

A baseline invertebrate survey of the Ken Hill Estate, 2019

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Fig. 1. The nationally rare Breckland Leather *Arenocoris waltii* is listed as Critically Endangered

0 - Summary

The Ken Hill Estate plan to rewild a large area of some 400 ha of their Estate during 2019 and 2020. The summer of 2019 was the last crop for much of this area and as such, the 2019 survey season was an exciting opportunity to collect baseline data before any changes were made to the site. The author was commissioned to carry out a wide range of surveys in 2019, including this baseline invertebrate survey.

A methodology used by the author to monitor other rewilding sites nationally was adopted based upon surveying eight fields/sections, six times from April to September. The sections needed to represent the site geographically, representationally in terms of habitats and crops and make a realistic circular route.

Each section was recorded for 30 minutes using the method pertinent to the season. Specimens were taken and identified at the microscope. Eight species lists were produced and an overall site species list was also produced. All species with conservation status were recorded and species accounts given. Any species recorded between section or on different surveys were also recorded.

A total of 1895 records were made during the six visits comprised of 811 species, 50 species of which had conservation status (6.2%). The total number of species was exceptionally rich, the highest figure of any six-visit invertebrate survey carried out by the author. The proportion of species with status was comparable to other rewilding surveys but these were carried out some 15 years after rewilding began. The most recorded invertebrates were beetles, with 270 species recorded, followed by 125 bugs and 112 spiders.

Variability between the sections was great, with the Breck-like Beach Road section to the south having 24 species with conservation status, a proportion of 9.2%. Nearly half of all the species with status recorded during the survey were recorded in this section. After this, the next highest number of species with conservation status was the heathland/acid-grassland compartment known as the Plain, with 14 species at only 5.3%. This and the remaining six compartments all had a value lower than the site average of 6.2%, showing how much the Beach Road section was lifting the site average. This is a very important area for invertebrates.

The **Breckland Leatherbug** *Arenocoris waltlii* was perhaps the rarest species recorded during the survey and was abundant on one small area of the Beach Road. Most of the spiders recorded were new to the area, showing how under-recorded this part of Norfolk is.

Harpalus froelichii, another Breckland specialist was recorded during light trapping on the Plain. This was one of another 88 species made during casual recording, 11 of which had conservation status.

The site is extremely diverse with specific areas being exceptionally rich. Much of the interest is associated with early successional habitat and this resource is very valuable to invertebrates. It is also restricted to specific soils and geographic locations on the site. This rich starting point is different to many other rewilding projects, so a precautionary approach is suggested allowing for bare ground creation mechanically if the livestock do not create it in these specific areas.

Management recommendations regarding grazing, bare ground, dead wood management and rewilding are provided and a suggestion of a survey of the dead wood invertebrate specifically is made.

1 - Introduction

The Ken Hill Estate plan to rewild a large area of some 400 ha of their Estate from 2019 and 2020. The summer of 2019 was the last crop for much of this area and as such the 2019 survey season was an exciting opportunity to collect baseline data before any changes were made to the site.

The author was commissioned to carry out a wide range of surveys in 2019, including this bird survey.

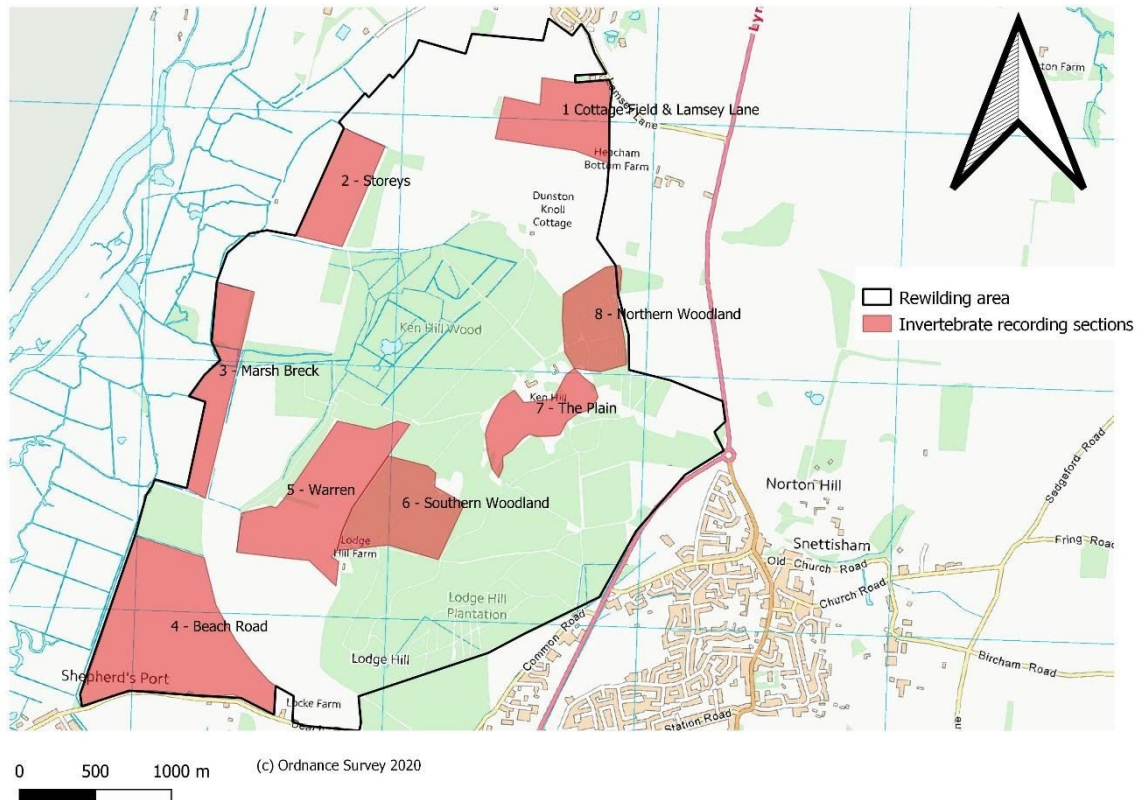


Fig. 2. Map of the rewilding area and location of the invertebrate recording areas.

The eight sections were selected to give:

- A geographical representation of the rewilding area
- A proportional representation of the habitats within the area (although only 2/8 of the sites were chosen as woodland sites)
- A representation of the different crop types, and therefore the different management types, across the site.
- The route needed to be roughly circular in order for one person without a vehicle to be able to complete the survey in a single day.

The eight sections selected were:

Tab. 1. The eight sections and their main habitats

	Compartment name	Main habitat	Crop	Site centroid
1	Cottage Field & Lamsey Lane	Arable	Rape	TF67653606

2	Storeys	Arable	Wheat	TF66773570
3	Marsh Breck (& compartments north of this)	Arable/Marsh/Meadow	Game cover	TF66323499
4	Beach Road	Arable/Breck	Beat, bluebells	TF66143395
5	Warren	Arable/Breck (but less so than 4)	Barley	TF66723446
6	Southern Woodland	Woodland	n/a	TF67063429
7	The Plain	Heath & acid grassland	n/a	TF67613484
8	Northern Woodland	Woodland	n/a	TF67743518

2 - Methodology

On each visit, the same eight fields were recorded for exactly 30 minutes. The methods relevant to the season were used and included beating, sieving, sweeping searching flowers, searching deadwood, searching bare ground and suction-sampling. Specimens were taken of species that could not be identified in the field.

The order of the eight compartments was alternated on subsequent visits so that no one compartment favoured the best (or worst) time of day for invertebrates.

Eight species lists were created from the first survey and these were added to on each visit, effectively producing eight comparable species-lists making up one large site species list.

The six dates were:

- 12th April
- 19th May
- 15th June
- 17th July
- 21st August
- 21st September

Records were assigned to a central grid reference centred around the middle of each section (known as a site centroid). The whole rewilding area sits in the 10 km square TF63.

This methodology has been carried out by the author at two other rewilding sites, Knepp and Butcherlands both in West Sussex. Therefore, there is the possibility to compare to these sites. Additional sites in Kent and Hampshire are also planned for survey using a similar methodology.

3 - Results

3.1 - Overview of species recorded

A total of 811 species were recorded during the timed counts. With additional species spotted during other surveys and moth trapping etc, a further 88 species were recorded making 899 species.

The full species list is attached in Appendix 1. Additional species are listed in Appendix 2.

Beetles were the largest group with 270 species recorded, followed by 125 bugs and 112 spiders.

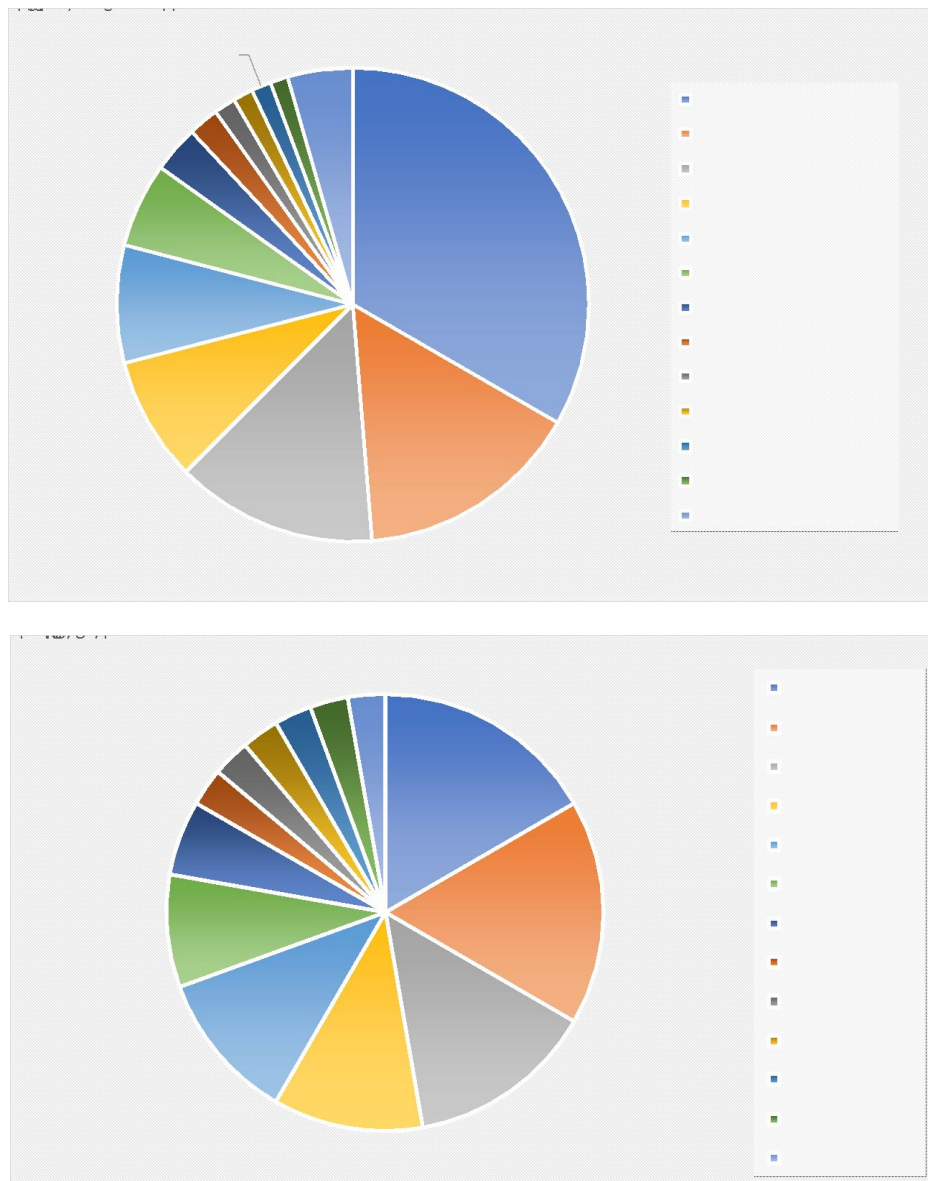


Fig. 3 & 4. Breakdown of the species record. Fig. 4 shows breakdown of 'other' in figure 3.

The total number of records made was large with 1895 records made during the six surveys and many more casual records of invertebrates made beyond this. This data will in time be

digitised into the author's Recorder 6 database so that in turn, this can be stored with the Estate and the Norfolk record centre.

As can be seen in figure 5 below, the two woodland sections (6 & 8), clearly show the lowest overall species. The southern arable sites and the Plain all come out very high with the two northernmost arable fields somewhere in between. Sections 1 and 2 clearly lacked the sandy/Breck-like qualities of Sections 4 & 5 or the diversity of habitats of Section 3 which explains this.

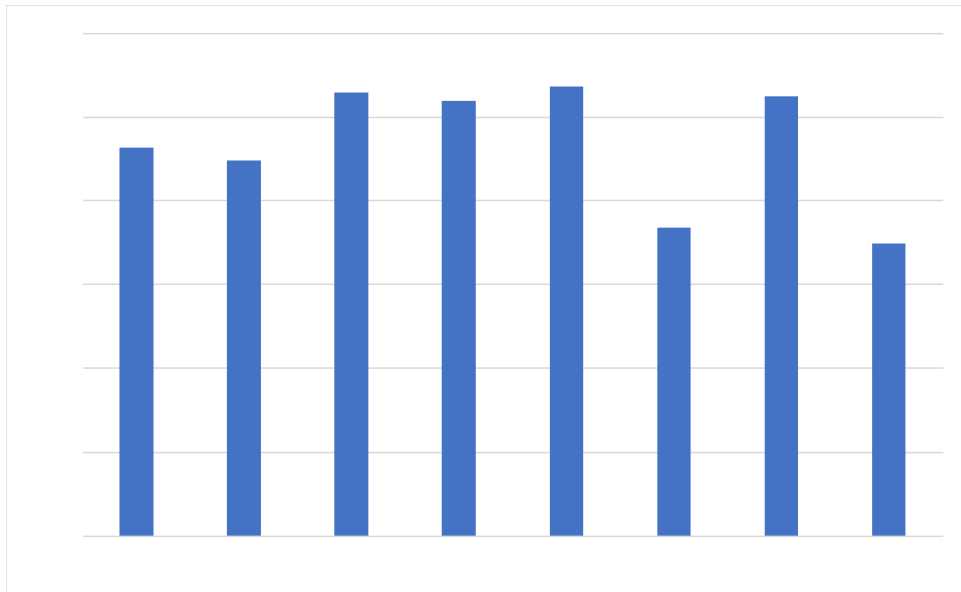


Fig. 5. Number of species recorded per section.

3.2 - Species with conservation status

Of the 811 species recorded, 50 were found to have some form of conservation status (6.2%). This is quite high for a site of this nature coming straight out of years of agriculture but looking at the eight sections individually is more enlightening.

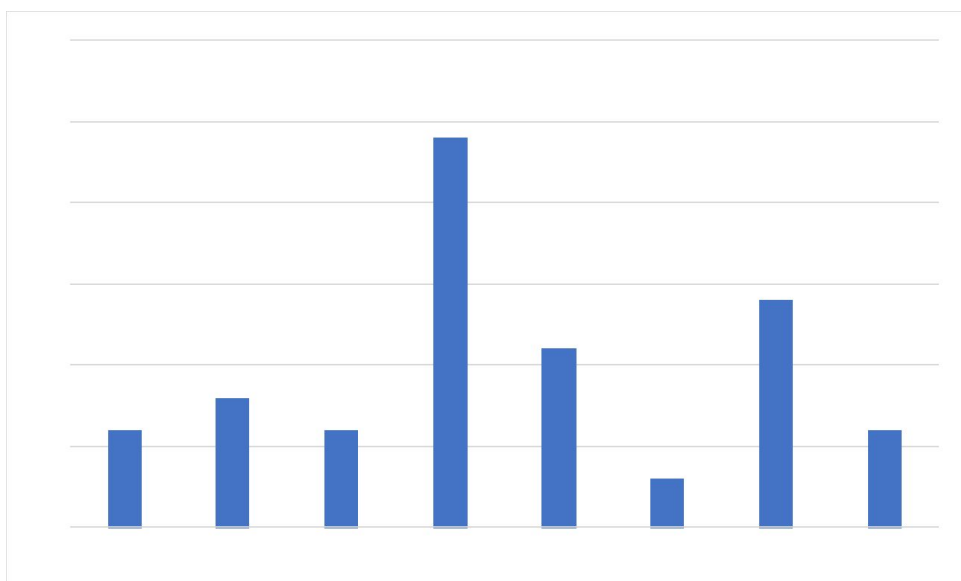


Fig. 6. Number of species with conservation status recorded per section.

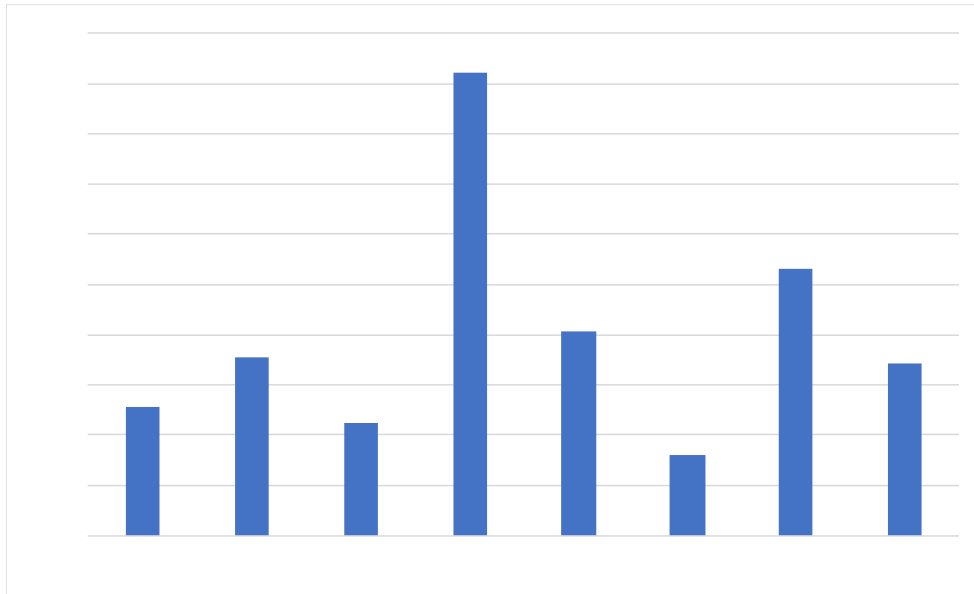


Fig. 7. Proportion of rare or scarce species recorded per section.

In-field observations of section 4/Beach Road being considerably better for scarce invertebrates were clearly justified with this field alone reaching a proportion of 9.2% conservation status. That is 24 of the 50 species with status were recorded in this one section. Even within this section, the area of interest is very small due to the field being dominated by a Sugar Beet crop. This suggests that if this wealth of diversity can survive in one small area, with the right management rewilding in this area could have huge conservation gains for invertebrates.

After this the next highest (but almost half this proportion) was the Plain at 5.3%, which is also below the whole site average. Showing just how much the Breck-like area carries the site, lifting its invertebrate value.

For context, the following chart shows the accumulative proportions across some recent surveys carried out by the author categorised by broad type (nature reserve, rewilding, park or development).



Fig. 8. Frequency distribution of author's proportions of species with conservation status from their invertebrate surveys.

Conservation status is a complex issue. Each taxonomic group has used a slightly different set of criteria for assessing their species. Within each group, some species are assessed more often or more thoroughly than others. Some are long overdue and as a result there are two systems running at present. Mike Edwards has kindly allowed the author to use this text to explain both systems.

"GB Conservation Status categories are in the process of being upgraded. This means that it is currently necessary to provide values for both systems as not all groups have been dealt with.

The old RDB (Red Data Book) Conservation Status categories were based purely on the number of 10km squares which a species was known to have been recorded from, with a base-line date of 1970. These categories are obviously susceptible to the progressive accumulation of new records over time. This is especially so as, for some species in particular, non-specialist recording has increased significantly. There are also known changes in range and abundance which have been increasingly commented on by specialists.

The old system graded species like this:

RDB 1. Endangered. Species currently (post 1970) known to exist in five or fewer ten-kilometre squares.

RDB 2. Vulnerable. Species in severely declining or vulnerable habitats, or of low known populations. Known to exist (post 1970) in ten, or fewer, ten-kilometre squares.

RDB 3. Rare. Species with small populations, not at present Endangered or Vulnerable, but which are felt to be at risk. Species currently known to exist (post 1970) in fifteen, or fewer, ten-kilometre squares.

RDB K. Species of undoubted RDB rank, but with insufficient information for accurate placement; includes possible recent arrivals.

Nationally Scarce. Species currently (post 1970) known to exist in one hundred, or fewer, ten-kilometre squares.

In some groups these are further sub-divided into:-

Nationally Scarce a. Species currently (post 1970) known to exist in thirty, or fewer, ten-kilometre squares.

Nationally Scarce b. Species currently (post 1970) known to exist in thirty-one to one hundred ten-kilometre squares.

The new IUCN-type Red Data Book Conservation Status categories are based on perceived threat, of which distribution is only one part, the other being related to the population trend over the 10 years previous to the assessment, for the species in question. Such trends may be inferred from accumulated specialist knowledge, but, as the quantity and quality of data improves increasing effort is being made to model such changes. The output of such modelling being then compared with the specialist knowledge. Species with a negative trend may not be inherently rare, it is the decline which is the significant factor.

The new system grades species like this (This is very much a summary, there is considerable detail to this, please consult the group-appropriate published Great Britain Red List for a better understanding of how the gradings have been arrived at):

Regionally Extinct (RE). See group-appropriate Red List for criteria. In general, a sufficiently long time has elapsed since the last record of this species.

Critically Endangered (CE). Species with a very severe decline in population trend or geographic range within the area considered.

Endangered (E). Species with a severe decline in population trend or geographic range within the area considered.

Vulnerable (V). Species with a marked decline in trend or geographic range within the area considered.

Near Threatened (NT). Species which are suspected to qualify for Vulnerable, but where the data does not quite support such a category.

Least Concern (LC). Species which show no marked negative population trend or geographic range. Indeed, they may have positive values for either or both.

There will be a number of species where it has been considered that there is insufficient information to provide a supported grading, such species are called Data Deficient (DD). There are also categories for invasive (with anthropogenic agency) species, which are usually assessed as Not Applicable (NA).

The IUCN Red List system was primarily developed for assessing large mammal populations and fish stocks, adapting it for invertebrates is, inevitably, an experimental process and it is to be expected that there will be variability in its application and interpretation between groups. However, each published GB Red List has information on the actual way in which decisions have been arrived at. These should be consulted where necessary.

There is no inherent equivalence between the old and new systems

Great Britain has a considerable environmental gradient from north to south and, to a lesser extent, east to west. Species which are stable in their trend or geographic extent may still be considerably limited by the availability of suitable habitat resources. In order that such species do not get missed from conservation considerations a second, parallel, system of GB scarcity has been developed. This is similar to the old Conservation Status system in that it is based on the number of 10km squares which the species is known from, in a given time period, usually 30 years previous to the date of the assessment.

Categories for this National Scarcity rating are:

NR, with 1-15 10Km occupied squares

NS, with 16 to 100 10Km occupied squares.

Clearly both systems will require periodic revision if they are to remain relevant to the needs of a modern country and the conservation of its fauna.”

The research BAP was a special designation to focus energy on studies to understand long term declines in a large list of common moth species. They were never meant to carry the same weight as the official BAP list. Unfortunately, this seems to have been forgotten. Therefore, species that fall on this list are not considered here to have conservation status. In this particular case this includes species such as Cinnabar, which are not including in any calculations based on conservation status in this report.

Araneae (Spiders)

A total of 112 species of spider were recorded with four of these having conservation status (3.6%). This proportion is quite low. The Plain held a higher proportion of spiders than anywhere else and three of the four species with status were recorded there. Spider conservation statuses were updated in 2017.

Cercidia prominens - Nationally Scarce

Only recorded during this survey on the Plain. Found during the May visit. This species is often found on heathland but will use other places with low nutrient content, such as chalk-grassland. This is a new 10 km square record for this species and a first for any of the Norfolk coast.



Fig. 9. *Cercidia prominens*

Euryopis flavomaculata (Ant-tiger) - Nationally Scarce

A single animal was suction-sampled from a purpose made heathery scrape on the Plain during the April visit and was not seen again. This appears to only be the second record for Norfolk based on the Spider Recording Scheme page for this species and a new 10 km square record for this species. The scrape where this species was found was dominated by short heather, surrounded by a sea of Wavy Hair-grass. Although livestock are likely to have a great impact on the rank grass, they may not have a great impact on producing short heathland like this and less so on producing bare ground. Therefore, the scraping carried out on the Plain should be continued until suitable early succession habitat is

created by the livestock. If this is not achieved by the livestock without having negative impacts on other features, scraping should be continued indefinitely.

***Thanatus striatus* - Nationally Scarce**

Recorded during the June survey in the Plain only. This species is often associated with thatchy grasslands, and as such probably does not deserve the conservation status that it has. Although common all along the north Norfolk coast, this was a new 10 km square record for this species.

***Zelotes electus* - Nationally Scarce**

This species is usually coastal where it is associated with sand dunes (except the Brecks and the RSPB Headquarters at Sandy). During this survey it was recorded only in the sandy Breck-like Beach Road (section 4) where it was recorded in May. This was a new 10 km square record for this species.



Fig. 10. *Zelotes electus*

Aculeate Hymenoptera (bees, ants and wasps)

A total of 17 wasps, 47 bees and 6 ants were recorded, 70 in all. Of these 70, 10 were known to have conservation status (14.3%). Section 5 had the most bees, with 18 species recorded, closely followed by section 4 with 17 species. The Plain held 15 species while the lowest was the arable section 2 to the north. Wasps were most abundant on the Plain with 12 species, the next highest being only four species in both sections 1 and 4. Overall,

the Plain came out the best for aculeates, with 30 species in all and the lowest being sections 2 and 8.

The bees have not been assessed for many years and new conservation statuses for them are currently being finalised. Many of the species in this report are not likely to stay on the list and this is likely to result in a drop in the number of species with status when the new list is published in the next couple of years.

***Bombus rupestris* - Nationally scarce b**

A single queen was recorded on the edge of section 5. The host of this large cuckoo-bee is the common Red-tailed Bumble-bee (*Bombus lapidarius*). It is now widespread though and unlikely to retain its status in the review.

***Dasypoda hirtipes* (Pantaloony Bee) - Nationally scarce b**

During this survey found only on sandy areas of Section 4. Males were also seen in the flower rich site to the east of the site with calcareous-like soils.



Fig. 11. *Dasypoda hirtipes*

***Lasioglossum pauxillum* - Nationally scarce a**

A now very common bee that will definitely not stay as scarce in the review. Found in sections 3, 4 and 5. These being the most floribund of the eight compartments.

***Lasius brunneus* Brown Tree Ant - Nationally scarce a**

A now common ant associated with trees where it is a carton nester in dead and decaying trees. Found in sections 1, 2 and 8.

***Megachile leachella* - Nationally scarce b**

This small leaf cutter bee that is usually associated with sandy areas, such as coastal dunes (but also the Brecks) was abundant on the sandy areas of section 4.



Fig. 12. *Megachile leachella*

***Nomada fucata* - Nationally scarce a**

Unlikely to retain its status in the review. This cuckoo bee is the cleptoparasite of *Andrena flavipes*. During this survey it was found in section 4 only. The only section where *Andrena flavipes* was present was also section 4.

***Nomada fulvicornis* - Rare (RDB3)**

Found in section 5 (Warren) only. This scarce cuckoo bee is the parasite of a range of specific *Andrena* species, none of which were recorded during the survey.

***Philanthus triangulum* (Bee-wolf) - Rare (RDB2)**

Predates specifically honey bees, with which it provisions its nest to feed its larvae. Likes warm, sandy bare ground. It was abundant on section 4 and the Plain. Additionally, it was also numerous on the small heath at the south of the site. Once scarce, this species is now widespread and is unlikely to retain its status in the review.

***Podalonia affinis* - Rare (RDB3)**

A huge and hairy wasp that was found on the sandy track running through the Plain only during the August survey. Another species that is mainly coastal (beyond Breckland sites). Predates larger moth caterpillars. Likely to move to nationally scarce in the review.

***Sphecodes crassus* - Nationally scarce b**

A small cuckoo bee, during this survey recorded in the Plain only in July. This species is now extremely widespread and will most likely be assessed as least concern. The host bees are *Lasioglossum* species.

Coleoptera (beetles)

A total of 270 species were recorded. Of these, 18 species were known to have some form of status (6.7%). Section 3 had the most species (93) while the Southern Woodland compartment had the last with 41 species.

***Anotylus insecatus* - Nationally notable**

A single animal was recorded in section 2 during May. This small rove beetle is mainly restricted to the east of the country.

***Agathidium marginatum* - Nationally notable**

A single adult male was found in Section 5. The species requires sandy soils where it feeds on roots.

***Aphanisticus pusillus* - Nationally Scarce**

A tiny seed-like jewel beetle that is usually only ever recorded by suction-sampler. Recorded on the track across the Plain on the 19th May. It feeds on rushes.

***Aphodius plagiatus* - Nationally Scarce**

A single animal was found in section 3. This is a coastal dung beetle associated with sand dunes (which are not far from this location despite the soils in this area not being especially sandy). It was recorded in May.

***Apteropeda globosa* - Nationally Scarce**

A single animal was recorded from Section 4. A small flea-beetle that feeds on various labiates and speedwells.

***Catapion pubescens* - Nationally scarce b**

Found in section 4 in September. This tiny weevil feeds on yellow trefoils (*Trifolium*).

***Coeliodes ruber* - Nationally scarce b**

A reddish weevil that feeds on oak. A single animal was beaten from oak in Section 1 on 15th June.

***Corticeus unicolor* - Nationally Scarce**

Found in the large log stack behind the house on the Plain in the Northern Woodland during the April visit (Section 8). The is a 'saproxylic' species that was once much scarcer but has spread in recent years.

***Dendroxena quadrimaculata* - Nationally Scarce**

A single animal was found resting on bramble leaves in Section 6 during the May visit. This scarce and unusual sylphid, rather than being associated with carrion like others in the family, is a woodland specialist where it lives in the canopy feeding mainly on caterpillars.



Fig. 13. *Dendroxena quadrimaculata*

***Diplocoelus fagi* - Nationally scarce b**

Found in the large log stack in woodland Section 8 throughout the year. A small saproxylic beetle.

***Hippodamia variegata* (Adonis Ladybird) - Nationally scarce b**

A now common ladybird that in this survey was found in sections 3 & 4.

***Hypera dauci* - Nationally scarce b**

This impressive weevil was only found in the Breck-like Section 4 of the survey. The species feeds on Common Stork's-bill, which is a key driver of the ecology in this field and in several other Breck-like fields around the site.



Fig. 14. *Hypera dauci*

***Hypera meles* - Nationally scarce a**

Found in section 2. This species is now common and widespread and does not warrant this status. It feeds on clovers, especially Red Clover.

***Neliocarus faber* - Nationally scarce b**

Found only on the Plain. This broad-nosed weevil feeds on roots of plants.

***Phalacrus championi* - Nationally scarce a**

A single animal was recorded in section 2 in August.

***Podagrica fuscipes* - Nationally Scarce**

This red and dark blue flea beetle feeds on mallow. During this survey it was only found in Section 1 where it was common.

***Quedius scitus* - Nationally scarce b**

A saproxylic rove beetle that was found only in Section 8 in the large log stack in July.

***Rhinocylus connicus* - Nationally scarce a**

This weevil feeds on thistles and is now very common. In this survey found in sections 1, 3 & 5.

Diptera (True Flies)

A total of 69 species were recorded, five of which had conservation status (7.4%). Flies are not an area that the author covers in as much detail as other taxa but within the groups covered here, hoverflies and soldierflies and allies were covered in as much detail as possible.

***Cistogaster globosa* - Rare (Endangered)**

This small but distinctive tachinid was recorded in sections 4 & 7. Tachinids have not been reviewed since 1994, this species is now commoner than once thought. The host is the Bishop's Mitre Shieldbug that was recorded in large numbers in all but sections 3 and the two woodland sections.

***Ctenophora pectinicornis* - Nationally notable**



Fig. 15. *Ctenophora pectinicornis*

This striking Batesian mimic crane-fly is totally harmless. The larvae develop in deadwood. A single animal was recorded from the log stack in section 8 in May.

***Eutolmus rufibarbis* - Nationally Scarce**

A large robber-fly associated with heathlands. During this survey it was found in sections 4 and 5. Robber-flies were reviewed in 2017.

***Micropeza lateralis* - Nationally notable**

This stilt-fly was recorded in summer in sections 4 and 7, the two sandiest sites.

***Miltogramma germeri* - Rare**

This species is a parasite of mining bees. The individual in figure 16 below was one of two animals frantically attending the burrows of female *Dasypoda* in section 4. Not reviewed since 1991.



Fig. 16. *Miltogramma germeri*

Hemiptera, Auchenorrhyncha (hoppers)

Hoppers are not covered by the author as comprehensively as the Heteroptera and therefore only 12 species were recorded. One species had conservation status. The section with the most species in was section 5, with the Northern Woodland having the least species with no hoppers present.

***Asirica clavicornis* - Nationally scarce b**

This unusual delphacid hopper has recently undergone a range expansion and is probably no longer scarce. It was recorded in sections 1, 4 & 5.

Hemiptera, Heteroptera (true bugs)

A total of 125 species were recorded during the survey, nine of which have conservation status (7.2%). This is both a very diverse total and quite a high proportion of rare species. The majority of these scarcer species are associated with bare ground or very short swards. Three of them specifically associated with Common Stork's-bill.

***Arenocoris falleni* (Fallen's Leatherbug) - Nationally Scarce**



Fig. 17. *Arenocoris falleni*

This scarce species feeds only Common Stork's-bill. During this survey, it was found on the edge of Beach Road in the Breck-like area where it was abundant. A single animal was suction-sampled from the track in front of the house on the Plain where the foodplant was abundant. Specimens were also recorded to the east of the site in the field called Poplars.

***Arenocoris waltlii* (Breckland Leatherbug) - Nationally Rare and IUCN Red List Critically Endangered**



Fig. 18. *Arenocoris waltlii* (the flared antennae and lack of white v-shaped mark on the pronotum separate this from the above species).

Quite possibly the find of the survey. This species was abundant on the rich south west facing bank to the east of Beach Road. Additionally, it was also found to be present in Poplars. This species was until recently thought to be present only in the Brecks but is clearly also well established in suitable habitat in north west Norfolk.

***Legnotus pictipes* (Heath Shieldbug) - Nationally Scarce**

Recorded in several places, most commonly on the Plain especially on the scrapes where the foodplant *Galium* (here Heath Bedstraw) was also found to be abundant. The species also needs heat, so rank heath and acid grassland is not ideal. A single animal was found in the northern field Section 2 (Storeys) and it was also abundant in section 4 (Beach Road).



Fig. 19. *Legnotus pictipes*

***Lygus pratensis* - Rare**

Although listed as rare, the Miridae are long overdue an update and this species is now one of the commonest bugs in late summer. It was found in all sections except the Plain.

***Megalonotus antennatus* - Nationally scarce b**

Recorded only on the nice bank in Beach Road (section 4). It is not clear what the plant association is for this species.



Fig. 20. *Megalonotus antennatus*

***Megalonotus praetextus* - Nationally scarce b**

A ground bug associated with Common Stork's-bill. It was found in Section 4/Beach Road only where it was abundant.



Fig. 21. *Megalonotus praetextus*

***Rhopalus parumpunctatus* - Nationally Scarce**

This Rhopalid bug was recorded from sections 2, 4, 5 & 7 throughout the survey. It favours warm open areas.

***Spathocera dalmanni* - Nationally Scarce**

This species was recorded only on the Plain (Section 7) where it was suction-sampled from along the track where its foodplant, Sheep's Sorrel, is abundant.



Fig. 22. *Spathocera dalmanni*

***Thyreocoris scarabaeoides* Scarab Shieldbug - Nationally Scarce**

A single animal was suction-sampled from the edge of the field under the pines on section 5 (Warren). The species requires short and warm turf where it is associated with violets.

Lepidoptera (moths)

A total of 65 species were recorded. The site is likely to hold far more species than those recorded. The survey technique does not record anywhere near the numbers that regular moth-trapping would return. It tends to favour day-flying species, micro moths, easily-disturbed geometrid moths and larvae. Larger bodied noctuids are mainly missed by this methodology and the only way to incorporate them and still make valid comparisons between plots would be to run eight moth traps at the same time which is not practicable. Of the 65 species recorded, none had conservation status. The Plain held the most species with 19 and the Warren the least with only nine species.

Lepidoptera (butterflies)

A total of 26 species were recorded, three of which had conservation status. The northern arable Section 1 had the most species with 15, while the Northern Woodland section 8 held only four species. Although recorded elsewhere on the Estate, not a single Peacock butterfly was recorded during the timed counts.

Small Heath - IUCN Red List Near Threatened & Section 41

Found in sections 2, 3 & 4. This species requires relatively short, warm grasslands. The larvae feed on fine-leaved grasses that are poor competitors with coarser, ranker grasses. The species is still very common in suitable habitat.

Wall - IUCN Red List Near Threatened & Section 41



Fig. 23. A pair of Wall butterflies (photo not take on site)

A species that has undergone huge declines in recent years. During this survey it was found only in sections 4 & 5 where it was frequent. Occasionally it was seen elsewhere and any seen outside of the survey were GPS'd and recorded.

White Admiral - IUCN Red List Near Threatened & Section 41

Recorded only in the Southern Woodland section 6. This woodland butterfly feeds on Honeysuckle but does need some canopy gaps too. The Southern Woodland section

featured a long ride that had a great deal of foodplant. This wasn't present in the colder and more closed canopy of the Northern Woodland.

Mollusca (slugs and snails)

Twelve species were recorded, none of which had conservation status. The darker and damper Northern Woodland section had the most species with six, while sections 2, 6 and 7 each had only one species. The site is not likely to be especially rich for molluscs being mainly acidic but some of the ditches could have some aquatic mollusc interest.

Orthoptera (crickets and grasshoppers)

A total of 11 species were recorded. The Plain held the most species with nine being present with only two in the Northern Woodland.

Odonata (dragonflies and damselflies)

Only ten species were recorded, none of which had conservation status. Section 3, closest to the marsh, had the most species with six, closely followed by section 5 with five species.

Other invertebrates

A number of other invertebrates were recorded, none of which have conservation status. These ere harvestmen (6), lacewings (4), millipedes (4), centipedes (1), earwigs (1), alderflies (1), scorpionflies (1), ticks (1), pseudoscorpions (1), crustaceans (5) and springtails (3).

3.3 Analysis by section

Tab. 2. Analysis at the section level. To show trends at a glance, the highest figure for an invertebrate order or resource is given in green and the lowest in red.

	1	2	3	4	5	6	7	8	ALL
Total species	232	225	265	260	269	184	263	175	811
Species with cons status	6	8	6	24	11	3	14	6	50
Proportion	2.6	3.6	2.3	9.2	4.1	1.6	5.3	3.4	6.2
Beetle	71	74	93	88	92	41	64	56	270
Bug	41	41	43	56	52	32	54	24	125
Spider	30	29	33	29	31	33	47	26	112
Flies	23	18	18	21	19	10	16	14	69
Moth	10	18	17	12	9	16	19	11	65
Bee	13	3	11	17	18	8	15	5	47
Butterfly	15	14	12	12	14	11	9	4	26
Wasps	4	2	2	4	2	1	12	1	17
Hoppers	5	5	4	3	6	2	3	0	12
Mollusc	3	1	2	2	2	1	1	6	12
Crickets and grasshoppers	5	6	8	4	6	7	9	2	11

Dragonflies & damselflies	1	1	6	1	5	3	3	1	10
Ant	3	3	3	3	2	1	3	2	6
Harvestman	2	1	2	1	2	4	1	4	6
Crustaceans	2	2	2	2	3	3	1	5	5
Lacewing	0	1	1	0	1	4	0	4	4
Millipede	0	0	1	0	0	1	0	4	4
Springtail	3	3	3	3	3	1	3	1	3
Caddisflies	0	0	0	0	0	1	1	2	2
Alderfly	0	0	1	0	0	0	0	0	1
Centipedes	0	0	0	0	0	0	0	1	1
Earwig	1	1	1	1	1	1	1	1	1
Scorpionfly	0	0	0	0	0	1	0	1	1
Pseudoscorpion	0	1	0	0	0	0	0	0	1
Tick	1	1	1	1	1	1	1	1	1
Uniques	46	32	56	56	33	35	65	56	379

In general, the woodland areas (6 & 8) are scoring lower than the other sections (except for a few small shade loving taxa such as lacewings and millipedes), Sections 4 and 7 come out ahead of the others with 3 and 5 following behind those. This is a good way of showing where the invertebrate hot spots are on the site, and in a project like this, showing which sites needs to be maintained, enhanced and protected. Woodlands generally are less interesting for invertebrates, particularly when there is limited open space and structure in the woods so it is not surprising that these areas did not score as well as much of the open space.

3.4 - Ubiquitous/unique

Of the 811 species, only 13 species were recorded in all eight compartments. This really is a reflection on how different the eight sections are and therefore how diverse the site is. Conversely, 379 of the 812 species were only recorded in one of the eight compartments.

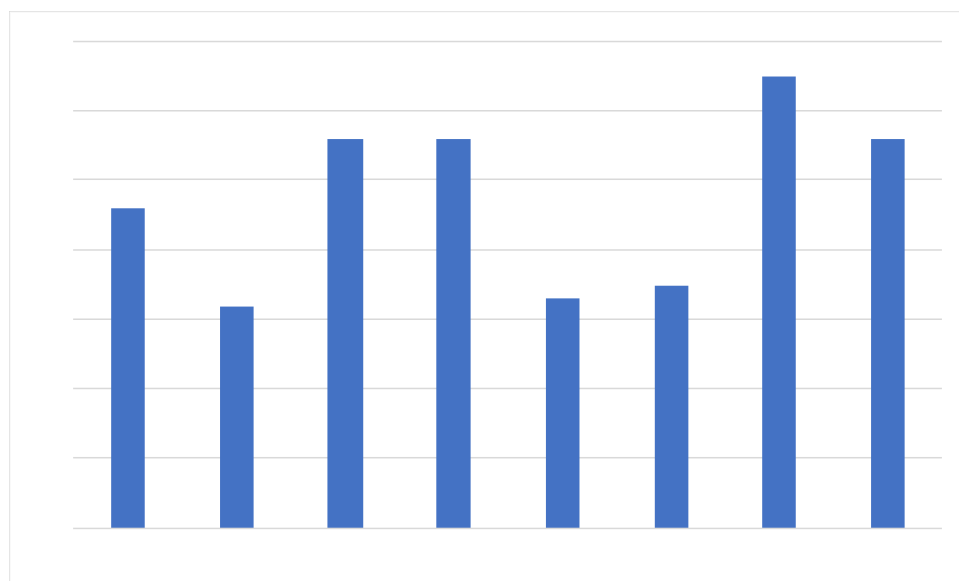


Fig. 24. Unique species by compartment

The Plain held the most species that were not seen elsewhere with 65 unique species. After this, sections 3, 4 & 8 all came in at second place each with 56 species that were not recorded anywhere else. Section held the least ‘uniques’, with only 32 not seen elsewhere.

The 13 species recorded in all eight sections were: Common Earwig, Deer Tick, *Philoscia muscorm* (Common Striped Woodlouse), *Orchesella cincta* (a springtail), *Aneolosis vittatus* (a spider), Meadow Brown, Birch Catkin Bug, *Megaloceraea recticornis* (a grass bug), Green Shield Bug, *Plagiognathus arbustorum* (a plant bug), 7-spot Ladybird, *Meligethes aeneus* (a pollen beetle) and *Rhagonycha fulva* (a soldier beetle).

3.5 - Analysis using ‘Pantheon/ISIS’

Tab. 3. All resources assessed as in favourable condition by the database are highlighted in bold (only sections 4, 5 and 7 have resources in favourable condition).

Invertebrate resource	1	2	3	4	5	6	7	8	ALL
Rich flower source	12	3	10	17	15	7	12	4	42
Scrub, heath & moorland	3	3	6	11	6	0	23	3	31
Bare sand and chalk	4	2	4	16	6	0	17	0	30
Scrub edge	5	6	8	11	11	8	16	4	26
Bark & sapwood decay	7	3	5	0	2	3	3	14	22
Open short sward	4	5	6	10	8	1	8	2	11
Heartwood decay	1	1	0	0	1	0	1	4	5

The ISIS database is a fairly sensitive way to assess change in these features at the section and site level. A measure of the success of the project for invertebrates would be more of the cells in table 3 above becoming bold showing favourable status. Although this will be hard to do for the deadwood resources (old growth takes time to improve), it should be achievable with the grassland and scrub-based resources.

3.6 - Additional species recorded outside of the timed counts

The full 88 species are recorded in Appendix 2. Of these 88 species, 11 had conservation status.

3.6.1 - Species recorded in the rewilding area

Harpalus froelichii - Nationally Rare, Near Threatened, S.41

The most significant of the additional species, perhaps on a par with the Breckland Leatherbug. Recorded at MV light in the Plain in August. This rare Breckland specialist ground beetle is centred around the Brecks with scattered records around more coastal parts of Norfolk.

Rhagonycha lutea - Nationally Scarce

A single animal was beaten from the edge of small block of woodland north of Beach Road. This arboreal soldier beetle is fairly widespread.

***Stenocarus ruficornis* - Nationally scarce b**

A single animal was recorded in the calcareous grassland to the east of the site in June. This weevil feeds on poppies.

***Alydus calcaratus* - Nationally Scarce**

A single nymph was recorded from the Breck-like area along the railway line, adjacent to the Beach Road field. This unusual bug has a striking ant-mimic nymph. Requires warm areas with short turf and bare ground. Recorded in May.

***Ceralpetus lividus* - Nationally Scarce**

A scarce leather bug that needs short, warm turf. Found together with the above species on the same day.

3.6.2 - Species recorded on sand dunes

These species were recorded on the sand dune complex to the west of the estate, outside of the rewilding area.

***Phalaris cadaverina* - Nationally Scarce**

Found to be abundant in Marram on the coastal dunes in October. A coastal tenebrionid beetle.

***Podalonia hirsuta* - Nationally scarce b**

A large coastal wasp, recorded in the dunes in April.

***Halorates reprobis* - Nationally Scarce**

A coastal money spider, found in tussocks of Marram in October on the sand dunes. A new record for north west Norfolk and the 10 km square.

***Pelecopsis nemoralioides* - Nationally Scarce**

A coastal money spider. Present in the dunes in October. A new 10 km square record.

***Typhocrestsus digitatus* - Nationally Scarce**

A money spider associated with short, dry swards, heaths and dunes, found on the sand dunes in October. A new 10 km square record.

***Walckenaeria monoceros* - Nationally Scarce**

A striking money spider with a quiff. This species was suction sampled of short turf behind the sand dunes in October. A new 10 km square record and new record for north west Norfolk.

Clearly the sand dunes at Ken Hill are extremely under-recorded for several taxa, especially spiders.

4 - Management recommendations

Ken Hill is clearly a very rich and varied site. The author not only recorded the most invertebrates of any six-visit rewilding survey but of any six-visit invertebrate survey they've carried out. The 6.2% conservation status is however comparable to other rewilding surveys carried out at Knepp and Butcherlands in West Sussex but this is comparing sites that have been in rewilding for 15 years at this stage.

4.1 - Management recommendations by compartment

4.1.1 - Cottage Field & Lamsey Lane

This area was in Oil-seed Rape during the survey and interest was extremely restricted to the edges of the fields. High levels of enrichment here may make this area less interesting to invertebrates than the other areas but should see greater changes too. There are only really gains to be made in this area.

4.1.2 - Storeys

This field was in winter wheat during the survey with species-rich margins to the north and south and very grassy rank margins to the east and west. If grazing will take the grassland on the margins (and eventually in the field centres) something closer to the Ribwort Plantain, Red Clover, Knapweed and Red Bartsia type grassland present to the north and south of this section, that would be positive. Rank grassland dominated by False Oat-grass, Cock's-foot, Nettle etc would show the site heading in the wrong direction but this is unlikely. Livestock can turn False Oat-grass grassland to something more interesting quite quickly but the issue is, if there is lots of nice grass to eat that is short and sweet, they are more likely to graze that down first. Therefore, it is easy to graze down flowers and structure by having too many animals on in the growing season. This becomes even more damaging if it is year after year at the same intensity.

4.1.3 - Marsh Breck

The grassland to the north of this block is likely to benefit from the grazing and will most likely not be harmed by the lack of mowing. The reedbed here will probably remain unchanged with livestock showing limited interest. The species-rich, ruderal/arable field known as Marsh Breck will also benefit from grazing but bare ground might quickly reduce without farming. There is a wealth of scarce arable plants in this field with very rich and floristic margins and these areas should be monitored as a reduction in flowers and structure would be counter-productive.

4.1.4 - Beach Road

Ken Hill is clearly an important invertebrate site, even as a working farm. The areas with the greatest invertebrate interest are those with bare, sandy soils. Beach Road and the Plain. Although similar in nature, the two sites are quite different. The wealth of bare ground creation on the Breck-like Beach Road is important but under arable was too

regular and extensive to be beneficial to invertebrates except on one discrete bank/margin on the edge of the old railway.

During the ISIS analysis, this and section 5 were the only sections to have a favourable 'rich flower assemblage' and the wealth of nectar sources on the bank were rich and varied. Bare ground was abundant. Away from these areas however, farming was too destructive to create any valuable invertebrate habitat. The vast area of this field is dominated beat, in time this may turn towards something more Breck-like. Historic fertiliser will be a limiting factor but should leach out of the light soils relatively easily. Weed killer was used in the area where bluebells were grown and this is also detrimental, which is unfortunate as this area is likely to recover extremely well.

The key problem will be preventing the sward from closing over with no bare ground creation. Steady grazing, the same number of animals used all year ever year, is less likely to create a suitable sward with bare ground than pulse grazing. Pulse grazing being varying the numbers, pushing harder followed by relaxation/cessation of grazing, creates germination space but then allows the vegetation to flourish. Invertebrates greatly benefit from this too.

4.1.5 - Warren

Management recommendation for this area broadly follow those for the above section.

4.1.6 - Southern Woodland

This area has a long ride that could be widened and enhanced. The creation of a more open pasture woodland around this area is also of great value and the more woodland management that can be done here the better. One issue is that any areas that are cleared rapidly become dominated by an understorey of bramble. It's likely that livestock will do nothing to improve this and it may get worse. A period of cutting AND grazing however, might break the back of it and allow the grassland to tiller under the trees and push out the bramble. This is however difficult to achieve and could easily consume resources.

4.1.7 - The Plain

This rich heathland will greatly benefit from grazing, the Wavy Hair-grass tussocks are incredibly tussocky and depending on the livestock used, may be a deterrent to grazing. If this is the case, it might be beneficial to cut some areas to allow them in to kick start the process.

Much of the invertebrate interest here is associated with the scrapes (and central track) and these should continue as the livestock are extremely unlikely to create the right habitat. That said, if pigs are used, it is possible that they may do so but with such a small area, they could spend all their time creating scrapes in the arable fields for example where these soils are not present Therefore, a 'whatever it takes' attitude is suggested, that is, continue creating scrapes here every year or two unless it becomes obvious there is no need.

The scrapes also allow a new generation of heather to regenerate (away from the scrapes the heather is mainly over-mature), which grazing is also likely to achieve but again this could be a slow process at first, careful monitoring is needed.

The ISIS analysis did not show a favourable 'rich flower assemblage' for this section and this is likely down to the lack of grazing producing a monoculture of Wavy Hair-grass.

4.1.8 - Northern Woodland

This area was very dense and dark, with a closed canopy and as a result was quite poor for invertebrates. One feature that was very significant was a large log stack in dense shade. It was a shame that the huge open grown Sycamore on the Plain that was present in March 2019 was chopped up and placed into the shade after blowing down. This tree would have been home to rare invertebrate for decades as it rotted down. By placing the wood in deep shade, and eventually using it for fire wood, it loses its value. Leaving deadwood to do its thing naturally is surely one of the basic principles of rewilding.

A similar Beech snag in this compartment had clearly come down in recent years and this was almost entirely cleared up and removed, probably placed in the same stack or taken for firewood.

4.1.8.1 - Deadwood management

ALL deadwood should be seen as sacrosanct and not removed for firewood. If firewood is needed, live healthy wood should be used. It is far better to cut down a living 30-year-old birch or oak, than it is to cut up an ancient tree (dead or alive) that has fallen over.

If deadwood has to be moved, the minimum number of cuts should be made and the wood moved the minimum possible distance. However, moving paths around such trees should be considered if possible.

4.2 - Other areas of value to invertebrate noted during the survey

4.2.1 - Small heathland to the south

The rich area to the south that is heavily rabbit grazed was found to have several species such as Bee-wolf. Gorse is taking over the sandy slope to the south of this area that has a wealth of Sand Sedge. It could be worth carrying out some gorse control here to benefit this area. Clearing some of the more established scrub here would also benefit this gently south facing slope by allowing some more light in. Neither of these tasks will be provided by livestock.

4.2.2 - Poplars

This sandy Breck-like field to the east of the site was not discovered until August. Breckland Leatherbug and several other species associated with Common Stork's-bill were recorded here that were also recorded on Beach Road.

4.2.3 - Slightly calcareous grassland north of Poplars

This floristically rich grassland would have been selected for a recording section if known about but it was not discovered until June. This is a very rich area that is likely to be benefit well from grazing as it is becoming dominated by False Oat-grass around its edges. *Dasyptoda hirtipes* was abundant here feeding on yellow composites.

4.2.4 - Pasture woodland

It was not felt that the deadwood invertebrate interest was sampled as well as it could have been during this survey and sampling the invertebrates here using aerial interception traps is suggested as a possible survey.

5 - Conclusion

Unlike other rewilding projects that are starting from a much less interesting starting point, or those that have much of their initial interest connected to old growth habitat (i.e. veteran trees), Ken Hill has a wealth of interest associated with 'early-successional habitat'. This is a direct function of both the interesting sandy soils and its arable nature. Care must be taken that if this driver is removed and the livestock do not produce similar effects, that some level of disturbance can still be produced mechanically.

Although a rich site, the pockets of interest across the site are restricted in extent. The rich area of the Beach Road section was limited to a thin section along its eastern edge. Rewilding should allow these areas to expand and connect.

The greatest threat that could face the invertebrates on this site after livestock are added could be the closing of the sward, reduction in diversity of nectar sources and reduction in bare ground which can happen if stocking densities are too high and do not vary. Livestock favour certain areas and these are usually the areas with short and varied swards, typically those that are of value to invertebrates. By allowing these some respite by pulse grazing they will be enhanced. Hopefully, by varying the intensity and timing of animals, this will be prevented and instead of this, large areas of varied structure, plentiful bare ground and a wealth of nectar sources will be created. Careful observation and the possibility and will to react to these observations will be vital in ensuring the site can be the best for wildlife that it can be.

This level of brinkmanship is difficult to manage but can be achieved as long as the monitoring/management feedback loop is maintained. Some rewilders believe that this loop is not relevant in rewilding but the author strongly believes this is a dangerous and blinkered approach. Especially so on a site that has great value to start with.

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Appendices

Appendix 1: Full species list

Order	Species	1	2	3	4	5	6	7	8	Status
Alderfly	<i>Sialis lutaria</i>			1						
Ant	<i>Formica fusca</i>			1	1	1		1		
Ant	<i>Lasius brunneus</i>	1	1						1	Na
Ant	<i>Lasius flavus</i>							1		
Ant	<i>Lasius niger</i>	1	1	1	1	1		1		
Ant	<i>Myrmica ruginodis</i>	1	1	1	1		1		1	
Ant	<i>Myrmica scabrinodis</i>	1	1	1	1	1	1	1		
Bee	<i>Andrena bicolor</i>				1					
Bee	<i>Andrena cineraria</i>					1		1		
Bee	<i>Andrena dorsata</i>	1			1	1				
Bee	<i>Andrena flavipes</i>				1					
Bee	<i>Andrena fuscipes</i>							1		
Bee	<i>Andrena haemorrhoa</i>					1				
Bee	<i>Andrena minutula</i>	1								
Bee	<i>Andrena nigroaenea</i>				1	1				
Bee	<i>Andrena nitida</i>		1		1					
Bee	<i>Andrena scotica</i>	1								
Bee	<i>Andrena subopaca</i>	1								
Bee	<i>Andrena wilkella</i>			1	1					
Bee	<i>Apis mellifera</i>	1		1		1	1	1	1	
Bee	<i>Bombus hortorum</i>	1								
Bee	<i>Bombus hypnorum</i>	1				1	1		1	
Bee	<i>Bombus lapidarius</i>	1	1	1	1	1	1		1	
Bee	<i>Bombus lucorum</i>			1				1		
Bee	<i>Bombus pascuorum</i>		1	1		1	1	1	1	
Bee	<i>Bombus pratorum</i>	1				1	1	1	1	
Bee	<i>Bombus rupestris</i>					1				Nb
Bee	<i>Bombus sylvestris</i>						1			
Bee	<i>Bombus terrestris</i>	1		1	1	1	1	1		
Bee	<i>Bombus vestalis</i>			1						
Bee	<i>Colletes hederæ</i>	1								
Bee	<i>Colletes succinctus</i>							1		
Bee	<i>Dasypoda hirtipes</i>				1					Nb
Bee	<i>Epeolus cruciger</i>							1		
Bee	<i>Epeolus variegatus</i>				1					
Bee	<i>Hylaeus communis</i>			1						
Bee	<i>Lasioglossum albipes</i>				1	1		1		
Bee	<i>Lasioglossum leucopus</i>				1					
Bee	<i>Lasioglossum morio</i>							1		
Bee	<i>Lasioglossum pauxillum</i>			1	1	1				Na
Bee	<i>Lasioglossum villosulum</i>				1					
Bee	<i>Lasioglossum punctatissimum</i>							1		
Bee	<i>Megachile leachella</i>				1					Nb
Bee	<i>Melitta leporina</i>			1	1					
Bee	<i>Nomada flavoguttata</i>	1								
Bee	<i>Nomada fucata</i>				1					Na
Bee	<i>Nomada fulvicornis</i>					1				Rare
Bee	<i>Nomada leucophthalma</i>							1		
Bee	<i>Nomada panzeri</i>	1		1		1	1			

Bee	<i>Nomada ruficornis</i>				1				
Bee	<i>Nomada rufipes</i>						1		
Bee	<i>Osmia bicornis</i>				1				
Bee	<i>Sphecodes crassus</i>						1		Nb
Bee	<i>Sphecodes ephippius</i>				1				
Beetle	<i>Adalia bipunctata</i>				1				
Beetle	<i>Adalia decempunctata</i>	1	1						1
Beetle	<i>Adrastus pallens</i>	1							
Beetle	<i>Agapanthia villosoviridescens</i>		1						
Beetle	<i>Agathidium marginatum</i>				1				No table
Beetle	<i>Agonum fuliginosum</i>			1					
Beetle	<i>Agriotes obscurus</i>				1				
Beetle	<i>Agriotes pallidulus</i>				1	1	1	1	1
Beetle	<i>Agriotes sputator</i>	1	1	1	1	1			
Beetle	<i>Agrypnus murinus</i>				1				
Beetle	<i>Altica lythri</i>			1					
Beetle	<i>Amalus scortillum</i>			1	1				
Beetle	<i>Amara aenea</i>		1						
Beetle	<i>Amara communis</i>	1							
Beetle	<i>Amara convexior</i>		1					1	
Beetle	<i>Amara familiaris</i>				1				
Beetle	<i>Amara plebeja</i>			1				1	
Beetle	<i>Amara similata</i>					1			
Beetle	<i>Amara tibialis</i>				1	1		1	
Beetle	<i>Anaspis frontalis</i>					1	1		1
Beetle	<i>Anaspis garneysi</i>								1
Beetle	<i>Anaspis maculata</i>	1		1					1
Beetle	<i>Anaspis regimbarti</i>	1		1					1
Beetle	<i>Anatis ocellata</i>					1		1	
Beetle	<i>Anchomenus dorsalis</i>	1							
Beetle	<i>Anotylus insecatus</i>		1						No table
Beetle	<i>Anthicus antherinus</i>		1	1					
Beetle	<i>Anthocomus rufus</i>			1	1				
Beetle	<i>Anthonomus rubi</i>							1	
Beetle	<i>Anthrenus fuscus</i>								1
Beetle	<i>Aphanisticus pusillus</i>							1	NS
Beetle	<i>Aphodius plagiatus</i>			1					NS
Beetle	<i>Aphodius sticticus</i>								1
Beetle	<i>Aphthona euphorbiae</i>						1		1
Beetle	<i>Apion frumentarium</i>			1		1			
Beetle	<i>Apion haematodes</i>				1			1	
Beetle	<i>Apion rubens</i>				1	1			
Beetle	<i>Apteropeda globosa</i>				1				NS
Beetle	<i>Archarius pyrrhoceras</i>			1	1			1	
Beetle	<i>Aspidapion aeneum</i>					1			
Beetle	<i>Aspidapion radiolus</i>	1				1			
Beetle	<i>Astenus lyonesis</i>				1	1		1	
Beetle	<i>Athous haemorrhoidalis</i>	1			1	1	1	1	1
Beetle	<i>Attelabus nitens</i>				1			1	
Beetle	<i>Badister bullatus</i>	1			1				

Beetle	<i>Bembidion biguttatum</i>				1				
Beetle	<i>Bembidion guttula</i>				1				
Beetle	<i>Bembidion lampros</i>	1		1		1			
Beetle	<i>Bembidion lunulatum</i>			1		1			
Beetle	<i>Bembidion mannerheimii</i>			1					
Beetle	<i>Bembidion obtusum</i>	1		1	1	1			
Beetle	<i>Bembidion quadrimaculatum</i>			1	1	1			
Beetle	<i>Betulapion simile</i>						1		
Beetle	<i>Brachypterus urticae</i>						1		1
Beetle	<i>Bruchidius varius</i>		1	1					
Beetle	<i>Bruchus loti</i>			1					
Beetle	<i>Bruchus rufimanus</i>	1	1	1		1		1	
Beetle	<i>Bruchus rufipes</i>		1		1				
Beetle	<i>Byturus ochraceus</i>				1				
Beetle	<i>Byturus tomentosus</i>					1	1		1
Beetle	<i>Calathus cinctus</i>				1				
Beetle	<i>Calodromius spilotus</i>					1			
Beetle	<i>Calvia quattuordecimguttata</i>						1		1
Beetle	<i>Cantharis cryptica</i>			1					
Beetle	<i>Cantharis decipiens</i>						1		1
Beetle	<i>Cantharis lateralis</i>	1	1		1	1			
Beetle	<i>Cantharis livida</i>				1				
Beetle	<i>Cantharis nigra</i>	1	1	1		1			
Beetle	<i>Cantharis nigricans</i>		1	1	1	1	1		
Beetle	<i>Cantharis pellucida</i>			1					1
Beetle	<i>Cantharis rufa</i>		1	1		1			
Beetle	<i>Cantharis rustica</i>	1	1	1	1	1			
Beetle	<i>Carabus problematicus</i>								1
Beetle	<i>Cartodere bifasciata</i>	1				1			1
Beetle	<i>Cassida rubiginosa</i>	1		1		1			
Beetle	<i>Cassida vibex</i>	1		1					
Beetle	<i>Cassida vittata</i>			1					
Beetle	<i>Catapion pubescens</i>				1				Nb
Beetle	<i>Catapion seniculus</i>		1						
Beetle	<i>Ceratapion onopordi</i>	1		1	1				
Beetle	<i>Cerylon histeroides</i>								1
Beetle	<i>Ceutorhynchus obstrictus</i>	1			1				1
Beetle	<i>Ceutorhynchus pallidactylus</i>	1	1	1	1	1		1	
Beetle	<i>Ceutorhynchus picitarsis</i>			1					
Beetle	<i>Ceutorhynchus typhae</i>	1							
Beetle	<i>Chaetocnema concinna</i>		1	1					
Beetle	<i>Chaetocnema hortensis</i>				1				
Beetle	<i>Cicindela campestris</i>							1	
Beetle	<i>Coccinella septempunctata</i>	1	1	1	1	1	1	1	1
Beetle	<i>Coccinella undecimpunctata</i>	1			1				
Beetle	<i>Coeliodes ruber</i>	1							Nb
Beetle	<i>Coelositona cambricus</i>			1					
Beetle	<i>Cordylepherus viridis</i>	1	1	1	1	1		1	1
Beetle	<i>Corticeus unicolor</i>								1 NS
Beetle	<i>Cryptocephalus fulvus</i>				1				

Beetle	<i>Cryptocephalus pusillus</i>	1	1						
Beetle	<i>Cryptophagus scanicus</i>					1			
Beetle	<i>Curculio glandium</i>		1						
Beetle	<i>Curtonotus aulicus</i>		1	1					
Beetle	<i>Cyphon coarctatus</i>			1					
Beetle	<i>Dalopius marginatus</i>				1			1	
Beetle	<i>Dasytes aeratus</i>		1						
Beetle	<i>Demetrias atricapillus</i>	1	1	1	1				
Beetle	<i>Dendroxena quadrimaculata</i>					1			NS
Beetle	<i>Denticollis linearis</i>			1					
Beetle	<i>Diplocoelus fagi</i>							1	Nb
Beetle	<i>Drusilla canaliculata</i>		1	1	1			1	
Beetle	<i>Dryophilus pusillus</i>							1	
Beetle	<i>Euophryum confine</i>								1
Beetle	<i>Exapion fuscirostre</i>							1	
Beetle	<i>Exapion ulicis</i>				1				
Beetle	<i>Exochomus quadripustulatus</i>	1				1		1	
Beetle	<i>Exomias pellucidus</i>	1							
Beetle	<i>Glischrochilus hortensis</i>								1
Beetle	<i>Goniocetena olivacea</i>				1			1	
Beetle	<i>Grammoptera ruficornis</i>	1		1			1		1
Beetle	<i>Halyzia sedecimguttata</i>						1		1
Beetle	<i>Harmonia axyridis</i>	1	1			1	1	1	1
Beetle	<i>Harmonia quadripunctata</i>					1		1	1
Beetle	<i>Harpalus rufipes</i>	1							
Beetle	<i>Hippodamia variegata</i>			1	1				Nb
Beetle	<i>Holotrichapion aethiops</i>					1	1		
Beetle	<i>Holotrichapion pisi</i>	1							
Beetle	<i>Hypera dauci</i>				1				Nb
Beetle	<i>Hypera meles</i>		1						Na
Beetle	<i>Hypera nigrirostris</i>		1	1					
Beetle	<i>Hypera rumicis</i>			1					
Beetle	<i>Hypera zoilus</i>							1	
Beetle	<i>Ischnopterapion loti</i>					1		1	
Beetle	<i>Ischnopterapion virens</i>		1		1				
Beetle	<i>Isomira murina</i>			1	1	1		1	
Beetle	<i>Kibunea minuta</i>		1		1	1	1		
Beetle	<i>Lagri hirta</i>	1	1				1		1
Beetle	<i>Lathrobium brunnipes</i>			1					
Beetle	<i>Lochmaea crataegi</i>			1					
Beetle	<i>Longitarsus dorsalis</i>	1							
Beetle	<i>Magdalis memnonia</i>							1	
Beetle	<i>Malachius bipustulatus</i>	1		1		1			1
Beetle	<i>Malthinus flaveolus</i>	1							1
Beetle	<i>Malvapion malvae</i>					1			
Beetle	<i>Mecinus labilis</i>		1	1					
Beetle	<i>Mecinus pascuorum</i>		1	1	1	1		1	
Beetle	<i>Mecinus pyrae</i>	1	1		1	1			
Beetle	<i>Melanotus castinipes/villosus</i>								1
Beetle	<i>Meligethes aeneus</i>	1	1	1	1	1	1	1	1

Beetle	<i>Meligethes nigrescens</i>				1				
Beetle	<i>Melolontha melolontha</i>					1			
Beetle	<i>Microelus ericae</i>						1		
Beetle	<i>Microcara testacea</i>			1			1		
Beetle	<i>Microlestes maurus</i>	1							
Beetle	<i>Microlestes minutulus</i>				1	1			
Beetle	<i>Microplantus melanostigma</i>	1							
Beetle	<i>Myrrha octodecimguttata</i>					1	1		
Beetle	<i>Myzia oblongoguttata</i>					1			
Beetle	<i>Nargus wilkii</i>								1
Beetle	<i>Nebria brevicollis</i>								1
Beetle	<i>Necrobia violacea</i>						1		
Beetle	<i>Nedus quadrimaculatus</i>	1	1	1	1	1	1		1
Beetle	<i>Neliocarus faber</i>							1	Nb
Beetle	<i>Neliocarus nebulosus</i>							1	1
Beetle	<i>Neocoenorrhinus germanicus</i>							1	
Beetle	<i>Neocrepidodera ferruginea</i>						1	1	
Beetle	<i>Nephus redtenbacheri</i>				1				
Beetle	<i>Nicrophorus vespillo</i>				1				
Beetle	<i>Notiophilus aquaticus</i>				1	1			
Beetle	<i>Notiophilus biguttatus</i>		1	1					1
Beetle	<i>Notiophilus palustris</i>		1	1		1			
Beetle	<i>Notiophilus substriatus</i>				1				
Beetle	<i>Notoxus monoceros</i>			1	1	1			
Beetle	<i>Ochina ptinoides</i>	1							
Beetle	<i>Octotemnus glabriculus</i>								1
Beetle	<i>Oedemera lurida</i>	1		1	1	1			
Beetle	<i>Oedemera nobilis</i>	1	1	1	1	1		1	
Beetle	<i>Oiceoptoma thoracicum</i>						1		
Beetle	<i>Olibrus aeneus</i>	1	1	1	1	1			
Beetle	<i>Olibrus affinis</i>				1	1			
Beetle	<i>Olibrus corticalis</i>					1			
Beetle	<i>Olibrus liquidus</i>	1							
Beetle	<i>Otiorhynchus ovatus</i>					1			
Beetle	<i>Otiorhynchus singularis</i>			1		1	1		1
Beetle	<i>Oulema melanopus</i>	1		1	1	1	1		1
Beetle	<i>Oxyporus rufus</i>				1				
Beetle	<i>Oxypselaphus obscurus</i>			1					
Beetle	<i>Oxystoma cracca</i>		1		1	1			1
Beetle	<i>Oxystoma pomonae</i>	1	1	1	1	1			
Beetle	<i>Paederus littoralis</i>		1						
Beetle	<i>Paradromius linearis</i>	1	1			1		1	
Beetle	<i>Paretheclus pollinarius</i>	1							
Beetle	<i>Paromalus flavicornis</i>								1
Beetle	<i>Pediacus dermestoides</i>								1
Beetle	<i>Perapion curtirostre</i>		1	1					
Beetle	<i>Perapion marchicum</i>							1	
Beetle	<i>Phaedon tumidulus</i>	1	1		1				
Beetle	<i>Phalacrus championi</i>		1						Na
Beetle	<i>Philonthus concinnus</i>		1						

Beetle	<i>Philorhizus melanocephalus</i>		1		1					
Beetle	<i>Phyllobius argentatus</i>			1			1			
Beetle	<i>Phyllobius maculicornis</i>		1					1		
Beetle	<i>Phyllobius pomaceus</i>	1				1				
Beetle	<i>Phyllobius pyri</i>		1	1		1	1	1		
Beetle	<i>Phyllobius roboretanus</i>	1		1						
Beetle	<i>Phyllobius virideaeris</i>					1				
Beetle	<i>Pirapion immune</i>							1		
Beetle	<i>Pissodes castaneus</i>							1		
Beetle	<i>Podagrica fuscipes</i>	1								NS
Beetle	<i>Pogonocherus hispidulus</i>						1		1	
Beetle	<i>Pogonocherus hispidus</i>								1	
Beetle	<i>Polydrusus cervinus</i>			1	1			1		
Beetle	<i>Propylea quatuordecimpunctata</i>	1	1			1	1		1	
Beetle	<i>Prosternon tessellatum</i>							1	1	
Beetle	<i>Protapion apricans</i>		1			1				
Beetle	<i>Protapion assimile</i>		1		1					
Beetle	<i>Protapion fulvipes</i>			1	1	1				
Beetle	<i>Protapion nigritarse</i>				1	1				
Beetle	<i>Protopirapion atratum</i>							1		
Beetle	<i>Pseudovadonia livida</i>	1	1		1					
Beetle	<i>Psylliodes chrysocephala</i>			1		1	1	1	1	
Beetle	<i>Psyllobora vigintiduopunctata</i>		1	1		1				
Beetle	<i>Pterostichus diligens</i>			1						
Beetle	<i>Pterostichus madidus</i>		1							
Beetle	<i>Pterostichus minor</i>			1						
Beetle	<i>Pterostichus vernalis</i>					1				
Beetle	<i>Ptomaphagus subvillosus</i>	1								
Beetle	<i>Pyrrhoxa serraticornis</i>		1	1						
Beetle	<i>Quedius scitus</i>								1	Nb
Beetle	<i>Quedius semiobscurus</i>				1	1				
Beetle	<i>Rhagonycha fulva</i>	1	1	1	1	1	1	1	1	
Beetle	<i>Rhagonycha lignosa</i>						1			
Beetle	<i>Rhagonycha limbata</i>		1							
Beetle	<i>Rhinocyllus conicus</i>	1		1		1				Nb
Beetle	<i>Rhinoncus castor</i>					1		1		
Beetle	<i>Rhizophagus dispar</i>		1							
Beetle	<i>Rhyzobius litura</i>	1	1	1	1	1		1		
Beetle	<i>Rugilus erichsonii</i>					1	1			
Beetle	<i>Rybaxis longicornis</i>		1							
Beetle	<i>Salpingus planirostris</i>						1			
Beetle	<i>Saprinus semistriatus</i>					1				
Beetle	<i>Scymnus suturalis</i>				1	1		1		
Beetle	<i>Sepedophilus nigripennis</i>	1	1			1				
Beetle	<i>Siagonium quadricorne</i>								1	
Beetle	<i>Silpha atrata</i>								1	
Beetle	<i>Sitona hispidulus</i>		1	1	1	1		1		
Beetle	<i>Sitona humeralis</i>							1		
Beetle	<i>Sitona lepidus</i>		1							
Beetle	<i>Sitona lineatus</i>	1	1	1	1	1		1		

Beetle	<i>Sitona regensteiniensis</i>				1			1	
Beetle	<i>Sitona sulcifrons</i>		1						
Beetle	<i>Sphaeroderma rubidum</i>				1				
Beetle	<i>Sphaeroderma testaceum</i>	1	1		1	1			
Beetle	<i>Stenocorus meridianus</i>	1							
Beetle	<i>Stenolophus mixtus</i>			1					
Beetle	<i>Stenus himaculatus</i>			1					
Beetle	<i>Stenus clavicornis</i>								1
Beetle	<i>Stenus juno</i>			1					
Beetle	<i>Stenus assium</i>			1					
Beetle	<i>Strophosoma capitatum</i>							1	
Beetle	<i>Strophosoma melanogrammum</i>			1			1	1	
Beetle	<i>Subcoccinella vigintiquatuorpunctata</i>	1	1	1	1	1	1	1	
Beetle	<i>Syntomus foveatus</i>				1	1		1	
Beetle	<i>Tachyporus dispar</i>	1		1			1		
Beetle	<i>Tachyporus hypnorum</i>	1	1	1	1	1	1		
Beetle	<i>Tachyporus solutus</i>			1	1				
Beetle	<i>Temnocerus nanus</i>							1	
Beetle	<i>Thanatophilus rugosus</i>					1	1		
Beetle	<i>Trachyploeus angustisetulus</i>				1			1	
Beetle	<i>Trechus quadristriatus</i>	1		1	1				
Beetle	<i>Trichosirocalus troglodytes</i>		1	1	1	1		1	
Beetle	<i>Tytthaspis sedecimpunctata</i>	1	1	1	1	1		1	
Beetle	<i>Xantholinus gallicus</i>			1				1	
Beetle	<i>Xantholinus longiventris</i>				1				
Bug	<i>Acanthosoma haemorrhoidale</i>	1							
Bug	<i>Aelia acuminata</i>	1	1		1	1		1	1
Bug	<i>Alloeotomus gothicus</i>					1	1	1	
Bug	<i>Amblytylus nasutus</i>		1			1			
Bug	<i>Anthocoris confusus</i>			1					
Bug	<i>Anthocoris nemoralis</i>	1				1		1	
Bug	<i>Anthocoris nemorum</i>	1		1	1		1		1
Bug	<i>Anthocoris sarothamni</i>				1			1	
Bug	<i>Apolygus lucorum</i>				1		1		
Bug	<i>Arenocoris falleni</i>				1			1	NS
Bug	<i>Arenocoris waltlii</i>				1				NR, CE
Bug	<i>Berytinus minor</i>				1	1			
Bug	<i>Blepharidopterus angulatus</i>								1
Bug	<i>Buchananiella continua</i>							1	
Bug	<i>Campyloneura virgula</i>								1
Bug	<i>Capsus ater</i>		1	1	1	1		1	
Bug	<i>Cardiastethus fasciventris</i>							1	1
Bug	<i>Chlamydatius pullus</i>				1				
Bug	<i>Chorosoma schillingi</i>				1			1	
Bug	<i>Closterotomus norwegicus</i>	1	1	1	1	1			
Bug	<i>Coranus subapterus</i>				1			1	
Bug	<i>Coreus marginatus</i>	1	1	1	1	1		1	
Bug	<i>Coriomeris denticulatus</i>		1		1			1	
Bug	<i>Corizus hyoscyami</i>	1	1	1	1	1			
Bug	<i>Cymus claviculus</i>							1	

Bug	<i>Cymus melanocephalus</i>			1					
Bug	<i>Cyphostethus tristriatus</i>							1	
Bug	<i>Deraeocoris lutescens</i>					1	1	1	
Bug	<i>Dicyphus epilobii</i>			1					
Bug	<i>Dicyphus globulifer</i>				1	1			
Bug	<i>Dicyphus pallicornis</i>					1			
Bug	<i>Dolycoris baccarum</i>	1	1	1	1	1	1	1	
Bug	<i>Drymus brunneus</i>								1
Bug	<i>Drymus ryei</i>					1			
Bug	<i>Drymus sylvaticus</i>	1	1	1	1	1	1		
Bug	<i>Dryophilocoris flavoquadrinotatus</i>				1				
Bug	<i>Elasmotethus interstinctus</i>					1	1	1	
Bug	<i>Elasmucha grisea</i>					1	1		
Bug	<i>Empicoris vagabundus</i>								1
Bug	<i>Eremocoris podagricus</i>		1						
Bug	<i>Eurydema oleracea</i>	1		1	1				
Bug	<i>Eurygaster testudinaria</i>				1	1			
Bug	<i>Eysarcoris venustissimus</i>	1		1					
Bug	<i>Gastrodes grossipes</i>							1	
Bug	<i>Gonocerus acuteangulatus</i>	1	1					1	1
Bug	<i>Harpocera thoracica</i>	1	1				1		
Bug	<i>Heterocordylus tibialis</i>			1	1			1	
Bug	<i>Heterogaster urticae</i>	1		1	1	1			
Bug	<i>Heterotoma planicornis</i>	1	1				1		
Bug	<i>Himacerus apterus</i>						1	1	
Bug	<i>Himacerus major</i>	1				1			
Bug	<i>Himacerus mirmicoides</i>	1		1		1		1	
Bug	<i>Ischnocoris angustulus</i>							1	
Bug	<i>Ischnodemus sabuleti</i>				1				
Bug	<i>Kalama tricornis</i>			1					
Bug	<i>Kleidocerys resedae</i>	1	1	1	1	1	1	1	1
Bug	<i>Legnotus picipes</i>		1		1			1	NS
Bug	<i>Leptoglossus occidentalis</i>				1				
Bug	<i>Leptopterna dolabrata</i>	1	1	1	1	1	1		
Bug	<i>Leptopterna ferrugata</i>				1			1	
Bug	<i>Liocoris tripustulatus</i>	1	1			1	1		1
Bug	<i>Lopus decolor</i>							1	
Bug	<i>Lygus pratensis</i>	1	1	1	1	1	1		1 Rare
Bug	<i>Lygus rugulipennis</i>	1	1	1	1	1		1	1
Bug	<i>Macrodera micropterus</i>							1	
Bug	<i>Mecomma ambulans</i>								1
Bug	<i>Megaloceraea relicticornis</i>	1	1	1	1	1	1	1	1
Bug	<i>Megalonotus antennatus</i>				1				Nb
Bug	<i>Megalonotus chiragra</i>					1			
Bug	<i>Megalonotus emarginatus</i>				1				
Bug	<i>Megalonotus praetextatus</i>				1				Nb
Bug	<i>Miris striatus</i>	1						1	
Bug	<i>Myrmus miriformis</i>				1	1		1	
Bug	<i>Nabis ericetorum</i>							1	
Bug	<i>Nabis ferus</i>	1		1	1	1	1	1	

Bug	<i>Nabis flavomarginatus</i>		1	1	1	1			
Bug	<i>Nabis limbatus</i>	1	1					1	
Bug	<i>Nabis rugosus</i>			1					
Bug	<i>Neides tipularius</i>				1	1			
Bug	<i>Neolygus viridis</i>							1	
Bug	<i>Neottiglossa pusilla</i>						1		
Bug	<i>Notostira elongata</i>	1	1	1					
Bug	<i>Nysius huttoni</i>				1		1		
Bug	<i>Oncotylus viridiflavus</i>		1	1					
Bug	<i>Orius niger</i>				1	1	1		
Bug	<i>Orthops campestris</i>	1							
Bug	<i>Orthops kalmii</i>	1	1						
Bug	<i>Orthotylus ericetorum</i>						1		
Bug	<i>Palomena prasina</i>	1	1	1	1	1	1	1	
Bug	<i>Parapiesma quadratum</i>				1				
Bug	<i>Pentatoma rufipes</i>	1		1		1	1	1	
Bug	<i>Peritrechus geniculatus</i>		1	1	1	1			
Bug	<i>Phylus melanocephalus</i>			1					
Bug	<i>Physatocheila dumetorum</i>		1	1		1			
Bug	<i>Phytocoris longipennis</i>						1		
Bug	<i>Phytocoris varipes</i>	1	1	1	1	1	1	1	
Bug	<i>Piesma maculatum</i>			1		1			
Bug	<i>Piezodorus lituratus</i>				1			1	
Bug	<i>Pithanus maerkeli</i>	1	1			1	1	1	
Bug	<i>Plagiognathus arbustorum</i>	1	1	1	1	1	1	1	
Bug	<i>Plagiognathus chrysanthemi</i>	1	1	1	1	1			
Bug	<i>Plinthinus brevipennis</i>					1		1	
Bug	<i>Podops inuncta</i>		1			1			
Bug	<i>Rhabdomiris striatellus</i>		1	1				1	
Bug	<i>Rhopalus parumpunctatus</i>		1		1	1		1	NS
Bug	<i>Rhopalus subrufus</i>		1	1		1	1		1
Bug	<i>Scolopostethus affinis</i>		1		1	1			
Bug	<i>Scolopostethus decoratus</i>						1	1	
Bug	<i>Scolopostethus grandis</i>				1		1		
Bug	<i>Scolopostethus thomsoni</i>	1	1	1		1	1		
Bug	<i>Spathocera dalmanii</i>							1	NS
Bug	<i>Stenodema calcarata</i>			1					
Bug	<i>Stenodema laevigata</i>	1	1	1	1	1	1	1	
Bug	<i>Stenotus binotatus</i>	1	1	1			1	1	1
Bug	<i>Stictopleurus punctatonevrosus</i>	1		1		1		1	
Bug	<i>Stygnocoris fuliginus</i>				1	1			
Bug	<i>Stygnocoris sabulosus</i>				1			1	
Bug	<i>Syromastus rhombeus</i>			1		1			
Bug	<i>Taphropeltus contractus</i>				1	1			
Bug	<i>Thyreocoris scarabaeoides</i>					1			NS
Bug	<i>Tingis ampliata</i>	1	1						
Bug	<i>Trapezonotus desertus</i>						1		
Bug	<i>Trapezontous arenarius</i>				1				
Bug	<i>Trigonotylus caelestialum</i>				1	1			
Bug	<i>Tritomegas bicolor</i>	1			1	1			

Butterfly	Brimstone				1				
Butterfly	Brown Argus		1		1				
Butterfly	Comma	1				1			
Butterfly	Common Blue		1	1					
Butterfly	Essex Skipper		1	1	1	1			
Butterfly	Gatekeeper	1	1	1	1	1	1	1	
Butterfly	Green Hairstreak				1				
Butterfly	Green-veined White	1		1		1	1		
Butterfly	Holly Blue	1							
Butterfly	Large Skipper	1							
Butterfly	Large White	1				1			
Butterfly	Meadow Brown	1	1	1	1	1	1	1	
Butterfly	Orange-tip	1		1		1			
Butterfly	Painted Lady	1	1	1	1	1			
Butterfly	Purple Hairstreak		1				1		
Butterfly	Red Admiral	1	1	1	1	1	1		1
Butterfly	Ringlet	1					1	1	
Butterfly	Silver-washed Fritillary					1			
Butterfly	Small Copper		1		1			1	
Butterfly	Small Heath		1	1	1				S.41, NT
Butterfly	Small Skipper		1	1		1		1	
Butterfly	Small Tortoiseshell	1	1	1	1			1	
Butterfly	Small White	1	1	1	1	1	1	1	
Butterfly	Speckled Wood					1	1		1
Butterfly	Wall				1	1			S.41, NT
Butterfly	White Admiral						1		S.41, VU
Caddisfly	<i>Limnephilus affinis</i>								1
Caddisfly	<i>Limnephilus auricula</i>						1	1	1
Centipede	<i>Lithobius forficatus</i>								1
Crickets & Gr	Common Green Grasshopper		1				1	1	
Crickets & Gr	Common Ground-hopper			1			1	1	
Crickets & Gr	Field Grasshopper	1		1	1	1		1	
Crickets & Gr	Long-winged Conehead	1	1	1		1			
Crickets & Gr	Meadow Grasshopper		1	1	1	1	1	1	
Crickets & Gr	Mottled Grasshopper						1	1	
Crickets & Gr	Oak Bush-cricket	1	1	1		1	1	1	1
Crickets & Gr	Roesel's Bush-cricket	1	1	1	1	1	1	1	
Crickets & Gr	Slender Ground-hopper			1					
Crickets & Gr	Speckled Bush-cricket	1	1	1		1	1	1	1
Crickets & Gr	Stripe-winged Grasshopper				1			1	
Dragonfly	Azure Damselfly			1					
Dragonfly	Blue-tailed Damselfly			1					
Dragonfly	Common Blue Damselfly			1		1			
Dragonfly	Common Darter						1	1	1
Dragonfly	Four-spotted Chaser			1					
Dragonfly	Hairy Dragonfly					1			
Dragonfly	Large Red Damselfly			1		1			
Dragonfly	Migrant Hawker					1		1	
Dragonfly	Ruddy Darter	1	1	1	1	1	1	1	
Dragonfly	Southern Hawker						1		

Earwig	Common Earwig	1	1	1	1	1	1	1	1	
Fly	<i>Anomoia purmunda</i>	1								
Fly	<i>Baccha elongata</i>								1	
Fly	<i>Bibio hortulanus</i>	1		1						
Fly	<i>Bibio leucopterus</i>	1	1	1				1		
Fly	<i>Bombylius major</i>	1	1		1			1		
Fly	<i>Cheilosia bergenstammi</i>					1				
Fly	<i>Cheilosia illustrata</i>		1							
Fly	<i>Cheilosia vernalis</i>					1				
Fly	<i>Chloromyia formosa</i>	1						1		
Fly	<i>Chorisops tibialis</i>				1					
Fly	<i>Chrysopilus cristatus</i>			1						
Fly	<i>Chrysotoxum bicinctum</i>	1			1					
Fly	<i>Chrysotoxum festivum</i>			1						
Fly	<i>Cistogaster globosa</i>				1			1		Rare
Fly	<i>Ctenophora pectinicornis</i>								1	Notable
Fly	<i>Dioctria atricapilla</i>		1				1			
Fly	<i>Dioctria rufipes</i>		1			1				
Fly	<i>Empis tessellata</i>	1	1	1		1				
Fly	<i>Epistrophe eligans</i>	1								
Fly	<i>Episyrphus balteatus</i>	1	1		1		1		1	
Fly	<i>Eriothrix rufomaculata</i>		1		1					
Fly	<i>Eristalis pertinax</i>			1		1		1	1	
Fly	<i>Eristalis tenax</i>	1	1							
Fly	<i>Eumerus tuberculatus</i>	1			1	1				
Fly	<i>Eupeodes latifasciatus</i>				1					
Fly	<i>Eupeodes luniger</i>	1						1	1	
Fly	<i>Eutolmus rufibarbis</i>				1	1				NS
Fly	<i>Gymnocheta viridis</i>	1	1		1		1			
Fly	<i>Haematopota pluvialis</i>		1	1						
Fly	<i>Helophilus pendulus</i>			1						
Fly	<i>Ilione albiseta</i>			1						
Fly	<i>Leptogaster cylindrica</i>	1		1	1	1		1		
Fly	<i>Limonia nubeculosa</i>								1	
Fly	<i>Machimus atricapillus</i>					1		1		
Fly	<i>Melanostoma mellinum</i>	1	1	1	1	1	1			
Fly	<i>Melanostoma scalare</i>	1				1			1	
Fly	<i>Merodon equestris</i>				1					
Fly	<i>Mesembrina meridiana</i>		1		1		1		1	
Fly	<i>Micropeza lateralis</i>				1			1		Notable
Fly	<i>Miltogramma gemari</i>				1					Rare
Fly	<i>Myathropa florea</i>					1		1		
Fly	<i>Neoitamus cyanurus</i>						1			
Fly	<i>Nowickia ferox</i>							1		
Fly	<i>Parasyrphus punctulatus</i>					1			1	
Fly	<i>Phasia barbifrons</i>							1		
Fly	<i>Phasia obesa</i>				1					
Fly	<i>Phasia pusilla</i>				1					
Fly	<i>Platycheirus rosarum</i>		1	1						
Fly	<i>Platycheirus scutatus</i>	1								

Fly	<i>Platystoma seminationis</i>	1							
Fly	<i>Rhagio lineola</i>				1	1		1	
Fly	<i>Rhagio scolopaceus</i>			1					
Fly	<i>Scaeva pyrastris</i>		1						
Fly	<i>Scaeva selenitica</i>				1				
Fly	<i>Scathophaga stercoraria</i>	1				1		1	
Fly	<i>Sicus ferrugineus</i>							1	1
Fly	<i>Sphaerophoria scripta</i>	1		1		1			
Fly	<i>Syritta pipiens</i>	1							
Fly	<i>Syrphus ribesii</i>		1	1	1	1	1	1	1
Fly	<i>Syrphus torvus</i>			1					
Fly	<i>Syrphus vitripennis</i>		1						
Fly	<i>Tachina fera</i>			1				1	
Fly	<i>Tipula paludosa</i>		1	1					
Fly	<i>Urophora cardui</i>					1			
Fly	<i>Volucella bombylans</i>	1							1
Fly	<i>Volucella inanis</i>					1			
Fly	<i>Volucella pellucens</i>	1					1		1
Fly	<i>Xylota segnis</i>						1		
Fly	<i>Xyphosia miliaria</i>				1				
Harvestman	<i>Dicranopalpus sp.</i>			1		1	1		
Harvestman	<i>Leiobunum blackwalli</i>								1
Harvestman	<i>Mitopus morio</i>		1		1		1		1
Harvestman	<i>Paroligolophus agrestis</i>	1				1	1	1	1
Harvestman	<i>Phalangium opilio</i>	1		1			1		
Harvestman	<i>Platybunus triangularis</i>								1
Hopper	<i>Agallia ribauti</i>				1				
Hopper	<i>Allygus mixtus</i>					1	1		
Hopper	<i>Asiraca clavicornis</i>	1			1	1			Nb
Hopper	<i>Cercopis vulnerata</i>	1	1			1		1	
Hopper	<i>Criomorphus albomarginatus</i>			1					
Hopper	<i>Euscelis incisus</i>	1	1	1	1	1		1	
Hopper	<i>Iassus lanius</i>	1				1			
Hopper	<i>Megophthalmus scabripennis</i>		1						
Hopper	<i>Neophilaeus lineatus</i>		1	1					
Hopper	<i>Oncopsis flavicollis</i>						1		
Hopper	<i>Philaeus spumarius</i>	1	1	1		1			
Hopper	<i>Ulopa reticulata</i>							1	
Lacewing	<i>Chrysoperla carnea</i> agg.		1	1		1	1		1
Lacewing	<i>Hemerobius lutescens</i>						1		1
Lacewing	<i>Hemerobius marginatus</i>						1		1
Lacewing	<i>Micromus variegatus</i>						1		1
Millipede	<i>Cylindroiulus punctatus</i>								1
Millipede	<i>Julus scandinavicus</i>								1
Millipede	<i>Ommatoiulus sabulosus</i>						1		1
Millipede	<i>Tachypodoiulus niger</i>			1					1
Mollusc	<i>Cepaea hortensis</i>							1	1
Mollusc	<i>Cepaea nemoralis</i>					1			1
Mollusc	<i>Cernuella virgata</i>	1							
Mollusc	<i>Discus rotundatus</i>				1				1

Mollusc	<i>Lehmannia marginata</i>							1	
Mollusc	<i>Limacus maculatus</i>							1	
Mollusc	<i>Limax maximus</i>							1	
Mollusc	<i>Monacha cantiana</i>	1	1	1	1	1			
Mollusc	<i>Oxychilus alliarius</i>						1		
Mollusc	<i>Trochulus striolatus</i>	1							
Mollusc	<i>Vertigo pygmaea</i>			1					
Moth	<i>Acleris sparsana</i>							1	
Moth	<i>Adela reamurella</i>	1							
Moth	<i>Aethes smeathmanniana</i>			1					
Moth	<i>Agapeta hamana</i>	1							
Moth	<i>Agonopterix heracliana</i>								1
Moth	<i>Agriphila geniculea</i>				1			1	
Moth	<i>Agriphila inquinatella</i>							1	
Moth	<i>Agriphila straminella</i>			1			1	1	
Moth	<i>Agriphila tristella</i>		1						
Moth	<i>Argyresthia goedartella</i>						1		
Moth	<i>Blastobasis lacticolella</i>							1	
Moth	Blood-vein								1
Moth	<i>Cameraria ohridella</i>								1
Moth	<i>Cedestis subfasciella</i>				1				
Moth	<i>Celypha lacunana</i>	1		1					
Moth	Chamomile Shark			1					
Moth	<i>Chrysoteuchia culmella</i>	1	1		1	1	1		
Moth	Cinnabar	1		1	1			1	
Moth	<i>Cochylis dubitana</i>			1					
Moth	<i>Coleophora pyrrhulipennella</i>							1	
Moth	Common Carpet		1				1	1	
Moth	Common Quaker	1							
Moth	Common Rustic agg.								1
Moth	Common Wave			1					
Moth	Copper Underwing						1	1	
Moth	<i>Crambus lathoniellus</i>		1	1					
Moth	<i>Crambus perlella</i>		1						
Moth	<i>Cydia splendana</i>						1		
Moth	Dingy Footman						1		
Moth	Dusky Sallow		1	1	1	1			
Moth	<i>Elachista argentella</i>		1					1	
Moth	<i>Esperia sulphurella</i>								1
Moth	<i>Evergestis forficalis</i>	1							1
Moth	<i>Gillmeria pallidactyla</i>		1						
Moth	<i>Glyphipterix fuscovirella</i>							1	
Moth	<i>Glyphipterix simplicella</i>		1		1	1			
Moth	<i>Grapholita compositella</i>		1						
Moth	<i>Helcystogramma rufescens</i>					1			
Moth	<i>Heliothis</i> sp.			1					
Moth	<i>Homoeosoma sinuella</i>			1	1	1		1	
Moth	Large Yellow Underwing							1	
Moth	Lesser Yellow Underwing								1
Moth	<i>Micropterix calthella</i>						1		

Moth	Middle-barred Minor				1				
Moth	Mother Shipton		1						
Moth	Mottled Umber		1	1			1		
Moth	<i>Pandemis cerasana</i>						1		
Moth	Pinion-streaked Snout					1			
Moth	<i>Pleuroptya ruralis</i>						1		
Moth	<i>Plutella xylostella</i>	1	1	1	1	1	1	1	
Moth	<i>Psyche casta</i>								1
Moth	<i>Pyrausta despicata</i>		1		1			1	
Moth	Red-green Carpet								1
Moth	Scalloped Hook-tip						1		
Moth	Scarce Umber						1		
Moth	Shaded Broad-bar		1	1					
Moth	Silver Y	1		1		1		1	
Moth	Spruce Carpet							1	
Moth	Straw Dot			1	1	1			
Moth	<i>Tortrix viridana</i>		1				1	1	
Moth	Treble Brown-spot								1
Moth	Winter Moth	1					1	1	
Moth	Yellow Belle				1				
Moth	Yellow Shell		1	1					1
Moth	Yellow-tail		1						
Pseudoscorpion	<i>Chthonius tenuis</i>		1						
Scorpionfly	<i>Panorpa germanica</i>						1		1
Spider	<i>Agalenatea redii</i>	1	1	1	1	1		1	
Spider	<i>Agelela labyrinthica</i>		1		1	1		1	
Spider	<i>Alopecosa pulverulenta</i>	1		1				1	
Spider	<i>Amaurobius similis</i>								1
Spider	<i>Anelosimus vittatus</i>	1	1	1	1	1	1	1	1
Spider	<i>Anyphaena accentuata</i>								1
Spider	<i>Araneus diadematus</i>	1		1	1	1	1	1	1
Spider	<i>Araneus quadratus</i>	1			1			1	
Spider	<i>Araneus sturmi</i>						1		
Spider	<i>Araneus triguttatus</i>			1				1	
Spider	<i>Araniella cucurbitina</i>	1				1		1	
Spider	<i>Araniella opisthographa</i>	1	1		1	1		1	
Spider	<i>Argiope bruennichi</i>		1					1	
Spider	<i>Cercidia prominens</i>							1	NS
Spider	<i>Cheiracanthium erraticum</i>	1	1	1		1			
Spider	<i>Clubiona brevipes</i>		1					1	
Spider	<i>Clubiona corticalis</i>								1
Spider	<i>Clubiona pallidula</i>								1
Spider	<i>Clubiona reclusa</i>			1					
Spider	<i>Clubiona stagnatilis</i>		1						
Spider	<i>Crustulina guttata</i>							1	
Spider	<i>Cyclosa conica</i>							1	
Spider	<i>Diaea dorsata</i>						1	1	1
Spider	<i>Dictyna arundinacea</i>			1					
Spider	<i>Dictyna latens</i>				1		1	1	
Spider	<i>Dictyna uncinata</i>	1							

Spider	<i>Diplostyla concolor</i>		1						
Spider	<i>Drape tisca socialis</i>					1			
Spider	<i>Enoplognatha latimana</i>				1				
Spider	<i>Enoplognatha ovata</i>			1		1		1	
Spider	<i>Enoplognatha thoracica</i>					1			
Spider	<i>Erigone atra</i>		1	1		1			
Spider	<i>Erigone dentipalpis</i>	1							
Spider	<i>Erigone promiscua</i>				1		1		
Spider	<i>Ero cambridgei</i>			1					
Spider	<i>Euophrys frontalis</i>	1	1		1	1		1	
Spider	<i>Euryopsis flavomaculata</i>							1	NS
Spider	<i>Gibbaranea gibbosa</i>		1	1		1	1	1	
Spider	<i>Gonatium rubellum</i>						1		
Spider	<i>Harpactea hombergi</i>	1							1
Spider	<i>Heliophanus flavipes</i>				1	1		1	
Spider	<i>Helophora insignis</i>						1		
Spider	<i>Hypomma bituberculatum</i>			1	1				
Spider	<i>Hypomma cornutum</i>		1						
Spider	<i>Hypsosinga pygmaea</i>				1			1	
Spider	<i>Larinioides cornutus</i>	1	1	1	1	1			
Spider	<i>Lathys humilis</i>							1	
Spider	<i>Lepthyphantes minutus</i>						1		1
Spider	<i>Linyphia hortensis</i>						1		1
Spider	<i>Linyphia triangularis</i>						1		1
Spider	<i>Mangora acalypha</i>		1	1				1	
Spider	<i>Meioneta rurestris</i>			1		1			
Spider	<i>Metellina mengei</i>			1	1	1	1	1	1
Spider	<i>Metellina merianae</i>								1
Spider	<i>Metellina segmentata</i>	1		1		1	1	1	1
Spider	<i>Micaria pulicaria</i>	1	1			1			
Spider	<i>Micrargus herbigradus</i>		1						
Spider	<i>Microlinyphia pusilla</i>				1	1			
Spider	<i>Microne ta viaria</i>	1		1			1		1
Spider	<i>Monocephalus fuscipes</i>							1	
Spider	<i>Neon reticulatus</i>					1		1	
Spider	<i>Nerine montana</i>								1
Spider	<i>Nerine peltata</i>						1		1
Spider	<i>Oedothorax apicatus</i>			1					
Spider	<i>Ozyptila brevipes</i>	1							
Spider	<i>Ozyptila praticola</i>						1		
Spider	<i>Ozyptila sanctuaria</i>		1		1				
Spider	<i>Pachygnatha degeeri</i>	1	1	1	1	1	1	1	
Spider	<i>Pardosa monticola</i>				1	1		1	
Spider	<i>Pardosa nigriceps</i>			1	1			1	
Spider	<i>Pardosa prativaga</i>	1	1	1	1				
Spider	<i>Pardosa pullata</i>		1			1	1	1	
Spider	<i>Pardosa saltans</i>			1	1	1	1	1	1
Spider	<i>Pelecopsis parallela</i>				1				
Spider	<i>Philodromus albidus</i>						1		
Spider	<i>Philodromus aureolus</i>	1						1	

Spider	<i>Philodromus dispar</i>					1		1	
Spider	<i>Philodromus praedatus</i>				1				
Spider	<i>Phrurolithus festivus</i>	1	1						
Spider	<i>Pirata hygrophilus</i>			1					
Spider	<i>Pirata latitans</i>			1					
Spider	<i>Pisaura mirabilis</i>	1	1	1		1	1	1	1
Spider	<i>Porrhomma pygmaeum</i>			1	1	1			
Spider	<i>Stemonyphantes lineatus</i>	1							
Spider	<i>Tenuiphantes tenuis</i>	1	1			1	1	1	
Spider	<i>Tenuiphantes zimmermanni</i>	1							
Spider	<i>Tetragnatha extensa</i>			1					
Spider	<i>Tetragnatha montana</i>			1			1		1
Spider	<i>Thanatus striatus</i>							1	NS
Spider	<i>Theridion bimaculatum</i>		1		1	1		1	
Spider	<i>Theridion impressum</i>		1	1	1	1		1	
Spider	<i>Theridion mystaceum</i>								1
Spider	<i>Theridion pallens</i>						1		1
Spider	<i>Theridion simile</i>							1	
Spider	<i>Theridion tinctum</i>						1		1
Spider	<i>Theridion varians</i>						1		
Spider	<i>Tibellus oblongus</i>	1	1						
Spider	<i>Tiso vagans</i>						1		
Spider	<i>Trachyzelotes pedestris</i>	1							
Spider	<i>Trochosa ruricola</i>				1				
Spider	<i>Trochosa terricola</i>				1				
Spider	<i>Walckenaeria atrotibialis</i>							1	
Spider	<i>Walckenaeria unicornis</i>			1					
Spider	<i>Xysticus audax</i>							1	
Spider	<i>Xysticus cristatus</i>	1	1	1		1			
Spider	<i>Xysticus erraticus</i>							1	
Spider	<i>Xysticus kochi</i>	1							
Spider	<i>Xysticus lanio</i>						1	1	1
Spider	<i>Zelotes electus</i>				1				NS
Spider	<i>Zelotes latreillei</i>							1	
Spider	<i>Zora spinimana</i>							1	
Spider	<i>Zygiella atrica</i>	1	1		1	1	1	1	
Springtail	<i>Orchesella cincta</i>	1	1	1	1	1	1	1	1
Springtail	<i>Orchesella villosa</i>	1	1	1	1	1		1	
Springtail	<i>Tomocerus longicornis</i>	1	1	1	1	1		1	
Tick	<i>Ixodes ricinus</i>	1	1	1	1	1	1	1	1
Wasp	<i>Ammophila sabulosa</i>			1				1	
Wasp	<i>Andricus kollari</i>				1				
Wasp	<i>Andricus quercuscalicis</i>	1	1					1	
Wasp	<i>Anoplius viaticus</i>							1	
Wasp	<i>Biorhiza pallida</i>	1	1					1	
Wasp	<i>Cerceris arenaria</i>							1	
Wasp	<i>Crabro cribrarius</i>				1				
Wasp	<i>Diplolepis rosae</i>			1		1			
Wasp	<i>Hedychrum nobile</i>				1	1		1	
Wasp	<i>Lindenius panzeri</i>							1	

Wasp	<i>Mellinus arvensis</i>						1		
Wasp	<i>Philanthus triangulum</i>				1			1	Rare
Wasp	<i>Podalonia affinis</i>							1	Rare
Wasp	<i>Tiphia femorata</i>	1							
Wasp	<i>Vespa crabro</i>							1	1
Wasp	<i>Vespula germanica</i>	1							
Wasp	<i>Vespula vulgaris</i>						1	1	
Woodlouse	<i>Armadillidium vulgare</i>	1	1		1	1			1
Woodlouse	<i>Oniscus asellus</i>						1		1
Woodlouse	<i>Philoscia muscorum</i>	1	1	1	1	1	1	1	1
Woodlouse	<i>Porcellio scaber</i>			1		1	1		1
Woodlouse	<i>Trichoniscus pusillus agg.</i>								1

Appendix 2 - Additional species records

Order	Species	Location	Status
Beetle	<i>Aegialia arenaria</i>	Sand dunes	
Beetle	<i>Amara apricaria</i>	The Plain light trapping	
Beetle	<i>Anotylus rugosus</i>	The Plain light trapping	
Beetle	<i>Berosus affinis</i>	The Plain light trapping	
Beetle	<i>Carabus violaceus</i>	The Plain light trapping	
Beetle	<i>Chrysolina americana</i>	Estate office	
Beetle	<i>Coccidula rufa</i>	Rewilding area	
Beetle	<i>Gastrophysa polygoni</i>	Rewilding area	
Beetle	<i>Harpalus affinis</i>	Rewilding area	
Beetle	<i>Harpalus froelichii</i>	The Plain light trapping	NR, NT, BAP
Beetle	<i>Hemicrepidius hirtus</i>	Rewilding area	
Beetle	<i>Hydrobius fuscipes</i>	The Plain light trapping	
Beetle	<i>Hypera venusta</i>	Beach Road	
Beetle	<i>Laccophilus minutus</i>	The Plain light trapping	
Beetle	<i>Melanimon tibialis</i>	Poplars	
Beetle	<i>Mogulones asperifoliarum</i>	Beach Road	
Beetle	<i>Nicrophorus vespilloides</i>	The Plain	
Beetle	<i>Phaleria cadaverina</i>	Sand dunes	NS
Beetle	<i>Phylan gibbus</i>	Sand dunes	
Beetle	<i>Pterostichus niger</i>	Rewilding area	
Beetle	<i>Rhagonycha lutea</i>	Rewilding area	NS
Beetle	<i>Silpha tristis</i>	The Plain	
Beetle	<i>Stenocarus ruficornis</i>	Rewilding area	Nb
Beetle	<i>Stictoleptura rubra</i>	Rewilding area	
Beetle	<i>Tasgius morsitans</i>	Rewilding area	
Bug	<i>Alydus calcaratus</i>	Beach Road	NS
Bug	<i>Ceraleptus lividus</i>	Beach Road	NS
Bug	<i>Deraeocoris flavilinea</i>	Rewilding area	
Bug	<i>Gampsocoris punctipes</i>	Rewilding area	
Bug	<i>Macrotylus paykulli</i>	Rewilding area	
Bug	<i>Sphragisticus nebulosus</i>	Poplars	
Butterfly	<i>Aglais io</i>	Rewilding area	
Caddisfly	<i>Mystacides longicornis</i>	The Plain light trapping	
Dragonfly	<i>Anax imperator</i>	Rewilding area	
Dragonfly	<i>Calopteryx splendens</i>	Rewilding area	
Fly	<i>Taxomyia taxi</i>	Rewilding area	
Hopper	<i>Aphrophora alni</i>	Rewilding area	
Mollusc	<i>Vitrina pellucida</i>	The Plain	
Moth	<i>Acentria ephemerella</i>	The Plain light trapping	
Moth	<i>Agrotis puta</i>	The Plain light trapping	
Moth	<i>Agrotis segetum</i>	The Plain light trapping	
Moth	<i>Alcis repandata</i>	Rewilding area	
Moth	<i>Amphipyra tragopoginis</i>	The Plain light trapping	
Moth	<i>Anarta trifolii</i>	The Plain light trapping	
Moth	<i>Carcina quercana</i>	Rewilding area	
Moth	<i>Catoptria pinella</i>	The Plain light trapping	
Moth	<i>Cerapteryx graminis</i>	The Plain light trapping	
Moth	<i>Cochylidia implicitana</i>	The Plain light trapping	
Moth	<i>Cochylimorpha straminea</i>	The Plain light trapping	

Moth	<i>Colostygia multistrigaria</i>	Rewilding area	
Moth	<i>Cyclophora punctaria</i>	The Plain light trapping	
Moth	<i>Cydia ulicetana</i>	Rewilding area	
Moth	<i>Diachrysia chrysis</i>	The Plain light trapping	
Moth	<i>Diurnea lipsiella</i>	Rewilding area	
Moth	<i>Ennomos alniaria</i>	The Plain light trapping	
Moth	<i>Epiphyas postvittana</i>	The Plain light trapping	
Moth	<i>Eupithecia icterata</i>	The Plain light trapping	
Moth	<i>Gymnoscelis rufifasciata</i>	The Plain light trapping	
Moth	<i>Hofmannophila pseudospretella</i>	Rewilding area	
Moth	<i>Hoplodrina ambigua</i>	The Plain light trapping	
Moth	<i>Idaea aversata</i>	Rewilding area	
Moth	<i>Idaea biselata</i>	Rewilding area	
Moth	<i>Idaea emarginata</i>	Rewilding area	
Moth	<i>Idaea seriata</i>	The Plain light trapping	
Moth	<i>Luperina testacea</i>	The Plain light trapping	
Moth	<i>Lycophotia porphyrea</i>	The Plain light trapping	
Moth	<i>Mamestra brassicae</i>	The Plain light trapping	
Moth	<i>Mesoligia furuncula</i>	The Plain light trapping	
Moth	<i>Mythimna albipuncta</i>	The Plain light trapping	
Moth	<i>Noctua janthe</i>	The Plain light trapping	
Moth	<i>Ochropleura plecta</i>	The Plain light trapping	
Moth	<i>Orgyia recens</i>	Rewilding area	
Moth	<i>Rhodometra sacraria</i>	The Plain light trapping	
Moth	<i>Saturnia pavonia</i>	Rewilding area	
Moth	<i>Scopula immutata</i>	Rewilding area	
Moth	<i>Thalpophila matura</i>	The Plain light trapping	
Moth	<i>Udea ferrugalis</i>	The Plain light trapping	
Moth	<i>Xestia c-nigrum</i>	The Plain light trapping	
Moth	<i>Xestia sexstrigata</i>	The Plain light trapping	
Moth	<i>Xestia xanthographa</i>	The Plain light trapping	
Spider	<i>Hahnina nava</i>	Beach Road	
Spider	<i>Halorates reprobis</i>	Sand dunes	NS
Spider	<i>Oonops domesticus</i>	Farm House	
Spider	<i>Pelecopsis nemoraloides</i>	Sand dunes	NS
Spider	<i>Typhochrestus digitatus</i>	Sand dunes	NS
Spider	<i>Walckenaeria monoceros</i>	Sand dunes	NS
Spider	<i>Zygiella x-notata</i>	Farm House	
Wasp	<i>Podalonia hirsuta</i>	Sand dunes	Nb