
SHORT COMMUNICATIONS

КРАТКИЕ СООБЩЕНИЯ

A NEW SPECIES OF *EPITHALASSIUS* (DIPTERA: DOLICHOPODIDAE) FROM BRITTANY, FRANCE

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A new species, *Epithalassius gloagueni* sp.n., is described and illustrated from the Trunvel-Tréogat Biological Nature Reserve (Brittany, France). This species can be distinguished from the similar *E. sanctimarci* from the Mediterranean Sea coast by the presence of only one long band-like outer lobe of the cercus. The male of *E. sanctimarci* has a cercus with two long band-like lobes of subequal size. An updated key to Palearctic species of *Epithalassius* is provided.

Key words: Atlantic coast of Europe, *Epithalassius gloagueni*, Hydrophorinae, key, Palearctic

Introduction

The genus *Epithalassius* Mik, 1891 (Hydrophorinae: Epithalassiini) is a small genus of dolichopodid flies with seven known species (Grichanov, 2008). The species are rarely collected in its Palearctic area, sometimes poorly described and known only from their type localities. They usually occur on sand beaches near the sea coast. The increasing use of beaches and coastal dunes for recreation poses a threat to this group of rare flies. Two species are known from the Black Sea basin. *Epithalassius caucasicus* Becker, 1918 (with undescribed male) was originally reported from the «Black Sea coast of the Caucasus» and was once mentioned from «all Bulgarian Black Sea coast». *Epithalassius stackelbergi* Beschovski, 1966 was collected for the first time in dunes along the Bulgarian Black Sea coast and found later (Pârnu, 1987) at the Danube Delta (Northern Dobruja, Romania). Three species are known from the Mediterranean Sea coast with *E. susmani* Grichanov, 2008 reported from Israel, *E. sanctimarci* Mik, 1891 from Corsica (France), Italy and Spain and *E. corsicanus* Becker, 1910 from sand beaches of Corsica and Israel. The latter species was probably introduced to the Atlantic St. Helena Island (Grichanov, 2008). The same author doubted the generic position of *E. africanus* Parent, 1930 described from a damaged female collected from an inland locality near Brazzaville (the Republic of Congo), far from the Ocean. The only species described from the Atlantic coast of Europe was *E. elegantulus* Villeneuve, 1920 described from Royan (France) and later reported from Finistère, France (Parent, 1938). The genus

has also been recorded from Portugal (Pollet et al., 2019). An identification key to the known species was provided by Grichanov (2008).

The main aims of this study are to describe and illustrate a new species of the genus *Epithalassius* from a coastal nature reserve in northwestern France and to compile an updated key to Palearctic species of the genus.

Material and Methods

The material cited in this work is housed at the Zoological Institute of RAS, St. Petersburg, Russia (ZIN). The types were studied and photographed with a ZEISS Discovery V-12 stereo microscope and an AxioCam MRc5 camera in St. Petersburg. Genitalia preparation was 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 relative lengths of the antennal segments and wing veins should be regarded as representative ratios and not measurements. The body length is measured from the base of the antenna to the tip of abdominal segment 6. The wing length is measured from the base to the wing apex.

The holotype and paratype of the new species were collected at the Trunvel-Tréogat Biological Nature Reserve (Réserve biologique de Trunvel-Tréogat) within the area of the protected «Natura 2000 site of Baie d'Audierne» (Buisson, 2010), Tréguennec Commune, Finistère Department, Brittany region, Northwestern France. This biological reserve occupies 2.645 km² of the so-called «Audierne

Bay Wetland» (Zone humide de la Baie d’Audierne) (Durfort, 2018). It is characterised by the presence of thermophilic dune plant communities (Fig. 1A,B) and alkaline marshes (Fig. 1C,D). Large coastal marshes flow occasionally into the sea by percolation or through an artificial breach in the barricade of pebbles. The other, less common ecosystems are either mobile or fixed dunes, eutrophic ponds, reed beds (with common reed and maritime bulrush), back dune depressions, sea buckthorn thickets, and dry heathlands. The habitats, where the types were collected, are back sand dunes of the Kermabec beach (Fig. 1C,D) and Tronoen beach belonging to the «Conservatoire du littoral», a French public organisation, member of IUCN.

Results

Genus *Epithalassius* Mik, 1891

Diagnosis. Body size: 1.2–3.0 mm. The genus contains eight, including the new one, species which inhabit sandy beaches along sea coasts. Adults are recognised by the combination of the following features: antennal postpedicel with distinct transverse ridge, appearing bi-segmented, with apical part beyond ridge subtriangular; thorax with uniserial or irregularly biserial acrostichal setae; 5–7 strong dorsocentrals present; 1–3 proepisternal setae; no hairs on the mesanepimeron; wing rather broad, with veins R_{4+5} and M_1 convergent, and vein M_1 distinctly curved anteriorly; male hypopygium with bilobate cercus (Grichanov & Brooks, 2017).

Description of the new species

Epithalassius gloagueni sp.n.

Diagnosis. Head and mesonotum with white bristles; postocular setae entirely white; antenna black; second section of costa as long as third section; femora mostly black; fore tibia with one strong anterodorsal and three strong posterodorsal bristles, with rows of long setulae dorsally; abdomen dark; cercus black, with long outer and short inner cercal lobe. See also the key to Palearctic species of *Epithalassius* below.

Type material. Holotype: ♂, France, Brittany, Finistère, Tréguennec, back sand dunes of Kermabec beach, 43.883694° N, 04.359827° W, 06.06.2020, P.-Y. Gloaguen coll. (ZIN). Paratype: 1 ♀, France, Brittany, Finistère, Tréguennec, back sand dunes of Kermabec beach, 43.883694° N, 04.359827° W, 06.06.2020, P.-Y. Gloaguen coll. (ZIN). The holotype has its male terminalia dissected and stored in glycerin in a microvial pinned with the source specimen.



A



B



C



D

Fig. 1. Coastal sand dunes in the Natura 2000 site of Baie d’Audierne, France. Designations: A–B – slope of coastal sand dunes facing the sea, general view; C–D – landscape behind coastal sand dunes: the type locality of *Epithalassius gloagueni* sp.n. (Photos: Pierre-Yves Gloaguen).

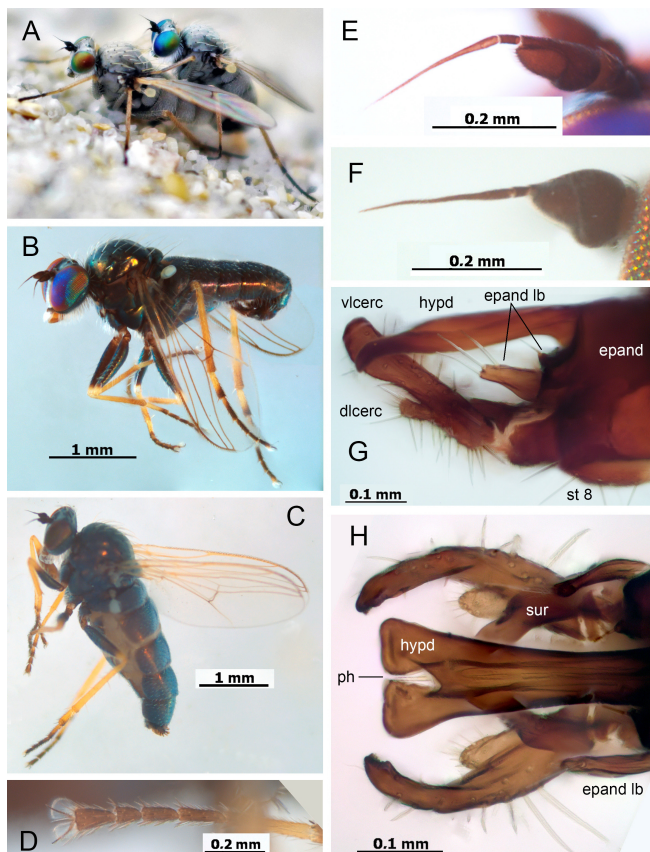


Fig. 2. *Epithalassius gloagueni* sp.n. Designations: A – male and female in copula (non-type specimens); B – male holotype habitus, in ethanol; C – female paratype habitus, in ethanol; D – male fore tarsus; E – male antenna, dorsolateral view; F – female antenna, outer lateral view; G – hypopygium, lateral view, in glycerin; H – hypopygial appendages, ventral view, in glycerin. Abbreviations: dlcerc – dorsal lobe of cercus; epand – epandrium; epand lb – epandrial lobe; hypd – hypandrium; ph – phallus; st 8 – sternite; sur – surstylus; vlcerc – ventral lobe of cercus (Photo 2A: Pierre-Yves Gloaguen).

Additional material. 1♂, France: Brittany, Finistère, Saint-Jean-Trolimon, back sand dunes of Tronoen beach, 47.851384° N, 04.346518° W, 30.05.2019, P.-Y. Gloaguen coll. (P.-Y. Gloaguen personal collection, Le Fort, F-29710 Gourlizon, France; dissected).

Notes. Both the Kermabec beach (Figs. 1C, 1D) and the Tronoen beach are located at the Trunvel-Tréogat Biological Nature Reserve within the territory of the protected «Natura 2000 site of Baie d’Audierne».

Male (Fig. 2A,B). Measurements: body length 2.7 mm, antenna length 0.5 mm, wing length 2.4 mm, wing width 0.9 mm.

Head. With only white bristles and cilia; frons greenish-black, grey-white pollinose; face silvery white pollinose, slightly narrowed at middle, at clypeus as wide as postpedicel (male secondary sexual character, or MSSC); antenna (Fig. 2E) black; postpedicel bare, apparently bi-segmented,

1.3 times longer than high at base (MSSC); basal part of postpedicel covering apical part dorsally with narrow process; apical part of postpedicel triangular, about as long as high at base; arista-like stylus apical and bare; length ratio of scape to pedicel to postpedicel to stylus (1st and 2nd segments), 5/5/14/4/24 (MSSC); palpus silvery-white, oval, with long dense pubescence; proboscis brown; upper postocular bristles uniseriate; lower postoculars multiseriate, long.

Thorax. Bluish-black, densely white pollinose, with white bristles and cilia; proepisternum with 2 bristles; 6–7 acrostichals in two irregular rows; 5–6 dorsocentrals; scutellum with a pair of strong medial setae and two lateral setae, half as long as medials, without additional hairs.

Legs (Fig. 2B). With yellow-white bristles and cilia; coxae and femora black, grey pollinose; knees, tibiae and basitarsi mostly yellow or dirty-yellow; tibiae dark at apex; tarsi black from tip of basitarsus onwards; all tarsi with black claws and well developed whitish yellow pulvilli (Fig. 2D); fore femur with numerous long posterior and ventral bristles, approximately as long as diameter of femur; fore tibia with one strong anterodorsal and three strong posterodorsal bristles, with rows of long setulae dorsally; mid femur with 1–2 anterior preapical bristles and with row of ventral bristles along entire length, half as long as diameter of femur; mid tibia with one anterodorsal and three posterodorsal bristles; hind femur with several long anterior and anterodorsal bristles at apex, with one row of dorsal bristles, half as long as diameter of femur, and with one row of rather short ventral bristles; hind tibia with two anterodorsal and three posterodorsal bristles, and two ventral setae; podomeres (from femur to fifth tarsomere, in mm) length: fore leg: 0.75/0.65/0.32/0.15/0.12/0.08/0.13, mid leg: 0.69/0.76/0.32/0.17/0.12/0.08/0.11, hind leg: 0.83/1.04/0.33/0.29/0.22/0.15/0.16.

Wing. Transparent with yellow veins; length ratio of costal sections between humeral vein, R_1 , R_{2+3} , R_{4+5} and M_{1+2} : 76/76/44/8; R_{4+5} and M_{1+2} convergent to apex; length ratio of apical and basal sections of M_{1+2} : 110/51; length ratio of apical section of M_4 and dm-m: 46/21; halter yellow; lower calypter with yellow hairs.

Abdomen. Bluish black, slightly metallic shining, densely white pollinose, with white setae; segment 8 covered with fine setae; hypopygium (Fig. 2G,H) black, white pollinose; cercus black; epandrium globular; hypandrium fused with epandrium, long and broad to apex, deeply

cleft at apex (ventral view); phallus simple; basoventral epandrial lobe small, with subtriangular apex and one apical seta; apicoventral epandrial lobe broad, leaf-like, with 2–3 long apical setae; surstylus narrow, S-shaped, about half as long as cercus, with one mid-ventral and one basodorsal tooth, with few setae; ventral lobe of cercus long and broad, with dense distal row of short thick setae and with long cilia along whole length; dorsal lobe of cercus as short finger-like process at base of ventral lobe, with long cilia.

Female (Fig. 2C). Length: body 3 mm, wing 3 mm, antenna 0.5 mm. Similar to male except for lacking MSSC: face wider, nearly parallel-sided, at narrowest point 1.7 times wider than postpedicel; postpedicel as long as high at base (Fig. 2F); arista-like stylus 2.5 times longer than postpedicel; segments 1–2 of tarsi mostly yellow, blackish at apex; terga 9+10 divided medially into two hemitergites, each bearing 5–6 thick spines.

Etymology. The new species is named after the French amateur entomologist Pierre-Yves Gloaguen (Le Fort, F-29710 Gourlizon, France) who collected the type material.

Habitat. As reported by Pierre-Yves Gloaguen, the collecting site of the types of the new spe-

cies is a classic coastal dune (Fig. 1) wedged between the sea and a coastal marsh whose formation dates back to 400 BC (Durfort, 2018). The flies were observed on the open bare sandy areas of the back dune sheltered from the wind.

Differential diagnosis

Following published keys (Parent, 1938; Grichanov, 2008), *Epithalassius gloagueni* sp.n. is close to *E. sanctimarci* (not examined). It can be distinguished from the latter by the presence of only one long band-like outer lobe of the cercus. The male fore tibia in *E. gloagueni* sp.n. bears one strong anterodorsal and three strong posterodorsal bristles, and dorsal rows of long setulae. The cercus is black in *E. gloagueni* sp.n. In the male of *E. sanctimarci*, the fore tibia bears only two short posterodorsal bristles. The cercus is rusty-yellow, with two long cercal lobes (Parent, 1938).

Females of species related to *E. gloagueni* sp.n. are probably indistinguishable without molecular analysis. Females of the two species known from the Atlantic coast of France can be easily distinguished by the colour of antennae and femora, yellow in *E. elegantulus*, and black in *E. gloagueni* sp.n.

Key to Palearctic species of *Epithalassius* Mik (after Grichanov, 2008, updated)

1. Head and mesonotum with black bristles; upper postocular setae black; second section of costa (between humeral transverse vein and R_1) distinctly shorter than third section (between R_1 and R_{2+3}); dm-m brownish limbate; antennae blackish; body 3.0–3.5 mm (Becker, 1918), 2.2–2.8 mm (Selivanova & Negrobov, 2006) (Black Sea coast of the Caucasus and Bulgaria) *E. caucasicus*
– Head and mesonotum with white bristles; postocular setae entirely white; other features variable 2
2. Antenna yellow; at least basal segments of abdomen yellow; dm-m brownish limbate; legs entirely yellow; male cercus with two broad lobes; body 2.50–2.75 mm (Selivanova & Negrobov, 2006) (France) *E. elegantulus*
– Antenna black; abdomen dark; other features variable 3
3. Legs entirely yellow; ventral lobe of male cercus narrow, with strongly enlarged apical plate; body 3 mm (Grichanov, 2008) (Israel) *E. susmani*
– At least femora mostly black; cercus variable 4
4. Second section of costa distinctly shorter than third section (3 : 4); dm-m slightly shorter than distal part of M_4 ; basal part of M_{1+2} vein much shorter than apical part (4 : 7); inner lobe of male cercus covered with short setae along whole length; 1.24 mm (wing 2.1 mm) (Selivanova & Negrobov, 2006) (Bulgaria, Romania) *E. stackelbergi*
– Second section of costa as long as or longer than third section; other features variable; cercus variously setose 5
5. Fore tibia with one strong anterodorsal and three strong posterodorsal bristles, and dorsal rows of long setulae; male cercus black, with long outer and short inner cercal lobes; body 2.7 mm (Northwestern France) *E. gloagueni* sp.n.
– Fore tibia with two short posterodorsal bristles, without dorsal rows of long setulae; cercus mostly or entirely rusty-yellow, with 2 long cercal lobes 6
6. Basal part of M_{1+2} vein measured from dm-m 2/5 as long as distal part; distal part of M_4 2.5 times longer than dm-m; male cercus rusty-yellow; outer cercal lobe pointed at apex; body 3 mm (Parent, 1938) (Corsica, Italy, Spain) *E. sanctimarci*
– Basal part of M_{1+2} vein 2/3 as long as distal part; distal part of M_4 less than 2 times longer than dm-m; cercus brownish or yellow, with narrowly blackish apex; outer cercal lobe rounded at apex, with shallow distal emargination; body 2.2–2.8 mm (Grichanov, 2008) (Corsica, Israel, St. Helena) *E. corsicanus*

Conclusions

As a result of this study, a new species of the genus *Epithalassius* is described and illustrated from the Brittany region of France. It is the northernmost point of the distribution range of the genus. An updated key to Palearctic species of the genus is compiled. *Epithalassius gloagueni* sp.n. and the other known species inhabit the coastal band of the Black Sea, Mediterranean Sea and Atlantic Ocean from the Caucasus and Israel in the east to Portugal and Brittany in the west. Some colour photos of a representative of the genus are published for the first time here, as well as some photos of the typical ecosystem for *Epithalassius* species. It is well known that the coastal and especially littoral habitats are subject to anthropogenic impact including the increasing urbanisation, recreational activities and mechanical beach cleaning. Therefore, species of this genus may be included as bioindicators into the nature conservation programmes aimed at prevention of biodiversity loss on sandy sea beaches and adjacent coastal ecosystems.

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НОВЫЙ ВИД РОДА *EPITHALASSIUS* (DOLICHOPODIDAE, DIPTERA) ИЗ БРЕТАНИ, ФРАНЦИЯ

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Описан новый вид *Epithalassius gloagueni* sp.n. из биологического заповедника Трунвель-Треогат (департамент Финистер в Бретани, северо-запад Франции). Самец *E. gloagueni* отличается от близкого вида *E. sanctimarci*, обитающего на берегах Средиземного моря, наличием только одной длинной лопасти церки. Самец *E. sanctimarci*, как и большинство других видов рода, имеет церку с двумя длинными лопастями. Составлен новый ключ для определения палеарктических видов *Epithalassius*.

Ключевые слова: *Epithalassius gloagueni*, Hydrophorinae, Атлантика, Европа, ключ, Палеарктика