

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

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Introduction

McAlpine (1991b) first accorded familial status to the Heterocheilidae and suggested the common name of “half-bridge flies” for the family. The family, which belongs in the superfamily Sciomyzoidea, includes a single genus, *Heterocheila* Rondani, and two species. The family’s phylogenetic relationships within the Sciomyzoidea remain unresolved, and in the past, *Heterocheila* has been included in other families: Helcomyzidae, Dryomyzidae, and Coelopidae. The family is found exclusively in north temperate zones where it occurs on maritime beaches in northern Europe and the Pacific Northwest in the Nearctic Region.

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 Heterocheilidae are included in this catalog or the biblio-

graphic 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); Gorodkov 1984 (catalog, Palearctic).

Checklists: Hackman 1980 (Finland), Nowakowski 1991 (Poland); Grosseries 1991 (Belgium); Poole & Gentili 1996 (Nearctic Region); Chandler 1998 (British Isles); Schumann 1999 (Germany); Meier & Petersen 2001 (Denmark); Beuk 2002: 247 (Netherlands).

Faunal treatments: Cole 1969 (western North America); 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:

AMNH American Museum of Natural History, New York, USA.
 CAS California Academy of Sciences, San Francisco, California, USA.
 MNHNP Muséum National d'Histoire Naturelle, Paris, France.
 ZIL Zoological Institute, Lund University, Lund, Sweden.

Diagnosis. Adult. Medium to moderately large flies (body length 4.2-6.5 mm); moderately robust, moderately setose; brown, moderately microtomentose, not shiny. *Head:* Postocellar setae long, orientation variable but often subparallel; 3 laterocline fronto-orbital setae; parafacial ridge shiny, ridge and associated suture complete, extended to postgenal area; postgenal fold distinctly incised. Antennae separated by at least diameter of scape; subporrect at rest; scape with setulae extended on to medial surface. Epistomal area of face lacking narrow emargination; gena high, mostly setulose, setulae almost to ventral eye margin; postclypeus moderately developed but not protruding through notch. *Thorax:* Acrostichal setulae arranged in a single, medial row before larger, prescutellar pair; metepisternum bare; katapisternal suture more or less straight, not arched dorsally posteriorly dorsad of katapisternal seta; pro- and metasternum bare; prosternum broadly triangular, extended laterally to join propleuron as a narrow, precoxal bridge (not uniformly sclerotized); proepisternal seta long; proepimeral seta lack-

ing. Costa unbroken; crossveins unmarked; mid region of costa lacking anteroventral spines, with regular series of dorsal and ventral setulae; apical section of vein M nearly straight, terminating posterior of wing apex; crossvein bm-cu almost aligned with vein CuA_2 ; vein CuA_2+A_1 evident to wing margin; vein A_2 beyond alula as a long, curved crease. Forebasitarsus lacking apical, ventral process; midtibia bearing dorsal, preapical and apical setae only; male with apical 2 tarsomeres flattened and somewhat expanded; hindtibia without subapical anterior seta. *Abdomen*: Tergites lacking lateral marginal setae; sternite 1 short, well sclerotized, bare; sternites 1-2 incompletely separated; spiracles in pleural membrane; male tergite 6 large (shorter than preceding tergites but not greatly reduced), almost symmetrical, setulose; aedeagus without dense pubescence, with pair of lateral lobes (gonites or parameres).

Egg (Egglisshaw 1960). Elongate ovoid, curved so as to be concave dorsally, without appendages, length 0.8 mm.

Third-instar larva (Egglisshaw 1960). Color white; shape typically maggot-like, cylindrical, surface smooth except for band of spinules on each segment; anterior end tapered; posterior end almost vertically truncate; anterior spiracle with 7-10 digitiform processes on short process; posterior spiracles on short, truncate process; stigmatal plate with 3 approximately oval slits and 2-3 separate groups of small, hydrofuge setulae; posterior portion with ventral tubercles near anus, otherwise tubercles lacking.

Puparium. Dark brown, elongate ovoid, transversely rugose.

Although similar to species of Coelopidae and Helcomyzidae, specimens of Heterocheilidae differ from either of these two families as follows (see McAlpine 1991b for a fuller discussion of distinguishing characters): parafacial suture and associated ridge complete (incomplete in Helcomyzidae); prothoracic precoxal bridge present (absent in Coelopidae); pro- and metasternum bare (setose in Helcomyzidae); katepisternal suture without posterior portion slanted posterodorsally (slanted posterodorsally in Coelopidae); apical tarsomere not dilated nor with setiferous teeth on apical margin (dilated and bearing setiferous teeth apically in Coelopidae); abdominal sternite 1 well developed; abdominal tergite 6 comparatively large (small in Helcomyzidae).

Biology. Egglisshaw (1960) reported on the natural history of *Heterocheila buccata* (Fallén), which lives in or near stranded beds of kelp (usually *Laminaria* sp.) on maritime beaches. Eggs are laid on the kelp, which is also fed upon by larvae. The 7-10 month life cycle is much longer than for species of *Coelopa* Meigen that occur in similar habitats.

Classification and nomenclature. A single genus, *Heterocheila*, comprises the family Heterocheilidae, and its relationships within the superfamily Sciomyzoidea are unclear, although the family may be related to the Sepsiidae (Sueyoshi, pers. comm.). *Heterocheila* includes two species that are similar externally. Structures of the male terminalia distinguish between these species (Steyskal 1962), as does their disjunct distributions.

The family-group name Heterocheilidae (McAlpine 1991b), which is based on the genus *Heterocheila*, is a homonym of the family-group name based on *Heterocheilus* Diesing 1839 (Railliet & Henry 1915, Nematoda), and a petition to the Commission of the ICZN will be needed to establish the proper name for these families.

Distribution. Species of Heterocheilidae are exclusively temperate in distribution and are only known from the northern hemisphere. Only two species are known with *Heterocheila buccata* occurring in northern Europe and *H. hannai* (Cole) being found in the Pacific Northwest of the Nearctic Region. The genus is notably lacking along coasts of eastern North America or eastern Asia.

Family Heterocheilidae McAlpine

Heterocheilidae McAlpine, 1991b: 198 [preoccupied, Railliet & Henry 1915, Nematoda]. Type genus: *Heterocheila* Rondani 1857. McAlpine 1998: 345 [Palearctic]; Chandler 1998: 131 [checklist, British Isles].

Genus HETEROCHEILA Rondani

Heterostoma Rondani, 1856: 104 [preoccupied De Filippi 1837, Hartmann 1843, Newport 1844]. Type species: *Heteromyza buccata* Fallén, 1820, by original designation.

Heterocheila Rondani, 1857: 13 [replacement name for *Heterostoma* Rondani]. Type species: *Heteromyza buccata* Fallén, 1820, automatic. Czerny 1930: 7 [review, synonymization of *Oedoparea* and *Exocheila*, Palearctic]; Hendel 1937: 186 [generic key]; Backlund 1945: 1 [larvae and puparium]; Steyskal 1962: 71 [review], 1965: 679 [catalog, Nearctic]; Cole 1969: 363 [western USA]; Stackelberg 1970: 173 [key, Russia], 1988: 277 [English translation of Stackelberg 1970]; Hackman 1980: 143 [checklist, Finland]; Gorodkov 1984: 150 [catalog, Palearctic]; McAlpine 1989: 1451 [as genus in Dryomyzidae, classification]; Grosseries 1991: 134 [checklist, Belgium]; McAlp-

- ine 1991a: 47 [discussion of family status]; McAlpine 1991b: 198 [type genus of family Heterocheilidae]; Nowakowski 1991: 179 [checklist, Poland]; Poole & Gentili 1996: 153 [checklist, Nearctic]; Chandler 1998: 131 [checklist, British Isles]; Schumann 1999: 153 [checklist, Germany]; Meier & Petersen 2001: 197 [checklist, Denmark]; Beuk 2002: 249 [checklist, Netherlands].
- Oedoparea* Loew, 1862: 10. Type species: *Heteromyza buccata* Fallén, 1820, by monotypy. Becker 1905: 22 [catalog, Palearctic]. Syn. Czerny 1930. Malloch 1933: 326 [synonymy of *Pseudosciomyza* by recombination of *hannai*].
- Oedeparea*. Misspelling. Schiner, 1868: 228.
- Exocheila* Rondani, 1868: 54 [unnecessary replacement name for *Heterocheila* Rondani]. Type species: *Heteromyza buccata* Fallén, 1820, automatic designation. Syn. Czerny 1930.
- Exochila* Scudder 1882: 137. [unjustified emendation. *Exocheilia* Rondani, ex Verrall manuscript; Verrall's emendation was clearly accepted by Scudder, as noted on p. 124 in his Universal Index].
- Pseudosciomyza* Malloch, 1923: 214. Type species: *Dryomyza hannai* Cole, by original designation. Syn. Malloch 1933.
- Heterochila*. Misspelling. Hendel 1935: 73.
- buccata** (Fallén). PA: Belgium, Denmark, Färoe Islands, Finland, France, Germany, Great Britain, Iceland, Ireland, Netherlands, Norway, Poland, Sweden, Russia (European Part).
- Heteromyza buccata* Fallén, 1820: 2. Sweden. "Skan." ST ♂♀ ZIL. Walker 1849: 1088 [list].
- Actora buccata*. Haliday 1833: 168 [generic combination].
- Heteromyza orientalis* Macquart, 1844: 262. "Java" [erroneous, probably Europe (McAlpine 1991b: 198)]. LT ♂ MNHNP [designated by McAlpine 1991b: 198]. Syn. McAlpine 1991b.
- Oedoparea buccata*. Loew 1862: 10 [generic combination]; Séguy 1934: 309 [review; fig. of head]; Steyskal 1958: 135 [review, includes *nudiseta* as synonym and *hannai* as tentative synonym].
- Exocheila buccata*. Rondani 1868: 54 [generic combination].
- Heterocheila buccata*. Czerny 1930: 7 [review, generic combination]; Séguy 1934: 88 [note]; Backlund 1945: 1 [larvae and puparium]; Steyskal 1962: 71 [synonymy, fig. of male terminalia]; Stackelberg 1970: 173 [key, Russia]; Hackman 1980: 143 [checklist, Finland]; Gorodkov 1984: 150 [catalog, Palearctic]; McAlpine 1991b: 198 [synonymy of *orientalis*]; Grosseries 1991: 134 [checklist, Belgium]; Chandler 1998: 131 [checklist, British Isles]; Schumann

1999: 153 [checklist, Germany]; Meier & Petersen 2001: 197 [checklist, Denmark]; Beuk 2002: 249 [checklist, Netherlands]; Speight 2004: 49 [list, Ireland].

Heterochila [sic] *buccata*. Hendel 1937: 186 [generic key].

Oedoparea gracilis. *Nomen nudum*. Steyskal 1962: 71 [name attributed to Frey].

hannai (Cole). NE: USA (Alaska, Oregon, Washington).

Dryomyza hannai Cole, 1921: 174. USA. Alaska: St. Paul Island. HT ♂ CAS [CAS type number 810]. Steyskal 1958: 135 [as tentative synonym of *buccata*].

Pseudosciomyza hannai. Malloch 1923: 215 [generic combination].

Oedoparea hannai. Malloch 1933: 326 [discussion, generic combination]; Steyskal 1962: 71 [discussion].

Heterocheila nudiseta Curran, 1933: 8. USA. Oregon: Lincoln, Boiler Bay. HT ♂ AMNH. Syn. Steyskal 1958. Steyskal 1965: 679 [as synonym of *hannai*, catalog, Nearctic].

Heterocheila buccata. Steyskal 1958: 135 [misidentification, figs. of male terminalia].

Heterocheila hannai. Steyskal 1965: 679 [generic combination, includes *nudiseta* as synonym of *hannai* (not *buccata*), catalog, Nearctic]; Cole 1969: 363 [western North America]; Poole & Gentili 1996: 153 [checklist, Nearctic].

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