

Lorenzo Munari

THE EURO-MEDITERRANEAN CANACIDAE S. L. (INCLUDING TETHINIDAE):
KEYS AND REMARKS TO GENERA AND SPECIES (INSECTA, DIPTERA)

Riassunto. *I Canacidae s.l. (inclusi Tethinidae) Euro-Mediterranei: chiavi e annotazioni ai generi e alle specie (Insecta, Diptera).*

Vengono proposte per la prima volta le chiavi di determinazione e annotazioni a tutti i generi e specie di Canacidae s.l. (incl. Tethinidae) Euro-Mediterranei. Numerose figure illustrano alcuni dei principali caratteri diagnostici forniti nelle chiavi, caratteri che talvolta potrebbero apparire particolarmente ostici o di difficile interpretazione.

Summary. Keys and remarks to all genera and species of Euro-Mediterranean Canacidae s.l. (incl. Tethinidae) are given for the first time. Several figures are also provided in order to illustrate a few of the main diagnostic characters given in the keys, which could sometimes be particularly difficult to interpret.

Keywords: Diptera, Canacidae, Tethinidae, Euro-Mediterranean keys, remarks.

INTRODUCTION

Since the beginning of this century, and especially after the publication of the World Catalog of the family Canacidae s.l. (including Tethinidae) (MUNARI & MATHIS, 2010), a fair number of European dipterists felt the need of a tool to identify the canacid species of the Euro-Mediterranean area, in particular those species of the genus *Tethina*, often of seriously difficult identification. The answer is hopefully the present paper, consisting primarily of identification keys, brief remarks to each species, and illustrations of the main or hardly interpretable characters in the keys. Among the most significant papers dealing with the West Palaearctic beach flies, we can cite revisionary keys to a given species-group (FREIDBERG & BESCHOVSKI, 1996; MUNARI & EBEJER, 2001), or relating to a particular geographical area (COLLIN, 1960; RALD, 1976; SOÓS, 1981; CANZONER & MENEGHINI, 1983; MUNARI & BÁEZ, 2000; MUNARI & VANIN, 2007; BESCHOVSKI, 2009; MUNARI & STUKE, 2011), or even dealing with a small genus in a faunal or revisionary work (COLLIN, 1966; SOÓS, 1978; MATHIS, 1982; MATHIS & FREIDBERG, 1982). Other renowned old literature including keys is today of predominantly historical value only (BECKER, 1926, revision of Palaearctic Canacidae; CZERNY, 1928, revision of Palaearctic Tethinidae; HENDEL, 1934, world revision of the family Tethinidae; SÉGUY, 1934, fauna of France; WIRTH, 1951, world revision of the family Canacidae s. str.; TROJAN, 1962, fauna of Poland; STACKELBERG, 1970a, 1970b, fauna of European Russia).

Accordingly, the present work was primarily conceived as an updated identification tool that could hopefully be helpful to the European dipterists who need to identify the Euro-Mediterranean genera and species of this taxonomically difficult family of beach flies. I must also emphasize that the keys proposed herein constitute de facto a first attempt to dichotomize some cryptical or puzzling character states, particularly for a few *Tethina* species, which generated in the past, and still generate, severe difficulties in the identification of certain critical taxa. It is also true that in the past several controversial specimens were often indiscriminately placed in

this or that taxon that we can today consider as a real “waste basket” gathering all those *Tethina* specimens with plain external features which posed, at that time, great difficulty in identification. This uncritical approach was based solely on intuition and experience of the specialist.

In this connection, it must also be said that due to the plain external morphology as well as the remarkable variation range in the colour of body and legs of some species of the genus *Tethina*, the identification key to the species of this genus should be considered, at least in a very few cases, merely as a guide to help identifying a given critical taxon. In this case, the reader should subsequently refer to the specialistic literature dealing with it thoroughly, particularly as far as the terminalia morphology is concerned.

The Euro-Mediterranean area considered here comprises the territories of Europe, excluding the Macaronesian archipelagos (see further) and including instead the vast area of European Russia (the latter extended to the Ural Mountains and the northernmost Yamal Peninsula), both the North African and Middle East territories (including the inland desert oases), and the peninsular region of Anatolia as well as the eastern coast of the Black Sea. The Canacidae s.l. from both Macaronesia and the Red Sea coasts of Sinai (Gulfs of Suez and Aqaba) are excluded from the keys proposed in this work. As to the former family Tethinidae from Macaronesia, readers are referred to MUNARI & BÁEZ (2000) and MUNARI & STUKE (2011).

MATERIALS AND METHODS

The morphological characters given in the keys were primarily obtained by careful re-examinations of several specimens from my collection (property of the Natural History Museum, Venice), as well as, although to a lesser extent, from the literature. As the external (sometimes also the postabdominal) morphology of many species of *Tethina* is rather plain and, therefore, poorly informative or of difficult interpretation, I have attempted, at least in a few cases, to propose more than one choice of key couplets running to the same species, in order to achieve anyhow the identification irrespective of variation in one or more character states in the examined specimens. In the keys an asterisk in brackets [*] before the genus name means that species is only known from the type locality or at most from very few other places (see the “Distribution” section under each species). The morphological terminology used in the keys chiefly follows that of the Manual of Nearctic Diptera (MCALPINE, 1981) and the Contributions to a Manual of Palearctic Diptera (MERZ & HAENNI, 2000), except for the first antennal flagellomere, for which the term “postpedicel” (sensu STUCKENBERG, 1999) has been used. The figures illustrating this work are of a rather heterogeneous graphic quality, this is because they come from different sources. Some pictures presented herein also originate from highly informative, unpublished sketches (courtesy of V. Beschovski). Figure 27b is an original drawing made especially for this work. Finally, I must emphasize all of the illustrations in this work were slightly modified from the originals in order to make uniform the plates as well as to provide a standardized scale bar for each figure. In a few cases the original pictures were wholly redrawn and slightly modified, mainly due to the very poor quality of the printing. Obviously, the above considerations apply to all of the captions to figures, unless otherwise specified. Thus, the specification “slightly modified” will not be further mentioned in the captions.

KEY TO SUBFAMILIES OF EURO-MEDITERRANEAN CANACIDAE

- 1 Face prominent, extensively convex, visible in profile, fully sclerotized (fig. 1); no facial tubercle above the foremost peristomal seta; clypeus large, convex, fully exposed; 1-3 long, anaclinate setae on gena; subcranial cavity very large; prementum enlarged, markedly convex, strongly sclerotized; cercus of female thickened basally and fused with epiproct, tapered distally, bearing 1-2 long, strong, more or less acutely pointed, straight, apical spine-like setae (fig. 2)Canacinae
- Face not as above, weakly and only partially sclerotized, at most only ventral part of face more or less prominent (figs. 3-4); facial tubercle above the foremost peristomal seta variable; clypeus small, entirely concealed or very scarcely exposed; anaclinate setae on gena absent; subcranial cavity of usual shape, not so large; prementum narrow, not distinctly convex, normally sclerotized; cercus of female not shaped as above, subcylindrical, never tapered distally, bearing fine pubescence (fig. 5) or with several short, stout, slightly curved, spinelike setae on dorsal and lateral surfaces (fig. 6)2
- 2 A very distinctive, shiny tubercle present just above the base of the foremost strong peristomal seta (pseudovibrissa); gena generally bare; if sparse, tiny, diaphanous hairs present on ventral or antero-ventral portions of gena, then wing patterned with black spots and short bands (fig. 7); wing cells *bm* and *dm* distinctTethinae
- No shiny tubercle above the foremost peristomal seta (the latter occasionally inconspicuous); gena with few to many scattered, distinctly longer hairs (sometimes pale white, thus difficult to see) (fig. 4); wing unpatterned; wing cells *bm* and *dm* confluent, crossvein *bm-cu* virtually absentPelomyiinae

KEY TO GENERA AND SPECIES OF THE SUBFAMILY CANACINAE

- 1 5-6 latero-clinate fronto-orbital setae; mesofrons distinctly shiny, with metallic green to greyish blue luster, densely setulose; intrafrontal setae lacking
.....(tribe Canacini, subtribe Dynomiellina) *Xanthocanace ranula* (Loew)
- 3 latero-clinate fronto-orbital setae; mesofrons dull, mostly olivaceous to bronze brown, sometimes with some more greenish colouration, bearing 2-4 pairs of long, intrafrontal, proclinate, lateral setae(tribe Canacini, subtribe Canacina, genus *Canace*) 2
- 2 Gena with 3 large, anaclinate setae below the eye (fig. 1)*Canace nasica* (Haliday)
- Gena with 2 large, anaclinate setae below the eye.....3
- 3 Mesofrons with 3-4 pairs of proclinate, marginal setae; anterior acrostichal setae strong, conspicuous; larger species, body length 2.5 to 3.3 mm*Canace salonitana* Strobl
- Mesofrons with 1-2 pairs of proclinate, marginal setae; anterior acrostichal setae weak, inconspicuous; smaller species, body length 1.5 to 3.1 mm*Canace acitites* Mathis

KEY TO GENERA AND SPECIES OF THE SUBFAMILY PELOMYIINAE

- 1 1 well developed fronto-orbital seta; face with a narrow, marginal, shiny edging extending along the entire length of peristomal margin; a few, sparse, tiny acrostichal setulae present on scutum*Pelomyia occidentalis* Williston
- 2 fronto-orbital setae (in *Pelomyiella mallochi* the anterior seta is very short and weak, sometimes difficult to see); face and peristoma uniformly microtomentose, without marginal, shiny edging; acrostichal setulae absent(Genus *Pelomyiella*) 2
- 2 1 outer postalar seta, inner seta absent; anterior fronto-orbital seta very short and weak, seldom missing; gena bearing weak, pale yellow or white, hardly visible setulae
.....*Pelomyiella mallochi* (Sturtevant)
- 2 postalar setae, inner seta weaker; anterior fronto-orbital seta variable, of normal size, like the posterior seta, or reduced; gena bearing well-recognizable, tiny, black setulae.....3
- 3 Anterior fronto-orbital seta reduced; eye slightly oblong, oval, higher than long; antenna with postpedicel usually entirely brownish to black (outer side); tarsi mostly yellow, except for the two dark brown or blackish distal tarsomeres; anterior half of each abdominal tergite distinctly brown.....*Pelomyiella hungarica* (Czerny)
- Anterior fronto-orbital seta of normal size, as long as the posterior seta; eye round; antenna with postpedicel usually bicoloured, brown to black dorsally, yellow ventrally (outer side); tarsi distinctly darker, brownish grey to blackish brown; dorsal surface of abdomen regularly brown, or anterior half of each abdominal tergite slightly yellowish grey*Pelomyiella cinerella* (Haliday)

KEY TO SPECIES OF THE SUBFAMILY TETHININAE

(In the Euro-Mediterranean area this subfamily is exclusively represented by the genus *Tethina* Haliday in Curtis, 1837)

- 1 Wing unpatterned.....3
 - Wing patterned, bearing black spots (fig. 7) and bands(*alboguttata*-group, partim) 2
- 2 Postocellar setae (= postverticals) present; katepisternal seta well developed; wing crossveins depigmented, white, surrounded by a milky halo.....
 -[*] *Tethina pictipennis* Freidberg & Beschovski
 - Postocellar setae and katepisternal seta lacking; wing crossveins not as above, anterior crossvein (*r-m*) yellowish, posterior crossvein (*dm-cu*) black, almost entirely included in a large black spot; no milky halo (fig. 7).....
 -[*] *Tethina lusitanica* Munari, Almeida & Andrade
- 3 Abdomen with black setal vestiture6
 - Abdomen with white setal vestiture4
- 4 Head strongly prognathous, distinctly longer than high; carina of ventral part of face markedly prominent, nose-shaped.....*Tethina illota* (Haliday)
 - Head subquadrangular to subspherical, usually as high as or slightly higher than long; carina of ventral part of face not so prominent5
- 5 Pleura and legs (excepting coxae) with black setal vestiture; acrostichal setulae in 2 rows on entire length of scutum[*] *Tethina inopinata* Munari & Canzoneri
 - Pleura and legs with white setal vestiture; acrostichal setulae in 4 rows on anterior part of scutum, but in 2 rows in proximity to prescutellars.....*Tethina albosetulosa* (Strobl)
- 6 Wing crossveins *r-m* and *dm-cu* regularly pigmented, never white, without a milky halo surrounding each of them; gena variable, uniformly microtomentose or marked by a subshiny, longitudinal stripe; male terminalia with surstylus without ventral lobe; female cercus bearing usual, fine pubescence.....17
 - Wing crossveins *r-m* and *dm-cu* depigmented, distinctly white, sometimes surrounded by a milky halo (the wing should be observed by holding a small, matt, black card behind it); gena uniformly microtomentose; male terminalia with surstylus generally having a broad ventral lobe; female cercus bearing several, strong, stout, spinelike setae (fig. 6) (female of *Tethina gatti* Munari & Ebejer unknown).....
 -(*alboguttata*-group, partim) 7
- 7 All femora yellowish, or at most fore and hind femora partially pale grey or grey.....12
 - At least hind femur extensively to partially dark grey to blackish8

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- 8 Acrostichal setulae generally absent or at most present as very sparse, weak, short hairs; scutellar spot relatively small, feeble to pale brown, extending only on apex or at most on apical half of discal surface (fig. 8).....[*] *Tethina melitensis* Munari & Ebejer
 - Acrostichal setulae normally developed; if inconspicuous, then scutellar spot large, dark brown, extending on most of the discal surface (fig. 9)9
- 9 Acrostichal setulae inconspicuous.....[*] *Tethina litocola* Munari & Ebejer (partim)
 - Acrostichal setulae normally developed.....10
- 10 Scutellum predominantly dark brown, strongly contrasting with the uniformly silver grey prescutellar surface of scutum (fig. 10)[*] *Tethina yaromi* Freidberg & Beschovski
 - Scutellum not strongly contrasting with scutum, at most slightly darker medially (fig. 11); scutum brownish grey, sometimes with distinct darker spots surrounding the setal sockets...11
- 11 Head sharply triangular in lateral view, conspicuously longer than high, with ventral part of face strongly protruding[*] *Tethina guttata* Freidberg & Beschovski
 - Head roughly rounded in lateral view, higher than long, ventral part of face not or moderately protruding¹*Tethina alboguttata* (Strobl)
- 12 Head in lateral view round, never quadrate or subquadrate14
 - Head in lateral view quadrate or subquadrate (figs. 12-13).....13
- 13 Head in lateral view distinctly quadrate (fig. 12); gena about as high as or slightly higher than eye height; long axis of eye nearly horizontal; palpus and labellum perceptibly reduced; acrostichal setulae well developed; proepimeral seta lacking; femora bright yellow; larger species (wing length 2-2.5 mm)*Tethina intermedia* Collin
 - Head in lateral view subquadrate only at ventral half, dorsal half being like congeners (fig. 13); gena distinctly narrower, about one third as high as eye height; long axis of eye oblique; palpus and labellum normally developed; acrostichal setulae short and sparse; proepimeral seta present; femora partially greyish; smaller species (wing length 1.26-1.33 mm)[*] *Tethina gatti* Munari & Ebejer (partim)
- 14 Scutellar spot indistinct, hardly visible medially; 3 long upper orbital setae; femora, especially anterior and posterior ones, greyish except at base and/or on ventral side where they can be yellowish; morphological pattern of surstylus quite different from that of the *alboguttata*-group (fig. 14).....[*] *Tethina gatti* Munari & Ebejer (partim)

¹ In specimens from the Canary Islands (a geographical area not covered by the present paper) the shape of the head is quite similar to that of *T. guttata* Freidberg & Beschovski, in lateral view longer than high, with ventral face strongly protruding, nose-shaped facial carina, and proboscis long and slender, with labellum generally longer than buccal cavity length (MUNARI & BÁEZ, 2000). These putatively endemic phenotypes have apparently evolved under conditions of more or less prolonged insular isolation.

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- Scutellar spot large, distinctly contrasted with rest of cuticle; 1-2 long upper orbital setae; femora yellowish; morphological pattern of surstylus typical of the *alboguttata*-group (fig. 15)15
 - 15 Thoracic setae dark brown to black; acrostichal setulae well developed; larger species (wing length 2.6 mm)[*] *Tethina karatasensis* Munari
 - Thoracic setae variable, yellow to dark brown, usually distinctly paler than in *T. karatasensis*; acrostichal setulae reduced in size and number, often lacking; smaller species (wing length 1.4-2 mm)16
 - 16 Scutellar spot very dark, round, extended only on central part of discal surface (fig. 16); head never prognathous; legs pale, whitish yellow; depigmentation of both wing crossveins and surrounding membrane forming white halo; setae of thorax yellowish [*] *Tethina acrostichalis* Freidberg & Beschovski
 - Scutellar spot distinctly paler, never round, extended on most of discal surface (entire scutellum generally almost uniformly brown) (fig. 9); head moderately prognathous; legs slightly darker, yellow; depigmentation of wing exclusively limited to crossveins, no white halo around them; setae of thorax darker, brownish to dark brown, often with golden reflections.....[*] *Tethina litocola* Munari & Ebejer (partim)
 - 17 Gena uniformly microtomentose, without longitudinal stripe33
 - Gena with more or less distinct, subshiny or dull longitudinal stripe generally extending from anterior to middle portions of gena or even longer, ending just before the postgenal area.....18
 - 18 Hind tibia pale or dark but never distinctly bicoloured; if strongly infuscate, then at most the proximal one-fifth lighter, yellowish.....23
 - Hind tibia distinctly bicoloured, with contrasting pale and dark areas.....19
 - 19 Hind tibia with dark brown to black apical ring, its basal edge always well defined, strongly contrasting with the yellow background22
 - Hind tibia without distinct apical ring, but strongly infuscate on apical third to apical half; if apical ring present, then its basal edge rather indistinct, not strongly contrasting with the yellow background20
 - 20 Gena narrow, about one-fifth as high as the longest diameter of eye; wing infuscate; abdomen regularly brown; no yellow posterior margin on each tergite; ♂ terminalia with surstylus distinctly longer than epandrium height, quite vertical if compared to the lateral axis of epandrium, basally constricted, gently swollen towards apex, drop-shaped (fig. 17); cercus apparently sclerotized, subrectangular in lateral view..... [*] *Tethina mariae* Munari
 - Gena wider, about one-fourth as high as the longest diameter of eye; wing not infuscate, yellowish grey; abdominal tergites each with white or yellow posterior margin; ♂ termi-

- nalialia with surstylus as long as or only slightly longer than epandrial height, distinctly inclined backward if compared to lateral axis of epandrium (fig. 18); cercus not sclerotized, ovate in lateral view.....21
- 21 Femora generally black; ♂ terminalia with surstylus thickened basally, increasingly tapered towards apex (lateral view, figs. 18-19).....*Tethina nigrofemorata* Beschovski
 - Femora distinctly paler, brown to partially yellow; ♂ terminalia with finger-like surstylus (lateral view), imperceptibly swollen in the postero-distal third only (lateral view, fig. 20)[*] *Tethina minoia* Munari (partim)
- 22 Fore and hind femora brown to partially yellow; ♂ terminalia with finger-like surstylus (lateral view), imperceptibly swollen in the postero-distal third only (lateral view, fig. 20)[*] *Tethina minoia* Munari (partim)
 - All femora generally yellow; ♂ terminalia with surstylus increasingly swollen towards its slightly rounded apex (lateral view, fig. 21)*Tethina incisuralis* (Macquart)
- 23 Profile of head generally prognathous; proboscis with stylet-shaped labellum, usually distinctly longer than buccal cavity length²32
 - Profile of head never distinctly prognathous; if slightly prognathous, then labellum not stylet-shaped, usually not or indistinctly longer than buccal cavity length; proboscis with generally not stylet-shaped labellum.....24
- 24 Gena with markedly impressed, subshiny or translucent, longitudinal stripe, sometimes reduced to a distinct, small, subshiny patch on foremost part of gena (fig. 27a).....27
 - Gena with feebly impressed, subshiny or dull longitudinal stripe.....25
- 25 Gena with subshiny longitudinal stripe; head with ventral part of face widely convex, nose-shaped, apparently membranous (fig. 22); ♂ terminalia with characteristically shaped surstylus (fig. 23)[*] *Tethina tschirnhausi* Munari
 - Gena with dull longitudinal stripe; head with ventral part of face not widely convex, at most with a carina forming a small, knoblike projection; ♂ terminalia with surstylus not shaped as above26
- 26 Ventral part of face sufficiently protruding to be vertically beneath middle, seldom slightly more, of postpedicel; dull stripe on gena brown; acrostichal setulae in 4 irregular rows; ♂ terminalia as in fig. 24*Tethina munarii* Carles-Tolrá
 - Ventral part of face not protruding (fig. 25); dull stripe on gena pale grey to whitish; acrostichal setulae in 2 rows; ♂ terminalia as in fig. 26[*] *Tethina histrica* Munari

² *Tethina subpunctata* Beschovski, hitherto only known from Tunisia, and a few rare specimens of *T. longirostris* (Loew) may exhibit a scarcely prognathous head, approximately higher than long, bearing stylet-shaped labellum about as long as buccal cavity length; in such rare cases the examination of ♂ terminalia is absolutely needed.

- 27 Gena with small, subshiny patch on its foremost part (fig. 27a); proepimeral seta lacking; hind tibia bearing 2 characteristically closely paired, antero-ventral, subapical, spine-like setae; hind basitarsus ventro-proximally with similar, contiguous, spine-like setae (fig. 27b)[*] *Tethina mima* Munari
- Gena with wide, subshiny, longitudinal stripe extending for the entire length of gena (or nearly so); proepimeral seta present; both tibia and basitarsus of hind leg without such closely paired, spine-like setae28
- 28 Gena with narrow longitudinal stripe, at most as high as one third of genal height (fig. 28); if longitudinal stripe distinctly higher, then labellum stylet-shaped, slender, tapered apically, as long as or slightly longer than buccal cavity length; ventral part of face in profile with a keel; acrostichal setulae variable30
- Gena with distinctly broader longitudinal stripe, higher than one third of genal height (fig. 29); labellum stumpy, cylindrical, generally distinctly shorter than buccal cavity length; face in profile rather flattened, generally without an obvious keel; acrostichal setulae in 2, sometimes 3, rows29
- 29 ♂ terminalia with surstylus sharply angulated basally (in both lateral and caudal views), short, ventrally bearing dark, stout spinulae (fig. 30); basiphallus with moderately long pubescence*Tethina pallipes* (Loew)
- ♂ terminalia with gently sinuous surstylus (lateral view), elongated, never angulated basally, ventrally bearing thin, pale, pointed spinulae (figs. 31a, c); basiphallus with a cap of long, dense pubescence (fig. 31b).....[*] *Tethina stobaeana* Munari
- 30 Labellum stylet-shaped, tapered apically; legs predominantly yellowish to pale grey; acrostichal setulae in 2 regular rows; ♂ terminalia as in fig. 32*Tethina flavoidea* Beschovski
- Labellum of normal shape; if moderately long and narrow (but not stylet-shaped), then femora dark brown to black; legs distinctly darker, brownish to black, especially femora³; acrostichal setulae in 2-4 rows; ♂ terminalia not as above31
- 31 Labellum moderately long and narrow; femora dark brown to black; acrostichal setulae in 2 rows; ♂ terminalia with small epandrium and long and slender surstylus, the latter longer than length of epandrium, tapered apically (lateral view) (fig. 33).....[*] *Tethina salinicola* Beschovski
- Labellum of normal shape; femora paler, yellowish brown to brown; acrostichal setulae usually in 3-4 rows⁴; ♂ terminalia generally with subrectangular surstylus (lateral view), slightly shorter than length of epandrium, always with broadly rounded apex (fig. 34) ...
.....*Tethina strobliana* (Mercier)

³ In a few small-sized specimens of *T. strobliana* the femora often exhibit a distinctly paler colour.

⁴ A few small-sized specimens of *T. strobliana* may have only 2 rows of acrostichal setulae.

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- 32 Scutum with a small dark spot at the base of each seta; basiphallus with epiphallus bearing very short pubescence (fig. 35).....[*] *Tethina subpunctata* Beschovski⁵
 - Scutum generally without a dark spot at the base of each seta; basiphallus with epiphallus bearing noticeably longer pubescence (fig. 36)*Tethina longirostris* (Loew)
- 33 Proboscis with stylet-shaped labellum, distinctly longer than buccal cavity length; size of species ≥ 2.5 mm*Tethina czernyi* (Hendel)
 - Proboscis with not stylet-shaped labellum, about as long as buccal cavity length or shorter; species of variable size.....34
- 34 Profile of head slightly though distinctly prognathous; legs black; ♂ terminalia as in fig. 37*Tethina tethys* Munari & Báez
 - Profile of head not prognathous; legs of different colour, with femora and tibiae yellow to dark grey, never black; ♂ terminalia not as above35
- 35 Body length generally > 3 mm; gena very broad, higher than half of eye height (fig. 3), uniformly covered with white or sometimes yellowish-white microtomentum
*Tethina grisea* (Fallén)
 - Body length < 3 mm; gena distinctly narrower, about as high as one third of eye height, uniformly covered with yellow microtomentum.....*Tethina flavigenis* (Hendel)

⁵ Possibly a junior synonym of *T. longirostris* (Loew).

TAXONOMIC ACCOUNT

In the following account the taxa are arranged in alphabetical order, the species under the respective genus and the genera under the respective subfamily. Species of *Tethina* belonging to the *alboguttata*-group are flagged by the acronym “TaG” (= *Tethina alboguttata*-group) after the author’s name/date of publication. For the synonyms and other matters, readers are referred to the recently published World Catalog of the family (MUNARI & MATHIS, 2010).

Subfamily Canacinae Jones, 1906

Genus *Canace* Haliday, 1837

actites Mathis, 1982

Distribution. Palaearctic: Portugal (Madeira Islands), Spain (including Canary Islands).

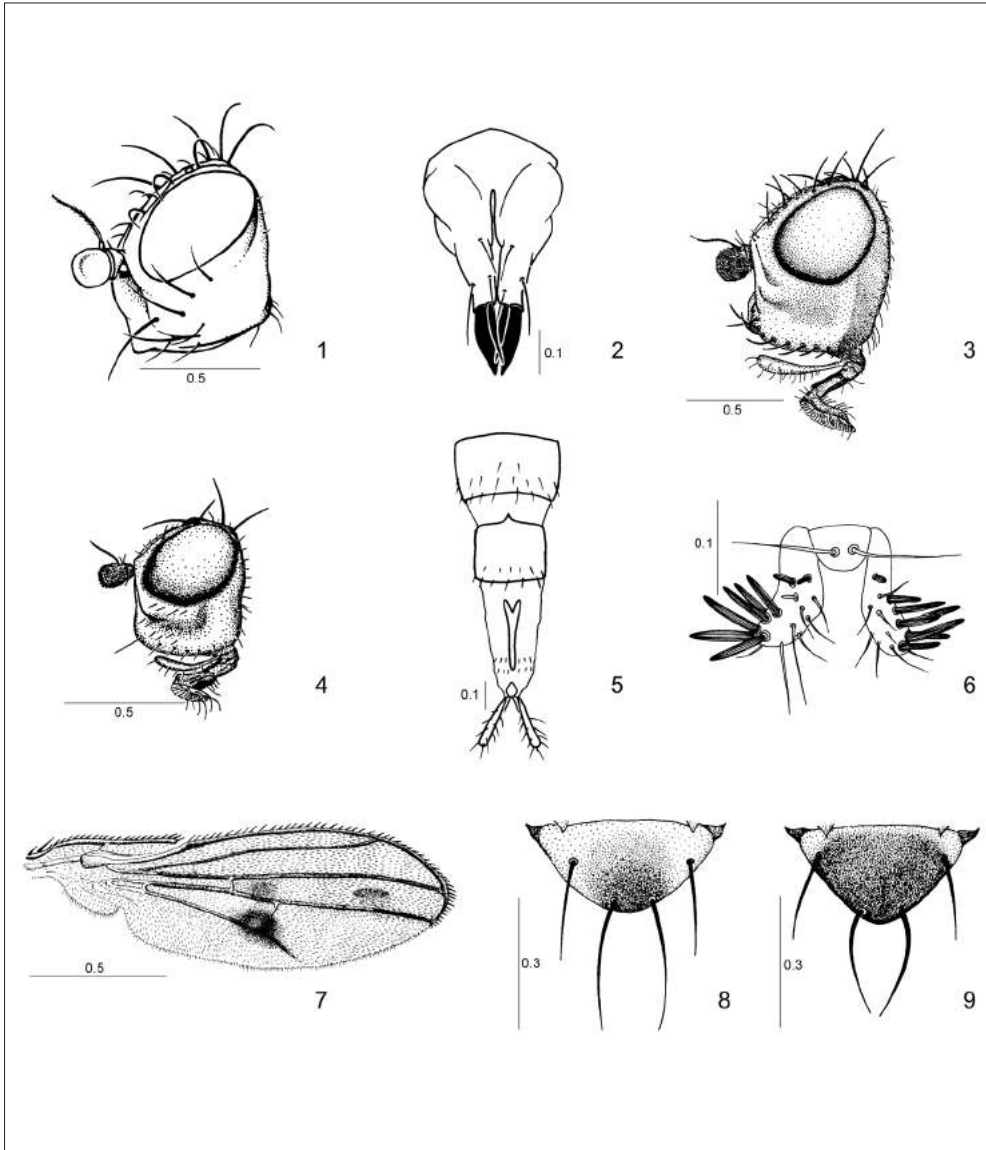
Remarks. CARLES-TOLRÁ (2001) recorded this Macaronesian species also from Barcelona (Spain), on specimens collected at the seashore, on rocks in the splash zone. This record was also reported by CARLES-TOLRÁ & BÁEZ (2002) in the Catalogue of Diptera of Spain, Portugal, and Andorra.

Until the early eighties, that is to say when MATHIS (1982) described this species, *C. actites* had been misidentified by the previous authors as *C. salonitana* Strobl, 1900, due to its strong similarity with the latter species.

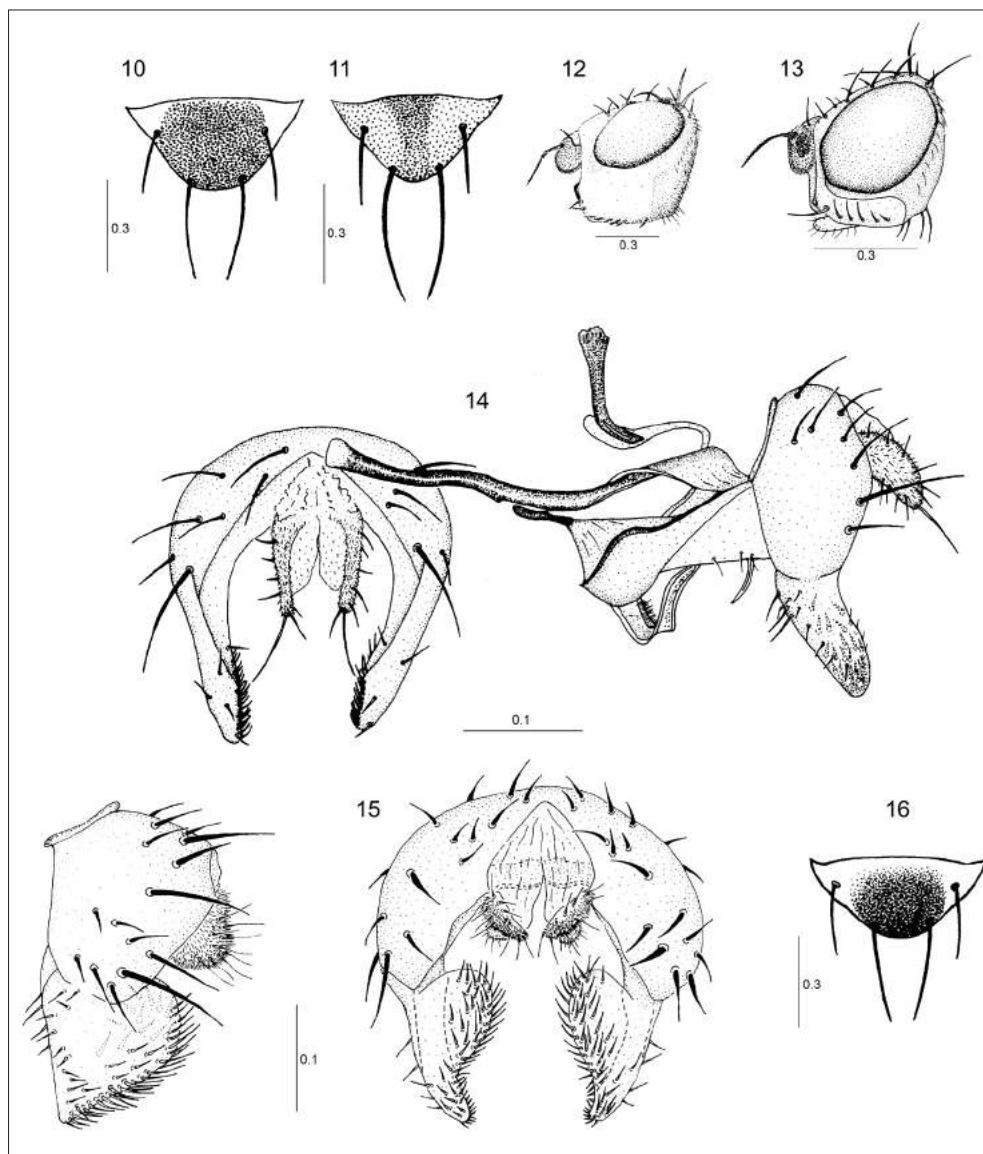
nasica (Haliday, 1839) (figs. 1-2)

Distribution. Afrotropical: Cape Verde Islands, Senegal. Palaearctic: Coast of western Europe (England, France, Germany, Ireland, and Spain), Mediterranean (Croatia, Egypt, Italy), and islands of northeastern Atlantic Ocean (Azores, Canary Islands, and Madeira Islands).

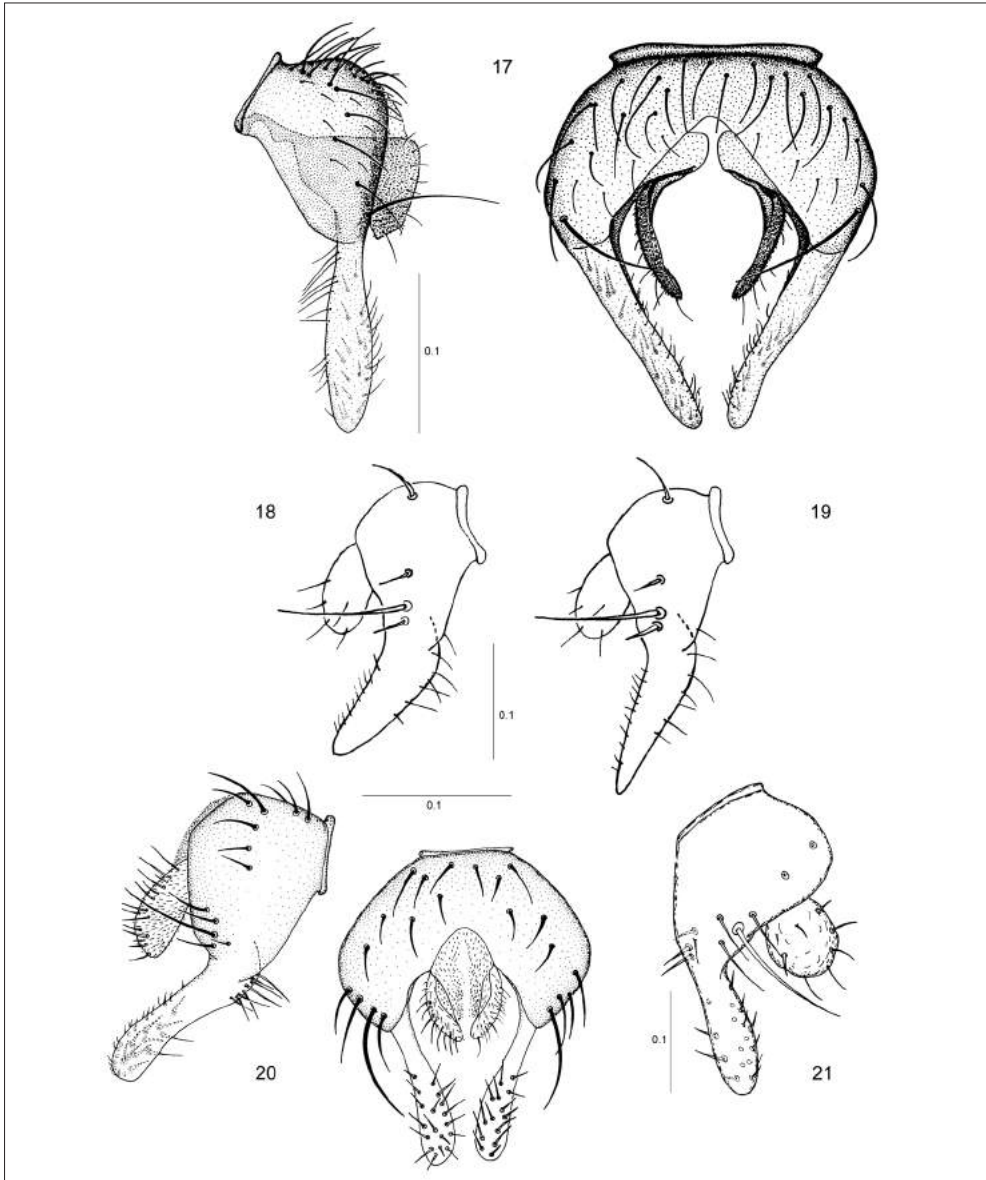
Remarks. A strictly halobiont/thalassobiont species like congeners, it is found preferably on the rocks, among the green algae, such as *Enteromorpha*, where the larvae apparently feed (HINTON, 1967; MATHIS, 1982). It was also recorded abundant from the urban channels of Venice (CANZONERI & MENEGHINI, 1983), an environment characterized by the presence of brackish water.



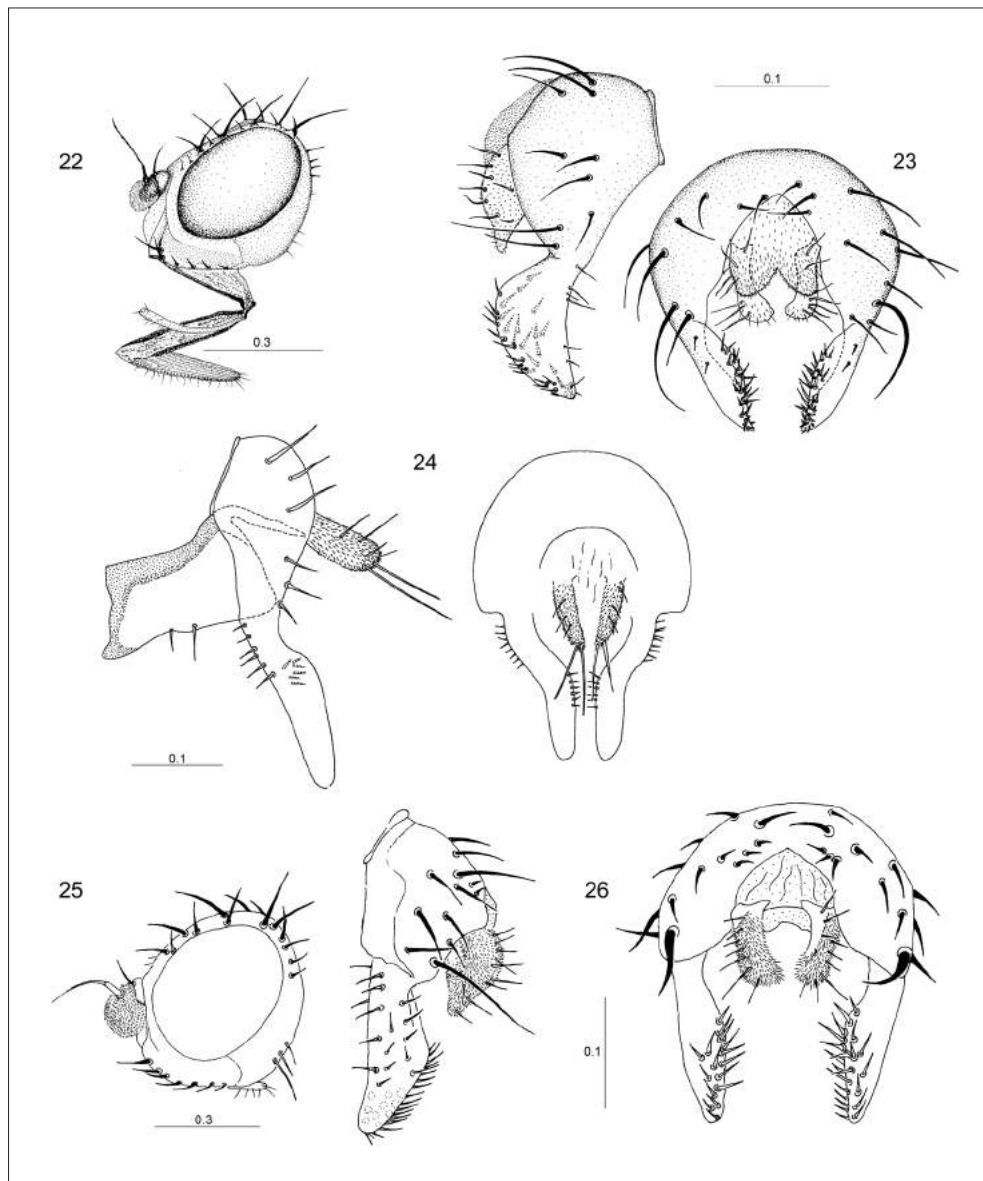
Figs. 1-9: **1:** *Canace nasica* (Haliday), head, lateral view (after MATHIS, 1982); **2:** ditto, female cerci, dorsal view (after MATHIS, 1982); **3:** *Tethina grisea* (Fallén), head, lateral view (after MUNARI, 1998); **4:** *Pelomyiella mallochi* (Sturtevant), head, lateral view (after MUNARI, 1998); **5:** *Tethina munarii* Carles-Tolrá, female postabdomen with cerci, dorsal view (after CARLES-TOLRÁ, 1993); **6:** *Tethina alboguttata* (Strobl), female cerci, dorsal view (after FREIDBERG & BESCHOVSKI, 1996); **7:** *Tethina lusitanica* Munari, Almeida & Andrade, wing (after MUNARI et al., 2009); **8:** *Tethina melitensis* Munari & Ebejer, scutellum, dorsal view (after MUNARI & EBEJER, 2001); **9:** *Tethina litocola* Munari & Ebejer, scutellum, dorsal view (after MUNARI & EBEJER, 2001). Scale bars in millimetres.



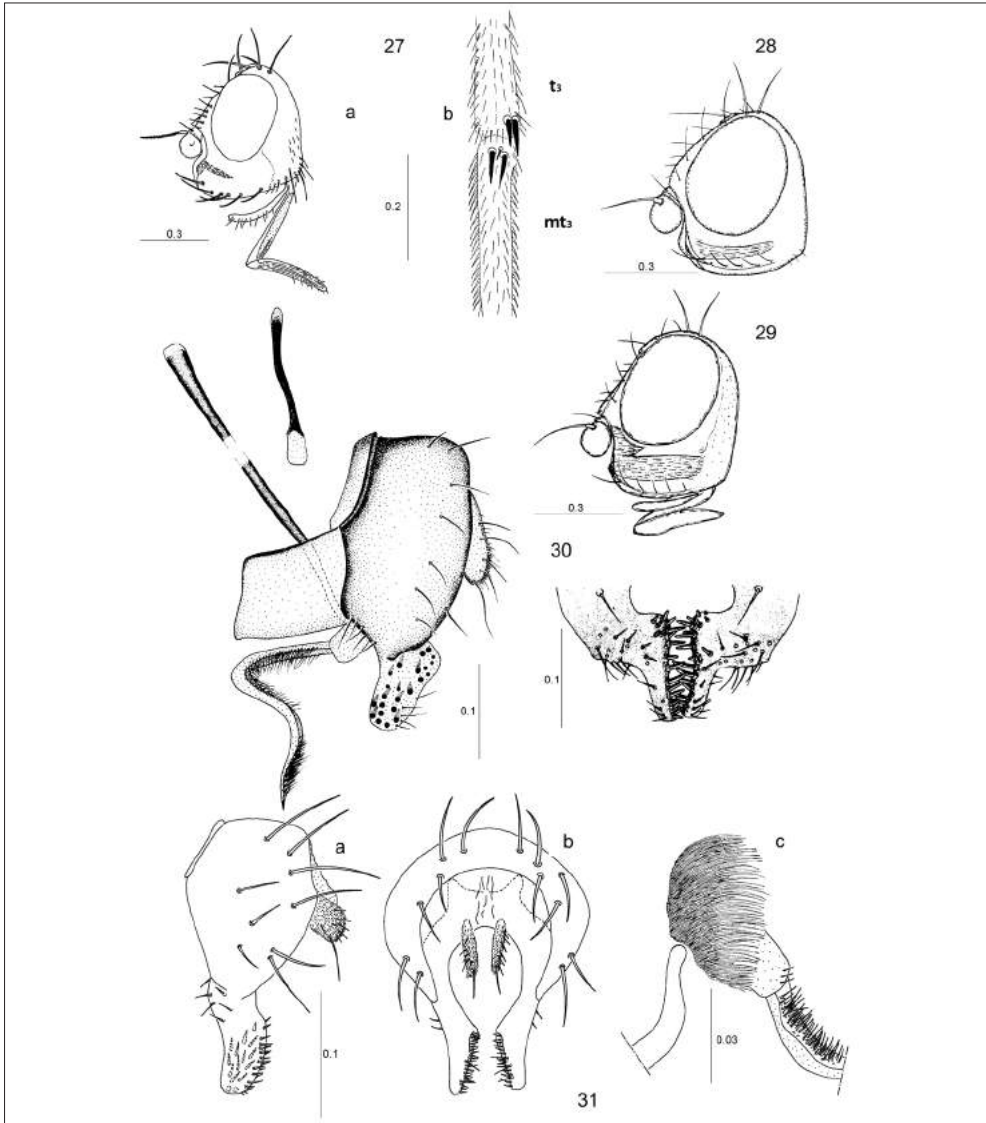
Figs. 10-16. **10:** *Tethina yaromi* Freidberg & Beschovski, scutellum, dorsal view (after FREIDBERG & BESCHOVSKI, 1996); **11:** *Tethina alboguttata* (Strobl), scutellum, dorsal view (after FREIDBERG & BESCHOVSKI, 1996); **12:** *Tethina intermedia* Collin, head, lateral view (after MUNARI & MERZ, 2003); **13:** *Tethina gatti* Munari & Ebejer, head, lateral view (after MUNARI & EBEJER, 2001); **14:** ditto, male terminalia, caudal (left) and lateral (right) views (after MUNARI & EBEJER, 2001); **15:** *Tethina karatasensis* Munari, male terminalia, lateral (left) and caudal (right) views (after MUNARI & MERZ, 2003); **16:** *Tethina acrostichalis* Freidberg & Beschovski, scutellum, dorsal view (after FREIDBERG & BESCHOVSKI, 1996). Scale bars in millimetres.



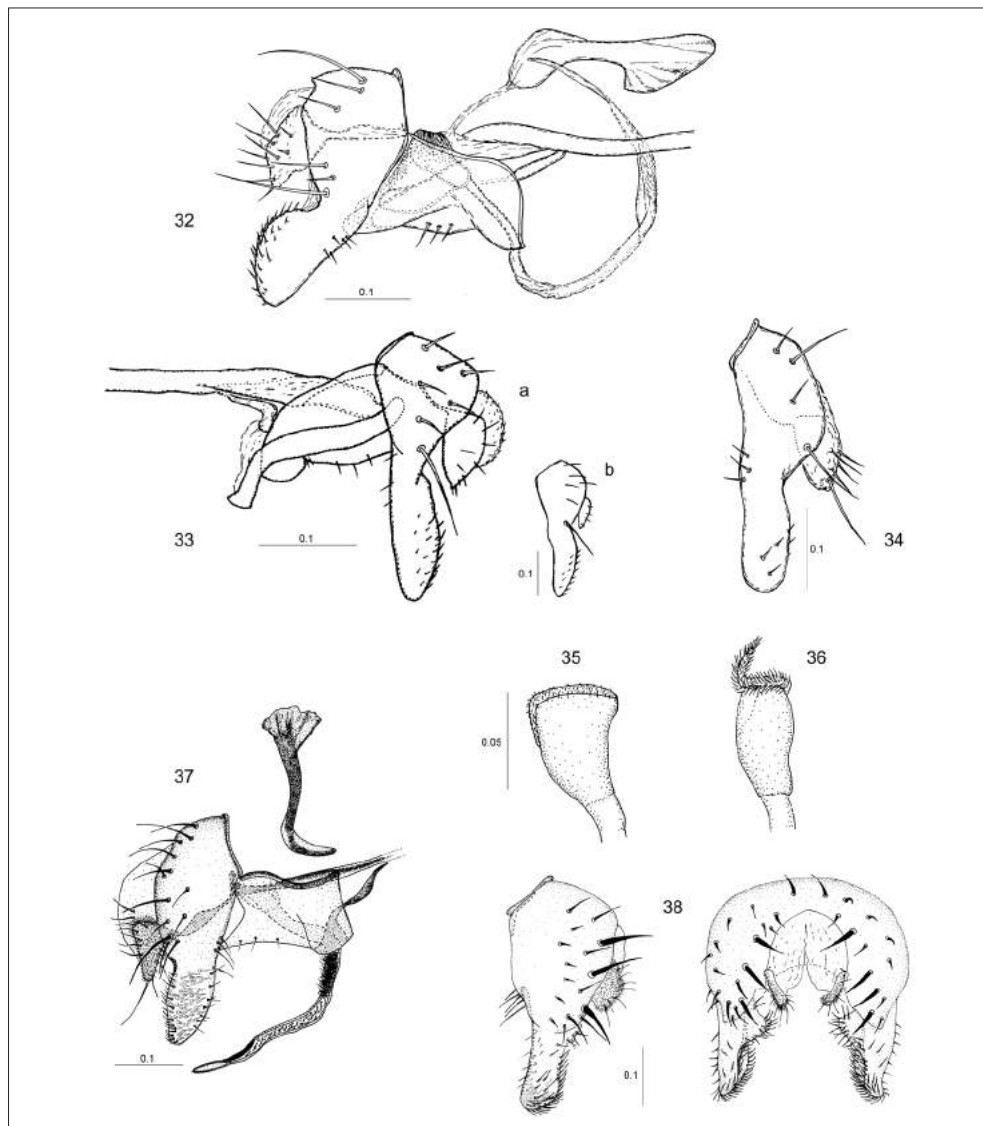
Figs. 17-21. 17: *Tethina mariae* Munari, male terminalia, lateral (left) and caudal (right) views (after MUNARI, 1997); 18: *Tethina nigrofemorata* Beschovski, male terminalia with “stumpy” surstylus, lateral view (after MUNARI & BÁEZ, 2000); 19: ditto, male terminalia with “slender” surstylus, lateral view (after MUNARI & BÁEZ, 2000); 20: *Tethina minoia* Munari, male terminalia, lateral (left) and caudal (right) views (after MUNARI, 1999); 21: *Tethina incisuralis* (Macquart), male terminalia, lateral view (after Beschovski’s unpublished sketch). Scale bars in millimetres.



Figs. 22-26. 22: *Tethina tschirnhausi* Munari, head, lateral view (after MUNARI, 1999); 23: ditto, male terminalia, lateral (left) and caudal (right) views (after MUNARI, 1999); 24: *Tethina munarii* Carles-Tolrá, male terminalia, lateral (left) and caudal (right) views (redrawn after CARLES-TOLRÁ, 1993); 25: *Tethina histrica* Munari, head, lateral view (after MUNARI, 2009); 26: ditto, male terminalia, lateral (left) and caudal (right) views (after MUNARI, 2009). Scale bars in millimetres.



Figs. 27-31. 27: *Tethina mimia* Munari, (a) head, lateral view (redrawn after MUNARI, 1996), (b) part of the left hind leg in ventral view: apical part of the tibia (t₃) and proximal part of the first tarsomere (mt₃) (orig.); 28: *Tethina strobliana* (Mercier), head, lateral view (after Beschovski's unpublished sketch); 29: *Tethina pallipes* (Loew), head, lateral view (after Beschovski's unpublished sketch); 30: ditto, male terminalia, lateral (left) and caudal (right - epandrium and cerci omitted) views (after MUNARI, 1990); 31: *Tethina stobaeana* Munari, male terminalia, (a) lateral view, (b) caudal view, (c) basiphallus in lateral view (redrawn after MUNARI, 1996). Scale bars in millimetres.



Figs. 32-38. **32:** *Tethina flavoidea* Beschovski, male terminalia, lateral view (after BESCHOVSKI, 1997); **33:** *Tethina salinicola* Beschovski, male terminalia, lateral view [(a) after BESCHOVSKI, 1998; (b) after Munari's unpublished sketch]; **34:** *Tethina strobliana* (Mercier), male terminalia, lateral view (after Beschovski's unpublished sketch); **35:** *Tethina subpunctata* Beschovski, basiphallus with epiphallus (redrawn after BESCHOVSKI, 1994); **36:** *Tethina longirostris* (Loew), basiphallus with epiphallus (redrawn after BESCHOVSKI, 1994); **37:** *Tethina tethys* Munari & Báez, male terminalia, lateral view (after MUNARI & BÁEZ, 2000); **38:** *Tethina intermedia* Collin, male terminalia, lateral (left) and caudal (right) views (after MUNARI & MERZ, 2003). Scale bars in millimetres.

***salonitana* Strobl, 1900**

Distribution. Palaearctic: Bulgaria, Croatia, Egypt, Greece (Crete), Israel, Italy, Spain.

Remarks. CZERNY & STROBL (1909) recorded this species from Algeciras (Spain), a locality near Gibraltar. Based on current knowledge, we do not know if the two authors actually found *C. salonitana* or misidentified under this name specimens of *C. actites*, a very similar species only described decades later (MATHIS, 1982). On the other hand, it should also be said that Strobl's species exhibits a more eastern distribution in the Mediterranean, so as to strengthen the hypothesis based on CZERNY & STROBL's (1909) misidentification. *C. salonitana* is often found syntopic with the preceding species (CANZONERI & MENEGHINI, 1983).

Genus *Xanthocanace* Hendel, 1914***ranula* (Loew, 1874)**

Distribution. Palaearctic: Belgium, Denmark, England, Germany, Ireland, Italy, Morocco (Atlantic coast), Netherlands, Spain (including Canary Islands).

Remarks. Species widespread on the northeastern Atlantic coast. The first record of *X. ranula* from the Mediterranean basin is CZERNY & STROBL's (1909) citation from Algeciras. These authors also recorded this species from San Fernando, an Atlantic locality ca. 74 kilometres northwest of the Strait of Gibraltar. MATHIS (1982) recorded this species from Italy, based on a single specimen, lacking locality data, collected by Haliday and preserved in the Museum für Naturkunde der Humboldt-Universität, Berlin. In CANZONERI & MENEGHINI's (1983) monograph on the Italian fauna, *X. ranula* is not mentioned, certainly due to the fact the two Italian authors submitted their monograph to the publisher long before Mathis's paper was published.

Subfamily Pelomyiinae Foster, 1976**Genus *Pelomyia* Williston, 1893*****occidentalis* Williston, 1893**

Distribution. Australasian/Oceanian: Hawaii (Molokai, Oahu). Nearctic: Canada (British Columbia, Manitoba), Mexico (Baja California Norte), United States (Arizona, California, Idaho, Nevada, New Mexico, Ohio, Oregon, Utah, Virginia, Washington). Neotropical: Mexico (Estado de Mexico). Palaearctic: Czech Republic, Germany, Great Britain, Hungary, Poland, Slovakia, Switzerland.

Remarks. A primarily North American species recently introduced, possibly by passive (anthropic) dispersal, in both Europe and Hawaii, where it is probably naturalized now. This species is the only representative of this Nearctic-Neotropical genus known from the Palaearctic Region (often recorded as *Pelomyia steyskali* HARDY & DELFINADO, 1980, junior synonym).

Genus *Pelomyiella* Hendel, 1934

cinerella (Haliday, 1837)

Notiphila opacula Zetterstedt, 1860, **syn. nov.**

Pelomyiella opacula (Zetterstedt, 1860). - ZATWARNICKI, 1991: 330 [generic combination, discussion]. - MUNARI & MATHIS, 2010: 40 [world catalog].

Distribution. Palaearctic: Belgium, China (Tibet), Denmark, England, Finland, France, Germany, Ireland, Italy, Mongolia, Netherlands, Poland, Scotland (first record), Spain, Sweden.

Remarks. ZATWARNICKI (1991) first asserted that *Notiphila opacula* Zetterstedt, 1860 belongs to *Pelomyiella*, also suggesting that it is perhaps a junior synonym of *P. cinerella* (Haliday, 1837) (indeed, he erroneously quoted the putative senior synonym as *P. cinerea* [lapsus calamii]). In that paper the Polish author transferred Zetterstedt's species to the "tethinids", therefore establishing a new nomenclatural combination. After examining Zetterstedt's holotype preserved in the Museum of Zoology, Lund University (Sweden), I am now able to formally corroborate Zetwarnicki's assumption. The holotype is double mounted, pinned dorsoventrally in a block of vegetable matter by a long, thin, headed pin, and is in very good condition. Below the pinned specimen there is a tiny label which reads: "Ills.[torp] 5/7", an additional large slip of paper is below the block, and reads: "Not. opacula Zett. n. sp. ♂ n° 57 (*Hydrellia opaca* Meig est longe diversa)". Additional labels were pinned later (in modern times) and are not considered here. During a recent field trip to northern Scotland I collected a single female specimen of this species, now labelled "W of Thurso, near Torrisdale Beach, 58°30'43.2" N, 4°13'18.8" W, sweeping on sheep and horse dung, 10.vii.2010, L. Munari". New to Scotland.

hungarica (Czerny, 1928)

Distribution. Palaearctic: Austria, Hungary, Slovakia.

Remarks. This species is expected to be much more widespread in Europe.

mallochi (Sturtevant, 1923) (fig. 4)

Distribution. Nearctic: Canada (British Columbia, Manitoba, Northwest Territories, Saskatchewan), Greenland, Mexico (Baja California Norte), United States (Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Idaho, Kansas, Maine, Maryland, Massachusetts, Michigan, Montana, Nevada, New York, North Dakota, Oregon, Rhode Island, South Dakota, Texas, Utah, Virginia, Washington, Wyoming). Palaearctic: Austria, Belgium, Bulgaria, China (Tibet), Czech Republic, Denmark, England, France, Germany, Greece, Hungary, Italy (incl. Sardinia), Mongolia, Netherlands, Poland, Romania, Russia (incl. Arctic territories), Slovakia, Spain, Sweden, Turkey, Ukraine, former Yugoslavia.

Remarks. This widely distributed species was also recorded from very high northern latitudes, such as Alaska (HENDEL, 1934) and Greenland (author unknown, in MUNARI & MATHIS, 2010), up to the Arctic Circle. As to the latter area, I report here a new record of a male specimen from “Russia, Yamal Peninsula, 70°11’ N – 67°17’ E (site 23, 22-23.viii.1994, leg. C. Hansson, Swedish-Russian Tundra Ecology Expedition 1994)”. The specimen is preserved in the dipterological collection of the Museum of Zoology, Lund University, Sweden. As far as I know, this record represents the northernmost finding for the Canacidae s.l. in the Palaearctic Region.

Subfamily Tethinae Hendel, 1916

Genus *Tethina* Haliday in Curtis, 1837

acrostichalis Freidberg & Beschovski, 1996 – TaG (fig. 16)

Distribution. Palaearctic: Israel.

Remarks. This species was described on several specimens collected in various places on the coast of Israel. It is expected to occur in other Eastern Mediterranean localities too.

alboguttata (Strobl, 1900) – TaG (figs. 6, 11)

Distribution. Afrotropical: St. Helena. Palaearctic: Algeria, Canary Islands, Morocco, Portugal (Madeira), Spain (including Balearic Islands), Tunisia.

Remarks. Strongly expected to occur in southern Italy as well. Several years ago I was able to examine the specimens recorded by VANSCHUYTBROECK (1976) from the Atlantic island of St. Helena. At that time very little was known about this group of species, so I confirmed them as *alboguttata* with some confidence (MUNARI, 1994). On the current state of knowledge, the identification of these specimens should be reassessed.

albosetulosa (Strobl, 1900)

Distribution. Afrotropical: Senegal. Palaearctic: Azores, Belgium, Bulgaria, Canary Islands, Cyprus, Denmark, Egypt, England, France, Germany, Greece, Hungary, Israel, Italy (incl. Sardinia), Lebanon, Malta, Portugal, Romania, Spain (including Balearic Islands), Tunisia, Turkey.

Remarks. A very common, thalassobiont (sea-loving) species mainly inhabiting sandy beaches (MUNARI & VANIN, 2007). Like other congeners with white setulation, this species is characterized by remarkable chromatic variation of the mesonotal setae, including those on the scutellum (MUNARI & CANZONERI, 1992; MUNARI & VANIN, 2007).

czernyi (Hendel, 1934)

Distribution. Palaearctic: Algeria, Bulgaria, Cyprus, Egypt (Sinai), France, Germany, Hungary, Israel, Italy, Mongolia, Poland, Spain, Tadjikistan, Tunisia, Turkey, Turkmenistan, Uzbekistan.

Remarks. Probably a halobiontic species mainly inhabiting inland saline biotopes, with eremic and suberemic occurrences in Central Asia and North Africa. In this connection, BESCHOVSKI & NARTSHUK (1997) state that “The species is distributed [in Central Asia] around the salt basin[s] and on the salt ground”. MUNARI (2005) recorded it from an inland (ca. 190 km from the sea coast), mesophilous, flowered meadow in the Anatolian Peninsula. *T. czernyi* is widely distributed mainly in the Mediterranean-Turanic (or Mediterranean-Central Asiatic) area, and it “appears to be another species confined to the Southern area” (COLLIN, 1966). Hence, the former citations from “Berlin” (HENDEL, 1934), from the “Nord- und Ostseeküsten” (KARL, 1930, as *T. grisea* sensu Czerny, 1928, nec Fallén, 1823), and from Poland (SZADZIEWSKI, 1983) absolutely need confirmation on the basis of current knowledge.

flavigenis (Hendel, 1934)

Distribution. Palaearctic: Bulgaria, Denmark, England, France, Germany, Greece, Italy (incl. Sardinia), Netherlands, Romania, Spain (including Balearic Islands), Tunisia.

Remarks. A halobiontic species commonly found on bare salty soil and on halophytes in proximity to the sea, but only sporadically collected on the beach.

flavoidea Beschovski, 1997 (fig. 32)

Distribution. Palaearctic: Egypt (Sinai), Israel.

Remarks. In Israel this species was collected in saline biotopes of inland desert. It is possibly an eremic species strictly associated with desert salty pools and lakes. BESCHOVSKI (1997) regarded it as “an East Mediterranean species, presently known from Israel and Sinai”.

gatti Munari & Ebejer, 2001 – ?TaG (figs. 13-14)

Distribution. Palaearctic: Algeria, Tunisia.

Remarks. This species was tentatively assigned to the *alboguttata*-group, in that it exhibits depigmented wing crossveins as well as other minor external features. However, the male terminalia do not show the distinctive morphological pattern found in the other species. This species group is widespread throughout the Macaronesian-Mediterranean area, and extends southeast up to Arabian peninsula. Examination of female (so far unknown) cercal chaetotaxy is absolutely required to ascertain or reject its affinity with congeners of the *alboguttata*-group (see comparative remarks and discussion in MUNARI & EBEJER, 2001).

grisea (Fallén, 1823) (fig. 3)

Distribution. Palaearctic: Azores, Belgium, Bulgaria, Canary Islands, Cyprus, Denmark, England, Finland, France, Germany, Greece (Crete), Israel, Italy, Malta, Netherlands, Norway, Spain (including Balearic Islands), Sweden, Tunisia, Turkey, Turkmenistan, Ukraine.

Remarks. A relatively common thalassobiontic species mainly inhabiting sandy beaches (MUNARI & VANIN, 2007). It was long regarded as including two different species, *T. cinerea* (Loew, 1862) occurring at the northern latitudes of Europe, and *T. grisea* (Fallén, 1823) inhabiting the seashore at more southern latitudes, including the Mediterranean basin. The former species was first synonymized under *T. grisea* by HENDEL (1934). However, most of the authors still considered these two putative species as valid taxa, until MUNARI (1996) confirmed HENDEL's (1934) synonymy, which was at last accepted unanimously.

guttata Freidberg & Beschovski, 1996 – TaG

Distribution. Palaearctic: Israel, Tunisia.

Remarks. This species is closely related to *T. alboguttata* (Strobl), with which it shares the generally dark body coloration. However, the head and proboscis are much more prolonged

in *guttata*. This species generally occurs in eremic habitats, often at a considerable distance from the sea coast (FREIDBERG & BESCHOVSKI, 1996; MUNARI, 2005). FREIDBERG & BESCHOVSKI (1996) regarded *T. guttata* as the eastern sister species of *T. alboguttata*.

histrica Munari, 2009 (figs. 25-26)

Distribution. Palaeartic: Croatia.

Remarks. *Tethina histrica* is closely allied to *T. longirostris* (Loew). It differs substantially from the latter species by the following external and male postabdominal characters: ventral face not protruding, with facial keel approximately beneath base of postpedicel (head not prognathous); prementum and labellum distinctly shorter, the latter appendix never stylet-shaped, about as long as buccal cavity length; gena narrower, without longitudinal subshiny band, at most with a weak, short, narrow, longitudinal impression; “eye : gena” ratio = 5-5.2 (in *T. longirostris* the ratio is 3.3-3.7); hind tibia weakly paler (yellowish) only on the extreme proximal part (“knee”); external terminalia slightly but consistently different, with surstylus noticeably slenderer and sharply subtriangular in lateral view (fig. 26).

illota (Haliday, 1838)

Distribution. Palaeartic: Belgium, Denmark, England, Finland, France (Atlantic coast), Germany, Ireland, Netherlands, Portugal, Sweden.

Remarks. An Atlantic-European species never recorded from the Mediterranean basin. At first, it was assumed (MUNARI & VANIN, 2007) that this species with white setulation had no chromatic variation as to the mesonotal setae. Recent unpublished observations on additional Atlantic specimens proved this former assumption to be incorrect. In fact, this species shows, albeit with a lesser frequency, the same chaetochromatic variation as other congeners with white thoracic setulation.

incisuralis (Macquart, 1851) (fig. 21)

Distribution. Afrotropical: Yemen. Palaeartic: Algeria, Canary Islands, Egypt, England, Greece (Crete), Israel, Jordan, Malta, Morocco, Qatar, Spain (including Balearic Islands), Syria, Tunisia, Turkmenistan, United Arab Emirates.

Remarks. A relatively common, halobiontic species often found in steppes and desert oases of North Africa and the Middle East (MUNARI, 2005). As surprising as it may seem, the citation by COLLIN (1960) from England is likely correct, and not due to misidentification or labelling errors, since the English author, after reporting unequivocally the characters for the

recognition of this species, states: “It is one of the more easily recognized species, and one of those Mediterranean insects found in this country in Cornwall only. All my specimens were taken by Dr. C.G. Lamb and myself at St. Merryn, near Padstow, in June 1912”. Considering the southern distribution of this species, its markedly thermophilic characteristics, as well as its common occurrence in eremic environments, the doubt arises that the specimens from Cornwall may have been netted, in the early years of last century, from an occasional, adventitious population of short duration. This was probably due to a relatively recent and accidental introduction of individuals of this species, no longer recorded by British colleagues (MUNARI & VANIN, 2007). This species is strongly expected to be found in Italy, too.

inopinata Munari & Canzoneri, 1992

Distribution. Palaearctic: Greece.

Remarks. A north Aegean species closely related to *T. albosetulosa* (Strobl). It can be easily distinguished from Strobl’s species mainly by the characters given in the key.

intermedia Collin, 1966 – TaG (figs. 12, 38)

Distribution. Palaearctic: Canary Islands, Egypt, Israel, Tunisia, Ukraine.

Remarks. This species is closely related to *T. acrostichalis*, from which it can be easily distinguished mainly by the peculiar quadrate-shaped head (fig. 12), distinctly shorter labellum, coarser acrostichals, and by the peculiar morphology of male terminalia (fig. 38).

karatasensis Munari, 1981 – TaG (fig. 15)

Distribution. Palaearctic: Turkey.

Remarks. Originally described on a single female, this species was collected again in southern (Mediterranean) Anatolia some years later, allowing the male to be described and its terminalia illustrated (fig. 15) (MUNARI & MERZ, 2003). Hitherto only known from Turkey.

litocola Munari & Ebejer, 2001 – TaG (fig. 9)

Distribution. Palaearctic: Cyprus, Tunisia.

Remarks. MUNARI & MERZ (2003) pointed out moderate, though consistent, morphological differences between specimens from Tunisia (type series) and Cyprus. Most species belong-

ing to this species-group very often exhibit a more or less marked variation in both body and legs hue and chaetotaxy of the acrostichal setulae. In this connection, the above-mentioned authors suggested that the populations inhabiting the seashore of Cyprus could represent an eastern Mediterranean form, distinct from the type series from Tunisia.

longirostris (Loew, 1865) (fig. 36)

Distribution. Palaearctic: Algeria, Cyprus, Egypt, France, Germany, Greece (Crete), Israel, Italy (Sicily), Malta, Spain (including Balearic Islands), Tunisia.

Remarks. A Mediterranean species (records from Germany are questionable) morphologically strongly variable in both external and male terminalia characters. Individuals of *T. longirostris* range in size from very small (dwarf phenotypes, ≤ 1.60 mm) to relatively large (giant phenotypes, slightly > 2.80 mm). A markedly consistent character state is, however, the stylet-shaped labellum, which is distinctly longer than buccal cavity length (this character state is particularly evident in specimens with strongly prognathous head). For a more detailed discussion about the morphological variation in this species, readers are referred to MUNARI & MERZ (2003).

lusitanica Munari, Almeida & Andrade, 2009 – TaG (fig. 7)

Distribution. Palaearctic: Portugal.

Remarks. A patterned-winged species with highly derived character states, unusual not only in the *alboguttata*-group but even in the entire subfamily. At first glance this species strongly resembles the closely related *T. pictipennis* Freidberg & Beschovski, but it differs noticeably from this latter species mainly by consistent character reversals relating to chaetotaxy. Indeed, it lacks postocellar and katepisternal setae as well as all setulae of head and thorax. Furthermore, an unusually long, narrow, genital postgonite characterizes the male terminalia. Hitherto only known from Northern Portugal.

mariae Munari, 1997 (fig. 17)

Distribution. Palaearctic: Morocco [near Larache: closely southwest of the Strait of Gibraltar].

Remarks. A strongly localized species hitherto known exclusively from the holotype. The male of this species is characterized by a peculiar, very long and slender surstylus, which is axially vertical to the epandrium (fig. 17).

melitensis Munari & Ebejer, 2001 – TaG (Fig. 8)

Distribution. Palaearctic: Malta.

Remarks. A species of the *alboguttata*-group hitherto only known from Malta. It is expected to occur in other places of the Maghrebian area. This species is similar to both *T. acrostichalis* Freidberg & Beschovski and *T. litocola* Munari & Ebejer, differing from them particularly by the distinctly dark femora (a character state sometimes also shared with *T. litocola*, see key) and the peculiar morphology of the external male terminalia. Additional characters that distinguish it from the latter two species are as follows: head not prognathous; mesonotum often with distinct golden brown microtomentum; scutellar spot rather evanescent (though distinguished especially when viewed obliquely from in front) (fig. 8); body, wing, and setal vestiture distinctly darker.

mima Munari, 1996 (figs. 27a, b)

Distribution. Palaearctic: Greece (Rhodes).

Remarks. This species, albeit described on a single female specimen, is neatly diagnosed by the consistent characters given in the key (see couplet 27). For this species, with such a peculiar combination of characters, MUNARI (1996) designated a new species-group (the *Tethina mima*-group).

minoia Munari, 1999 (fig. 20)

Distribution. Palaearctic: Greece (Crete).

Remarks. Possibly an endemic species quite similar externally to *Tethina incisuralis* (Macquart, 1851). It is distinguished from the latter species exclusively by the different shape of the male surstylus (fig. 20).

munarii Carles-Tolrá, 1993 (figs. 5, 24)

Distribution. Palaearctic: Italy (Sicily), Malta, Spain (including Balearic Islands).

Remarks. A strongly localized, south Mediterranean species. It is distinguished from congeners mainly by the characters given in the key.

nigrofemorata Beschovski, 1997 (figs. 18-19)

Distribution. Palaearctic: Algeria, Canary Islands, Cyprus, Egypt, France, Greece (Crete), Israel, Jordan, Malta, Spain (including Balearic Islands), Tunisia.

Remarks. Species externally similar to *Tethina incisuralis* (Macquart). Besides the distinctive shape of the male terminalia, which however show variation in the lateral outline of the surstylus (figs. 18-19), *T. nigrofemorata* is distinguished from the latter species mainly by the blackish femora and the colour of the hind tibia as described in couplet 19. Both species are often found at eremic places such as desert oases of the Mediterranean subregion (MUNARI, 2005).

pallipes (Loew, 1865) (figs. 29-30)

Distribution. Afrotropical: Cape Verde Islands, Senegal, Seychelles (Aldabra), South Africa. Australasian/Oceanian: Australia (Western Australia). Oriental: India, Taiwan. Nearctic: Bermuda, United States (Texas). Neotropical: Chile, Mexico (Chiapas, Tabasco). Palaearctic: Algeria, Azores, Bulgaria, Canary Islands, Cyprus, Egypt, France, Greece, Israel, Italy, Jordan, Malta, Oman, Portugal (Madeira), Spain (including Balearic Islands), Tunisia, Turkey, United Arab Emirates.

Remarks. In the Western Palaearctic Region this subcosmopolitan species is widely distributed mainly throughout southern Europe and the Mediterranean basin. *Tethina pallipes* differs from the allied *T. strobliana* (Mercier) particularly in having a broader subshiny stripe on the gena (fig. 32), 2 rows of acrostichals (sometimes with very few sparse, additional setulae), and male terminalia of a very distinctive form (fig. 30). This species has long been known as *Tethina ochracea* (Hendel, 1913), until MUNARI (2006) placed it in synonymy with Loew's species.

pictipennis Freidberg & Beschovski, 1996 – TaG

Distribution. Palaearctic: Morocco [same locality as *T. mariae*, and further south (Agadir, Tamri)].

Remarks. A patterned-winged species (also see the Remarks under *T. lusitanica*) hitherto only known from the Moroccan coast south of the Strait of Gibraltar. Besides the morphological and chaetotactical peculiarities, these two species are also characterized by the presence of scattered, inconspicuous hairs on the gena, like those occurring in the species of *Pelomyiella* Hendel (Pelomyiinae). This character, occurring in species of both the subfamilies Tethiniinae and Pelomyiinae, has therefore arisen independently more than once (MUNARI et al., 2009).

salinicola Beschovski, 1998 (figs. 33a-b)

Distribution. Palaearctic: France [Mediterranean coast].

Remarks. Strongly similar to *Tethina strobliana* (Mercier), it differs from the latter species mainly in the morphology of male terminalia (see key couplet 31). In the original description of this species, BESCHOVSKI (1998) states that “face and genae [are] entirely covered with pale yellow-whitish microtomentum”. He also gives a figure of the head showing no longitudinal narrow stripe on the gena. However, after examining two topotypic specimens from the same catch as the type series, I noticed a distinct longitudinal, narrow, subshiny stripe on the gena. Thanks to the courtesy of Dr. A. Müller (curator of Entomology at the Federal Institute of Technology, Zürich, Switzerland), who carefully inspected the holotype of this species housed in his Institute, I had confirmation of the oversight happened to Beschovski while describing and illustrating *T. salinicola*. In fact, Dr. Müller confirmed unequivocally the gena of this species exhibits a distinct, longitudinal, narrow, subshiny stripe (personal communication of September 9, 2010). In addition, Dr. B. Merz (curator of Entomology at the Natural History Museum, Geneva, Switzerland) also confirmed to me (personal communication of September 21, 2010) the occurrence of the same character in five paratypes preserved in his Institute. In my topotypic specimens, I have further noticed that the lateral outline of the surstylus shows slight variation. Indeed, the anterior margin can sometimes be distinctly straighter (fig. 33b), rather than slightly convex as figured by BESCHOVSKI (1998) (fig. 33a). Similar variation of the surstylus commonly occurs in *T. strobliana* (Mercier) as well.

stobaeana Munari, 1996 (figs. 31a-c)

Distribution. Palaearctic: Spain, Uzbekistan.

Remarks. A small species described on specimens from Spain (holotype) and Uzbekistan (paratype). I have now become suspicious about their conspecificity. The real identity of the paratype needs verification on the basis of additional material.

strobliana (Mercier, 1923) (figs. 28, 34)

Distribution. Palaearctic: Azores, Belgium, Bulgaria, Czech Republic, Denmark, England, France, Germany, Greece (Crete), Hungary, Israel, Italy (including Sardinia), Kazakhstan, Lebanon, Malta, Oman, Poland, Portugal (Madeira), Russia (Sea of Azov), Slovakia, Spain (including Balearic Islands), Syria, Tadjikistan, Tunisia, Turkmenistan, Ukraine, Uzbekistan.

Remarks. A halobiontic species often found in habitats with mesophilic vegetation (MUNARI & VANIN, 2007). It is very common in both coastal environments and inland saline habitats, sometimes many kilometres from the sea (MUNARI, 2005). In this species the lateral outline

of the surstylus is strongly variable (MUNARI, 2006); in fig. 34 one of the most common morphological patterns found is illustrated. For this reason, most old records of this species need verification, as they may have often been confused with allied congeners.

subpunctata Beschovski, 1994 (fig. 35)

Distribution. Palaearctic: Tunisia.

Remarks. Possibly a junior synonym of *T. longirostris* (Loew). MUNARI & MERZ (2003) pointed out that some specimens of *T. longirostris* with golden brown mesonotum also show indistinct dark spots around the base of the scutal setae. This being the most important character state distinguishing *T. subpunctata* from *T. longirostris*, it is obvious that further study of the respective types and examination of additional material will be needed to establish if they are indeed two distinct species.

tethys Munari & Báez, 2000 (fig. 37)

Distribution. Palaearctic: Azores, Italy (incl. Sardinia), Spain (Balearic Islands).

Remarks. A very uncommon species widely distributed from Azores to Sardinia. If doubts persist in identifying a given specimen, it will be necessary to examine the male terminalia, very distinctive in this species (fig. 37) by having a large, almond-shaped surstylus (lateral view) entirely fused with the epandrium.

tschirnhausi Munari, 1999 (figs. 22-23)

Distribution. Palaearctic: Greece (Crete).

Remarks. This species is easily recognizable from congeners by the following combination of characters: rather narrow gena (eye : gena ratio = 4.8-6.0); facial carina apparently membranous, well developed, nose-shaped (fig. 22); two interfrontal setae only (this character state needs confirmation based on additional specimens); all femora and tibiae brown; very characteristic shape of the surstylus (fig. 23).

yaromi Freidberg & Beschovski, 1996 – TaG (fig. 10)

Distribution. Palaearctic: Spain (including Balearic Islands).

Remarks. This probably psammophilous species, hitherto only known from Spain, belongs

to the *alboguttata* group, and could be easily confused with other closely related species. FREIDBERG & BESCHOVSKI (1996) commented as follows: “This species occupies an intermediate position between the two main subgroups of the *acrostichalis* [sic, mistake for *alboguttata*] group. On the one hand, it resembles the *alboguttata* subgroup in the generally dark coloration, including the coxae, femora and most setae and setulae, and in the relatively long proboscis, the labella of which is [sic] about as long as the ventral head margin. On the other hand, the thoracic coloration is more similar to that of the *acrostichalis* subgroup, with the thorax generally heavily and uniformly gray microtomentose, having a dark, isolated and contrasted scutellar spot, which is not an extension of a median scutal [sic] vitta.”

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Author's address:

Lorenzo Munari c/o Museo di Storia Naturale di Venezia, Santa Croce 1730, I-30135 Venezia, Italia; lormun@iol.it