

NEW RECORDS OF IRISH SPONGE FLIES (NEUROPTERA: SISYRIDAE)

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Abstract

Three species of sponge fly (Neuroptera: Sisyridae) occur in Ireland *viz.* *Sisyra dalii* McLachlan, 1866, *S. nigra* (Retzius, 1783) and *S. terminalis* Curtis, 1854. New records are provided for each species and their known distributions reviewed.

Key words: Neuroptera, Sisyridae, *Sisyra*, sponge flies, Ireland, distributions.

Introduction

Sponge flies, also known as spongilla-flies (Neuroptera: Sisyridae), are specialist predators of freshwater sponges of which five species are recorded from Ireland *viz.* *Ephydatia fluviatilis* (L. 1759), *E. muelleri* (Lieberkühn 1855), *Eunapius fragilis* (Leidy 1851), *Rackelia ryderi* (Potts 1882) and *Spongilla lacustris* (L. 1759) (Lucey and Cocchiglia, 2014). The sisyrids are the only true aquatic insects in the order Neuroptera. The adults resemble small brown lacewings (Hemerobiidae) (Plate 1). The female lays her eggs on vegetation overhanging water. The larvae hatch and drop into the water where they seek out sponges to feed on. Unlike the sponge feeding caddisflies, the larvae do not ingest whole particles. The mouth parts are modified into two elongated tubes which are used to pierce the sponge and suck the fluids within (Fig. 1). They have also been reported to suck fluids from bryozoans and algae (Resh, 2012; Singleton, 2018). Given the requirement of freshwater sponges for good water quality, sisyrids are generally localised in their distribution and can be used as indicators of clean rivers (McCulloch and Crowley, 2024). Three species have been recorded from the British Isles. The adults may be identified using Elliott (1996), Plant (1997) and Plant *et al.* (2024). There is no complete key to larvae because of the lack of specimens (Elliott, 1996).

While collecting Irish caddisflies (Trichoptera), the authors took the opportunity to record any sponge flies that they encountered. These records are presented here, along with specimens sent to the senior author, and are indicated by an asterisk*. New counties are similarly indicated. The opportunity is also taken to review all the other existing Irish distributional data. The new material was identified by the senior author using Elliott (1996) and Plant (1997).

***Sisyra dalii* McLachlan, 1866 (Fig. 2)**

First described from Britain (McLachlan, 1866), *Sisyra dalii* is a Nationally Notable species there (NBN, 2024a). It is only known from four counties in Ireland. Outside the British Isles, it

has been found in Czechia, Denmark, France, Germany, Hungary, Netherlands, Norway, Portugal, Spain, Sweden and the Netherlands (Jepson, 2024). The flight period is May-August and adults have been found chiefly near large rivers (Elliott, 1996).

Records

DUBLIN: River Tolka at Glasnevin (O1437) (King and Halbert, 1910) [given as O1438 in dataset 64 of the National Biodiversity Data Centre (Irish Biogeographical Society, 2018)].

GALWAY: Inverin (M0822), August 1926, coll. and det. M. E. Mosely (Mosely, 1930 as *S. dalei*; Plant, 1994; NBN, 2024a) (grid reference given as (M02) in Plant and NBN).

KERRY: Dinish, Killarney (V9385); Ross Castle, Killarney (V9688). Ross Castle is V9788 but it is more likely that the species was taken on the nearby Bunrower River (V9688) (King and Halbert, 1910); Killarney (V99) (V9490 is used on the map below), 31 July 1887, J. J. F. X. King (the collector is mistakenly given as F. J. Killington), det. F. J. Killington (Plant, 1994; NBN, 2024a).

WEXFORD: Edenvale (T0427) (see note below) (Plate 2); *River Slaney, Enniscorthy (S9739), 1♂ 27 July 2015, J. P. O'Connor and M. A. O'Connor.

The grid reference (T051213) for Edenvale given in dataset 64 of the National Biodiversity Centre (Irish Biogeographical Society, 2018) is erroneous. The site is further north and deserves a description. Edenvale is a forested area that is situated 1km outside of Castlebridge and the area is popular as it has a walking path that runs alongside the River Sow leading to an impressive waterfall. A tributary of the River Slaney, the Sow drains an isolated catchment area of 88 square kilometres and at Edenvale has cut out a narrow valley with steep sides. There are two accessible tributary streams along the path, both flowing into the Sow which has a pH of 6.9-7.8. Eden Vale House once stood near the waterfall and J. J. F. X. King may have stayed there when he visited the area in 1902.

***Sisyra nigra* (Retzius, 1783) (Fig. 3)**

synonym *Sisyra fuscata* (Fabricius, 1793)

Sisyra nigra is found in Europe and Northern Asia (excluding China) and North America (NBN, 2024b). The flight period is from May to October (Plant, 1994). Larvae are found both on and inside sponges and bryozoans inhabiting ponds, lakes, canals, rivers and streams. Adults have also been found near an Irish turlough and in a marsh. The adults are usually found on the vegetation by the water and are easily taken in a sweep-net or a light-trap. The life cycle takes one year or less. Larvae leave the water in the autumn, overwinter in the prepupal stage, pupate in April-June with the adults emerging in May-June. They feed on insects and mites along with honeydew containing *inter alia* pollen grains, fungal spores and algae. Adults are usually found near the banks of the water bodies. The usual larval hosts are *Spongilla lacustris* and *Ephydatia fluviatilis*. Further information on the species will be found in Elliott (1996). *Gyrinophagus aper* (Walker) (Hymenoptera: Pteromalidae), a parasitoid of *S. nigra* has been found at Corofin,

Co. Clare (Thuróczy and O'Connor, 2006).

Records

ANTRIM: Belfast (J37) (Barnard, O'Connor, and Speight, 1991) (J3472 has been used for the purpose of mapping); Greenmount Campus (J1584), adult 5 September, light-trap, Rodney Monteith, det. Rodney Monteith; Springfarm (J1488), adult 10 August 2022, light-trap, Rodney Monteith, det. Rodney Monteith (NBN, 2024b).

ARMAGH: Loughgall (H9051) (King and Halbert, 1910).

***CARLOW:** *Bahana Woods, River Barrow (S7239), 1♂ 14 June 1991, J. P. O'Connor and M. A. O'Connor.

***CAVAN:** *Lady's Lake, Dun an Ri Forest Park (N7897), 3♂♂1♀ 7 August 2022, J. P. O'Connor and M. A. O'Connor; *Lough Ramor, Virginia (N6087), 1♂ 12 August 2020, J. P. O'Connor and M. A. O'Connor; *Lough Ramor, Lakeside Manor (N6286), 2♂♂ 12 August 2020, J. P. O'Connor and M. A. O'Connor.

CLARE: Dromore (R3487) (Barnard, O'Connor and Speight, 1991); *River Fergus, Addron Bridge (R3587), 1♀ 25 May 2023, Hugh Feeley.

DONEGAL: Clonkillybeg (C1219) (King and Halbert, 1910); Glenbeagh (B9918) [Owenbeagh R.] (King and Halbert, 1910); Keel Lough (C1524) (King and Halbert, 1910); *Lough Eske (G9683), 2♂♂ 6-7 June 2018, light traps, J. P. O'Connor and M. A. O'Connor; *Lough Eske (G9684), 2♀♀ 7 June 2018, J. P. O'Connor and M. A. O'Connor; *River Clady, near Spoule's Lough (C1018) (King and Halbert, 1910).

***DOWN:** *Castlewellan Lake (J3336), ♂♂♀♀ 18-19 June 2017, J. P. O'Connor and M. A. O'Connor; *Tullynagee (J4763), small lake, 1♂ 18-19 June 2017, light-trap, J. P. O'Connor and M. A. O'Connor.

DUBLIN: *pond, Áras an Uachtaráin, Phoenix Park (O1235), 1♂2♀♀ 2020, Simon Hodge; *Glen Pond, Phoenix Park (O0935), 2♂♂2♀♀ 22 July 2018, J. P. O'Connor and M. A. O'Connor; Gollierstown (O0132) (Barnard, O'Connor and O'Connor, 1987); Lucan [River Liffey] (O0135) (King and Halbert, 1910); *River Liffey, Lucan Demense (O0235), ♂♂♀♀ 15 July 2018, J. P. O'Connor and M. A. O'Connor; *River Liffey, Strawberry Beds (O0735), 1♀ 30 July 2018, J. P. O'Connor; *Quarry Lake, Phoenix Park (O1036), 1♀ 23 July 2018, J. P. O'Connor; *Zoological Gardens (O1235), 1♀ 1-25 July 2019, Rothamsted Insect Survey light-trap, per A. Riley.

***FERMANAGH:** *Mill Lough (H2438), 2♂♂ 5-6 June 2018, light-trap, J. P. O'Connor and M. A. O'Connor.

GALWAY: Doorosbeg pier, Lough Derg (R7894); Muingahunna, Portumna (M8303); turlough near Killinny (M4103) (all Barnard, O'Connor, and Speight, 1991).

KERRY: *Doolough, Muckross Peninsula (V9585), 4♂♂3♀♀ 5-14 September 1993 and 20♂♂20♀♀ 26 July-5 August 1993, Malaise traps in old *Betula/Quercus* woods and swamp

Alnus/Salix strip at the edge of the lake, M C. D. Speight; Gap of Dunloe (V8787) (King and Halbert, 1910); Killarney (V99), 1923 (NBN, 2024b) (V9490 is used on the map below); Lough Allua (W1765), 8 September 1989, P. Kirby and S. J. Lambert, det. P. Kirby (NBN, 2024b); Middle Lake, Killarney (V960846) (Barnard, O'Connor and O'Connor, 1987); Muckcross (V9586), 5 September 1989, P. Kirby and S. J. Lambert, det. P. Kirby (NBN, 2024b); O'Sullivan's Cascade, Killarney (V9188); River Laune Exit, Lower Lake, Killarney (V8991) (both Barnard, O'Connor and Speight, 1991); Ross Castle (V9688) (King and Halbert, 1910).

LAOIS: Grantstown (S3380); Wheelahan's Bridge (N5911); Woodbrook (N517092) (all Barnard, O'Connor, and Speight, 1991).

LEITRIM: Dromod (N0489) (Barnard, O'Connor, and Speight, 1991).

LONGFORD: Newtown Forbes (N0882) (Barnard, O'Connor, and Speight, 1991).

MAYO: Achill Island (F6903) (Halbert, 1912); Belclare (L9781) (Halbert, 1912) (Carrowbeg River (L9295) (King and Halbert, 1910); Kip Lough (M0880) (King and Halbert, 1910); Prospect Lough (L9581) (King and Halbert, 1910); Westport (L9984) (Halbert, 1912).

MEATH: near Oldbridge (O044761) in 1986 (Barnard, O'Connor, and Speight, 1991).

MONAGHAN: Emyvale (H6843) (King and Halbert, 1910); Glaslough (H7241) (King and Halbert, 1910).

***OFFALY:** *Loch an Dochais, Boora Park (N1819), 2♂♂ 26 June 2018 and 1♀ 25 July 2018, J. P. O'Connor and M. A. O'Connor; *Lough Boora (N1818), 1♂1♀ 25 July 2018 (Plate 2); *Upper Finnamore Lake, Boora Park (N2120), 1♂ 26 June 2018, J. P. O'Connor and M. A. O'Connor.

***TIPPERARY:** *Hatchery, Kilmastulla River (R6867), 2♂♂ 3 August 1976, M. A. O'Connor; *River Suir, Clonmel (S2122), 1♀ 11 August 2019, J. P. O'Connor and M. A. O'Connor.

WATERFORD: Ballymacaw Cove (X648991) (Barnard, O'Connor, and Speight, 1991). Given as Dallymacaw Cove in NBN (2024b).

***WESTMEATH:** *Lough Ennell, Inchacrone, Tudenham (N4146), 1♂ 9 July 1997, J. P. O'Connor.

WEXFORD: *Curracloe (T1128), 1♀ 5 August 2019, marsh, J. P. O'Connor; Killurin (S9726) [R. Slaney] (King and Halbert, 1910); *Lower Lake, Johnstown Castle (T0216), 1♂ 8 August 2019, J. P. O'Connor and M. A. O'Connor; Mount Garrett Wood (S720305) (Barnard, O'Connor and O'Connor, 1987); *River Slaney, Enniscorthy (S9739), 1♀ 6 August 2019, J. P. O'Connor and M. A. O'Connor.

***Sisyr terminalis* Curtis, 1854 (Fig. 4)**

First described from Ireland by Curtis (1854) who stated that he discovered the species "at the base of Turk Mountain, near the Lakes of Killarney, in a tour of the west of Ireland made in 1835 with my friend Mr. Haliday. The specimens were beaten out of an oak tree the 9th of July". *Sisyr terminalis* is a Nationally Notable species in Britain (NBN, 2024c). It is only known

from six counties in Ireland. Outside the British Isles, it has been found in Austria, Belgium, Bulgaria, Croatia, Czechia, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Luxembourg, Poland, Romania, Russian Federation, Slovakia, Sweden, Switzerland and the Netherlands (GBIF, 2024; Jepsen, 2024). The flight period is June to August (Plant, 1994). Adults occur near fast flowing rivers, canals and lakes (Elliott, 1996). In Britain, *S. terminalis* is rarer than *S. dalii*. The reverse appears to be the situation in Ireland. The genome sequence is given by McCulloch and Crowley (2024).

***CARLOW:** *River Barrow, St Mullins (S7237), 1♂1♀ 10 August 2018, J. P. O'Connor and M. A. O'Connor.

CORK: Fota Wildlife Park (W781813), 1989, light, R. Peny, det. C. W. Plant (NBN, 2024c; Plant, 1994).

DUBLIN: Lucan [River Liffey] (O0135) 21 August 1894 (King and Halbert, 1910); *River Liffey, Islandbridge (O1134), ♀24 July 2022, J. P. O'Connor and M. A. O'Connor; *River Liffey, Lucan Demense (O0235), 1♀ 18 July 2018, J. P. O'Connor and M. A. O'Connor (Plate 3); *River Liffey, Strawberry Beds (O0735), ♀ 30 June 2018, J. P. O'Connor.

KERRY: Cloghereen, Killarney (V9886); Deenagh, Killarney (V9490); Ross Castle, Killarney (V9488) (King and Halbert, 1910); Gortadirra, Muckross, Killarney (V9088), 16 August 1978, M. de Courcy Williams, det. J. P. O'Connor (Plant, 1994; NBN, 2024c); at the base of Turk [Torc] Mountain [The Owengarriff River and Torc Falls] (V9684), 1835, John Curtis (Curtis, 1854).

***KILDARE:** *River Liffey, Castletown Estate, Celbridge (N9733), 1♀ 30 June 2019 and 1♀ 7 July 2019, J. P. O'Connor and M. A. O'Connor.

***WEXFORD:** *River Slaney, Enniscorthy (S9739), 1♀ 6 August 2019, J. P. O'Connor and M. A. O'Connor (Plate 4).

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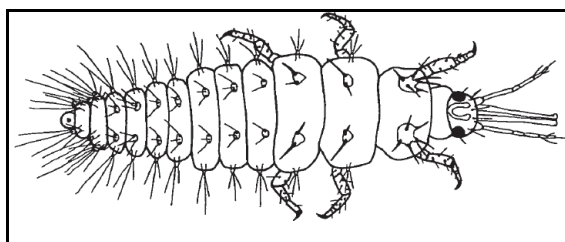


FIGURE 1. Larva of *Sisyra dalii*, dorsal view (from Weibmair, 1999).



PLATE 1. *Sisyra nigra*, adult, Áras an Uachtaráin, Phoenix Park, Dublin City, 2020. Photograph: Simon Hodge.



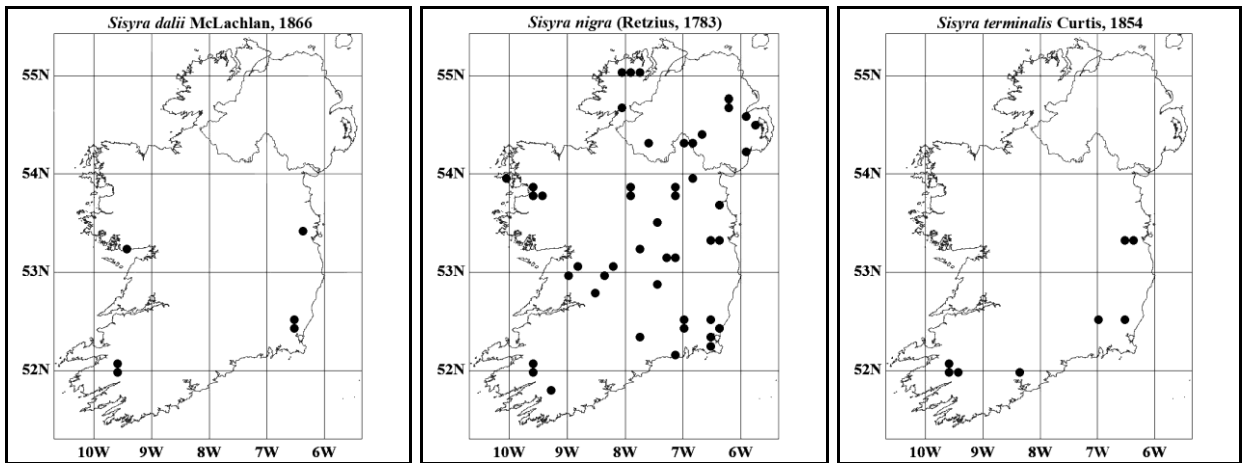
PLATE 2. A site for *Sisyr daliai*, River Sow, Edenvale, Co. Wexford, 14 August 2018, Photograph: M. A. O'Connor.



PLATE 3. Left: a site for *Sisyr nigra*, Lough Boora, Co. Offaly, 25 July 2018. Photograph: M. A. O'Connor, Right: a site for *Sisyr terminalis*, River Liffey, Lucan Demense, Co. Dublin, 18 July 2018. Photograph: J. P. O'Connor.



PLATE 4. A site for all three Irish species, tidal stretch of the River Slaney, below Enniscorthy, Co. Wexford. Photograph: Andrew (Adobe) (licenced).



FIGURES 2-4. The known Irish distributions of *Sisyra dalii* McLachlan, 1866, *Sisyra nigra* (Retzius, 1783) and *Sisyra terminalis* Curtis, 1854.