

<https://doi.org/10.11646/zootaxa.4820.1.8>

<http://zoobank.org/urn:lsid:zoobank.org:pub:99776202-FAD8-42FE-9C77-3A1AFBCC5246>

Revision of the genus *Tephrochlaena*, with a key to genera of Palaearctic Heteromyzinae (Diptera: Heleomyzidae)

GIUSEPPE LO GIUDICE^{1,2*} & ANDRZEJ JÓZEF WOŹNICA³

¹Raggruppamento Carabinieri Biodiversità, Reparto Biodiversità Verona, Via del Ponte 256, Peri, Verona, Italy; ²LaNaBIT—Laboratorio Nazionale Tassonomia e Biondicazione Invertebrati, Verona, Italy;

 giuseppelogiudice78@gmail.com;  <https://orcid.org/0000-0002-0194-5474>

³Institute of Biology, University of Environmental and Life Sciences in Wrocław, 51-631 Wrocław, Kozuchowska 5b, Poland.

 andrzej.woznica@upwr.edu.pl;  <https://orcid.org/0000-0002-3316-0188>

*Corresponding author

Abstract

In order to fix the identity of the European monospecific genus of heleomyzid flies *Tephrochlaena* Czerny, 1924 (Figs. 1, 2), the type specimens of *Helomyza halterata* Meigen, 1830, and *Tephrochlaena oraria* Collin, 1943, were re-examined. *Tephrochlaena oraria* is redescribed, the lectotype is designated to clarify the application of the name to the taxon and the type species of *Tephrochlaena* Czerny, 1924 is fixed as *Tephrochlaena oraria* Collin, 1943 (= *Helomyza halterata* sensu Czerny, 1924, nec Meigen, 1830), under ICZN Article 70.3.2. External characters and male and female terminalia are illustrated. A key to the Palaearctic genera of the subfamily Heteromyzinae is provided. By First Reviser action, *Tephrochlamys rufiventris* (Meigen, 1830) is given precedence over *Helomyza halterata* Meigen, 1830 **syn. nov.** under ICZN Article 24.2.1. A lectotype is also designated for *Helomyza rufiventris* Meigen, 1830 under ICZN Recommendation 73F.

Key words: lectotype designations, new synonymy, taxonomy, *Tephrochlaena oraria*, identification key, Heteromyzini

Introduction

Heteromyzinae is one of the three subfamilies of the family Heleomyzidae in the sense of Gorodkov (1972). In the Palaearctic Region it includes one tribe, Heteromyzini, containing the three genera *Heteromyza* Fallén, 1820, *Tephrochlamys* Loew, 1862, and *Tephrochlaena* Czerny, 1924.

The circumscription and classification of Heteromyzinae is still under discussion and is briefly summarized as follows. Czerny (1924) included the three genera in the subfamily Heleomyzinae. Gorodkov (1971), based on postabdominal morphology, maintained it as a subfamily rank. Griffiths (1972), in a treatment based on the study of *Tephrochlamys rufiventris* (Meigen, 1830) and *Heteromyza atricornis* Meigen, 1830, inserted *Heteromyza* and *Tephrochlamys* in the family Heteromyzidae, which, together with Tanypezidae, formed the prefamily Tanypezoinea. Gorodkov (1972) divided Heleomyzidae into three subfamilies and included the genus *Heteromyza* and *Tephrochlamys* in the subfamily Heteromyzinae. The genus *Tephrochlaena* was listed for the first time within the subfamily Heteromyzinae some years later in the Catalogue of Palaearctic Diptera (Gorodkov 1984). Woźnica (1998) argued for the monophyly of the extant Heteromyzinae (including *Kiboleria* Lindner, 1956) and agreed with Gorodkov (1972), separating Heteromyzinae from Heleomyzinae and Suilliinae based on one newly discovered synapomorphy, the well-developed pair of scapular setulae (= prescapulars in Woźnica 1998, 2001). McAlpine (2007) proposed a different classification for this group, with Heteromyzidae as a family encompassing both Heleomyzidae and Sphaeroceridae, but this was generally not accepted (e.g., Lo Giudice & Woźnica 2013; Pape *et al.* 2015; Soszyńska & Woźnica 2016).

The status of the genus *Tephrochlaena* is particularly complex. Meigen (1830) described *Helomyza halterata* from a female specimen collected near Berlin (“aus der Berliner Gegend”, p. 57) with a character state not common for the group: dark brown halteres. Becker (1902) studied the specimen described by Meigen, considering it to be a

species of the genus *Blepharoptera* Agassiz, 1846 (= *Heleomyza* Fallen, 1810), and pointed out the following main characters: very short setae on Costa, dark halteres, 6 mm in length, vibrissae exceptionally small. During his stay in Paris in 1906, Collin examined the type specimen of *Helomyza halterata* and supposed it to be a *Tephrochlamys* because of the lack of presutural *dc* (Collin 1943). The problem arose when Czerny (1924) identified specimens from Tunis and Rügenwalde (= Darlowo, Poland) as *H. halterata*, and described the genus *Tephrochlaena* based on these specimens, designating *H. halterata* Meigen, 1830, as type species. Czerny's specimens from Tunis had whitish-yellow halteres, vibrissae normally developed, costal spines normally developed, were about 4–5 mm in body length, and had one pair of presutural *dc* (all characters in contrast with those noted above by Becker and Collin based in the examination of the type specimen of *H. halterata* Meigen preserved in Paris. Séguy (1934) examined the holotype of *H. halterata* and placed it in the genus *Tephrochlamys*. Collin (1943) stated that *H. halterata* of Czerny (1924) was a misidentification and proposed *Tephrochlaena oraria* Collin, 1943, for a correct identification of the specimens. Despite this, the name *Tephrochlaena halterata* has continued to be erroneously used in faunistic works, e.g., by Caoduro *et al.* (1994) where a specimen of *Heteromyza atricornis* Meigen, 1830 (ITALY: Veneto, Verona, Grotta A del Ponte di Veja, 117 V/VR, Ruffo leg., 1 ♀) was misidentified as *T. halterata* (DISAAA-A), Beron *et al.* (2011), Mansard-Veken (1999) and von Ts chirnhaus (2008).

In this work, we clarify a taxonomic identity of *Helomyza halterata* and *Tephrochlaena oraria* based on the examination of the type specimens of both species and provide a redescription of *T. oraria*, including images of male and female terminalia.

Material and methods

Specimen preparation and documentation for morphological analyses: pinned specimens were examined using an MZ12.5 stereoscopic microscope (Leica, Wetzlar, Germany), an SMZ800 stereoscopic microscope (Nikon, Tokyo) and a TM1000 environmental scanning electron microscope (ESEM, Hitachi, Tokyo). Composite “all-in-focus” images were produced from stacked images captured using a DS-L1 digital camera (Nikon, Tokyo) mounted on the MZ12.5 and processed in Photoshop CS6 (1990–2012, Adobe Systems Incorporated).

Male and female terminalia were dissected and prepared for examination as follows: the abdomen was removed from dried pinned specimens and heated (90 °C) for 1–2 min in a 10% KOH solution, placed in 70% acetic acid for neutralization, rinsed in 70% ethanol and dissected in glycerin. After dissection, male terminalia were dehydrated through 70% and 100% ethanol washes of 30 min each and critical point dried, and image of the surstylus was captured using a TM1000 ESEM. Rehydrated male terminalia and female terminalia were slide-mounted and studied with a DMLS Binocular Microscope (Leica, Wetzlar, Germany) and the SMZ800, where a drawing tube was mounted for preparation of line drawings of the spermathecae, the epandrial and the hypandrial complex. After study and documentation, male and female terminalia were placed in glycerol inside a small plastic vial pinned with the source specimen, and the abdomen was glued on to the source specimen, on a label, or preserved in glycerol in the plastic vial together with the terminalia.

Label data: label data of name-bearing types are given verbatim, using the following symbols:

- / end of a line and beginning of the next;
- // end of a label and beginning of the next (from top to bottom on the same pin).

Acronyms of specimen repositories:

DEI	Deutsches Entomologisches Institut (Senckenberg Gesellschaft für Naturforschung), Müncheberg, Märkisch-Oderland, Brandenburg, Germany
DISAAA-A	Dipartimento di Scienze Agrarie, Alimentari e Agro-ambientali, Pisa, Italy
LUZ	Lunds Universitet, Zoologiska Museet, Lund, Sweden.
MFN	Museum für Naturkunde—Leibniz-Institut für Evolutions- und Biodiversitätsforschung, Berlin, Germany.
MNHN	Muséum national d'Histoire naturelle, Paris, France.
NHMUK	Natural History Museum [formerly British Museum (Natural History)], London, UK.
NHMUS	Hungarian Natural History Museum, Budapest, Hungary.

NHMW	Naturhistorisches Museum Wien, Wien, Austria.
NHMO	Natural History Museum of University in Oslo, Sweden.
SMOC	Slezské zemské muzeum, Opava, Czech Republic.
TMZ	Tromsø University Museum, Zoologisk avdeling, Tromsø, Norway.
OUMNH	Oxford University Museum of Natural History, Oxford, UK.

Terminology: morphological terms follow Cumming & Wood (2017). Measurements and ratios of the head follow Woźnica (2006) and Cerretti (2010) except for the following:

Frons ratio 1. Head in dorsal view, distance from postocellar setae to the anterior end of frons / width of vertex.

Frons ratio 2. Head in dorsal view, distance from the second fronto-orbital seta to the anterior end of frons / width of vertex.

Abbreviations: the following abbreviations and terms are used: *dc* = dorsocentral seta(e); *ad* = anterodorsal seta(e); *pd* = posterodorsal seta(e); *pv* = posteroventral seta(e); T1+2, T3, T4 etc. = abdominal syntergite 1+2, tergite 3, tergite 4, etc.; S1, S2, etc. = abdominal sternite 1, abdominal sternite 2, etc.

Type material examined.

Tephrochlaena oraria Collin, 1943: 242.

Lectotype in NHMUK (here designated) (Fig. 3, micropinned on a yellow celluloid support):

Male from Porthcawl (Glamorgan, Wales), bearing the following labels: Syn / type // Porthcawl, / Glamorgan. / VI. '06. / Lt. Col. Yerbury // Leria / halterata, Mg. 1916–49 // BMNH (E) # / 230867 // LECTOTYPE ♂ / *Tephrochlaena oraria* / Collin, 1943 / Lo Giudice & Woźnica des. 2020.

Paralectotypes (73 specimens in NHMUK, OUMNH, NHMUS):

SCOTLAND. Golspie / Sutherland / IV.'04 / Lt. Col. Yerbury // Leria / halterata, Mg. / 1916–49. // BMNH (E) / 230880–82 3 ♀♀ (NHMUK); Bettyhill / 3.7.38 // VC-TYPE 637 / *Tephrochlaena / oraria* ♂ / Collin, 1 ♂ (OUMNH); Nairn. / V–VI. '05 / Lt. Col. Yerbury // Leria / halterata, Mg. 1916–49 // BMNH (E) / 230884–87, 4 ♀♀ (NHMUK); Skelbo / 26.7.36 // VC-TYPE 637 / *Tephrochlaena / oraria* ♂ / Collin, 1 ♂ (OUMNH); Skelbo / 26.7.36 // VC-TYPE 637 / *Tephrochlaena / oraria* ♀ / Collin, 2 ♀♀ (OUMNH); Skelbo / 26.7.36 // ex Verrall—/ Collin duplicate / Coll. 18-1967 // VC-TYPE 637 / *Tephrochlaena / oraria* ♀ / Collin, 1 ♀ (OUMNH); Skelbo / 27.7.14 // VC-TYPE 637 / *Tephrochlaena / oraria* ♀ / Collin, 2 ♀♀ (OUMNH); Skelbo / 27.7.14 // ex Verrall—/ Collin duplicate / Coll. 18-1967 // VC-TYPE 637 / *Tephrochlaena / oraria* ♀ / Collin, 6 ♀♀ (OUMNH); WALES: Barmouth / Merioneth / IV–VI. '02. / Lt. Col. Yerbury // Leria / halterata, Mg. // Verral / Bequest. / 1911–411 // BMNH (E) / 230873, 1 ♀ (NHMUK); Barmouth / Merioneth / IV–VI. '02. / Lt. Col. Yerbury // Leria / halterata, Mg. 1916–49 // BMNH (E) / 230869–72, 230874–79, 7 ♀♀, 3 ♂♂ (NHMUK); Porthcawl, / Glamorgan. / VI. '03. / Lt. Col. Yerbury // Leria / halterata, Mg. 1916–49 // BMNH (E) / 230860–66, 4 ♀♀, 3 ♂♂ (NHMUK); Porthcawl, / Glamorgan. / VI. '06. / Lt. Col. Yerbury // Leria / halterata, Mg. 1916–49 // BMNH (E) / 230868, 1 ♀ (NHMUK). ENGLAND: Walton on Naze, Essex. / VI. '08. / Lt. Col. Yerbury. // Leria / halterata, Mg. 1916–49 // BMNH (E) / 230856–59, 1 ♀, 3 ♂♂ (NHMUK); Walton on Naze / 5.7.12 // *Tephrochlaena / oraria* ♀ / Collin, 1 ♀ (OUMNH); Chatham / 4.[18]92 / de la Garde // ex Verrall—/ Collin duplicate / Coll. 18-1967 // VC-TYPE 637 / *Tephrochlaena / oraria* ♀ / Collin, 1 ♀ (OUMNH); Folkestone / 18/4/20 // Leria / halterata, Mg. // Verral / Bequest. / 1911–411 // BMNH (E) / 230855, 1 ♀ (NHMUK); Palling / 17.6.04 // Leria / halterata, Mg. // Verral / Bequest. / 1911–411 // BMNH (E) / 230854, 1 ♂ (NHMUK); Palling / 17.6.04 // VC-TYPE 637 / *Tephrochlaena / oraria* ♂ / Collin, 2 ♂♂ (OUMNH); Palling / 17.6.04 // ex Verrall—/ Collin duplicate / Coll. 18-1967 // VC-TYPE 637 / *Tephrochlaena / oraria* ♀ / Collin, 2 ♀♀ (OUMNH); Blackeney / Point / 24.5.20 / [illegible] / Brenchley // VC-TYPE 637 / *Tephrochlaena / oraria* ♂ / Collin, 1 ♂ (OUMNH); Blackeney / Point / 24.V.20 / [illegible] / Brenchley // ex Verrall—/ Collin duplicate / Coll. 18-1967 // VC-TYPE 637 / *Tephrochlaena / oraria* ♀ / Collin, 1 ♀ (OUMNH); Blackeney / Pt. / 24.V.20 / [illegible] / Brenchley // VC-TYPE 637 / *Tephrochlaena / oraria* ♂ / Collin, 1 ♂ (OUMNH); Blackeney / Pt. / 10.6.30 // ex Verrall—/ Collin duplicate / Coll. 18-1967 // VC-TYPE 637 / *Tephrochlaena / oraria* ♀ / Collin, 1 ♀ (OUMNH); Blackeney / Pt. / 10.6.30 // ex Verrall—/ Collin duplicate / Coll. 18-1967 // VC-TYPE 637 / *Tephrochlaena / oraria* ♂ / Collin, 1 ♂ (OUMNH); Blackeney / Pt. / 16.7.20 // ex Verrall—/ Collin duplicate / Coll. 18-1967 // VC-TYPE 637 / *Tephrochlaena / oraria* ♂ / Collin, 1 ♂ (OUMNH); Blackeney / Pt. / 21.7.20 // VC-TYPE 637 / *Tephrochlaena / oraria* ♀ / Collin, 1 ♀ (OUMNH); Blackeney / Pt. / 10.6.30 // ex Verrall—/ Collin duplicate / Coll. 18-1967 // VC-TYPE 637 / *Tephrochlaena / oraria* ♀ / Collin, 1 ♀ (OUMNH); Blackeney / Pt. / 10.6.30 // ex Verrall—/ Collin duplicate / Coll. 18-1967 // VC-TYPE 637 / *Tephrochlaena / oraria* ♂ / Collin, 1 ♂ (OUMNH); Blackeney / Pt. / 16.7.20 // ex Verrall—/ Collin duplicate / Coll. 18-1967 // VC-TYPE 637 / *Tephrochlaena / oraria* ♂ / Collin, 1 ♂ (OUMNH); Broadstairs / 5.7.14 // VC-TYPE 637 / *Tephrochlaena / oraria* ♂ / Collin, 1 ♂ (OUMNH);

♂ (abdomen missing, dissected terminalia glued on a yellow celluloid support on a pin bearing the following label: *Leria halterata*) (OUMNH); Blackhall / shore / 15.6.00 // ex Verrall—/ Collin duplicate / Coll. 18-1967 // VC-TYPE 637 / *Tephrochlaena oraria* ♀ / Collin, 1 ♀ (OUMNH).

TUNISIA: Tunis / Saint Germain / 1913.IV.28. // *T. halterata* / det. Czerny, 4 ♂♂, 4 ♀♀; Tunis / Hoegen, 1 ♀; Tunisia / Djedel Mesratine / 1913.IV.26., 1 ♂ (NHMUS).

UNKNOWN LOCALITY: Dossiter // 1881 // ex Verrall—/ Collin duplicate / Coll. 18-1967 // VC-TYPE 637 / *Tephrochlaena oraria* ♀ / Collin, 1 ♀ (OUMNH).

Remarks. Pont (1995) listed 77 syntypes of *Tephrochlaena oraria*: 12 ♂♂ and 22 ♀♀ from NHMUK (the male specimen with label data: Golspie / Sutherland / VII-VIII.'00 / Lt. Col. Yerbury // *Leria halterata*, Mg. / 1916-49. // BMNH (E) / 230883 (NHMUK) is actually a *Neoleria ruficeps* (Zetterstedt, 1838), 8 ♂♂ and 21 ♀♀ from OUMNH, 2 specimens from MFN and 6 ♂♂ and 6 ♀♀ from NHMUS. Pont (1995) also stated that syntypes of *T. oraria* Collin from NHMUK were partly from a Verrall bequest, partly from Yerbury material, and named by Verrall and Collin as *halterata*. We examined all the specimens except for two specimens from MFN (with all probability the specimens from Rügenwalde) and one male and one female from NHMUS, currently not available.



1



2



3

FIGURES 1–3. *T. oraria* (Mallorca, Spain). 1. ♂. 2. ♀ (Photo taken by Hedy van Prattenburg). 3. *T. oraria*, lectotype (with labels).

Considering the material we have studied and the distribution of the species, we totally agree with Pont's assessments regarding the list of syntypes.

Helomyza halterata Meigen, 1830: 56.

Holotype in MNHN: female, bearing the following labels: meigen (round white label) / 2623 40 (below) // halterata / ♀ (square label, yellowed) // MNHN, Paris / ED2041 // HOLOTYPE (<http://coldb.mnhn.fr/catalognum-ber/mnhn/ed/ed2041>).

Helomyza rufiventris Meigen, 1830: 58.

Lectotype in NHMW (here designated): female, bearing the following labels: Coll. Winthem (square white label) // 220 (square white label) // *rufiventris* det. Löw (square label, yellowed) / Lo Giudice & Wozinica des. 2020.

Remarks. Loew in 1862(59) wrote about syntypes of *Helomyza rufiventris* in the Winthem collection. Unfortunately, no specimens are currently present in MNHN and only one specimen in NHMW. Other syntypes are probably lost. Therefore, we have to treat the specimen as a lectotype, by present designation.

This species is now assigned to *Tephrochlamys* (following the key of Papp (1998)). However, as highlighted below, the species of the genus *Tephrochlamys* need revision.

Other material examined.

Tephrochlaena oraria

SWEDEN. Sk. Vitemölle, dynhed, 19.5.1954, nr. 55, 1 ♀; Hall Laxvik, R. Dahl, (NHMUK); 1 ♀, Hall Tylösand, sötvatten, 11.6.1954, nr 99// ephydrid, undersökningarna, Richard Dahl (NHMUK). 1 ♀, Sk, 22.V.[19]43, Ängelholm, coll. O. Ringdal (LUZ); Hbg, 18.VI.[19]23; SK. Helsingborg, O. Ringdahl coll., H. Andersson det., 1 ♂ (LUZ); Helsingborg, Raus Marker, 6.V.1950, coll. S Barden, 1 ♀ (LUZ). WALES. Oxwich, Gower Glam, 11–16.V.1955, 1 ♀, 1 ♂, E.A. Fonseca; 4–9.VII.1954, 2 ♀♀, 1 ♂, E.A. Fonseca; 1.VI.1972, 2 ♂♂. ENGLAND. Bristol Glos., 10–17.V.1980, 1 ♀, E. A. Fonseca (NHMUK); E. Suffolk, Minsmere, 26.V.1952, 1 ♀, L. Parmenter (NHMUK). SCOTLAND. Sutherland, Dornoch Sands, 24–29.VI.1971, 1 ♀, E.A. Fonseca (NHMUK).

GERMANY. One male specimen from the Oldenberg collection, Memmert (Germany, East Frisian island), Alfken (leg.), 02.06.[19]21 with labels only partially legible (DEI).

ICELAND: S. Island Skoegar, Vlk; loc. 83c, 29.8.[19]67, 1 ♀, 1 ♂; Vikurhamrar leg. 94, 27.VIII.1967, 1 ♀ (LUZ); S. Island Skoegar, Vlk; loc. 83c, 29.VIII.[19]67, 1 ♂ H. Andersson leg (LUZ). NORWAY: (Norway, [illegible]), 1 ♀ (NHMO); Vannö, 17.VII.1925, S.R. as *Oecothea fenestralis*, 2 ♀♀ (TMZ); Vannö, 30.VII.1925, S.R., 1 ♀ (TMZ); Andenes, 22.VII.1941, S.R., 1 ♂ (TMZ). SPAIN: Hispania mer. or., Gandia env., 10.V.1979, J. Roháček leg, 1 ♀ (SMOC). MALLORCA: 21.III.2018, Hedy van Prattenburg leg., 1 ♀, 1 ♂. TUNISIA: Tunisia / Carthago [dorsal side] // 1913 / IV. 13. [ventral side] // *Tephrochlaena* / *halterata* / Meig, 1 ♂ (NHMW); Tunisia / Carthago / 913.IV.13., 1 ♀ (NHMW).

Taxonomy

Diagnosis of the subfamily Heteromyzinae basing on apomorphic characters. Gena posteriorly with a long anteriorly-directed seta. One pair of prescapular setae. Mid tibia with one ventroapical seta. Male S6 ventral, symmetrical and macrotrichose, shorter than S5 (except longer than S5 in *Tephrochlaena*). Phallic apodeme long, stick-like and free from hypandrium. Subepandrial sclerite narrow, poorly sclerotized and strongly connected to genitalia, forming a connection between surstyler bases.

Other characters useful for a correct diagnosis: Male terminalia symmetrical, including 6th segment. T6 in males well developed, macrotrichose, considerably shorter than T5. S7 and S8 in male fused into a dorsal sclerite. Cerci and surstyli symmetrical in median sagittal plane, large, not fused to epandrium. Ejaculatory apodeme slender, long and stick-like. Pregonite connected widely with medial part of hypandrium and basiphallus; postgonite forming a compact structure with pregonite. Epiphallus large. Female terminalia: T7 and S7 separate, S8 poorly sclerotized. Spermathecal ducts bulbous and sclerotized below the globular spermathecae. Cerci of females well separated.

Key to Heteromyzinae genera

1. Vein R_1 long, reaching costal vein distal to r-m as in Fig. 4. Strong sexual dimorphism in width of frontal vitta and face *Heteromyza*
- Vein R_1 shorter, reaching costal vein at level of r-m or slightly proximally as in Fig. 5. No sexual dimorphism in width of frontal vitta and face. 2
2. Arista longer than width of head. Usually presutural *dc* absent (if present, clearly shorter than postsutural *dc*). Male S6 shorter than S5. Male genitalia small, anus caudally directed. Ovipositor simple, regular and telescopically narrowed *Tephrochlamys*
3. Arista shorter than width of the head. 1+3 *dc* (presutural *dc* as long as postsutural in males, shorter in females). Male S6 not shorter than S5. Male genitalia large, anus ventrally directed. Ovipositor distally flattened and bent upwards, forming an open ring ventrally *Tephrochlaena*

Tephrochlaena Czerny, 1924: 87

Type species: *Tephrochlaena oraria* Collin, 1943.

Type species fixed herein, under Article 70.3.2 of the Code (I.C.Z.N. 1999), as *T. oraria* Collin 1943, misidentified as *Helomyza halterata* Meigen, 1830 in the original designation by Czerny (1924).

Diagnosis. Two pairs of orbital setae. Arista short, shorter than width of head in lateral view. No sexual dimorphism in width of postfrons and facial plate. 1 + 3 *dc* arising from dark spots. Vein R_1 joining Costa proximal to crossvein r-m.

Tephrochlaena oraria Collin, 1943: 242. Type locality: “Wales, Porthcawl, Glamorgan”

(Fig. 6)

Redescription [measurement of female specimens in parentheses, measurement of lectotype in brackets].

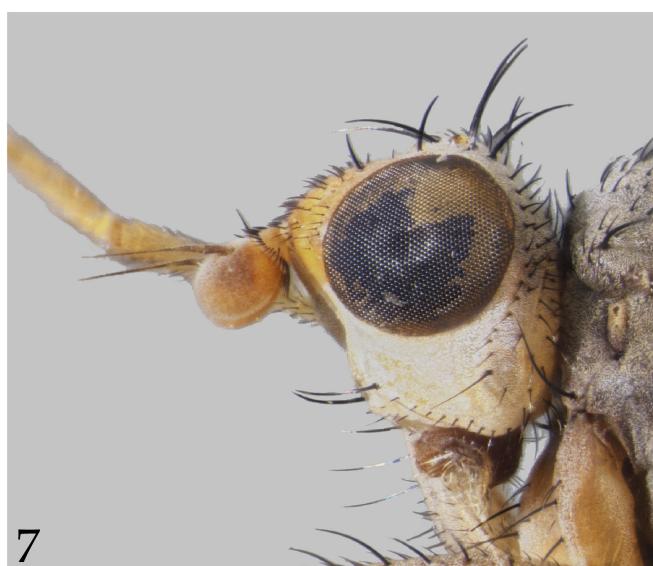
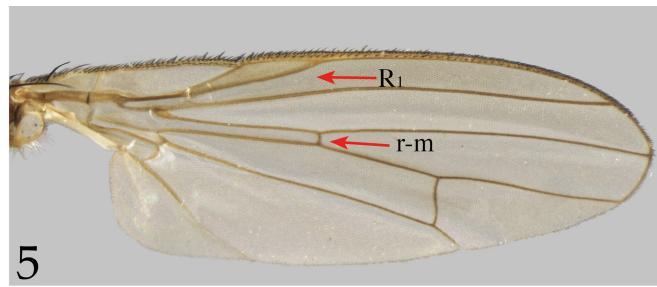
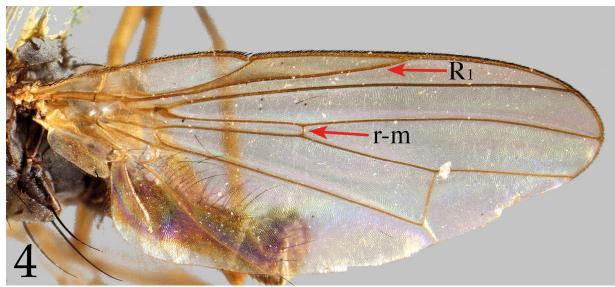
Length: 3.74–[4.05] 4.25 (3.35–4.40) mm.

Colour. Frons and fronto-orbital plates orange, brownish at sides of ocellar triangle in some specimens. Ocellar triangle brownish-grey. Occiput, genae, face (except for the yellow-orange central part) and parafacials whitish-yellow. Palpi orange. Antennae brownish-orange. Ocellar triangle, occiput, frontal vitta, central part of frons (slightly visible) and face below antennae covered with silver pruinosity. Arista brownish (orange in basal part). Prosternum yellowish-grey and covered with light silver pruinosity. Mesonotum greyish-brownish. Two dark grey stripes on mesonotum, extending between *dc* and reaching third postsutural *dc*. Postpronotum greyish-brown. Lateral part of thorax brownish-grey. Scutellum brownish-grey with brownish-orange tip. Legs brownish-yellow. Pulvilli yellowish. Wing membrane pale. Veins not darkened. Tegula and basicosta brownish-orange. Halteres brownish-yellow. Abdomen varying from entirely orange to brown.

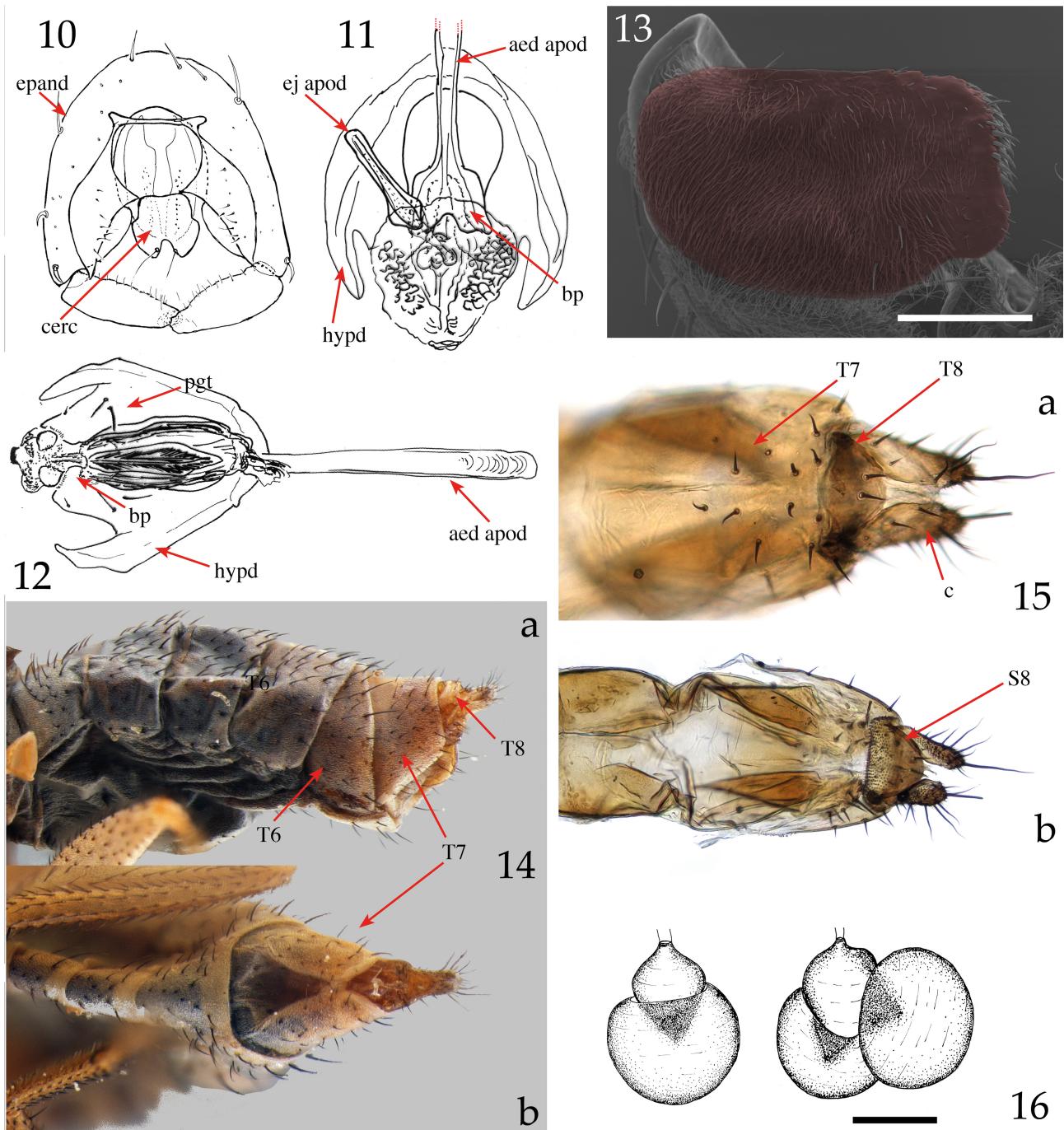
Head (Figs. 7–9). In lateral view about 1.08–1.18 [1.09] (1.14–1.20) times as high as long. Frons ratio 1: 1.09–1.19 [1.12] (1.00–1.05). Frons ratio 2: 0.60–0.84 [0.71] (0.61–0.75). Vr/eye: 1.80–2.16 [1.84] (2.00–2.00). Ocellar setae inserted halfway between anterior and posterior ocelli or closer to anterior ocellus. Peristomal setae in one row. Anterior orbital seta about 0.65–0.88 [0.67] (0.57–0.90) times as long as posterior one. Postpedicel ratio: 1.03–1.25 [1.06] (1.03–1.25). Postpedicel/gena ratio: 0.63–0.81 [0.78] (0.60–0.75). Arista short pubescent, with hairs not longer than basal segment of arista. Second aristomere about two–three times as long as wide. Eye rounded. Gena/eye ratio: 0.45–0.61 [0.49] (0.33–0.64).

Thorax. Prosternum bare. First postsutural *dc* closer to suture than to second *dc* (rarely closer to second *dc*). Acrostichal setae in 5–7 unarranged rows between *dc*. Anepisternum bare. Proepimeron without setulae in addition to main seta. One strong katepisternal seta. Upper part of kateristernum covered with setae (unarranged or arranged in 1–2 rows) approx. 1/4–1/5 as long as main katepisternal seta (shorter in females). Anepimeron bare. Scutellum with dorsal and ventral surface bare. Two pairs of well-developed marginal scutellar setae.

Legs. Fore femur with unarranged setae on posterodorsal and posteroventral surfaces. Mid femur with one fine seta on proximal ventral surface. One small dorsal preapical seta on all tibiae. Fore fourth tarsomere shorter than fifth.



FIGURES 4–9. 4. *H. rotundicornis*, male holotype (MZLU), wing. 5–9. *T. oraria*, ♂ (Wales, Oxwich). Wing (5). Habitus in lateral view (6). Head in lateral (7), frontal (8) and dorsal (9) view.



FIGURES 10–16. *T. oraria*, male and female terminalia. 10. ♂, epandrial complex in caudal view. 11–12. ♂, hypandrial complex in ventral (11) and dorsal (12) view. 13. ♂ (Wales, Oxwich), surstylos in a view perpendicular to the outer surface (scale: 100 µm). 14. ♀ (Wales, Oxwich), terminalia in lateral (a) and ventral (b) view. 15. ♀ (Wales, Oxwich), terminalia in dorsal (a) and ventral (b) view. 16. ♀ (Wales, Oxwich), spermathecae (scale: 50 µm). Abbreviations used in figures: epand = epandrium; c = cercus; ej apod = ejaculatory apodeme; hypd = hypandrium; pgt = postgonite; bp = basiphallus; aed apod = aedeagal apodeme; T1+2, T3, T4 etc. = abdominal synergite 1+2, tergite 3, tergite 4 etc.; S1, S2, etc. = abdominal sternite 1, abdominal sternite 2, etc.

Wing (Fig. 5). Length: 4.00–4.54 [4.46] (4.90–5.30) mm. Width: 1.40–1.51 [1.50] (1.35–1.90) mm. First part of Costa, behind basicosta, with a strong ventral seta. Costal spines slightly longer than costal thickness. Mv ratio: 1.30–1.53 [1.36] (1.19–1.35).

Abdomen. All tergites setulose, with long marginal setulae on T3, T4 and T5 (distinctly shorter in females).

Male terminalia (Figs. 10–13). Male genitalia large. T7 concave and about 2 times longer than T6. Anus ven-

trally-directed. Epandrium (Fig. 10) large and convex, semiglobular in lateral view, with long and medium-thick setae. Cercus partially fused with epandrium, with 1 medium-long apical seta and scattered fine setulae. Hypandrium with pointed lobes of lateral arms (Figs. 11, 12). Phallic complex (Fig. 12) with long aedeagal apodeme. Postgonite with 2 medium-sized setae. Ejaculatory apodeme normally developed, rod-like, dilated proximally. Surstylus symmetrical, subrectangular, with short but thick setae on outer distal part and only few scattered setulae on distal surface: in a view perpendicular to the outer surface as in Fig. 13.

Female terminalia (Figs. 14–16). T6 subtriangular in lateral view and downwardly-directed, T7 slightly flattened and forming an open ring ventrally (Figs. 14, 15). Anus ventrally-directed. Three globular spermathecae (two of them fused), sclerotized at base (Fig. 16).

Biology. Rotheray (2015) noted that puparia of *T. oraria* were collected from a thin line of decaying seaweed deposited along the high-water line. In all probability, the larvae can develop on decaying organic matter like the seaweed *Fucus vesiculosus* (Patrick Grootaert, pers. comm.) or dead fish (Lindroth *et al.* 1967; Lindroth *et al.* 1973).

Distribution. *Tephrochlaena oraria* is a West-Palaearctic coastal species, probably widely distributed along the seashores of the Mediterranean and East Atlantic coasts. According to *Fauna Europaea* (Woźnica *et al.* 2013) and to its distribution in the different biogeographical regions (Fig. 17), it seems to be an Atlanto-mediterranean species. Currently it is known from: Germany (Memmert), the Balearic Islands (Mallorca) (new data from Spain), the British Isles (England, Scotland, Wales), Iceland [including Surtsey Island (Baldursson & Ingadóttir 2007)], Ireland, Norway, Poland (Rügenwalde = Darłowo and not the Isle of Rügen, erroneous interpretation of the label “Rügenw” pointed out by Gorodkov 1984 as part of the type-locality), Spanish mainland, Tunisia and, in the last decade, from the Netherlands (van der Weele 2013). Data on its presence in Bulgaria (Beron et Guéorguiev 1967), Italy (Cauduro *et al.* 1994), and Czechia (Martinek 2001) are based on misidentifications and refer to species belonging to other genera. The material of “*Tephrochlaena halterata*” cited by von der Dunk (2006) from Bayern (Germany) is unknown to us, but judging from the locality it belongs to the genus *Tephrochlamys* and the genus name should be removed from the Checklist of Bavarian Diptera.

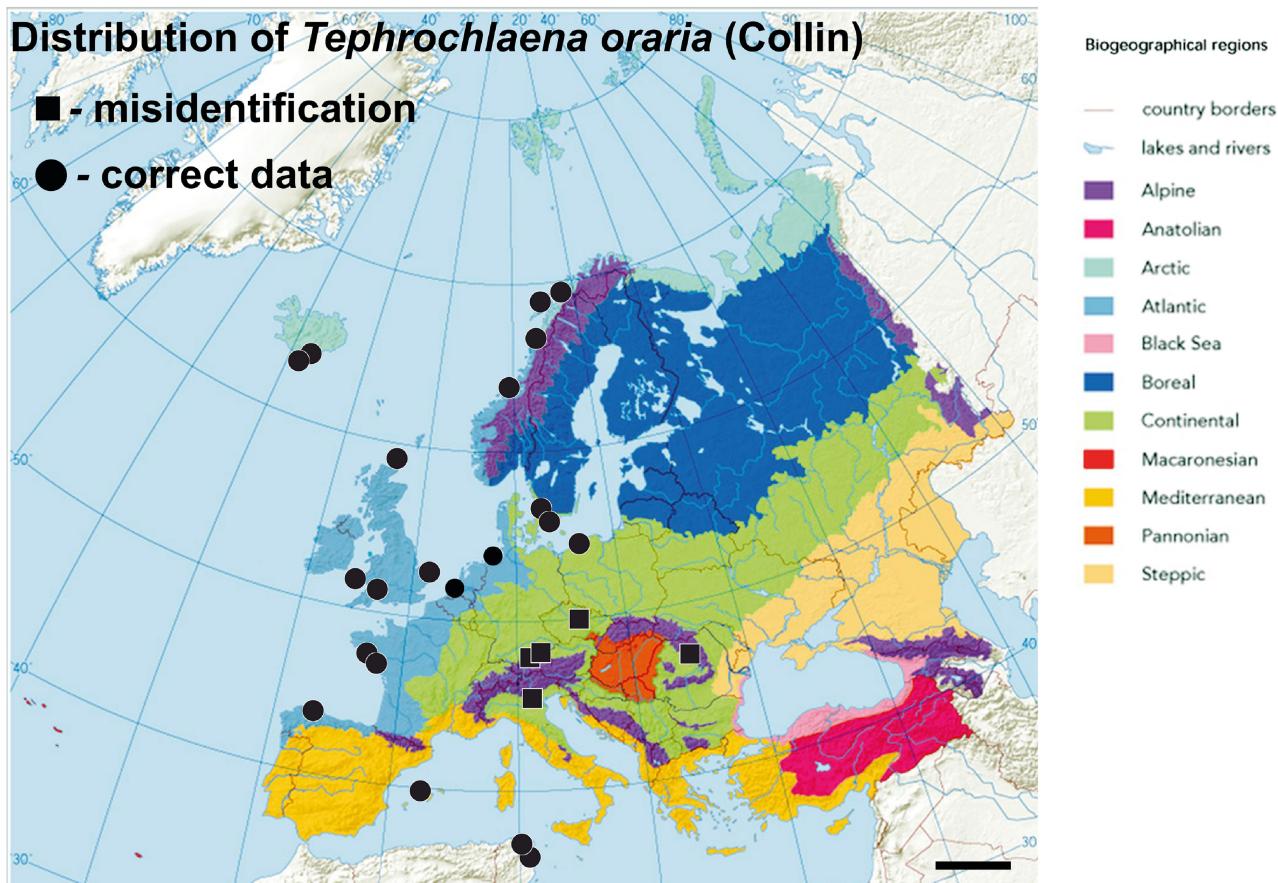


FIGURE 17. *T. oraria*, distribution map (scale: 500 km).

Discussion

Based on the complex history of the genus outlined above, the designation of a lectotype for its type-species *Tephrochlaena oraria* Collin, 1943 (as fixed in the present paper) was necessary. The lectotype in NHMUK was chosen among those studied by Collin from Great Britain, following Article 74 of the Code (I.C.Z.N. 1999).

The holotype female of *Helomyza halterata* Meigen, 1830, preserved in MNHN is here identified as conspecific with the lectotype (by present designation) of *Helomyza rufiventris* Meigen, 1830 (currently assigned to *Tephrochlamys*) as a result of our type examination. The lectotype of *Tephrochlamys rufiventris* was designated above following Article 73 of the Code, Recommendation 73F (I.C.Z.N. 1999). Descriptions of both species were published in the same work by Meigen (1830). We herewith act as First Reviser following Article 24.2.1 of the Code (I.C.Z.N. 1999), fixing the precedence for *T. rufiventris* (Meigen, 1830) over *Helomyza halterata* (Meigen, 1830) **syn. nov.**, following the Principle of Priority in order to promote stability and not upset a long-accepted name by introducing the name of a junior synonym. The classification of the genus *Tephrochlamys* need revision, and further studies on West-Palaearctic species are in progress.

Acknowledgements

We are grateful to: Joachim Ziegler (former curator of DEI), Jenny Pohl (MFN), Roy Danielsson (former curator of LUZ), László Papp (former curator of MNM), Jindřich Roháček (SMOC), Thomas Pape (former curator of Zoological collection in Stockholm, Sweden), Lita Greve (former curator of Zoological Museum in Bergen, Norway), Knut Rognes (former curator of NHMO), Filippo Di Giovanni (DISAAA-A), Zoe Simmons (OUMNH) and Daniel Whitmore (former curator at NHMUK) for the loan of or access to specimens under their care; to Hedy van Prattenburg (Netherlands) for the images of *T. oraria* taken in Mallorca; to Chris Raper (Manager of the UK Species Inventory, NHMUK) and Pierfilippo Cerretti (Sapienza University of Rome, Italy) for their useful comments and suggestions on an early draft of the manuscript. Special thanks to Daniel Whitmore (Staatliches Museum für Naturkunde Stuttgart, Germany) and Thomas Pape (Natural History Museum of Denmark, University of Copenhagen, Copenhagen, Denmark) for useful comments, suggestions and for improving the English, and to Franco Mason (Raggruppamento Carabinieri Biodiversità, Verona, Italy) for making this research possible. We also thanks two anonymous reviewers for their precious suggestions.

This research received support from the SYNTHESYS Project (<http://www.synthesys.info/>), which is financed by the European Community Research Infrastructure Action under the FP7 “Capacities” Program.

References

- Baldursson, S. & Ingadóttir, Á. (Eds.) (2007) *Nomination of Surtsey for the UNESCO World Heritage List*. Icelandic Institute of Natural History, Reykjavík, 123 pp. [ISBN-978-9979-9335-6-4.]
- Becker, T. (1902) Die Meigen'schen Typen der sogen. Muscidae acalipterae (Muscaria holometopa) in Paris und Wien. *Zeitschrift für Systematische Hymenopterologie und Dipterologie*, 2 (4–6), 209–256 + 289–320 + 337–349.
- Beron, P., Petrov, B. & Stoev, P. (2011) The invertebrate cave fauna of the Western Rhodopes (Bulgaria and Greece). In: Beron, P. (Ed.), *Biodiversity of Bulgaria. 4. Biodiversity of Western Rhodopes (Bulgaria and Greece). II*. Pensoft & National Museum of Natural History, Sofia, pp. 583–662.
- Beron, P. & Guéorguiev, V. (1967) Essai sur la faune cavernicole de Bulgarie. II. Résultats des recherches biospéleologiques de 1961–1965. *Bulletin de l'Institut de zoologie et musée*, Sofia, 24, 151–212.
- Caoduro, G., Osella, G. & Ruffo, S. (1994) La fauna cavernicola della regione veronese. *Memorie del Museo civico di Storia naturale di Verona*, Series IIa, Sez. Biologica, 11, 1–144.
- Cerretti, P. (2010) *I tachinidi della fauna italiana (Diptera Tachinidae), con chiave interattiva dei generi ovest-paleartici*. Vols. I & II (atlante iconografico). Cierre Edizioni, Verona, 573 pp. [(Vol. I) + 339 pp. (Vol. II)]
- Collin, J.E. (1943) The British species of Heleomyzidae (Diptera). *Entomologist's Monthly Magazine*, 79, 234–251.
- Cumming, J.M. & Wood, D.M. (2017) Adult morphology and terminology. In: Kirk-Spriggs, A.H. & Sinclair, B.J. (Eds.), *Manual of Afrotropical Diptera. Vol. 1. Suricata 4*. South African National Biodiversity Institute, Pretoria, pp. 89–133.
- Czerny, L. (1924) Monographie der Helomyziden. *Abhandlungen der zoologisch-botanischen Gesellschaft in Wien*, 15, 1–166.
- von der Dunk, K. (2006) Zweiflüger aus Bayern XXIV (Diptera: Heleomyzidae, Trixoscelididae). *Entomofauna*, 27, 177–183.
- Gorodkov, K.B. (1971) The Evolution of the male genitalia of Heleomyzidae (Diptera) and the taxonomy of the family. *XIII*

- International Congress of Entomology, Moscow, 1968, Proceedings 1, 248–249.*
- Gorodkov, K.B. (1972) A system of Holarctic Helomyzidae (Diptera, Acalyptratae). *Doklady XXIII ezhg. chtenii pam. N.A. Kholodkovskogo*, 2 April 1970, 50–92. [in Russian]
- Gorodkov, K.B. (1984) Family Heleomyzidae. In: Soós, Á. & Papp, L. (Eds.), *Catalogue of Palaearctic Diptera*, 10, pp. 15–45.
- Griffiths, G.C.D. (1972) *The phylogenetic classification of the Diptera Cyclorrhapha with special reference to the structure of the male postabdomen*. W. Junk, The Hague, 340 pp.
https://doi.org/10.1007/978-94-017-5914-4_3
- International Commission on Zoological Nomenclature (1999) *International Code of Zoological Nomenclature. 4th Edition*. The International Trust for Zoological Nomenclature 1999 c/o The Natural History Museum, Cromwell Road, London, XXIX + 305 pp.
- Lindroth, C.H., Anderson, H., Bödvarsson, H. & Richter, S.H. (1967) *Report on the Surtsey Investigation in 1966 Terrestrial invertebrates*. Departement of Entomology, Zoological Institute, University, Lund, 9 pp.
- Lindroth, C.H., Anderson, H., Bödvarsson, H. & Richter, S.H. (1973) Surtsey, Iceland. (The development of a new fauna, 1963–1970. Terrestrial invertebrates). *Entomologica Scandinavica*, Supplement 5, 1–280.
- Loew, H. (1862) Ueber die europäischen Helomyziden und die in Schlesien vorkommenden Arten derselben. *Zeitschrift fuer entomologie Breslau*, 13, 1–80. [1859]
- Lo Giudice, G. & Woźnica, A.J. (2013) An updated checklist of the Italian Heleomyzidae (Diptera: Sphaeroceroidea). *Genus*, 24 (3–4), 439–458.
- Mansard-Veken, M. (1999) Heleomyzidae. In: Schumann, H., Bährmann, R. & Stark, A. (Eds.), *Entomofauna Germanica 2. Checkliste der Dipteren Deutschlands. Studia dipterologica*, Supplement 2, pp. 144–145.
- Martinek, V. (2001) New or scarce Acalyptrate flies (Diptera) found in the forests of the Czech and Slovak Republics. *Journal of Forest Science*, 47, 523–528.
- McAlpine, D.K. (2007) Review of the Borboroidini or Wombat Flies (Diptera: Heteromyzidae), with reconsideration of the status of families Heleomyzidae and Sphaeroceridae, and descriptions of femoral gland-baskets. *Records of Australian Museum*, 59 (3), 143–219.
<https://doi.org/10.3853/j.0067-1975.59.2007.1487>
- Meigen, J.W. (1830) *Systematische Beschreibung der bekannten europäischen zweiflügeligen Insekten*. Schulzische Buchhandlung, Hamm, xi + 401 pp.
- Pape, T., Beuk, P., Pont, A.C., Shatalkin, A.I., Ozerov, A.L., Woźnica, A.J., Merz, B., Bystrowski, C., Raper, C., Bergström, C., Kehlmaier, C., Clements, D.K., Greathead, D., Kameneva, E.P., Nartshuk, E., Petersen, F.T., Weber, G., Bächli, G., Geller-Grimm, F., Van de Weyer, G., Tschorasnig, H.-P., de Jong, H., van Zuijlen, J.-W., Vaňhara, J., Roháček, J., Ziegler, J., Majer, J., Hůrka, K., Holston, K., Rognes, K., Greve-Jensen, L., Munari, L., de Meyer, M., Pollet, M., Speight, M.C.D., Ebejer, M.J., Martinez, M., Carles-Tolrá, M., Földvári, M., Chvála, M., Barták, M., Evenhuis, N.L., Chandler, P.C., Cerretti, P., Meier, R., Rozkosny, R., Prescher, S., Gaimari, S.D., Zatwarnicki, T., Zeegers, T., Dikow, T., Korneyev, V.A., Richter, V.A., Michelsen, V., Tanasijtshuk, V.N., Mathis, W.N., Hubenov, Z. & de Jong, Y. (2015) Fauna Europaea: Diptera—Brachycera. *Biodiversity Data Journal*, 3, e4187.
<https://doi.org/10.3897/BDJ.3.e4187>
- Papp, L. (1998) Families of Heleomyzoidea. In: Papp, L. & Darvas, B. (Eds.), *Contribution to a Manual of Palaearctic Diptera (with special reference to flies of economic importance) Higher brachycera. Vol. 3*. Science Herald, Budapest, pp. 425–455.
- Pont, A.C. (1995) *The type material of Diptera (Insecta) described by G.H. Verrall and J.E. Collin*. Oxford Scientific Publications, Oxford, 223 pp.
- Rotheray, G.E., Horsfield, D., Ayre, K. & Hancock, E.G. (2016) The early stages and development sites of four species of Heleomyzidae (Diptera). *Dipterists Digest*, 22 (2), 111–122. [ISSN 0953-7260]
- Séguy, E. (1934) Diptères (Brachycères) (Muscidae Acalyptratae et Scatophagidae). In: *Faune de France. 28. Paul Lechevalier et fils, 12, Rue de Tournon*. Federation française des Sociétés naturelles, Office central de faunistique, Paris, pp. I–iv + 1–832.
- Soszyńska-Maj, A. & Woźnica, A.J. (2016) A case study of Heleomyzidae (Diptera) recorded on snow in Poland with a review of their winter activity in Europe. *European Journal of Entomology*, 113, 279–294.
<https://doi.org/10.14411/eje.2016.035>
- von Tschirnhaus, M. (2008) The acalyptrate flies (Diptera: Schizophora, "Acalyptratae") of the East Frisian islands. Critical species list by means of literature data, new discoveries, and in cooperation with colleagues. In: Niedringhaus, R., Haeseler, V. & Janiesch, P. (Eds.), *Flora and Fauna of the East Frisian Islands. Species lists and evaluations of the biodiversity*, pp. 373–390. [in German, 6 + IV + 469 pp., 10 maps]
- van der Weele, R. (2013) *Tephrochlaena oraria*, een nieuwe afvalvlieg voor de Nederlandse fauna. *Nederlandse Faunistische Mededelingen*, 40, 35–38.
- Woźnica, A.J. (1998) On the genus *Kiboleria* Lindner and its relationship with other Heteromyzine genera (Diptera: Heleomyzidae). In: *Fourth International Congress of Dipterology, Keble College, Oxford*, 6–13 September 1998, Abstracts Volume, pp. 250.
- Woźnica, A.J. (2001) A new species of the genus *Tephrochlamys* Loew (Diptera: Heleomyzidae: Heteromyzinae) from Namibia,

- with a key to Afrotropical species. 2001. *Cimbebasia*, 17, 163–167.
- Woźnica, A.J. (2006) Three new species of the genus *Suillia* Robineau-Desvoidy, 1830 from the Neotropical Region (Diptera: Heleomyzidae). *Annales Zoologici*, 56, 657–665.
- Woźnica, A.J., Bystrowski, C. & Richter, V.A. (2013) Fauna Europaea: Heleomyzidae. In: Beuk, P. & Pape, T. (Eds.), *Fauna Europaea: Diptera. Fauna Europaea. Version June 2017*. Available from: <https://fauna-eu.org> (accessed 12 January 2020)
- Zetterstedt, J.W. (1846) *Diptera Scandinaviae disposita et descripta. [Part]. Tomus Quintus*. Ex officina lundbergiana, Lundae (Lund), 424 pp. [pp. 1739–2162]