The figures showing the hypopygium in lateral view are oriented as it appears in the intact specimens, with the morphologically ventral surface of the genitalia facing upwards, dorsal surface downwards, anterior end facing left and posterior end facing right.

TAXONOMY

Genus *Lichtwardtia* Enderlein, 1912

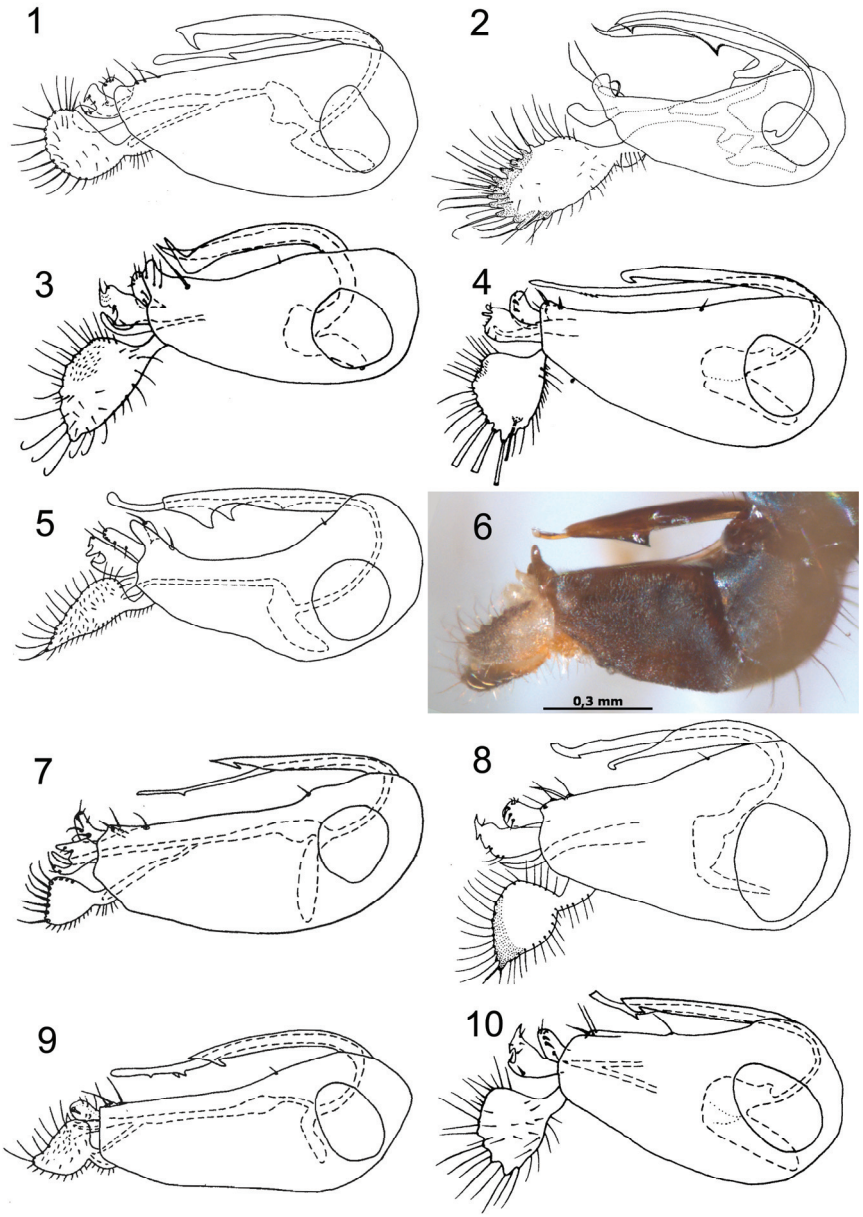
Lichtwardtia Enderlein, 1912: 406. Type species: *Lichtwardtia formosana* Enderlein, 1912, by original designation.

Vaalimyia Curran, 1926: 398. Type species: *Vaalimyia violacea* Curran, 1926 [=*Dolichopus angularis* Macquart, 1842], by original designation.

NOTES. See Grichanov (2004) and Yang *et al*. (2011) for diagnosis of the genus *Lichtwardtia*. Males differ from females usually in such male secondary sexual characters (MSSC) as variously coloured face (partly or mostly metallic, matt black, densely white or yellow pollinose), sometimes modified podomeres or wing costa. Females of close species are practically indistinguishable (Tang *et al*., 2018).

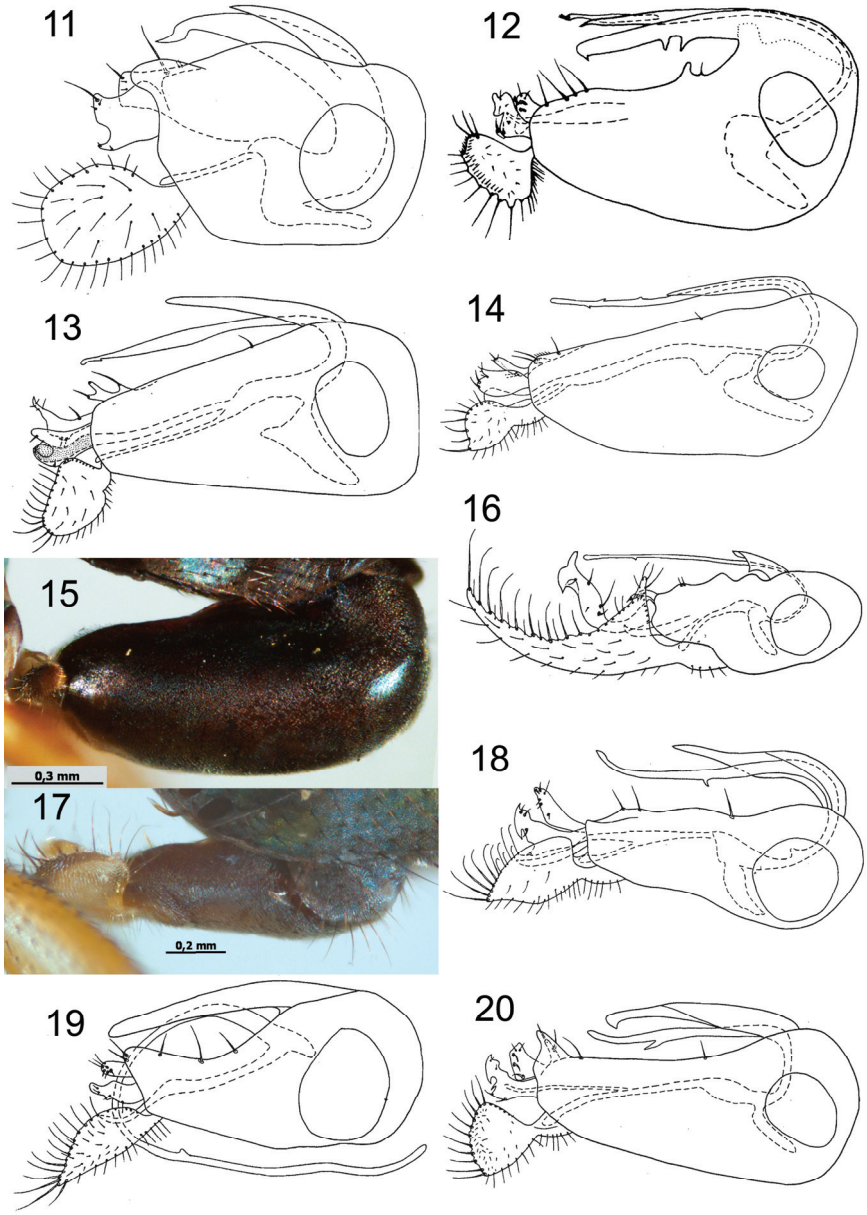
Key to Afrotropical species (males)

1. At least hind femur and tibia mostly blackish-brown, or all femora blackish-brown dorsally 2
– Femora and tibiae yellow; rarely hind tibia blackish in distal 1/3 or all tibiae partly blackish 3
2. Wing distinctly maculated at M_2 and *dm-m*; postpedicel usually 1.5-2 times longer than high, with drawn-out or acute apex; cercus rounded, as long as high; hypandrium with strong dorsal tooth (Fig. 1); 3.5-4.5 mm ..... *L. angularis* (Macquart)
– Wing almost evenly fumose; postpedicel rounded, as long as high; cercus twice as long as high; hypandrium simple, without dorsal tooth (Fig. 21); 3-4 mm ... *L. aethiopica* (Bezzi)
3. Postocular setae entirely black 4
– Lower postoculars white 6
4. Costa with long and broad thickening in basal half of wing; epandrium about as long as high (Fig. 11); 1.8 mm ..... *L. mironovi* Grichanov
– Costa simple or with punctiform thickening at R_1; epandrium about 2 times as long as high; larger species 5
5. Face mostly mat-black, clypeus silvery-white pollinose; all tibiae partly blackish on dorsal side; hypandrium with 3 dorsal teeth (Fig. 12); 4.8 mm ..... *L. nigrifacies* Grichanov
– Face almost entirely white pollinose, metallic under antennae only; tibiae entirely yellow; hypandrium without dorsal teeth (Fig. 3); 2.8 mm ..... *L. angulicornis* Grichanov
6. Last two segments of hind tarsus dilated; cercus triangular, longer than epandrium, with long pointed apex (Fig. 16); 2.6-3.4 mm ..... *L. sukharevae* Grichanov
– Hind tarsus simple; cercus smaller, usually rounded or oval, at most 1/3 as long as epandrium 7
7. Face mostly metallic or matt brown-black, more or less strongly white pollinose on clypeus 8
– Face densely white pollinose, rarely metallic shining under antenna 11
8. Face mostly matt brown-black (Fig. 61); 3.3 mm ..... *L. oromiaensis* **sp. n.**
– Face mostly metallic 9
9. Wing with wide grey limb along margins, maculated at M_2 and *dm-m*; distoventral epandrial lobe reduced; hypandrium with dorsal tooth (Fig. 10); 2.6-3.0 mm .... *L. maculata* (Parent)
– Wing evenly greyish, without spots; distoventral epandrial lobe bifurcated; hypandrium without tooth 10
10. Cercus with distodorsal emargination; cercus covered with white hairs (Figs 22, 29); 2.9 mm ..... *L. dianaensis* **sp. n.**
– Cercus without distodorsal emargination, with black setae along distal margin (Fig. 13); 3.0 mm ..... *L. nigrotorquata* (Parent)
11. Hind basitarsus with 1 reduced dorsal seta, at most 1/3 as long as basitarsus; cercus usually elongate-oval, twice longer than wide, with acute apex; or subtriangular, as long as wide 12
– Hind basitarsus with 1 strong dorsal seta, half as long as basitarsus; cercus usually rounded or subtriangular, at most 1.5 times longer than wide, rarely with distinct apex 15



Figs 1–10. *Lichtwardtia* spp., hypopygium, left lateral view. 1 – *L. angularis* (Macquart); 2 – *L. aldabrensis* Meuffels & Grootaert; 3 – *L. angulicornis* Grichanov; 4 – *L. clypeata* Grichanov; 5, 6 – *L. emelyanovi* Grichanov; 7 – *L. fractinervis* (Parent); 8 – *L. hilgerae* Grichanov; 9 – *L. hollisi* Grichanov; 10 – *L. maculata* (Parent). (Figs 1, 5, 7, 9, after Grichanov, 1998; fig. 2, after Meuffels & Grootaert, 2007; figs 3, 4, 8, 10, after Grichanov, 2004).

12. Distal part of M_{1+2} (from *dm-m* to *m-m*) 1/2 to 2/3 as long as distal part of M_1 (from *m-m* to costa); 2.3-2.5 mm 13
– Distal part of M_{1+2} 1/3 as long as distal part of M_1; 2.6-3.0 mm 14
13. Cercus apically broad and subquadrate (Figs 23, 30); 2.3-2.5 mm ... *L. minuscula* (Parent)
– Cercus apically narrow and pointed (Fig. 19); 2.4 mm ..... *L. ghanaensis* **sp. n.**
14. Face about 4 times higher than wide; palpus with light hairs; cercus elongate-oval, twice longer than wide, with acute apex (Figs 5, 6); 2.6 mm ..... *L. emelyanovi* Grichanov
– Face about 6 times higher than wide; palpus with black hairs; cercus rounded-subtriangular, as long as wide (Figs 25, 32); 3.0 mm ..... *L. nikitai* **sp. n.**
15. Fore tibia with one strong and long posterior seta, at least twice longer than diameter of tibia; distoventral epandrial lobe undeveloped, with epandrial setae raising from epandrium 16
– Fore tibia with one fine posterior seta, not longer or slightly longer than diameter of tibia; distoventral epandrial lobe digitiform, though often concealed, bearing 2 setae 20
16. Wing distinctly maculated at M_2 and *dm-m*; postpedicel 1.5-2 times longer than high; postgonite broad and rounded at apex; cercus rounded or oval, without distinct apex (Fig. 1); 3.5-4.5 mm ..... *L. angularis* (Macquart)
– Wing evenly greyish or slightly infumated at M_2 and *dm-m*; postgonite usually narrow and pointed at apex; cercus usually with distinct distodorsal apex 17
17. Postpedicel 1.5 times longer than high; hind tibia yellow; costa with punctiform thickening at apex of R_1; hypandrium with dorsal subapical tooth; ventral lobe of surstylus broad, with long basoventral seta and long thick apical spine directed basad (Fig. 9); 4.2 mm .... *L. hollisi* Grichanov
– Postpedicel as long as high; costa simple 18
18. Hind tibia blackened in distal 1/3; hypandrium with dorsal apical tooth; ventral lobe of surstylus broad, with long basoventral seta and long thick apical spine directed basad (Fig. 8); 4.2 mm ..... *L. hilgerae* Grichanov
– Hind tibia yellow, at most blackish at apex 19
19. Hypandrium without tooth, pointed at apex; ventral lobe of surstylus narrow, with short setae (Figs 17, 18); 3.7 mm ..... *L. tikhonovi* Grichanov
– Hypandrium with worm-like apical process behind small dorsal tooth (Fig. 24); ventral lobe of surstylus broad; 3.3 mm ..... *L. musolini* **sp. n.**
20. Wing with wide grey limb along margins, maculated at M_2 and *dm-m*; epistome metallic green under antennae, with broad metallic longitudinal stripe in middle; male postpedicel at least 2 times longer than high; 2.6-3.0 mm ..... *L. maculata* (Parent)
– Wing evenly greyish, without spots; face entirely pollinose; postpedicel no more than 1.5 times longer than high 21
21. Costa with long stigma at R_1; face 10 times higher than its minimal width; cercus with several blunt flat setae at apex (Fig. 4); 2.8 mm ..... *L. clypeata* Grichanov
– Costa simple or with punctiform thickening at R_1; face usually 3.5-4 times higher than wide; cercus with simple setae 22
22. Cercus half as long as epandrium, serrate distally; hypandrium with 2 strong dorsal teeth (Fig. 2); 2.3-2.8 mm ..... *L. aldabrensis* Meuffels et Grootaert
– Cercus at most 1/3 length of epandrium, with even margins 23
23. Cercus 1/5 to 1/3 length of epandrium, regularly triangular; hypandrium with 1 dorsal tooth; ventral surstylus leaflike, with strong lateral setae 24
– Cercus 1/10 length of epandrium 25



Figs 11–20. *Lichtwardtia* spp., hypopygium, left lateral view. 11 – *L. mironovi* Grichanov; 12 – *L. nigrifacies* Grichanov; 13 – *L. nigrotorquata* (Parent); 14, 15 – *L. nikolaevae* Grichanov; 16 – *L. sukharevae* Grichanov; 17, 18 – *L. tikhonovi* Grichanov; 19 – *L. ghanaensis* **sp. n.**; 20 – *L.* sp. A (Figs 11, 13, 14, 16, 18, 20, after Grichanov, 1998; fig. 12, after Grichanov, 2004).

24. Hypandrium with rounded apex; epandrium strongly projected apicoventrally (Fig. 20) ... . *L.* sp. A
– Hypandrium with pointed apex; epandrium without apicoventral projection (Fig. 7); 2.7-3.2 mm ..... *L. fractinervis* (Parent)
25. M_4 1.4-1.6 times longer than *dm-m*; antenna orange-yellow with postpedicel blackish distally; postpedicel as long as high, not pointed at apex; cercus as long as high; postgonite spoon-like (Figs 14-15); 2.6 mm ..... *L. nikolaevae* Grichanov
– M_4 as long as *dm-m*; antenna entirely yellow, slightly darker at apex; postpedicel distinctly longer than high, with pointed apex; cercus higher than long (after Parent, 1939); 2.75 mm ..... *L. microlepis* (Parent)

Descriptions and new records

***Lichtwardtia aethiopica* (Bezzi, 1906)**
Figs 21, 28, 34, 42, 52, 62

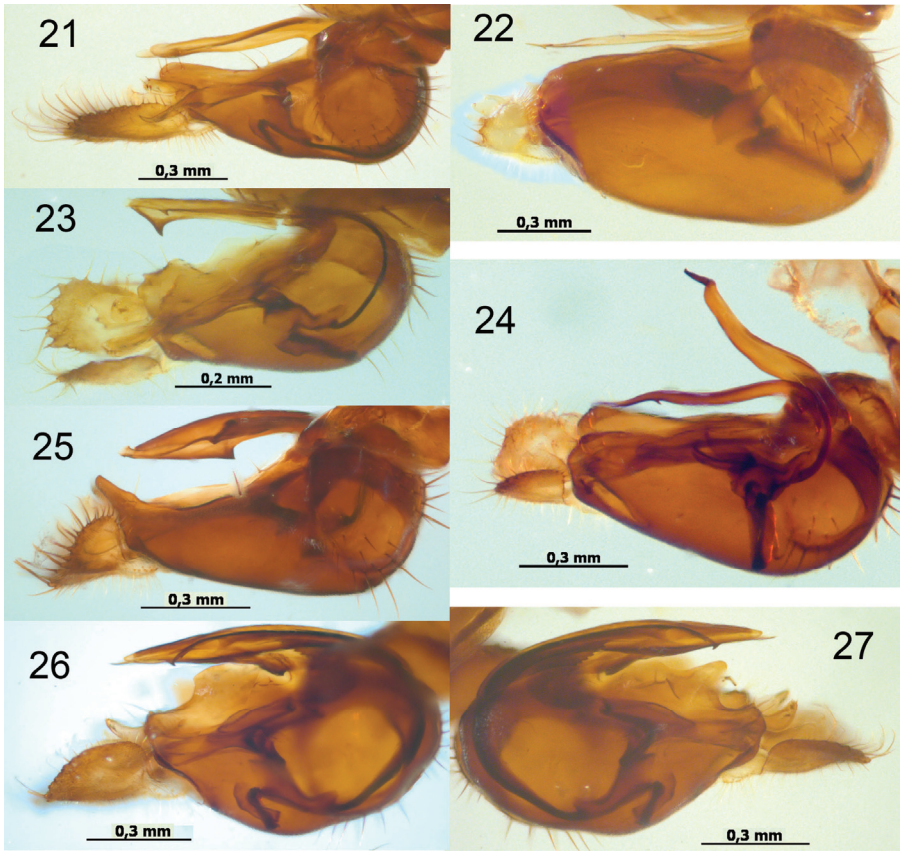
MATERIAL EXAMINED. **Ethiopia**: Oromia, Debre Libanos, 9.732°N, 38.816°E, 2500 m, 29–30.VII 2012, 2♂, N. Vikhrev [ZMUM].

DIAGNOSIS. Male. Head. Face grey-brown on upper part, whitish grey in middle, white pollinose on clypeus; face almost parallel-sided, narrowest at upper third; ratio of its minimal width to height 12/35; clypeus bulging, slightly convex ventrally, not reaching lower margin of eyes; lower postocular setae white; antenna mostly orange-yellow; postpedicel black in distal half, rounded, as long as high, slightly angular apicodorsally; length ratio of scape to pedicel to postpedicel to stylus (1st and 2nd segments), 14/12/16/11/40; palpus grey-yellow, with black hairs and setae.

Legs bicolorate; fore coxa brown, mid coxa black with yellow apex, hind coxa brown with black spot in middle; femora mostly black with yellow apices, or all femora mostly yellow, broadly black dorsally; fore and mid tibiae dirty yellow; hind tibia black or dirty yellow with black apex; fore and mid tarsi black from tip of basitarsus; hind tarsus black; femora without long hairs; fore tibia with 1 strong anterodorsal, 1 strong and 1 short posterodorsal setae, 1 posteroventral seta, about 2 times longer than diameter of tibia, 3 strong apical setae; mid tibia with 3 anterodorsal, 2 posterodorsal, 1 anteroventral and 5 apical setae; hind tibia simple, with 3 anterodorsal, 3 posterodorsal, 3-4 short ventral, 3 apical setae; hind basitarsus with 1 basoventral, 1 apical short setae, 1 strong dorsal seta, half as long as basitarsus. Tibia and tarsomere (from first to fifth) length ratio: fore leg: 88/40/19/ 16/12/15, mid leg: 119/59/32/27/17/18, hind leg: 141/51/58/41/26/22.

Wing evenly greyish, inconspicuously darker along veins; costa simple; ratio of part of costa between R_{2+3} and R_{4+5} to this between R_{4+5} and M_{1+2}, 33/26; ratio of distal part of M_1 to *m-m* to distal part of M_{1+2} to *dm-m* to distal part of M_4, 73/11/48/35/44; lower calypter yellow, with black setae; halters grey-yellow.

Abdomen with 8th segment black; epandrium black, as long as 3rd-5th tergites combined, 2 times longer than high, swollen basally, narrowed distad, concave ventrally, projected and rounded distoventrally; hypandrium basoventral, reaching apex of epandrium, without teeth. Phallus thin and long, simple; one epandrial seta far from base of hypandrium; 3 strong epandrial setae on distoventral projection; epandrial lobe absent; surstylus yellow, bilobate; ventral lobe narrow, fingerlike, with 2 thick spines and 3 simple setae; dorsal lobe of surstylus broad, longer than ventral lobe, half as long as cercus, with apical projection and shallow distal emargination, with several subapical setulae; postgonite narrow, pointed at apex; cercus dirty yellow, black distally, elongate-ovate, 2 times longer than wide, serrate along distal margin, with straight cilia hooked at apex.



Figs 21–27. *Lichtwardtia* spp., hypopygium after maceration, left (21–26) and right (27) lateral view. 21 – *L. aethiopica* (Bezzi); 22 – *L. dianaensis* **sp. n.**; 23 – *L. minuscula* (Parent); 24 – *L. musolini* **sp. n.**; 25 – *L. nikitai* **sp. n.**; 26, 27 – *L. oromiaensis* **sp. n.**

MEASUREMENTS (in mm). Body length 2.9; antenna length 0.8; wing length 3.1; wing width 1.1; hypopygium length 1.2.

DISTRIBUTION. Type locality: Eritrea: "Dintorni di Adi Ugri" (=Mendefera, ~2000 m a.s.l.). DR Congo (?), Eritrea. New for Ethiopia.

NOTES AND DIAGNOSIS. *L. aethiopica* is remarkable in having femora mostly or partly black. One of the two males examined is somewhat darker than another male, with mainly black femora. Specimens described by Bezzi (1906) have mainly yellow femora, being a little smaller (3 vs. 3.5-4 mm). The other species of the genus have entirely yellow femora, though I saw a *L. angularis* phenotype with partly black femora, differing from *L. aethiopica* in distinctly maculated wing at M_2 and *dm-m* veins; postpedicel usually 1.5-2 times longer than high, with drawn-out or acute apex; and in morphology of hypopygium.

***Lichtwardtia angularis* (Macquart, 1842)**
Fig. 1

MATERIAL EXAMINED. **Guinea-Bissau**: Bafatá: Bafatá, 8–10.XI 2004, Malaise trap, 1♂, N. Jönsson (ZIN); **Namibia**: Katima Mulilo Distr., Mavunje campsite at: 17°55.141' S, 23°19.073' E, 22-26.XI 2012, 945 m, A.H. Kirk-Spriggs, Malaise trap, Kwando River floodplain; Katima Mulilo Distr., Kalizo Lodge area at: 17°32.806' S, 24°33.829' E, 14-17.XI 2012, 941 m, A.H. Kirk-Spriggs, Malaise trap, open savanna floodplain (totally 31♂, 13♀) [BMSA]; **South Africa**: RSA: KZN, Royal Natal Nature Park, Mahai Campsite are at: 28°41.386'S, 28°56.288'E, 17–18.II 2010, 1♂, 3♀, A.H. Kirk-Spriggs / Malaise trap (1), straddling Mahai River [BMSA]; OFS, Bethlehem Dist., Avondrust. 28°28'S, 28°41'E, 24–27.IX 1994, 1♂, Ent. Dept. [BMSA]; **Zambia**: Mumbwa Distr., Kafue National Park, Mayukuyuku camp area at: 14°54.898'S, 26°03.820'E, 3–5.XII 2012, 1081 m, 1♂, A.H. & M.K. Kirk-Spriggs, Malaise trap, Central Zambezian Miombo woodlands [BMSA].

DISTRIBUTION. Type locality: Senegal. Botswana, DR Congo, Ethiopia, Gabon, Gambia, Ivory Coast, Kenya, Mozambique, Namibia, Nigeria, Senegal, South Africa, Swaziland, Tanzania, Uganda, Zambia. A new species for Guinea-Bissau.

***Lichtwardtia dianaensis* Grichanov, sp. n.**
http://zoobank.org/NomenclaturalActs/5BD43001-F458-4171-87E1-F87ADEBD91DB
Figs 22, 29, 35, 36, 43, 53, 54, 63

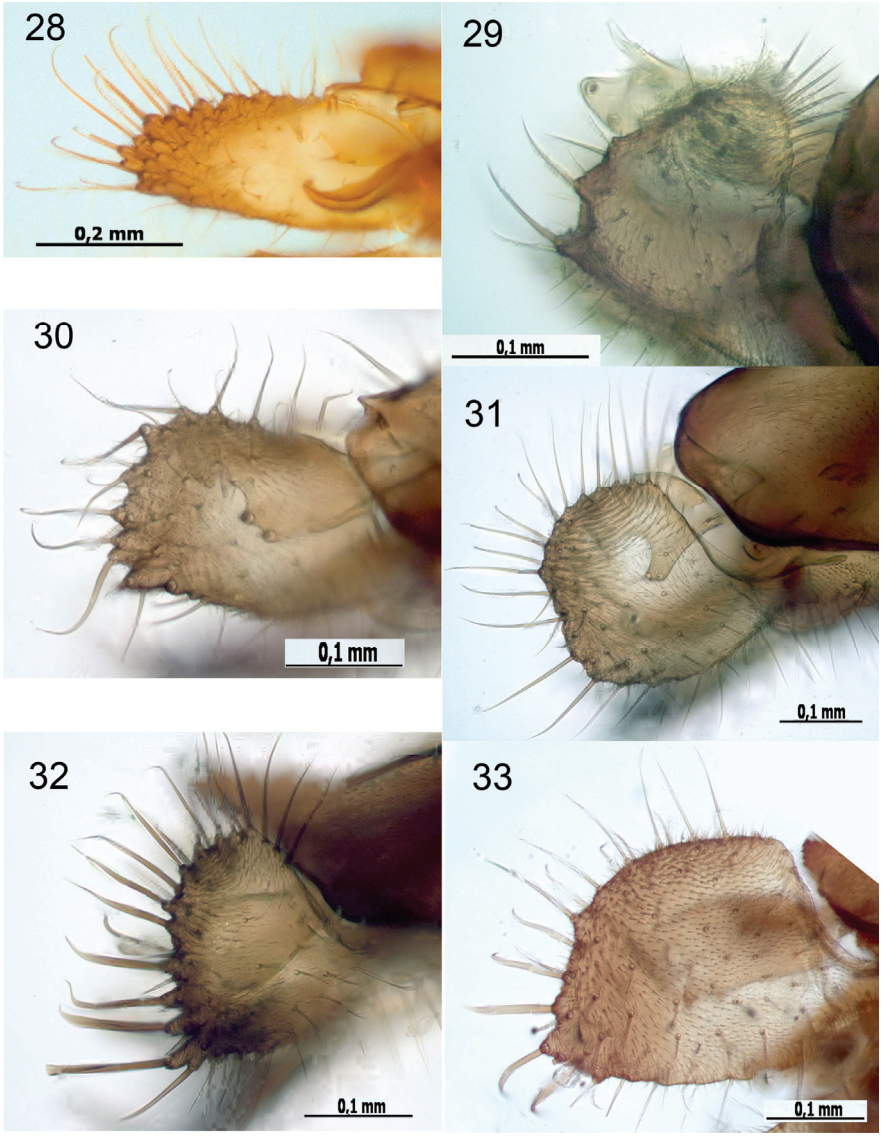
TYPE MATERIAL. Holotype – ♂, **Madagascar**: Province Antsiranana, Reserve Special d'Ankarana, 2.6 km E Andrafiabe, 12°57.523'S, 49°7.189'E, 4–6.I 2007, light trap, A.H. Kirk-Spriggs [BMSA]. Paratypes: 9♂, 6♀, same label, Malaise trap or light trap [BMSA].

DESCRIPTION. Male. Head. Frons metallic greenish blue, weakly pollinose; face mostly metallic bluish green, often with copper reflection (anterior view), white pollinose along lateral and ventral margins of clypeus; one strong vertical, one short postvertical, a pair of strong ocellar setae present; lower postocular setae white; ventral postcranium with 2 long black setae and several light cilia; eyes with short hairs; face glabrous; face almost parallel-sided, narrowest at upper third, slightly widening at clypeus; clypeus with small triangular projection ventrally in middle, slightly bulging, not reaching lower margin of eyes; ratio of its minimal width to height 15/45; antenna yellow; postpedicel yellow-grey in distal half, subtriangular, as long as high, right-angular apicodorsally, with short hairs; arista-like stylus middorsal, yellow-brown, sparsely pubescent, with hairs 2-4 times longer than basal diameter of stylus; length ratio of scape to pedicel to postpedicel to stylus (1st and 2nd segments), 13/8/ 16/12/44; palpus and proboscis yellow, with short light hairs; palpus slightly enlarged, with 1 short seta.

Thorax. Mesonotum metallic dark-blue-violet, weakly brownish pollinose; pleura greenish-black, whitish pollinose; 5 strong dorsocentral setae with several microscopic hairs in front of the 1st pair, 2 rows of short acrostichals; proepisternum with 1 strong black seta above fore coxa and several short hairs; scutellum with 2 strong setae and 2 very short lateral hairs.

Legs mostly yellow; fore coxa yellow, mid coxa black, hind coxa yellow-brown; apical segments of fore tarsus brown; mid and hind tarsi black from tip of basitarsus; femora without long hairs; fore coxa with black hairs and several long apical setae; fore tibia with 1 minute anterodorsal, 1 posterior seta, about as long as diameter of tibia, 1 short and 1 long and fine posteroventral apical setae; fore tarsus simple, fore basitarsus with short basoventral seta; mid femur with 1 subapical anterior seta; mid tibia with 2 anterodorsal, 2 posterodorsal, 1 anteroventral and 5 apical setae; hind femur with one anterodorsal prepapical seta; hind tibia

simple, with 3-5 anterodorsal, 3 posterodorsal, 1 row of short ventral, 2-3 apical setae; hind basitarsus with 1 basoventral, 1 apical short setae, 1 strong dorsal seta, nearly half as long as basitarsus. Tibia and tarsomere (from first to fifth) length ratio: fore leg: 86/40/19/14/8/12, mid leg: 115/58/28/24/16/14, hind leg: 123/46/51/29/24/18.



Figs 28–33. *Lichtwardtia* spp., male cercus after maceration, outer view. 28 – *L. aethiopica* (Bezzi); 29 – *L. dianaensis* **sp. n.**; 30 – *L. minuscula* (Parent); 31 – *L. musolini* **sp. n.**; 32 – *L. nikitai* **sp. n.**; 33 – *L. oromiaensis* **sp. n.**

Wing evenly greyish; costa simple; R_1 reaching to first third of wing; R_{2+3} and R_{4+5} straight, slightly divergent at apex; ratio of part of costa between R_{2+3} and R_{4+5} to this between R_{4+5} and M_{1+2}, 30/23; M_{1+2} broken in middle of distal part, joining costal vein just before wing tip; R_{4+5} and distal part of M_1 parallel; crossveins *m-m* and *dm-m* straight, almost perpendicular to corresponding longitudinal veins; ratio of distal part of M_1 to *m-m* to distal part of M_{1+2} to *dm-m* to distal part of M_4, 83/9/41/30/33; anal vein distinct, almost reaching to wing margin; anal lobe well developed; anal angle obtuse; lower calypter yellow, with black setae; halters yellow.

Abdomen metallic bronze-black, grey pollinose, with black hairs and marginal setae; 8th segment black, with sparse black hairs; epandrium black, enlarged, nearly as long as 1st-6th tergites combined, 2 times longer than high, swollen basally, slightly narrowed distad, convex ventrally, rounded distally; hypandrium basoventral, narrow, half as long as epandrium, without teeth; phallus thin and long, with 2 rather small teeth at apex; one small epandrial seta at base of hypandrium; epandrial lobe small, fingerlike, with 2 apical setae; surstylus yellow, bilobate; ventral lobe narrow, fingerlike, with 1 thick spine and 2 simple setae; dorsal lobe of surstylus broad, longer than ventral, as long as cercus, with apicoventral and apicodorsal projections and distal emargination, with several short subapical setulae; postgonite short, narrow, shorter than surstylus; cercus yellow, narrowly black along margin, very small, rounded-oval, wider than long, with distodorsal emargination, with straight white cilia not longer than diameter of cercus.

MEASUREMENTS (in mm). Body length 2.9; antenna length 0.7; wing length 2.9; wing width 1.0; hypopygium length 1.3.

Female. Similar to male except lacking MSSC. Face mostly metallic blue, grey pollinose on clypeus; palpus yellow, with brown and yellow hairs. Podomeres (from tibia to fifth tarsomere) length ratio: fore leg: 94/45/18/14/11/13, mid leg: 125/64/33/25/18/14, hind leg: 140/50/51/33/26/22.

DISTRIBUTION. Madagascar.

ETYMOLOGY. The name of the species belongs to the Diana Region of Madagascar at the most northerly part of the Island including the type locality for the new species.

DIAGNOSIS. The new species is remarkable in bearing long and fine posteroventral apical seta on fore tibia (MSSC). Having mostly metallic male face, it keys to *L. nigrotorquata*, differing in cercus with distodorsal projection covered with short white cilia (see key above). Femora and tibiae yellow; lower postoculars white; hind tarsus simple; wing evenly greyish, without spots; distoventral epandrial lobe fingerlike; hypandrium without tooth.

***Lichtwardtia emelyanovi* Grichanov, 1998**
Figs 5, 6, 44

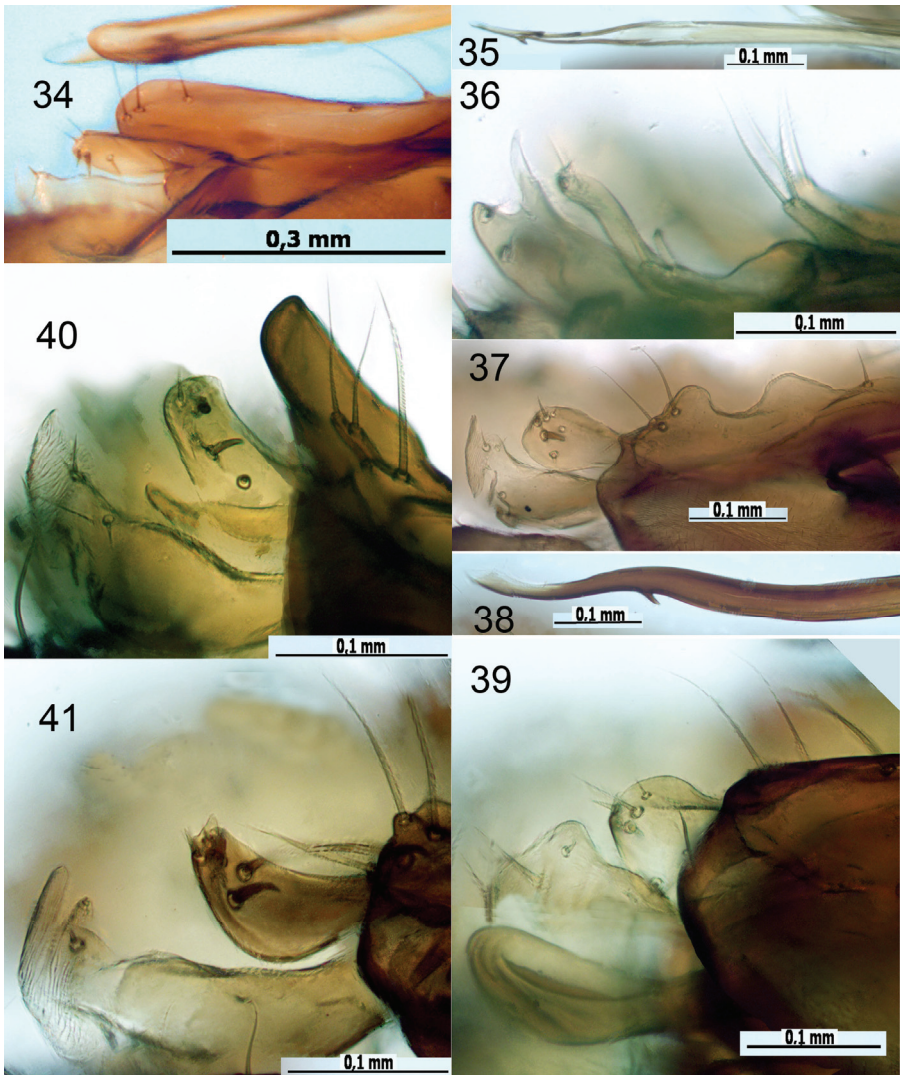
MATERIAL EXAMINED. **Cameroon**: Northwest Reg., Universite de Oschang, 5°26.761'N, 10°04.237'E, 1402 m, 16.VIII 2013, 1♂, A.H. Kirk-Spriggs / sweeping cultivated plots & banana groves; North Reg., Mayo-Louti, Bossom at: 9°55.233'N, 13°46.645'E, 475 m, 6, 9.VIII 2013, 5♀, A.H. Kirk-Spriggs [BMSA].

DISTRIBUTION. Type locality: Cameroon: Kumba. Cameroon, Kenya.

***Lichtwardtia fractinervis* (Parent, 1929)**
Figs 7, 45, 58, 59, 60, 64

MATERIAL EXAMINED. **Burundi**: Bururi Prov., Res. Nat. de Rumonge, 4°00.940'S, 29°29.560'E, 900 m, 17–20.XI 2010, 1♂, 3♀, A.H. Kirk-Spriggs / malaise trap, *Brachystegia* woodland [BMSA]; **Ethiopia**: Amhara, Blue Nile, 1070 m, 10.08° N, 38.19° E, 31.VII 2012,

1♂, N. Vikhrev [ZMUM]; **Namibia**: Katima Mulilo Distr., Mudumu N.P., Nakatwa at: 18°10.254'S, 23°25.183'E, 900 m, 26–27.XI 2012, A.H. Kirk-Spriggs, Malaise trap, Miombo & Moppane woodlands; Katima Mululo Distr, Ndopu village, Bukalo, near 17°43.660'S, 24°32.106'E, 20–23.II 2012, A.H. Kirk-Spriggs (totally 2♂, 3♀) [BMSA];



Figs 34–41. *Lichtwardtia* spp., details of hypopygium, left lateral view. 34 – *L. aethiopica* (Bezzi), distoventral part; 35 – *L. dianaensis* **sp. n.,** phallus; 36 – *L. dianaensis* **sp. n.,** surstylus and epandrial lobe; 37 – *L. minuscula* (Parent), distoventral part; 38 – *L. musolini* **sp. n.,** phallus; 39 – *L. musolini* **sp. n.,** distoventral part; 40 –*L. nikitai* **sp. n.**, distoventral part**;** 41 – *L. oromiaensis* **sp. n.**, surstylus and epandrial setae.

Tanzania: Iringa env., 7.798°S, 35.797°E, 1550 m, 15–16.II 2017, 1♂, N. Vikhrev [ZMUM]; **Zambia**: Mumbwa Distr., Kafue National Park, Mayukuyuku camp area at: 14°54.898' S, 26°03.820' E, 1081 m, 3–5.XII 2012, 3♂, A.H. & M.K. Kirk-Spriggs, Malaise trap, Central Zambezian Miombo woodlands [BMSA].

DISTRIBUTION. Type locality: [Benin:] Dahomey. Angola, Benin, DR Congo, Gabon, Ivory Coast, Malawi, Namibia, Nigeria, South Africa, Uganda. A new species for Burundi, Ethiopia, Tanzania and Zambia. Here excluded from Ghana.

NOTES. *Lichtwardtia fractinervis* was originally described by a female from Benin (Parent, 1930). A male was described later (Parent, 1937) from DR Congo (Eala), differing slightly from female description in colour characters of antenna and hind coxa. The two descriptions may belong to different species. However, Grichanov (1998) accepted the species concept proposed by Parent (1937), studied a male identified by Parent as *L. fractinervis* (from Eala) and types of *Vaalimyia minuta* Vanschuytbroeck, 1951 (type locality: DR Congo: Uele, Monga) and *Vaalimyia kivuensis* Vanschuytbroeck, 1951 (type locality: DR Congo: Kivu, Rutshuru), placed the latter two names in synonymy to *L. fractinervis*, as well as *Vaalimyia microlepis* Parent, 1939 (type locality: Ghana: "Obuasi Ashanti") and redescribed the species, using abundant material from DR Congo after the specimens collected in the same river basin (Uele River, Garamba Park). Grichanov also reported the species from many Afrotropical countries (see Grichanov, 2018). Nevertheless, it seems that *L. fractinervis* is represented by a complex of species, and some records must be confirmed. In this paper, *L. microlepis* (Parent) is raised from synonymy; Ghana is excluded from area of *L. fractinervis.* I associate also males mentioned by Grichanov (1998) from Angola (Cunene River) with an undescribed new species, thus excluding from the country a part of the material studied.

***Lichtwardtia microlepis* (Parent, 1939), nom. resurr.**
Figs 68, 69

Vaalimyia microlepis Parent, 1939: 274.
Vaalimyia minuta Vanschuytbroeck, 1951: 51. Type locality: DR Congo: Uele, Monga.
Lichtwardtia fractinervis (Parent, 1929) (in part): Grichanov, 1998: 233.

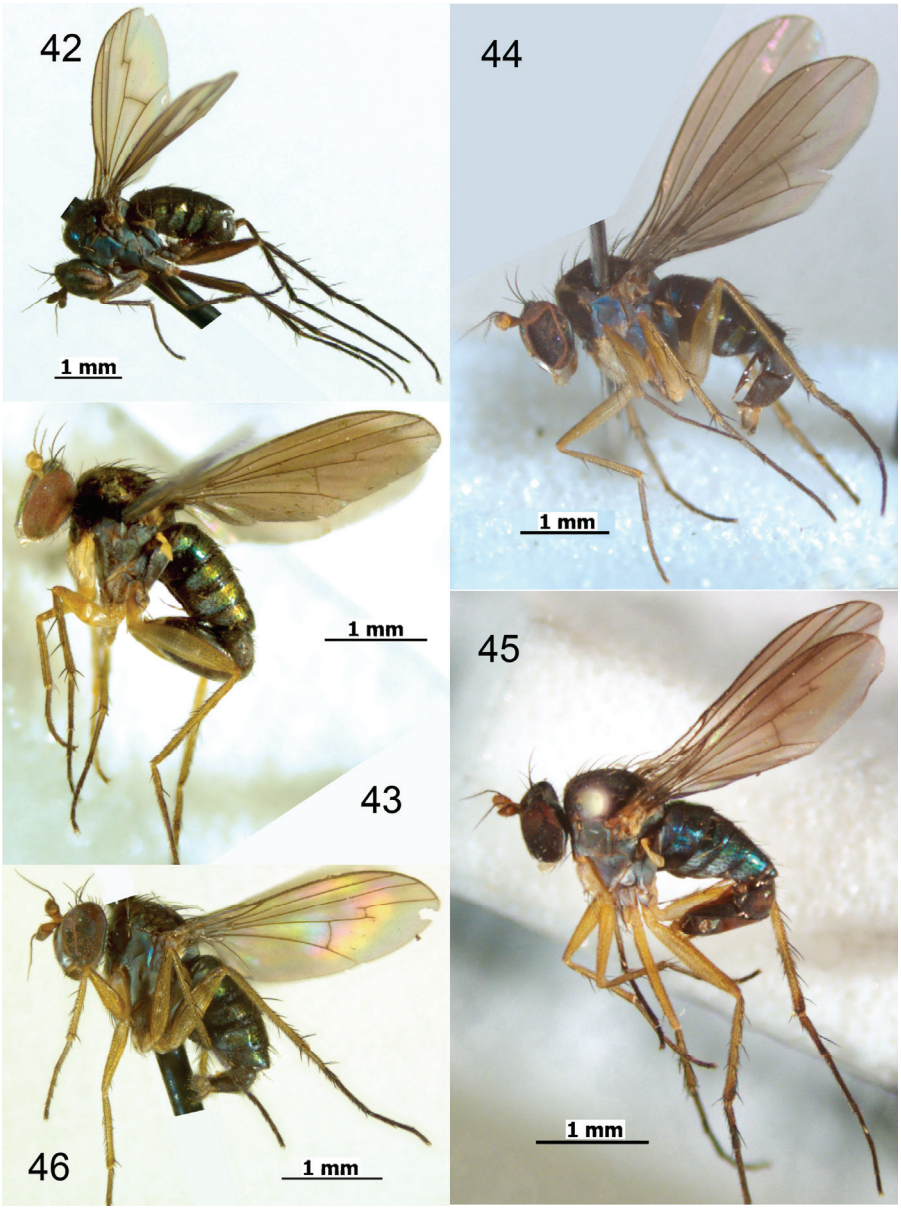
DISTRIBUTION. Type locality: Ghana: "Obuasi Ashanti". DR Congo, Ghana.

NOTES. Grichanov (1998) noted variability of the *L. fractinervis* material studied. Nevertheless, the latest descriptions of new species (Grichanov, 2004; Tang *et al*., 2018; this paper) clearly testify that the Figures 29–30 (Parent, 1939) do not correspond with the species concept of *L. fractinervis* proposed by Parent (1937) and figured by Grichanov (1998: Figs 1, 11). So, I raise here *L. microlepis* from synonymy. It is apparently a sibling species with *L. nikolaevae*, differing from the latter in M_4 as long as *dm-m*; antenna entirely yellow, slightly darker at apex; postpedicel distinctly longer than high, with pointed apex; male cercus higher than long (after Parent, 1939).

***Lichtwardtia minuscula* (Parent, 1934)**
Figs 23, 30, 37, 46, 55, 65

MATERIAL EXAMINED. **Tanzania**: Mikumi NP env., 7.385°S, 37.015°E, 520 m, 24-25.II 2017, 1♂, N. Vikhrev [ZMUM].

REDESCRIPTION. Male. Head. Frons metallic greenish blue; face entirely white pollinose; one strong vertical, one short postvertical, a pair of strong ocellar setae present; lower postocular setae white; ventral postcranium with 1–2 long dirty white setae and several light



Figs 42–46. *Lichtwardtia* spp., male habitus. 42 – *L. aethiopica* (Bezzi); 43 – *L. dianaensis* **sp. n.**; 44 – *L. emelyanovi* Grichanov; 45 – *L. fractinervis* (Parent); 46 – *L. minuscula* (Parent).

cilia; eyes with short hairs; face glabrous; face almost parallel-sided, narrowest at upper third, slightly widening at clypeus; clypeus bulging, slightly convex ventrally, not reaching lower margin of eyes; ratio of its minimal width to height 16/31; antenna mostly orange; postpedicel black in distal half, subtriangular, inconspicuously longer than high, angular apicodorsally, with short hairs; arista-like stylus middorsal, black, sparsely pubescent, with hairs 2 times longer than basal diameter of stylus; length ratio of scape to pedicel to post-pedicel to stylus (1st and 2nd segments), 14/8/16/11/39; palpus small, dirty yellow, with short black setae; proboscis brown.

Thorax. Mesonotum metallic blue-violet; pleura dark blue, whitish grey pollinose; 5 strong dorsocentral setae with several microscopic hairs in front of the 1st pair, 2 rows of acrostichals; proepisternum with 1 strong black seta above fore coxa and several black hairs; scutellum with 2 strong setae and 2 very short lateral hairs.

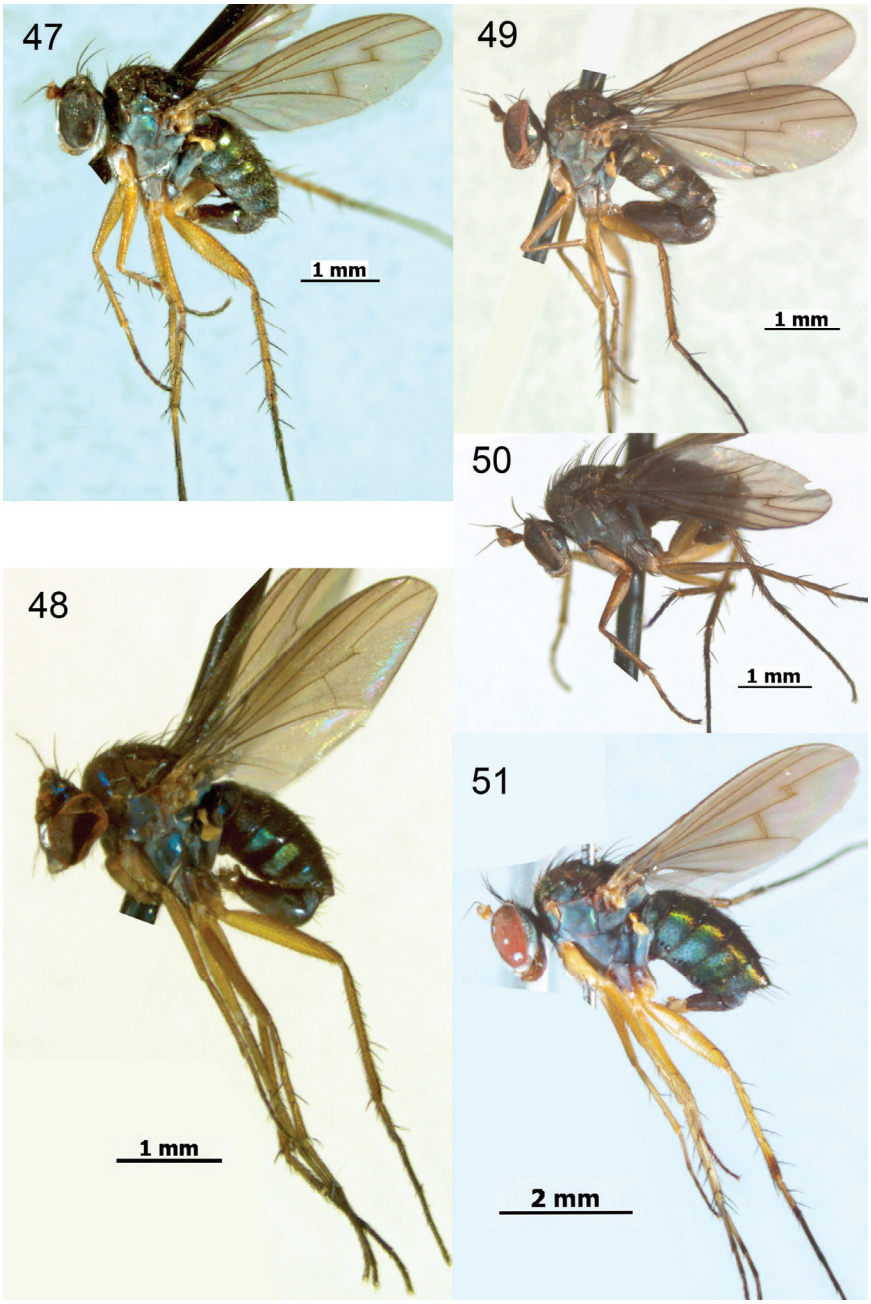
Legs mostly yellow; fore coxa yellow, mid coxa black, hind coxa yellow with black spot; apical segments of fore tarsus brown; mid and hind tarsi black from tip of basitarsus; femora without long hairs; fore coxa with black hairs and several long apical setae; fore tibia with 2 strong dorsals, 1 posterior seta, slightly longer than diameter of tibia, 3 strong apical setae; fore tarsus simple, fore basitarsus with short basoventral seta; mid femur with 1 subapical anterior seta; mid tibia with 3 anterodorsal, 2 posterodorsal, 1 anteroventral and 5 apical setae; hind femur with one anterodorsal prepapical seta; hind tibia simple, with 3 antero-dorsal, 3 posterodorsal, 3-4 short ventral, 3 apical setae; hind basitarsus with 1 basoventral, 1 apical short setae, 1 strong dorsal seta, about 1/3 as long as basitarsus. Tibia and tarsomere (from first to fifth) length ratio: fore leg: 74/36/15/12/9/13, mid leg: 106/50/26/21/16/16, hind leg: 118/40/46/29/20/16.

Wing evenly greyish; costa simple; R_1 reaching to first third of wing; R_{2+3} and R_{4+5} straight, slightly divergent at apex; ratio of part of costa between R_{2+3} and R_{4+5} to this between R_{4+5} and M_{1+2}, 24/22; M_{1+2} broken in middle of distal part, joining costal vein just before wing tip; R_{4+5} and distal part of M_1 slightly divergent; crossveins *m-m* and *dm-m* straight, almost perpendicular to corresponding longitudinal veins; ratio of distal part of M_1 to *m-m* to distal part of M_{1+2} to *dm-m* to distal part of M_4, 70/10/37/27/35; anal vein distinct, almost reaching to wing margin; anal lobe well developed; anal angle obtuse; lower calypter yellow, with black setae; halters yellow.

Abdomen metallic blue-black, whitish pollinose laterally, with black hairs and marginal setae; 8th segment black, with sparse black hairs; epandrium black, as long as 4th-5th tergites combined, 2 times longer than high, swollen basally, slightly narrowed distad, concave ventrally in middle, with broad projection distoventrally; hypandrium basoventral, broad, reaching apex of epandrium, with large subapical dorsal tooth; phallus long, with small dorsal tooth before apex; one small epandrial seta at base of hypandrium; 3 strong epandrial setae on distoventral projection; epandrial lobe absent; surstylus yellow, bilobate; ventral lobe broad, with 2-3 thick spines and 3 simple setulae; dorsal lobe of surstylus broad, longer than ventral, 2/3 as long as cercus, with apicoventral and apicodorsal projections and distal emargination, with several short subapical setulae; postgonite broad, shorter than surstylus; cercus dirty yellow, black on distal half, rounded-quadrate, as wide as long, serrate distally, with curved cilia not longer than diameter of cercus.

MEASUREMENTS (in mm). Body length 2.5; antenna length 0.7; wing length 2.6; wing width 0.9; hypopygium length 0.7.

DIAGNOSIS. *L. minuscula* is a sibling species with *L. ghanaensis* **sp. n.** (see below), together with *L. nikitai* **sp. n.** and *L. emelyanovi* Grichanov forming *minuscula* group of species (see key above), which is peculiar in hind basitarsus bearing reduced dorsal seta, at most 1/3 as long as basitarsus. *L. minuscula* differs reliably from *L. ghanaensis* **sp. n.** in male cercus apically broad and subquadrate rather than narrow and pointed; hypandrium with large subapical dorsal tooth.



Figs 47–51. *Lichtwardtia* spp., male habitus. 47 – *L. musolini* **sp. n.;** 48 – *L. nikitai* **sp. n.**; 49 – *L. nikolaevae* Grichanov; 50 – *L. oromiaensis* **sp. n.**; 51 – *L. tikhonovi* Grichanov.

DISTRIBUTION AND NOTES. Type locality: Chad: Demraou, rives du Moyen Chari. Vanschuytbroeck (1964) recorded the species from Tanzania by single female. Here I confirm its presence in Tanzania and exclude the species from Ghana (misidentification; see below).

***Lichtwardtia ghanaensis* Grichanov, sp. n.**

http://zoobank.org/NomenclaturalActs/5f684a66-5ec5-48d7-b538-bb1abdd2d6fb

Fig. 39

Lichtwardtia minuscula Grichanov, 1998: 228 (nec Parent, 1934, misidentification).

TYPE MATERIAL. Holotype – ♂, **Ghana**: Banda-Nkwanta / VII–VIII 1965, leg. Endrody-Y. [HNHM]. Paratypes: 1♂, same label [ZIN]; **Ghana**: Kumasi, 1–25.VI 1965, 2♂, leg. Endrody-Y. [HNHM].

DESCRIPTION. Male. Similar to *Lichtwardtia minuscula* in all respects except as noted. Head: face distinctly narrowed at upper third; ratio of its minimal width to height 11/35; antenna yellow; postpedicel darkened distally, as long as high; palpus yellow, with short brown setae.

Legs. Hind basitarsus with 1 reduced dorsal seta, at most 1/4 as long as basitarsus; fore tibia and tarsomere (from first to fifth) length ratio: 69/33/15/12/9/11.

Wing hyaline. Ratio of part of costa between R_{2+3} and R_{4+5} to this between R_{4+5} and M_{1+2}, 25/24; ratio of distal part of M_1 to *m-m* to distal part of M_{1+2} to *dm-m* to distal part of M_4, 59/10/38/22/32;

Epandrium of moderate size, elongate, swollen basally, narrow distally, twice longer than high, with concave ventral margin (lateral view); hypandrium simple, basoventral, nearly as long as epandrium, without tooth; phallus thin and long, with small dorsal tooth positioned at middle of full length of epandrium; epandrial lobe undeveloped; 3 strong epandrial setae raising from dorsal side of epandrium in apical third; 2 epandrial setae positioned on apico-ventral prominence; surstylus bilobate; ventral lobe short, digitiform, rounded at apex, with several short apical and subapical setae; dorsal lobe of surstylus somewhat longer and wider than ventral, broad at base, narrowed at apex, half as long as cercus, with 2 dorsal and 2 sub-apical short setae; postgonite very narrow, nearly as long as surstylus; cercus 1/3 as long as epandrium, twice longer than wide, elongate-oval, with acute distodorsal apex and long ventral cilia, of which apical cilia equal in length to medial width of cercus.

MEASUREMENTS (in mm). Body length 2.4; wing length 2.4; wing width 0.8; hypopygium length 0.6.

Female. Unknown.

DISTRIBUTION. Ghana.

ETYMOLOGY. The Latin name of the species belongs to the country of origin.

DIAGNOSIS. The new species is a sibling species with *L. minuscula*, differing reliably from the latter in male cercus apically narrow and pointed rather than broad and subquadrate; hypandrium simple.

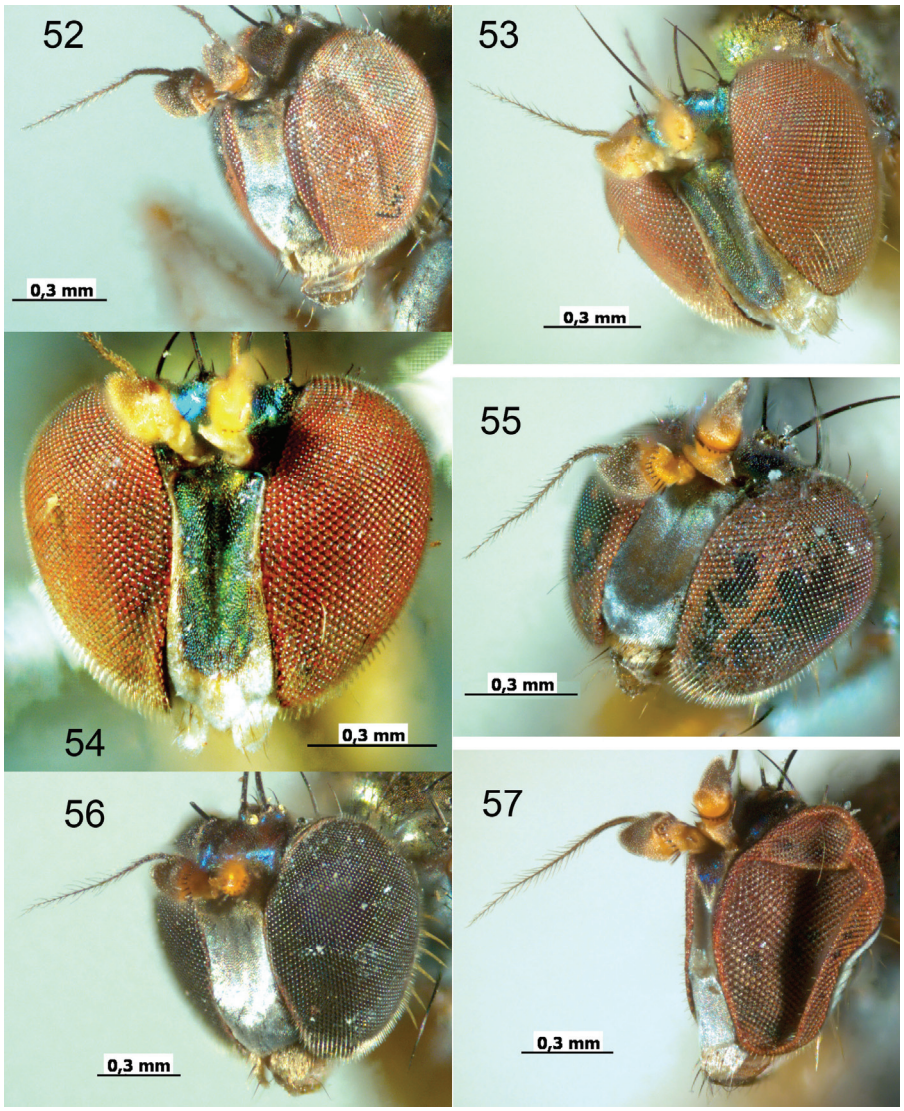
NOTES. Grichanov (1998) mentioned 3 females under the name *L. minuscula* from Ghana, but from different localities. They are not included into the type series of *L. ghanaensis*, because two or more species of the genus can be collected from the same locality with their females being practically indistinguishable.

***Lichtwardtia musolini* Grichanov, sp. n.**

http://zoobank.org/NomenclaturalActs/825a0562-e39f-424e-ab59-4407ed9fd461

Figs 24, 31, 38, 39, 47, 56, 66

TYPE MATERIAL. Holotype – ♂, **Ethiopia**: Oromia, Ziwai L., 7.91°N, 38.73°E, 1640 m, 11–13.II 2012, N. Vikhrev [ZMUM]. Paratype: 1♂, same label [ZIN].



Figs 52–57. *Lichtwardtia* spp., male head. 52 – *L. aethiopica* (Bezzi); 53, 54 – *L. dianaensis* **sp. n.**; 55 – *L. minuscula* (Parent); 56 – *L. musolini* **sp. n.**; 57 –*L. nikitai* **sp. n.**

DESCRIPTION. Male. Head. Frons metallic black violet; face densely white pollinose; one strong vertical, one short postvertical, a pair of strong ocellar setae present; lower postocular setae white; ventral postcranium with 2 long white setae and several light cilia; eyes with short hairs; face glabrous; face almost parallel-sided; clypeus slightly bulging, not reaching lower margin of eyes; ratio of its minimal width to height 20/42; antenna orange-yellow; postpedicel black in distal half, subtriangular, as long as high, rounded apicodorsally, with short

hairs; arista-like stylus middorsal, black, sparsely pubescent, with hairs 2-4 times longer than basal diameter of stylus; length ratio of scape to pedicel to postpedicel to stylus, 15/10/17/10/51; palpus dirty yellow, with short black hairs and 1 fine black seta; proboscis brown.

Thorax. Mesonotum metallic black-violet, weakly pollinose; pleura blueish-black, grey pollinose; 5 strong dorsocentral setae with several microscopic hairs in front of the 1st pair, 2 rows of acrostichals; proepisternum with 1 strong black seta above fore coxa and several short hairs; scutellum with 2 strong setae and 2 short lateral hairs.

Legs mostly yellow; fore coxa yellow, mid coxa black with yellow apex, hind coxa yellow with black spot; hind tibia blackish at apex; fore and mid tarsi black from tip of basitarsus; hind tarsus black; femora without long hairs; fore coxa with black hairs and several long apical setae; fore tibia with 2-3 anterodorsal, 2-3 posterodorsal, 2 posterior seta, of which lower seta nearlly 3 times as long as diameter of tibia, 2 strong apical setae; fore tarsus simple, fore basitarsus with short basoventral seta; mid femur with 1 subapical anterior and 1 subapical posteroventral setae; mid tibia with 3 anterodorsal, 2 posterodorsal, 1 anteroventral and 5 apical setae; hind femur with one anterodorsal prepapical seta; hind tibia simple, with 4 anterodorsal, 4 posterodorsal, 1 strong and 2-3 short ventral, 3 apical setae; hind basitarsus with 1 basoventral, 1 apical short setae; 1 strong dorsal seta, half as long as basitarsus. Tibia and tarsomere (from first to fifth) length ratio: fore leg: 99/48/21/16/14/17, mid leg: 141/64/35/32/21/21, hind leg: 168/57/66/48/33/25.

Wing evenly greyish, somewhat darker on crossveins; costa simple; R_1 reaching to first third of wing; R_{2+3} and R_{4+5} straight, slightly divergent at apex; ratio of part of costa between R_{2+3} and R_{4+5} to this between R_{4+5} and M_{1+2}, 31/28; M_{1+2} broken in middle of distal part, joining costal vein just before wing tip; R_{4+5} and distal part of M_1 parallel; crossveins *m-m* and *dm-m* straight, almost perpendicular to corresponding longitudinal veins; ratio of distal part of M_1 to *m-m* to distal part of M_{1+2} to *dm-m* to distal part of M_4, 85/16/54/36/36; anal vein distinct, almost reaching to wing margin; anal lobe well developed; anal angle obtuse; lower calypter yellow, with black setae; halters yellow.

Abdomen metallic bronze-black, whitish pollinose laterally, with black hairs and marginal setae; 8th segment black, with sparse black hairs; epandrium black, about as long as 3rd-6th tergites combined, 2 times longer than high, swollen basally, narrowed distad, concave ventrally, rounded distally; hypandrium basoventral, nearly as long as epandrium, with worm-like apical process behind small dorsal tooth; phallus thin and long, with small dorsal tooth far from apex; one small epandrial seta at base of hypandrium; 3 strong epandrial setae distoventrally; epandrial lobe undeveloped; surstylus yellow, bilobate; ventral lobe broad, as wide as long, with 1 long and 3 short setae; dorsal lobe of surstylus broad, longer than ventral, 2/3 as long as cercus, with apicoventral and apicodorsal projections and distal emargination, 2 long setae and few short setulae; postgonite broad, spoonlike, as long as surstylus. Cercus yellow, black along distal margin, semi-circular, higher than long, with straight and curved marginal setae not longer than diameter of cercus.

MEASUREMENTS (in mm). Body length 3.3; antenna length 0.8; wing length 3.4; wing width 1.2; hypopygium length 1.0.

Female. Unknown.

DISTRIBUTION. Ethiopia.

ETYMOLOGY. The species is named after the Russian entomologist, Dr. Dmitrii Musolin (St. Petersburg, Russia).

DIAGNOSIS. The new species is close to *L. tikhonovi* Grichanov, differing from the latter in hypandrium bearing worm-like apical process behind small dorsal tooth; ventral lobe of surstylus broad. Hypandrium has no tooth, and ventral lobe of surstylus is narrow in *L. tikhonovi*. *L. musolini* **sp. n.** is distinguished by wing evenly greyish, slightly infumated at

crossveins; costa simple; postpedicel as long as high; hind tibia yellow, blackish at apex; fore tibia with one strong and long posterior seta; hind basitarsus with 1 strong dorsal seta; cercus rounded.

***Lichtwardtia nikitai* Grichanov, sp. n.**

http://zoobank.org/NomenclaturalActs/08AE7B64-F139-4D8C-86E2-351E812BD2B0

Figs 25, 32, 40, 48, 57, 67

TYPE MATERIAL. Holotype – ♂, **Tanzania**: Morogoro env., 6.85°S, 37.67°E, 2–3.XII 2015, N. Vikhrev [ZMUM].

DESCRIPTION. Male. Head. Frons metallic greenish blue; face densely silvery-white pollinose, slightly shining blue under antennae, with brown ground colour (anterior view); one strong vertical, one short postvertical, a pair of strong ocellar setae present; lower post-ocular setae white; ventral postcranium with 1-2 long dirty white setae and several light cilia; eyes with short hairs; face glabrous; face almost parallel-sided, narrowest at upper third, slightly widening at clypeus; clypeus bulging, convex ventrally, not reaching lower margin of eyes; ratio of its minimal width to height 8/45; antenna mostly orange; postpedicel black in distal half, subtriangular, inconspicuously longer than high, angular apicodorsally, with short hairs; arista-like stylus middorsal, black, sparsely pubescent, with hairs 2-3 times longer than basal diameter of stylus; length ratio of scape to pedicel to postpedicel to stylus (1st and 2nd segments), 14/8/18/12/57; palpus small, dirty yellow, with black hairs and setae; proboscis brown.

Thorax. Mesonotum metallic blue-violet; pleura dark blue, whitish grey pollinose; 5 strong dorsocentral setae with several microscopic hairs in front of the 1st pair, 2 rows of acrostichals; proepisternum with 1 strong black seta above fore coxa and several black hairs; scutellum with 2 strong setae and 2 very short lateral hairs.

Legs mostly yellow; fore coxa yellow, mid coxa black, hind coxa yellow with black spot; tarsi black from tip of basitarsus; femora without long hairs; fore coxa with black hairs and several long apical setae; fore tibia with 2 dorsals, 1 fine posterior seta, not longer than diameter of tibia, 3 strong apical setae, of which 1 ventral seta distinctly longer than others; fore tarsus simple, fore basitarsus with short basoventral seta; mid femur with 1 subapical anterior seta; mid tibia with 3 anterodorsal, 2 posterodorsal, 1 anteroventral and 5 apical setae; hind femur with one anterodorsal prepapical seta; hind tibia simple, with 3 anterodorsal, 2 posterodorsal, 2-3 short ventral, 3 apical setae; hind basitarsus with 1 basoventral, 1 apical short setae, 1 strong dorsal seta, about 1/3 as long as basitarsus. Tibia and tarsomere (from first to fifth) length ratio: fore leg: 85/43/21/16/12/14, mid leg: 126/59/34/26/15/16, hind leg: 139/49/48/32/22/17.

Wing evenly greyish, without dark spots and stripes; costa inconspicuously thickened at R_1; R_1 reaching to first third of wing; R_{2+3} and R_{4+5} straight, slightly divergent at apex; ratio of part of costa between R_{2+3} and R_{4+5} to this between R_{4+5} and M_1, 37/24; M_{1+2} broken in middle of distal part, joining costal vein just before wing tip; R_{4+5} and M_1 parallel; crossveins *m-m* and *dm-m* straight, almost perpendicular to corresponding longitudinal veins; ratio of distal part of M_1 to *m-m* to distal part of M_{1+2} to *dm-m* to distal part of M_4, 97/9/35/34/39; anal vein distinct, almost reaching to wing margin; anal lobe well developed; anal angle obtuse; lower calypter yellow, with black setae; halters yellow.

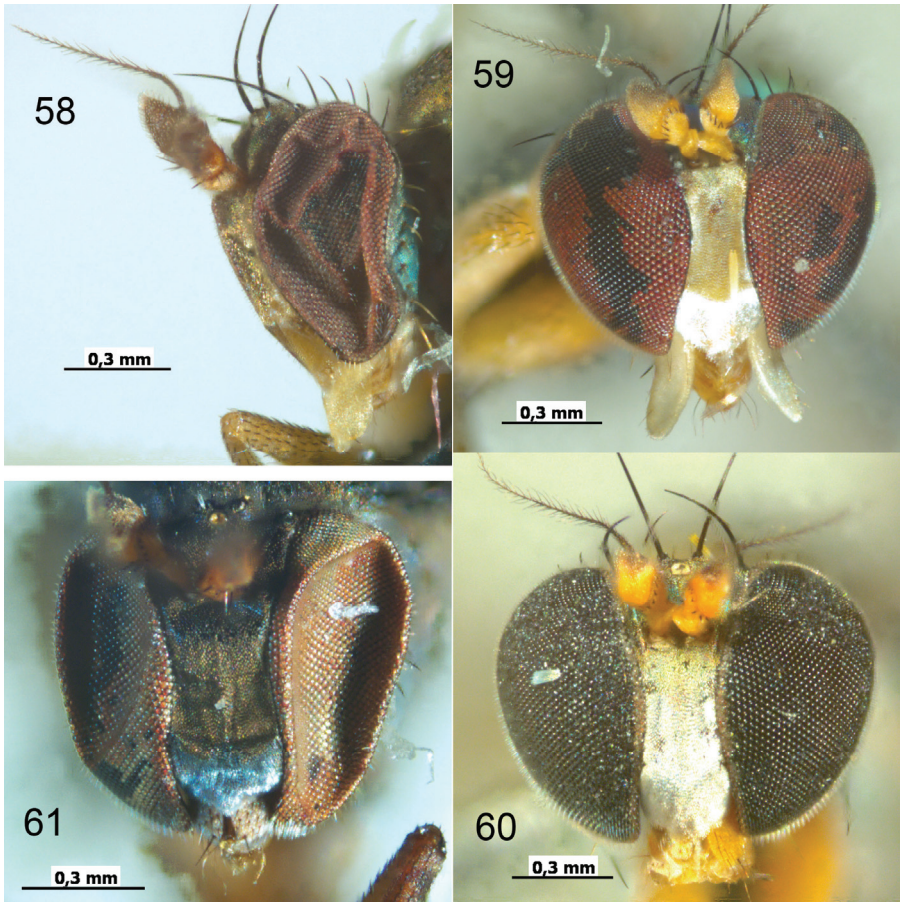
Abdomen metallic blue-black, whitish pollinose laterally, with black hairs and marginal setae; 8th segment black, with sparse black hairs; epandrium black, as long as 3rd-6th tergites combined, 2 times longer than high, swollen basally, narrowed distad, strrrongly concave ventrally, with long and narrow projection distally; hypandrium basoventral, nearly as long as

epandrium, broad, with large dorsal tooth at middle; phallus with small dorsal tooth far from apex; one epandrial seta far from base of hypandrium; small fingerlike epandrial lobe (concealed) distoventrally bearing 2 long setae at apex and 1 strong and long seta at base; surstylus yellow, bilobate; ventral lobe broad, longer than wide, with 2 thick spines and 3 simple setae; dorsal lobe of surstylus broad, longer than ventral, 2/3 as long as cercus, with apicoventral and apicodorsal projections and shallow distal emargination, with few short setae; postgonite short, narrow, shorter than surstylus; cercus dirty yellow, black on distal half, rounded-subtriangular, wider than long, serrate distally, with distinct apex distodorslly, with thick and curved marginal setae, with 1 straight blunt seta.

Female. Unknown.

MEASUREMENTS (in mm). Body length 3.0; antenna length 0.9; wing length 3.1; wing width 1.1; hypopygium length 1.3.

DISTRIBUTION. Tanzania.



Figs 58–61. *Lichtwardtia* spp., male head (58, 59, 61), female head (60). 58, 59, 60 – *L. fractinervis* (Parent); 61 – *L. oromiaensis* **sp. n**.

ETYMOLOGY. The species is named after the Russian entomologist, Dr. Nikita Vikhrev (Moscow, Russia), the collector of the type specimen.

DIAGNOSIS. The new species belongs to the *L. minuscula* species group (see key above). *L. nikitai* **sp. n.** is close to *L. emelyanovi* Grichanov, differing in male face about 6 times rather than 4 times higher than wide; palpus with black rather than light hairs; male cercus subtriangular, as long as wide rather than elongate-oval, twice longer than wide, with acute apex. Hind basitarsus with 1 reduced dorsal seta, at most 1/3 as long as basitarsus. Distal part of M_{1+2} (from *dm-m* to *m-m*) 1/3 as long as distal part of M_1.

***Lichtwardtia nikolaevae* Grichanov, 1998**
Figs 14, 15, 49

MATERIAL EXAMINED. **Ethiopia**: Oromia, Debre Libanos, 9.732°N, 38.816°E, 2500 m, 29–30.VII 2012, 1♂, N. Vikhrev [ZMUM]; **Namibia**: Katima Mulilo Distr., Mavunje campsite at: 17°55.141' S, 23°19.073' E, 945 m, 22–26.XI 2012, 1♀, A.H. Kirk-Spriggs, Malaise trap, Kwando River floodplain [BMSA]; **Zambia**: Mumbwa Distr., Kafue National Park, Mayukuyuku camp area at: 14°54.898' S, 26°03.820' E, 1081 m, 3–5.XII 2012, 5♂, 4♀, A.H. & M.K. Kirk-Spriggs, Malaise trap, Central Zambezian Miombo woodlands [BMSA].

DISTRIBUTION. Type locality: "S. W. Africa: Ameib Farm, 19 mls NW Karibib". Namibia, DR Congo. A new species for Ethiopia and Zambia.

***Lichtwardtia oromiaensis* Grichanov, sp. n.**
http://zoobank.org/NomenclaturalActs/22bf64e0-e1eb-4e43-9889-1abd7edc850e
Figs 26, 27, 33, 41, 50, 61

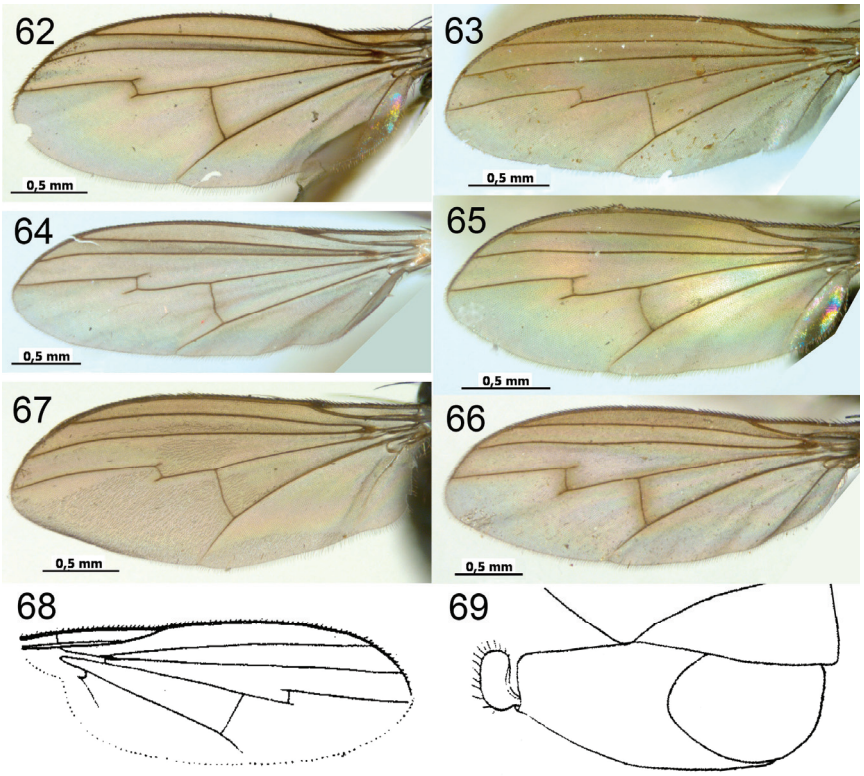
TYPE MATERIAL. Holotype – ♂, **Ethiopia**: Oromia, Debre Libanos, 9.732°N, 38.816°E, 2500 m, 29–30.VII 2012, N. Vikhrev [ZMUM].

DESCRIPTION. Male. Head. Frons metallic black-violet, weakly pollinose; face mostly matt brown-black, metallic violet under antenna, white pollinose on clypeus; one strong vertical, one short postvertical, a pair of strong ocellar setae present; lower postocular setae white; ventral postcranium with 2 long white setae and several light cilia; eyes with short hairs; face glabrous; face almost parallel-sided, narrowest at upper third, slightly widening at clypeus; clypeus with small triangular projection ventrally in middle, slightly bulging, not reaching lower margin of eyes; ratio of its minimal width to height 18/37; antenna orange-brown; postpedicel black in distal half, subtriangular, inconspicuously longer than high, right-angular apicodorsally, with short hairs; arista-like stylus middorsal, yellow-brown, sparsely pubescent, with hairs 2 times longer than basal diameter of stylus; length ratio of scape to pedicel to postpedicel to stylus, 12/11/19/6/41; palpus and proboscis brownish, with short black hairs; palpus with 1 black short seta.

Thorax. Mesonotum metallic black, weakly grey pollinose; pleura blueish-black, whitish pollinose; 5 strong dorsocentral setae with several microscopic hairs in front of the 1st pair, 2 rows of short acrostichals; proepisternum with 1 strong black seta above fore coxa and several short hairs; scutellum with 2 strong setae and 2 very short lateral hairs.

Legs mostly dirty yellow; fore coxa brownish yellow, mid and hind coxae black with orange apex; fore and mid tarsi black from tip of basitarsus; hind tibia at apex and hind tarsus black; hind femora without long hairs; fore coxa with black hairs and several long apical setae; fore tibia with 2 strong anв 2 fine dorsal, 2 posterior seta, about as long as diameter of tibia, 3-4 apical setae; fore tarsus simple, fore basitarsus with short basoventral

seta; mid femur with 1 subapical anterior seta; mid tibia with 3 anterodorsal, 2 posterodorsal, 1 anteroventral and 5 apical setae; hind femur with one anterodorsal prepapical seta; hind tibia simple, with 4 anterodorsal, 3-4 posterodorsal, 1 row of short ventral, 2-3 apical setae; hind basitarsus with 1 basoventral, 1 apical short setae, 1 strong dorsal seta, nearly half as long as basitarsus. Tibia and tarsomere (from first to fifth) length ratio: fore leg: 95/39/19/17/12/15, mid leg: 129/58/35/27/20/14, hind leg: 150/56/61/40/30/23.



Figs 62–69. *Lichtwardtia* spp., male wing (62–68) and hypopygium (69). 62 – *L. aethiopica* (Bezzi); 63 – *L. dianaensis* **sp. n.**; 65 – *L. minuscula* (Parent); 66 – *L. musolini* **sp. n.**; 67 – *L. nikitai* **sp. n.**; 68, 69 – *L. microlepis* (Parent). (Figs 68, 69, after Parent, 1939).

Wing evenly brownish, somewhat darker on crossveins; costa simple; R_1 reaching to first third of wing; R_{2+3} and R_{4+5} straight, slightly divergent at apex; ratio of part of costa between R_{2+3} and R_{4+5} to this between R_{4+5} and M_{1+2}, 38/30; M_{1+2} broken in middle of distal part, joining costal vein just before wing tip; R_{4+5} and distal part of M_1 parallel; crossveins *m-m* and *dm-m* straight, almost perpendicular to corresponding longitudinal veins; ratio of distal part of M_1 to *m-m* to distal part of M_{1+2} to *dm-m* to distal part of M_4, 81/14/52/25/28; anal vein distinct, almost reaching to wing margin; anal lobe well developed; anal angle obtuse; lower calypter orange, with black setae; halters yellow.

Abdomen metallic black, grey pollinose, with black hairs and marginal setae; 8th segment black, with sparse black hairs; epandrium black, enlarged, nearly as long as 3rd-6th tergites

combined, 2 times longer than high, swollen basally, narrowed distad, rounded distally, asymmetrically projected ventrally, with semi-circular right lobe and subtriangular left lobe; hypandrium basoventral, as long as epandrium, broad, with large dorsal tooth at base; phallus swollen and serrate dorsally at base of hypandrium, pointed at apex, with dorsal tooth far before apex; one small epandrial seta at base of hypandrium; 3 strong pedunculate epandrial setae distodorsally; epandrial lobe undeveloped; surstylus yellow, bilobate; ventral lobe broad, longer than wide, with 2 thick spines and 3 simple setae; dorsal lobe of surstylus broad, longer than ventral, 2/3 as long as cercus, with few short setae; postgonite short, narrow, shorter than surstylus; cercus dirty yellow, black in distal half, rounded, slightly longer than wide, with angular apex distodorsally, with short curved setae distally, half as long as width of cercus.

MEASUREMENTS (in mm). Body length 3.3; antenna length 0.8; wing length 3.3; wing width 1.0; hypopygium length 1.3.

Female unknown.

DISTRIBUTION. Ethiopia.

ETYMOLOGY. The name of the new species belongs to the Oromia Province of Ethiopia.

DIAGNOSIS. The new species is remarkable in having mostly matt brown-black face. Only *L. nigrifacies* Grichanov was previously known with mostly mat-black male face, differing from *L. oromiaensis* **sp. n.** in postocular setae entirely black, all tibiae partly blackish on dorsal side, and in characters of hypopygium (Fig. 12).

***Lichtwardtia sukharevae* Grichanov, 1998**
Fig. 16

MATERIAL EXAMINED. **South Africa:** Free State, Brandfort, Florisbad Res. Stat., 28°46.039'S, 26°04.234'E, 4–6.IV 2009, 1♂, A.H. Kirk-Spriggs / *Acacia* savanna [BMSA]; KwaZulu-Natal [Ingwavuma] Ndumo Game Reserve, pan at: 26°54.374'S, 32°19.226'E, 9–10.XII 2009, 1♂, 1♀, A.H. Kirk-Spriggs / Malaise trap, grassy floodplain [BMSA].

DISTRIBUTION. Type locality: Botswana: Madiba Secondary School, Mahalapye. Botswana, Madagascar, Namibia, Senegal, South Africa.

***Lichtwardtia tikhonovi* Grichanov, 1998**
Figs 17, 18, 51

MATERIAL EXAMINED. **South Africa**: Nylsley Reserve, Naboomspruit, Tvl. [=Mookgophong, Limpopo Province], 28.XI.1978, 1♂, P. Ferrar [NMSA].

DISTRIBUTION. Type locality: Angola: Roçadas, R. Cunene. Afrotropical: Angola. A new species for South Africa.

***Lichtwardtia* sp. A**
Fig. 20

Lichtwardtia fractinervis (Parent, 1929) (in part): Grichanov, 1998: 233, 225, Fig. 9.

MATERIAL EXAMINED. **Angola** (A2): Roçadas, R. Cunene, 19–22.II 1972, 10♂ / at light / Southern African Exp. B.M. 1972-1 [NHML].

NOTES. Males collected from the Cunene River were associated with *L. fractinervis* by Grichanov (1998) who noted variability of the material studied. Nevertheless, the latest descriptions of new species (Grichanov, 2004; Tang *et al*., 2018; this paper) clearly testify that the Figure 9 (Grichanov, 1998) does not correspond with the species concept of *L. fractinervis* proposed by Parent (1937) and figured by Grichanov (1998: Figs 1, 11). So, I consider those males as belonging to a new species to be described later. It is apparently a sibling species with *L. fractinervis*, differing reliably from the latter in only hypopygial structures.

APPENDIX

Genus *Dolichopus* Latreille, 1796

***Dolichopus afroungulatus* Grichanov, 2004**

MATERIAL EXAMINED. **Namibia**: Katima Mulilo Distr., Mavunje campsite at: 17°55.141'S, 23°19.073'E, 945 m, 22–26.XI 2012, 1♂, 3♀, A.H. Kirk-Spriggs, Malaise trap, Kwando River floodplain [BMSA].

DISTRIBUTION. Type locality: South Africa: Natal, Nseleni Nature Res. DR Congo, Ethiopia, Namibia, South Africa, Zambia.

NOTES. The species is the only native Afrotropical species of the mainly Holarctic genus *Dolichopus* (Grichanov, 2018). It keys (Negrobov *et al*., 2005) to the Palaearctic *D. ungulatus* Linnaeus, 1758, differing from the latter species in the presence of stublike wing vein M_2, flattened laterally 2nd–4th segments of mid tarsus, long distal process on cercus and many other characters (Grichanov, 2004). Hind basitarsus of *D. afroungulatus* bears one short middorsal seta, 1.5 times longer than diameter of tarsomere, similar to that in some *Lichtwardtia* species. Nevertheless, the presence of only one stump vein (M_2), the short-haired stylus, the overall habitus and especially the hypopygium morphology (Grichanov, 2004) distinguish clearly *D. afroungulatus* from *Lichtwardtia*. Epandrial lobes of the *Lichtwardtia* hypopygium are greatly reduced, usually to simple or pedunculate ventral setae. In contrast, both distoventral and basoventral epandrial lobes are generally large and strongly projected in *Dolichopus* species.

ACKNOWLEDGMENTS

The author is sincerely grateful to Drs. Ashley H. Kirk-Spriggs [BMSA], Mike Mostovsky (the Steinhardt Museum of Natural History, Tel Aviv, Israel), Brian Pitkin (NHML), Thomas Pape (HNHM), N.E. Vikhrev and A.L. Ozerov (ZMUM) for their kindness in providing specimens for study.

REFERENCES

Bezzi, M. 1905 (1906). Ditteri Eritrei raccolti dal Dott. Andreini e dal Prof. Tellini. Parte prima. Diptera Orthorrhapha. *Bollettino della Società Entomologica Italiana*, 37: 195–304.

Brooks, S.E. 2005. Systematics and phylogeny of the Dolichopodinae (Diptera: Dolichopodidae). *Zootaxa*, 857: 1–158.

Cumming, J.M. & Wood, D.M. 2017. 3. Adult morphology and terminology. P. 89–134. *In*: Kirk-Spriggs, A.H. & Sinclair, B.J. (Eds.). *Manual of Afrotropical Diptera. Volume 1. Introductory chapters and keys to Diptera families.* Suricata 4. SANBI Graphics & Editing, Pretoria.

Curran, C.H. 1926. The Dolichopodidae of the South African Museum. *Annals of the South African Museum*, 23: 377–416.

Enderlein, G. 1912. Zur Kenntnis aussereuropäischer Dolichopodiden. I. Tribus Psilopodini. *Zoologische Jahrbucher. Jena (suppl.)*, 15: 367–408.

Grichanov, I.Ya. 1998. Afrotropical species of the genus *Lichtwardtia* Enderlein (Diptera: Dolichopodidae). *International Journal of Dipterological Research*, 9(3): 221–236.

Grichanov, I.Ya. 2004. Review of Afrotropical Dolichopodinae (Diptera: Dolichopodidae). *Plant Protection News Suppl.* St. Petersburg: VIZR RAAS: 1–244.

Grichanov, I.Ya. 2011a. An illustrated synopsis and keys to Afrotropical genera of the epifamily Dolichopodoidae (Diptera: Empidoidea). *Priamus Serial Publication of the Centre for Entomological Studies Ankara Supplement*, 24: 1–99.

Grichanov, I.Ya. 2011b. On the Dolichopodidae (Diptera) of Gabon. *International Journal of Dipterological Research*, 22(3): 131–137.

Grichanov, I.Ya. 2017. *Alphabetic list of generic and specific names of predatory flies of the epifamily Dolichopodoidae (Diptera). 2nd ed.* VIZR, St.Petersburg. 563 pp. (Plant Protection News Supplements, 23). DOI: 10.5281/zenodo.884863

Grichanov, I.Ya. 2018. *An annotated catalogue of Afrotropical Dolichopodoidae (Diptera)*. VIZR, St.Petersburg. 152 pp. (Plant Protection News Supplements, 25). DOI: 10.5281/zenodo.1187006

Grichanov, I.Ya. & Brooks, S.E. 2017. 56. Dolichopodidae (long-legged dance flies). P. 1265–1320. *In*: Kirk-Spriggs, A.H. & Sinclair, B.J. (Eds.). *Manual of Afrotropical Diptera*, *Volume 2. Nematocerous Diptera and Lower Brachycera*. Suricata 5. SANBI Graphics & Editing, Pretoria.

Grichanov, I.Ya., Kirk-Spriggs, A.H. & Grootaert, P. 2006. An annotated checklist of Namibian Dolichopodidae (Diptera) with the description of a new species of *Grootaertia* and a key to species of the genus. *African Invertebrates*, 47: 207–227.

Grichanov, I.Ya., Kirk-Spriggs, A.H. & Grootaert, P. 2011a. New records of Dolichopodidae (Diptera: Empidoidea) from the Democratic Republic of Congo. *CESA News*, 64: 12–22.

Grichanov, I.Ya., Mostovski, M.B. & Muller, B. 2011b. New records of Afrotropical Dolichopodidae (Diptera) from the collection of Natal Museum (2). *International Journal of Dipterological Research*, 22(2): 81–98.

Grichanov, I.Ya. & Urban, R. 2009. New records of Afrotropical Dolichopodidae (Diptera) from the South African National Collection of Insects. *International Journal of Dipterological Research*, 20(3): 133–135.

Meuffels, H. & Grootaert, P. 2007. New longlegged flies (Diptera, Dolichopodidae) of the Seychelles. *Phelsuma*, 15: 28–62.

Negrobov, O.P., Rodionova, S.Yu., Maslova, O.O. & Selivanova, O.V. 2005. Key to the males of the Palaearctic species of the genus *Dolichopus* Latr. (Diptera: Dolichopodidae). *International Journal of Dipterological Research*, 16(2): 133–146.

Parent, O. 1930. Espèces nouvelles de Dolichopodides (Diptères) conservées au Muséum National d'Histoire Naturelle de Paris. *Annales de la Société scientifique de Bruxelles*, Ser. B, 50: 86–115.

Parent, O. 1937. Diptères Dolichopodides nouveaux du Congo Belge et du Maroc. *Bulletin du Musée royal d'histoire naturelle de Belgique*, 13(18): 1–19.

Parent, O. 1939. Diptères dolichopodides de la région ethiopienne. *Revue de Zoologie et de Botanique Africaines*, 32(2): 256–282.

Tang, C., Yang, D. & Grootaert, P. 2018. Revision of the genus *Lichtwardtia* Enderlein in Southeast Asia, a tale of highly diverse male terminalia (Diptera, Dolichopodidae). *ZooKeys*, 798: 63–107. DOI: 10.3897/zookeys.798.28107.

Vanschuytbroeck, P. 1964. Diptères Dolichopodidae d'Afrique orientale el meridionale. (Ergebnisse der Deutschen Zoologischen Ostafrika-Expedition 1951/52, Gruppe Lindner-Stuttgart, Nr. 39. und Ergebnisse der Forschungsreise Lindner 1958/59-Nr. 17). *Stuttgarter Beiträge zur Naturkunde*, 130: 1–6.

Yang, D., Zhang, L., Wang, M. & Zhu, Y. 2011. Dolichopodidae. *In: Fauna Sinica, Insecta, Volume 53*. Science Press, Beijing. 1912 pp. [In Chinese, with English summary]

© **Far Eastern entomologist (Far East. entomol.)** Journal published since October 1994.
Editor-in-Chief: S.Yu. Storozhenko
Editorial Board: A.S. Lelej, S.A. Belokobylskij, M.G. Ponomarenko, E.A. Beljaev, V.A. Mutin, E.A. Makarchenko, A.V. Gorochov, T.M. Tiunova, M.Yu. Proshchalykin, S.A. Shabalin
Address: Federal Scientific Center of the East Asia Terrestrial Biodiversity (former Institute of Biology and Soil Science), Far East Branch of the Russian Academy of Sciences, 690022, Vladivostok-22, Russia.
E-mail: storozhenko@biosoil.ru web-site: http://www.biosoil.ru/fee