

A VERY PECULIAR NEW SPECIES OF *TETHINA* HALIDAY, 1838 AND A NEW RECORD OF *TETHINA ILLOTA* (HALIDAY, 1838) FROM PORTUGAL (DIPTERA: CANACIDAE, TETHININAE)

LORENZO MUNARI ⁽¹⁾, JORGE ALMEIDA ⁽²⁾ & RUI ANDRADE ⁽³⁾

Key words: Canacidae, Tethininae, new species, *Tethina illota*, new record, Portugal.

Abstract

Tethina lusitanica **sp. nov.** from Portugal is described and illustrated. This “spotted-wing” new species is closely related to *Tethina pictipennis* Freidberg and Beschovski, 1996. Besides the male terminalia features, it differs from the latter species, as well as from all congeners, mainly by some peculiar character reversals relating to chaetotaxy. *T. lusitanica* **sp. nov.** has been photographed and video recorded in nature. Additionally, *Tethina illota* (Haliday, 1838) is recorded for the first time from the Iberian peninsula.

Riassunto

Una assai peculiare nuova specie di Tethina Haliday, 1838 e una nuova segnalazione di Tethina illota (Haliday, 1838) dal Portogallo (Diptera: Canacidae, Tethininae)

Viene descritta e illustrata *Tethina lusitanica* **sp. nov.** del Portogallo. Questa nuova specie dalle ali maculate è affine a *Tethina pictipennis* Freidberg e Beschovski, 1996. Oltre alle caratteristiche dei genitali del maschio, essa differisce da quest'ultima specie, come pure da tutte le congeneri, principalmente per alcune inversioni relative a caratteri della chaetotassi. *T. lusitanica* **sp. nov.** è stata fotografata e filmata in natura. Inoltre, *Tethina illota* (Haliday, 1838) viene segnalata per la prima volta per la penisola Iberica.

Introduction

Tethina pictipennis Freidberg and Beschovski, 1996 is a North African (Morocco) species strongly characterized mainly by having patterned wings. So far it was the only species in the family to have such a peculiar character state. Unexpectedly, a second species with spotted wings was collected by two of the authors (J.A., R.A.) in a beach of northern Portugal. At first glance it strongly resembles *T. pictipennis* as to shape, colour, and wings bearing black spots, but it substantially differs from the latter species by having a combination of external and genitalic features that makes it unique within the entire family Canacidae. Besides the spotted wings (a character state which is shared with *T. pictipennis* only), it lacks postocellar and katepisternal setae and all setulae of head and thorax are lacking as well. Furthermore, an unusually long, narrow, genital postgonite characterizes the male terminalia. This sclerite is so much long that it even protrudes, as a rodlike projection, outside the postabdomen in dry and alcohol specimens.

Both these species, *T. pictipennis* and *T. lusitanica*, belong to the *alboguttata*-group, a group of species with depigmented (white) crossveins (but pigmented in the new species), sometimes surrounded by a milky halo, surstylus with more or less broad ventral lobe, and fema-

le cercus bearing numerous, stout, curved spinulae. Additionally, the two species have patterned wings, a character state unique among the canacids, as well as the gena bearing a few, scattered, microscopical setulae like those occurring on the gena of the species of *Pelomyiella* Hendel (Pelomyiinae). The occurrence of the latter character in species of both the subfamilies Tethininae and Pelomyiinae has arisen independently more than once. In the new species described herein these tiny hairs are mostly located on the anterior corner of gena, whereas they are generally more widely distributed on the gena of *T. pictipennis*. These characters single out the two species as a monophyletic lineage, likely evolved in the westernmost area of the *alboguttata*-group. The absence of some main setae and setulae in the new species (see diagnosis below) distinguishes it from all congeners. This peculiarity is probably due to an autapomorphic character reversal. A phylogenetic analysis on this species group will hopefully clarify their taxonomic position in a more consistent way.

The specimens, inhabiting a sandy beach characterized by heavy anthropical pressure, were observed in nature, photographed, video recorded (see: <http://www.youtube.com/user/tethinaportugal>) and finally collected and preserved in alcohol.

⁽¹⁾ Co-operating Entomologist, Natural History Museum, S. Croce 1730, I-30135 Venezia, Italy. E-mail: lormun@iol.it

⁽²⁾ Rua da Póvoa Dão – Casal Jusão, 3500-532 Silgueiros – Viseu, Portugal. E-mail: jorgemotalmeida@gmail.com

⁽³⁾ Rua Dr. Abel Varzim 16 2 – D, 4750-253 Barcelos, Portugal. E-mail: ruiamandrade@yahoo.com



Figures 1-3 - *Tethina lusitanica* sp. nov., 1. Male terminalia lateral view; 2. Ditto, caudal view; 3. Basiphallus caudal view. Scale bar = 0.1 mm.

Taxonomic account

Tethina lusitanica sp. nov.

(Figs. 1–10)

TYPE MATERIAL

Holotype ♂: [printed white label] “HOLOTYPUS / *Tethina lusitanica* sp. nov., / male, L. Munari des. / Portugal: Braga, Esposende, / Apulia, beach, 13.ix.2008 / J. Almeida leg.”. The specimen is in excellent condition. The holotype is deposited in the Natural History Museum, Venice [inventory no. 5151], and is stored in 70% ethanol together with the dissected abdomen and terminalia, each of them in a separate plastic microtube placed inside the same red-plug tube containing alcohol. Paratypes (both micropinned and in 70% ethanol), 2 ♂♂ 8 ♀♀, same locality data as holotype with the following additional dates: 6, 12 and 14.ix.2008. Paratypes are deposited in J. Almeida’s and L. Munari’s collections.

DIAGNOSIS

Tethina lusitanica sp. nov. differs from the congeners mainly by the following combination of characters: postocellar and interfrontal setae lacking, at most a pair of vestigial setulae sometimes present on upper part of frons; peristomals inconspicuous, except for most anterior seta being fairly long; several, microscopic hairs on gena just above peristomal border; acrostichal and intra-alar setulae lacking; pre-scutellar postalar setae lacking; all setulae of head and thorax lacking; scutellum brown, strongly darkened (blackish)

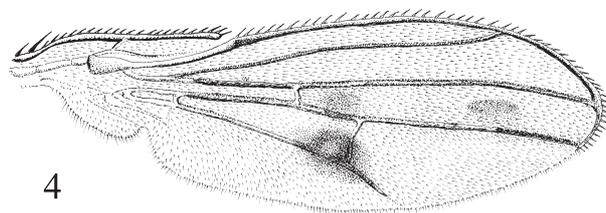


Figure 4 - *Tethina lusitanica* sp. nov., wing.

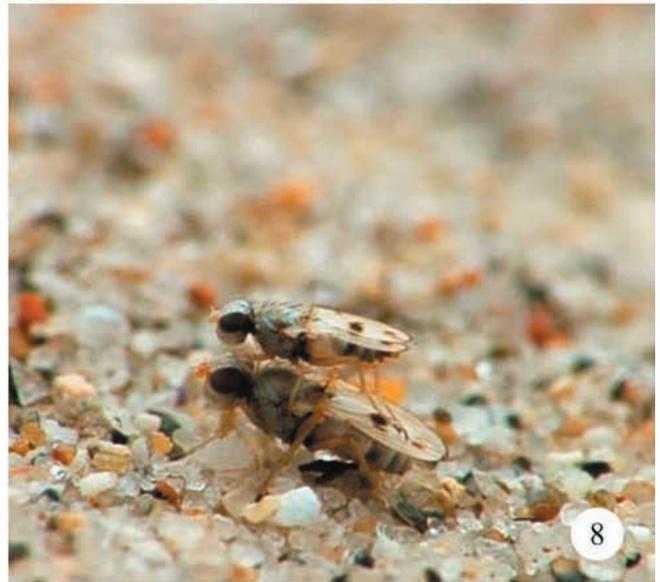
apically; anepisternum with only one posterior, marginal, weak seta; katepisternum bare, lacking posterodorsal seta; wings with black spots; crossveins neither depigmented (white) nor encircled by milky halo; alula small, narrow; abdominal tergites poorly setulose, only bearing few, sparse, tiny, spinelike setulae mostly located on lateral sides; no long tergal setae; male terminalia with postgonite unusually long, even protruding as a thin, rodlike appendix outside postabdomen; cercus of female terminalia bearing strong spinulae; epiproct with a pair of spinelike setae.

DESCRIPTION.

Size. Body length 1.82 – 2.31 mm, wing length 1.40 – 1.81 mm. *Habitus.* Small fly with body and legs invested by whitish grey microtomentum. Scutellum brown on apical half. Setal vestiture black. Setulae of head and thorax lacking. Wings with black spots.

Head. Vertex and occiput whitish grey, latter with broad, black area laterad, behind margin of eye; frons bare, yellow, face and gena invested by homogeneously whitish microtomentum; postocellar setae lacking; medial vertical seta very long, slightly curved inwardly, distinctly longer than lateral vertical seta; a few microscopic setulae on upper postocular area; paraverticilar seta lacking or at most strongly reduced; ocellar triangle bearing a pair of long ocellar setae; 3 laterocliniate, orbital setae, posterior seta long and strong; interfrontal setae lacking, at most a pair of upper, vestigial setulae sometimes present; antenna yellow, with postpedicel slightly infusate medially; arista strongly infusate apically; eye apparently glabrous, small, strongly oblique, its longest diameter 1.66 (in both ♂♀) times as long as genal height; gena very broad, homogeneously silvery microtomentose, bearing inconspicuous peristomals, except for most anterior seta being fairly long; numerous, microscopic hairs on gena just above peristomal border; parafacialia wide, distinctly pale yellow, about as long as postpedicel width; face of same colour as gena, of normal shape and size, bearing usual pair of shiny knobs above vibrissal corner; mouth parts yellow, with slender palpus, labella shorter than buccal cavity length.

Thorax. Whitish grey microtomentose, with scutum bearing distinct, golden brown shading medially; 1+3 long, black, dorsocentral setae; acrostichal setulae lacking; 1 long postpronotal seta; 1 presutural; 2 notopleurals; 1 supra-alar; 1 outer postalar, prescutellar postalar lacking; intra-alar setulae lacking; scutellum brown, strongly darkened (blackish) apically, bearing the usual two pairs of strong setae; apical setae stronger than basal setae; 0-1 inconspicuous, proepisternal seta distinctly shifted anteriorly, proepimeral seta lacking; anepisternum with only one



Figures 5–10. *Tethina lusitanica* sp. nov. in nature. Figure 8 shows a big female while carrying a male on its dorsum, immediately after mating (fig. 7). Figure 9 displays two males while performing a sophisticated, precopulatory ritual, probably in order to settle the dominant male before mating. It is remarkable to notice how both of the males have the terminalia fully exposed during the ritual performance, with the surstyli widely opened out (fig. 10). Close-up photographs 7–8 have been obtained from videos, this is why the two images have lower resolution. (Photographs by Rui Andrade and Jorge Almeida; not at the same scale).

posterior, marginal, weak seta; katapisternum bare, lacking posterodorsal seta.

Legs. Entirely pale yellow except for two most distal tarsomeres strongly infusate; legs evenly setulose, bearing longer, black setulae on anterior side of mid and hind femora; forefemur with few, scattered setae dorsally and postero-dorsally; mid tibia bearing very long, black, ventroapical spur.

Wing. Veins yellowish, membrane hyaline to pale yellowish; crossveins neither depigmented (white) nor encircled by milky halo; alula small, narrow; costal vein reaching end of M_1 ; R_{2+3} and R_{4+5} divergent distally; R_{4+5} and M_1 parallel on distal half; crossvein *r-m* ending slightly beyond middle of cell *dm*; crossvein *dm-cu* as long as or slightly shorter than last section of CuA_1 ; 3 dark grey to black spots on distal half of wing, arranged as in figure 4; M_1 distinctly infusate distally; haltere pale yellowish.

Abdomen. Silvery microtomentose; tergites with posterior margin bordered by narrow, yellowish stripe; tergites poorly setulose, only bearing few, sparse, tiny, spinelike setulae located mostly on lateral sides; no long tergal setae.

Male terminalia (figs. 1-3). Epandrium fairly large, bearing scarce and poorly developed setal vestiture; surstylus, in lateral view, rather large, stumpy, widely rounded apically, bearing several strong, long spinulae on ventral side; ventral lobe of surstylus present, even if poorly developed; hypandrium well developed; phallapodeme long and straight, abruptly bent posteriad at first proximal third; postgonite unusually long, even protruding as a thin, rodlike appendix outside postabdomen in specimens preserved in alcohol; ejaculatory apodeme very large, with wide fan; cercus of normal shape and size, slightly pointed apically (in lateral view); basiphallus (fig. 3) broadly subspherical; distiphallus (fig. 1) long, ribbonlike, microscopically pubescent ventrally.

FEMALE

Similar to male except for usual, slight, sexual dimorphism. Postabdomen scarcely telescopically retractile with short, stumpy, cercus bearing usual strong spinulae which

are typical of this species group; epiproct with a pair of spinelike setae.

ETYMOLOGY

The species epithet, *lusitanica*, is a Latin toponym that refers to the ancient Lusitania, a Roman province approximately including all of modern Portugal south of the Douro river, and part of modern Spain (the present Extremadura and a small part of the province of Salamanca).

Tethina illota (Haliday, 1838)

DISTRIBUTION

Belgium, Denmark, England, Finland, France, Germany, Ireland, Netherlands, Portugal (**new**), Sweden.

MATERIAL EXAMINED

Portugal, Braga, Esposende, Apulia, beach, 6, 13–14.ix.2008, J. Almeida, 5 ♂♂.

REMARKS

This common, Atlantic-European species is herein newly recorded from Portugal. The new finding represents both the southernmost and the westernmost records of this species, as well as the first finding from the Iberian peninsula.

Acknowledgements

We gratefully thank Drs B. Merz (Geneve, Switzerland), J. Roháček (Opava, Czech Republic), and B. J. Sinclair (Ottawa, Canada) for discussing about some male terminalia structures of the new species.

Reference

FREIDBERG, A. & BESCHOVSKI, V. (1996) A new species group within *Tethina* Haliday (Diptera: Tethinidae) with descriptions of six new Mediterranean species. *Israel Journal of Entomology*, **30**, 91–113.