

**FIRST IRISH RECORDS OF *THERIDION HEMEROBIUS* SIMON, 1914 (ARANEAE: THERIDIIDAE)**

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**Abstract**

Specimens of the spider *Theridion hemerobius* Simon, 1914 (Araneae: Theridiidae) were found at three widely separated locations on Irish waterways. The spider is possibly a quite recent arrival and may have been introduced through human agency.

**Key words:** Araneae, Theridiidae, *Theridion hemerobius*, Ireland, first records

**Records and identification of *Theridion hemerobius* Simon, 1914**

**TIPPERARY:** Lough Derg, Terryglass (M863009), from the ceiling of a plastic lifebelt housing and from a low, roofed information panel on the margins of the lake, ♂3♀♀ of *Theridion hemerobius* on 5 June 2013. Also *Theridion varians* Hahn, 1833 (♀).

**WESTMEATH:** Lough Owel (N417587), from the ceiling of a plastic lifebelt housing, a ♀ of *T. hemerobius* on 29 June 2013. Also, from under a concrete overhang on a building a ♀ of *T. mystaceum*, L. Koch, 1870.

**LEITRIM:** Lough Allen, Drumshanbo (G967110), from the underside of a metal spar supporting an information sign, 2♀♀ of *T. hemerobius* on 30 June 2013. Also, from a toilet and shower block, *T. varians* Hahn, 1833 (♂2♀♀), *T. mystaceum* (♀), *B. gracilis* (Blackwall, 1841) (♀) and many immatures of *Zygiella* and *Larinioides*.

The specimens of were identified as *T. hemerobius* using Bosmans *et al.* (1994), Almquist (2005) and Knoflach *et al.* (2009). The spider is closely related to *Theridion pictum* (Walckenaer, 1802), which has not been recorded in Ireland and with which *T. hemerobius* has been confused. *T. hemerobius* is not noted in Helsdingen (1996) nor any subsequent publication

on Irish spiders and the present records are considered the first for Ireland.

The spider is quite variable in colouration and markings. The carapace in both sexes is pale with a dark median band similar to *T. varians* but neither so wide nor so dark as this species. The Irish male specimen resembles *T. varians* having a foliate median band on the abdomen and one of the females is similarly marked. The other two females have a large dark patch centrally and slightly anteriorly on the dorsum but the mark is significantly darker in one specimen (teneral) than the other. Two of the females have clearly annulated legs while the teneral specimen's legs are generally very pale with a hint of annulations on legs I-III and slightly darker on leg IV. The variability of markings in adults makes the safe assignation of juvenile specimens difficult (Law, 2005). This author also observed possible evidence of melanism in some specimens located on a dark (rusting) surface.

### **Nomenclature and taxonomy**

The correct form of the name is *Theridion hemerobius* despite the frequent appearance of the spelling *hemerobium*. Cameron (cited in Platnick, 2013) states that the specific name is a Greek two-ending adjective (thus the -us ending is both masculine and feminine). He corrects the statement that the specific epithet is a latinised noun in apposition as suggested by Bosmans *et al.* (1994).

The present picture of the distribution of *T. hemerobius* has emerged relatively recently due in part to the previous lack of readily available good diagnostic illustrations (Bosmans *et al.*, 1994) or of errors in description: Simon's (1914) illustration of the male is not of *T. hemerobius* (Bosmans *et al.*, 1994) and he did not illustrate the female; Levy and Amitai (1982) illustrated *T. hemerobius* under the name *T. ?pictum* but noting the resemblance of the females to other European and American species, and not having seen any males, did not commit to a diagnosis of the latter sex; numerous of the descriptions appearing in the U.S.A. described the species under a different name (Platnick, 2013). A paper by Blick *et al.* (1993) finally illustrated both sexes together as *T. hemerobius* and Bosmans *et al.* (1994) made an accurate description

available in a more widely available journal. In Britain, for example, this probably facilitated the subsequent appearance of information on the species' distribution and habits there (Daws, 2003, 2004; Law 2004, 2005; Marriott, 1998; White, 2005).

### **Species distribution**

Canada, U.S.A., Europe, Russia, Israel and Turkey (Helsdingen, 2013; Platnick, 2013): it is found across a broad tract of the European continent, occurring from Ireland (present records) to southern Russia and from the Mediterranean to Scandinavia, however it is yet to be recorded from a large area of the Balkans, Eastern Europe and the Baltic. There are still very few records from numerous countries where it has been recorded. It is known from the following European countries and territories: Great Britain, France (and Corsica), Belgium, Netherlands, Denmark, Sweden, Germany, Switzerland, Slovakia, Czech Republic, Portugal, Italy (and Sardinia (doubtful according to <[www.araneae.unibe.ch](http://www.araneae.unibe.ch)>)), Greece, Romania and Bulgaria, (Helsdingen, 2013).

The suggestion of Bosmans *et al.* (1994) that the species, being widespread, may be identified from collections previously made has been borne out to some extent by the first identification of the species' occurrence in Greece from a collection made there in 2000 (Knoflach *et al.*, 2009) and in Turkey from specimens deposited in 2010 (Danışman *et al.*, 2011). The species may be spreading; a number of first records for a country are recent, *inter alia* the Czech Republic, 1996/1997 (Holec, 2000), Turkey, 2010 (Danışman *et al.*, 2011), Greece, 2000 (Knoflach *et al.*, 2009).

### **Preferred environment**

The spider has a clear association with natural, eutrophic wetland habitats and with anthropogenic structures in such situations and on managed waterways. Thus in the Czech Republic, the species was first recorded from eulittoral vegetation (*Carex*, *Typha* and *Phragmitis*) and was at the time interpreted as being restricted to this habitat (Holec, 2000).

However, Buchar and Ruziska (2002) note that it can be easily collected in the country from artificial structures.

### **Natural habitat**

Usually found on littoral and emergent vegetation at the margins of various freshwater habitats: rivers, lakes, marshes etc (Anthes, 2000; Almquist, 2005). Bosmans *et al.* (1994) characterise its preferred habitat as ancient, eutrophic marsh e.g. reed marshes and flooded nitrophilous vegetation, often dominated by *Urtica*. Anthes (2000) and Knoflach *et al.* (2009) suggest that the spider is stenotopic to such (riparian) habitats. In the Netherlands, it is found in littoral sedge tussocks on peat-bog fenland (Helsdingen, 2005) and has also been found in bog in France and Germany (Blick *et al.*, 1993; Peru, 2006).

It is known from a variety of other habitats; in France from salt-marsh, oak *Quercus* and pine *Pinus* forest (Peru, 2006) and on lowland heath on sandy soil close to birch *Betula* (Braud, 2007), papyrus reed *Cyperus* (Israel), shrub in steppe (Slovakia) (Bosmans *et al.*, 1994), gravel banks (Anthes, 2000).

The preferred plant species seem to be *Typha*, *Carex*, *Phragmites* and *Urtica* (Bosmans *et al.*, 1994; Helsdingen, 2005; Holec, 2000; Almquist, 2005). It has also been collected from stones amongst *Phragmites* vegetation and from a variety of shrubs and bushes (Anthes, 2000).

### **Semi-natural and managed habitats**

The species is found on vegetation and man-made structures bordering managed water bodies e.g. canals, flooded gravel pits etc. Isolated artificial pools that host the spider seem usually to be adjacent to canals or rivers from which the spider possibly colonised (Marriott, 1998; Law, 2004). Harvey *et al.* (2002) discuss the spider's occurrence in littoral vegetation but subsequent researches (especially in England) (Daws, 2003, 2004; Law, 2005; White, 2005) has shown the spider to be readily collectable from non-natural structures on which it sets its web: signage, fishing platforms, metal railings, bridges, horizontal galvanised bumper bars (canal edges) and

pilings. In Britain, the species is now known to be widely distributed through central England's canal system (Law, 2005). Daws (2004) suggests the species is largely absent from reservoirs, isolated lakes and non-navigable rivers. Specimens were first recorded in Turkey from two gardens (Danışman *et al.*, 2011). Law (2005) found hand searching of solid structures to be a far more efficient way of detecting the species rapidly compared to beating vegetation. Daws (2003, 2004) found that it did occur on metal, wood and plastic structures but avoided stone and brick. This might gain evidence from the Irish occurrences where at Drumshanbo, no specimens of *T. hemerobius* were collected from a brick toilet unit while both *T. varians* and *T. mystaceum* were present. Daws (2003) suggests that this behaviour may be to avoid competition with other *Theridion* species. Aggressive interactions do occur between the species for one of the Irish females identified had been bitten and was being wrapped by a mated (epigyne plugged) female of *T. varians*.

### **Micro-habitat**

*T. hemerobius* prefers to be slightly shaded or sheltered and usually can be found concealed under an overhang (Daws, 2003). Law (2005) agrees, having found most specimens under the overhang of horizontal bumpers edging canals. This accords very well with the situations in which the Irish specimens were found. The spider can also be found within a small, silk, tubular retreat under such overhangs. It has been recorded from unvegetated sand and gravel banks where it presumably lives interstitially and occurs up to 1.5m on preferred vegetation (Anthes, 2000).

### **Comments**

Law (2005) queries how this species has remained undetected for so long in Britain. It is difficult to know if it has an ancient association with natural situations in countries such as Ireland and Britain or has spread into them having been introduced into managed waterway systems. Three possibilities may be suggested: **(1)** It was recently introduced and is spreading

along waterways making use of both natural and man-made environments. (2) It has long been native and has been misidentified or overlooked by collectors. (3) It had been confined to natural habitats but has recently started to make use of artificial structures, leading to a recent rapid dispersal and consequently a greater number of sightings. The second suggestion is irrelevant to Ireland since *T. pictum*, the only species with which it could be reasonably confused, has not been recorded here.

Daws (2004) notes the seeming absence of the species from heavily built-up areas. Law (2005) also did not detect it in some urban areas. A couple of urban areas I searched did not produce any specimens (details below). The spider's preference for artificial structures does not in any way obviate the possibility that it may make use of natural habitat at some stage of its life-cycle.

Given that it can make use of artificial structures, plastic, metal and otherwise, it seems very likely that it could be dispersed by the movement of boats through waterways.

The following areas were also searched but *T. hemerobius* was not found: **DUBLIN:** Grand Canal in Dublin, from Portobello bridge (O156324) to Mount Street bridge (O172333) on 9 June 2013. Same area on tree trunks, 14 June 2013, *T. mystaceum* (♀) with egg-sac, *T. tinctum* (Walckenaer, 1802) (♀) with egg-sac. There are few records of the latter species in Ireland and it has a rather local distribution. **WESTMEATH:** McNead's Bridge, Royal Canal (N493528), galvanised bumper railing on pathside adjacent to canal, 29 June 2013, *T. varians* (♀) epigyne plugged and with egg-sac; same location, metal signage, metal gates, galvanised bumper railings, 12 July 2013, *T. varians* (6♀♀, all plugged and with at least 1 egg-sac each). Numerous *Zygiella* and *Larinioides* immatures also seen. **LEITRIM:** Carrick-on-Shannon (M937993), signage, a metal walkway set in the River Shannon (with lifebelts and housings) and other artificial structures, 29 June 2013, no likely Theridiidae seen, numerous immatures of *Zygiella* sp. and *Larinioides* sp. were noted. **KILKENNY:** lifebelt housings along a riverside path within the city precincts, (S5155), 6 July 2013, *T. varians* (3♀♀). At least 5 or 6 other specimens, all most likely *T. varians* (based on the very rapid manner in which they jumped

from their webs and eluded capture).

These records of absence do not mean the spider is not in these areas. Law (2005) noted the species could occur in a locality despite not being found on long stretches of likely habitat therein.

### **Habits and seasonality**

Anthus (2000) summarises the available information and reports males and females appearing as early as February. Males are mature from then to July, reaching a maximum from the middle of May to early July. Females mature slightly later than males and reach maximum abundance from the end of May to the end of July but persist into August. Only females are found into September. Daws (2004) found subadults and a range of immature instars in October and the following March mature females were found at the same site alongside large immatures and sub-adults. The species thus probably has an essentially annual cycle though it is possible that a spiderling hatching late in the year might be obliged to overwinter twice before maturing. Daws (2004) suggests the spider may have a long breeding season, potentially March to September, with reproduction being deterred only by the onset of winter.

Daws (2004) recorded a specimen at a significant distance from any water body and feels it might indicate the species can disperse by ballooning. This being the case the spider might have made it to Ireland under its own silk, however the case demonstrating ballooning on the part of the species has not been definitely established.

### **Irish Distribution**

The species is obviously widespread in Ireland and could very well be widely (if not commonly) dispersed through the major waterway systems of the Shannon River and the Royal and Grand Canals. Lough Derg and Lough Allen are respectively the southern and northernmost major lakes on the Shannon. The presence of the spider at both suggests it could occur in likely habitat along the Shannon's full course of 360km. The Lough Allen site is at the lake's

southernmost tip at a point where the lake leads into a canal which in turn leads into the Shannon after some 7km. Lough Owel, through a narrow channel, supplies the Royal Canal at Mullingar, which then runs west where it eventually joins the Shannon at Cloondara. The River Brosna also flows through Mullingar and is joined by the Grand Canal very shortly before the river meets the Shannon. Thus the spider certainly has access to both the canal systems that between them run a course some 270km in length from the Shannon to Dublin. While the distances between the locations where the spider was found are relatively large, over 50km from Drumshanbo to Lough Owel and about 120km from Drumshanbo to Terryglass (as the crow flies), the waterways provide a ready route for dispersal, regardless of whether this is by virtue of natural habitat or the economic and leisure activities of humans.

It is worth noting that *Larinioides sclopetarius* (Clerck, 1757) has a somewhat similar distribution in Ireland where it preferably inhabits solid, man-made structures along waterways. Typically it can be found on bridges, walls and signage along rivers and canals and occasionally on very sturdy vegetation if immediately adjacent. It is possible this species is also a relatively recent advent to Ireland; it was first noted here less than thirty years ago (Taylor, 1986) but there are now a significant number of records and it is widely distributed (Cawley, 2009). It is hard to believe that this large spider, often abundant in heavily built-up areas, would have been missed by arachnologists collecting in Ireland in the early twentieth century.

### **Conservation status**

*T. hemerobius* has been considered threatened. In Germany, it has been thought endangered (Platen, 1997 (cited by Anthes (2000))), on basis of its occurrence in threatened wetlands. While it was once considered rare in Britain, it is now obviously known to be far more widespread than recently thought; nevertheless Harvey *et al.* (2002) suggest management protocols for those wetland habitats in which it occurs.

In Ireland, while it will be of great interest to see if it occurs in natural or threatened habitats, it is more probably an introduced alien, possibly recently arrived, which has established a

resident community throughout Ireland's waterways. That the species has not been noticed till now is curious and similar to the situation that pertains in Britain. The question as to whether it is long-established here could possibly be resolved through examination of DNA and comparison with other European populations.

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