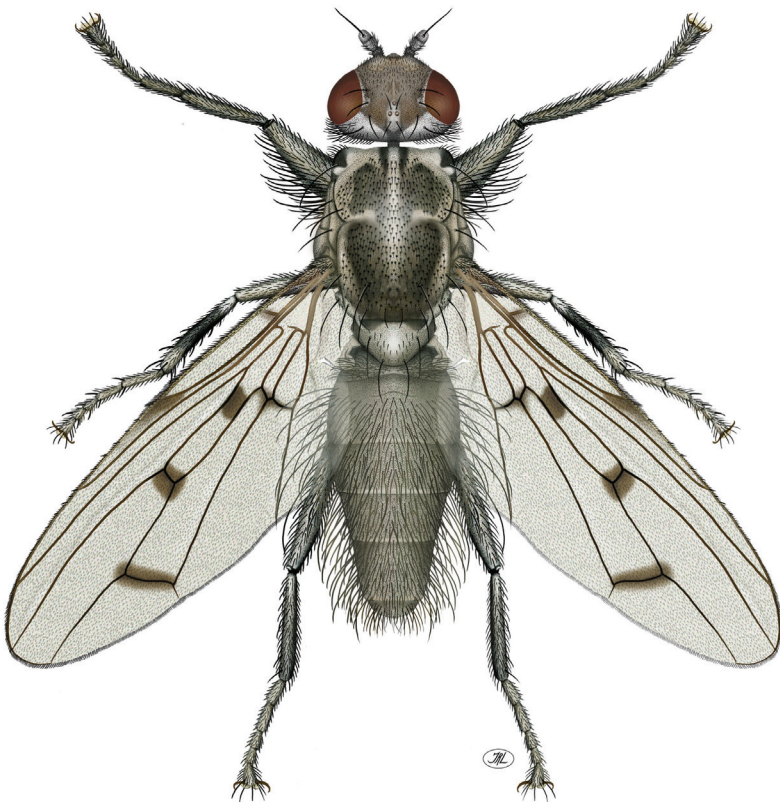


## World Catalog and Conspectus on the Family Helcomyzidae (Diptera: Schizophora)

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### Introduction

The Helcomyzidae are a small family of acalyptrate Diptera that includes only three genera and 12 species. Unlike most families of acalyptrate Diptera, specimens are comparatively large, with adults sometimes attaining lengths of 16 mm. All known species occur on maritime coasts where they



**Fig. 1:** *Helcomyza mirabilis* Melander.

feed on seaweed, especially kelp that has been stranded on the beach, similar to species of Heterocheilidae and Coelopidae. McAlpine (1991) has suggested that the Coelopidae and Helcomyzidae are closely related phylogenetically as well as ecologically. McAlpine also suggested the common name of "bridge flies" for the Helcomyzidae. The family is seldom collected, is usually poorly represented in collections, and entomologists are generally unfamiliar with the group. Although no species is known to be of economic importance, the larvae contribute to the recycling and bioprocessing of beach strand.

Zoological catalogs, checklists, and equivalent databases are indispensable tools for anyone needing a reference to a currently accepted name and frequently to other information relating to that taxon, such as bibliographic and distributional data. This is possible because most information is filed under a species' scientific name, which is the key to retrieval of information from the literature. The system is dynamic, however, and subject to interpretation. The taxonomic literature is constantly changing to reflect recent work, and some species are known by more than one name. Thus a complete listing of names, including synonyms, is an important starting point for locating information, whether as the basis for applied and basic research or simply to satisfy a curiosity.

The information included in a catalog is usually arranged in a logical and organized format that allows for its convenient and rapid conveyance - in short, a quick and easy storage and retrieval system. The format and amount of information presented varies greatly, however. Our use of the term catalog is intended to convey a more comprehensive treatment, including information on all valid names, synonyms, type species, and the status and deposition of primary types. The bibliographic section includes complete references (author, date, original citation), and distributional and other biotic information are also provided. Not all citations that occur in the literature of Helcomyzidae are included in this catalog or the bibliographic section, especially where we suspect that the species being treated was misidentified, and inclusion would further promulgate inaccurate distributional data.

Regional catalogs, checklists, and faunal treatments have contributed significantly to the compilation of this catalog. The most recent of these for a given region or country are as follows:

Catalogs: Steyskal 1965 (Nearctic); 1967 (Neotropical); Gorodkov 1984 (Palearctic); Pitkin 1989 (Australasian/Oceanian).

Checklists: Grosseries 1991 (Belgium); Munari & Rivosecchi 1995 (Italy); Poole & Gentili 1996 (Nearctic Region); Chandler 1998 (British

Isles); Schumann 1999 (Germany); Meier & Petersen 2001 (Denmark); Beuk 2002: 247 (Netherlands).

Faunal treatments: Séguy 1934 (France); Czerny 1930 (Palearctic); Cole 1969 (western North America); Steyskal 1958 (Nearctic); Stackelberg 1970 (European Russia); Harrison 1976 (Subantarctic islands); McAlpine 1998 (Palearctic).

### Acronyms used in this catalog

To economize on space we have used acronyms for museums where primary type(s) are deposited. These acronyms are as follows:

- BMNH British Museum (Natural History), London, England.  
 CMC Canterbury Museum, Christchurch, New Zealand.  
 MNHNP Muséum National d'Histoire Naturelle, Paris, France.  
 NRS Naturhistoriska Riskmuseet, Stockholm, Sweden.  
 USNM former United States National Museum, collections now in National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA.  
 ZMHU Zoologisches Museum, Humboldt Universität, Berlin, Germany.

**Diagnosis.** Adult. Small to large flies (body length 3.0-16.0 mm); robust, often strongly setose; gray, microtomentose; occurring on seashores. *Head:* Vertex flat to shallowly convex; postocellar setae approximate, divergent to subparallel; usually only 2 fronto-orbital setae. Antenna semiporrect to porrect, not decumbent; scape variably setulose. Face slightly convex to concave; ventral facial margin narrowly emarginate medially; face sclerotized, often with rounded, medial carina; parafacial ridge shiny, not continued posteriorly ventrad of gena; parafacial suture obsolete or interrupted posterior of angular section of ridge; gena relatively high, setulose (females) to mollisetose (males). *Thorax:* Mesonotum not distinctly flattened or depressed; lacking differentiated acrostichal setulae; scutellar disc setulose laterally; metepisternum lacking short setulae; katepisternal suture nearly straight, not ascending posteriorly; katepisternal setae in a series parallel with katepisternal suture, setae mostly oriented dorsally; katepisternum with posterodorsal hypopleural channel, channel narrow, parallel sided; pro- and metasternum setulose; prosternum with adjacent strongly sclerotized, broad, precoxal bridges. Wing usually macropterous, hyaline to faintly infuscate; costa unbroken; midregion of costa bearing spaced, an-

terovenral spinelike setae, without continuous series of dorsal and ventral setulae; subcosta complete; apical section of vein M not bent strongly forward, terminating posterior of wing apex; vein  $CuA_2+A_1$  reaching posterior margin; crossvein  $bm-cu$  and vein  $CuA_2$  intersecting. Male forebasitarsomere with terminal ventral thumbnail-like process; female hindtibia with subapical anterior seta. *Abdomen*: Abdominal sternite 1 well developed, setulose; male 6<sup>th</sup> tergite much reduced; female bearing 1 large seta near lateral margin of each tergite 2-4. Female with 2 spermathacae.

Egg. Undescribed.

Third-instar larva. Typically maggot-like, cylindrical, anterior end tapered, posterior end almost vertically truncate; cuticle largely white and densely covered with small posteriorly directed plates but lacking spinulose creeping pads; anterior spiracle on short process, fan-shaped, digitate, with 8-11 processes; posterior spiracles separate, each on short, truncate process with large spinous process above spiracle; each stigmatal plate with 3 elongate-oval openings and no hydrofuge setulae; posterior portion lacking tubercles except for those laterad of anal opening.

Puparium. Dark brown, elongate-ovoid, with pair of prominent, posterior, spinous processes.

**Biology.** Information is available on species of *Helcomyza* Curtis (Egglishaw 1960) and *Paractora* Bigot (Crafford 1984) and was recently summarized (McAlpine 1998). Helcomyzidae are only found on maritime coasts where the immature stages live in stranded beds of kelp. Larvae of *Paractora* sometimes occur in large numbers and apparently can also live in vertebrate carcasses. Adults are also associated with the seashore on the kelp beds or adjacent, bare sand, and their flight is characterized by short, quick flights, making them difficult to catch. On beaches of England, adults of *H. ustulata* Curtis are seasonal, occurring only in the summer, while those of *Paractora* on Marion Island do not demonstrate a seasonal pattern of generations.

**Distribution.** The species of Helcomyzidae occur in coastal marine habitats and are essentially temperate in distribution with the genus *Helcomyza* occurring in the northern hemisphere and with *Paractora* and *Maorimyia* Tonnoir & Malloch being found in the southern hemisphere. Although samplings of these flies, especially from the southern hemisphere, is very limited and undoubtedly incomplete, many species of *Helcomyza* and *Paractora* appear to have widespread distributions, typical of many coastal marine species. Other species are more localized and are known thus far

from a single island. Even though many species are widespread, there are major geographic areas that lack species, such as the Atlantic coast of North America and the Pacific coast of Asia. The three species of *Helcomyza* are allopatric in the northern hemisphere as follows: *H. mediterranea* (Loew) (Mediterranean), *H. mirabilis* Melander (Oregon, Washington), and *H. us-tulata* (northern Europe).

### Table of genera

The following table lists the genera of Helcomyzidae in the order found in the catalog, with a summary of the number of species known from each zoogeographic region.

TAXON	DISTRIBUTION						Total
	NE	NT	PA	AF	OR	AU	
<i>Helcomyza</i> Curtis	1		2				3
<i>Paractora</i> Bigot		5				5	8
<i>Maorimyia</i> Tonnoir & Malloch						1	1
TOTALS	1	5	2			6	12

**Classification.** The Helcomyzidae are a small family in the superfamily Sciomyzoidea. Hendel (1924) first proposed the family-group name Helcomyzinae as a subfamily in the Dryomyzidae, and the only genera then included in the subfamily were *Helcomyza* Curtis and *Heterocheila* Rondani. Many subsequent authors (Czerny 1930, Steyskal 1967, Griffiths 1972, Grosseries 1991, Munari & Rivosecchi 1995) have followed that precedent. Malloch (1933), however, who was a contemporary of Hendel, accorded family status to the group, and Malloch's concept and classification have now been more widely adopted (Steyskal 1958, 1965, Stackelberg 1970, Gorodkov 1984, Pitkin 1989, McAlpine 1998, Meier & Petersen 2001, Beuk 2002) and are followed here. McAlpine (1991), in the most recent, comprehensive study of Coelopidae and related taxa, concluded that the Helcomyzidae should be maintained as a family and he included the genera *Helcomyza*, *Paractora*, and *Maorimyia*. McAlpine based his study on morphological evidence and further suggested that the Helcomyzidae are closely related to the Dryomyzidae and Coelopidae, perhaps as the sister group of the latter family. There is no phylogenetic assessment of the three included genera. The genus *Paractora* is in need of revision, as the species are poorly diagnosed and difficult to identify.

### Key to genera of Helcomyzidae

1. Anepisternum densely setose, setae fine .....  
   ..... *Maorimyia* Tonnoir & Malloch
- Anepisternum bare..... 2
2. At least midtibia with several ventral and posterior setae along  
   most of length..... *Helcomyza* Curtis
- Tibia lacking ventral and posterior setae except at apex.....  
   ..... *Paractora* Bigot

### Family Helcomyzidae Hendel

**Helcomyzinae** Hendel, 1924: 213 [as a subfamily of Dryomyzidae]. Type genus: *Helcomyza* Curtis 1825.

Helcomyzidae Malloch 1933: 324 [first usage as family]; Séguy 1934: 88 [France]; Hendel 1937: 183 [review, key to genera, species of Subantarctic islands]; Steyskal 1965: 678 [catalog, Nearctic], 1967: 1 [catalog, Neotropics]; Cole 1969: 363 [western North America]; Stackelberg 1970: 172 [European Russia]; Hennig 1973: 56 [discussion]; Harrison 1976: 131 [Subantarctic islands]; Gorodkov 1984: 149 [catalog, Palearctic]; McAlpine 1989: 1450 [review, classification, phylogeny]; Pitkin 1989: 801 [catalog, Australasia/Oceania]; Grosseries 1991: 134 [checklist, Belgium]; Munari & Rivosecchi 1995: 3 [checklist, Italy]; McAlpine 1998: 341 [Palearctic]; Chandler 1998: 131 [checklist, British Isles]; Schumann 1999: 153 [checklist, Germany]; Meier & Petersen 2001: 197 [checklist, Denmark]; Beuk 2002: 248 [checklist, Netherlands].

Halcomyzidae Misspelling. Maa & Gressitt 1973: 287.

### Genus HELCOMYZA Curtis

***Helcomyza*** Curtis, 1825: pl. 66. Type species: *ustulata* Curtis, by original designation. Czerny 1930: 6 [review, Palearctic]; Séguy 1934: 89 [France]; Hendel 1937: 186 [generic key]; Steyskal 1958: 133 [review, Nearctic], 1965: 678 [catalog, Nearctic]; Cole 1969: 363 [western North America]; Stackelberg 1970: 172 [European Russia]; Gorodkov 1984: 149 [catalog, Palearctic]; Poole & Gentili 1996: 153 [checklist, Nearctic]; McAlpine 1998: 341 [Palearctic]; Schumann 1999: 153 [checklist, Germany].

*Actora* Meigen, 1826: 403. Type species: *aestuum* Meigen (= *Helcomyza ustulata* Curtis 1825), by monotypy. Becker 1905: 38 [synonymy].

*Macromelanderia* Curran, 1934: 382. Type species: *Helcomyza mirabilis* Melander, by monotypy. Hendel 1935: 56 [synonymy].

***mediterranea*** (Loew). **PA:** Bulgaria, Greece, Italy, Turkey.

*Actora mediterranea* Loew, 1854: 22. Greece (coast); Turkey (coast) (= “griechischen und kleinasiatischen Küsten”). ST ♂♀ ZMHU. Schiner 1862: 41 [Europe]; Becker 1905: 38 [catalog, Palearctic].

*Helcomyza mediterranea*. Czerny 1930: 6 [review, generic combination]; Séguy 1934: 89 [key]; Gorodkov 1984: 149 [catalog, Palearctic]; Munari & Rivosecchi 1995: 3 [checklist, Italy].

***mirabilis*** Melander. **NE:** USA (Oregon, Washington).

*Helcomyza mirabilis* Melander, 1920: 309. USA. Washington: Pacific, Ilwaco. HT ♂ USNM. Cole & Lovett 1921: 321 [list, Oregon]; Steyskal 1958: 133 [description, figs. of male terminalia], 1965a: 678 [catalog, Nearctic]; Cole 1969: 363 [western North America]; Poole & Gentili 1996: 153 [checklist, Nearctic].

*Macromelanderia mirabilis*. Curran 1934: 382 [generic combination]; Hendel 1935: 57 [discussion].

***ustulata*** Curtis. **PA:** Belgium, Denmark, France, Germany, Great Britain, Ireland, Italy, Netherlands, Russia (European Part), Sweden.

*Helcomyza ustulata* Curtis, 1825: plate 66. England. “Swansea and Yarmouth,” & “Christ Church”; France. “Calais.” ST ? BMNH. Czerny 1930: 6 [review]; Séguy 1934: 89 [France]; Hendel 1937: 186 [generic key]; Stackelberg 1970: 173 [key, Russia]; Gorodkov 1984: 150 [catalog, Palearctic]; Grosseries 1991: 134 [checklist, Belgium]; Munari & Rivosecchi 1995: 3 [checklist, Italy]; Chandler 1998: 131 [checklist, British Isles]; Schumann 1999: 153 [checklist, Germany]; Meier & Petersen 2001: 197 [checklist, Denmark]; Beuk 2002: 248 [checklist, Netherlands].

*Actora aestuum* Meigen, 1826: 403. Denmark. Jutland (coast) (= “in Jütland auf dem Meerschaume”). ST ? MNHNP. Loew 1854: 22 [comparison with *Actora mediterranea*]; Schiner 1862: 41 [synonymy, Germany]; Becker 1905: 38 [catalog, Palearctic].

### Genus PARACTORA Bigot

***Paractora*** Bigot, 1888: 38. Type species: *fuegiana* Bigot [= *Orygma trichosterna* Thomson], by monotypy. Malloch 1933: 327 [revision, Patagonia and south Chile]; Hendel 1937: 183 [subantarctic islands];

- Séguy 1940: 239 [discussion, key to species], 1965: 779 [key to species]; Steyskal 1967: 1 [catalog, Neotropics]; Harrison 1976: 131 [subantarctic islands]; Robinson 1984: 18 [checklist, Falkland Islands]; Pitkin 1989: 801 [catalog, Australasia/Oceania].
- Actoceles* Enderlein, 1912: 43. Type species: *abscondita* Enderlein [= *Heteromyza rufipes* Macquart], by original designation. Malloch 1933: 327 [synonymy]; Hendel 1937: 187 [discussion, generic key].
- Pezomyia* Austen, 1913: 501. Type species: *Pezomyia moseleyi* Austen, by original designation. Malloch 1933: 327 [synonymy]; Hendel 1937: 186 [discussion, generic key].
- Oedoparea* of authors [not Loew]. Misidentification. Lamb 1917: 338 [Falkland Islands]; Malloch 1933: 327 [discussion].
- angustata** Malloch. **NT:** Chile (Río Toltén south to Seno Skyring).  
*Paractora angustata* Malloch, 1933: 332. Chile. Chiloe Island: Ancud. HT ♀ USNM [USNM type number 44896]. Séguy 1940: 238 [key]; Steyskal 1967: 1 [catalog, Neotropics].
- antarctica** (Thomson). **NT:** Argentina (Tierra del Fuego, Staten Island), Chile (Ancud, Mocha), Falkland Islands.  
*Orygma antarctica* Thomson, 1869: 601. Argentina. "Patagonia." LT ♀ NRS [designated by Edwards 1933: 331].  
*Leria rufifrons* Bigot, 1888: 35. Argentina. Tierra del Fuego: "baie Orange." LT ♀ MNHNP [designated by Edwards 1933: 331]. Syn. Malloch 1933. Séguy 1940: 240 [note, treated as synonym of *antarctica*].  
*Actora cinerascens* Bigot, 1888: 37. Argentina. Tierra del Fuego: "baie Orange." ST 2♂ MNHNP. Séguy 1940: 240 [figs. of male terminalia]. Syn. Malloch 1933.  
*Paractora antarctica*. Malloch 1933: 331 [generic combination, synonymy of *rufifrons*, questionable synonymy of *cinerascens*]; Edwards 1933: 331 [discussion of cotype]; Séguy 1940: 240 [note]; Steyskal 1967: 1 [catalog, Neotropics]; Robinson 1984: 18 [checklist, Falkland Islands].
- Paractora fuegiana*. Misidentification. Hendel 1937: 189 [figs. of head].
- asymmetrica** (Enderlein). **AU:** Macquarie Island.  
*Actoteles asymmetrica* Enderlein, 1930: 259. Australia. Macquarie Island, east coast. HT ♂ ZMHU.  
*Paractora asymmetrica*. Harrison 1959: 93 [review, generic combination], 1976: 131 [review]; Pitkin 1989: 575 [catalog, Australasia/Oceania].



***dreuxi*** Séguy. AU: Subantarctic: Crozet Islands.

*Paractora dreuxi* Séguy, 1965: 775. France. Crozet Islands. HT ♂ MNHNP. Séguy, 1965: 776 [figs. of male habitus, wings, structures of terminalia]; Pitkin 1989: 801 [catalog, Australasia/Oceania].

***dreuxi mirabilis*** Séguy. AU: Subantarctic: Marion Island.

*Paractora dreuxi mirabilis* Séguy, 1971: 346. South Africa. Marion Island. HT ♂ MNHNP. Séguy 1971: 346 [figs. of male habitus and structures of terminalia]; Pitkin 1989: 801 [catalog, Australasia/Oceania]; Crafford 1984: 18 [life cycle]; Crafford & Schultz 1987: 289 [degradation of kelp]; Pitkin 1989: 801 [catalog, Australasia/Oceania].

***jeanneli*** Séguy. AU: Subantarctic: Marion Island.

*Paractora jeanneli* Séguy, 1940: 241. South Africa. Marion Island. HT ♀ MNHNP. Pitkin 1989: 802 [catalog, Australasia/Oceania].

***moseleyi*** (Austen). NT: Falkland Islands.

*Pezomyia moseleyi* Austen, 1913: 503. United Kingdom. Falkland Islands: West Falkland, Port North. ST ♂♀ BMNH. Hendel 1937: 186 [generic key].

*Paractora moseleyi*. Malloch 1933: 333 [review, generic combination]; Ringuelet 1956: 436 [list, Falkland Islands]; Steyskal 1967: 1 [catalog, Neotropics]; Robinson 1984: 18 [checklist, Falkland Islands].

***rufipes*** (Macquart). AU: Subantarctic: South Georgia. NT: Argentina (Tierra del Fuego, Staten Island), Falkland Islands.

*Heteromyza rufipes* Macquart, 1844: 263. United Kingdom. Falkland Islands. LT ♀ (designated by Edwards, in Malloch 1933: 335) MNHNP. Malloch 1933: 335 [synonymy of *flavipes*].

*Actora flavipes* Macquart, 1844: 264. United Kingdom. Falkland Islands. ST ♂ MNHNP. Syn. Malloch 1933. Edwards 1933: 335 [confirmation of synonymy].

*Paractora flavipes*. Enderlein 1912: 46 [review, generic combination].

*Actoceles abscondita* Enderlein, 1912: 44. United Kingdom. Falkland Islands: Port Stanley and Seal Cove. ST ♂♀ ZMHU. Syn. Malloch 1933. Hendel 1937: 186 [generic key, discussion, figs. of head and wing].

*Actoceles georgiana* Schaeffer, 1914: 92. South Georgia. Possession Bay. ST ♂♀ USNM [USNM type number 44428]. Syn. Malloch 1933.

*Oedoparea oblita* Lamb, 1917: 388. Falkland Islands. ST ? BMNH. Syn. Malloch 1933.

*Paractora rufipes*. Malloch 1933: 326 [review, generic combination, synonymy of *abscondita*, *flavipes*, *georgiana* and *oblita*]; Ringue-

let 1956: 436 [list, Falkland Islands]; Steyskal 1967: 1 [catalog, Neotropics]; Robinson 1984: 18 [checklist, Falkland Islands].

***trichosterna*** (Thomson). **AU:** Subantarctic: South Georgia. **NT:** Argentina (Tierra del Fuego, Staten Island), Falkland Islands.

*Orygma trichosterna* Thomson, 1868: 602. Argentina. "Patagonia." LT ♀ NRS [designated by Edwards, in Malloch 1933: 329].

*Paractora fuegiana* Bigot, 1888: 39. Argentina. Tierra del Fuego: "baie Orange." ST ♂♀ BMNH, MNHNP. Enderlein 1912: 45 [review]. Syn. Malloch 1933. Hendel 1937: 189 [review].

*Paractora trichosterna*. Malloch 1933: 329 [review, generic combination, synonymy of *fuegiana*]; Ringuelet 1956: 436 [list, Falkland Islands]; Steyskal 1967: 2 [catalog, Neotropics]; Pitkin 1989: 802 [catalog, Australasia/Oceania]; Robinson 1984: 18 [checklist, Falkland Islands].

### Genus MAORIMYIA Tonnoir & Malloch

***Maorimyia*** Tonnoir & Malloch, 1928: 155. Type species: *Trigonometopus bipunctata* Hutton, by original designation. Malloch 1933: 326 [generic key, discussion]; Hendel 1937: 184 [generic key]; Harrison 1959: 91 [revision]; Pitkin 1989: 575 [catalog, Australasia/Oceania].

***bipunctata*** (Hutton). **AU:** New Zealand (Cape Saunders, Dunedin, Invercargill, Chatham Islands).

*Trigonometopus bipunctata* Hutton, 1901: 86. New Zealand. Chatham Islands. HT ♂ CMC.

*Maorimyia bipunctata*. Tonnoir & Malloch 1928: 155 [generic combination]; Malloch 1933: 327 [discussion]; Hendel 1937: 184 [generic key]; Harrison 1959: 91 [revision]; Pitkin 1989: 575 [catalog, Australasia/Oceania].

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