An invertebrate survey of Scragh Bog, Co Westmeath

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An invertebrate survey of Scragh Bog, Co Westmeath

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Site list: Scragh Bog SAC (000692)

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Invertebrate survey of Scragh Bog 2015

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Executive Summary

The fauna of Scragh Bog reflects the diverse transitions from groundwater-fed areas of fen to acidic raised mire for which the site was designated as a Special Area of Conservation (SAC).

Lists of invertebrates with comments on notable species in this report, paint a picture of an exceptionally diverse natural landscape supporting a nationally significant fauna. Overall, 480 species were recorded, including 165 beetles, 109 moths and 98 spider species. When compared to earlier surveys and the available lists, the results of this survey have shown that most elements of the fen and wetland fauna are still present. Some additional notable species were found which adds to the information on the site. The conclusion from this study is that, based on the invertebrate fauna, the site remains in favourable conservation status. All the scarce or red-listed mire beetles found in earlier surveys (Hydroporus glabriusculus, Hydroporus scalesianus, Laccornis oblongus, Stenus glabellus) were re-found. An important transition fen species, the ground beetle, Pterostichus aterrimus, now extinct in Britain and declining in Europe, was added to the site list. In addition, 33 specimens of the rare aquatic weevil Bagous lutosus were taken in pitfalls and a single specimen of Acalyptus carpini, for which this is the second Irish record, by sweeping fen vegetation. Overall, the terrestrial beetle fauna of the Bog was found to be somewhat truncated i.e. a small number of fen species were widespread (e.g. Staphylinus erythropterus and Paederus riparius) but the majority were thinly scattered and often difficult to detect.

The other main group of terrestrial predators, the spiders, differed in having a more even distribution and greater biomass. The spider fauna of Scragh Bog is also intact. All the species of an earlier survey were re-found except Porhomma oblitum with the addition of several rare linyphiid spiders including Barympha gowerense and Satilatlas britteni. Carorita limnaea was found to be relatively widespread on the Bog and single adults of Sitticus caricis and Dolomedes fimbriatus were also captured.

A wide range of other invertebrates were recorded. These include the tabanid fly Hybomitra bimaculata which is an addition to the Irish list. The bug Hallodapus rufescens was found in the fen and is only the second modern record of this species in Ireland.
Acknowledgements

The contract was set up by Dr Brian Nelson, Invertebrate Ecologist, NPWS, and the operation of the contract was assisted by Conservation Ranger, Tríona Finnen.

Thanks are due for assistance with the identification of critical species of weevils by Prof Mike Morris and spiders by Peter Harvey. Background information on Irish spiders was kindly supplied by Myles Nolan.
1 Introduction

1.1 Transition mires

Undisturbed transition mires are of increasingly rare occurrence in Europe. The term refers to vegetation that in floristic composition and general ecology reflects a transition between acid bog and alkaline fen, in which surface conditions range from acidic to slightly base-rich i.e. the point of transition from groundwater-fed alkaline fen to ombrotrophic (rain-fed) bog. Scragh Bog is a particularly good example of a wet, actively growing transition fen where disturbance is minimal.

Such habitats have a characteristic fauna as well as flora. However, most invertebrates associated with these sites may also occur in a range of fen and mire types. The exact conditions which predispose invertebrates such as the ground beetle *Pterostichus aterrimus* to occur in transition mires are unknown as are their feeding habits and, for the most part, their life histories.

1.2 Scragh Bog ownership and designation

The greater part of the site was purchased by the Irish Peatland Conservation Council in 1992 with funds generously provided by the Dutch Foundation for the Conservation of Irish Bogs. It was then handed over to the State for management as a Nature Reserve.

The site has since been designated a Special Area of Conservation (SAC). SACs are strictly protected sites designated under the EC Habitats Directive. Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive. The listed habitat types and species are those considered to be most in need of conservation at a European level (excluding birds).

Of the Annex I habitat types and Annex II species, the following occur at Scragh Bog and are listed as a Qualifying Interest for the SAC:

- Transition Mires
- Alkaline Fens
- Slender Green Feather Moss (*Drepanocladus vernicosus*)

Note that the Marsh Fritillary (*Euphydryas aurinia*) is no longer a Qualifying Interest for this SAC. A re-evaluation of the habitat on the site concluded that it is not of large enough extent or of sufficient quality to maintain a large or permanent population.
1.3 Scragh Bog habitats

The site is located about 6 km north-west of Mullingar and occupies a narrow valley running south-east to north-west parallel to the shore of nearby Lough Owel. The site occupies 22.8 ha and varies from planted conifer at the southern end through acid scrub dominated by willows and Downy Birch to transition mire dominated by Black Bog Rush and Long-stalked Yellow Sedge with areas of embryonic raised bog in the middle sections and back again to transition mire at the north end (Figure 1).

Figure 1: Indicative habitat map of Scragh Bog, Co Westmeath. Source NPWS SAC file, dated October 2005.

1.4 Previous knowledge of the invertebrates of Irish fens

The invertebrates of Irish fens are still poorly known as there have been few comprehensive studies. Species that inhabit Irish fens are listed as threatened amongst the water beetles (Foster et al. 2009),
molluscs (Byrne et al. 2009) and dragonflies (Nelson et al. 2010). The insects and spiders of fens have been most studied in Northern Ireland (Nelson and Anderson 1999; Nelson 2005) with some similar work in Co Monaghan which focused on dragonflies and water beetles (Woodrow and Nelson, 2009).

1.5 The 2015 invertebrate survey

Roy Anderson and Adam Mantell were contracted to carry out a survey of invertebrates with particular emphasis on fauna thought to be characteristic of transition mires.

Specific aims were:

- conduct an invertebrate survey at a scale appropriate to the site reflecting the habitats listed for the site
- using appropriate methodology search for the listed species as follows:
- produce a final report detailing the findings
- assess the effects of current management on the invertebrate assemblages
- suggest a monitoring protocol of the target groups and species to assess changes in the ecological status of the reserve

2 Methodology

2.1 Taxonomic groups surveyed

The groups surveyed reflect the interests and skills of the surveyors in this survey. Where invertebrates were collected beyond the skills of the surveyors other workers were consulted e.g. some weevils (Curculionidae) were sent to Prof Mike Morris for comment and/or identification and a few of the more difficult spiders were confirmed by Peter Harvey. The rest have been determined by one of the authors. Coverage was therefore biased towards ground-living and freshwater groups and the Diptera and Hymenoptera in particular were only partly covered. The choice of groups inevitably has to be balance between expertise available and survey time, the influence of weather and the interpretive value of the group.

2.2 Timing of visits and weather

This was decided on the basis of:

- Prevailing weather
- The needs of specific capture technology: pitfall-trapping, light trapping etc.
- The known seasonality within different groups

With two field operatives (hereafter referred to as RA, Roy Anderson and AM, Adam Mantell) plus assistance from NPWS staff (BN, Brian Nelson) there was considered to be sufficient flexibility within the programme to deal with most eventualities.

RA was to take responsibility for collection and/or trapping of all invertebrates except moths (Lepidoptera) and spiders (Araneae). The main focus would be a) field collecting in suitable weather, b) the setting up and collection from pitfall traps. Pitfall traps were assembled on 12 May 2015 along three transects (Fig. 2).

![Figure 2. Pitfall transects A-C operated at Scragh Bog in 2015. A series of ten traps per transect were installed in roughly a north-east to south-west trajectory. Transect A was intercepted by very wet conditions at its south-west end and two traps had to be installed in a line diverging north-west from the main group to avoid this obstacle. AM was primarily concerned with moths and spiders. Moths would be collected by light trapping principally in the woodland to the south of the main site or in woodland edge habitat, supplemented by field collecting. Araneae would be collected primarily by field collecting supplemented by static collecting employing bark wrapping of suitable trees within the bog woodland. BN added expertise in water beetles (Coleoptera), dragonflies and damselflies (Odonata), and true bugs (Heteroptera). These groups were investigated using pond netting, sweeping and beating with field-collected material in critical species retained for later identification.](image-url)
2015 was an unusual year in Ireland notable for the cool, wet and often windy conditions that prevailed (Met Eireann, 2016). The spring and summer were particularly cool especially with late frosts into June and cool daytime conditions especially in July. This will undoubtedly have reduced the populations of many invertebrates. The spring of 2015 was late and cold with persistent northerly winds. Despite this, work on pitfalling began on 12 May. Other activities were, however, delayed because of the weather and plant growth and invertebrate activity were clearly restricted until well into June. After this slow start sampling progressed normally for the rest of spring and summer. Table 1 lists the survey visits by each participant and summarises the weather conditions.

Table 1. Schedule of entomological survey visits to Scragh Bog in 2015 by each participant with brief summary of the weather conditions and recording activity

<table>
<thead>
<tr>
<th>Date</th>
<th>RA</th>
<th>AM</th>
<th>BN</th>
<th>Recorded weather</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 May</td>
<td>12 May</td>
<td>12 May</td>
<td>Cold, very wet afternoon</td>
<td>Pitfall setup; treading vegetation; pond netting</td>
<td></td>
</tr>
<tr>
<td>16 May</td>
<td>Cool, wet</td>
<td>Moss sieving, sweeping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 June</td>
<td>Cool, sunny</td>
<td>Pond netting, sweeping in fen, wooded fen and open pools; field recording for Odonata</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 June</td>
<td>Cool, dry</td>
<td>First pitfall collection, sweeping in fen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 June</td>
<td>Settled, dry</td>
<td>Treading vegetation, in fen, pools visited</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 June</td>
<td>Settled, dry</td>
<td>Bark wrapping, sieving sweeping in fen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 July</td>
<td>Settled, warm, dry</td>
<td>Second pitfall collection, treading/sweeping in fen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 July</td>
<td>Settled, showery</td>
<td>MV light trap &amp; actinic light trap</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 Aug</td>
<td>Dull, warm, settled</td>
<td>Sweeping, treading the full length of the bog</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3 Results

In this section the findings are reported and discussed by taxonomic group. Species and groups of special interest will be discussed individually or collectively in more detail.

Table 2 presents a summary of the number of species recorded in the 2015 survey by taxonomic group. The detailed species data is displayed in Appendix 1 and Appendix 2. Appendix 1 lists species of Coleoptera that have been recorded at Scragh by previous recorders. Appendix 2 gives full details of all the records gathered in this survey. This data has been submitted to the National Biodiversity Data Centre, Waterford and is also held by NPWS.

Table 2. Taxonomic groups surveyed in 2015, species totals and main texts consulted

<table>
<thead>
<tr>
<th>Taxonomic Group</th>
<th>Species total</th>
<th>Text references</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hirudinea (leeches)</td>
<td>3</td>
<td>Elliott &amp; Mann (1979)</td>
</tr>
<tr>
<td>Mollusca (snails &amp; slugs)</td>
<td>22</td>
<td>Cameron (2008); Rowson et al. (2014); Glöer (2002)</td>
</tr>
<tr>
<td>Chilopoda (centipedes)</td>
<td>1</td>
<td>Barber (2008)</td>
</tr>
<tr>
<td>Diplopoda (millipedes)</td>
<td>5</td>
<td>Gordon Blower (1985)</td>
</tr>
<tr>
<td>Isopoda (woodlice)</td>
<td>4</td>
<td>Hopkin (1991)</td>
</tr>
<tr>
<td>Araneae (spiders)</td>
<td>98</td>
<td>Roberts (1985)</td>
</tr>
<tr>
<td>Opiliones (harvestmen)</td>
<td>2</td>
<td>Sankey &amp; Savory (1974)</td>
</tr>
<tr>
<td>Odonata (dragonflies)</td>
<td>6</td>
<td>BDS (2015)</td>
</tr>
<tr>
<td>Dermaptera (earwigs)</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Heteroptera (true bugs)</td>
<td>28</td>
<td>Southwood &amp; Leston (1959); Savage (1989)</td>
</tr>
<tr>
<td>Auchenorrhyncha (leaf hoppers)</td>
<td>1</td>
<td>Lequesne (1965)</td>
</tr>
<tr>
<td>Lepidoptera (butterflies)</td>
<td>5</td>
<td>Manley (2008)</td>
</tr>
<tr>
<td>Lepidoptera (moths)</td>
<td>109</td>
<td>Waring &amp; Townsend (2009); Sterling &amp; Parsons (2012)</td>
</tr>
<tr>
<td>Diptera (true flies)</td>
<td>22</td>
<td>Stubbs &amp; Falk (1983); Stubbs &amp; Drake (2001)</td>
</tr>
<tr>
<td>Symphyta (sawflies)</td>
<td>2</td>
<td>Wright (1990)</td>
</tr>
<tr>
<td>Coleoptera (beetles)</td>
<td>165</td>
<td>Die Käfer Mitteleuropas (ser.) (1964-1989); RES Handbooks (ser.) (various)</td>
</tr>
</tbody>
</table>
3.1 Comparison of current results with previous studies

3.1.1 Spiders (Araneae)

The spider fauna of Scragh Bog was investigated in the 1990s and a list of spiders from the site was provided by Van Helsdingen (1998). His list is here compared with that of the present survey (Table 3) and comment made thereon.

The difference in species recorded between the two surveys is almost certainly down to methodology. The present survey covered peripheral habitats on the bog so a much greater range of micro habitats was sampled, especially woodland, which Van Helsdingen did not sample at all. Pitfall trapping and bark wrappings were also used whereas Van Helsdingen relied exclusively on sweeping, sifting moss and litter and hand collecting. It is therefore to be expected that in the present survey many more species were recorded. The same is actually true for the next comparison, involving beetles (below).

Pleasingly all of the rare species from the 1998 list were re-found except one, *Porromma oblitum*, which was a first Irish record. The *Porromma* genus contains a number of species that are notoriously hard to separate even for very experienced arachnologists using reference specimens, and not surprisingly Van Helsdingen explained his reasoning in some detail in the paper. It is worth noting however that during Van Helsdingen’s survey only a single specimen was found so it was clearly very thinly distributed at the time of his survey. Unfortunately therefore, the current status of this species is hard to ascertain. It could easily still be present at a very low population levels or it could have been lost from the site. It may also have been a failed attempt to colonise the site from another meta-population as linyphiids are capable or travelling long distances by 'ballooning'.

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td><em>Agroeca proxima</em></td>
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<td></td>
</tr>
<tr>
<td><em>Agyneta cauta</em></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td><em>Agyneta subtilis</em></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td><em>Alopecosa pulverulenta</em></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td><em>Antistea elegans</em></td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>
Table 3 Comparison of the lists of spiders from Scragh Bog identified in the present survey (2015) and given in Van Helsdingen (1998) (continued).

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Aphileta misera</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Araeoncus crassiceps</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Araniella cucurbitina</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Argyroneta aquatica</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Barympha gowerense</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Baryphyma trifrons</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Bathyphantes approximatus</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Bathyphantes gracilis</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Bathyphantes parvulus</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Bathyphantes setiger</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Carorita limnaea</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Centromerus arcanus</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Centromerus dilutus</td>
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<td></td>
</tr>
<tr>
<td>Ceratinella brevipes</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Ceratinella scabrosa</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Clubiona comta</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Clubiona diversa</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Clubiona phragmitis</td>
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<tr>
<td>Clubiona reclusa</td>
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<td>+</td>
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<tr>
<td>Clubiona stagnatilis</td>
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<td>+</td>
</tr>
<tr>
<td>Dictyna arundinacea</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Dicymbium nigrum</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Diplocephalus permixtus</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Diplocephalus picinus</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Dismodicus bifrons</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>
Table 3 Comparison of the lists of spiders from Scragh Bog identified in the present survey (2015) and given in Van Helsdingen (1998) (continued).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dolomedes fimbriatus</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Drassodes cupreus</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Drepanotylus uncatus</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Enoplognatha ovata</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Erigone atra</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Erigone dentipalpis</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Erigonella ignobilis</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Ero cambridgei</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Gnathonarium dentatum</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Gonatium rubens</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Gongylidiellum vivum</td>
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<tr>
<td>Haplodrassus signifer</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Hypomma bituberculatum</td>
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<td>+</td>
</tr>
<tr>
<td>Hypomma fulvum</td>
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<tr>
<td>Kaestneria pullata</td>
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</tr>
<tr>
<td>Larinioides cornutus</td>
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<td>+</td>
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<tr>
<td>Leptyphantes leprosus</td>
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<td></td>
</tr>
<tr>
<td>Leptorhoptrum robustum</td>
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</tr>
<tr>
<td>Lophomma punctatum</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Maso sundevalli</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Metellina mengei</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Metellina merianae</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Metopobactrus prominulus</td>
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<td></td>
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<tr>
<td>Micrargus herbigradus</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Microlinyphia impigra</td>
<td>+</td>
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</tr>
</tbody>
</table>
Table 3 Comparison of the lists of spiders from Scragh Bog identified in the present survey (2015) and given in Van Helsdingen (1998) (continued).

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Microlinyphia pusilla</td>
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<td>Minyriolus pusillus</td>
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</tr>
<tr>
<td>Misumena vatia</td>
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<td>+</td>
</tr>
<tr>
<td>Monocephalus fuscipes</td>
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<td></td>
</tr>
<tr>
<td>Neon reticulatus</td>
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<td>+</td>
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<tr>
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Table 3 Comparison of the lists of spiders from Scragh Bog identified in the present survey (2015) and given in Van Helsdingen (1998) (continued).

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<td>Trochosa spinopalpis</td>
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Table 3 Comparison of the lists of spiders from Scragh Bog identified in the present survey (2015) and given in Van Helsdingen (1998) (continued).

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<td><em>Zora spinimana</em></td>
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TOTALS 96 53

GRAND TOTAL (BOTH SURVEYS) 113

A number of new or rare linyphiid spiders are added from the present survey which will be dealt with individually below. There are a number of other species recorded from this site which, if spider distribution in Ireland were better documented, would likely be of some significance in their own right. It is likely that a number of species from this site deserve red listing in Ireland.

Nelson (2005) identified a number of characteristic fen species found during surveys of 30 fens in Counties Armagh, Down and Tyrone. Two spiders, *Pirata piscatorius* and *Trochosa spinipalpis* feature on that multi-taxon list. Both species were found at Scragh Bog during the current survey, albeit with just a single example of *Trochosa spinipalpis*. While *Trochosa spinipalpis* is evidently present at Scragh Bog, it is present at much lower levels than at many of the fens sampled in Nelson (2005).

Other noteworthy points in relation to Nelson (2005) are:

- *Pirata hygrophilus* was the second most common lycosid spider at Scragh Bog, but was not recorded at any of 30 sites in Northern Ireland,

- The number of species recorded at Scragh Bog in the present survey exceeds the total number of species found in all the sites surveyed in the Northern Ireland survey.

There are probably several reasons for these differences. Firstly, sampling techniques differed, with a greater emphasis on hand searching at Scragh Bog. The Northern Ireland survey was exclusively a
pitfall survey. Secondly, Scragh Bog offers a very wide range of hydrological conditions, different vegetation types, gradients from basic conditions to acid that may provide opportunities for many more micro-habitats than at most other fen sites. Less easily explainable however is the absence of two comparatively common species, *Pachygnatha degeeri* and *Larinioides cornutus* which are associated with damp habitats. I can offer no convincing explanation for their absence from this site.

Overall it adds up to a picture of an undisturbed, long established species-diverse site of very high quality for spiders.

*Baryphyma gowerense* (Lockett)

*Baryphyma gowerense* is a Holarctic species (ASE, 2015) with a restricted distribution in Europe centred on the British Isles and Scandinavia. It is an extremely rare spider in a British context, found in just two hectads since 1992. In Ireland there are previous records from 8 Counties, with this record for Westmeath adding a ninth. The species shows a preference for two distinct ecological niches, saltmarsh and fen. There is no evidence to suggest whether there are two distinct ecotypes or whether these two habitat types are interchangeable, the spider may simply have a requirement for high humidity.

*Carorita limnaea* (Crosby & Bishop)

*Carorita limnaea* is a Holarctic species (ASE, 2015) with a widespread distribution in northern Europe, but it is not common anywhere. It was added to the Irish list from Scragh Bog (Van Helsdingen 1998) and has since been found at two sites in Co Armagh. It is equally rare in Britain where three sites are known. It is on the Northern Ireland Priority species list. It is found in mosses especially on *Sphagnum* bog, sometimes in association with *Erica tetralix*, *Eriophorum* and *Vaccinium oxycoccus*.

When Red Lists for spiders are finally prepared in Ireland this species will be a very strong candidate. A very rare species in Ireland, the UK and in the wider European context.

*Centromerus arcanus* (O.P. Cambridge)

A Palaearctic species with a wide distribution across Europe (ASE, 2015). It is a species which appears to have two ecological niches, in mountainous areas and secondly in acidic bogs with trees at lower altitudes amongst moss, leaf litter and pine needles. The reason this species is of significance is that while it is has a rather local westerly and northerly distribution in Britain, it has only two previous county records from Ireland. It may therefore merit Red Listing. The reason for reduced abundance of this species between Ireland and the rest of Europe is not clear.

*Pirata piscatorius* (Clerk)

A Palearctic species that is widespread in Europe but thinly distributed, and a specialist of sphagnum bogs with standing water. Previously recorded from nine Irish Counties, but very local in its
distribution and confined to high quality sphagnum bog habitats. Some evidence of a long term decline in Britain, and although data is lacking, loss of peatland habitats, will undoubtedly have affected Irish populations.

**Hypomma fulvum** (Bösenberg)

Another Palearctic species that is rare across its known range in Europe (ASE, 2015). It is a specialist fen species that is rarely recorded outside that habitat. While it has been recorded from 11 Counties in Ireland, it is nonetheless a significant find due to its wider rarity. In Britain for example it is almost entirely confined to fenland reed beds in the east of England.

**Satilatlas britteni** (Jackson)

Another Palearctic species that is rare across its known European range (ASE, 2015; BSR, 2015). In Britain most records of this species are from the extreme west, although that appears not to be such a strong association in Ireland. Like *Baryphyma gowerense* mentioned above, this spider occurs in saltmarsh and *Sphagnum* bogs. A requirement for high humidity may play a role in determining its distribution. Previously recorded from six vice counties in Ireland, with this record in Westmeath making a seventh.

**Sitticus caricis** (Westring)

Records of this species exist for just two Irish Counties. It has a very local distribution across its range in northern and central Europe. Typically found in among *Molinia* and *Sphagnum* in lowland bogs, and among low vegetation in marshes and fens. *Sitticus caricis* is a Biodiversity Action Plan species in Britain, and given its known distribution in Ireland is a candidate for Red Listing.

### 3.1.2 Beetles (Coleoptera)

A number of visitors (Bilton, 1988; Lott and Foster, 1990; Owen, 1997) have produced faunal lists for Scragh Bog, mainly of beetles. These are combined here and compared with results of the 2015 survey. There are some important differences between the two lists. Only one important species has been recorded by earlier workers but not in the current survey. This is *Philonthus furcifer* which, though widespread and not uncommon in Irish wetlands, does not occur in Britain. One important fen species, *Pterostichus aterrimus*, not seen by earlier visitors was recorded in pitfall traps on the western side of the bog in an area unlikely to have been reached by the casual visitor. It is a substantial addition to the list of specialist transition mire species recorded for the Bog.

During the survey a special attempt was made to find the characteristically very small *H. scalesianus* but the main small dytiscid encountered was *Graptodytes granularis*. *Hydroporus scalesianus* was seen by BN on one occasion whereas *G. granularis* appeared to be widespread on the Bog. The reason for this is unclear. Scragh Bog is unusual in that movement around the Bog by surveyors is greatly impeded by
the immense moss tussocks that have built up over time, with forward movement extremely difficult in some areas (e.g. the raised bog and wet scrub near the centre of the Bog shown in Fig. 1). Direct evidence from at least one earlier visitor (Prof Owen) suggests that visitors may have tended to sample near the easiest point of entry at the south-eastern end (around the walkway, N425588) and not venture far on to the bog surface. During the present survey an attempt was made to sample the whole bog as evenly as possible, and no particular attention was paid to areas around the main access point where some of the more interesting species were recorded.

3.2.3 Hemiptera, Heteroptera (True Bugs)

**Hallodapus rufescens** (Burmeister)

This rare ant-mimic bug is associated with ants and heath vegetation and is very local in Britain ranging from the New Forest in Hampshire to the north-east Highlands of Scotland. In Ireland there are only two prior records, for Clonbrock, Co Galway in 1896 (Halbert, 1898) and Ower, West Galway in August 2006 (Nelson et al., 2015). Its occurrence at Scragh Bog is interesting, in an undistinguished area of transition mire, lacking heather (N42215950). Heathers seen on the bog were *Calluna* which is concentrated on the raised part of the Bog (Fig. 1), and a small scattering of cross-leaved heath *Erica tetralix*. Bell heather *Erica cinerea* was not encountered. More research would be needed to ascertain exactly where it is established and breeding.

3.2.4 Hemiptera, Auchennorhyncha (Plant hoppers and relatives)

**Cixius similis** Kirschbaum

A local species in Ireland but with very little accessible information on its distribution. Alexander (2011) refers to its capture during a survey of St John’s Wood, Roscommon. It is certainly very scarce in Northern Ireland but may be less so in central Ireland.

3.2.5. Lepidoptera (butterflies and moths)

A total of 5 butterflies and 107 moths were recorded during the survey. This includes a number of notable records which are discussed briefly below. The sources for this information are mainly derived from the online Atlases and status categories published through the Moths Ireland web site (MI, 2015), UK Moths (UKM, 2015) and field guides by Sterling et al. (2012) and Waring & Townsend (2009).
**Ancylis geminana (Donovan) [Tortricidae]**

*Ancylis geminana* has a widespread but very local distribution in Ireland, a pattern which is matched in Britain. It feeds on various *Salix* sp. This is perhaps the second record from Co Westmeath.

**Dark Tussock Dicallomera fasicellina (Linnaeus)**

This species is primarily a moorland and coastal species, inhabiting heathland, sand-hills and shingle beaches. In Ireland it is primarily found on acidic peat habitats – bogs and wet heaths – and feeds on heather. It has a restricted distribution, mainly in north Leinster, with an isolated northern occurrence centred on Peatlands Park, in Co Armagh, Northern Ireland. This is Near Threatened on the Irish Red List (Allen et al., 2016).

**Epermenia falciformis Haworth**

Moths Ireland shows just a handful of Irish records and none from Westmeath. However, AM is aware of a small number of as yet unpublished records of this species. Likely to be a recent adventive addition to the Irish list that is expanding its range. It is well distributed in the southern half of England. The larvae feed on wild angelica (*Angelica sylvestris*) or ground-elder (*Aegopodium podagraria*).

**Sallow Kitten Furcula furcula (Clerck)**

Distributed throughout Ireland in a range of habitats but not common. The caterpillars feed on sallow (*Salix*), aspen (*Populus tremula*) and other poplars (*Populus spp.*). Noted on Moths Ireland as scarce in Ireland but assessed as Least Concern on the Irish Red List (Allen et al., 2016). There has been just one previous record from Westmeath.

**Gypsonoma dealbana Frölich**

A species which is widely distributed and reasonably common in Britain, but has few records from Ireland, mostly along the east coast. It is polyphagous, and mainly coastal in distribution. There are no records from Co Westmeath shown on the Moths Ireland maps.

**Beautiful Snout Hypena crassalis (Fabricius)**

This species is thinly distributed across Ireland in suitable habitat (open woodland, moor and heath including wet habitats). Described as scarce but may be reasonably abundant in suitable habitat. It feeds primarily on Bilberry (*Vaccinium myrtillus*). Assessed as Least Concern on the Irish Red List (Allen et al., 2016)

**Small Rivulet Perizoma alchemillata (Linnaeus)**
Scarce in Ireland, it occurs in woodland and open habitats. The larvae feed mainly on the flowers of hemp nettle (*Galeopsis* spp.). This species has notably few records from the Irish Midlands. Assessed as Least Concern on the Irish Red List (Allen *et al.*, 2016)

**Piniphila bifasciana** (Haworth)

A very scarce species in Ireland with a few records from east coastal counties sites. This record is new to Westmeath and the most westerly Irish record reported. It is worth noting that all records are post-2000 so there is a strong possibility that this species is recently adventive in Ireland and is expanding its range. The foodplants are Scots and maritime pines.

**Small Seraphim Pterapherapteryx sexalata** (Retzius)

The preferred habitats of this species are a variety of damp places including fens and marshes. This species is recorded as scarce in Ireland (but was assessed as Least Concern on the Irish Red List (Allen *et al.*, 2016)), but has a pronounced southerly distribution in Britain where it may be more common. Sallow (*Salix*) is the larval foodplant.

**Scallop Shell Hydria undulata** (Linnaeus) (formerly *Rheumaptera undulata*)

A highly distinctive moth, unlikely to be confused with any other British or Irish species. Its preferred habitat is damp open woodland with an undergrowth of bilberry. Larvae have been reported feeding on bilberry and *Salix* sp. The species is categorized as scarce in Ireland though it is widely distributed.

**Lepidoptera on the UK/Northern Irish Priority species list**

In addition to the notable species above, the following are all on the UK/Northern Irish Priority species list by reason of rarity, significant decline, or a significant proportion of international population:

- Garden Tiger *Arctia caja* (Linnaeus)
- Oblique Carpet *Orthonama vittata* (Borkhausen)
- Small Square-spot *Diarsia rubi* (Vieweg)
- Knot Grass *Acronicta rumicis* (Linnaeus)
- Small Phoenix *Ecliptopera silaceata* (Denis & Schiffermüller)
- Buff Ermine *Spilosoma lutea* (Hufnagel)
- White Ermine *Spilosoma lubricipeda* (Linnaeus)
- Dot Moth *Melanchra persicariae* (Linnaeus)

3.2.6 Diptera: Syrphidae (Hoverflies)
**Parhelophilus consimilis** (Malm)

A very local hoverfly usually found near ponds in peaty mires favouring nutrient-poor sites (Ball & Morris, 2014). It is found at suitable habitat throughout Ireland especially in south Clare. A number of specimens apparently of this species were seen on the wing on two occasions (8 July, 13 August) around horsetail fen by the walkway, but were very elusive and difficult to catch. One specimen, a male, was eventually caught and identified as the present species. It formerly was considered Vulnerable in Britain but latest assessment was Nationally Scarce (Ball & Morris, 2014).

**Plate 1**: The wetland hoverfly *Parhelophilus consimilis* (Diptera: Syrphidae), Scragh Bog, Co Westmeath.

Photograph © Roy Anderson

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**3.2.7 Diptera: Tabanidae (Horseflies)**

*Hybomitra bimaculata* (Macquart) **Plate 2**

This large horse fly is widespread and fairly common in southern Britain, becoming much less common in north-west England and the East Highlands of Scotland (Stubbs & Drake, 2001). There are no Irish records. While treading and sweeping very wet *Equisetum* swamp on the west side of the Bog (N42265912, 16 June) a large, freshly emerged tabanid was captured in a tangle of moss. This was keyed out using Stubbs & Drake (2001), to *Hybomitra bimaculata*. This is a first record for Ireland and because of the nature of the record and the site location suggests that this species could have been
overlooked in central Ireland. The voucher specimen for this record will be donated to the National Museum Collection.

Plate 2: The horsefly *Hybomitra bimaculata* (Diptera: Tabanidae), Scragh Bog, Co Westmeath. This is the first Irish record. Photograph © Roy Anderson

3.2.8 Coleoptera (Beetles)

*Acalyptus carpini* (Fabricius) [Curculionidae – a weevil]

According to Alexander (2011) larvae of this weevil inhabit the female catkins of various willows *Salix* spp, and in Britain it is known from fens and bogs rather than woodlands. Its distribution there is scattered in the southern half of England and Wales, but most sites are in the East Anglian fens. One specimen was taken by treading fen vegetation and sweeping, in dense fen vegetation near the eastern fringe of the Bog at N42295920. This is the second Irish record, the first being reported by Alexander (2011) in a survey of St John’s Wood, Co Roscommon. It is clearly rare but may be more widely spread in suitable wet woodland on mires in the midland counties. Would perhaps qualify for red listing and as a rare but characteristic indicator for partially wooded transition mires in Ireland.

*Altica longicollis* (Allard) [Chrysomelidae – a leaf beetle]

Older works use the names *Altica britteni* and *Altica ericeti* but Cox (2007) synonymised these with *A. longicollis* (Allard, 1860). This species is very rare in Ireland with about six records. Localities are:
Gortdirragh, North Kerry (RA, 1996); Big Dog, Lough Navar, Fermanagh (RA, 1992); Reilly Wood, Fermanagh (K.N.A. Alexander, 1992); Crom Castle (K.N.A. Alexander, 1992); Lough Oughter, Cavan (Johnson, 1893). None of these, except Johnson (1893) has previously been published. AM found a total of 8 specimens at sites scattered across the southern half of the open part of the Bog. The species is classified as Nb in Britain and associated with wet raised mire (Hyman in Parsons, 1992). It would certainly qualify for red-listing in Ireland.

**Bagous collignensis** (Herbst) [Curculionidae – a weevil]

Recorded by Prof. Owen from wet moss on the south-east corner of the Bog on 22 May 1993. Some controversy attaches to records of this species (Foster et al., 2009). It is only known with certainty from a W.F. Johnson record for Armagh in 1895. All other records for this species where vouchers could be located are now allocated to *Bagous frit* (Herbst), including several recent records for the Armagh/Down fens (Nelson, 2005). While not entirely discounting the Owen record it should be treated with reserve. The food plant is *Myriophyllum* which was not encountered on the Bog whereas that of *Bagous frit* is bogbean which is abundant on the Bog. *Bagous collignensis* is pRDB3 in Britain but DD (Data Deficient) in Ireland, due to past confusion and the mis-determination of older records.

**Bagous lutosus** (Gyllenhal) [Curculionidae – a weevil] Plate 3

A total of 33 specimens were recorded from the pitfalls and one by hand searching. The food plant is reputed to be *Potamogeton gramineus* (Foster et al., 2009) but this plant is certainly not common on the Bog. The determinations were confirmed by Prof M.G. Morris but at present no explanation of the discrepancy between the species’ common occurrence and scarcity of the supposed food plant is forthcoming. It is possible that the Owen record of *B. collignensis* refers to this species as *Bagous* weevils are notoriously difficult to identify. The present species is pRDB1 in Britain but dd (Data Deficient) in Ireland. There have been several recent reports of *Bagous lutosus* in the midland counties of Ireland (Foster et al., 2009).

**Cyphon punctipennis** Sharp [Scirtidae – a marsh beetle]

The first modern record of this species in Ireland was from Scragh Bog (McCormack, 2006). A single female was taken from sieving moss in tussocks at N423590. It is assessed as nationally scarce in Britain (Foster 2010) and Vulnerable on the water beetle red list for Ireland (Foster et al. 2009).

**Gymnetron beccabungae** (L.) [Curculionidae – a weevil]

This weevil feeds on Brooklime *Veronica beccabungae*, and Marsh Speedwell *Veronica scutellata* both of which occur at Scragh Bog with Brooklime being abundant around the margins. The weevil is widely spread but uncommon in Ireland despite the abundance and wide distribution of its food plants. Its small size and difficulty in identification may, however, have contributed to a perception of rarity.
Invertebrate survey of Scragh Bog 2015

Plate 3: The wetland weevil *Bagous lutosus* (Coleoptera: Curculionidae), Scragh Bog, Co Westmeath.

Photograph © Roy Anderson

*Hydroporus scalesianus* Stephens [Dytiscidae – a diving beetle]

This tiny flightless water beetle is probably less rare in Ireland than anywhere in the rest of Europe and has been found widely across Ireland from Co Down in the north-east, across midland counties to Limerick in the south-west (Foster *et al.* 2015). Foster *et al.* (2009) classified it as Near Threatened, a step up from its first stage assessment of Least Concern, this higher category being justified on its rarity internationally. Recorded at Scragh Bog by several recorders and in 2015 by BN by treading in the flooded moss carpets.

*Hydroporus glabriusculus* Aubé [Dytiscidae – a diving beetle]

This small water beetle has been described (Foster *et al.*, 2015) as confined to undisturbed relict fen and bog systems in Britain and Ireland. It is rare throughout its range in western Europe. It appears to be relatively widespread in the eastern half of Scragh Bog. It was assessed as Endangered in the water beetle red list for Ireland (Foster *et al.* 2009).

*Laccornis oblongus* (Stephens) [Dytiscidae – a diving beetle]

This species is a quintessential fens species found throughout the Armagh/Down interdrumlin fens (Nelson, 2005) and widely in the midland Irish counties (Foster *et al.*, 2015). It appears to be rare at Scragh Bog being recorded by BN on one occasion in 2015. Listed as NT (Near Threatened) on the water beetle red list for Ireland (Foster *et al.* 2009).
Invertebrate survey of Scragh Bog 2015

Malachius bipustulatus (L.) [Malachiidae – a malachite beetle]

The malachite beetle has a reputation for rarity in Ireland. Despite its bright colours it has only been reported three times since 1901, five times if the present site records are included. Nevertheless, it may have been overlooked since a remarkable abundance occurred in Waterstown park by the Liffey west of Dublin during a Bioblitz in May 2011.

Noterus crassicornis (Müller) [Noteridae – a diving beetle]

This is the smaller and rarer of the two Noterus in Ireland and like Laccornis oblongus and Hydroporus scalesianus is much commoner in Ireland than in Britain (Foster et al., 2015). Although designated Nationally Scarce in Britain (Foster 2010) it is classified as of Least Concern in Ireland (Foster et al., 2009). This has not previously recorded from the Bog, but two individuals were swept in or near deep pools on the western side of the Bog. This area is unlikely to have been visited by other recorders because of difficulty of access and the dangers associated with variable thickness in the floating vegetation carpet near the pools.

Pterostichus aterrimus (Herbst) [Carabidae – a ground beetle]

This is an extremely hygrophilous species and confined to particular kinds of wet humus soils in eutrophic or mesotrophic fens. There are no records for raised or blanket (ombrotrophic) bogs, except where peat-cutting has brought about the regeneration of fen conditions. In the absence of human interference it appears able to exist only in the early successional stages of raised bog formation, before contact with mineral-rich ground water is lost i.e. in transition mires. It has not previously been recorded from Scragh Bog which is surprising considering its habitat preferences. Five specimens were caught in pitfall traps on transect B, 10 June – 8 July. Specific grid references are: N42515875 (1); N42495874 (1); N42485874 (2); N42475872 (1). In Britain this species is assessed as Critically Endangered (possibly extinct) on the latest Red List (Telfer 2016).

Stenus glabellus Thomson [Staphylinidae – a rove beetle]

The first record of Stenus glabellus in Britain and Ireland was reported by Lott & Foster (1990) and was made in 1987 and 1989 at Scragh Bog. The site was visited subsequently by Prof. J.A. Owen (1993) and others. Anderson (in Lott & Anderson, 2011) describes it as a species of “floating emergent vegetation characteristic of the early stages of raised bog formation in lake hollows”. A total of five specimens, one male and four females, were found in the survey. The distribution of records suggests a concentration in the middle area of the bog around the periphery of the raised bog section (Fig. 3). The species remains very rare in Ireland known from just two additional sites to Scragh Bog – Ballynafid, Co Westmeath and a site in Co Cavan (Denton & Foster, 2011). Stenus glabellus is endemic to Europe with a relict distribution of sites scattered across Scandinavia, Poland, Germany, the Low Countries and northern France (Lott & Foster 1990). It is unknown from Great Britain.
Figure 3. Distribution of the wetland beetle *Stenus glabellus* (Coleoptera, Staphylinidae) at Scragh Bog, Co Westmeath. Red diamonds indicate present survey and black diamond the possible location from earlier surveys.

**Zyras collaris** (Märkel) [Staphylinidae – a rove beetle]

*Zyras collaris* is rare in Britain and listed as Nb. It is a small colourful staphylinid associated with ants’ nests on bogs. Probably not rare in Ireland with 29 records for the whole of Ireland, but mostly concentrated in the interdrumlin mires of Cos Down and Armagh.

It has not previously been recorded for Scragh Bog. Two individuals were swept from floating vegetation in fen at N424587 and N422592. Together with *Drusilla canaliculata*, which was common across the Bog, it comprises the ant-following community on the Bog. Bog ants were: *Myrmica ruginodis* (common throughout); *Formica lemani* (scattered, locally common); and *Myrmica rubra* (uncommon, bog woodland only) (Appendix II).
4 Discussion and Summary

The fauna of Scragh Bog reflects the diverse transitions from groundwater-fed areas of fen to acidic raised mire present on the bog. Lists of invertebrates with comment on notable species in this report paint a picture of an exceptionally diverse natural landscape. This is certainly true for the spiders but appearances can be deceptive with regard to the other major group of ground predators, the Coleoptera or beetles. The list of beetles (Appendices I and II) appears complete enough in itself but is contradicted by the experience of collecting on the bog surface. This is a rather different experience from that on many other transition mires in Ireland. The word truncated is apposite, with a preponderance of one or two species and a great scarcity of the majority of species. The water beetles (Dytiscidae, Hydrophilidae) are diverse enough but present only sparingly with, for example, the normally ubiquitous *Anacaena* spp seemingly absent from large areas. The field layer with its mix of ground and rove beetles is even stranger. The only aleocharine staphylinids found widely in the bog during the survey were *Atheta graminicola* (scarce) and *Ocyusa picina* with the ant follower *Drusilla canaliculata* occasional in pitfall catches. Almost all other species are represented by single records. It took considerable periods of sweeping fen vegetation to get anything coleopterous at all. The ground beetles were also noticeable by their virtual absence with only *Pterostichus gracilis* in the margins of wooded areas and *P. strenuus* and *P. diligens* present with a very occasional specimen of *Agonum fuliginosum* or *A. thoreyi* on the open bog. *Agonum gracile* was not seen at all, nor any of the larger ground beetles except *Pterostichus aterrimus* which was caught very sparingly in pitfalls. The only staphylinids that could be described as common were, rather surprisingly, *Staphylinus erythropterus* and *Paederus riparius*.

How to explain this? It is certainly not due to any lack of quality in the habitat but perhaps more to do with the availability of critical nutrients. It was noticeable that the ubiquitous water louse *Asellus aquaticus* was relatively scarce everywhere and specimen size was noticeably reduced compared to comparable sites. Freshwater snails were also much reduced in size and abundance, although calcium is unlikely to have been a limiting factor. This might be connected to the available food supply, mainly freshwater macrophytes, which were also scarce and low in biomass. So then, a mossy fen with a limited range of nutrients and of macrophytes, except on the margins where there is runoff from nearby agricultural land.

It was noticeable that algal growth was present in many pool areas of the middle and west side of the Bog. In one respect this contradicts observations above, suggesting that eutrophication from surrounding agricultural land is taking place. If so, it does not currently appear to be having a noticeable impact on plant communities in the middle of the bog. Algal growth is usually limited by
phosphorus, a key component in superphosphate enriched fertilisers used for silage swards in dairying enterprises. Such an enterprise exists on the west side of Scragh Bog and may be enriching the site by runoff, particularly from slurry spreading.

These two factors appear contradictory in their effects. A truncated beetle and invertebrate fauna possibly influenced by limited nutrients and/or range and biomass of macrophytes on the Bog. And a new development, potential eutrophication leading to rapid algal growth in some parts of the Bog. These contradictory elements may resolve rapidly in the future changing both the bog landscape and its fauna.

The survey showed that the principal elements of the rare beetle fauna are still present, with a few interesting additions. The discovery of Pterostichus aterrimus and Acalyptus carpini is noteworthy as is the re-recording of Hydroporus glabriusculus, H. scalesianus, Laccornis oblongus and Stenus glabellus. And this is despite comments above about the relative scarcity of beetles on the Bog. On the bog margins the malachite beetle Malachius bipustulatus was seen twice in June. This species is rarely recorded in Ireland and tends to be southern in distribution.

Spiders were for the most part much less scarce than beetles in all compartments within the Bog. This may be explained by the relatively easy movement of aerial plankton on to the Bog because of its long narrow shape, with nutrient restrictions not being so effective in limiting biomass as with other groups. All of the notable species recorded by Van Helsdingen (1998), with the exception of Porhomma oblitum, were re-found and several others discovered for the first time. From a spider perspective Scragh Bog is clearly a long-established, little-disturbed habitat that has acquired and retained a very diverse spider population. It also confirms that the site contains a good variety of micro-habitats in terms of the height and composition of the vegetation, gradients from wet to dry and cool to warm that would be required to support such a variety of arachnid within a relatively small geographic area.

Other fauna recorded tend to back up observations on the lack of beetles. 2015 was certainly a poor year for dragonflies Odonata. The Large Red Damsel Pyrrhosoma nymphula was common in May and June but other damsels failed to appear in any numbers and the Irish Damselfly Coenagrion lunulatum was not seen. Larger species were conspicuous by their absence, with a single record of Brachytron pratense in June and with Libellula quadrimaculata making a brief appearance in mid-July. Other flying insects were similarly scarce. This could have been a reflection of a poor and late start to the season or to the prevailing trophic conditions on the Bog. Hoverflies (Diptera: Syrphidae) were uncommon and not very diverse and no Anasimyia, for instance, were seen. However Parheleophilis consimilis appeared in small numbers from mid-July to mid-August.

It is likely that the site holds many more species of moth (Lepidoptera) than have been recorded. The relatively brief adult lifespan and limits on trapping effort means that only a proportion has been
surveyed. A site like this could reasonably be expected to hold somewhere between 500 to 700 species, but intensive trapping across several years would be necessary to get a fuller picture of the fauna. It is possible to say however that the species list contains several notable finds amongst a good diversity of species and as with other taxonomic groups surveyed is indicative of a high quality site.

**Heteroptera** varied in frequency. *Pachybrachius fracticollis* was common everywhere in May and June. Several other common lygaeids were also recorded early despite the cold spring. *Hebrus ruficeps* occurred at about the same time as *Pachybrachius* but in very low numbers. *Cymus glandicolor* peaked in June but occurred sparingly, and *Acalypta parvula* about the same time, in pitfalls or in the moss. No other tingids were seen. *Drymus brunneus* and *D. sylvaticus* appeared late and *Hallodapus rufescens* was captured once in a pitfall in June/July. Water bugs were mainly seen in or near the ponds at the western side of the bog, but only common species. *Nepa cinerea* was scattered in ground water across the Bog but all specimens were very small, seemingly dwarfed by the oligotrophic conditions.

**Molluscs** were everywhere scarce. The greatest variety occurred at the ponds on the west side of the centre of the Bog and were taken to be relics of former lake conditions. Those living in the transition mire were small or under-developed and scarce e.g. *Stagnicola fuscus* the marsh snail. The usually abundant amber snail *Oxyloma elegans* was almost restricted to *Phragmites* stands in the north of the Bog and specimens were extremely small and under-developed. The transition from open lake conditions to bog with its fluctuating acidity and restricted nutrients is certainly not kind to snails.

A picture is therefore painted of a low nutrient environment with some unexpected imbalances but with the continuing presence of a diverse specialist fauna in what is an ancient and diverse site.

Future requirements for management of the site to maintain the status quo, is examined next.

### 4.1 Future management

Current management of the site could be described as minimum intervention. We agree that the slow evolution of conditions which has been taking place since the early Postglacial should be allowed to continue i.e. a continuation of this policy.

The question of management intervention arises only when external factors intervene to change the internal equilibrium of the site. Gross physical intervention by human agencies has been avoided and placing the site under protection as an SAC will probably secure its long term future in this regard.

A problem has been suggested by the survey work. Algal accumulations observed in surface water at the centre and west of the bog area may signal pollution from outside the site and ultimately cause damage to sensitive communities on the site. The cause of this is at present unknown but farm enterprises on the west shore of the site may be implicated. Some attempt should be made to investigate this further, perhaps by assaying SRP (soluble reactive phosphorus) in the affected waters.
4.2 Future monitoring

Chemical monitoring has been suggested above as a means of determining external pollution threats. This should also be done internally by the monitoring of sensitive invertebrate communities.

Ideally monitoring should take place every six years. It should involve at least two pitfall trapping transects as exemplified in Methodology above for a period of one month in the May-June period. Field collecting transects (three) laterally across the breadth of the site using Treading/Sweep Netting protocols (Methodology, above) should parallel the pitfall exercise at two points in the year, early (May-June) and late (July-August).

This will allow a judgment to be made about the status of a broad section of the fauna in comparison with results in the present survey.
References


### Appendix 1: Historical records of beetles (Coleoptera) recorded from Scragh Bog, Co Westmeath

<table>
<thead>
<tr>
<th>Beetle Name</th>
<th>Family Name</th>
<th>Description</th>
<th>Beetle Name</th>
<th>Family Name</th>
<th>Description</th>
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### Appendix 2: Complete list of invertebrates recorded in the 2015 survey of Scragh Bog, Co Westmeath

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<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
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<th>Comment/niche</th>
<th>Recorder</th>
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<td>Erpobdella octoculata (a leech)</td>
<td>N42105947</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Medium-sized specimen at roots of vegetation.</td>
<td>RA</td>
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<tr>
<td>Erpobdella testacea (a leech)</td>
<td>N42275911</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Swept, deep pool.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td>Haemopis sanguisuga (Horse Leech)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
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<tr>
<td><strong>MOLLUSCA</strong></td>
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<tr>
<td>Acroloxus lacustris (Lake Limpet)</td>
<td>N42275911</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Swept from deep pool.</td>
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<td>Arion ater (Great Black Slug)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>In large tussock.</td>
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<td>Arion ater (Great Black Slug)</td>
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<td>Open moss tussocks.</td>
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<tr>
<td>Arion ater (Great Black Slug)</td>
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<td>Tussocky wooded bog.</td>
<td>RA</td>
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<tr>
<td>Arion ater (Great Black Slug)</td>
<td>N423590</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>6</td>
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<tr>
<td>Arion ater (Great Black Slug)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Arion ater (Great Black Slug)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>70</td>
</tr>
<tr>
<td>Arion distinctus (Common Garden Slug)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Bathymphalus contortus (a ramshorn snail)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Small acid pools.</td>
<td>RA</td>
<td>frequent</td>
</tr>
<tr>
<td>Bathymphalus contortus (a ramshorn snail)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Sweeping fen vegetation.</td>
<td>RA</td>
<td>frequent</td>
</tr>
<tr>
<td>Bathymphalus contortus (a ramshorn snail)</td>
<td>N42275911</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Shallow margins of deep pool.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td>Bathymphalus contortus (a ramshorn snail)</td>
<td>N42235917</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Deep acid pool.</td>
<td>RA</td>
<td>occasional</td>
</tr>
</tbody>
</table>
### Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Bathyomphalus contortus</em> (a ramshorn snail)</td>
<td>N42055955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Tall fen vegetation; shallow water. Swept in pools between moss tussocks/Typha.</td>
<td>RA</td>
<td>occasional</td>
</tr>
<tr>
<td><em>Bithynia tentaculata</em> (a spire snail)</td>
<td>N42215922</td>
<td>16.06.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss tussock.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Cochlicopa lubrica</em> (a moss snail)</td>
<td>N42215922</td>
<td>16.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Tusocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Deroceras invadens</em> (Chestnut Slug)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Deroceras laeve</em> (Marsh Slug)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>12</td>
</tr>
<tr>
<td><em>Deroceras laeve</em> (Marsh Slug)</td>
<td>N423590</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tusocky wooded bog.</td>
<td>RA</td>
<td>10</td>
</tr>
<tr>
<td><em>Deroceras laeve</em> (Marsh Slug)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>14</td>
</tr>
<tr>
<td><em>Deroceras laeve</em> (Marsh Slug)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Deroceras laeve</em> (Marsh Slug)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Deroceras laeve</em> (Marsh Slug)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>59</td>
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<tr>
<td><em>Deroceras laeve</em> (Marsh Slug)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Outflow of small pond.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Euconulus alderi</em> (a glass snail)</td>
<td>N42045955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Euconulus alderi</em> (a glass snail)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Galba truncatula</em> (a pond snail)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Hippaeus complanatus</em> (a ramshorn snail)</td>
<td>N42275911</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>On Riccia , pool margins.</td>
<td>RA</td>
<td>frequent</td>
</tr>
<tr>
<td><em>Limax maximus</em> (Great Grey Slug)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Limax maximus</em> (Great Grey Slug)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Nesovitrea hammonis</em> (a glass snail)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Species Name (Common Name)</td>
<td>Grid Ref</td>
<td>Date</td>
<td>Habitat type</td>
<td>Comment/niche</td>
<td>Recorder</td>
<td>Abundance</td>
</tr>
<tr>
<td>---------------------------</td>
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<td>-------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>----------</td>
<td>-----------</td>
</tr>
<tr>
<td>Nesovitrea hammonis (a glass snail)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, open Sphagnum carpets</td>
<td>Moss pillows with Cladium. Open moss tussocks. Tussocky wooded bog.</td>
<td>RA</td>
<td>3</td>
</tr>
<tr>
<td>Nesovitrea hammonis (a glass snail)</td>
<td>N423590</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td></td>
<td>RA</td>
<td>3</td>
</tr>
<tr>
<td>Nesovitrea hammonis (a glass snail)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td></td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Nesovitrea hammonis (a glass snail)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td></td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Oxyloma elegans (an amber snail)</td>
<td>N42235917</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Very small specimens on vegetation. Open moss tussocks.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td>Oxyloma elegans (an amber snail)</td>
<td>N42105947</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td></td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td>Oxyloma elegans (an amber snail)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td></td>
<td>RA</td>
<td>5</td>
</tr>
<tr>
<td>Pissidium personatum (a pea mussel)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation. Open moss tussocks. Scarce in fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Punctum pygmaeum (a discus snail)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td></td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Radix balthica (Wandering Snail)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Deep acid pool. Small size, by pond with bogbean.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td>Radix balthica (Wandering Snail)</td>
<td>N42235917</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td></td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td>Radix balthica (Wandering Snail)</td>
<td>N42055955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td></td>
<td>RA</td>
<td>occasional</td>
</tr>
<tr>
<td>Radix balthica (Wandering Snail)</td>
<td>N42105947</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Small specimens. Treading shallow fen vegetation.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td>Sphaerium nucleus (an orb mussel)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Outflow of pool. Very scarce in fen vegetation. Small; margins of deep acid pool.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td>Sphaerium nucleus (an orb mussel)</td>
<td>N42235917</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td></td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Stagnicola fuscus (a pond snail)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td></td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td>Stagnicola fuscus (a pond snail)</td>
<td>N42235917</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td></td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td>Stagnicola fuscus (a pond snail)</td>
<td>N42055955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td></td>
<td>RA</td>
<td>occasional</td>
</tr>
<tr>
<td>Stagnicola fuscus (a pond snail)</td>
<td>N42105947</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Small specimens swept from base</td>
<td>RA</td>
<td>occasional</td>
</tr>
</tbody>
</table>
### Invertebrate survey of Scragh Bog 2015

#### Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche of vegetation.</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Valvata cristata</em> (Flat Valve Snail)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Small acid pool.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Valvata cristata</em> (Flat Valve Snail)</td>
<td>N42275911</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Swept, deep pool.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Valvata cristata</em> (Flat Valve Snail)</td>
<td>N42235917</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Deep acid pool.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Vertigo antivertigo</em> (a whorl snail)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td><em>Vertigo antivertigo</em> (a whorl snail)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Zonitoides nitidus</em> (a glass snail)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Zonitoides nitidus</em> (a glass snail)</td>
<td>N42235917</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Margins, deep pool.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Zonitoides nitidus</em> (a glass snail)</td>
<td>N42215922</td>
<td>16.06.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss tussocks.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><strong>CHILOPODA</strong></td>
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<td></td>
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</tr>
<tr>
<td><em>Lithobius borealis</em> (a centipede)</td>
<td>N427985</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Tree trunk wrapping.</td>
<td>AM</td>
<td>1</td>
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</tbody>
</table>

**DIPLOPODA**

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche of vegetation.</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Ommatothorax sabulosus</em> (Striped Millipede)</td>
<td>N42615872</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Under stacked conifer logs.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Ommatothorax sabulosus</em> (Striped Millipede)</td>
<td>N423392</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Ommatothorax sabulosus</em> (Striped Millipede)</td>
<td>N423392</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, open Sphagnum carpets</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>4</td>
</tr>
<tr>
<td><em>Ommatothorax sabulosus</em> (Striped Millipede)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Ommatothorax sabulosus</em> (Striped Millipede)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Ophyiulus pilosus</em> (a julid snake millipede)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>6</td>
</tr>
<tr>
<td><em>Ophyiulus pilosus</em> (a julid snake millipede)</td>
<td>N423390</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Ophyiulus pilosus</em> (a julid snake millipede)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>8</td>
</tr>
<tr>
<td><em>Ophyiulus pilosus</em> (a julid snake millipede)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
</tbody>
</table>
### Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polydesmus angustus (a flat-back millipede)</td>
<td>N42615872</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Under stacked conifer logs.</td>
<td>RA</td>
<td>1 pair</td>
</tr>
<tr>
<td>Polydesmus angustus (a flat-back millipede)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>7</td>
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<tr>
<td>Polydesmus angustus (a flat-back millipede)</td>
<td>N423590</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Polydesmus angustus (a flat-back millipede)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>3</td>
</tr>
<tr>
<td>Polydesmus angustus (a flat-back millipede)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, open Sphagnum carpets</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td>Polydesmus angustus (a flat-back millipede)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>10</td>
</tr>
<tr>
<td>Polydesmus angustus (a flat-back millipede)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td>Polydesmus angustus (a flat-back millipede)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Polydesmus angustus (a flat-back millipede)</td>
<td>N423590</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>9</td>
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<tr>
<td>Polydesmus angustus (a flat-back millipede)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, open Sphagnum carpets</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
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<tr>
<td>Polydesmus angustus (a flat-back millipede)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>18</td>
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<td>Polydesmus angustus (a flat-back millipede)</td>
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<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
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<td>Polydesmus angustus (a flat-back millipede)</td>
<td>N42605890</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping laneway.</td>
<td>RA</td>
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<tr>
<td>Proteroiulus fuscus (Snake Millipede)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
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<tr>
<td>Tachypodoiulus niger (White-legged Snake Millipede)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
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<td>Tachypodoiulus niger (White-legged Snake Millipede)</td>
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<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
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<td>Tachypodoiulus niger (White-legged Snake Millipede)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, open Sphagnum carpets</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
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<tr>
<td>Tachypodoiulus niger (White-legged Snake Millipede)</td>
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<td>Tussocky wooded bog.</td>
<td>RA</td>
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<tr>
<td>Tachypodoiulus niger (White-legged Snake Millipede)</td>
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<td>Mire: valley bog, mosaic</td>
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<td>Tachypodoiulus niger (White-legged Snake Millipede)</td>
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<td>Mire: valley bog, mosaic</td>
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<tr>
<td>Asellus aquaticus (a water slater)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>frequent</td>
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<tr>
<td>Asellus aquaticus (a water slater)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Small acid pools.</td>
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<tr>
<td>Asellus aquaticus (a water slater)</td>
<td>N42275911</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Swept, deep pool.</td>
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<td>Asellus aquaticus (a water slater)</td>
<td>N42055955</td>
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<td>Fen: valley mire, basic</td>
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<td>Asellus aquaticus (a water slater)</td>
<td>N42105947</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
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<td>Oniscus asellus (a woodlouse)</td>
<td>N425587</td>
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<td>Parkland/scattered trees: mixed</td>
<td>Tussocky</td>
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<tr>
<td>Species Name (Common Name)</td>
<td>Grid Ref</td>
<td>Date</td>
<td>Habitat type</td>
<td>Comment/niche</td>
<td>Recorder</td>
<td>Abundance</td>
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<tr>
<td>Oniscus asellus (a woodlouse)</td>
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<td>Mire: valley bog, mosaic</td>
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<td>Philoscia muscorum (a woodlouse)</td>
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<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
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<tr>
<td>Philoscia muscorum (a woodlouse)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
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<tr>
<td>Philoscia muscorum (a woodlouse)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, open Sphagnum carpets</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
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<tr>
<td>Philoscia muscorum (a woodlouse)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
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<tr>
<td>Trichoniscus pusillus (a woodlouse)</td>
<td>N425587</td>
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<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
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<tr>
<td>Trichoniscus pusillus (a woodlouse)</td>
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<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
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<td>ARANEAE</td>
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<tr>
<td>Agroeca proxima (a running foliage spider)</td>
<td>N425587</td>
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<td>Mire: lowland raised bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
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<tr>
<td>Agyneta cauta (a money spider)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: lowland raised bog, moss</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
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<tr>
<td>Agyneta subtilis (a money spider)</td>
<td>N427985</td>
<td>12.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Sieved, deciduous litter.</td>
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<tr>
<td>Agyneta subtilis (a money spider)</td>
<td>N427985</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Sieved from grass/moss.</td>
<td>AM</td>
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<tr>
<td>Agyneta subtilis (a money spider)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
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<tr>
<td>Agyneta subtilis (a money spider)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
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<tr>
<td>Alopecosa pulverulenta (a wolf spider)</td>
<td>N424590</td>
<td>12.05 – 10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td>Antista elegans (a lesser cobweb spider)</td>
<td>N422591</td>
<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Antista elegans (a lesser cobweb spider)</td>
<td>N421594</td>
<td>18.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
<td>AM</td>
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<tr>
<td>Aphileta misera (a money spider)</td>
<td>N422591</td>
<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
<td>AM</td>
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Invertebrate survey of Scragh Bog 2015

Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
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<tbody>
<tr>
<td>Aphileta misera (a money spider)</td>
<td>N421594</td>
<td>18.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
<td>AM</td>
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<tr>
<td>Araeoncus crassiceps (a money spider)</td>
<td>N422591</td>
<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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<td>Araeoncus crassiceps (a money spider)</td>
<td>N422593</td>
<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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<tr>
<td>Araniella cucurbitina (an orb-weaver spider)</td>
<td>N425588</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept from shrub layer (opisthographa).</td>
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</tr>
<tr>
<td>Araniella cucurbitina (an orb-weaver spider)</td>
<td>N424587</td>
<td>17.05.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept.</td>
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<td>Argyroneta aquatica (Water Spider)</td>
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<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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<tr>
<td>Baryphyma gowerense (a money spider)</td>
<td>N422593</td>
<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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<td>Baryphyma gowerense (a money spider)</td>
<td>N424590</td>
<td>12.05 – 10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
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</tr>
<tr>
<td>Bathyphantes approximatus (a money spider)</td>
<td>N422591</td>
<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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<tr>
<td>Bathyphantes approximatus (a money spider)</td>
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<td>18.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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<tr>
<td>Bathyphantes gracilis (a money spider)</td>
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<td>Mire: valley bog, mosaic</td>
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<td>Bathyphantes gracilis (a money spider)</td>
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<td>Treading and sieving vegetation.</td>
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<td>Bathyphantes gracilis (a money spider)</td>
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<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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<td>Bathyphantes gracilis (a money spider)</td>
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<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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### Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
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<tbody>
<tr>
<td><em>Bathyphantes gracilis</em> (a money spider)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
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<td>Open moss tussocks. Treading and sieving vegetation.</td>
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<tr>
<td><em>Bathyphantes setiger</em> (a money spider)</td>
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<td>18.05.15</td>
<td>Mire: valley bog, mosaic</td>
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<tr>
<td><em>Carorita limnaea</em> (a money spider)</td>
<td>N422591</td>
<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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<tr>
<td><em>Carorita limnaea</em> (a money spider)</td>
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<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
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<td><em>Carorita limnaea</em> (a money spider)</td>
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<td>Mire: lowland raised bog, mosaic</td>
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<td><em>Carorita limnaea</em> (a money spider)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Moss pillows with Cladium.</td>
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<tr>
<td><em>Centromerus arcanus</em> (a money spider)</td>
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<td>Mire: lowland raised bog, mosaic</td>
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<td>Fen: valley mire, basic</td>
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<td><em>Centromerus arcanus</em> (a money spider)</td>
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<td><em>Ceratinella brevipes</em> (a money spider)</td>
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<td><em>Ceratinella brevipes</em> (a money spider)</td>
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<td>Mire: lowland raised bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
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<tr>
<td><em>Ceratinella scabrosa</em> (a money spider)</td>
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<td>Mire: lowland raised bog, mosaic</td>
<td>Tussocky wooded bog.</td>
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<td><em>Ceratinella scabrosa</em> (a money spider)</td>
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<td><em>Ceratinella scabrosa</em> (a money spider)</td>
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<td>10.06 – 08.07.15</td>
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<td>Tussocky wooded bog.</td>
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<tr>
<td><em>Clubiona comta</em> (a foliage spider)</td>
<td>N425588</td>
<td>18.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Bark wrappings.</td>
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### Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
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<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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<td><em>Clubiona phragmitis</em> (a foliage spider)</td>
<td>N421594</td>
<td>18.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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</tr>
<tr>
<td><em>Clubiona phragmitis</em> (a foliage spider)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
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</tr>
<tr>
<td><em>Clubiona reclusa</em> (a foliage spider)</td>
<td>N424587</td>
<td>17.05.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept.</td>
<td>AM</td>
<td>2</td>
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<tr>
<td><em>Clubiona stagnatilis</em> (a foliage spider)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
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<tr>
<td><em>Dictyna arundinacea</em> (a mesh webbed spider)</td>
<td>N425588</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept from heather. Treading and sieving vegetation.</td>
<td>AM</td>
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<tr>
<td><em>Dictyna arundinacea</em> (a mesh webbed spider)</td>
<td>N423590</td>
<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
<td>AM</td>
<td>3</td>
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<tr>
<td><em>Dicylbium nigrum</em> (a money spider)</td>
<td>N427585</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Sieved from grass/moss.</td>
<td>AM</td>
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<tr>
<td><em>Dioplocephalus picinus</em> (a money spider)</td>
<td>N427585</td>
<td>12.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Sieved, deciduous litter.</td>
<td>AM</td>
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</tr>
<tr>
<td><em>Dioplocephalus picinus</em> (a money spider)</td>
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<td>16.05.15</td>
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<td>Sieved from grass/moss.</td>
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<tr>
<td><em>Dismodicus bifrons</em> (a money spider)</td>
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<td>17.05.15</td>
<td>Grassland: marshy, lowland</td>
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<tr>
<td><em>Dolomedes fimbriatus</em> (Raft Spider)</td>
<td>N42055955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from shallow ground water.</td>
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<tr>
<td><em>Drassodes cupreus</em> (a ground spider)</td>
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<td>Tussocky wooded bog. Treading and sieving vegetation.</td>
<td>RA</td>
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<tr>
<td><em>Drepanotylus uncatus</em> (a money spider)</td>
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<td>Mire: valley bog, mosaic</td>
<td>Swept.</td>
<td>AM</td>
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</tr>
<tr>
<td><em>Enoplognatha ovata</em> (a comb-footed spider)</td>
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<td>Grassland: marshy, lowland</td>
<td>Swept.</td>
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<tr>
<td><em>Erigone atra</em> (a money spider)</td>
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<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
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<tr>
<td><em>Erigone atra</em> (a money spider)</td>
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<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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### Appendix 2 (cont)

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<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
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<tbody>
<tr>
<td>Erigone atra (a money spider)</td>
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<td><em>Ero cambridgei</em> (a pirate spider)</td>
<td>N423590</td>
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<td>Mire: valley bog, mosaic</td>
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<tr>
<td><em>Ero cambridgei</em> (a pirate spider)</td>
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<td>Gnathonarium dentatum (a money spider)</td>
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<td>Gnathonarium dentatum (a money spider)</td>
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<td>Gonatium rubens (a money spider)</td>
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<tr>
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<td>12.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
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<td>Haplodrassus signifer (a ground spider)</td>
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<tr>
<td>Hypomna bituberculatum (a money spider)</td>
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<tr>
<td>Hypomna bituberculatum (a money spider)</td>
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<td>Hypomna fulvum (a money spider)</td>
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<td>Kaestneria pallata (a money spider)</td>
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<td>Mire: valley bog, mosaic</td>
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<tr>
<td>Kaestneria pallata (a money spider)</td>
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<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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<th>Species Name (Common Name)</th>
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<th>Abundance</th>
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<td>Larinioides cornutus (an orb-weaver spider)</td>
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<td>Grassland: marshy, lowland</td>
<td>Swept.</td>
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<tr>
<td>Larinioides cornutus (an orb-weaver spider)</td>
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<td>18.05.15</td>
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<td>Treading and sieving vegetation.</td>
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<td>Leptophantes leprosus (a money spider)</td>
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<td>16.05.15</td>
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<td>Leptorhoptrum robustum (a money spider)</td>
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<td>Fen: valley mire, basic</td>
<td>Moss pillows with Cladium.</td>
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<tr>
<td>Lophomma punctatum (a money spider)</td>
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<td>Lophomma punctatum (a money spider)</td>
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<td>Maso sundevalli (a money spider)</td>
<td>N425588</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
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<td>AM</td>
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<td>Maso sundevalli (a money spider)</td>
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<td>Sieved from grass/moss.</td>
<td>AM</td>
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<tr>
<td>Maso sundevalli (a money spider)</td>
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<td>17.05.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept.</td>
<td>AM</td>
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<tr>
<td>Maso sundevalli (a money spider)</td>
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<td>Scrub: dense/continuous, neutral</td>
<td>Bark wrappings.</td>
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<td>Maso sundevalli (a money spider)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
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<tr>
<td>Maso sundevalli (a money spider)</td>
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<td>10.06 – 08.07.15</td>
<td>Mire: lowland raised bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td>Maso sundevalli (a money spider)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td>Maso sundevalli (a money spider)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
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<tr>
<td>Metellina mengei (an orb-weaver spider)</td>
<td>N425588</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept, shrub layer.</td>
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<td>16.05.15</td>
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<td>Metellina meriansae (an orb-weaver spider)</td>
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<td>Bark wrappings.</td>
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### Invertebrate survey of Scragh Bog 2015

**Appendix 2 (cont)**

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
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<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
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<tr>
<td><em>Metopobactrus prominulus</em> (a money spider)</td>
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<td>Fen: valley mire, basic</td>
<td>Moss pillows with Cladium.</td>
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<td><em>Metopobactrus prominulus</em> (a money spider)</td>
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<td>Tussocky wooded bog.</td>
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<tr>
<td><em>Microlinyphia pusilla</em> (a money spider)</td>
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<td><em>Minyriolus pusillus</em> (a money spider)</td>
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<td><em>Misumena vatia</em> (a crab spider)</td>
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<td>Scrub: dense/continuous, neutral</td>
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<tr>
<td><em>Monoccephalus fuscipes</em> (a money spider)</td>
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<td>Scrub: dense/continuous, neutral</td>
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<td><em>Nemastoma binaculatum</em> (a harvestman)</td>
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<td>Habitat type</td>
<td>Comment/niche</td>
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<td><em>Nuctenea umbratica</em> (an orb-weaver spider)</td>
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### Appendix 2 (cont)

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<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
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<th>Abundance</th>
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<td>6</td>
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<tr>
<td><em>Pirata tenuitarsis</em> (a wolf spider)</td>
<td>N421594</td>
<td>18.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog. Treading and sieving vegetation.</td>
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<td>16.5.15</td>
<td>Mire: valley bog, mosaic</td>
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<td>16.5.15</td>
<td>Mire: valley bog, mosaic</td>
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<td>16.5.15</td>
<td>Mire: valley bog, mosaic</td>
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<td><em>Pirata tenuitarsis</em> (a wolf spider)</td>
<td>N424590</td>
<td>12.05 – 10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
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<td><em>Pirata tenuitarsis</em> (a wolf spider)</td>
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<td>Fen: valley mire, basic</td>
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<td>RA</td>
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<tr>
<td><em>Pocadicnemis juncea</em> (a money spider)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Mire: lowland raised bog, mosaic</td>
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<td>RA</td>
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<td><em>Pocadicnemis juncea</em> (a money spider)</td>
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<td>Fen: valley mire, basic</td>
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<tr>
<td><em>Pocadicnemis juncea</em> (a money spider)</td>
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<td>12.05 – 10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Moss pillows with Cladium.</td>
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<td>Moss pillows with Cladium.</td>
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<td><em>Pocadicnemis pumila</em> (a money spider)</td>
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<td>Fen: valley mire, basic</td>
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<td>Species Name (Common Name)</td>
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<td>Recorder</td>
<td>Abundance</td>
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<td><em>Pocadicnemis pumila</em> (a money spider)</td>
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<td>Moss pillows with Cladium.</td>
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<tr>
<td><em>Porromma pygmaeum</em> (a money spider)</td>
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<td>16.5.15</td>
<td>Scrub: dense/continuous, neutral</td>
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<td><em>Rilaena triangularis</em> (a harvestman)</td>
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<td><em>Robertus lividus</em> (a comb-footed spider)</td>
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<td>12.05 – 10.06.15</td>
<td>Mire: lowland raised bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
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<tr>
<td><em>Robertus lividus</em> (a comb-footed spider)</td>
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<td>Moss pillows with Cladium.</td>
<td>RA</td>
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<tr>
<td><em>Robertus lividus</em> (a comb-footed spider)</td>
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<td>Open moss tussocks.</td>
<td>RA</td>
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<td><em>Robertus lividus</em> (a comb-footed spider)</td>
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<td>Mire: lowland raised bog, mosaic</td>
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<tr>
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<td><em>Salticus cingulatus</em> (a jumping spider)</td>
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<td><em>Satilatlas britteni</em> (a money spider)</td>
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<td><em>Silometopus elegans</em> (a money spider)</td>
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<td>Mire: lowland raised bog, mosaic</td>
<td>Tussocky wooded bog.</td>
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<td><em>Silometopus elegans</em> (a money spider)</td>
<td>N424590</td>
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<td>Fen: valley mire, basic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
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<td>Moss pillows with Cladium.</td>
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<td>Open moss tussocks.</td>
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<td><em>Sitticus caricis</em> (a jumping spider)</td>
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<td>16.5.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
<td>AM</td>
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<tr>
<td><em>Tallusia experta</em> (a money spider)</td>
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<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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<tr>
<td><em>Tallusia experta</em> (a money spider)</td>
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<td>16.5.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
<td>AM</td>
<td>1</td>
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<td><em>Tallusia experta</em> (a money spider)</td>
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<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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<td><em>Tallusia experta</em> (a money spider)</td>
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<td><em>Tallusia experta</em> (a money spider)</td>
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<td>RA</td>
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<tr>
<td><em>Tapinocyba pallens</em> (a money spider)</td>
<td>N427585</td>
<td>16.5.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Sieved from grass/moss.</td>
<td>AM</td>
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<tr>
<td><em>Taranucnus setosus</em> (a money spider)</td>
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<td>12.05 – 10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Open moss tussocks.</td>
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<td><em>Taranucnus setosus</em> (a money spider)</td>
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<td>Fen: valley mire, basic</td>
<td>Moss pillows with Cladium.</td>
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<td><em>Taranucnus setosus</em> (a money spider)</td>
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<td>10.06 – 08.07.15</td>
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<td>Tussocky wooded bog.</td>
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<tr>
<td><em>Tenuiphantes alacris</em> (a money spider)</td>
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<td>Scrub: dense/continuous, neutral</td>
<td>Bark wrappings.</td>
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<td><em>Tenuiphantes flavipes</em> (a money spider)</td>
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<td><em>Tenuiphantes mengei</em> (a money spider)</td>
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<td>Moss pillows with Cladium.</td>
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<td><em>Tenuiphantes mengei</em> (a money spider)</td>
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<td>Moss pillows with Cladium.</td>
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<td><em>Tenuiphantes tenuis</em> (a money spider)</td>
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<td>Fen: valley mire, basic</td>
<td>Moss pillows with Cladium.</td>
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<tr>
<td><em>Tetragnatha extensa</em> (a long-jawed spider)</td>
<td>N422591</td>
<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
<td>AM</td>
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<tr>
<td><em>Tetragnatha extensa</em> (a long-jawed spider)</td>
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<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
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### Appendix 2 (cont)

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<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
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<th>Recorder</th>
<th>Abundance</th>
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<tr>
<td><em>Tetragnatha extensa</em> (a long-jawed spider)</td>
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<td>Grassland: marshy, lowland</td>
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<td><em>Tetragnatha extensa</em> (a long-jawed spider)</td>
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<td>18.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>AM, Treading and sieving vegetation.</td>
<td>AM</td>
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<tr>
<td><em>Tetragnatha obtusa</em> (a long-jawed spider)</td>
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<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>AM, Swept from shrub layer.</td>
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<tr>
<td><em>Tetragnatha obtusa</em> (a long-jawed spider)</td>
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<td><em>Tetragnatha obtusa</em> (a long-jawed spider)</td>
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<td>AM, Treading and sieving vegetation.</td>
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<td><em>Theridion pallens</em> (a comb-footed spider)</td>
<td>N425588</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
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<td><em>Theridion sisyphium</em> (a comb-footed spider)</td>
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<td>AM</td>
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<td><em>Trichopterna thorelli</em> (a money spider)</td>
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<td>Mire: valley bog, mosaic</td>
<td>AM, Treading and sieving vegetation.</td>
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<td>Fen: valley mire, basic</td>
<td>Open moss tussocks.</td>
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<tr>
<td><em>Trochosa ruricola</em> (a wolf spider)</td>
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<td>Moss pillows with Cladium.</td>
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<td><em>Trochosa terricola</em> (a wolf spider)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Mire: lowland raised bog, mosaic</td>
<td>Tussocky, wooded bog.</td>
<td>RA</td>
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<td>Fen: valley mire, basic</td>
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<td>RA</td>
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<td>N423592</td>
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<td>Fen: valley mire, basic</td>
<td>Moss pillows with Cladium.</td>
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<td><em>Walckenaeria atrotibialis</em> (a money spider)</td>
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<td>RA, Tussocky wooded bog.</td>
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<td>Fen: valley mire, basic</td>
<td>RA, Open moss tussocks.</td>
<td>RA</td>
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<td>N425587</td>
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<td>Tussocky wooded bog.</td>
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</tr>
<tr>
<td>Walckenaeria nudipalpis (a money spider)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: lowland raised bog, mosaic</td>
<td>Sieved from grass/moss.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Walckenaeria vigilax (a money spider)</td>
<td>N427385</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept from heather. Treading and sieving vegetation.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Xysticus cristatus (a crab spider)</td>
<td>N42588</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept from heather. Treading and sieving vegetation.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Xysticus ulmi (a crab spider)</td>
<td>N422591</td>
<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Xysticus ulmi (a crab spider)</td>
<td>N422593</td>
<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Xysticus ulmi (a crab spider)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Zora spinimana (a ghost spider)</td>
<td>N42588</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept, shrub layer.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Zora spinimana (a ghost spider)</td>
<td>N422591</td>
<td>16.05.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading and sieving vegetation.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Zora spinimana (a ghost spider)</td>
<td>N42588</td>
<td>18.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Bark wrappings</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Zora spinimana (a ghost spider)</td>
<td>N42587</td>
<td>12.05 – 10.06.15</td>
<td>Mire: lowland raised bog, mosaic</td>
<td>Tussocky wooded bog. Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Zora spinimana (a ghost spider)</td>
<td>N424590</td>
<td>12.05 – 10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Zora spinimana (a ghost spider)</td>
<td>N424587</td>
<td>10.06 – 08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><strong>ODONATA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Brachytron pratense</em> (Hairy dragonfly)</td>
<td>N42605881</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Flying over fen.</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td><em>Coenagrion pulchellum</em> (Variable Damselfly)</td>
<td>N42605881</td>
<td>08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Flying through Equisetum by walkway.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Coenagrion pulchellum</em> (Variable Damselfly)</td>
<td>N423589</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Flying over fen.</td>
<td>BN</td>
<td>Present</td>
</tr>
</tbody>
</table>
### Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Enallagma cyathigerum</em> (Common Blue Damselfly)</td>
<td>N42605881</td>
<td>08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Flying through Equisetum.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Enallagma cyathigerum</em> (Common Blue Damselfly)</td>
<td>N423592</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>On vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Libellula quadrimaculata</em> (Four-spotted Chaser)</td>
<td>N423592</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Patrolling vegetation.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Libellula quadrimaculata</em> (Four-spotted Chaser)</td>
<td>N42275911</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Shallow margins of deep pool.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Libellula quadrimaculata</em> (Four-spotted Chaser)</td>
<td>N423589</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Flying over fen</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td><em>Pyrrhosoma nymphula</em> (Large Red Damselfly)</td>
<td>N423592</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>On vegetation.</td>
<td>RA</td>
<td>frequent</td>
</tr>
<tr>
<td><em>Sympetrum striolatum</em> (Common Darter)</td>
<td>N42075952</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Among tall fen vegetation.</td>
<td>RA</td>
<td>frequent</td>
</tr>
</tbody>
</table>

**DERMAPTERA**

| *Forficula auricularia* (Common earwig)                         | N42605887 | 16.5.15    | Scrub: dense/continuous, neutral                 | Leaf litter.                        | AM       | 1         |

**HEMIPTERA**

<p>| <em>Acalypta parvula</em> (a lacebug)                                  | N423592   | 10.06 – 08.07.15 | Mire: valley bog, open Sphagnum carpets | Moss pillows with Cladium.           | RA       | 1         |
| <em>Acalypta parvula</em> (a lacebug)                                  | N423592   | 12.05 – 10.06.15 | Mire: valley bog, mosaic                     | Moss pillows with Cladium.           | RA       | 1         |
| <em>Acalypta parvula</em> (a lacebug)                                  | N424590   | 10.06 – 08.07.15 | Mire: valley bog, mosaic                     | Open moss tussocks.                 | RA       | 1         |
| <em>Anthocoris nemoralis</em> (Flower bug)                            | N423589   | 04.06.15    | Fen: valley mire, basic                       | Wood/scrub.                         | BN       | Present   |
| <em>Anthocoris nemorum</em> (Common flower bug)                       | N423589   | 04.06.15    | Fen: valley mire, basic                       | Wood/scrub.                         | BN       | Present   |
| <em>Cymus glandicolor</em> (a stiltbug)                                | N42415907 | 08.07.15   | Fen: valley mire, basic                       | Swept in tall vegetation.           | RA       | several   |
| <em>Cymus glandicolor</em> (a stiltbug)                                | N425586   | 17.06.15   | Grassland: marshy, lowland                    | Swept, marshy meadow.              | AM       | 1         |
| <em>Cymus glandicolor</em> (a stiltbug)                                | N421594   | 17.06.15   | Fen: valley mire, basic                       | Sieving vegetation.                | AM       | 1         |
| <em>Cymus glandicolor</em> (a stiltbug)                                | N42215922 | 16.06.15   | Fen: valley mire, basic                       | Moss tussock.                       | RA       | several   |
| <em>Cymus glandicolor</em> (a stiltbug)                                | N42215922 | 04.06.15   | Fen: valley mire, basic                       | Fen part of site                   | BN       | Present   |
| <em>Dicrphus stachidis</em> (Plant bug)                                | N423589   | 04.06.15   | Fen: valley mire, basic                       | Fen part of site                   | BN       | Present   |
| <em>Drymus brunneus</em> (a ground bug)                               | N42295920 | 13.08.15   | Fen: valley mire, basic                       | Swept from fen vegetation.         | RA       | 1         |
| <em>Drymus sylvaticus</em> (a ground bug)                              | N42605887 | 16.05.15   | Fen Carr Woodland                              | Moss and leaf litter.              | AM       | 1 pair    |</p>
<table>
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<tr>
<th>Species Name (Common Name)</th>
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<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Gerris lacustris</em> (Common pondskater)</td>
<td>N423589</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Fen part of site</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td><em>Haliolopus rufescens</em> (a plantbug or grassbug)</td>
<td>N42215950</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Hebrus ruficeps</em> (Sphagnum bug)</td>
<td>N4222592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Hebrus ruficeps</em> (Sphagnum Bug)</td>
<td>N42335913</td>
<td>16.06.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Hebrus ruficeps</em> (Sphagnum Bug)</td>
<td>N423590</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>4</td>
</tr>
<tr>
<td><em>Hebrus ruficeps</em> (Sphagnum Bug)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>4</td>
</tr>
<tr>
<td><em>Hebrus ruficeps</em> (Sphagnum Bug)</td>
<td>N423592</td>
<td>04.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Mossy mire in flooded hollows.</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td><em>Hesperocorixa linnei</em> (a waterboatman)</td>
<td>N422235917</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Deep acid pool.</td>
<td>RA</td>
<td>frequent</td>
</tr>
<tr>
<td><em>Hesperocorixa linnei</em> (a waterboatman)</td>
<td>N42105947</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from shallow water.</td>
<td>RA</td>
<td>3</td>
</tr>
<tr>
<td><em>Hesperocorixa moesta</em> (a waterboatman)</td>
<td>N42045955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>In small pond with bogbean.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Hesperocorixa moesta</em> (a waterboatman)</td>
<td>N42105947</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from shallow water.</td>
<td>RA</td>
<td>3</td>
</tr>
<tr>
<td><em>Hydrometra stagnorum</em> (a water-measurer)</td>
<td>N4222592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Sweeping fen vegetation.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Hydrometra stagnorum</em> (a water-measurer)</td>
<td>N423589</td>
<td>04.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Mossy mire in flooded hollows..</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td><em>Leptopterna dolabrata</em> (a plantbug or grassbug)</td>
<td>N42586</td>
<td>17.06.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept, marshy meadow.</td>
<td>AM</td>
<td>3</td>
</tr>
<tr>
<td><em>Lygus rugulipennis</em> (Tarnished plant bug)</td>
<td>N423589</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Fen part of site.</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td><em>Microvelia reticulata</em> (A water cricket)</td>
<td>N423589</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Pools.</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td><em>Miris striatus</em> (Fine Streaked Bugkin)</td>
<td>N42405909</td>
<td>08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept in dense vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Nepa cinerea</em> (Water Scorpion)</td>
<td>N42587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Nepa cinerea</em> (Water Scorpion)</td>
<td>N42235917</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Deep acid pool.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Nepa cinerea</em> (Water Scorpion)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Nepa cinerea</em> (Water Scorpion)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>several</td>
</tr>
</tbody>
</table>
## Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
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<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Nepa cinerea</em> (Water Scorpion)</td>
<td>N42105947</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Very small specimen.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Nepa cinerea</em> (Water Scorpion)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Pools.</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td><em>Nepa cinerea</em> (Water Scorpion)</td>
<td>N423589</td>
<td>04.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Notonecta glauca</em> (Common Water-boatman)</td>
<td>N42235917</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Deep acid pool.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Pachybrachius fracticollis</em> (a ground bug)</td>
<td>N42275911</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Shallow outflow of pool.</td>
<td>RA</td>
<td>frequent</td>
</tr>
<tr>
<td><em>Pachybrachius fracticollis</em> (a ground bug)</td>
<td>N42528599</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Pachybrachius fracticollis</em> (a ground bug)</td>
<td>N42385904</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Pachybrachius fracticollis</em> (a ground bug)</td>
<td>N425586</td>
<td>17.06.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept, marshy meadow.</td>
<td>AM</td>
<td>1</td>
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<tr>
<td><em>Pachybrachius fracticollis</em> (a ground bug)</td>
<td>N42365911</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Pachybrachius fracticollis</em> (a ground bug)</td>
<td>N423589</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept fen part of site.</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td><em>Picromerus bidens</em> (a shield bug)</td>
<td>N425589</td>
<td>17.06.15</td>
<td>Heathland: wet dwarf shrub heath, lowland</td>
<td>Swept, wet meadow.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Polymerus palustris</em> (a plantbug or grassbug)</td>
<td>N42295920</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Sigara fossarum</em> (a waterboatman)</td>
<td>N42045955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Small pond with bogbean.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Stenodema calcatrix</em> (a plantbug or grassbug)</td>
<td>N42215922</td>
<td>16.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Moss tussock.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Stenodema calcatrix</em> (a plantbug or grassbug)</td>
<td>N42405909</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Stenodema calcatrix</em> (a plantbug or grassbug)</td>
<td>N4223589</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept fen part of site.</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td><em>Stenodema holsatum</em> (a plantbug or grassbug)</td>
<td>N4223589</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept fen part of site.</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td><em>Stenodema lacigatum</em> (a plantbug or grassbug)</td>
<td>N4223589</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept fen part of site.</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td><em>Velia caprai</em> (Water Cricket)</td>
<td>N4223590</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Zicrona caerulea</em> (a shield bug)</td>
<td>N4235913</td>
<td>16.06.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Zicrona caerulea</em> (a shield bug)</td>
<td>N42295920</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Zicrona caerulea</em> (a shield bug)</td>
<td>N423589</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept fen part of site.</td>
<td>BN</td>
<td>Present</td>
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</table>
### Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
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<tbody>
<tr>
<td><strong>AUCHENOR RHYNCHA</strong></td>
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<tr>
<td>Cixius similis (a lacehopper)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
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<tr>
<td>Cixius similis (a lacehopper)</td>
<td>N423589</td>
<td>04.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Wood/scrub.</td>
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<tr>
<td><strong>LEPIDOPTERA (butterflies)</strong></td>
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<tr>
<td>Anthocharis cardamines (Orange Tip)</td>
<td>N422591</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Field observation.</td>
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<td>Anthocharis cardamines (Orange Tip)</td>
<td>N42605890</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Wooded fen.</td>
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<tr>
<td>Aphantopus hyperantus (Ringlet)</td>
<td>N42605881</td>
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<td>Fen: valley mire, basic</td>
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<tr>
<td>Maniola jurtina (Meadow Brown)</td>
<td>N42605881</td>
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<td>Fen: valley mire, basic</td>
<td>Fen vegetation.</td>
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<tr>
<td>Pieris brassicae (Large White)</td>
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<tr>
<td>Pieris napi (Green-veined White)</td>
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<td>Fen: valley mire, basic</td>
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<tr>
<td><strong>LEPIDOPTERA (moths)</strong></td>
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<tr>
<td>Abrostola trigeminal (Dark Spectacle)</td>
<td>N42565900</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
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<tr>
<td>Abrostola triplasia (Spectacle)</td>
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<td>Acronicta rumicis (Knotgrass)</td>
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<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
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<tr>
<td>Aethes cnicana (a micro-moth)</td>
<td>N42565899</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
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<tr>
<td>Aethes cnicana (a micro-moth)</td>
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<td>Scrub: dense/continuous, neutral</td>
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<td>Aethes cnicana (a micro-moth)</td>
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<td>Scrub: dense/continuous, neutral</td>
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<tr>
<td>Agriphila straminella (a pyralid moth)</td>
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<td>Agriphila tristella (a pyralid moth)</td>
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<tr>
<td>Agriphila tristella (a pyralid moth)</td>
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<tr>
<td>Agrotis exclamationis (Heart and Dart)</td>
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### Appendix 2 (cont)

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<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
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<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
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<tr>
<td>Agrotis exclamationis (Heart and Dart)</td>
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<td>Alcis repandata (Mottled Beauty)</td>
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<tr>
<td>Alcis repandata (Mottled Beauty)</td>
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<tr>
<td>Ancylis geminana (a tortrix moth)</td>
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<td>Anthophila fabriciana (Nettle-tap)</td>
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<td>Apanea monoglypha (Dark Arches)</td>
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<td>Apanea monoglypha (Dark Arches)</td>
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<td>Archips podana (Large Fruit-tree Tortrix)</td>
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<td>Arctia caja (Garden Tiger)</td>
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<td>Autographa pulchrina (Beautiful Golden Y)</td>
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<tr>
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<td>Axyla putris (Flame)</td>
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<td>Biston betularia (Peppered Moth)</td>
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<tr>
<td>Biston betularia (Peppered Moth)</td>
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<td>Scrub: dense/continuous, neutral</td>
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<td>Species Name (Common Name)</td>
<td>Grid Ref</td>
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<td>Comment/niche</td>
<td>Recorder</td>
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<td>Cabera exanthemata (Common Wave)</td>
<td>N42965894</td>
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<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
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<td>Calliteara pudibunda (Pale Tussock)</td>
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<td>17.06.15</td>
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<td>Campaea margaritata (Light Emerald)</td>
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<td>Catoptria margaritella (Pearl-band Grass Veneer)</td>
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<td>Chloroclystis rectangulata (Green Pug)</td>
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<td>Chloroclystis v-ata (V-Pug)</td>
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<td>Chrysoteuchia culmella (Garden Grass-veneer)</td>
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<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
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<td>Chrysoteuchia culmella (Garden Grass-veneer)</td>
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<td>Colostygia pectinataria (Green Carpet)</td>
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<td>Cucullia umbratica (Shark)</td>
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<td>Deilephila elpenor (Elephant Hawk-moth)</td>
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<td>Diachrysia chrysitis (Burnished Brass)</td>
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<td>Scrub: dense/continuous, neutral</td>
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<td>Diaphora mendica (Muslin Moth)</td>
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<td>Diarsia brunnea (Purple Clay)</td>
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<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
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### Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
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<td>Diarsia rubi (Small Square-spot)</td>
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<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
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<td>Diarsia rubi (Small Square-spot)</td>
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<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
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<td>Dicallomera fascelina (Dark Tussock)</td>
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<td>Drepana falcata (Pebble Hook-tip)</td>
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<td>Actinic light trap.</td>
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<td>Elachista argentella (a micro-moth)</td>
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<td>Eligmodonta ziczac (Pebble Prominent)</td>
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<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
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### Invertebrate survey of Scragh Bog 2015

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<td><em>Ochropleura plecta</em> (Flame Shoulder)</td>
<td>N42565895</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>12</td>
</tr>
<tr>
<td><em>Ochropleura plecta</em> (Flame Shoulder)</td>
<td>N42595874</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>15</td>
</tr>
<tr>
<td><em>Olethreutes lacunana</em> (a tortrix moth)</td>
<td>N42595874</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Field obs.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Olethreutes lacunana</em> (a tortrix moth)</td>
<td>N42565897</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Oligia strigalis</em> (Marbled Minor)</td>
<td>N42595874</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Opisthograptis luteolata</em> (Brimstone Moth)</td>
<td>N42965894</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>4</td>
</tr>
<tr>
<td><em>Opisthograptis luteolata</em> (Brimstone Moth)</td>
<td>N42565895</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>20</td>
</tr>
<tr>
<td><em>Opisthograptis luteolata</em> (Brimstone Moth)</td>
<td>N42755853</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>4</td>
</tr>
<tr>
<td><em>Orthonama vittata</em> (Oblique Carpet)</td>
<td>N42965894</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>2</td>
</tr>
<tr>
<td><em>Orthonama vittata</em> (Oblique Carpet)</td>
<td>N42565897</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Ourapteryx sambucaria</em> (Swallow-tailed Moth)</td>
<td>N42565895</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>2</td>
</tr>
<tr>
<td><em>Pandemis cerasana</em> (Barred Fruit-tree Tortrix)</td>
<td>N42565900</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Peribatodes rhomboidaria</em> (Willow Beauty)</td>
<td>N42755853</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Perizoma alchemillata</em> (Small Rivulet)</td>
<td>N42755853</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>2</td>
</tr>
<tr>
<td><em>Phalera bucephala</em> (Buff-tip)</td>
<td>N42565897</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
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</tr>
</tbody>
</table>
### Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Pheosia tremula</em> (Swallow Prominent)</td>
<td>N42565897</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>125w MV light trap.</td>
<td>AM</td>
<td>2</td>
</tr>
<tr>
<td><em>Pheosia tremula</em> (Swallow Prominent)</td>
<td>N42755853</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Piniphila bifasciata</em> (Pine marble)</td>
<td>N42595874</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Pterapherapteryx sexalata</em> (Small Seraphim)</td>
<td>N42565900</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>125w MV light trap.</td>
<td>AM</td>
<td>6</td>
</tr>
<tr>
<td><em>Pterapherapteryx sexalata</em> (Small Seraphim)</td>
<td>N42595874</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>2</td>
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<tr>
<td><em>Rheumaptera undulata</em> (Scallop Shell)</td>
<td>N42595874</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
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<tr>
<td><em>Rheumaptera undulata</em> (Scallop Shell)</td>
<td>N42755853</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Rivula sericalis</em> (Straw Dot)</td>
<td>N42565895</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>125w MV light trap.</td>
<td>AM</td>
<td>3</td>
</tr>
<tr>
<td><em>Scoparia subfuscata</em> (a pyralid moth)</td>
<td>N42595874</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>2</td>
</tr>
<tr>
<td><em>Scopula immutata</em> (Lesser Cream Wave)</td>
<td>N42565900</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>125w MV light trap.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Selenia dentaria</em> (Early Thorn)</td>
<td>N42755853</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Smerinthus ocellata</em> (Eyed Hawk-moth)</td>
<td>N42595874</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Spilonota ocellana</em> (Bud Moth)</td>
<td>N42565899</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>125w MV light trap.</td>
<td>AM</td>
<td>3</td>
</tr>
<tr>
<td><em>Spilosoma lubricipeda</em> (White Ermine)</td>
<td>N42965894</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>9</td>
</tr>
<tr>
<td><em>Spilosoma lubricipeda</em> (White Ermine)</td>
<td>N42565898</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>125w MV light trap.</td>
<td>AM</td>
<td>5</td>
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<tr>
<td><em>Spilosoma lubricipeda</em> (White Ermine)</td>
<td>N42755853</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>2</td>
</tr>
<tr>
<td><em>Spilosoma luteum</em> (Buff Ermine)</td>
<td>N42565897</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>125w MV light trap.</td>
<td>AM</td>
<td>5</td>
</tr>
<tr>
<td><em>Teleiodes proximella</em> (a micro-moth)</td>
<td>N42965894</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Thera britannica</em> (Spruce Carpet)</td>
<td>N42565900</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>125w MV light trap.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Thunatha senex</em> (Round-winged Muslin)</td>
<td>N42565895</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>125w MV light trap.</td>
<td>AM</td>
<td>30+</td>
</tr>
<tr>
<td>Species Name (Common Name)</td>
<td>Grid Ref</td>
<td>Date</td>
<td>Habitat type</td>
<td>Comment/niche</td>
<td>Recorder</td>
<td>Abundance</td>
</tr>
<tr>
<td>---------------------------</td>
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</tr>
<tr>
<td><em>Thumatha senex</em> (Round-winged Muslin)</td>
<td>N42595874</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>10</td>
</tr>
<tr>
<td><em>Tinea semifulvella</em> (a micro-moth)</td>
<td>N42565899</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>125w MV light trap. Actinic light trap.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Xanthorhoe montanata</em> (Silver-ground Carpet)</td>
<td>N42965894</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Actinic light trap.</td>
<td>AM</td>
<td>7</td>
</tr>
<tr>
<td><strong>DIPTERA: RHAGIONIDAE</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><em>Rhagio scolopacea</em> (a snipe fly)</td>
<td>N42525899</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>On tall vegetation near margins.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><strong>DIPTERA: TABANIDAE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Haematopota plavialis</em> (a horse fly)</td>
<td>N425588</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept, bog wood. Swept from deep moss among Equisetum, fen.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Hybomitra binaculata</em> (a horse fly)</td>
<td>N42265912</td>
<td>16.06.15</td>
<td>Fen: valley mire, basic</td>
<td></td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><strong>DIPTERA: STRATIOMYIDAE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Microchrysa cyaneneventris</em> (a soldier fly)</td>
<td>N425588</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept, bog wood.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Nemotelus pantherinus</em> (a soldier fly)</td>
<td>N42415907</td>
<td>08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept in tall vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Oplodontha viridula</em> (a soldier fly)</td>
<td>N42415907</td>
<td>08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept in dense vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Oplodontha viridula</em> (a soldier fly)</td>
<td>N425588</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept, bog wood.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Oplodontha viridula</em> (a soldier fly)</td>
<td>N42105947</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept off Angelica.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><strong>DIPTERA: SYRPHIDAE</strong></td>
<td></td>
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</tr>
<tr>
<td><em>Cheilosia albitarsis</em> (a hoverfly)</td>
<td>N425588</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept, bog wood.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Cheilosia albittarsis</em> (a hoverfly)</td>
<td>N427585</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept, dry wood.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Chrysogaster solstitialis</em> (a hoverfly)</td>
<td>N42405909</td>
<td>08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept in dense vegetation.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td><em>Eristalis arbustorum</em> (a hoverfly)</td>
<td>N42065955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>On Angelica.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Eristalis pertinax</em> (a hoverfly)</td>
<td>N425588</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept, bog wood.</td>
<td>AM</td>
<td>several</td>
</tr>
<tr>
<td><em>Eristalis pertinax</em> (a hoverfly)</td>
<td>N42605881</td>
<td>08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Flowers by Angelica.</td>
<td>RA</td>
<td>frequent</td>
</tr>
<tr>
<td>Species Name (Common Name)</td>
<td>Grid Ref</td>
<td>Date</td>
<td>Habitat type</td>
<td>Comment/niche</td>
<td>Recorder</td>
<td>Abundance</td>
</tr>
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<td>---------------------------------------</td>
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</tr>
<tr>
<td><em>Helophilus pendulus</em> (a hoverfly)</td>
<td>N427585</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept, dry wood.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Leucozona lucorum</em> (a hoverfly)</td>
<td>N427585</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept, dry wood.</td>
<td>AM</td>
<td>2</td>
</tr>
<tr>
<td><em>Leucozona lucorum</em> (a hoverfly)</td>
<td>N42605881</td>
<td>08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Fen vegetation by walkway.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td><em>Melanostoma scalare</em> (a hoverfly)</td>
<td>N425588</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept, bog wood.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Neoascia meticulosa</em> (a hoverfly)</td>
<td>N427585</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept, dry wood.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Neoascia tenur</em> (a hoverfly)</td>
<td>N42405909</td>
<td>08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept in dense vegetation.</td>
<td>RA</td>
<td>1 pair</td>
</tr>
<tr>
<td><em>Parhelophilus consimilis</em> (a hoverfly)</td>
<td>N42605881</td>
<td>08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Fen vegetation by walkway.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Phytomyza attemans</em> (a hoverfly)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Pyrophaena granditarsa</em> (a hoverfly)</td>
<td>N42045955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Among umbels in fen.</td>
<td>RA</td>
<td>frequent</td>
</tr>
<tr>
<td><em>Pyrophaena granditarsa</em> (a hoverfly)</td>
<td>N42075952</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Among tall vegetation.</td>
<td>RA</td>
<td>occasional</td>
</tr>
<tr>
<td><em>Rhingia campestris</em> (a hoverfly)</td>
<td>N42695879</td>
<td>16.06.15</td>
<td>Boundaries, intact hedge, species-rich</td>
<td>At brambles, hedgerow.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Rhingia campestris</em> (a hoverfly)</td>
<td>N425588</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept, bog wood.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Sercomia silentis</em> (a hoverfly)</td>
<td>N425588</td>
<td>18.07.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept, bog wood.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Sympylus ribesii</em> (a hoverfly)</td>
<td>N42045955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>At brambles, Angelica.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Sympylus torvus</em> (a hoverfly)</td>
<td>N427585</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Swept, dry wood.</td>
<td>AM</td>
<td>1</td>
</tr>
</tbody>
</table>

**SYMPHYTA**

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Arge pagana</em> (a sawfly)</td>
<td>N42625900</td>
<td>16.06.15</td>
<td>Cultivated farmland, mainly grass and hedge boundaries.</td>
<td>At brambles, field.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Athalia circularis</em> (a sawfly)</td>
<td>N42415907</td>
<td>08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept in tall vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
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</table>

**ACULEATA**
<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Bombus lucorum</em> (White-tailed Bumble Bee)</td>
<td>N428586</td>
<td>10.06.15</td>
<td>Scrub: dense/continuous, acidic</td>
<td>Vegetation by path.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Bombus pascuorum</em> (Common Carder Bee)</td>
<td>N428586</td>
<td>10.06.15</td>
<td>Scrub: dense/continuous, acidic</td>
<td>Vegetation by path.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Bombus terrestris</em> (Buff-tailed Bumble Bee)</td>
<td>N425587</td>
<td>10.06–08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Formica lemani</em> (an ant)</td>
<td>N425587</td>
<td>12.05–10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>Present</td>
</tr>
<tr>
<td><em>Formica lemani</em> (an ant)</td>
<td>N423592</td>
<td>12.05–10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>Present</td>
</tr>
<tr>
<td><em>Myrmica rubra</em> (Red Ant)</td>
<td>N425587</td>
<td>12.05–10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>Present</td>
</tr>
<tr>
<td><em>Myrmica ruginodis</em> (an ant)</td>
<td>N425587</td>
<td>12.05–10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>Present</td>
</tr>
<tr>
<td><em>Myrmica ruginodis</em> (an ant)</td>
<td>N425590</td>
<td>10.06–08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>Present</td>
</tr>
<tr>
<td><em>Myrmica ruginodis</em> (an ant)</td>
<td>N424590</td>
<td>10.06–08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>Present</td>
</tr>
<tr>
<td><em>Myrmica ruginodis</em> (an ant)</td>
<td>N423592</td>
<td>10.06–08.07.15</td>
<td>Mire: valley bog, open Sphagnum carpets</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>Present</td>
</tr>
<tr>
<td>DERMAPTERA</td>
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</tr>
<tr>
<td><em>Forficula auricularia</em> (Common Earwig)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>Leaf litter.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>COLEOPTERA</td>
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<tr>
<td><em>Acalyptus carpini</em> (a weevil)</td>
<td>N42295920</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Agabus affinis</em> (a water beetle)</td>
<td>N42315909</td>
<td>16.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept in shallow fen.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Agabus affinis</em> (a water beetle)</td>
<td>N42235917</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Deep acid pool.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Agabus affinis</em> (a water beetle)</td>
<td>N42045955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Small pond with bogbean.</td>
<td>RA</td>
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</tr>
<tr>
<td><em>Agabus affinis</em> (a water beetle)</td>
<td>N423589</td>
<td>12.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept, mossy mire with</td>
<td>BN</td>
<td>Present</td>
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### Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agabus bipustulatus (a water beetle)</td>
<td>N425587</td>
<td>10.06–08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog. Swept, mossy mire with flooded hollows.</td>
<td>RA</td>
<td>1 pair</td>
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<tr>
<td>Agabus bipustulatus (a water beetle)</td>
<td>N423589</td>
<td>12.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Present</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td>Agabus unguicularis (a water beetle)</td>
<td>N42065955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>RA</td>
<td>3</td>
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<tr>
<td>Agabus unguicularis (a water beetle)</td>
<td>N42105947</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>RA</td>
<td>1</td>
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<tr>
<td>Agabus unguicularis (a water beetle)</td>
<td>N423589</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Present</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td>Agonum fuliginosum (a ground beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation. Leaf litter. AM 2</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Agonum fuliginosum (a ground beetle)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>In moss. AM 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agonum fuliginosum (a ground beetle)</td>
<td>N42525899</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation. AM 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agonum fuliginosum (a ground beetle)</td>
<td>N421594</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>AM</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Agonum muelleri (a ground beetle)</td>
<td>N42385904</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>AM</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Agonum muelleri (a ground beetle)</td>
<td>N425587</td>
<td>12.05–10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tusssocky wooded bog. Treading fen vegetable. AM 1</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Agonum thoreyi (a ground beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetable. RA 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agonum thoreyi (a ground beetle)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetable. RA 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agonum thoreyi (a ground beetle)</td>
<td>N42525899</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss. AM 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agonum thoreyi (a ground beetle)</td>
<td>N42385904</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation. AM 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agonum thoreyi (a ground beetle)</td>
<td>N423590</td>
<td>12.05–10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks. RA 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aleochara lanuginosa (a rove beetle)</td>
<td>N423592</td>
<td>12.05–10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium. RA 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alophus trigattatus (a weevil)</td>
<td>N423592</td>
<td>12.05–10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium. RA 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Altica longicollis (a leaf beetle)</td>
<td>N42235933</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping AM 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Invertebrate survey of Scragh Bog 2015

**Appendix 2 (cont)**

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Altica longicollis</em> (a leaf beetle)</td>
<td>N42385907</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Altica longicollis</em> (a leaf beetle)</td>
<td>N426589</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Tree trunk wrapping</td>
<td>AM</td>
<td>4</td>
</tr>
<tr>
<td><em>Altica longicollis</em> (a leaf beetle)</td>
<td>N425586</td>
<td>17.06.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept, marshy meadow</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Anara plebeja</em> (a ground beetle)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>Leaf litter, bog wood.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Amischa analis</em> (a rove beetle)</td>
<td>N425858</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td><em>Anacaena globulus</em> (a scavenger water beetle)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>In leaf litter.</td>
<td>AM</td>
<td>3</td>
</tr>
<tr>
<td><em>Anacaena globulus</em> (a scavenger water beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog. Open moss tussocks and pools</td>
<td>RA</td>
<td>Present</td>
</tr>
<tr>
<td><em>Anacaena globulus</em> (a scavenger water beetle)</td>
<td>N423859</td>
<td>12.05.15</td>
<td>Fen: valley mire, basic</td>
<td>In leaf litter.</td>
<td>AM</td>
<td>Present</td>
</tr>
<tr>
<td><em>Anacaena limbata</em> (a scavenger water beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Open moss tussocks and pools</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td><em>Anacaena lutescens</em> (a scavenger water beetle)</td>
<td>N423859</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Open moss tussocks and pools</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td><em>Anaspis regimbarti</em> (a tumbling flower beetle)</td>
<td>N427585</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Tree trunk wrapping.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Anotylus rugosus</em> (a rove beetle)</td>
<td>N42575894</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping along boardwalk.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Anotylus rugosus</em> (a rove beetle)</td>
<td>N42055955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Anthobium unicolor</em> (a rove beetle)</td>
<td>N425858</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Atheta graminicola</em> (a longhorn beetle)</td>
<td>N423859</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>On pine stem, wooded area</td>
<td>BN</td>
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<tr>
<td><em>Atheta graminicola</em> (a rove beetle)</td>
<td>N42365911</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
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<tr>
<td><em>Atheta graminicola</em> (a rove beetle)</td>
<td>N421594</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping</td>
<td>AM</td>
<td>1</td>
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<tr>
<td>Species Name (Common Name)</td>
<td>Grid Ref</td>
<td>Date</td>
<td>Habitat type</td>
<td>Comment/niche</td>
<td>Recorder</td>
<td>Abundance</td>
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<tr>
<td>Bagous lutosus (a weevil)</td>
<td>N42385904</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>vegetation.</td>
<td>AM</td>
<td>13</td>
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<tr>
<td>Bagous lutosus (a weevil)</td>
<td>N423590</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>3</td>
</tr>
<tr>
<td>Bagous lutosus (a weevil)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td>Bagous lutosus (a weevil)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, open Sphagnum carpets</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>5</td>
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<tr>
<td>Bagous lutosus (a weevil)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>11</td>
</tr>
<tr>
<td>Barypeithes araneiformis (Spider weevil)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>In moss etc.</td>
<td>AM</td>
<td>1</td>
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<tr>
<td>Barypeithes araneiformis (Spider weevil)</td>
<td>N427585</td>
<td>17.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tree trunk wrapping.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Botitobius cingulatus (a rove beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Brachygluta fossulata (a short-winged mould beetle)</td>
<td>N423590</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Brachygluta haematica (a short-winged mould beetle)</td>
<td>N42615872</td>
<td>10.6.15</td>
<td>Scrub: dense/continuous, acidic</td>
<td>Under bark of conifer log.</td>
<td>RA</td>
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<tr>
<td>Brachygluta haematica (a short-winged mould beetle)</td>
<td>N423590</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
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<tr>
<td>Bradycellus ruficollis (a ground beetle)</td>
<td>N42575880</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, acidic</td>
<td>In moss, heather.</td>
<td>AM</td>
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<tr>
<td>Bryaxis bulbifer (a short-winged mould beetle)</td>
<td>N423590</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Byturus tomentosus (Raspberry Beetle)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>Swept.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Cartodere bifasciatus (a mould beetle)</td>
<td>N42605890</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping along boardwalk.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Cartodere nodifer (a mould beetle)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, open Sphagnum carpets</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Cercyon analis (a scavenger water beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Cercyon analis (a scavenger water beetle)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Chalcoides aurea (Willow Flea Beetle)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>Beaten off willow.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Chalcoides aurea (Willow Flea Beetle)</td>
<td>N42605890</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Goat willow.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td>Chalcoides aurea (Willow Flea Beetle)</td>
<td>N425586</td>
<td>17.06.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept, marshy</td>
<td>AM</td>
<td>2</td>
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<tr>
<td>Species Name (Common Name)</td>
<td>Grid Ref</td>
<td>Date</td>
<td>Habitat type</td>
<td>Comment/niche</td>
<td>Recorder</td>
<td>Abundance</td>
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<tr>
<td>Chalcoides fulvicornis (a leaf beetle)</td>
<td>N425586</td>
<td>17.06.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept, marshy meadow.</td>
<td>AM</td>
<td>1</td>
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<tr>
<td>Chilocorus bipustulatus (a ladybird)</td>
<td>N42575880</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, acidic</td>
<td>Swept off Calluna.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Chrysolina polita (Knotgrass Leaf Beetle)</td>
<td>N421594</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sieving vegetation.</td>
<td>AM</td>
<td>2</td>
</tr>
<tr>
<td>Cidnorhinus quadriraculatus (Small Nettle Weevil)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>Swept off nettle.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Coccidula rufa (a ladybird)</td>
<td>N425586</td>
<td>17.06.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept, marshy meadow.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Coelostoma orbiculare (a scavenger water beetle)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, open Sphagnum carpets</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Coelostoma orbiculare (a scavenger water beetle)</td>
<td>N423589</td>
<td>12.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Mossy mire in flooded hollows.</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td>Cortinicara gibosa (a mould beetle)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, open Sphagnum carpets</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
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<tr>
<td>Cryptopleurum minutum (a scavenger water beetle)</td>
<td>N425586</td>
<td>17.06.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept, marshy meadow.</td>
<td>AM</td>
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<tr>
<td>Curculio salicivorus (Willow Gall Weevil)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>Beaten off willow.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Cyphon coarctatus (a marsh beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>3</td>
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<tr>
<td>Cyphon coarctatus (a marsh beetle)</td>
<td>N427585</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Tree trunk wrapping.</td>
<td>AM</td>
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<tr>
<td>Cyphon coarctatus (a marsh beetle)</td>
<td>N425586</td>
<td>17.06.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept, marshy meadow.</td>
<td>AM</td>
<td>2</td>
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<tr>
<td>Cyphon hilaris (a marsh beetle)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Cyphon hilaris (a marsh beetle)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>In moss.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Cyphon hilaris (a marsh beetle)</td>
<td>N42575880</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, acidic</td>
<td>Swept.</td>
<td>AM</td>
<td>1</td>
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<tr>
<td>Cyphon padi (a marsh beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
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<tr>
<td>Cyphon padi (a marsh beetle)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
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<tr>
<td>Cyphon padi (a marsh beetle)</td>
<td>N426589</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Tree trunk wrapping.</td>
<td>AM</td>
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<tr>
<td>Cyphon padi (a marsh beetle)</td>
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<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Tree trunk wrapping.</td>
<td>AM</td>
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### Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
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<tbody>
<tr>
<td>Cyphon punctipennis (a marsh beetle)</td>
<td>N423950</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
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<tr>
<td>Cyphon variabilis (a marsh beetle)</td>
<td>N42385904</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
<td>1</td>
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<tr>
<td>Cyphon variabilis (a marsh beetle)</td>
<td>N42605890</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping along boardwalk.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Cyphon variabilis (a marsh beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td>Cyphon variabilis (a marsh beetle)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>4</td>
</tr>
<tr>
<td>Cyphon variabilis (a marsh beetle)</td>
<td>N427585</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Cyphon variabilis (a marsh beetle)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tree trunk wrapping.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Cyphon variabilis (a marsh beetle)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td>Cyphon variabilis (a marsh beetle)</td>
<td>N423590</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
<td>several</td>
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<tr>
<td>Cylitus sericeus (a pill beetle)</td>
<td>N4227911</td>
<td>16.05.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Shallow outflow of pool.</td>
<td>RA</td>
<td>7</td>
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<tr>
<td>Cylitus sericeus (a pill beetle)</td>
<td>N423950</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td>Cylitus sericeus (a pill beetle)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>2</td>
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<tr>
<td>Cylitus sericeus (a pill beetle)</td>
<td>N423590</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept, mossy fen.</td>
<td>AM</td>
<td>3</td>
</tr>
<tr>
<td>Dalopius marginatus (a click beetle)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>Leaf litter, bog wood.</td>
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<tr>
<td>Dalopius marginatus (a click beetle)</td>
<td>N42575880</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, acidic</td>
<td>Swept off willow.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Dalopius marginatus (a click beetle)</td>
<td>N425586</td>
<td>17.06.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept, marshy meadow.</td>
<td>AM</td>
<td>1</td>
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<tr>
<td>Dinaraea linearis (a rove beetle)</td>
<td>N42615872</td>
<td>10.06.15</td>
<td>Scrub: dense/continuous, acidic</td>
<td>Under bark of conifer log.</td>
<td>RA</td>
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</tr>
<tr>
<td>Dromius quadrimaculatus (a ground beetle)</td>
<td>N4257585</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Tree trunk wrapping.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Dromius quadrinotatus (a ground beetle)</td>
<td>N4227587</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>15</td>
</tr>
<tr>
<td>Drusilla canaliculata (a rove beetle)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Drusilla canaliculata (a rove beetle)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>28</td>
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### Appendix 2 (cont)

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<th>Species Name (Common Name)</th>
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<th>Comment/niche</th>
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<th>Abundance</th>
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<tbody>
<tr>
<td>Drusilla canaliculata</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, open Sphagnum carpets</td>
<td>Moss pillows with Cladium. Tussocky wooded bog.</td>
<td>RA</td>
<td>55</td>
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<tr>
<td>Drusilla canaliculata</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td>Drusilla canaliculata</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>12</td>
</tr>
<tr>
<td>Drusilla canaliculata</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td>Dryocoetinus villosus</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td>Dytiscus semisulcatus</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Enochrus caerctatus</td>
<td>N423590</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept, mossy fen.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Enochrus caerctatus</td>
<td>N423590</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping along boardwalk.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td>Enochrus ochropterus</td>
<td>N42235917</td>
<td>16.05.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Deep acid pool.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Enochrus ochropterus</td>
<td>N42235917</td>
<td>16.05.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Deep acid pool.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Enochrus ochropterus</td>
<td>N42235917</td>
<td>16.05.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Deep acid pool.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Enochrus ochropterus</td>
<td>N42235917</td>
<td>16.05.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Deep acid pool.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Enochrus ochropterus</td>
<td>N42235917</td>
<td>16.05.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Deep acid pool.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Fagniezia impressa</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td>Galerucella lineola</td>
<td>N42575880</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, acidic</td>
<td>General sweeping.</td>
<td>AM</td>
<td>frequent</td>
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<tr>
<td>Galerucella lineola</td>
<td>N42635884</td>
<td>10.06.15</td>
<td>Scrub: dense/continuous, acidic</td>
<td>Beaten off goat willow.</td>
<td>RA</td>
<td>several</td>
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<tr>
<td>Galerucella lineola</td>
<td>N42575894</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>On goat willow.</td>
<td>RA</td>
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<tr>
<td>Galerucella lineola</td>
<td>N42335913</td>
<td>16.06.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td>Galerucella lineola</td>
<td>N425586</td>
<td>17.06.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept, marshy meadow.</td>
<td>AM</td>
<td>several</td>
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### Appendix 2 (cont)

<table>
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<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
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<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
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<tbody>
<tr>
<td>Galerucella pusilla (a leaf beetle)</td>
<td>N423592</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>On meadowsweet leaves.</td>
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<tr>
<td>Galerucella pusilla (a leaf beetle)</td>
<td>N425586</td>
<td>17.06.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept, marshy meadow.</td>
<td>AM</td>
<td>1</td>
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<tr>
<td>Galerucella tenella (a leaf beetle)</td>
<td>N421594</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sieving vegetation.</td>
<td>AM</td>
<td>2</td>
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<tr>
<td>Graptoleus granularis (a water beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
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<tr>
<td>Graptoleus granularis (a water beetle)</td>
<td>N42105947</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
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<tr>
<td>Graptoleus granularis (a water beetle)</td>
<td>N423589</td>
<td>12.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Mossy mire with flooded hollows.</td>
<td>BN</td>
<td>Present</td>
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<tr>
<td>Gymnetron beccabungae (a weevil)</td>
<td>N421594</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sieving vegetation.</td>
<td>AM</td>
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</tr>
<tr>
<td>Gymnusa brevicollis (a rove beetle)</td>
<td>N42235933</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
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<tr>
<td>Gymnusa brevicollis (a rove beetle)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
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<td>Helophorus grandis (a scavenger water beetle)</td>
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<td>16.06.15</td>
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<td>Deep acid pool.</td>
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<td>several</td>
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<tr>
<td>Hydroporus angustatus (a water beetle)</td>
<td>N42145942</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
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<tr>
<td>Hydroporus angustatus (a water beetle)</td>
<td>N423589</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Mossy mire with flooded hollows.</td>
<td>BN</td>
<td>present</td>
</tr>
<tr>
<td>Hydroporus erythrocephalus (a water beetle)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Small acid pools.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Hydroporus erythrocephalus (a water beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td>Hydroporus erythrocephalus (a water beetle)</td>
<td>N423589</td>
<td>12.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Mossy mire with flooded hollows.</td>
<td>BN</td>
<td>present</td>
</tr>
<tr>
<td>Hydroporus glabriusculus (a water beetle)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Swept, eget acid pools.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Hydroporus glabriusculus (a water beetle)</td>
<td>N42055955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1 pair</td>
</tr>
<tr>
<td>Hydroporus glabriusculus (a water beetle)</td>
<td>N42405909</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
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</tbody>
</table>
### Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
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<tbody>
<tr>
<td><em>Hydoropus glabriusculus</em>  (a water beetle)</td>
<td>N423589</td>
<td>12.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Mossy mire with flooded hollows.</td>
<td>BN</td>
<td>present</td>
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<tr>
<td><em>Hydoropus menmonius</em>      (a water beetle)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Hydoropus menmonius</em>      (a water beetle)</td>
<td>N423589</td>
<td>12.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Mossy mire with flooded hollows.</td>
<td>BN</td>
<td>present</td>
</tr>
<tr>
<td><em>Hydoropus nigrita</em>        (a water beetle)</td>
<td>N42525899</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept in shallow pools.</td>
<td>AM</td>
<td>several</td>
</tr>
<tr>
<td><em>Hydoropus nigrita</em>        (a water beetle)</td>
<td>N42145942</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Hydoropus obscurus</em>       (a water beetle)</td>
<td>N42145942</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Hydoropus palustris</em>      (a water beetle)</td>
<td>N42065955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Hydoropus scalesianus</em>    (a water beetle)</td>
<td>N423589</td>
<td>12.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Mossy mire with flooded hollows.</td>
<td>BN</td>
<td>present</td>
</tr>
<tr>
<td><em>Hydoropus striola</em>        (a water beetle)</td>
<td>N423589</td>
<td>12.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Mossy mire with flooded hollows.</td>
<td>BN</td>
<td>present</td>
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<tr>
<td><em>Hydoropus tristis</em>        (a water beetle)</td>
<td>N42415907</td>
<td>08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept in wet moss.</td>
<td>RA</td>
<td>2</td>
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<tr>
<td><em>Hydorpus umbrosus</em>        (a water beetle)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td><em>Hydoropus umbrosus</em>       (a water beetle)</td>
<td>N42065955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Small vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Hydrothassa marginella</em>   (a leaf beetle)</td>
<td>N42525899</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Hydrothassa marginella</em>   (a leaf beetle)</td>
<td>N427585</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>In moss.</td>
<td>AM</td>
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<tr>
<td><em>Hygronoma dimidiata</em>      (a rove beetle)</td>
<td>N42345903</td>
<td>08.07.15</td>
<td>Fen: valley mire, basic</td>
<td>Tree trunk wrapping.</td>
<td>AM</td>
<td>frequent</td>
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<tr>
<td><em>Hygrotus inaequalis</em>      (a water beetle)</td>
<td>N42275911</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Swept in wet moss.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Hypera arator</em>            (a weevil)</td>
<td>N423590</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Swept, deep pool.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Ilybius aenescens</em>        (a water beetle)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Ilybius guttiger</em>         (a water beetle)</td>
<td>N42065955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen</td>
<td>RA</td>
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### Appendix 2 (cont)

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<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Ilybius guttiger</em> (a water beetle)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td><em>Ilybius guttiger</em> (a water beetle)</td>
<td>N423589</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Mossy mire with flooded hollows.</td>
<td>BN</td>
<td>present</td>
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<tr>
<td><em>Ilybius montanus</em> (a water beetle)</td>
<td>N42525899</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept in shallow pools.</td>
<td>AM</td>
<td>2</td>
</tr>
<tr>
<td><em>Ilybius quadriguttatus</em> (a water beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Ilybius quadriguttatus</em> (a water beetle)</td>
<td>N42235917</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Deep acid pool.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Ilybius quadriguttatus</em> (a water beetle)</td>
<td>N42065955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Ilybius quadriguttatus</em> (a water beetle)</td>
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<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Ilybius quadriguttatus</em> (a water beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Ischnopterapion virens</em> (a seed weevil)</td>
<td>N42575894</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping along boardwalk.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Kateretes rufilabris</em> (a pollen or sap beetle)</td>
<td>N425586</td>
<td>17.06.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept, marshy meadow.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Laccornis oblongus</em> (a water beetle)</td>
<td>N423589</td>
<td>12.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Mossy mire with flooded hollows.</td>
<td>BN</td>
<td>present</td>
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<tr>
<td><em>Lathrobium brunipes</em> (a rove beetle)</td>
<td>N42575880</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, acidic</td>
<td>General sweeping.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Lathrobium brunipes</em> (a rove beetle)</td>
<td>N42235933</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
<td>3</td>
</tr>
<tr>
<td><em>Lathrobium geminum</em> (a rove beetle)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>Leaf litter.</td>
<td>AM</td>
<td>4</td>
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<tr>
<td><em>Lathrobium terminatum</em> (a rove beetle)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Lathrobium terminatum</em> (a rove beetle)</td>
<td>N42525899</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Lathrobium terminatum</em> (a rove beetle)</td>
<td>N42235917</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Outflow of pool.</td>
<td>RA</td>
<td>2</td>
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<tr>
<td><em>Lathrobium terminatum</em> (a rove beetle)</td>
<td>N42215922</td>
<td>16.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Moss tussock.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Lesteva heeri</em> (a rove beetle)</td>
<td>N42385904</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
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<tr>
<td><em>Lesteva heeri</em> (a rove beetle)</td>
<td>N42235933</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping.</td>
<td>AM</td>
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<tr>
<td><em>Liopterus haemorrhoidalis</em> (a water beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen</td>
<td>RA</td>
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<tr>
<td>Species Name (Common Name)</td>
<td>Grid Ref</td>
<td>Date</td>
<td>Habitat type</td>
<td>Comment/niche</td>
<td>Recorder</td>
<td>Abundance</td>
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<tr>
<td><em>Liopterus haemorrhoidalis</em> (a water beetle)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Small acid pools.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Liopterus haemorrhoidalis</em> (a water beetle)</td>
<td>N42525899</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept in shallow pools.</td>
<td>AM</td>
<td>2</td>
</tr>
<tr>
<td><em>Liopterus haemorrhoidalis</em> (a water beetle)</td>
<td>N42235917</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Deep acid pool.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Liopterus haemorrhoidalis</em> (a water beetle)</td>
<td>N423589</td>
<td>12.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Mossy mire in flooded hollows.</td>
<td>BN</td>
<td>Present</td>
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<tr>
<td><em>Lochmaea suturalis</em> (Heather Beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
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<tr>
<td><em>Lochmaea suturalis</em> (Heather Beetle)</td>
<td>N42575880</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, acidic</td>
<td>Swept off Calluna.</td>
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<td><em>Lochmaea suturalis</em> (Heather Beetle)</td>
<td>N421594</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sieving vegetation.</td>
<td>AM</td>
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<tr>
<td><em>Malachius bipustulatus</em> (Malachite beetle)</td>
<td>N42705875</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Wooded path to walkway.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Meligethes aeneus</em> (Common Pollen Beetle)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>General sweeping.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Micrelus ericae</em> (Heather weevil)</td>
<td>N423589</td>
<td>04.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Mossy mire with flooded hollows.</td>
<td>BN</td>
<td>Present</td>
</tr>
<tr>
<td><em>Microcara testacea</em> (a marsh beetle)</td>
<td>N42575894</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping along platform.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Mniusa incrassata</em> (a rove beetle)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>Under bark, dead wood.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Mniusa incrassata</em> (a rove beetle)</td>
<td>N42235933</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
<td>3</td>
</tr>
<tr>
<td><em>Mocyta orbata</em> (a rove beetle)</td>
<td>N42587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Mocyta orbata</em> (a rove beetle)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Neuraphes elongatulus</em> (a small antlike beetle)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, open Sphagnum carpets</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Neuraphes elongatulus</em> (a small antlike beetle)</td>
<td>N42587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Noterus crassicornis</em> (The Smaller Noterus)</td>
<td>N42275911</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Swept, pool</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td>Species Name (Common Name)</td>
<td>Grid Ref</td>
<td>Date</td>
<td>Habitat type</td>
<td>Comment/niche</td>
<td>Recorder</td>
<td>Abundance</td>
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<tr>
<td><em>Noterus crassicornis</em> (The Smaller Noterus)</td>
<td>N42105947</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from roots of vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Notiophilus biguttatus</em> (a ground beetle)</td>
<td>N425589</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept, wooded fen.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Ochthephilum fracticorne</em> (a rove beetle)</td>
<td>N42525899</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Ochthephilum fracticorne</em> (a rove beetle)</td>
<td>N42385904</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Ochthephilum fracticorne</em> (a rove beetle)</td>
<td>N423590</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept, mossy fen.</td>
<td>AM</td>
<td>3</td>
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<tr>
<td><em>Ocyusa picina</em> (a rove beetle)</td>
<td>N42605890</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping Equisetum, boardwalk.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td><em>Ocyusa picina</em> (a rove beetle)</td>
<td>N42055955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>3</td>
</tr>
<tr>
<td><em>Ocyusa picina</em> (a rove beetle)</td>
<td>N421594</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Othius punctulatus</em> (a rove beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td><em>Otiorhynchus singularis</em> (Raspberry Weevil)</td>
<td>N427585</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Tree trunk wrapping.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Oulema obscura</em> (a leaf beetle)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>Swept.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Oxytelus laqueatus</em> (a rove beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>abundant</td>
</tr>
<tr>
<td><em>Paederus riparius</em> (a rove beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading swamp vegetation.</td>
<td>RA</td>
<td>frequent</td>
</tr>
<tr>
<td><em>Paederus riparius</em> (a rove beetle)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Small acid pool margins.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Paederus riparius</em> (a rove beetle)</td>
<td>N42525899</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>AM</td>
<td>9</td>
</tr>
<tr>
<td><em>Paederus riparius</em> (a rove beetle)</td>
<td>N423590</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td><em>Paederus riparius</em> (a rove beetle)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>27</td>
</tr>
<tr>
<td><em>Paederus riparius</em> (a rove beetle)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Phaedon armoricace</em> (Mustard Beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Species Name (Common Name)</td>
<td>Grid Ref</td>
<td>Date</td>
<td>Habitat type</td>
<td>Comment/niche</td>
<td>Recorder</td>
<td>Abundance</td>
</tr>
<tr>
<td>---------------------------</td>
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<td>-----------</td>
</tr>
<tr>
<td>Phaedon armoraciae (Mustard Beetle)</td>
<td>N42575880</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, acidic</td>
<td>Swept.</td>
<td>AM</td>
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</tr>
<tr>
<td>Phaedon armoraciae (Mustard Beetle)</td>
<td>N42385904</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Phaedon armoraciae (Mustard Beetle)</td>
<td>N42605890</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping along boardwalk.</td>
<td>RA</td>
<td>3</td>
</tr>
<tr>
<td>Phaedon cochleariae (Mustard Beetle)</td>
<td>N42385904</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Phaedon cochleariae (Mustard Beetle)</td>
<td>N42605890</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping along boardwalk.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Philonthus carbonarius (a rove beetle)</td>
<td>N42235917</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Outflow of pool.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Philonthus carbonarius (a rove beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Philonthus fumarius (a rove beetle)</td>
<td>N42295920</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Philonthus laminatus (a rove beetle)</td>
<td>N42525899</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>7</td>
</tr>
<tr>
<td>Philonthus nigrita (a rove beetle)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1 pair</td>
</tr>
<tr>
<td>Philonthus nigrita (a rove beetle)</td>
<td>N42525899</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Philonthus nigrita (a rove beetle)</td>
<td>N42385904</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
<td>1 pair</td>
</tr>
<tr>
<td>Philonthus nigrita (a rove beetle)</td>
<td>N42235933</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Phyllotreta flexuosa (a leaf beetle)</td>
<td>N42605890</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping along boardwalk.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Phyllotreta flexuosa (a leaf beetle)</td>
<td>N42575894</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping along boardwalk.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Plateumaris discolor (a leaf beetle)</td>
<td>N422593</td>
<td>16.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Plateumaris sericea (a leaf beetle)</td>
<td>N42575880</td>
<td>16.05.15</td>
<td>Scrub: dense/continuous, acidic</td>
<td>General sweeping.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td>Polydrusus pterygomalis (a weevil)</td>
<td>N42695879</td>
<td>16.05.15</td>
<td>Boundaries, intact hedge, species-rich</td>
<td>Beaten off hazel, hedgerow.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Poophagus sisyphri (a weevil)</td>
<td>N42575894</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping along boardwalk.</td>
<td>RA</td>
<td>frequent</td>
</tr>
<tr>
<td>Poophagus sisyphri (a weevil)</td>
<td>N42605890</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping crucifers.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td>Poophagus sisyphri (a weevil)</td>
<td>N423589</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Wooded fen drains</td>
<td>BN</td>
<td>present</td>
</tr>
</tbody>
</table>
### Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Porhydrus lineatus</em> (a water beetle)</td>
<td>N42235917</td>
<td>16.06.15</td>
<td>Open water: small mesotrophic ponds</td>
<td>Deep acid pool.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Prasocuris junci</em> (a leaf beetle)</td>
<td>N423589</td>
<td>04.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Mossy mire with flooded hollows.</td>
<td>BN</td>
<td>present</td>
</tr>
<tr>
<td><em>Prasocuris phellandrii</em> (a leaf beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Propylea quattuordecimpunctata</em> (14-spot Ladybird)</td>
<td>N42635884</td>
<td>10.06.15</td>
<td>Scrub: dense/continuous, acidic</td>
<td>Beaten off birch.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Pseudaphus heisei</em> (a short-winged mould beetle)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>In moss.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Pseudaphus heisei</em> (a short-winged mould beetle)</td>
<td>N424590</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Pseudaphus heisei</em> (a short-winged mould beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, open Sphagnum carpets</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Pterostichus aterrimus</em> (a ground beetle)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>5</td>
</tr>
<tr>
<td><em>Pterostichus diligens</em> (a ground beetle)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>5</td>
</tr>
<tr>
<td><em>Pterostichus gracilis</em> (a ground beetle)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td><em>Pterostichus rhaeticus</em> (a ground beetle)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>6</td>
</tr>
<tr>
<td><em>Pterostichus strenuus</em> (a ground beetle)</td>
<td>N425587</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept, mossy fen.</td>
<td>AM</td>
<td>2</td>
</tr>
<tr>
<td><em>Pterostichus gracilis</em> (a ground beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Pterostichus gracilis</em> (a ground beetle)</td>
<td>N423589</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>3</td>
</tr>
<tr>
<td><em>Pterostichus rhaeticus</em> (a ground beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>2</td>
</tr>
<tr>
<td><em>Pterostichus strenuus</em> (a ground beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>3</td>
</tr>
<tr>
<td><em>Pterostichus strenuus</em> (a ground beetle)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Pterostichus strenuus</em> (a ground beetle)</td>
<td>N425587</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Pterostichus strenuus</em> (a ground beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
</tbody>
</table>
## Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Quedius curtipennis</em> (a rove beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Quedius curtipennis</em> (a rove beetle)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>TuSsocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Quedius fuliginosus</em> (a rove beetle)</td>
<td>N4252899</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>AM</td>
<td>6</td>
</tr>
<tr>
<td><em>Quedius fuliginosus</em> (a rove beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>TuSsocky wooded bog.</td>
<td>RA</td>
<td>1 pair</td>
</tr>
<tr>
<td><em>Quedius fuliginosus</em> (a rove beetle)</td>
<td>N423590</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1 pair</td>
</tr>
<tr>
<td><em>Quedius fuliginosus</em> (a rove beetle)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Quedius fuliginosus</em> (a rove beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>TuSsocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Reichenbachia juncaurum</em> (a short-winged mould beetle)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Rhagium bifasciatum</em> (a longhorn beetle)</td>
<td>N42425905</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Landed on me.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Rhagonycha lignosa</em> (a soldier beetle)</td>
<td>N425588</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept, wooded fen.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Rhantus gracii</em> (a water beetle)</td>
<td>N42105947</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Teneral specimen.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Rhantus gracii</em> (a water beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>2</td>
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<tr>
<td><em>Rhizophagus dispar</em> (a narrow bark beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Mossy mire with flooded hollows.</td>
<td>BN</td>
<td>present</td>
</tr>
<tr>
<td><em>Scirtes orbicularis</em> (a marsh beetle)</td>
<td>N42065955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>TuSsocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Rhynchites germanicus</em> (Strawberry Rhynchites)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>Beating birch.</td>
<td>AM</td>
<td>2</td>
</tr>
<tr>
<td><em>Silpha atrata</em> (Black Snail Beetle)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Sitona lineatus</em> (Pea and Bean Weevil)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>TuSsocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Sitona lineatus</em> (Pea and Bean Weevil)</td>
<td>N425586</td>
<td>17.06.15</td>
<td>Grassland: marshy, lowland</td>
<td>Swept off willow.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Staphylinus erythropterus</em> (a rove beetle)</td>
<td>N42425905</td>
<td>10.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept, marshy meadow.</td>
<td>AM</td>
<td>1</td>
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<tr>
<td><em>Staphylinus erythropterus</em> (a rove beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>Walking on bog moss.</td>
<td>RA</td>
<td>5</td>
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<tr>
<td><em>Staphylinus erythropterus</em> (a rove beetle)</td>
<td>N425587</td>
<td>12.05 – 10.06.15</td>
<td>Parkland/scattered trees: mixed</td>
<td>TuSsocky</td>
<td>RA</td>
<td>13</td>
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</table>
### Invertebrate survey of Scragh Bog 2015

**Appendix 2 (cont)**

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Staphylinus erythropterus</em> (a rove beetle)</td>
<td>N423590</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>wooded bog.</td>
<td>RA</td>
<td>324</td>
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<tr>
<td><em>Staphylinus erythropterus</em> (a rove beetle)</td>
<td>N423592</td>
<td>12.05 – 10.06.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>112</td>
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<tr>
<td><em>Staphylinus erythropterus</em> (a rove beetle)</td>
<td>N423592</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, open Sphagnum carpets</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
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<tr>
<td><em>Staphylinus erythropterus</em> (a rove beetle)</td>
<td>N425587</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Moss pillows with Cladium.</td>
<td>RA</td>
<td>4</td>
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<tr>
<td><em>Staphylinus erythropterus</em> (a rove beetle)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Tussocky wooded bog.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Staphylinus erythropterus</em> (a rove beetle)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Stenichnus collaris</em> (a small antlike beetle)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>In moss.</td>
<td>AM</td>
<td>1</td>
</tr>
<tr>
<td><em>Stenus brunipes</em> (a rove beetle)</td>
<td>N42055955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>several</td>
</tr>
<tr>
<td><em>Stenus cicindeloides</em> (a rove beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>4</td>
</tr>
<tr>
<td><em>Stenus cicindeloides</em> (a rove beetle)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Stenus cicindeloides</em> (a rove beetle)</td>
<td>N42335913</td>
<td>16.06.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Stenus fulvicornis</em> (a rove beetle)</td>
<td>N42365911</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Stenus fuscipes</em> (a rove beetle)</td>
<td>N424590</td>
<td>10.06 – 08.07.15</td>
<td>Mire: valley bog, mosaic</td>
<td>Open moss tussocks.</td>
<td>RA</td>
<td>3</td>
</tr>
<tr>
<td><em>Stenus glabellus</em> (a rove beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Stenus glabellus</em> (a rove beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Stenus glabellus</em> (a rove beetle)</td>
<td>N42235933</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
<td>1</td>
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<tr>
<td><em>Stenus glabellus</em> (a rove beetle)</td>
<td>N42365911</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Stenus impressus</em> (a rove beetle)</td>
<td>N42605887</td>
<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>Leaf litter/moss.</td>
<td>AM</td>
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</tr>
<tr>
<td><em>Stenus impressus</em> (a rove beetle)</td>
<td>N42365911</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Stenus impressus</em> (a rove beetle)</td>
<td>N427985</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Tree trunk wrapping.</td>
<td>AM</td>
<td>2</td>
</tr>
<tr>
<td><em>Stenus juno</em> (a rove beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
</tbody>
</table>
### Appendix 2 (cont)

<table>
<thead>
<tr>
<th>Species Name (Common Name)</th>
<th>Grid Ref</th>
<th>Date</th>
<th>Habitat type</th>
<th>Comment/niche</th>
<th>Recorder</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Stenus latifrons</em> (a rove beetle)</td>
<td>N42525899</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>AM</td>
<td>3</td>
</tr>
<tr>
<td><em>Stenus latifrons</em> (a rove beetle)</td>
<td>N42285904</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
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</tr>
<tr>
<td><em>Stenus latifrons</em> (a rove beetle)</td>
<td>N42235933</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping</td>
<td>AM</td>
<td>4</td>
</tr>
<tr>
<td><em>Stenus latifrons</em> (a rove beetle)</td>
<td>N42235917</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Outflow of pool.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Stenus latifrons</em> (a rove beetle)</td>
<td>N42215922</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Moss tussock.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Stenus latifrons</em> (a rove beetle)</td>
<td>N42335913</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Stenus latifrons</em> (a rove beetle)</td>
<td>N42055955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Stenus latifrons</em> (a rove beetle)</td>
<td>N42065955</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>2</td>
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<tr>
<td><em>Stenus latifrons</em> (a rove beetle)</td>
<td>N42265911</td>
<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>5</td>
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<tr>
<td><em>Stenus latifrons</em> (a rove beetle)</td>
<td>N421594</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept, open fen.</td>
<td>AM</td>
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<tr>
<td><em>Stenus nitens</em> (a rove beetle)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
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<tr>
<td><em>Stenus nitidiusculus</em> (a rove beetle)</td>
<td>N421594</td>
<td>17.06.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept, open fen.</td>
<td>AM</td>
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<tr>
<td><em>Stenus nitidiusculus</em> (a rove beetle)</td>
<td>N424587</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1 pair</td>
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<tr>
<td><em>Stenus nitidiusculus</em> (a rove beetle)</td>
<td>N42525899</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>AM</td>
<td>1</td>
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<tr>
<td><em>Stenus nitidiusculus</em> (a rove beetle)</td>
<td>N42235933</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Sweeping vegetation.</td>
<td>AM</td>
<td>1 pair</td>
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<tr>
<td><em>Stenus nitidiusculus</em> (a rove beetle)</td>
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<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Outflow of pool.</td>
<td>RA</td>
<td>2</td>
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<tr>
<td><em>Stenus nitidiusculus</em> (a rove beetle)</td>
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<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
<td>1 pair</td>
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<td><em>Stenus nitidiusculus</em> (a rove beetle)</td>
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<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
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<tr>
<td><em>Stenus palustris</em> (a rove beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
</tr>
<tr>
<td><em>Stenus palustris</em> (a rove beetle)</td>
<td>N42525899</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>In moss.</td>
<td>AM</td>
<td>1</td>
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<tr>
<td><em>Stenus palustris</em> (a rove beetle)</td>
<td>N42215922</td>
<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
<td>Moss tussock.</td>
<td>RA</td>
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<td><em>Stenus palustris</em> (a rove beetle)</td>
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<td><em>Stenus palustris</em> (a rove beetle)</td>
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<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
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</table>
### Appendix 2 (cont)

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<thead>
<tr>
<th>Species Name (Common Name)</th>
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<th>Abundance</th>
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<tbody>
<tr>
<td><em>Stenus similis</em> (a rove beetle)</td>
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<td>16.05.15</td>
<td>Fen: valley mire, basic</td>
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<td><em>Stenus tarsalis</em> (a rove beetle)</td>
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<td>Fen: valley mire, basic</td>
<td>Sweeping along boardwalk.</td>
<td>RA</td>
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<td><em>Suphrodytes dorsalis</em> (a water beetle)</td>
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<td>13.08.15</td>
<td>Fen: valley mire, basic</td>
<td>Swept from fen vegetation.</td>
<td>RA</td>
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<tr>
<td><em>Tachyporus pusillus</em> (a rove beetle)</td>
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<td>16.05.15</td>
<td>Fen Carr Woodland</td>
<td>In moss.</td>
<td>AM</td>
<td>1</td>
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<tr>
<td><em>Tachyporus pusillus</em> (a rove beetle)</td>
<td>N427585</td>
<td>17.06.15</td>
<td>Scrub: dense/continuous, neutral</td>
<td>Tree trunk wrapping.</td>
<td>AM</td>
<td>1</td>
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<tr>
<td><em>Zynus collaris</em> (a rove beetle)</td>
<td>N422592</td>
<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
<td>RA</td>
<td>1</td>
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<tr>
<td><em>Zynus collaris</em> (a rove beetle)</td>
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<td>12.05.15</td>
<td>Fen: basin mire, basic</td>
<td>Treading fen vegetation.</td>
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