

Scathophagidae

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Diagnosis: Body length 5.0-15.0 mm, ground-colour dark, black or yellow, frequently shining, entirely or partially grey dusted, strongly bristled and often yellow haired. The status of the family is well-founded and unambiguous, with the following principal characters: lower calypter (squama alaris) greatly reduced and linear, head more or less spherical and eyes in both sexes widely separated, frontal vitta in both sexes wide and without a pair of crossed frontal bristles, second antennomere with distinct and complete dorsal longitudinal seam, venation of wing almost constant and without a strong costal spine at end of subcostal vein, katepisternum with one to three bristles, two pairs of gonapophyses. The phylogenetic relationships within this family are now generally well understood; two subfamilies, Scathophaginae and Delininae, are recognised. The species *Scathophaga stercoraria* has served since the early 1960s in numerous ecological, behavioural and evolutionary investigations, particularly as model system for studies of sperm competition, cryptic female choice, and life history evolution.

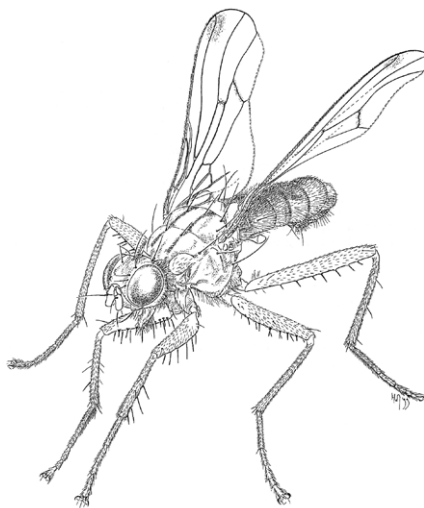
Biology: The adults occur in sheltered and moist habitats of various types, forests, lowland to montane meadows, littoral vegetation, marshes, peatbogs, etc. Many adults are predators and hunt small insects, exceptionally consuming nectar in flowers, whilst others are coprophagous or saprophagous. Several Arctic species are regularly observed on carrion and mammalian dung. Some species breed in rotting seaweed. The eggs are attached to the leaf surface or inserted into plant tissues, dung, or other substrates. Most of the larvae are phytophagous and mine the leaves and stems particularly of monocotyledonous plants. Other larvae are predaceous in dung, coprophagous or saprophagous. Larvae may also live in soil, in stagnant or running water. The larval development is only known for a limited number of species. Individuals of several species perform the ecologically important function of resource recycling.

Nomenclature and classification: According to Šifner (2008) with some changes especially concerning the species listed as belonging to *Norellia* Robineau-Desvoidy, 1830 or *Norellisoma* Wahlgren, 1917.

Number of species: CH: 58 (1998 Checklist: 45),
AT: 69, CZ: 85, DE: 59, HU: 40, PL: 67, SK: 65, Palearctic: 256, World: 362.

Level of faunistic knowledge in Switzerland: Medium.

General references: Becker (1894), Bernasconi et al. (2000a, 2000b, 2001, 2010), Bernasconi & Šifner (2021), Collin (1958), Gorodkov (1986), Hackman (1956), de Jong (2005), Kutty et al. (2007), Sack (1937), Séguy (1934, 1952), Šifner (1995, 2003, 2008, 2009, 2018), Šifner & Bernasconi (2021).



Norellia spinipes,
male (CMPD A, p. 431).

References to the Swiss fauna: Bächli et al. (2014), Merz & Bächli (1998), Merz et al. (2002, 2006), Šifner (1979, 2018).

Checklist

Delininae

Americina Malloch, 1923

- *media* Becker, 1894 !
- *vittata* (Meigen, 1826) !

Delina Robineau-Desvoidy, 1830

- *nigrita* (Fallén, 1819) !

Leptopa Zetterstedt, 1838

- *filiformis* Zetterstedt, 1838 !

Micropselapha Becker, 1894

- *filiformis* (Zetterstedt, 1846) !

Mirekiana Šifner, 2012

- *anthrax* (Schiner, 1864) ! N1
- = *carbonaria* (Pokorný, 1887)

Neochirosia Malloch, 1917

- *nigriceps* (Becker, 1894) L N2

Scathophaginae

Acanthocnema Becker, 1894

- *nigrimana* (Zetterstedt, 1846) !

Amaurosoma Becker, 1894 N3

- *armillatum* (Zetterstedt, 1846) !
- *fasciatum* Meigen, 1826 !
- *flavipes* (Fallén, 1819) !
- *longicorne* (von Roser, 1840) !
- *tibiellum* (Zetterstedt, 1838) !
- Chaetosa* Coquillett, 1898
 - *punctipes* (Meigen, 1826) !
- Cleigastra* Macquart, 1835
 - *apicalis* (Meigen, 1826) !
- Conisternum* Strobl, 1894
 - *obscurum* (Fallén, 1819) !
- Cordilura* Fallén, 1810 N4
 - *albilabris* (Fabricius, 1805) ! N5
 - *albipes* (Fallén, 1819) !
 - *ciliata* (Meigen, 1826) !
 - *picipes* (Meigen, 1826) !
 - *pudica* (Meigen, 1826) L
 - *rufipes* (Meigen, 1826) ! N6
 - = *pubera* (Linnaeus, 1758)
- Cosmetopus* Becker, 1894
 - *dentimanus* (Zetterstedt, 1838) L
- Gimnomera* Rondani, 1866 N7
 - *castanipes* Becker, 1894 L
 - *dorsata* (Zetterstedt, 1838) !
 - *lasiosstoma* Becker, 1894 L
- Gonatherus* Rondani, 1856
 - *planiceps* (Fallén, 1826) !
- Hexamitocera* Becker, 1894
 - *loxocerata* (Fallén, 1826) !
- Hydromyza* Fallén, 1813
 - *livens* (Fabricius, 1794) !
- Megaphthalma* Becker, 1894
 - *pallida* (Fallén, 1819) !
- Megaphthalmoides* Ringdahl, 1936
 - *unilineata* (Zetterstedt, 1838) !
- Microprosopa* Becker, 1894
 - *haemorrhoidalis* (Meigen, 1826) !
 - *pallidicauda* (Zetterstedt, 1838) L
 - *zlobini* Ozerov, 2008 ! N8
- Norellia* Robineau-Desvoidy, 1830
 - *alpestris* Schiner, 1864 !
 - *femoralis* (Loew, 1864) !
 - *liturata* (Wiedemann in Meigen, 1826) !
 - *nervosa* (Meigen, 1826) !
 - *spinimana* (Fallén, 1819) !
 - *spinipes* (Meigen, 1826) !

- *striolata* (Meigen, 1826) !
- *tipularia* (Fabricius, 1794) !
- Norellisoma* Wahlgren, 1917
 - *mirusae* Šifner, 1974 ! N9
 - *vockerothi* Ozerov, 2013 !
- Parallelomma* Strobl, 1894
 - *fuscipes* (Zetterstedt, 1838) !
 - = *fuscitibia* (Rondani, 1867)
- Scathophaga* Meigen, 1803
 - *analis* (Meigen, 1826) ! N10 [1]
 - *cineraria* (Meigen, 1826) !
 - = *lurida* Schiner, 1864
 - *cordylurina* (Holmgren, 1883) !
 - *furcata* (Say, 1823) !
 - *incola* (Becker, 1900) !
 - *inquinata* (Meigen, 1826) L N11
 - *lutaria* (Fabricius, 1794) !
 - = *maculipes* Zetterstedt, 1846
 - *scybalaria* (Linnaeus, 1758) !
 - *stercoraria* (Linnaeus, 1758) !
 - *suilla* (Fabricius, 1794) !
 - = *ordinata* Becker, 1894
 - *taeniopa* (Rondani, 1867) ! N12
- Spaziphora* Rondani, 1856
 - *hydromyzina* (Fallén, 1819) !
- Trichopalpus* Rondani, 1856
 - *fraternus* (Meigen, 1826) !

Notes

- N1 *Delina carbonaria* Pokorný was synonymised with *Delina anthrax* (Schiner, 1864) by Strobl (1898); see also Šifner (2008). *Delina anthrax* has been then transferred to the new genus *Mirekiana* by Šifner (2012).
- N2 *Delina nigriceps* (Becker, 1894) is in the genus *Neochirosia* Malloch, 1917 (see Ozerov 2009).
- N3 The genus *Nanna* Strobl, 1894 should be replaced by *Amaurosoma* Becker, 1894 as detailed in Šifner (2003).
- N4 The subdivision of *Cordilura* into subgenera does not find clear support in any phylogenetic analyses (e.g. Bernasconi et al. 2000 and Kutty et al. 2007).
- N5 *Phrosia albilabris* should be considered as *Cordilura albilabris*, therefore a Scathophaginae and not a Deliniinae. See Bernasconi et al. (2000a) and Kutty et al. (2007).
- N6 The new name of *Cordilura pubera* (L., 1758) is *Cordilura rufipes* (Meigen, 1826); see Šifner (2008, 2018).
- N7 The genus name *Gimnamera* is used instead of *Cochliarium*. See Šifner (2008); see also Bernasconi et al. (2000a) and Kutty et al. (2007).
- N8 The correct name is *Microprosopa zlobini*, not «*zlobinii*».
- N9 The author of *Norellisoma mirusae* is Šifner, 1974, and not Spitzer, 1974 (see Šifner 1974).
- N10 *Scathophaga analis* is a valid species (Šifner 2018) and the Swiss record was validated.
- N11 *Scathophaga inquinata* was already recorded for Switzerland by Šifner (1979).
- N12 *Scathophaga taeniopa* is a valid species. See Bernasconi et al. (2000a, 2001, 2010), Kutty et al. (2007), Šifner (2003, 2008).

Species records

[1] 1M, Dietikon ZH, 16.7.1994, leg. Gerhard Bächli (NML)

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