

# **SPIDERS OF HOWTH**

A report for Fingal County Council

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**SYNOPSIS**

A survey of ground beetles using pitfall traps was carried out on Howth Head in 2019. Spiders, harvestmen and pseudoscorpions also collected were examined and identified by the author: 573 specimens in all were examined. Forty-seven spider taxa were identified (43 species and four genera), as were five species of harvestman and one species of pseudoscorpion. Adult spiders are tabulated indicating the numbers identified from the different habitats examined. Immature spiders, harvestmen and pseudoscorpions identified are tabulated indicating the numbers collected. Comment is made on the most abundant spider species collected. 23 species collected had not been previously noted from Howth. Historical records and small collections made by two other individuals are added to the list from 2019 in order to compile a complete list of spiders recorded from Howth. This shows that 95 species have been recorded there over a period of some 120 years. Rare and noteworthy species are noted and discussed; a number have very restricted distributions; Howth is an Irish stronghold for some of these. The majority of the rarer species are associated with Ericaceous heathlands/lightly vegetated soils and stone/cliff surfaces. Loss of such habitat to anthropogenic management or scrub encroachment could impact negatively on some of these.

## **METHODS: COLLECTION, IDENTIFICATION, LISTING**

A survey of ground beetles was executed on Howth Head, County Dublin in the summer/autumn of 2019 using pitfall traps as the primary capture method. A substantial number of spiders (Order Araneae) and harvestmen (Order Opiliones) and a small number of pseudoscorpions (Order Pseudoscorpiones) were also trapped. All specimens were collected and sorted by Nessa Darcy (ND) and were given to and identified by Myles Nolan (MN) using Roberts (1985, 1987a, 1987b, 1993), Hillyard (2005) and Legg and Jones (1988) respectively. In total 573 specimens were examined and identified: 456 spiders, 113 harvestmen and four pseudoscorpions.

All specimens identified were collected in pitfall traps which were installed and run at a variety of locations on Howth Head (Grid ref: O23) and across varying ranges of dates for two broad collecting sessions; from the latter half of July into the first third of August and from mid-September into the first third of October. Full details of the collecting period of each trap are given in appendix 3 of this report and details of the numbers (male and female) of each species occurring at each trap location in appendix 4.

In order to present a more complete account of the spider fauna of Howth Head the results of the 2019 survey are augmented with the addition of all historical records of spiders therefrom of which the author is aware. These stem primarily from a small number of published sources (Carpenter, 1898; Pack-Beresford, 1909, 1911, 1920, 1922, 1924, 1929). In addition to these a number of personal records of MN are included, as are a number of personal records made by Adam Mantell (AM), the inclusion of which he has kindly permitted.

## **HOWTH SURVEY 2019**

### **Spiders**

267 adult spiders representing 42 species were identified from the catch – the numbers in which they occurred and the habitats in which they were recorded are detailed in Table 1. 189 immature spiders were identified to varying levels; to species (6 specimens), to genus (165 specimens) and to family/order (18 specimens). Numbers of immatures are shown in Table 3. The immature specimens added one more species and four genera to the list so 47 spider taxa were collected and identified in total.

The nine most abundant species (>3% total adult catch) and the percentage in which they occurred in the habitat in which they were most abundant are shown in Table 2. The three most abundant species recorded were *Agroeca proxima* (O. P.-Cambridge, 1871), *Bathyphantes gracilis* (Blackwall, 1841) and *Tenuiphantes tenuis* (Blackwall, 1852) which together represented a little over 35% of the catch. While the latter two species are amongst the most commonly occurring spiders in Ireland, *A. proxima* is associated with a narrower range of habitats and especially with open heathland. Its abundance is

due to collecting occurring later in the year; adults are most abundant from late August to end November (only one specimen was collected during the first trapping period).

**Table 1. Howth survey 2019: species and numbers of adults recorded from different habitat types (alphabetised in order of abundance).**

Species	Habitat/location	Woodland	Bracken	Gorse heath	Heath other	Grassland	Heather heath	Totals
<i>Agroeca proxima</i> (O. P.-Cambridge, 1871)				5			31	36
<i>Bathyphantes gracilis</i> (Blackwall, 1841)		1		4	11	15	1	32
<i>Tenuiphantes tenuis</i> (Blackwall, 1852)		1	2	4	5	5	9	26
<i>Erigone atra</i> Blackwall, 1833					7	12	2	21
<i>Pardosa nigriceps</i> (Thorell, 1856)				2	3		15	20
<i>Palliduphantes ericaeus</i> (Blackwall, 1853)				3	6	4	4	17
<i>Tenuiphantes zimmermanni</i> (Bertkau, 1890)		1	4	7			5	17
<i>Pardosa pullata</i> (Clerck, 1757)					9	5		14
<i>Erigone dentipalpis</i> (Wider, 1834)					1	11		12
<i>Pachygnatha degeeri</i> Sundevall, 1830					2	6		8
<i>Dicymbium brevisetosum</i> Locket, 1962			1			6		7
<i>Tiso vagans</i> (Blackwall, 1834)						5		5
<i>Ceratinella brevipes</i> (Westring, 1851)			1	2			1	4
<i>Oedothorax fuscus</i> (Blackwall, 1834)						2	2	4
<i>Oedothorax gibbosus</i> (Blackwall, 1841)					3	1		4
<i>Walckenaeria acuminata</i> Blackwall, 1833			1		1		2	4
<i>Hahnia helveola</i> Simon, 1875				3				3
<i>Peponocranium ludicrum</i> (O. P.-Cambridge, 1861)							3	3
<i>Agyneta decora</i> (O. P.-Cambridge, 1871)						1	1	2
<i>Alopecosa pulverulenta</i> (Clerck, 1757)							2	2
<i>Ceratinella brevis</i> (Wider, 1834)							2	2
<i>Gongyliidiellum vivum</i> (O. P.-Cambridge, 1875)				1	1			2
<i>Leptothrix hardyi</i> (Blackwall, 1850)							2	2
<i>Micaria pulicaria</i> (Sundevall, 1831)			1	1				2
<i>Agelena labyrinthica</i> (Clerck, 1757)							1	1
<i>Agyneta subtilis</i> (O. P.-Cambridge, 1863)				1				1
<i>Clubiona trivialis</i> C. L. Koch, 1843							1	1
<i>Maso sundevalli</i> (Westring, 1851)							1	1
<i>Meioneta rurestris</i> (C. L. Koch, 1836)							1	1
<i>Monocephalus fuscipes</i> (Blackwall, 1836)							1	1
<i>Ozyptila sanctuaria</i> (O. P.-Cambridge, 1871)							1	1
<i>Pardosa monticola</i> (Clerck, 1757)							1	1
<i>Pocadicnemis pumila</i> (Blackwall, 1841)						1		1
<i>Saaristoa abnormis</i> (Blackwall, 1841)			1					1
<i>Scotina celans</i> (Blackwall, 1841)							1	1
<i>Scotina gracilipes</i> (Blackwall, 1859)							1	1
<i>Tapinopa longidens</i> (Wider, 1834)				1				1
<i>Tenuiphantes flavipes</i> (Blackwall, 1854)				1				1
<i>Xysticus cristatus</i> (Clerck, 1757)							1	1
<i>Xysticus sabulosus</i> (Hahn, 1832)							1	1
<i>Zelotes latreillei</i> (Simon, 1878)						1		1
<i>Zora spinimana</i> (Sundevall, 1833)			1					1
Total specimens per habitat type		3	12	35	49	75	93	<b>267</b>
Total species per habitat type		3	8	13	11	14	26	<b>42</b>

All other species occurring at abundances  $\geq 3\%$  are very common and widespread in Ireland. Their local abundances at Howth reflect their general habitat preferences: *Erigone atra* Blackwall, 1833, *Erigone dentipalpis* (Wider, 1834) and *Pachygnatha degeeri* Sundevall, 1830 are three of the most abundantly occurring species on open grasslands (including pastoral and agricultural types) and this preference is clearly reflected in their relative abundance in grassland traps (Table 2). *Tenuiphantes zimmermanni* (Bertkau, 1890) prefers heavily shaded habitats (usually at highest relative abundance in woodlands) and this is reflected at Howth where it preferred the dense shading vegetation offered by gorse. Its congener *Tenuiphantes tenuis* (Blackwall, 1852) makes use of a wide range of open habitats with some shading vegetation wherein it sets a web. The common wolf spider *Pardosa nigriceps* (Thorell, 1856) is the only member of the family in Ireland that climbs field-layer vegetation such as *Calluna* and *Ulex*, where it can be found especially in sunny conditions. *Pardosa pullata* (Clerck, 1757) is the commonest of the wolf spiders in Ireland and is highly characteristic of open habitats with low vegetation providing some cover and this is evidenced in its avoidance of the *Calluna* and *Ulex* dominated areas.

**Table 2. Species recorded at  $\geq 3\%$  of total catch and % of total specimens occurring in the habitat type where most abundant.**

Species	% of total adults	% of species on habitat where most abundant
<i>Agroeca proxima</i>	13.48%	86% 'Heather' heath
<i>Pardosa nigriceps</i>	7.49%	75% 'Heather' heath
<i>Tenuiphantes tenuis</i>	9.74%	34% 'Heather' heath
<i>Pardosa pullata</i>	5.24%	64% heath 'other'
<i>Palliduphantes ericaeus</i>	6.37%	35% heath 'other'
<i>Erigone dentipalpis</i>	4.49%	91% grasslands
<i>Pachygnatha degeeri</i>	3.00%	75% grasslands
<i>Erigone atra</i>	7.87%	57% grasslands
<i>Tenuiphantes zimmermanni</i>	6.37%	41% Gorse
	76.03%	

Amongst the other species recorded a number are noteworthy, uncommon or rare and merit further comment: *Zelotes latreillei* (Simon, 1878) is known from eighteen Irish counties but only some 30 hectads. The vast majority of records are coastal, especially from dune systems. The species occurs inland also however, on heaths and calcareous grasslands. *Pardosa monticola* (Clerck, 1757) is known from seventeen Irish counties but only 26 hectads. It is nearly confined to coastal areas in Ireland where it can be the most abundant species on short-swards characteristic of 'grey' dunes (rich in lichens and mosses) on the leeward side of coastal dune systems; because this type of sub-habitat is especially vulnerable to trampling the species can be severely impacted locally. *Hahnina helveola* Simon, 1875 is known from twelve Irish counties including Dublin and is a relatively uncommon species that prefers shaded habitats and usually is found in woodland/forest but also occurs on

*Calluna* heath e.g. the drier margins of raised bog. Like *A. proxima* it is most abundant in the latter half of the year. *Scotina celans* (Blackwall, 1841) is known from ten Irish counties but only about thirteen hectads. It occurs in a range of habitats, preferring heavily vegetated heathlands and woodlands and usually the damper areas of these. *Xysticus sabulosus* (Hahn, 1832) is another crab spider and is known from nine Irish counties but only twelve hectads. It is characteristic of heathlands and especially lightly vegetated bare soils thereon; nearly all recent Irish records are from the drying margins of drained raised bogs and it can be abundant on burnt heathlands in Britain. The record from Howth is one of very few from heathland proper in Ireland and is the first record of the species from county Dublin. *Leptothrix hardyi* (Blackwall, 1850) is known from five Irish counties and only seven hectads, including that encompassing Howth. The species was previously collected on the Hill of Howth prior to 1929 by E. O'Mahony (Pack-Beresford, 1929) and has not been recorded there again until now. It is probably under-recorded in Ireland however as it is adult from September to December when less recording of spiders (and invertebrates in general) tends to be carried out. It is usually associated with wet heathland and is more abundant in Britain in the northern half of the country, as is also the case in Ireland. It is uncommon across its European range. *Ozyptila sanctuaria* (O. P.-Cambridge, 1871) is the rarest spider found during the 2019 survey. It is known from only five Irish counties, including Dublin, and only five hectads. It was first recorded in Dublin in 2009 from Bull Island. Some of the other records are also from coastal dunes; Tramore in Waterford and Mornington in Meath.

### **Immature spiders**

Of the 189 immature specimens collected the Lycosidae (wolf spiders) was the most abundant (n=145) family represented (Table 3). Post-partum females carry their hatchlings on their backs and the numerous spiderlings in the traps was probably due a number of such females falling in. The Linyphiidae was the next most abundantly represented family with 23 specimens identified. One specimen could be identified to species, *Araneus diadematus* Clerck, 1757, the common garden spider. In addition four genera, *Drassodes*, *Linyphia/Neriene*, *Ero* and *Trochosa* could be identified from immatures – however these are all represented in Ireland by a number of species so a critical identification could not be made. All four genera are known from adults collected previously at Howth (Appendix 2). The most interesting specimen from the point of view of rarity was an immature male of *L. hardyi* collected during the first session of trapping, showing this species can be active at immature stages.

**Table 3. Immature spiders recorded at Howth during 2019. Taxa not in Table 1 are indicated \***

Family	Species/genus/family	numbers
Araneidae	* <i>Araneus diadematus</i> Clerck, 1757	1
Araneidae	Araneae (not identified to family)	6
Gnaphosidae	* <i>Drassodes</i> sp	3
Linyphiidae	* <i>Linyphia/Neriene</i> sp	1
Linyphiidae	<i>Lepthyphantes sensu lato</i>	9
Linyphiidae	<i>Leptothrix hardyi</i> (Blackwall, 1850)	1
Linyphiidae	Linyphiidae	12
Lycosidae	* <i>Trochosa</i> sp	6
Lycosidae	<i>Pardosa nigriceps</i> (Thorell, 1856)	(4 egg-sacs)
Lycosidae	<i>Pardosa</i> spp	139
Mimetidae	* <i>Ero</i> sp	3
Tetragnathidae	<i>Pachygnatha degeeri</i> Sundevall, 1830	4
Thomisidae	<i>Ozyptila</i> sp	2
Thomisidae	<i>Xysticus</i> sp	2
		<b>189</b>

The range of species collected in 2019 (ND) is short compared with the total list (Appendix 2). This is due primarily to a single collection method, which largely collects ground-dwellers, being utilised. Species living on and amongst taller field-layer vegetation are barely represented. It is notable however, and reflective of the fact that Howth's spider fauna has been rather poorly investigated, that the 2019 survey (ND) and some casual collecting recorded 25 species not previously collected there.

### Harvestmen and pseudoscorpions

Five species of harvestman were collected in the pitfall traps (Table 4). The most interesting of these is *Anelasmocephalus cambridgei* (Westwood, 1874), a small, very dark, mite-like species. It seems to have undergone a very rapid spread through Ireland in recent years where it is now known from fourteen counties (Cawley, 2002, 2012). The records from Howth seem to be the first from county Dublin. The other harvestmen recorded are all common and occur in a range of habitats, however *Megabunus diadema* (Fabricius, 1779) is probably the least anthropophilic of them (represented by a single recent hatchling). *Nemastoma bimaculatum* (Fabricius, 1775) is a small, very abundant species which occurs primarily at ground level. *Paroligolophus agrestis* (Meade, 1855) is also very abundant but occurs in great numbers both at ground level and on tall scrubby vegetation and trees. It is found abundantly in built-up environments. The pseudoscorpion *Chthonius ischnocheles* (Hermann, 1804) is one of the most commonly seen pseudoscorpions in Ireland and occurs in a wide range of habitats.

**Table 4. Harvestmen and pseudoscorpions recorded from Howth during 2019**

Opiliones (Harvestman)	<i>Anelasmocephalus cambridgei</i> (Westwood, 1874)	8
Opiliones (Harvestman)	<i>Megabunus diadema</i> (Fabricius, 1779)	1
Opiliones (Harvestman)	<i>Nemastoma bimaculatum</i> (Fabricius, 1775)	64
Opiliones (Harvestman)	<i>Paroligolophus agrestis</i> (Meade, 1855)	38
Opiliones (Harvestman)	<i>Phalangium opilio</i> L.	2
Pseudoscorpiones	<i>Chthonius ischnocheles</i> (Hermann, 1804)	4

### OTHER NOTEWORTHY SPIDERS FROM HOWTH

A number of notable species have been collected at Howth that were not represented in the ND catch. Many of these were recorded in the late 19<sup>th</sup> (Carpenter, 1898) and early 20<sup>th</sup> century (Pack-Beresford, 1909, 1911, 1920, 1922, 1924, 1929). Collections by MN in 2004 and 2013 and by AM in May 2019 added further species of significant conservation interest. These collections, in addition to the 2019 survey (ND – which added 23 species), shows that 95 spider species in total have been recorded from Howth head (Appendix 2) – nearly 23% of the Irish spider fauna. Amongst the notable species are the following: *Cheiracanthium erraticum* (Walckenaer, 1802), *Crustulina sticta* (O. P.-Cambridge, 1861), *Dictyna latens* (Fabricius, 1775), *Dipoena inornata* (O. P.-Cambridge, 1861), *Evansia merens* O. P.-Cambridge, 1900, *Halorates reprobus* (O. P.-Cambridge, 1879), *Liocranum rupicola* (Walckenaer, 1830), *Steatoda nobilis* (Thorell, 1875), *Thyreosthenius parasiticus* (Westring, 1851), *Trichoncus saxicola* (O. P.-Cambridge, 1861) and *Xysticus ulmi* (Hahn, 1831). Each of these is discussed below working broadly from the most widespread to the rarest. Many of these species have a rather limited distribution in Ireland, either geographically or with respect to preferred habitat. The large false-widow or noble widow *S. nobilis* which was recorded on the Howth cliffs in 2004 by MN. This spider was first recorded in Ireland in 1997 (Nolan, 2000) and has now been recorded from twenty counties (Cawley, 2001, 2009; Dugon et al., 2017; Nolan, 2002). It is especially widespread in Ireland's southern half where it can be very abundant in built-up areas; that it was found living on the wilder areas of the Howth cliffs however shows that it can survive in habitats that are not man-made. *H. reprobus* is known from fourteen Irish counties and some nineteen hectads but is noteworthy as a species that is largely restricted to coastal habitats where it occurs on dunes, amongst stones and on saltmarsh. It has been collected on dune systems around Dublin previously. *D. latens* (Fabricius, 1775) is known from ten counties (c. twenty hectads) and *C. erraticum* (Walckenaer, 1802) is known from ten counties (c. fourteen hectads); both species are quite strongly anthropophobic and the former is essentially confined to coastal areas in the southern half of the country where it sets webs on sturdy scrubby vegetation. Less common is *T. parasiticus* (Westring, 1851), known from ten counties and about twelve hectads, a small Linyphiid spider that occurs especially in woodland in association with rotted fallen wood debris. The crab spider *X. ulmi* (Hahn, 1831) is known from six counties and eight hectads and occurs usually in wet heath and fen-type habitats. Another linyphiid species *E. merens* O. P.-Cambridge, 1900 is also known from six counties but only six hectads and is usually found in association with ants.

The four remaining species are amongst the most rarely recorded spiders in Ireland: *L. rupicola* (Walckenaer, 1830) is known from three counties (three hectads) and all records are from coastal stony areas or cliff; Howth (Pack-Beresford, 1911) where it was found in 1909 and 1910; cliffs at Ballyhack, county Wexford (Cawley, 2001) and Inishmore of the Aran Islands (Cawley, 2008). *T.*



*saxicola* (O. P.-Cambridge, 1861) was first recorded in October 1910 by Pack-Beresford (Pack-Beresford, 1911) and was not recorded again until 2004 (Nolan, 2016). It was collected again at Howth by AM in May 2019. It is essentially a southern species in Britain and Europe. There is another recent record from upland wet-heath/blanket bog near Kippure in Co. Wicklow (Wisdom, 2010) though unfortunately a voucher specimen is not available. These are the only two hectads from which the species has been recorded in Ireland to date but Howth is the only known area in Ireland where a breeding population persists. *C. sticta* (O. P.-Cambridge, 1861) also is known from only two counties and two hectads. It was first recorded in Ireland in 1981 from a marshy/slack area of Bull Island (Snazell, 1984) but has not been recorded there since. On various dates in 2004 a number of specimens were collected by MN from *Calluna* on Howth and on cliffs leading from Bray to Greystones in Co. Wicklow in 2014 (Nolan, 2014). The species was collected again at Howth by AM in May 2019. This small Theridiid spider builds scaffold/tangle-type webs low in vegetation and at the base of *Calluna* plants. *D. inornata* is another very rare spider of which there are only two Irish records; there is some uncertainty about the provenance of the earlier of these. The certain record is of a specimen collected in the Burren in 1969 (Mackie & Millidge, 1969). The earlier record is noted by Carpenter (1898) and assigned to 'Leinster?' on foot of the fact that it forms an element of the Templeton collection in the Natural History Museum, Dublin. As Carpenter writes, Templeton's material came largely from Dublin, Meath and Wicklow. The collection of the species from Howth by AM lends plausibility to Carpenter's assumptions and verifies the species' presence in Leinster. The typical habitat in which this species is found in Britain is lowland heath and coastal grassland. Of the rarer species noted from Howth, six have Nationally Scarce status in Britain *C. sticta*, *D. inornata*, *E. merens*, *L. hardyi*, *L. rupicola*, *S. celans* and *X. sabulosus* while *T. saxicola* is deemed Vulnerable according to IUCN conventions (Harvey *et al.* 2016).

## CONCLUSIONS

A number of notably rare and uncommon spiders are found on Howth head in association with a number of habitat types. Undoubtedly the most important habitat types are the heathlands dominated by *Calluna/Erica* and the insolated cliff-faces. Some of the rarest species recorded in 2019 were associated with the former, including the Linyphiid *L. hardyi* and the two crab spiders *O. sanctuaria* and *X. sabulosus*. Other uncommon species were also recorded from *Calluna/Erica* dominated heath including *S. celans* and *P. monticola*. Other rarities are strongly associated with open, low-sward habitat with some exposed or stony soils and stony poorly vegetated cliff-face e.g. *E. merens*, *L. rupicola* and with wet or dry heathlands *C. erraticum*, *C. sticta* and *X. ulmi*. *T. saxicola* is more usually associated with tall grassland (and it was from this kind of habitat that the specimen was collected on Howth in 2004 (Nolan, 2016) in Britain, but also occurs there on 'heather' dominated and other heathland types.

Discrete patches of *Ulex* dominated scrub serve to augment the total range of species living and breeding on Howth head. Species such as *H. helveola* and *D. latens* depend on taller vegetation to provide shaded habitat and locations for their webs. A range of other (often common) species not trapped during the 2019 survey (due to the late period in the year when it was carried out) make use of this habitat including *Philodromus* spp, *Phylloneta* spp, *Neottiura bimaculata* (Linnaeus, 1767), *Anelosimus vittatus* (C. L. Koch, 1836) and a range of species from the Linyphiidae.

Heathland characterised by a mosaic of tall *Calluna*, open low sward and bare, stony soils probably constitutes the optimum habitat for many of the rarest spiders known from Howth. Loss of such to management practises or large-scale encroachment of *Ulex* scrub would probably be inimical to their survival.

### MUSEUM SPECIMENS

Specimens of *L. hardyi*, *O. sanctuaria*, *S. celans* and *X. sabulosus* have been retained for inclusion in the collection of the Natural History Museum, Dublin. Registration numbers have been assigned against the species as follows:

Registration number	Species	Location	dates	gender
NMINH:2019.17.1	<i>Leptothrix hardyi</i> (Blackwall, 1850) (Linyphiidae)	Ben of Howth	12/09/2019-30/09/2019	2 males, 1 female
NMINH:2019.17.2	<i>Xysticus sabulosus</i> (Hahn, 1832) (Thomisidae)	Ben of Howth	12/09/2019-30/09/2019	1 male
NMINH:2019.17.3	<i>Ozyptila sanctuaria</i> (O. P.-Cambridge, 1871) (Thomisidae)	Bellinghams Farm	15/09/2019-03/10/2019	1 male
NMINH:2019.17.4	<i>Scotina celans</i> (Blackwall, 1841) (Liocranidae)	East Mountain	14/09/2019-02/10/2019	1 female
Invertebrate survey of Howth Head, Dublin (O23) funded by Fingal County Council. Collected and sorted by Nessa Darcy using pitfall traps set in <i>Calluna/Erica</i> dominated heath. Identified by Myles Nolan				

A small number of other specimens have been retained by the author for research purposes including *Agyneta decora* (O. P.-Cambridge, 1871), *Agyneta subtilis* (O. P.-Cambridge, 1863), *Hahnia helveola* Simon, 1875, *Micaria pulicaria* (Sundevall, 1831), *Pardosa monticola* (Clerck, 1757) and *Scotina gracilipes* (Blackwall, 1859).

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**APPENDICES****APPENDIX 1**

Species collected by Adam Mantell in May 2019. Notable species are indicated \*. Species constituting first records from Howth are indicated †

1	† Clubiona comta C. L. Koch, 1839
2	Clubiona terrestris Westring, 1851
3	* Crustulina sticta (O. P.-Cambridge, 1861)
4	*† Diplocephalus inornata (O. P.-Cambridge, 1861)
5	Drassodes cupreus (Blackwall, 1834)
6	Episinus sp.
7	*† Halorates reprobatus (O. P.-Cambridge, 1879)
8	Harpactea hombergi (Scopoli, 1763)
9	Heliophanus sp
10	Oedothorax gibbosus (Blackwall, 1841)
11	† Pelecopsis nemoralis (Blackwall, 1841)
12	Segestria senoculata (Linnaeus, 1758)
13	Tenuiphantes tenuis (Blackwall, 1852)
14	Tibellus sp
15	* Trichoncus saxicola (O. P.-Cambridge, 1861)
16	Xysticus cristatus (Clerck, 1757)

**APPENDIX 2**

Spider species list for Howth. Species added during the 2019 survey are indicated \*.

#	Family	Species	Trophic level
1	Agelenidae	* <i>Agelena labyrinthica</i> (Clerck, 1757)	Ground/shrub – web
2	Clubionidae	<i>Cheiracanthium erraticum</i> (Walckenaer, 1802)	Ground
3	Clubionidae	<i>Clubiona compta</i> C. L. Koch, 1839	Shrub/tree
4	Clubionidae	<i>Clubiona diversa</i> O. P.-Cambridge, 1862	Field-layer
5	Clubionidae	<i>Clubiona neglecta</i> O. P.-Cambridge, 1862	Ground/ Field-layer
6	Clubionidae	<i>Clubiona reclusa</i> O. P.-Cambridge, 1863	Ground/ Field-layer
7	Clubionidae	<i>Clubiona terrestris</i> Westring, 1851	Ground/ Field-layer
8	Clubionidae	* <i>Clubiona trivialis</i> C. L. Koch, 1843	Field-layer
9	Dictynidae	<i>Dictyna latens</i> (Fabricius, 1775)	Field-layer – web
10	Dysderidae	<i>Dysdera crocata</i> C. L. Koch, 1838	Ground
11	Dysderidae	<i>Harpactea hombergi</i> (Scopoli, 1763)	Ground/ Field-layer/Tree
12	Gnaphosidae	<i>Drassodes cupreus</i> (Blackwall, 1834)	Ground
13	Gnaphosidae	<i>Micaria pulicaria</i> (Sundevall, 1831)	Ground
14	Gnaphosidae	<i>Zelotes latreillei</i> (Simon, 1878)	Ground
15	Hahniidae	<i>Hahnia helveola</i> Simon, 1875	Ground
16	Hahniidae	<i>Hahnia montana</i> (Blackwall, 1841)	Ground
17	Linyphiidae	<i>Agyneta conigera</i> (O. P.-Cambridge, 1863)	Ground – web
18	Linyphiidae	* <i>Agyneta decora</i> (O. P.-Cambridge, 1871)	Ground – web
19	Linyphiidae	* <i>Agyneta subtilis</i> (O. P.-Cambridge, 1863)	Ground – web
20	Linyphiidae	<i>Baryphyma trifrons</i> (O. P.-Cambridge, 1863)	Ground – web
21	Linyphiidae	<i>Bathypantes gracilis</i> (Blackwall, 1841)	Ground – web
22	Linyphiidae	<i>Centromerita concinna</i> (Thorell, 1875)	Ground – web
23	Linyphiidae	* <i>Ceratinella brevipes</i> (Westring, 1851)	Ground – web
24	Linyphiidae	<i>Ceratinella brevis</i> (Wider, 1834)	Ground – web
25	Linyphiidae	* <i>Dicymbium brevisetosum</i> Locket, 1962	Ground – web
26	Linyphiidae	<i>Entelecara erythropus</i> (Westring, 1851)	Ground – web
27	Linyphiidae	<i>Erigone atra</i> Blackwall, 1833	Ground – web
28	Linyphiidae	* <i>Erigone dentipalpis</i> (Wider, 1834)	Ground – web
29	Linyphiidae	<i>Evansia merens</i> O. P.-Cambridge, 1900	Ground ?
30	Linyphiidae	* <i>Gongylidiellum vivum</i> (O. P.-Cambridge, 1875)	Ground – web
31	Linyphiidae	<i>Halorates reprobus</i> (O. P.-Cambridge, 1879)	Ground ?
32	Linyphiidae	<i>Kaestneria pullata</i> (O. P.-Cambridge, 1863)	Ground/Field-layer – web
33	Linyphiidae	<i>Leptothrix hardyi</i> (Blackwall, 1850)	Ground – web
34	Linyphiidae	<i>Maso sundevalli</i> (Westring, 1851)	Ground – web
35	Linyphiidae	* <i>Meioneta rurestris</i> (C. L. Koch, 1836)	Ground – web
36	Linyphiidae	<i>Microneta viaria</i> (Blackwall, 1841)	Ground – web
37	Linyphiidae	* <i>Monocephalus fuscipes</i> (Blackwall, 1836)	Ground – web
38	Linyphiidae	<i>Neriere montana</i> (Clerck, 1757)	Field-layer – web
39	Linyphiidae	<i>Oedothorax apicatus</i> (Blackwall, 1850)	Ground – web
40	Linyphiidae	* <i>Oedothorax fuscus</i> (Blackwall, 1834)	Ground – web
41	Linyphiidae	* <i>Oedothorax gibbosus</i> (Blackwall, 1841)	Ground (wet) – web
42	Linyphiidae	* <i>Palliduphantes ericaeus</i> (Blackwall, 1853)	Ground – web
43	Linyphiidae	<i>Pelecopsis nemoralis</i> (Blackwall, 1841)	Field-layer/tree
44	Linyphiidae	<i>Peponocranium ludicrum</i> (O. P.-Cambridge, 1861)	Ground/Shrub – web
45	Linyphiidae	* <i>Pocadicnemis pumila</i> (Blackwall, 1841)	Ground – web
46	Linyphiidae	<i>Poeciloneta variegata</i> (Blackwall, 1841)	Ground/Field-layer – web

47	Linyphiidae	* Saaristoia abnormis (Blackwall, 1841)	Ground – web
48	Linyphiidae	* Tapinopa longidens (Wider, 1834)	Ground – web
49	Linyphiidae	* Tenuiphantes flavipes (Blackwall, 1854)	Ground/herb-layer – web
50	Linyphiidae	Tenuiphantes mengei (Kulczyński, 1887)	Ground/herb-layer – web
51	Linyphiidae	Tenuiphantes tenuis (Blackwall, 1852)	Ground/herb-layer – web
52	Linyphiidae	Tenuiphantes zimmermanni (Bertkau, 1890)	Ground/herb-layer – web
53	Linyphiidae	Thyreosthenius parasiticus (Westring, 1851)	Ground – web
54	Linyphiidae	Tiso vagans (Blackwall, 1834)	Ground – web
55	Linyphiidae	Trichoncus saxicola (O. P.-Cambridge, 1861)	Ground/herb – web
56	Linyphiidae	Walckenaeria acuminata Blackwall, 1833	Ground – web
57	Liocranidae	Agroeca proxima (O. P.-Cambridge, 1871)	Ground
58	Liocranidae	Liocranum rupicola (Walckenaer, 1830)	Ground
59	Liocranidae	Scotina celans (Blackwall, 1841)	Ground
60	Liocranidae	* Scotina gracilipes (Blackwall, 1859)	Ground
61	Lycosidae	* Alopecosa pulverulenta (Clerck, 1757)	Ground
62	Lycosidae	Pardosa amentata (Clerck, 1757)	Ground
63	Lycosidae	Pardosa monticola (Clerck, 1757)	Ground
64	Lycosidae	Pardosa nigriceps (Thorell, 1856)	Ground/field-layer
65	Lycosidae	* Pardosa pullata (Clerck, 1757)	Ground
66	Lycosidae	Pirata piraticus (Clerck, 1757)	Ground (wet)
67	Lycosidae	Trochosa terricola Thorell, 1856	Ground
68	Philodromidae	Philodromus aureolus (Clerck, 1757)	Field-layer/tree
69	Philodromidae	Philodromus cespitum (Walckenaer, 1802)	Field-layer/tree
70	Philodromidae	Tibellus oblongus (Walckenaer, 1802)	Field-layer
71	Salticidae	Euophrys frontalis (Walckenaer, 1802)	Ground
72	Salticidae	Heliophanus cupreus (Walckenaer, 1802)	Ground
73	Segestriidae	Segestria senoculata (Linnaeus, 1758)	Ground/tree (trunk) – web
74	Tetragnathidae	Meta menardi (Latreille, 1804)	Cave (troglophile) – web
75	Tetragnathidae	Metellina merianae (Scopoli, 1763)	Cliff/vertical banks – web
76	Tetragnathidae	Pachygnatha degeeri Sundevall, 1830	Ground – web
77	Tetragnathidae	Zygiella atrica (C. L. Koch, 1845)	Field-layer – web
78	Theridiidae	Anelosimus vittatus (C. L. Koch, 1836)	Field-layer – web
79	Theridiidae	Crustulina sticta (O. P.-Cambridge, 1861)	Ground – web
80	Theridiidae	Dipoena inornata (O. P.-Cambridge, 1861)	Ground – web
81	Theridiidae	Enoplognatha ovata (Clerck, 1757)	Field-layer – web
82	Theridiidae	Enoplognatha thoracica (Hahn, 1833)	Ground – web
83	Theridiidae	Episinus angulatus (Blackwall, 1836)	Field-layer – web
84	Theridiidae	Neottiura bimaculata (Linnaeus, 1767)	Field-layer – web
85	Theridiidae	Pholcomma gibbum (Westring, 1851)	Ground/Field-layer – web
86	Theridiidae	Phylloneta impressa (L. Koch, 1881)	Field-layer – web
87	Theridiidae	Phylloneta sisypchia (Clerck, 1757)	Field-layer – web
88	Theridiidae	Robertus arundineti (O. P.-Cambridge, 1871)	Ground/Field-layer – web
89	Theridiidae	Steatoda nobilis (Thorell, 1875)	Cliff/vertical faces – web
90	Theridiidae	Theridion mystaceum L. Koch, 1870	Cliff/vertical faces – web
91	Thomisidae	* Ozyptila sanctuaria (O. P.-Cambridge, 1871)	Ground
92	Thomisidae	Xysticus cristatus (Clerck, 1757)	Ground/Field-layer
93	Thomisidae	* Xysticus sabulosus (Hahn, 1832)	Ground
94	Thomisidae	Xysticus ulmi (Hahn, 1831)	Field-layer
95	Zoridae	* Zora spinimana (Sundevall, 1833)	Ground

**APPENDIX 3**

Trap codes, locations, habitat types and trapping dates that collected spiders, harvestmen and pseudoscorpions

Trap Code	Site	Habitat Type	Date
B1	East Mountain	Bracken	14/09/2019-02/10/2019
B2	East Mountain	Bracken	15/07/2019-29/07/2019
B2	East Mountain	Bracken	14/09/2019-02/10/2019
B3	East Mountain	Bracken	15/07/2019-29/07/2019
B3A	East Mountain	Bracken	13/09/2019-02/10/2019
B4	East Mountain	Bracken	13/09/2019-02/10/2019
B5	Red Rock	Bracken	13/09/2019-03/10/2019
B6	Shielfmartin	Bracken	25/07/2019-09/08/2019
B6	Shielfmartin	Bracken	24/09/2019-11/10/2019
B7	Shielfmartin	Bracken	25/07/2019-09/08/2019
B7	Shielfmartin	Bracken	24/09/2019-11/10/2019
B8	Shielfmartin	Bracken	25/07/2019-09/08/2019
B8	Shielfmartin	Bracken	24/09/2019-11/10/2019
F1	East Mountain	Gorse dominated heathland	15/07/2019-04/08/2019
F1	East Mountain	Gorse dominated heathland	14/09/2019-02/10/2019
F2	Bellinghams Farm	Gorse dominated heathland	15/09/2019-03/10/2019
F3	Bellinghams Farm	Gorse dominated heathland	15/09/2019-03/10/2019
F4	Bellinghams Farm	Gorse dominated heathland	18/07/2019-01/08/2019
F5	Shielfmartin	Gorse dominated heathland	23/07/2019-06/08/2019
F5	Shielfmartin	Gorse dominated heathland	24/09/2019-11/10/2019
F6	Ben of Howth	Gorse dominated heathland	21/07/2019-04/08/2019
F6+A	Ben of Howth	Gorse dominated heathland	12/09/2019-30/09/2019
F8	Red Rock	Gorse dominated heathland	23/07/2019-06/08/2019
F8	Red Rock	Gorse dominated heathland	15/09/2019-03/10/2019
F9	Shielfmartin	Gorse dominated heathland	24/09/2019-11/10/2019
F10	Shielfmartin	Gorse dominated heathland	25/07/2019-09/08/2019
F10	Shielfmartin	Gorse dominated heathland	24/09/2019-11/10/2019
G1	East Mountain	Grassland	15/07/2019-29/07/2019
G1A	East Mountain	Grassland	14/09/2019-02/10/2019
G2	East Mountain	Grassland	14/09/2019-02/10/2019
G3	Red Rock	Grassland	23/07/2019-06/08/2019
G4	Red Rock	Grassland	23/07/2019-06/08/2019
G5	Red Rock	Grassland	24/09-2019-08/10/2019
G6	Red Rock	Grassland	18/07/2019-01/08/2019
G6	Red Rock	Grassland	15/09/2019-08/10/2019
G7	Red Rock	Grassland	15/09/2019-03/10/2019
G8	Bellinghams Farm	Grassland	18/07/2019-01/08/2019
G8	Bellinghams Farm	Grassland	15/09/2019-03/10/2019
G9	Red Rock	Grassland	25/07/2019-09/08/2019
G9	Red Rock	Grassland	15/09/2019-03/10/2019
H1	Ben of Howth	Heather dominated heath	21/07/2019-04/08/2019
H1	Ben of Howth	Heather dominated heath	12/09/2019-30/09/2019
H2	Ben of Howth	Heather dominated heath	21/07/2019-04/08/2019
H2	Ben of Howth	Heather dominated heath	12/09/2019-30/09/2019
H3	East Mountain	Heather dominated heath	15/07/2019-29/07/2019
H3A	East Mountain	Heather dominated heath	14/09/2019-02/10/2019
H4	East Mountain	Heather dominated heath	15/07/2019-29/07/2019
H4A	East Mountain	Heather dominated heath	13/09/2019-02/10/2019
H5	East Mountain	Heather dominated heath	15/07/2019-29/07/2019
H5A	East Mountain	Heather dominated heath	13/09/2019-02/10/2019
H6	East Mountain	Heather dominated heath	15/07/2019-29/07/2019



H6A	East Mountain	Heather dominated heath	13/09/2019-02/10/2019
H7	East Mountain	Heather dominated heath	13/09/2019-02/10/2019
H8	East Mountain	Heather dominated heath	21/07/2019-04/08/2019
H8A	East Mountain	Heather dominated heath	13/09/2019-02/10/2019
H9	Ben of Howth	Heather dominated heath	21/07/2019-04/08/2019
H9	Ben of Howth	Heather dominated heath	12/09/2019-30/09/2019
H10	Ben of Howth	Heather dominated heath	21/07/2019-04/08/2019
H10	Ben of Howth	Heather dominated heath	12/09/2019-30/09/2019
H11	Ben of Howth	Heather dominated heath	21/07/2019-04/08/2019
H11	Ben of Howth	Heather dominated heath	12/09/2019-30/09/2019
H12	Bellinghams Farm	Heather dominated heath	18/07/2019-01/08/2019
H12	Bellinghams Farm	Heather dominated heath	15/09/2019-03/10/2019
H13	Shielfmartin	Heather dominated heath	23/07/2019-06/08/2019
H13	Shielfmartin	Heather dominated heath	24/09/2019-11/10/2019
H14	Shielfmartin	Heather dominated heath	25/07/2019-09/08/2019
H14	Shielfmartin	Heather dominated heath	24/09/2019-11/10/2019
H15	Shielfmartin	Heather dominated heath	25/07/2019-09/08/2019
H15	Shielfmartin	Heather dominated heath	24/09/2019-11/10/2019
H16	Shielfmartin	Heather dominated heath	25/07/2019-09/08/2019
H16	Shielfmartin	Heather dominated heath	24/09/2019-11/10/2019
H17	Shielfmartin	Heather dominated heath	25/07/2019-09/08/2019
H17	Shielfmartin	Heather dominated heath	24/09/2019-11/10/2019
H18	Shielfmartin	Heather dominated heath	24/09/2019-11/10/2019
SH1	Red Rock	Heath other	18/07/2019-01/08/2019
SH1	Red Rock	Heath other	15/09/2019-03/10/2019
SH2	Red Rock	Heath other	18/07/2019-01/08/2019
SH2	Red Rock	Heath other	15/09/2019-03/10/2019
SH3	Red Rock	Heath other	18/07/2019-01/08/2019
SH3	Red Rock	Heath other	15/09/2019-08/10/2019
SH4	East Mountain	Heath other	21/07/2019-04/08/2019
SH4	East Mountain	Heath other	13/09/2019-02/10/2019
W1	Ben of Howth	Woodland	21/07/2019-04/08/2019
W1	Ben of Howth	Woodland	12/09/2019-30/09/2019
W2	Red Rock	Woodland	23/07/2019-06/08/2019
W3	Red Rock	Woodland	15/09/2019-08/10/2019
W4	Ben of Howth	Woodland	21/07/2019-04/08/2019
W4A	Ben of Howth	Woodland	12/09/2019-30/09/2019

**APPENDIX 4**

Species and number of specimens (M = male; F = female) at each trap location

Species	Trap Code	Site	Date	M	F	tot
<i>Agelena labyrinthica</i>	H10	Ben of Howth	21/07/2019-04/08/2019	1		1
<i>Agroeca proxima</i>	F6 + F6A	Ben of Howth	12/09/2019-30/09/2019	5		5
<i>Agroeca proxima</i>	H1	Ben of Howth	12/09/2019-30/09/2019	7		7
<i>Agroeca proxima</i>	H10	Ben of Howth	12/09/2019-30/09/2019	3		3
<i>Agroeca proxima</i>	H11	Ben of Howth	21/07/2019-04/08/2019	1		1
<i>Agroeca proxima</i>	H13	Shielfmartin	24/09/2019-11/10/2019	1	1	2
<i>Agroeca proxima</i>	H14	Shielfmartin	24/09/2019-11/10/2019	5	1	6
<i>Agroeca proxima</i>	H16	Shielfmartin	24/09/2019-11/10/2019		2	2
<i>Agroeca proxima</i>	H3A	East Mountain	14/09/2019-02/10/2019	5		5
<i>Agroeca proxima</i>	H5A	East Mountain	13/09/2019-02/10/2019	2	2	4
<i>Agroeca proxima</i>	H7	East Mountain	13/09/2019-02/10/2019	1		1
<i>Agyneta decora</i>	G8	Bellinghams Farm	18/07/2019-01/08/2019	1		1
<i>Agyneta decora</i>	H9	Ben of Howth	21/07/2019-04/08/2019		1	1
<i>Agyneta subtilis</i>	F1	East Mountain	15/07/2019-04/08/2019		1	1
<i>Alopecosa pulverulenta</i>	H1	Ben of Howth	21/07/2019-04/08/2019		1	1
<i>Alopecosa pulverulenta</i>	H16	Shielfmartin	25/07/2019-09/08/2019		1	1
<i>Bathyphantes gracilis</i>	F4	Bellinghams Farm	18/07/2019-01/08/2019		4	4
<i>Bathyphantes gracilis</i>	G1	East Mountain	15/07/2019-29/07/2019		1	1
<i>Bathyphantes gracilis</i>	G3	Red Rock	23/07/2019-06/08/2019	1		1
<i>Bathyphantes gracilis</i>	G4	Red Rock	23/07/2019-06/08/2019		1	1
<i>Bathyphantes gracilis</i>	G6	Red Rock	18/07/2019-01/08/2019	7	1	8
<i>Bathyphantes gracilis</i>	G6	Red Rock	15/09/2019-08/10/2019	1	3	4
<i>Bathyphantes gracilis</i>	H18	Shielfmartin	24/09/2019-11/10/2019	1		1
<i>Bathyphantes gracilis</i>	SH2	Red Rock	18/07/2019-01/08/2019		1	1
<i>Bathyphantes gracilis</i>	SH3	Red Rock	18/07/2019-01/08/2019	6	3	9
<i>Bathyphantes gracilis</i>	SH3	Red Rock	15/09/2019-08/10/2019		1	1
<i>Bathyphantes gracilis</i>	W2	Red Rock	23/07/2019-06/08/2019	1		1
<i>Ceratinella brevipes</i>	B7	Shielfmartin	25/07/2019-09/08/2019		1	1
<i>Ceratinella brevipes</i>	F1	East Mountain	15/07/2019-04/08/2019		2	2
<i>Ceratinella brevipes</i>	H9	Ben of Howth	21/07/2019-04/08/2019		1	1
<i>Ceratinella brevis</i>	H13	Shielfmartin	24/09/2019-11/10/2019		1	1
<i>Ceratinella brevis</i>	H14	Shielfmartin	25/07/2019-09/08/2019		1	1
<i>Clubiona trivialis</i>	H8	East Mountain	21/07/2019-04/08/2019	1		1
<i>Dicymbium brevisetosum</i>	B6	Shielfmartin	24/09/2019-11/10/2019	1		1
<i>Dicymbium brevisetosum</i>	G5	Red Rock	24/09-2019-08/10/2019	1		1
<i>Dicymbium brevisetosum</i>	G6	Red Rock	18/07/2019-01/08/2019		1	1
<i>Dicymbium brevisetosum</i>	G6	Red Rock	15/09/2019-08/10/2019	3		3
<i>Dicymbium brevisetosum</i>	G8	Bellinghams Farm	15/09/2019-03/10/2019	1		1
<i>Erigone atra</i>	G4	Red Rock	23/07/2019-06/08/2019	1		1
<i>Erigone atra</i>	G6	Red Rock	18/07/2019-01/08/2019	5		5
<i>Erigone atra</i>	G6	Red Rock	15/09/2019-08/10/2019	2		2
<i>Erigone atra</i>	G8	Bellinghams Farm	18/07/2019-01/08/2019	3	1	4
<i>Erigone atra</i>	H12	Bellinghams Farm	18/07/2019-01/08/2019	1		1
<i>Erigone atra</i>	H12	Bellinghams Farm	15/09/2019-03/10/2019		1	1
<i>Erigone atra</i>	SH1	Red Rock	18/07/2019-01/08/2019	2		2
<i>Erigone atra</i>	SH2	Red Rock	18/07/2019-01/08/2019	1		1
<i>Erigone atra</i>	SH3	Red Rock	18/07/2019-01/08/2019	4		4
<i>Erigone dentipalpis</i>	G6	Red Rock	18/07/2019-01/08/2019	6	1	7
<i>Erigone dentipalpis</i>	G8	Bellinghams Farm	18/07/2019-01/08/2019	4		4
<i>Erigone dentipalpis</i>	SH2	Red Rock	15/09/2019-03/10/2019		1	1
<i>Gongyliidium vivum</i>	F6	Ben of Howth	21/07/2019-04/08/2019	1		1
<i>Gongyliidium vivum</i>	SH3	Red Rock	15/09/2019-08/10/2019		1	1

Hahnia helveola	F1	East Mountain	14/09/2019-02/10/2019	1		1
Hahnia helveola	F10	Shielfmartin	25/07/2019-09/08/2019		1	1
Hahnia helveola	F10	Shielfmartin	24/09/2019-11/10/2019	1		1
Leptothrix hardyi	H11	Ben of Howth	12/09/2019-30/09/2019	1	1	2
Maso sundevalli	H6	East Mountain	15/07/2019-29/07/2019	1		1
Meioneta rurestris	H12	Bellinghams Farm	18/07/2019-01/08/2019		1	1
Micaria pulicaria	B3A	East Mountain	13/09/2019-02/10/2019	1		1
Micaria pulicaria	F8	Red Rock	23/07/2019-06/08/2019	1		1
Monocephalus fuscipes	H17	Shielfmartin	25/07/2019-09/08/2019		1	1
Oedothorax fuscus	G3	Red Rock	23/07/2019-06/08/2019		1	1
Oedothorax fuscus	G6	Red Rock	18/07/2019-01/08/2019	1		1
Oedothorax fuscus	H12	Bellinghams Farm	18/07/2019-01/08/2019	1	1	2
Oedothorax gibbosus	G8	Bellinghams Farm	18/07/2019-01/08/2019		1	1
Oedothorax gibbosus	SH4	East Mountain	21/07/2019-04/08/2019		3	3
Ozyptila sanctuaria	H12	Bellinghams Farm	15/09/2019-03/10/2019	1		1
Pachygnatha degeeri	G6	Red Rock	18/07/2019-01/08/2019	1		1
Pachygnatha degeeri	G6	Red Rock	15/09/2019-08/10/2019	2	1	3
Pachygnatha degeeri	G8	Bellinghams Farm	18/07/2019-01/08/2019	2		2
Pachygnatha degeeri	SH1	Red Rock	15/09/2019-03/10/2019	1	1	2
Palliduphantes ericaeus	F2	Bellinghams Farm	15/09/2019-03/10/2019		1	1
Palliduphantes ericaeus	F4	Bellinghams Farm	18/07/2019-01/08/2019		2	2
Palliduphantes ericaeus	G5	Red Rock	24/09-2019-08/10/2019		2	2
Palliduphantes ericaeus	H18	Shielfmartin	24/09/2019-11/10/2019		1	1
Palliduphantes ericaeus	H6	East Mountain	15/07/2019-29/07/2019		2	2
Palliduphantes ericaeus	SH1	Red Rock	18/07/2019-01/08/2019	3	2	5
Palliduphantes ericaeus	SH1	Red Rock	15/09/2019-03/10/2019	1		1
Palliduphantes ericaeus	G3	Red Rock	23/07/2019-06/08/2019	1		1
Palliduphantes ericaeus	G9	Red Rock	25/07/2019-09/08/2019		1	1
Palliduphantes ericaeus	H3	East Mountain	15/07/2019-29/07/2019	1		1
Pardosa monticola	H4	East Mountain	15/07/2019-29/07/2019		1	1
Pardosa nigriceps	F10	Shielfmartin	25/07/2019-09/08/2019	1		1
Pardosa nigriceps	F6	Ben of Howth	21/07/2019-04/08/2019		1	1
Pardosa nigriceps	H1	Ben of Howth	21/07/2019-04/08/2019		2	2
Pardosa nigriceps	H10	Ben of Howth	21/07/2019-04/08/2019		2	2
Pardosa nigriceps	H11	Ben of Howth	21/07/2019-04/08/2019		2	2
Pardosa nigriceps	H12	Bellinghams Farm	18/07/2019-01/08/2019		1	1
Pardosa nigriceps	H14	Shielfmartin	25/07/2019-09/08/2019		1	1
Pardosa nigriceps	H2	Ben of Howth	12/09/2019-30/09/2019		2	2
Pardosa nigriceps	H3	East Mountain	15/07/2019-29/07/2019		2	2
Pardosa nigriceps	H5	East Mountain	15/07/2019-29/07/2019		2	2
Pardosa nigriceps	H6	East Mountain	15/07/2019-29/07/2019		1	1
Pardosa nigriceps	SH1	Red Rock	18/07/2019-01/08/2019		1	1
Pardosa nigriceps	SH3	Red Rock	18/07/2019-01/08/2019		1	1
Pardosa nigriceps	SH4	East Mountain	21/07/2019-04/08/2019		1	1
Pardosa pullata	G3	Red Rock	23/07/2019-06/08/2019	1	1	2
Pardosa pullata	G6	Red Rock	18/07/2019-01/08/2019	1	1	2
Pardosa pullata	G9	Red Rock	25/07/2019-09/08/2019		1	1
Pardosa pullata	SH1	Red Rock	18/07/2019-01/08/2019		1	1
Pardosa pullata	SH4	East Mountain	21/07/2019-04/08/2019		7	7
Pardosa pullata	SH4	East Mountain	13/09/2019-02/10/2019		1	1
Peponocranium ludicrum	H4	East Mountain	15/07/2019-29/07/2019		1	1
Peponocranium ludicrum	H5	East Mountain	15/07/2019-29/07/2019		1	1
Peponocranium ludicrum	H6	East Mountain	15/07/2019-29/07/2019		1	1
Pocadicnemis pumila	G1	East Mountain	15/07/2019-29/07/2019		1	1
Saaristoa abnormis	B7	Shielfmartin	24/09/2019-11/10/2019	1		1
Scotina celans	H3A	East Mountain	14/09/2019-02/10/2019		1	1
Scotina gracilipes	H16	Shielfmartin	25/07/2019-09/08/2019	1		1
Tapinopa longidens	F1	East Mountain	14/09/2019-02/10/2019	1		1

<i>Tenuiphantes flavipes</i>	F3	Bellinghams Farm	15/09/2019-03/10/2019	1		1
<i>Tenuiphantes tenuis</i>	B6	Shielfmartin	25/07/2019-09/08/2019		1	1
<i>Tenuiphantes tenuis</i>	B7	Shielfmartin	24/09/2019-11/10/2019	1		1
<i>Tenuiphantes tenuis</i>	F10	Shielfmartin	24/09/2019-11/10/2019		1	1
<i>Tenuiphantes tenuis</i>	F4	Bellinghams Farm	18/07/2019-01/08/2019		1	1
<i>Tenuiphantes tenuis</i>	F5	Shielfmartin	23/07/2019-06/08/2019		1	1
<i>Tenuiphantes tenuis</i>	F6 + F6A	Ben of Howth	12/09/2019-30/09/2019		1	1
<i>Tenuiphantes tenuis</i>	G1	East Mountain	15/07/2019-29/07/2019		2	2
<i>Tenuiphantes tenuis</i>	G4	Red Rock	23/07/2019-06/08/2019		2	2
<i>Tenuiphantes tenuis</i>	G9	Red Rock	25/07/2019-09/08/2019		1	1
<i>Tenuiphantes tenuis</i>	H12	Bellinghams Farm	18/07/2019-01/08/2019		3	3
<i>Tenuiphantes tenuis</i>	H12	Bellinghams Farm	15/09/2019-03/10/2019		1	1
<i>Tenuiphantes tenuis</i>	H14	Shielfmartin	24/09/2019-11/10/2019		1	1
<i>Tenuiphantes tenuis</i>	H18	Shielfmartin	24/09/2019-11/10/2019		1	1
<i>Tenuiphantes tenuis</i>	H2	Ben of Howth	21/07/2019-04/08/2019		1	1
<i>Tenuiphantes tenuis</i>	H4	East Mountain	15/07/2019-29/07/2019		1	1
<i>Tenuiphantes tenuis</i>	H8	East Mountain	21/07/2019-04/08/2019		1	1
<i>Tenuiphantes tenuis</i>	SH2	Red Rock	18/07/2019-01/08/2019		3	3
<i>Tenuiphantes tenuis</i>	SH3	Red Rock	18/07/2019-01/08/2019		1	1
<i>Tenuiphantes tenuis</i>	SH4	East Mountain	21/07/2019-04/08/2019		1	1
<i>Tenuiphantes tenuis</i>	W1	Ben of Howth	21/07/2019-04/08/2019		1	1
<i>Tenuiphantes zimmermanni</i>	B2	East Mountain	15/07/2019-29/07/2019	1		1
<i>Tenuiphantes zimmermanni</i>	B6	Shielfmartin	25/07/2019-09/08/2019		1	1
<i>Tenuiphantes zimmermanni</i>	B6	Shielfmartin	24/09/2019-11/10/2019		1	1
<i>Tenuiphantes zimmermanni</i>	B7	Shielfmartin	24/09/2019-11/10/2019	1		1
<i>Tenuiphantes zimmermanni</i>	F10	Shielfmartin	25/07/2019-09/08/2019	1	1	2
<i>Tenuiphantes zimmermanni</i>	F4	Bellinghams Farm	18/07/2019-01/08/2019		2	2
<i>Tenuiphantes zimmermanni</i>	F9	Shielfmartin	24/09/2019-11/10/2019	1	2	3
<i>Tenuiphantes zimmermanni</i>	H17	Shielfmartin	24/09/2019-11/10/2019	3	2	5
<i>Tenuiphantes zimmermanni</i>	W3	Red Rock	15/09/2019-08/10/2019	1		1
<i>Tiso vagans</i>	G3	Red Rock	23/07/2019-06/08/2019	2		2
<i>Tiso vagans</i>	G4	Red Rock	23/07/2019-06/08/2019		1	1
<i>Tiso vagans</i>	G8	Bellinghams Farm	18/07/2019-01/08/2019	1	1	2
<i>Walckenaeria acuminata</i>	B8	Shielfmartin	24/09/2019-11/10/2019	1		1
<i>Walckenaeria acuminata</i>	H14	Shielfmartin	25/07/2019-09/08/2019		1	1
<i>Walckenaeria acuminata</i>	H3	East Mountain	15/07/2019-29/07/2019		1	1
<i>Walckenaeria acuminata</i>	SH4	East Mountain	21/07/2019-04/08/2019		1	1
<i>Xysticus cristatus</i>	H12	Bellinghams Farm	15/09/2019-03/10/2019		1	1
<i>Xysticus sabulosus</i>	H10	Ben of Howth	12/09/2019-30/09/2019	1		1
<i>Zelotes latreillei</i>	G9	Red Rock	25/07/2019-09/08/2019		1	1
<i>Zora spinimana</i>	B3	East Mountain	15/07/2019-29/07/2019	1		1
				129	138	267