

РОССИЙСКАЯ АКАДЕМИЯ НАУК
Южный Научный Центр

RUSSIAN ACADEMY OF SCIENCES
Southern Scientific Centre

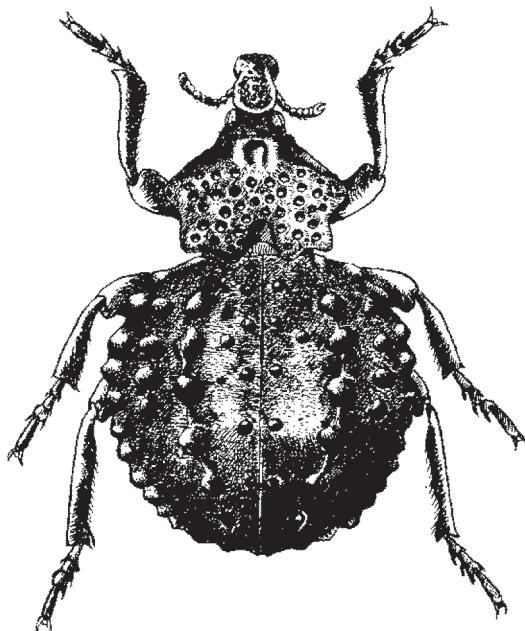


Кавказский Энтомологический Бюллетень

CAUCASIAN ENTOMOLOGICAL BULLETIN

Том 4. Вып. 1

Vol. 4. No. 1



Ростов-на-Дону
2008

Systematics of the genus *Epithalassius* Mik, 1891 (Diptera, Dolichopodidae)

Систематика рода *Epithalassius* Mik, 1891 (Diptera, Dolichopodidae)

I.Ya. Grichanov
И.Я. Гричанов

All-Russian Institute of Plant Protection, Podbel'skiy roadway, 3, St. Petersburg, Pushkin 196608 Russia. E-mail: grichanov@mail.ru
Всероссийский институт защиты растений, шоссе Подбельского, 3, Санкт-Петербург-Пушкин 196608 Россия

Key words: Diptera, Dolichopodidae, Palearctic Region, Afrotropical Region, *Epithalassius*, new species, key.

Ключевые слова: Diptera, Dolichopodidae, Палеарктика, Тропическая Африка, *Epithalassius*, новый вид, определитель.

Abstract. The genus *Epithalassius* Mik, 1891 is reviewed, illustrated and keyed, and includes seven species, one of them newly described: *E. susmani* sp. n. from Israel. A checklist of the *Epithalassius* fauna is provided along with notes on selected species and genus position. *E. corsicanus* Becker, 1910 is first recorded from Israel. A new tribe Epithalassiini, **tribus novus**, is proposed in the subfamily Hydrophorinae. A key to tribes of the subfamily is also compiled.

Резюме. Даны обзор и определитель семи видов рода *Epithalassius* Mik, 1891, в т.ч. одного нового вида *E. susmani* sp. n. из Израиля. Приведен список видов и заметки о некоторых видах и систематическом положении рода. *E. corsicanus* Becker, 1910 впервые указан для Израиля. Предложена новая триба в подсемействе Hydrophorinae – Epithalassiini, **tribus novus**. Составлен определитель триб подсемейства.

Introduction

The genus *Epithalassius* was described by Mik [1891] with only one included species *E. sanctimargi* Mik, 1891 (described by a female from Venice), which is the type species of the genus. The description has a few specific characters allowing poor association of this female with subsequently described Mediterranean species, including quadrisetose scutellum, rusty oviscapta and entirely light body setation. Strobl [in Czerny, Strobl, 1909] described *E. czernyi* from southernmost Spain (Tarifa), distinguishing it from *E. sanctimargi* by entirely black femora with only knees red-yellow, while *E. sanctimargi* was described with femora broadly ochraceous at their apex and with hind femur ochraceous also basoventrally. The male of this species was described as having cercal lobes rusty-yellow, thin, long, more or less widened at apex. Becker [1910] described *E. corsicanus* from Bastia (Corsica), distinguishing it from previously known species by bisetose scutellum and black cercal lobes. It is worth noting that he described wing vein CuA₁ as being 1.5 times longer than *m-cu*; one cercal lobe as knoblike, and another one not thickened at apex in male; female having black oviscapta. Becker [1918] included the genus into the subfamily Raphiinae with three known Mediterranean species, *E.*

sanctimargi (= *E. czernyi*), *E. corsicanus* and *E. caucasicus* Becker, 1918 (described by females). Later, *E. elegantulus* Villeneuve, 1920 was described from Atlantic France, *E. africus* Parent, 1930 was described by a female from Congo and *E. stackelbergi* Bešovskiy, 1966 from Bulgaria. Parent [1938] included South France and Corsica into the area of *E. sanctimargi*; nevertheless, the records and identity of this species with *E. czernyi* should be confirmed. Selivanova and Negrobov [2006] have redescribed types of *E. caucasicus*, *E. corsicanus* and *E. elegantulus*, and have designated lectotypes and paralectotypes for *E. caucasicus* and *E. corsicanus*. *E. caucasicus* was recorded from all Bulgarian Black Sea coast [Caspers, 1951], but its male is not yet described. Vanschuytbroeck [1976] has recorded *E. corsicanus* from St. Helena; the specimen is found in Belgium, Tervuren. Ulrich [1980] included the genus into the subfamily Systeninae (with a question mark), Negrobov [1986] into the subfamily Peloropeodinae, and Grichanov [2007] has placed the genus into the subfamily Hydrophorinae. Treating collection of the Department of Zoology of the Tel Aviv University, I have found a new material on the genus *Epithalassius*. Description of one new species from Israel is also given in this paper.

Materials and methods

Material cited in this work is housed at the following institutions:
MNHN – France, Paris, Muséum National d'Histoire Naturelle;
RMCA – Belgium, Tervuren, Musée Royal de l'Afrique Centrale;
TAU – Israel, Tel Aviv, Tel Aviv University.

The left lateral view of the hypopygium, or male genital capsule, is illustrated for new species. In describing the hypopygium, 'dorsal' and 'ventral' refer to morphological position prior to genitalic rotation and flexion. Thus, in figures showing a lateral view of the hypopygium, the top of the page is morphologically ventral, while the bottom is dorsal. Morphological terminology follows Grichanov [2007]. The relative lengths of the podomeres should be regarded as representative ratios and not measurements.

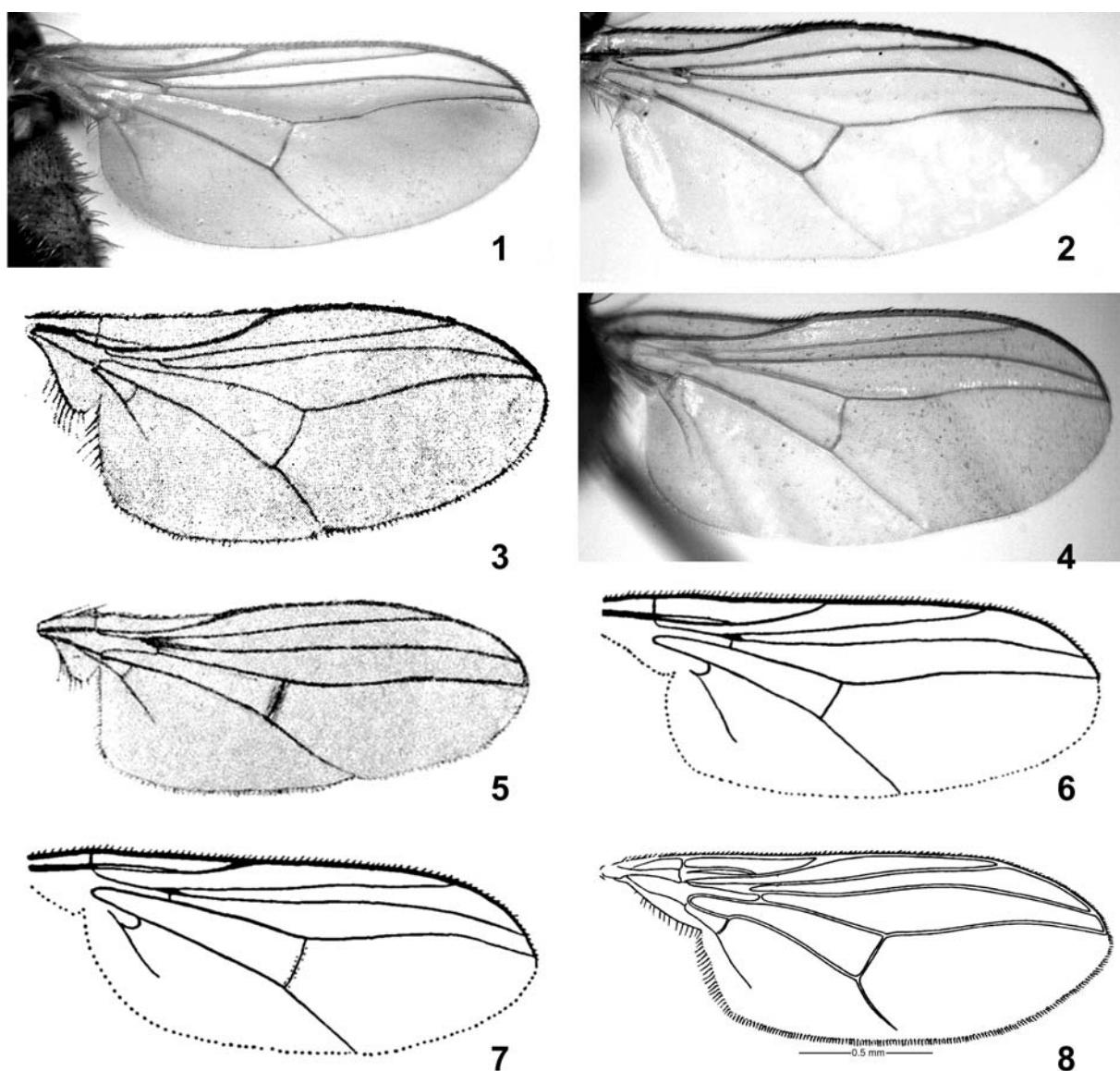


Fig. 1–8. Wings.

1 – *Epithalassius corsicanus* Becker, 1910 (Israel); 2 – *Epithalassius corsicanus* Becker, 1910 (St. Helena); 3 – *Epithalassius corsicanus* Becker, 1910 (after Becker [1918]); 4 – *Epithalassius susmani* Grichanov, sp. n.; 5 – *Epithalassius caucasicus* Becker, 1918 (after Becker [1918]); 6 – *Epithalassius sanctimарci* Mik, 1891 (after Parent [1938]); 7 – *Epithalassius elegantulus* Villeneuve, 1920 (after Parent [1938]); 8 – *Epithalassius stackelbergi* Bešovsky, 1966 (after Bešovsky [1966]).

Рис. 1–8. Крыло.

1 – *Epithalassius corsicanus* Becker, 1910 (Израиль); 2 – *Epithalassius corsicanus* Becker, 1910 (о. Св. Елены); 3 – *Epithalassius corsicanus* Becker, 1910 (по [Becker, 1918]); 4 – *Epithalassius susmani* Grichanov, sp. n.; 5 – *Epithalassius caucasicus* Becker, 1918 (по [Becker, 1918]); 6 – *Epithalassius sanctimарci* Mik, 1891 (по [Parent, 1938]); 7 – *Epithalassius elegantulus* Villeneuve, 1920 (по [Parent, 1938]); 8 – *Epithalassius stackelbergi* Bešovsky, 1966 (по [Bešovsky, 1966]).

Taxonomy

Genus *Epithalassius*

Epithalassius Mik, 1891: 186. Type species: *Epithalassius sanctimарci* Mik, 1891 (monotypy).

Diagnosis. Head: about as high as wide; frons flat and broad; 1 pair of verticals, 1 pair of ocellars, 1 pair of long postverticals; face relatively broad in both sexes, without transverse division, not reaching lower margins of eyes; eyes practically bare, well separated in both sexes; proboscis and palps moderately developed; scape bare, pedicel with

a ring of short setulae; postpedicel bisegmented (?MSSC), with 1st subsegment usually transverse, higher than 2nd one; the latter subtriangular, with usually apical bare stylus; both subsegments are divided by only surface suture.

Thorax: mesonotum flattened posteriorly; acrostichals usually uniseriate, rarely biseriate, rather long; 5–7 strong dorsocentrals present; 1–3 proepisternal setae; no hairs on the mesanepimeron; scutellum usually with 2 strong and 2 weak setae.

Legs: robust, with weak, often long, setae, without modified podomeres; hind coxa with 1–3 setae; mid and hind femora with preapical setae.

Wing: specific for the genus (fig. 1–8); rather broad, usually hyaline or sometimes with smoky spot on *m-cu*; vein R_1 relatively long; R_{4+5} and M_{1+2} convergent; M weakly variable in curvature, from slightly curved to moderately bent, usually reaching wing margin before wing apex; crossvein *m-cu* straight, located before wing midlength, shorter than distal part of CuA_1 ; anal vein present.

Abdomen: 6-segmented, slightly flattened basally, without strong posterior marginal setae on tergites; hypopygium small; epandrium usually globular; hypopygial foramen left lateral and positioned in basal third of epandrium; epandrial lobes well developed, bearing strong apical setae; cercus bilobate, with species diagnostic shape and setae.

Remarks. *Epithalassius* is mainly Mediterranean genus, commonly occurring on sand beaches near the sea coast. Nevertheless, *E. elegantulus* meets on Atlantic coast of France, *E. corsicanus* is also found in the South Atlantic, and *E. africus* is described from environs of Brazzaville, far from the Ocean. Despite its unusual habitus, the genus should be placed into the subfamily Hydrophorinae on the basis of genital morphology. Such characters as apical antennal stylus, prescutellar flattening, convergent R_{4+5} and M_{1+2} are not characteristic of the subfamily, but rather common in Hydrophorinae [Negrobov, 1979]. Even such unique for the family feature as bisegmented postpedicel may be related to a weak suture separating more or less distinctly the small distal part of postpedicel in many *Hydrophorus* Fallen, 1823 species. This character was overlooked by all researchers. Parent [1938] probably incorrectly figured antenna of *E. sanctimaci*; he showed a ring of small setulae on pedicel, but described the 2nd antennal segment (probably 1st subsegment of postpedicel) as having no corona of setulae. Selivanova and Negrobov [2006] have pictured setulose pedicel and bisegmented postpedicel of *E. corsicanus*, but describing them in the text as 1st, 2nd and 3rd joints of antenna. Considering the postabdomen of males, the genus *Peodes* Loew, 1857 is one of the closest to *Epithalassius*, but differing in simple postpedicel with dorsal stylus and other features. The complex of characters allows separating the genus *Epithalassius* (type genus) in a new tribe Epithalassiini, **tribus novus**, that can be diagnosed within the subfamily as follows (after Negrobov [1981]):

1. Vertical (fronto-orbital) setae present; antennal postpedicel pointed, with apical or strictly subapical stylus 2
– Verticals absent; stylus usually dorsal 4
2. Labellae hook-shaped in lateral view, with long recurved, generally protruding hypopharynx; antennal postpedicel undivided, with apical stylus; wing crossvein *m-cu* located far behind level of R_1 ; prescutellar depression undeveloped Aphrosylini Aldrich, 1905
– Labellae normal in lateral view, without long protruding hypopharynx; antennal stylus dorsoapical or strictly subapical 3
3. Wing crossvein *m-cu* located just behind level of R_1 ; antennal postpedicel bisegmented; prescutellar depression developed Epithalassiini Grichanov, **tribus novus**
– Wing crossvein *m-cu* located far behind level of R_1 ; antennal postpedicel non-divided; prescutellar depression undeveloped Cymatopini Grichanov, 1997
4. Antennal scape setose dorsally; prescutellar flattening undeveloped; female abdomen with 6 segments; oviscapts with

- 3 segments Hypocharassini Negrobov, 1981
- Antennal scape glabrous; prescutellar flattening developed; female abdomen with 5 segments; oviscapts with 4 segments 5
5. Antennal pedicel forming a more or less distinct projection into postpedicel; distal part of CuA_1 longer than *m-cu*; male sternites unmodified Thinophilini Aldrich, 1905
– Antennal pedicel simple, without projection; distal part of CuA_1 usually shorter than *m-cu*; male sternites IV–VI often modified Hydrophorini Lioy, 1864

List of *Epithalassius* species

- Epithalassius africus* Parent, 1930: 103; Parent, 1929: 160, 184 as **nom. nud.** Distribution: Congo (Brazzaville).
Epithalassius caucasicus Becker, 1918: 267. Distribution: Bulgaria; "Black Sea coast of the Caucasus".
Epithalassius corsicanus Becker, 1910: 648. Distribution: France (Corsica), Israel; St. Helena (?introduced).
Epithalassius elegantulus Villeneuve, 1920: 352. Distribution: France (Royan).
Epithalassius sanctimaci Mik, 1891: 187 (as *Sancti Marci*). Distribution: France (Corsica), Italy, Spain.
= *Epithalassius czernyi* Strobl, 1909: in Czerny, Strobl, 1909: 192; Becker, 1918: 264.
Epithalassius stackelbergi Bešovsky, 1966: 1079. Distribution: Bulgaria, Romania.
Epithalassius susmani sp. n. Distribution: Israel.

Key to *Epithalassius* species

1. Head and mesonotum with black bristles; upper postocular setae black; 2nd section of costa (between humeral transverse vein and R_1) distinctly shorter than 3rd one (between R_1 and R_{2+3}); *m-cu* brownish limbate; antennae blackish; 3–3.5 mm [Becker, 1918], 2.2–2.8 mm [Selivanova, Negrobov, 2006] *caucasicus*
– Head and mesonotum with white bristles; postocular setae entirely white 2
2. Antenna yellow; at least basal segments of abdomen yellow; legs yellow 3
– Antenna black; abdomen dark 4
3. Acrostichals uniserial; 5 dorsocentrals; midtibia without ventral setae; hind basitarsus as long as next segment; *m-cu* brownish limbate; male cercus with two broad lobes; 2.5 mm *elegantulus*
– Acrostichals biseriate; 6–7 dorsocentrals; midtibia with ventral setae; hind basitarsus slightly shorter than next segment; *m-cu* non-limbate; 3 mm *africus* (female)
4. Legs yellow; outer lobe of cercus very narrow, with strongly enlarged apical plate; body length 3 mm *susmani* sp. n.
– At least femora mostly black 5
5. Second section of costa distinctly shorter than 3rd one; *m-cu* slightly shorter than distal part of CuA_1 ; basal part of M_{1+2} vein much shorter than apical one (4 : 7); inner lobe of male cercus covered with short setae along whole length; 1.24 mm (wing 2.1 mm) *stackelbergi*
– Second section of costa as long as or longer than 3rd one 6
6. Basal part of M_{1+2} vein measured from *bm-cu* 2/5 the length of apical one; distal part of CuA_1 2.5 times longer than *m-cu*; cercus rusty-yellow; outer cercal lobe pointed at

apex; 3 mm *sanctimarci*
 – Basal part of M_{1+2} vein 2/3 the length of apical one; distal part of CuA_1 less than 2 times longer than $m-cu$; outer cercal lobe rounded at apex, with shallow distal emargination; cercus blackish or yellow, with narrowly blackish apex; 2–2.8 mm *corsicanus*

Epithalassius africus

Type material. Holotype ♀, Museum Paris, Congo Français, env. du Brazzaville, E. Roubaut & A. Weiss, 1907 / Type [red label] / *Epithalassius africus* n. sp. O. Parent det. [MNHN].

Diagnosis. Head and mesonotum with white bristles; face slightly narrower than frons, entirely white pollinose; antenna yellow; thorax densely ash-grey pollinose; acrostichals biseriate; 6–7 dorsocentrals; scutellum yellow, black at extreme base, with 2 strong bristles; coxae and legs yellow, with yellow bristles; mid femur with 1 subapical anterior seta; fore tibia with 2–3 anterodorsal, 2–3 posterodorsal bristles; mid tibia with 1–2 anterodorsal, 1–2 posterodorsal, 2 posteroventral bristles; hind tibia with 3–5 anterodorsal, 3–5 posterodorsal, 2 short ventral bristles; hind basitarsus slightly shorter than next segment; wing whitish with yellow veins; length ratio of costal sections between R_{2+3} , R_{4+5} and M_{1+2} – 23 : 3; R_{4+5} and M_{1+2} converging to the apex; M_{1+2} sinuate at middle of distal part; $m-cu$ non-limbate; length ratio of apical section of CuA_1 and $m-cu$ – 27 : 10; abdomen yellow; last abdominal segments blackish at base; body length 3 mm.

Remark. The species is known by a female that does not entirely correspond to generic concept of *Epithalassius*, being also the only non-maritime species in the genus. Unfortunately, antennal postpedicel is partly broken in the holotype; therefore, it is impossible to be confident in generic assignment of the species.

Epithalassius corsicanus

(Fig. 1–3, 13)

Material examined. 1♂, Israel: Nizzanim, 23.03.1995, A. Freidberg [TAU]; 1♂, Saint-Helena: Sud Sandy Bay, Blasney Bridge, 300 ft, 9.12.1965 / Coll. Mus. Tervuren, Mission. Zool. St. Helene (P. Basilewsky, P.L.G. Benoit & N. Leleup) / *Epithalassius corsicanus* Beck., P. Vanschuytbroeck det. 1974 [RMCA].

Diagnosis and variability. Head: with white bristles and cilia; frons greenish-black, grey-white pollinose; face silvery-white; clypeus short pubescent, as wide as or wider than height of postpedicel; antenna black; postpedicel bare; 1st subsegment of postpedicel transverse, with straight vertical distal margin; 2nd subsegment of postpedicel triangular, as long as or slightly longer than high at base; stylus apical and bare; palpus silvery-white, oval, with long dense cilia; proboscis brown; upper postocular bristles uniserial; lower postoculars multiseriate, long.

Thorax: blackish, densely white pollinose, with white bristles and cilia; proepisternum with 2 bristles; 7–8 acrostichals in 1 irregular row; 6 dorsocentrals; scutellum with a pair of strong medial setae and two lateral setae, 2/3 length of medial, with 4 irregular dorsal cilia in middle part, or with a pair of strong medial setae and with a few microscopic hairs.

Legs: with yellow-white bristles and cilia; coxae and

femora black, grey pollinose; knees, tibia and basal part of tarsi yellow or dirty-yellow; distal tarsomeres brown; all tarsi with brown or black-brown claws and well developed whitish yellow pulvilli; fore femur with numerous long posterior and ventral bristles, approximately as long as diameter of femur; fore tibia with 2 short posterodorsals at 1/3 and 2/3; mid femur with 2–3 long anterior bristles at apex and with full row of ventrals, as long as diameter of femur; mid tibia with 1–2 small anterodorsal and 2–3 posterodorsal bristles; hind femur with several long anterior and anterodorsal bristles at apex and with rows of anteroventrals, half as long as diameter of femur; hind tibia with 2 anterodorsal and 4 posterodorsal bristles.

Wing: transparent with yellow veins; R_{4+5} and M_{1+2} converging to the apex; halter yellow or reddish-yellow; lower calypter with yellow hairs.

Abdomen: dark green, slightly metallic shining, densely white pollinose, with white hairs; hypopygium brownish-black, white pollinose; cercus blackish or yellow, with narrowly blackish distal margin. Epandrium subcubical; cercal lobes long and narrow, somewhat widened at apex; ventral lobe with dense distal row of short thick setae and with some sparse short cilia; dorsal cercal lobe rounded at apex, with shallow distal emargination; with some longish cilia at apex and with very short cilia along whole length.

Length (mm): body without antennae 2.2–2.8, antenna 0.5, wing 2.1–2.6/0.8–1, hypopygium 0.5–0.7.

Remark. The redescription of type material [Selivanova, Negrobov, 2006] does not entirely correspond to original description of the species that may be partly explained by individual variability of the species confirmed by comparison of the two specimens studied. A male from St. Helena is somewhat smaller and darker than a male from Israel, having only 2 strong setae on scutellum. Nevertheless, hypopygium morphology of the two specimens is practically identical.

Epithalassius susmani Grichanov, sp. n.

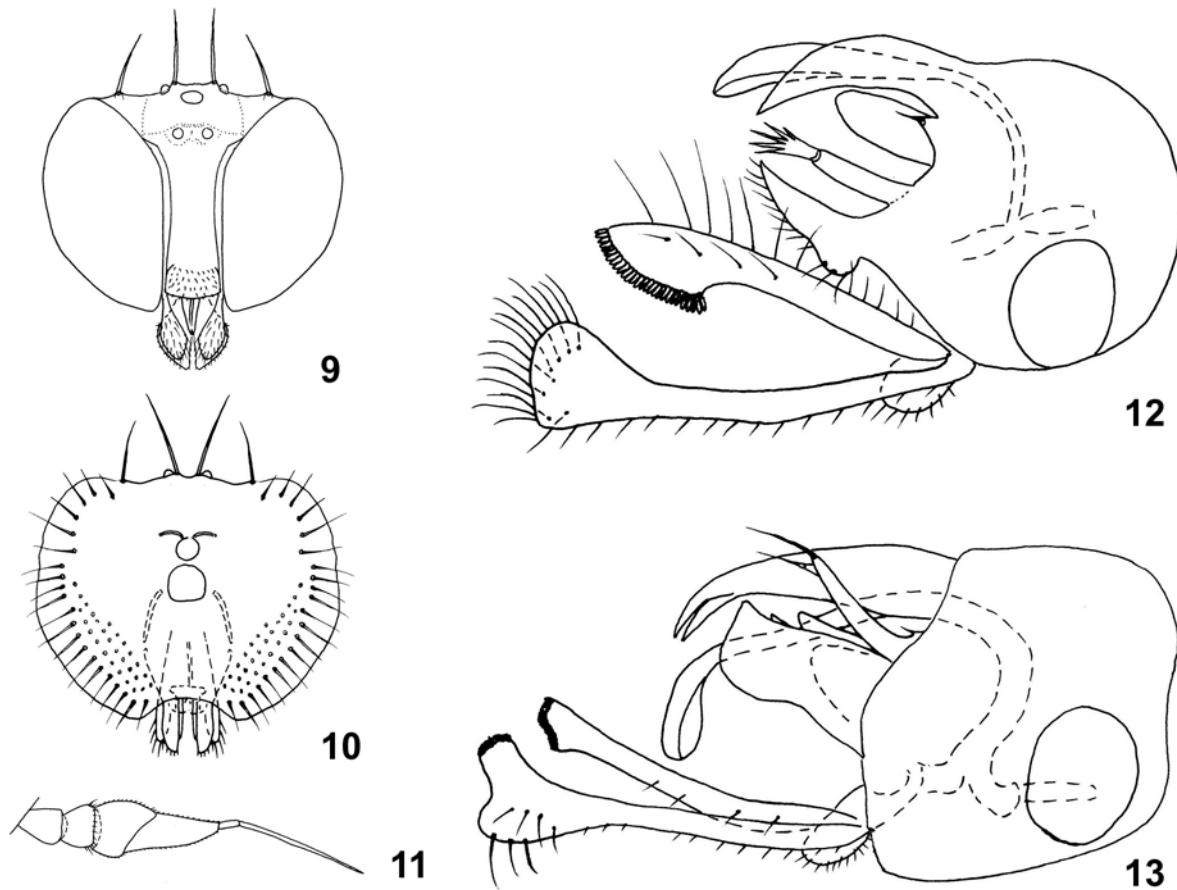
(Fig. 4, 9–12)

Type material. Holotype ♂, Israel: Achziv, 23.05.1986 (Ian Susman) [TAU].

Description. Head: with white bristles and cilia; frons greenish-black, grey-white pollinose; face silvery-white, entirely sunken between eyes; antenna mainly black, with scape and pedicel reddish ventrally; postpedicel bare; 1st subsegment of postpedicel covering 2nd one dorsally with beak-like process; 2nd subsegment of postpedicel triangular, twice as long as high at base; stylus apical and bare; length ratio of antennal segments and stylus, 3 : 2 : 5 : 8 : 14; palpus silvery-white, oval, with long dense cilia; proboscis brown; upper postocular bristles uniserial; lower postoculars multiseriate, long.

Thorax: bluish-black, densely white pollinose, with white bristles and cilia; proepisternum with 2 bristles; 5–6 acrostichals in 1 irregular row; 7 dorsocentrals; scutellum with a pair of strong medial setae and two lateral setae, 1/3 length of medial, without additional hairs.

Legs: mainly yellow, with yellow-white bristles and cilia; coxae blackish-brown at base, yellow distally, grey pollinose; distal tarsomeres brown apically; all tarsi with

Fig. 9–13. Genus *Epithalassius*.

9 – *Epithalassius susmani* Grichanov, sp. n., head (front view); 10 – *Epithalassius susmani* Grichanov, sp. n., head (back view); 11 – *Epithalassius susmani* Grichanov, sp. n., antenna; 12 – *Epithalassius susmani* Grichanov, sp. n., hypopygium; 13 – *Epithalassius corsicanus* Becker, 1910, hypopygium (Israel).

Рис. 9–13. Род *Epithalassius*.

9 – *Epithalassius susmani* Grichanov, sp. n., голова (вид спереди); 10 – *Epithalassius susmani* Grichanov, sp. n., голова (вид сзади); 11 – *Epithalassius susmani* Grichanov, sp. n., усики; 12 – *Epithalassius susmani* Grichanov, sp. n., гипопигий; 13 – *Epithalassius corsicanus* Becker, 1910, гипопигий (Израиль).

brown claws and poorly developed yellow pulvilli; fore femur with numerous long posterior and ventral bristles, approximately as long as diameter of femur; fore tibia with 1 small anterodorsal, 3 short posterodorsals; length ratio of fore tibia to tarsal segments (from 1st to 5th) – 39 : 19 : 10 : 6 : 5 : 5; mid femur with 1–2 anterior bristles at apex and with full row of ventrals, half as long as diameter of femur; mid tibia with 1 small anterodorsal and 3 posterodorsal bristles; length ratio of mid tibia to tarsal segments (from 1st to 5th) – 42 : 23 : 13 : 6 : 5 : 5; hind femur with several long anterior and anterodorsal bristles at apex, with row of dorsals, half as long as diameter of femur and with row of rather short ventrals; hind tibia with 4 short anterodorsal and 6 posterodorsal bristles; length ratio of hind tibia to tarsal segments (from 1st to 5th) – 61 : 19 : 15 : 10 : 7 : 7.

Wing: transparent with yellow veins; length ratio of costal sections between humeral vein, R₁, R₂₊₃, R₄₊₅ and M₁₊₂ – 41 : 50 : 25 : 5; R₄₊₅ and M₁₊₂ converging to the apex; length ratio of apical and basal sections of M₁₊₂ – 64 : 32; length ratio of apical section of CuA₁ and m-cu – 30 : 14;

halter yellow; lower calypter with yellow hairs.

Abdomen: dark green, slightly metallic shining, densely white pollinose, with white hairs; 8th segment covered with fine hairs; hypopygium brownish-black, white pollinose; cercus dirty-yellow. Epandrium globular, fused with hypandrium; cercal lobes long and narrow, somewhat widened at apex; ventral lobe with dense distal row of short thick setae and with long cilia along whole length; dorsal lobe with dense long cilia at apex and with short cilia along whole length.

Length (mm): body without antennae 3, antenna 0.7, wing 3.0/1.2, hypopygium 0.8.

Female unknown.

Diagnosis. The new species is very distinct in having elongated postpedicel and oblique suture between 1st and 2nd subsegments of postpedicel. This is the third species in the genus with entirely yellow femora, differing from afrotropical *E. africus* and Northern-Atlantic *E. elegantulus* in mainly black antenna, dark abdomen and many other morphological characters.

Acknowledgements

The author expresses sincere gratitude to late Dr. Loïs Matile (Paris), Dr. Marc De Meyer (Brussels) and Dr. Amnon Freidberg (Tel Aviv) for their kindness in furnishing an opportunity to study the collections of their museums.

References

- Becker Th. 1910. Orthorrhapha Brachycera; Cyclorrhapha Holometopa. In: Becker Th., Kuntze A., Schnabl J. & Villeneuve E. Dipterologische Sammelreise nach Korsika (Dipt.). // Deutsche Entomologische Zeitschrift. 6: 635–665.
- Becker Th. 1918. Dipterologische Studien. Dolichopodidae. Paläarktische Region. Erster Teil // Nova Acta Academia Ceasar Leopold Carolensis. 103: 203–315.
- Bešovský V.L. 1966. *Epithalassius stackelbergi* n. sp. une nouvelle espèce de Diptera (Dolichopodidae) du littoral Bulgare de la Mer Noire // Compte rendus de l'Academie bulgare des Sciences. 19: 1079–1082.
- Caspers H. 1951. Biozönotische Untersuchungen über die Strandarthropoden in Bulgarischen Küstenbereich des Schwarzen Meeres // Hydrobiologia. 3: 131–193.
- Czerny L., Strobl G. 1909. Spanische Dopteren. III Beitrag // Verhandlungen der Kaiserlich-Königliche Zoologisch-botanischen Gesellschaft in Wien. 5(59): 121–301.
- Grichanov I.Ya. 2007. A checklist and keys to Dolichopodidae (Diptera) of the Caucasus and East Mediterranean. St. Petersburg: VIZR RAAS (Plant Protection News Supplement). 160 p.
- Mik J. 1891. *Epithalassius Sancti Marci*, ein neues Dipteron aus Venedig // Wiener entomologische Zeitung. 10(5): 186–187.
- Negrobov O.P. 1979. Dolichopodidae // E. Lindner. Die Fliegen der palearktischen Region. 29(321–322): 419–530.
- Negrobov O.P. 1981. Review of genera of the subfamily Hydrophorinae (Dolichopodidae, Diptera) of world fauna with discrimination of new tribes // Voprosy obshchei entomologii / Trudy Vsesoyuznogo entomologicheskogo obshchestva. 63: 146–148 (in Russian).
- Negrobov O.P. 1986. The system and phylogeny of flies of the family Dolichopodidae // Entomologicheskoe obozrenie. 65(1): 182–186 (in Russian).
- Parent O. 1929. Les Dolichopodides de la Région Ethiopienne. Étude systématique // Bulletin Société Royale Entomologique d'Egypte. 13(4): 151–190.
- Parent O. 1930. Espèces nouvelles de Dolichopodides (Diptères) conservées au Muséum national d'Histoire naturelle de Paris // Annales de la Société Scientifique de Bruxelles. (B) 50 (Mem.): 86–115.
- Parent O. 1938. Diptères Dolichopodidés // Faune de France. Vol. 35. Paris: L'Académie des Sciences de Paris. 720 p.
- Selivanova O.V., Negrobov O.P. 2006. A review of species of the genus *Epithalassius* Mik (Diptera: Dolichopodidae) // International Journal of Dipterological Research. 17(2): 101–105.
- Ulrich H. 1980. Zur systematischen Gliederung der Dolichopodiden (Diptera) // Bonner Zoologische Beiträge. 31(3–4): 385–402.
- Vanschuybroeck P. 1976. Fam. Dolichopodidae. In: La Faune terrestre de l'Île de Sainte-Hélène (Troisième Partie) // Annales Musée Royal de l'Afrique Centrale, Tervuren, ser. 8(215): 49–57.
- Villeneuve D.J. 1919–1920. Diptères inédites // Bulletin de la Société Royale Entomologique de France. Année 1919: 352–353.

References

- Becker Th. 1910. Orthorrhapha Brachycera; Cyclorrhapha Holometopa. In: Becker Th., Kuntze A., Schnabl J., Villeneuve E. Dipterologische Sammelreise nach Korsika (Dipt.). *Deutsche Entomologische Zeitschrift*. 6: 635–665.
- Becker Th. 1918. Dipterologische Studien. Dolichopodidae. Palaarktische Region. Erster Teil. *Nova Acta Academia Ceasar Leopold Carolensis*. 103: 203–315.
- Bešovský V.L. 1966. *Epithalassius stackelbergi* n. sp. une nouvelle espèce de Diptera (Dolichopodidae) du littoral Bulgare de la Mer Noire. *Comptes rendus de l'Académie bulgare des sciences: sciences mathématiques et naturelles*. 19: 1079–1082.
- Caspers H. 1951. Biozonotische Untersuchungen über die Strandarthropoden in Bulgarischen Küstenbereich des Schwarzen Meeres. *Hydrobiologia*. 3: 131–193.
- Czerny L., Strobl G. 1909. Spanische Dopteren. III Beitrag. *Verhandlungen der Kaiserlich-Königliche Zoologisch-botanischen Gesellschaft in Wien*. 5(59): 121–301.
- Grichanov I.Ya. 2007. A checklist and keys to Dolichopodidae (Diptera) of the Caucasus and East Mediterranean. *Plant Protection News. Supplement*: 1–160.
- Mik J. 1891. *Epithalassius Sancti Marci*, ein neues Dipteron aus Venedig. *Wiener Entomologische Zeitung*. 10(5): 186–187.
- Negrobov O.P. 1979. Dolichopodidae. In: Die Fliegen der palearktischen Region. Bd. 29. Liefs 321–322. Stuttgart: Schweizerbartsche Verlagsbuchhandlung: 419–530.
- Negrobov O.P. 1981. Review of genera of the subfamily Hydrophorinae (Dolichopodidae, Diptera) of world fauna with discrimination of new tribes. In: Trudy Vsesoyuznogo entomologicheskogo obshchestva. T. 63. Voprosy obshchey entomologii [Proceedings of the All-Union Entomological Society. T. 63. Questions of general entomology]. Leningrad: Zoological Institute of Academy of Sciences of the USSR: 146–148 (in Russian).
- Negrobov O.P. 1986. The system and phylogeny of flies of the family Dolichopodidae. *Entomologicheskoe obozrenie*. 65(1): 182–186 (in Russian).
- Parent O. 1929. Les Dolichopodidae de la région éthiopienne. Étude systématique. *Bulletin de la Société Royale Entomologique d'Égypte*. 13(4): 151–190.
- Parent O. 1930. Espèces nouvelles de Dolichopodidae (Diptères) conservées au Muséum national d'Histoire naturelle de Paris. *Annales de la Société Scientifique de Bruxelles (B)*. 50: 86–115.
- Parent O. 1938. Diptères Dolichopodidae. Faune de France. Vol. 35. Paris: L'Académie des Sciences de Paris. 720 p.
- Selivanova O.V., Negrobov O.P. 2006. A review of species of the genus *Epithalassius* Milk (Diptera: Dolicopodidae). *International Journal of Dipterological Research*. 17(2): 101–105.
- Ulrich H. 1980. Zur systematischen Gliederung der Dolichopodiden (Diptera). *Bonner Zoologische Beiträge*. 31(3–4): 385–402.
- Vanschuybroeck P. 1976. Fam. Dolichopodidae. La Faune terrestre de l'Île de Sainte-Hélène (Troisième Partie). *Annales Musée Royal de l'Afrique Centrale, Tervuren, ser. 8*. 215: 49–57.
- Villeneuve D.J. 1919–1920. Diptères inédites. *Bulletin de la Société Entomologique de France*. 1919: 352–353.