

Tata Steel, Port Talbot
An Invertebrate Assessment

A report for:
RSK Biocensus

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By:
Conops Entomology Ltd

Report Number: 05.22





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1 Introduction

1.1 Conops Entomology Ltd was engaged by RSK Biocensus, to undertake an invertebrate assessment of land at Tata Steel, Port Talbot.

1.2 The scope of this survey is to undertake an invertebrate assessment of land at Tata Steel, Port Talbot (referred to hereafter as ‘the site’) prior to a proposed development at the site that may partially impact the habitats and/or features of value to invertebrates. The assessment appraised the key habitats and/or features of the site through the recording of invertebrates. The data are used to assess the value to invertebrates of those habitats or features in order to evaluate the site for its importance as an invertebrate resource. From the collection of data and subsequent assessment and valuation, suitable recommendations could then be put forward in the event that some or all of those features or key habitats may be impacted by a proposed development.

1.3 The invertebrate surveys were carried out between April 2022 and September 2022 within the original red line boundary (shown in purple in Figure 1). Subsequently, adjustments were made to the red line boundary, however, no additional surveys were undertaken (shown in red in Figure 1) as the original surveys had sufficient coverage to inform the proposed development.

1.4 The site is located at OS grid reference SS 77890 85406.

1.5 The site is broadly a series of post-industrial compartments and also a compartment of tall grassy swards with ditches and stands of swamp (*Phragmites australis*).

1.6 Following a scoping survey, undertaken by Conops Entomology Ltd¹, on behalf of RSK Biocensus in November 2021, three areas of raised conservation interest and potentially important invertebrate habitat were identified within the proposed footprint of a possible development:

- Compartment 1

OS grid reference: SS 77550 85802

1.7 An area of patchy open bare ground and perennial flowering swards with kidney vetch (*Anthyllis vulneraria*), yellow composites, and umbellifers. There are stands of willow (*Salix* spp.) scrub and bramble thickets (*Rubus fruticosus* agg.). The sampling area borders a wet ditch.

- Compartment 2

OS grid reference: SS 78099 85248

1.8 A large area of tall, coarse grassland with a series of ditches. At the time of the survey, these were dry, but anecdotally, they are usually wet or full of water.

1.9 There are stands of common reed (*P. australis*) and patches of mixed scrub.

- Compartment 3

OS grid reference: SS 78374 85533

¹ Jukes, A. (2021) Land at Tata Steel Works, Port Talbot. An Invertebrate Scoping Assessment. Unpublished report for RSK Biocensus.

- 1.10 The compartment is principally a former rail line. The substrate is limestone ballast that has been partly vegetated. Along the linear trackway are areas of damp ground, scrub, and fine, sandy deposits. It is floristically varied and abundant with a range of plant families including Asteraceae and Fabaceae.

Methods and timings

- **Sample effort**

- 1.11 The methods used for the assessment are those recommended in the Natural England guidance document *Surveying Terrestrial and Freshwater Invertebrates for Conservation Evaluation* (Drake *et al.*, 2007). In some instances, a bespoke method has been created for the site assessment but still retains the overall approach to assessing features and habitats for conservation assessment. The bespoke methods relate to the extent of the free-ranging sampling.

- **Sweep netting**

- 1.12 This method provides the main proportion of the survey element and is the most efficient method for cataloguing a site's invertebrate resource. Sweep netting involves the use of a long-handled sweep net being swept over vegetation such as stands of emergent vegetation or flowers, or along scrub fringes in order to gather invertebrate material.

- **Spot sampling**

- 1.13 Spot sampling is employed to collect large, conspicuous invertebrates such as bees and wasps from flowering plants, and to supplement the sweep samples. Spot sampling is often the most effective method for recording species from high-fidelity niches.

- **Grubbing**

- 1.14 Fallen deadwood, piles of rotting timber (for deadwood beetles), and short turf (for surface-running beetles) are fingertip-searched for any hiding or crawling invertebrates, principally beetles.

- **Beating**

- 1.15 Some beating of tree and scrub branches was undertaken. This method dislodges invertebrates clinging to leaves and twigs on the scrub fringes.

- **Pitfall trapping**

- 1.16 A series of pitfall traps were installed for the duration of the survey (April–September).

- **Vacuum sampling**

- 1.17 Suction sampling was undertaken on all compartments of the site.

Target groups

- 1.18 The groups targeted for the survey are those that are key indicators of the habitats and features present on the site, as defined by Drake (2007). The principal groups are:

- bees and wasps (early succession, flowery habitats, and structural variation);
- heteropteran bugs (range of habitats including short turf ground and grasslands);
- butterflies (open grassland and early succession);

- various fly families including hoverflies; and
- beetles (including leaf beetles, ground beetles, and weevils).

Survey timing

- 1.19 The site was visited on five occasions spread throughout the peak flight period of most groups of invertebrates. Each visit consisted of two consecutive days.

Visit dates

25-26 April 2022 – sun and cloud, 14–16°C;

30-31 May 2022 – sun, 15–16°C;

19-20 June 2022 – sunny, 23–28°C;

20-21 July 2022 – sunny, 20–22°C; and

05-06 September 2022 – sunny, 19–22°C.

2 Results summary

2.1 A total of 414 species from the sampled groups were recorded from the survey visits.

2.2 A total of 28 species recorded have a national status (see Table 2), though it is recognized by many of the national recording schemes that a number of these no longer warrant their current status and that they may need revising. This total does not include research-only moths.

2.3 The full list of species recorded for each compartment is provided in Appendix II.

Table 1 Species breakdown

Sampling compartments	Total no. of species recorded	Total no. of species of importance*	Species of importance (%)
1	197	14	7.1
2	184	7	3.8
3	206	19	9.2
Site totals	414	28	6.7

*Some species do not warrant nationally significant status.

Table 2 Species of importance

Scientific name	Vernacular name	National/local status	Habitat preferences and species notes	Compartment
<i>Andrena labiata</i>	A mining bee	Notable a*	Nests in patchy bare ground and forages from small flowers such as speedwells (<i>Veronica</i> spp.) and forget-me-nots (<i>Myosotis</i> spp.). No longer thought to be scarce and likely to be downgraded in upcoming status review.	3
<i>Andrena trimmerana</i>	A mining bee	Notable b	Nests in patchy bare ground and forages from a range of plants from spring blossom such as blackthorn (<i>Prunus spinosa</i>) to Asteraceae in summer.	3
<i>Bombus humilis</i>	Brown-banded carder bee	Section 42 Priority Species	Extensive flowery grasslands with trefoils and clovers (Fabaceae), and	1, 3

Scientific name	Vernacular name	National/local status	Habitat preferences and species notes	Compartment
			Lamiaceae.	
<i>Bombus ruderator</i>	Large garden bumblebee	Notable b; Section 42 Priority Species	Extensive flowery grasslands with trefoils and clovers (Fabaceae) and Lamiaceae. Often found near wetlands.	1
<i>Bombus sylvarum</i>	Shrill carder bee	Notable b; Section 42 Priority Species	Extensive flowery grasslands with trefoils and clovers (Fabaceae) and Lamiaceae. Also often recorded from Asteraceae including ragworts (<i>Senecio</i> spp.) and common fleabane (<i>Pulicaria dycentarica</i>).	1, 2
<i>Brachinus crepitans</i>	Bombardier beetle	Nationally Scarce	Brownfield and calcareous grassland species. Prefers sites with loose aggregate material.	1
<i>Calosirus terminatus</i>	A beetle	Notable b	Short sward calcareous grasslands.	1
<i>Coenonympha pamphilus</i>	Small heath butterfly	NERC Act Section 42	Requires varied structured grassy sites with fine-leaved grasses including fescues (<i>Festuca</i> spp.) and bents (<i>Agrostis</i> spp.).	2, 3
<i>Cupido minimus</i>	Small blue butterfly	Legal Protection; Near Threatened; Section 42 Priority Species	Brownfield and calcareous grassland species. Has total fidelity to kidney vetch (<i>Anthyllis vulneraria</i>).	1, 3
<i>Crossocerus distinguendus</i>	A solitary wasp	Notable a	A small predatory wasp, most frequently found along structurally complex scrub fringes. Nests in bare ground.	3
<i>Dolichopus signifer</i>	A fly	Nationally Scarce	Muddy ground and wetlands at the coast.	3
<i>Ectemnius ruficornis</i>	A solitary wasp	Notable b	A predatory wasp, most frequently found along structurally complex scrub fringes. Nests in deadwood. Potentially	1, 3

Scientific name	Vernacular name	National/local status	Habitat preferences and species notes	Compartment
			a species that is in national decline.	
<i>Erynnis tages</i>	Dingy skipper butterfly	NERC Act Section 42	Open mosaic species associated with bird's-foot trefoils (<i>Lotus</i> spp.).	1, 3
<i>Gabrius osseticus</i>	A beetle	Notable b	A marshland species, most frequently found near the coast.	1, 2
<i>Hippodamia variegata</i>	Adonis ladybird	Notable b*	Dry parched swards, now much more common than its status suggests.	3
<i>Liorhyssus hyalinus</i>	A true bug	Nationally Scarce	Recent colonist.	1, 3
<i>Lasiommata megera</i>	Wall butterfly	Endangered, NERC Act Section 42	A rapidly declining species associated with parched, stony sites including brownfields. Requires a patchwork of bare ground and fine-leaved swards.	2, 3
<i>Malacosoma neustria</i>	Lackey moth	Section 42 Priority Species – research only; Vulnerable	A species that is listed on the NERC Act Section 42 list as a 'research only' moth. Based on the listed NERC status, the species is not 'genuinely scarce' but was originally listed owing to another reason, such as marked decline but not sufficient enough to warrant a nationally significant status. However, it is now also listed as 'vulnerable' and as such may warrant a re-evaluation of its NERC status.	2
<i>Megachile leachella</i>	Silvery leafcutter bee	Notable b	A mobile sand-loving species. Forages from a range of plants. Not uncommon around sandy coastlines.	2, 3
<i>Megalonotus praetextatus</i>	A true bug	Notable b	A ground bug associated with dry and parched sites.	3

Scientific name	Vernacular name	National/local status	Habitat preferences and species notes	Compartment
<i>Meligethes fulvipes</i>	A pollen beetle	Notable	Mainly found near the coast on flowery sites with a white mustard (<i>Sinapis arvensis</i>).	3
<i>Philanthus triangulum</i>	Bee wolf	Red Data Book 2*	Open sites with sandy areas for nesting. Preys on honeybees (<i>Apis mellifera</i>). No longer scarce or threatened and should lose any status in upcoming review.	2, 3
<i>Nysson trimaculatus</i>	A solitary wasp	Notable b*	A predatory wasp, most frequently recorded from scrub fringes. No longer thought scarce or threatened and will be downgraded in upcoming status review.	1, 3
<i>Polydrusus formosus</i>	A weevil	Notable a*	Woodland edge and scrub fringes. No longer warrants a nationally significant status.	3
<i>Sphecodes crassus</i>	A cuckoo bee	Notable b	Cleptoparasitic bee on other solitary bees, mainly <i>Lasioglossum</i> species such as <i>L. parvulum</i> .	1
<i>Tiphia minuta</i>	A cleptoparasitic wasp	Notable b*	Predates dung beetle larvae. Now more common than status suggests.	1
<i>Zophomyia temula</i>	Parasitic fly	Notable	Unknown host. Possibly increasing in range and occurrence.	1
<i>Thecophora fulvipes</i>	Diptera	Notable	A parasite of small <i>Lasioglossum</i> mining bees.	3

*Accepted as being more common than this status suggests; likely to be downgraded.

Results analysis

- 2.4 Tables 3 and 4 have been generated using the Pantheon software package. Pantheon is an analytical tool developed by Natural England and the Centre for Ecology & Hydrology (CEH) to assist invertebrate nature conservation in England. Site data in the form of species lists can be imported into Pantheon, which then analyses the species within the lists, assigning them to habitats and resources. Pantheon also consigns the most up-to-date national status to the species where it is available.
- 2.5 Pantheon is also capable of other outputs such as Specific Assemblage Types (SATs) (see Table 4).
- 2.6 A SAT is characterized by stenotopic species (those that can withstand only a narrow range of environmental conditions). SATs are therefore more tightly defined than ‘habitats’ or ‘resources’ and sit within a parent habitat or Broad Assemblage Type (BAT). More than one SAT can sit within a parent BAT.
- 2.7 SAT tables for each compartment are provided in Appendix III. Table 4 is a SAT table for the whole site.

Example:

BAT: F2 – grassland and scrub matrix

SAT: F211 – herb-rich dense sward

F212 – dense scrub

- 2.8 The information obtained from Pantheon can then be used to assign quality to sites and their features, assist in management decisions, and facilitate requirement for further surveys, where required and appropriate.
- 2.9 Pantheon was first made publicly accessible in April 2018 and is the primary analytical tool used by entomologists in site evaluation. It is also the tool recognized and preferred by Natural England. For more information on this new resource, see <http://www.brc.ac.uk/pantheon/>.
- 2.10 Not all species of importance are expressed in the following tables, as they do not form part of the Pantheon analysis, and/or their specific requirements are not yet fully understood.

Table 3 Site resource-usage table (taken from Webb et al., 2017)

Broad biotope	Habitat	No. of species	Species with conservation status (excluding research-only moths)	Conservation status
open habitats	tall sward & scrub	177	7	<i>Hippodamia variegata</i> (Notable b*); <i>Bombus humilis</i> (NERC Act Section 42); <i>Bombus ruderatus</i> (Notable b; NERC Act Section 42); <i>Bombus humilis</i> (Notable b; NERC Act Section 42); <i>Ectemnius ruficornis</i> (Notable b); <i>Erynnis tages</i> (NERC Act Section 42); <i>Cupido minimus</i> (Legal Protection; Near Threatened; NERC Act Section

Broad biotope	Habitat	No. of species	Species with conservation status (excluding research-only moths)	Conservation status
				42);
open habitats	short sward & bare ground	98	13	<i>Brachinus crepitans</i> (Nationally Scarce); <i>Calosirus terminatus</i> (Notable b); <i>Gabrius osseticus</i> (Notable b); <i>Megalonotus praetextatus</i> (Notable b); <i>Andrena labiata</i> (Notable a*); <i>Andrena trimmerana</i> (Notable b); <i>Crossocerus distinguendus</i> (Notable a); <i>Philanthus ttiangulum</i> (Red Data Book 2*); <i>Sphecodes crassus</i> (Notable b); <i>Megachile leachella</i> (Notable b); <i>Tiphia minuta</i> (Notable b*); <i>Coenonympha pamphilus</i> (NERC Act Section 42; Vulnerable); <i>Lasiommata megera</i> (Endangered; NECT Act Section 42)
wetland	marshland	35	–	–
wetland	acid & sedge peats	33	–	–
tree-associated	arboreal	22	2	<i>Polydrus formosus</i> (Notable a*); <i>Malacosoma neustria</i> (NERC Act Section 42 – research only; Vulnerable)
tree-associated	shaded woodland floor	19	1	<i>Nysson trimaculatus</i> (Notable b*)
tree-associated	decaying wood	19	1	<i>Ectemnius ruficornis</i> (Notable b)
tree-associated	wet woodland	6	–	–
wetland	wet woodland	5	–	–
wetland	running water	3	–	–
coastal	saltmarsh	1	1	<i>Dolichopus signifier</i> (Nationally Scarce)
coastal	sea cliff	1	1	<i>Calosirus terminatus</i> (Notable b)

*Accepted as being more common than this status suggests; likely to be downgraded.

Table 4 Site SAT table (taken from Webb et al., 2017)

Broad biotope	SAT	SAT code	No. of species	No. of species with conservation status (excluding research-only moths)	Conservation status	Reported condition
open habitats	rich flower resource	F002	42	6	<i>Andrena labiata</i> (Notable a*); <i>Andrena trimmerana</i> (Notable b); <i>Bombus humilis</i> (NERC Act Section 42); <i>Bombus ruderatus</i> (Notable b; NERC Act Section 42); <i>Bombus humilis</i> (Notable b; NERC Act Section 42); <i>Megachile leachella</i> (Notable b)	Favourable (42 species, 15 required)
open habitats	scrub edge	F001	16	2	<i>Crossocerus distinguendus</i> (Notable a); <i>Ectemnius ruficornis</i> (Notable b)	Favourable (16 species, 11 required)
open habitats	bare sand & chalk	F111	16	4	<i>Brachinus crepitans</i> (Nationally Scarce); <i>Gabrius osseticus</i> (Notable b); <i>Megalonotus praetextatus</i> (Notable b); <i>Megachile leachella</i> (Notable b)	Unfavourable (16 species, 19 required)
tree-associated	bark & sapwood decay	A212	14	1	<i>Ectemnius ruficornis</i> (Notable b)	Unfavourable (14 species, 19 required)
open habitats	open short sward	F112	13	3	<i>Calosirus terminatus</i> (Notable b); <i>Coenonympha pamphilus</i> (NERC Act Section 42; Vulnerable); <i>Lasiommata megera</i> (Endangered; NECT Act Section 42)	Favourable (13 species, 13 required)
open habitats	scrub-heath &	F003	4	1	<i>Thecophora fulvipes</i> (Notable)	Unfavourable (4 species, 9 required)

Broad biotope	SAT	SAT code	No. of species	No. of species with conservation status (excluding research-only moths)	Conservation status	Reported condition
	moorland					
wetland	reed-fen & pools	W314	2	–	–	Unfavourable (2 species, 11 required)
tree-associated	heartwood decay	A211	2	–	–	Unfavourable (2 species, 6 required)
coastal	saltmarsh & transitional brackish marsh	M311	1	1	<i>Dolichopus signifier</i> (Nationally Scarce)	Unfavourable (1 species, 9 required)
open habitats	exposed sea-cliff	F113	1	1	<i>Calosirus terminatus</i> (Notable b)	–

*Accepted as being more common than this status suggests; likely to be downgraded.

3 Discussion

Caveats

- 3.1 2022 experienced significant dry weather for a protracted period of time. Little to no rain for many months coupled with extreme heat events has anecdotally (personal communication with a number of other invertebrate ecologists) significantly negatively impacted invertebrate abundance across much of England and Wales. As a consequence, detection of species, particularly those that are elusive, specific to niche features, or scarce, has been affected.
- 3.2 Results therefore have been on average lower than expected, and species lists dominated by common species. It is still possible to reflect fairly the value of a site, though, through the analysis and discussion, and by using the experience of the invertebrate ecologist.

Habitats

- 3.3 The site is represented by a range of habitats broadly covering three biotopes: ‘open habitats’, ‘tree-associated’, and ‘wetland’.
- 3.4 The ‘coastal’ biotope is also represented but only by a few individual species and are noted owing to the site’s proximity to the coast, and there is an element of species drift occurring.
- 3.5 It is the open terrestrial biotope that overwhelmingly dominates the site in terms of species associations and physical extent of each habitat. This is supported by the other biotopes, both tree-associated and wetland, that contribute to the overall value of the site and opportunities to invertebrates.
- 3.6 The habitat that is the most prominent across all areas of the compartment is the tall sward and scrub habitat, with a strong total of 177 species of association recorded. The resource has a broad cross-section of species and groups dependent upon it including solitary bees and wasps, bumblebees, true bugs such as shield bugs and ground bugs, and also flies, particularly hoverflies and fruitflies. Seven species are noted by Pantheon as being of particular value to the habitat, though one is more common now than its status suggests.
- 3.7 The second most speciose habitat on the site is the short sward and bare-ground habitat, with 98 species of association, including 13 with nationally significant statuses. These totals are high and significant. This list of scarce species includes two declining butterfly species. The habitat is widespread across the site but is most obvious in compartments 1 and 3, with compartment 3 having the strongest resources, partly owing to the range of bare ground types from limestone ballast to fine, sandy deposits that enable both calcareous habitats and also sandy habitats to be present, juxtaposed to one another.
- 3.8 The site includes a few waterbodies, though the dry weather impacted these during much of the summer. Despite this, a resource of 65 species was recorded, including beetles and wetland breeding flies, though none have a nationally significant status.
- 3.9 The species assemblage associated with the tree-associated element of the site is only moderately developed, being recorded as scrub fringe. Owing to this, a resource of 59 species are recorded, including four species of significance, though at least two of these no longer warrant their current status designations.

SATs

- 3.10 The site is large and has a variety of habitat features. Consequently, there are a number of SATs noted in the SAT analysis. There are three of these SATs in favourable condition and a further two that are thought to be in favourable condition.
- 3.11 The SAT that has the greatest number of 'fidelity species' is the F002 'rich flower resource'. The assemblage holds 42 species (where the threshold for favourable status is 15). This is a considerable total above the threshold score highlighting the extensive and diverse flowering resources across the site from spring blossom to late summer-flowering Asteraceae such as common fleabane (*Pulicaria dysenterica*). This assemblage includes three NERC Act Section 42 bumblebee species including the high-conservation-priority shrill carder bee (*Bombus sylvarum*).
- 3.12 The scrub fringe SAT (F001) holds a resource of 16 species of association and is in favourable condition status (where the threshold for favourable status is 11). The varied structure and juxtapositions of scrub and open habitats are the reason for its strong presence across the site. It also includes two nationally significant solitary wasp species and is populated by a wide range of species that rely on the scrub fringe specifically but also as an interface with other associated features such as flowery swards (for foraging) or bare ground and water (for breeding).
- 3.13 The important bare sand and chalk SAT (F111) and open short sward SAT (F112) are essentially the 'open mosaics' habitat on the site. The F112 SAT matches the favourable status of 13 species of association; however, the F111 falls short of the threshold score for favourable status though only by three species of association (where the threshold is 19). Given the challenging weather of 2022, it is suggested that this SAT too would reach favourable status.
- 3.14 The bark and sapwood decay SAT (A212) with 13 species also does not reach favourable status (where the threshold for favourable status is 19). The resource may not reach favourable status; however, this is a strong total, especially when considering the obvious lack of large trees or piles of deadwood on the site. The resource is primarily an assemblage of stem-nesting bees and wasps. These are species that utilize dead stems and deadwood in which to construct a nest.
- 3.15 There are other SATs highlighted in the analysis, though these are only done so by the presence of very few or single species. They are therefore not currently thought to be intrinsic to the site. The reed-fen and pools SAT (W314) is thought to be more strongly developed on the site, but owing to the very dry conditions of 2022, the species either were at such low numbers that they were not detectable or moved out of the area to find other suitable habitats. In more typical years, it is suggested that this SAT would be a more prominent feature in compartment 2.

Species

- 3.16 The survey of the site recorded 414 species and 28 species identified by Pantheon as being of value; a number of species are more common now than their status suggests, so in time, this number would be revised downwards as further status reviews are completed.
- 3.17 Owing to the challenging weather conditions of 2022, the lists of species is slightly lower than expected, but they do still present a strong cross-section of species that are reflective of the habitats on the site. The important species on the lists are those that require complex or flower-abundant sites.
- 3.18 There are a number of significant species on the lists, but broadly there is a suite of scarce butterflies and bumblebees that are possibly of greatest value to the site.
- 3.19 The resource of butterflies totals 17 species, including four NERC Act Section 42 species. Potentially the species of greatest conservation value is the wall brown butterfly (*Lasiommata megera*). This NERC Act Section 42 species is dependent upon a range of grasses such as (*Agrostis* spp.) for its larvae, and the adults prefer sites with patchy bare ground, often gravelly or mixed aggregate/limestone ballast type sites. A number of individuals were recorded in compartments 2 and 3, suggesting that a colony is likely to be present across the site. The butterfly has declined by 77% since the 1970s², owing to climate change and also habitat loss.
- 3.20 The Kenfig Dunes National Nature Reserve to the east of Port Talbot and the site is known to be a site for the NERC Act Section 42 shrill carder bee (*Bombus sylvarum*). The species is regarded as possibly the scarcest bumblebee in mainland Britain and is recorded from the site from compartment 1 and 2. Strong numbers were recorded from both compartments. It is unknown whether they nest on the site or commute from surrounding land, but given the numbers recorded, including males, it is possible that the species could be nesting on or adjacent to the site. Two further scarce bumblebee species are also recorded: the large garden bumblebee (*B. ruderatus*) and the brown-banded carder bee (*B. humilis*).
- 3.21 The broader assemblage of bees and wasps is also of some note to the site. A total of 78 species were recorded, 12 of which currently have nationally significant statuses, and not withstanding that a number of these require downward revisions, the assemblage is a moderately high total.

² Butterfly Conservation (2022) Wall species page. Available at: <https://butterfly-conservation.org/butterflies/wall> [Accessed 04 October 2022].

Site assessment summary

- 3.22 The survey recorded 414 species from the target groups, including 28 species of importance. This constitutes 6.7% of the total species recorded.
- 3.23 The overall number of species recorded is slightly lower than expected for a site of this mosaic profile and geographical location, but it is still a strong list that includes a high number of scarce species. The scarce species percentage (6.7%) is regarded as reasonably strong though not exceptional but is complemented by strong suites of key indicator species including the butterflies, and bees and wasps.
- 3.24 The range of species recorded reflects well the habitats and features on the site, giving precedent to the scrub fringes, flowery grassland, and open and patchy bare ground. The wetlands, however, are not well expressed. This is mainly due to the very dry weather of 2022 that impacted many invertebrates, with wetland-associated species adversely affected.
- 3.25 It is considered that the site is of some value (see Site evaluation section), and as such, a number of recommendations are put forward in the Recommendations section to offset any impacts from a proposed development.
- 3.26 The key with any invertebrate compensation is to create mosaics that include strong interfaces and juxtapositions of habitats and features, as it is these that generate the opportunities to species indicative of brownfield sites, including many of those of value at the site.
- 3.27 As part of these mosaics, another important key component in compensating for negative impacts from a proposed development will be to provide extensive, flower-abundant, and diverse swards.

Site evaluation

- 3.28 The site comprises, or is thought to comprise (see Caveats section), a moderately high invertebrate fauna that includes a low number of localized and specialized species; 15 of these currently have nationally significant statuses.
- 3.29 The valuation of the site takes into consideration the range of species recorded, including the scarce species, the overall assemblages, and the importance of the habitats to the species. It also considers the context of the year's weather, the site, and/or its species in relation to the local area and further afield.
- 3.30 From considering the above summary information and data collected from the surveys, it is suggested that any impact on the site's key features and species should be considered to be of at least **Regional importance**.
- 3.31 The site is considered to be of Regional importance, and not one of a lower status, owing to the site holding or supporting potentially significant populations of three NERC Act Section 42 bumblebees, including the high-priority shrill carder bee, and all in national decline. Along with these, there is also a suite of NERC Act Section 42 butterflies (four species in total) making the site of considerable value and importance as a resource of scarce and threatened species.

4 Recommendations

Important note

- 4.1 The priority should always be to retain key areas of habitat *in situ*.
- 4.2 Where this cannot be done, a further replicant habitat **mosaic** should be created. This should be of high quality and managed to retain its desirable character.
- 4.3 All invertebrate-related mitigation should be undertaken on **low-fertility soils and aggregates**.
- 4.4 As the site and its key species are associated with a range of features, a complex mosaic of features is required to support the invertebrates that currently use the site.
- 4.5 The success of any mitigation for loss of part or all of the site's key features will be dependent on incorporating key features in juxtaposition with one another and creating features that are **abundant, extensive, and optimal**.

Open mosaics and butterfly bunds

- 4.6 The presence of an open, flowery sward with patches of bare ground is an important feature.
- 4.7 To be successful, the mosaic should be exposed to full sun for much of the day, including the key period between 10:00 and 16:00, and be created on nutrient-poor subsoils to promote a patchy sward dominated by flowering plants. Some of these substrates should be gravelly, made from partly crushed builders' rubble, or, ideally, limestone ballast. Other areas should comprise compacted, fine, sandy material for ground-nesting bees and wasps.
- 4.8 Bare ground should comprise approximately 30% of the overall habitat mosaic.
- 4.9 A mosaic of fine-leaved grasses and a range of flowering plants are required to fulfil the requirements of the open flowery mosaics. It is likely that a 'one-stop' commercially sourced seed mixture may not be suitable, but a bespoke mix will be required.
- 4.10 The bare-ground element should be topographically varied to include horizontal planes and, ideally, also near-vertical exposures or banks. These exposures can be low (as little as 20 cm) to over 1 m in height.
- 4.11 Southerly aspect bunds, also known as 'butterfly bunds' are of useful design for creating small blue breeding sites. It is recommended that bunds (anywhere between 50 cm and 3 m in height and each at least 10 m in length) are created using aggregate or limestone ballast deposits, and subsequently sown or planted with a range of key flowering plants and grasses. These bunds can be scattered throughout sunny areas of the compensation areas, or clustered together in one area, and further enhanced through the creation of flowering grassland, therefore creating a mosaic of bunds and flowery swards.

The following plant species should be included as part of the short turf sward:

- common bird's-foot trefoil (*Lotus corniculatus*) – for dingy skipper butterfly;
- hawkbits (*Leontodon* spp.);
- kidney vetch (*Anthyllis vulneraria*) – for small blue butterfly;
- other low-growing yellow Asteraceae;
- other trefoils (Fabaceae);
- other vetches (*Vicia* spp.);
- red clover (*Trifolium pratense*).

Grasses to include for both small heath and wall butterflies:

- bents (*Agrostis* spp.) – for wall and small heath butterflies;
- false brome (*Brachypodium sylvaticum*) – for wall butterfly;
- tor grass (*Brachypodium pinnatum*) – for wall butterfly;

- meadow-grasses (*Poa* spp.) – small heath butterfly;
- fescues (*Festuca* spp.) – small heath butterfly.

4.12 Note: Although wall butterfly also uses Yorkshire-fog (*Holcus lanatus*) and cock's-foot (*Dactylis glomerata*), it is not recommended that these be sown or planted, as they are tall and aggressive plants, may become dominant, and would require significant management to keep under control. It is recommended to plant only fine-leaved grass species.

Flowering swards

4.13 As the site is noted for its rich flower resource, it will be important to provide as rich and abundant a flowering resource as possible for the site's invertebrates. Flowering areas should be sown/planted with an appropriate mix of flowering plants. This mix should benefit the pollen- and nectar-foraging invertebrates, and therefore include the following:

- common bird's-foot trefoil (*Lotus corniculatus*);
- common knapweed (*Centaurea nigra*);
- bush vetch (*Vicia cracca*);
- hawkbits (*Leontodon* spp.);
- hawkweeds (*Hieracium* spp.);
- labiates (Lamiaceae);
- ragwort (*Jacobaea vulgaris*);
- meadow vetchling (*Lathyrus pratensis*);
- other trefoils (Fabaceae);
- other vetches (*Vicia* spp.);
- viper's bugloss (*Echium vulgare*);
- common fleabane (*Pulicaria dysenterica*);
- ox-eye daisy (*Leucanthemum vulgare*);
- yellow rattle (*Rhinanthus minor*);
- red clover (*Trifolium pratense*); and
- woundworts (*Stachys* spp.).

4.14 The flowering swards should have a very high density of flowers. Most standard mixes do not have a high enough proportion of flowering plants that are suitable for invertebrate mitigation, so a bespoke mix or additional ordering of supplementary flower seed or plugs is advised. On-site resources can also be used.

4.15 Site the tall flowery swards adjacent to, or as a matrix with, bare ground and butterfly bunds.

Scrub fringe

4.16 Scrub is an important interface with open flowery habitats and short turf/bare ground.

4.17 Scrub, or specifically spring blossom, is also an integral part of a healthy and functioning invertebrate site. It is a key provider of pollen and nectar in spring from March to late June before the grassland flowers dominate.

4.18 Scrub, or any trees, should not shade out important areas of flowery areas or bare ground/short turf. Where scrub is needed to produce an interface, it should be positioned on the northern side of the mosaic.

4.19 Where additional scrub planting is required, only use native species. The following species provide a continuity of flowers from early spring to summer:

- apples (*Malus domestica* agg.);
- blackthorn (*Prunus spinosa*);
- cherry plum (*Prunus cerasifera*);

- field maple (*Acer campestre*);
- hawthorn (*Crataegus monogyna*);
- plums (*Prunus domestica* agg.);
- rowan (*Sorbus aucuparia*); and
- willows (*Salix* spp.).

Wetlands

- 4.20 Although the wetlands and waterbodies did not feature strongly in the survey or analysis, they are still thought to be of value to the site, particularly in compartment 2. The ditches in this compartment were dry throughout the survey period. It is recommended that these ditches be re-dug, with some excavated to sufficient depth to retain water all year round. Other ditches should be allowed to dry out periodically.
- 4.21 The re-dug ditches do not need to be planted, as aquatic and emergent plants readily naturally colonize. If there is a desire to plant the ditches, include plants from a wide range of groups, similar to the range of plant families for terrestrial flowery swards such as Lamiaceae and Asteraceae.

5 Figures

Figure 1 – survey compartments



Legend:

- Site boundary
- 2021/2022 survey area
- Invertebrate survey compartment

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EXPERTS IN ECOLOGY

TITLE: Figure 1:
Invertebrate survey areas

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6 Appendix

Appendix I: Red Data Book definitions

Appendix II: Survey results

Appendix III: Compartment SAT Analysis tables

Appendix I: Red Data Book definitions

Red Data Book category 1 (RDB 1) – Endangered

Species that are known or believed to occur as only a single population within one 10-km square of the National Grid.

Red Data Book category 2 (RDB 2) – Vulnerable

Species declining throughout their range or in vulnerable habitats.

Red Data Book category 3 (RDB 3) – Rare

Species that are estimated to exist in only 15 or fewer post-1970 10-km squares. This criterion may be relaxed where populations are likely to exist in over 15 10-km squares but occupy small areas of especially vulnerable habitat.

Nationally Notable (Scarce) category A (NS A) – Notable A

Taxa that do not fall within the RDB category but that are nonetheless uncommon in Great Britain and thought to occur in 30 or fewer 10-km squares of the National Grid or, for less well-recorded groups, between eight and 20 vice counties.

Nationally Notable (Scarce) category B (NS B) – Notable B

Taxa that do not fall within the RDB category but that are nonetheless uncommon in Great Britain and thought to occur in 31–100 10-km squares of the National Grid or, for less well-recorded groups, between eight and 20 vice counties.

Nationally Notable (Scarce) (N) – Notable

Species that are estimated to occur within the range of 16–100 10-km squares. The subdividing of this category into Notable A and Notable B has not been attempted for many species in this part of the review.

IUCN categories

EXTINCT (EX)

A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range, have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

CRITICALLY ENDANGERED (CR)

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

ENDANGERED (EN)

A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.

VULNERABLE (VU)

A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.

NEAR THREATENED (NT)

A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered, or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

LEAST CONCERN (LC)

A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable, or Near Threatened. Widespread and abundant taxa are included in this category.

DATA DEFICIENT

A taxon is Data Deficient (DD) when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this

category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. DD is therefore not a category of threat.

GB Rarity Status categories and criteria

Broadly speaking, the Nationally Rare category is equivalent to the Red Data Book, namely: Endangered (RDB1), Vulnerable (RDB2), Rare (RDB3), Insufficiently Known (RDBK), and Extinct, which will not be used in this report.

The Nationally Scarce category is directly equivalent to the combined Nationally Notable A (Na) and Nationally Notable B (Nb) categories used in the assessment of various taxonomic groups, e.g. by Hyman and Parsons (1992) in assessing the status of beetles, but never used in a published format to assess these three families.

Nationally Rare Native species recorded from 15 or fewer hectads of the Ordnance Survey National Grid in Great Britain since 31 December 1989 and where there is reasonable confidence that exhaustive recording would not find them in more than 15 hectads. This category includes species that are probably extinct.

Nationally Scarce Native species that are not regarded as Nationally Rare AND have not been recorded from more than 100 hectads of the Ordnance Survey National Grid in Great Britain since 31 December 1989 and where there is reasonable confidence that exhaustive recording would not find them in more than 100 hectads.

England NERC S.41 Biodiversity Lists – England England NERC S.41 Species ‘of principal importance for the purpose of conserving biodiversity’ covered under section 41 (England) of the NERC Act (2006) and therefore need to be taken into consideration by a public body when performing any of its functions with a view to conserving biodiversity. 2008 Natural Environment and Rural Communities Act 2006 – Species of Principal Importance in England (section 41) and Wales (section 42).

Appendix II: Survey results

Only species with a national status have been annotated. All others are common or local species.

- **Compartment 1 species list**

Scientific name	Taxonomic group	National status
<i>Acupalpus dubius</i>	Coleoptera	
<i>Adalia bipunctata</i>	Coleoptera	
<i>Adalia decempunctata</i>	Coleoptera	
<i>Aelia acuminata</i>	Hemiptera	
<i>Agriotes lineatus</i>	Coleoptera	
<i>Agriotes obscurus</i>	Coleoptera	
<i>Agriotes sputator</i>	Coleoptera	
<i>Agrypnus murinus</i>	Coleoptera	
<i>Aleochara bipustulata</i>	Coleoptera	
<i>Amara aenea</i>	Coleoptera	
<i>Amara communis</i>	Coleoptera	
<i>Amara convexior</i>	Coleoptera	
<i>Amara lunicollis</i>	Coleoptera	
<i>Amara tibialis</i>	Coleoptera	
<i>Ammophila sabulosa</i>	Hymenoptera	
<i>Ancistrocerus nigricornis</i>	Hymenoptera	
<i>Andrena bicolor</i>	Hymenoptera	
<i>Andrena dorsata</i>	Hymenoptera	
<i>Andrena minutula</i>	Hymenoptera	
<i>Andrena wilkella</i>	Hymenoptera	
<i>Anthocoris nemoralis</i>	Hemiptera	
<i>Arachnospila spissa</i>	Hymenoptera	
<i>Armadillidium vulgare</i>	Isopoda	
<i>Athous haemorrhoidalis</i>	Coleoptera	
<i>Bembidion biguttatum</i>	Coleoptera	
<i>Bembidion guttula</i>	Coleoptera	
<i>Bibio marci</i>	Diptera	
<i>Bombus pascuorum</i>	Hymenoptera	
<i>Bombus humilis</i>	Hymenoptera	Section 42 Priority Species
<i>Bombus pascuorum</i>	Hymenoptera	
<i>Bombus pratorum</i>	Hymenoptera	
<i>Bombus ruders</i>	Hymenoptera	Notable b; Section 42 Priority Species
<i>Bombus sylvarum</i>	Hymenoptera	Notable b; Section 42 Priority Species
<i>Bombus terrestris</i>	Hymenoptera	
<i>Brachinus crepitans</i>	Coleoptera	Nationally Scarce
<i>Byrrhus pilula</i>	Coleoptera	

Scientific name	Taxonomic group	National status
<i>Byrrhus pustulatus</i>	Coleoptera	
<i>Calathus fuscipes</i>	Coleoptera	
<i>Calocoris (Calocoris) roseomaculatus</i>	Hemiptera	
<i>Calosirus terminatus</i>	Coleoptera	Notable b
<i>Cantharis flavilabris</i>	Coleoptera	
<i>Cantharis rufa</i>	Coleoptera	
<i>Cassida rubiginosa</i>	Coleoptera	
<i>Catops nigricans</i>	Coleoptera	
<i>Cerceris arenaria</i>	Hymenoptera	
<i>Ceutorhynchus obstrictus</i>	Coleoptera	
<i>Cheilosia proxima</i>	Diptera	
<i>Cheilosia vernalis</i>	Diptera	
<i>Chloromyia formosa</i>	Diptera	
<i>Chorisops tibialis</i>	Diptera	
<i>Chorosoma schillingi</i>	Hemiptera	
<i>Chorthippus brunneus</i>	Orthoptera	
<i>Chorthippus parallelus</i>	Orthoptera	
<i>Chrysomela populi</i>	Coleoptera	
<i>Closterotomus norwegicus</i>	Hemiptera	
<i>Coccinella septempunctata</i>	Coleoptera	
<i>Coenonympha pamphilus</i>	Lepidoptera	Section 42 Priority Species; Vulnerable
<i>Conocephalus fuscus</i>	Orthoptera	
<i>Coriomeris denticulatus</i>	Hemiptera	
<i>Crabro peltarius</i>	Hymenoptera	
<i>Crossocerus megacephalus</i>	Hymenoptera	
<i>Cryptocephalus aureolus</i>	Coleoptera	
<i>Cupido minimus</i>	Lepidoptera	Legal Protection; Near Threatened; Section 42 Priority Species
<i>Deraeocoris (Deraeocoris) ruber</i>	Hemiptera	
<i>Deraeocoris (Knightocapsus) lutescens</i>	Hemiptera	
<i>Discomyza incurva</i>	Diptera	
<i>Dolycoris baccarum</i>	Hemiptera	
<i>Drusilla canaliculata</i>	Coleoptera	
<i>Ectemnius ruficornis</i>	Hymenoptera	Notable b
<i>Empis tessellata</i>	Diptera	
<i>Eriothrix rufomaculata</i>	Diptera	
<i>Erynnis tages</i>	Lepidoptera	Section 42 Priority Species
<i>Eupeodes corollae</i>	Diptera	
<i>Gabrius osseticus</i>	Coleoptera	Notable b
<i>Gorytes quadrifasciatus</i>	Hymenoptera	

Scientific name	Taxonomic group	National status
<i>Halictus rubicundus</i>	Hymenoptera	
<i>Halictus tumulorum</i>	Hymenoptera	
<i>Harpalus rubripes</i>	Coleoptera	
<i>Harpalus tardus</i>	Coleoptera	
<i>Helophorus grandis</i>	Coleoptera	
<i>Hoplitis claviventris</i>	Hymenoptera	
<i>Hoplomachus thunbergii</i>	Hemiptera	
<i>Hylaeus brevicornis</i>	Hymenoptera	
<i>Hylaeus communis</i>	Hymenoptera	
<i>Hylaeus confusus</i>	Hymenoptera	
<i>Hylaeus dilatatus</i> [Genus inferred]	Hymenoptera	
<i>Hylaeus hyalinatus</i>	Hymenoptera	
<i>Hypera postica</i>	Coleoptera	
<i>Isomira murina</i>	Coleoptera	
<i>Lasioglossum albipes</i>	Hymenoptera	
<i>Lasioglossum calceatum</i>	Hymenoptera	
<i>Lasioglossum leucopus</i>	Hymenoptera	
<i>Lasioglossum leucozonium</i>	Hymenoptera	
<i>Lasioglossum minutissimum</i>	Hymenoptera	
<i>Lasioglossum morio</i>	Hymenoptera	
<i>Lasioglossum smeathmanellum</i>	Hymenoptera	
<i>Lasioglossum villosulum</i>	Hymenoptera	
<i>Leptogaster cylindrica</i>	Diptera	
<i>Lindenius albilabris</i>	Hymenoptera	
<i>Liorhyssus hyalinus</i>	Hemiptera	Nationally Scarce
<i>Longitarsus exoletus</i>	Coleoptera	
<i>Lycaena phlaeas</i>	Lepidoptera	
<i>Lygocoris (Lygocoris) rugicollis</i>	Hemiptera	
<i>Lygus rugulipennis</i>	Hemiptera	
<i>Malachius bipustulatus</i>	Coleoptera	
<i>Maniola jurtina</i>	Lepidoptera	
<i>Mecinus pascuorum</i>	Coleoptera	
<i>Mecinus pyrastrer</i>	Coleoptera	
<i>Megalonotus chiragra</i>	Hemiptera	
<i>Melanostoma scalare</i>	Diptera	
<i>Meligethes aeneus</i>	Coleoptera	
<i>Meligethes viridescens</i>	Coleoptera	
<i>Minettia fasciata</i>	Diptera	
<i>Myrmeleotettix maculatus</i>	Orthoptera	
<i>Neoascia tenur</i>	Diptera	
<i>Notostira elongata</i>	Hemiptera	
<i>Nysson trimaculatus</i>	Hymenoptera	Notable b*

Scientific name	Taxonomic group	National status
<i>Ochlodes sylvanus</i>	Lepidoptera	
<i>Ocypus aeneocephalus</i>	Coleoptera	
<i>Ocypus olens</i>	Coleoptera	
<i>Oedemera lurida</i>	Coleoptera	
<i>Oedemera nobilis</i>	Coleoptera	
<i>Olibrus aeneus</i>	Coleoptera	
<i>Ophonus puncticeps</i>	Coleoptera	
<i>Opomyza germinationis</i>	Diptera	
<i>Orthocephalus saltator</i>	Hemiptera	
<i>Orthops (Orthops) campestris</i>	Hemiptera	
<i>Orthotylus (Orthotylus) marginalis</i>	Hemiptera	
<i>Osmia aurulenta</i>	Hymenoptera	
<i>Osmia spinulosa</i>	Hymenoptera	
<i>Otiorhynchus ovatus</i>	Coleoptera	
<i>Oxycera nigricornis</i>	Diptera	
<i>Oxycera trilineata</i>	Diptera	
<i>Oxystoma pomonae</i>	Coleoptera	
<i>Paederus riparius</i>	Coleoptera	
<i>Parhelophilus versicolor</i>	Diptera	
<i>Passaloecus gracilis</i>	Hymenoptera	
<i>Pemphredon inornata</i>	Hymenoptera	
<i>Phania funesta</i>	Diptera	
<i>Pherbellia cinerella</i>	Diptera	
<i>Philonthus succicola</i>	Coleoptera	
<i>Philophylla caesio</i>	Diptera	
<i>Phyllobius pyri</i>	Coleoptera	
<i>Phyllobius roboretanus</i>	Coleoptera	
<i>Phytocoris (Ktenocoris) varipes</i>	Hemiptera	
<i>Pieris napi</i>	Lepidoptera	
<i>Pinalitus cervinus</i>	Hemiptera	
<i>Pipizella viduata</i>	Diptera	
<i>Plagiognathus (Plagiognathus) chrysanthemi</i>	Hemiptera	
<i>Platycheirus albimanus</i>	Diptera	
<i>Platycheirus manicatus</i>	Diptera	
<i>Poecilus versicolor</i>	Coleoptera	
<i>Polydrusus cervinus</i>	Coleoptera	
<i>Polyommatus icarus</i>	Lepidoptera	
<i>Psenulus concolor</i>	Hymenoptera	
<i>Psenulus pallipes</i>	Hymenoptera	
<i>Pterostichus diligens</i>	Coleoptera	
<i>Pterostichus niger</i>	Coleoptera	
<i>Pterostichus nigrita</i>	Coleoptera	

Scientific name	Taxonomic group	National status
<i>Pterostichus strenuus</i>	Coleoptera	
<i>Pyronia tithonus</i>	Lepidoptera	
<i>Pyrrhosoma nymphula</i>	Odonata	
<i>Quedius curtipennis</i>	Coleoptera	
<i>Quedius fuliginosus</i>	Coleoptera	
<i>Quedius semiobscurus</i>	Coleoptera	
<i>Rhagonycha fulva</i>	Coleoptera	
<i>Rhyzobius litura</i>	Coleoptera	
<i>Saprinus semistriatus</i>	Coleoptera	
<i>Sicus ferrugineus</i>	Diptera	
<i>Silpha atrata</i>	Coleoptera	
<i>Sitona humeralis</i>	Coleoptera	
<i>Sphaerophoria scripta</i>	Diptera	
<i>Sphecodes crassus</i>	Hymenoptera	Notable b
<i>Stenopterapion meliloti</i>	Coleoptera	
<i>Stenus clavicornis</i>	Coleoptera	
<i>Stomis pumicatus</i>	Coleoptera	
<i>Sympetrum striolatum</i>	Odonata	
<i>Sympetrum striolatum</i>	Odonata	
<i>Syritta pipiens</i>	Diptera	
<i>Syrphus ribesii</i>	Diptera	
<i>Tachinus laticollis</i>	Coleoptera	
<i>Tachinus rufipes</i>	Coleoptera	
<i>Tasgius winkleri</i>	Coleoptera	
<i>Thereva nobilitata</i>	Diptera	
<i>Thymelicus sylvestris</i>	Lepidoptera	
<i>Tiphia femorata</i>	Hymenoptera	
<i>Tiphia minuta</i>	Hymenoptera	Notable b*
<i>Trichosirocalus troglodytes</i>	Coleoptera	
<i>Trichrysis cyanea</i>	Hymenoptera	
<i>Tropidia scita</i>	Diptera	
<i>Tyria jacobaeae</i>	Lepidoptera	
<i>Urophora stylata</i>	Diptera	
<i>Vanessa atalanta</i>	Lepidoptera	
<i>Vanessa cardui</i>	Lepidoptera	
<i>Volucella bombylans</i>	Diptera	
<i>Xanthogramma pedissequum sensu lato</i>	Diptera	
<i>Zophomyia temula</i>	Diptera	Notable
<i>Zygaena filipendulae</i>	Lepidoptera	

*Widely accepted as being much more common than this status suggests; likely to be downgraded.

- **Compartment 2 species list**

Scientific name	Taxonomic group	National status
<i>Acidia cognata</i>	Diptera	
<i>Actia lamia</i>	Diptera	
<i>Acupalpus dubius</i>	Coleoptera	
<i>Adalia bipunctata</i>	Coleoptera	
<i>Adalia decempunctata</i>	Coleoptera	
<i>Agabus bipustulatus</i>	Coleoptera	
<i>Aglais urticae</i>	Lepidoptera	
<i>Agonum emarginatum</i>	Coleoptera	
<i>Agonum fuliginosum</i>	Coleoptera	
<i>Agriotes obscurus</i>	Coleoptera	
<i>Agriotes sputator</i>	Coleoptera	
<i>Agrypnus murinus</i>	Coleoptera	
<i>Amara communis</i>	Coleoptera	
<i>Anasimyia contracta</i>	Diptera	
<i>Anaspis pulicaria</i>	Coleoptera	
<i>Andrena scotica</i>	Hymenoptera	
<i>Anotylus rugosus</i>	Coleoptera	
<i>Anthocoris nemoralis</i>	Hemiptera	
<i>Aphthona nonstriata</i>	Coleoptera	
<i>Apion frumentarium</i>	Coleoptera	
<i>Bembidion biguttatum</i>	Coleoptera	
<i>Bembidion guttula</i>	Coleoptera	
<i>Beris geniculata</i>	Diptera	
<i>Beris vallata</i>	Diptera	
<i>Bombus lapidarius</i>	Hymenoptera	
<i>Bombus pascuorum</i>	Hymenoptera	
<i>Bombus sylvarum</i>	Hymenoptera	Notable b; Section 42 Priority Species
<i>Bombus terrestris</i>	Hymenoptera	
<i>Bradycellus harpalinus</i>	Coleoptera	
<i>Bruchus loti</i>	Coleoptera	
<i>Calocoris (Calocoris) roseomaculatus</i>	Hemiptera	
<i>Cantharis cryptica</i>	Coleoptera	
<i>Cantharis flavilabris</i>	Coleoptera	
<i>Cantharis rustica</i>	Coleoptera	
<i>Capsus ater</i>	Hemiptera	
<i>Cerceris arenaria</i>	Hymenoptera	
<i>Chaetostomella cylindrica</i>	Diptera	
<i>Cheilosia albitarsis</i>	Diptera	
<i>Cheilosia illustrata</i>	Diptera	

Scientific name	Taxonomic group	National status
<i>Cheilosia pagana</i>	Diptera	
<i>Chorisops tibialis</i>	Diptera	
<i>Chorthippus parallelus</i>	Orthoptera	
<i>Chrysopilus cristatus</i>	Diptera	
<i>Cleigastra apicalis</i>	Diptera	
<i>Coccidula rufa</i>	Coleoptera	
<i>Colletes daviesanus</i>	Hymenoptera	
<i>Conocephalus dorsalis</i>	Orthoptera	
<i>Conocephalus fuscus</i>	Orthoptera	
<i>Coreus marginatus</i>	Hemiptera	
<i>Crabro cribrarius</i>	Hymenoptera	
<i>Crepidodera fulvicornis</i>	Coleoptera	
<i>Crossocerus podagricus</i>	Hymenoptera	
<i>Cymus melanocephalus</i>	Hemiptera	
<i>Cynomya mortuorum</i>	Diptera	
<i>Cyphon coarctatus</i>	Coleoptera	
<i>Cyphon laevipennis</i>	Coleoptera	
<i>Dasysyrphus albostriatus</i>	Diptera	
<i>Dicyphus (Dicyphus) epilobii</i>	Hemiptera	
<i>Dilophus febrilis</i>	Diptera	
<i>Dolichopus festivus</i>	Diptera	
<i>Dolichopus wahlbergi</i>	Diptera	
<i>Dorytomus taeniatus</i>	Coleoptera	
<i>Empis livida</i>	Diptera	
<i>Empis tessellata</i>	Diptera	
<i>Enallagma cyathigerum</i>	Odonata	
<i>Epistrophe grossulariae</i>	Diptera	
<i>Episyrphus balteatus</i>	Diptera	
<i>Eriothrix rufomaculata</i>	Diptera	
<i>Eristalis intricarius</i>	Diptera	
<i>Eristalis tenax</i>	Diptera	
<i>Eupeodes corollae</i>	Diptera	
<i>Euthrix potatoria</i>	Lepidoptera	
<i>Forficula auricularia</i>	Dermaptera	
<i>Gabrius osseticus</i>	Coleoptera	Notable b
<i>Gastrophysa viridula</i>	Coleoptera	
<i>Gorytes quadrifasciatus</i>	Hymenoptera	
<i>Graphomya maculata</i>	Diptera	
<i>Helophilus pendulus</i>	Diptera	
<i>Helophorus obscurus</i>	Coleoptera	
<i>Hermaeophaga mercurialis</i>	Coleoptera	
<i>Himacerus (Aptus) mirmicoides</i>	Hemiptera	

Scientific name	Taxonomic group	National status
<i>Hylaeus brevicornis</i>	Hymenoptera	
<i>Hylaeus communis</i>	Hymenoptera	
<i>Hypera suspiciosa</i>	Coleoptera	
<i>Isomira murina</i>	Coleoptera	
<i>Lasioglossum calceatum</i>	Hymenoptera	
<i>Lasioglossum fulvicorne</i>	Hymenoptera	
<i>Lasioglossum leucopus</i>	Hymenoptera	
<i>Lasiommata megera</i>	Lepidoptera	Endangered; Section 42 Priority Species
<i>Lathrobium brunnipes</i>	Coleoptera	
<i>Lathrobium geminum</i>	Coleoptera	
<i>Leistus terminatus</i>	Coleoptera	
<i>Libellula quadrimaculata</i>	Odonata	
<i>Liophloeus tessulatus</i>	Coleoptera	
<i>Lipara lucens</i>	Diptera	
<i>Lonchoptera bifurcata</i>	Diptera	
<i>Lycaena phlaeas</i>	Lepidoptera	
<i>Lygus rugulipennis</i>	Hemiptera	
<i>Malachius bipustulatus</i>	Coleoptera	
<i>Malacosoma neustria</i>	Lepidoptera	Section 42 Priority Species – research only; Vulnerable
<i>Malthodes marginatus</i>	Coleoptera	
<i>Megachile leachella</i>	Hymenoptera	Notable b
<i>Megachile maritima</i>	Hymenoptera	
<i>Melieria crassipennis</i>	Diptera	
<i>Meligethes aeneus</i>	Coleoptera	
<i>Mesembrina meridiana</i>	Diptera	
<i>Myathropa florea</i>	Diptera	
<i>Neoscia tenor</i>	Diptera	
<i>Neocrepidodera transversa</i>	Coleoptera	
<i>Nicrophorus vespillo</i>	Coleoptera	
<i>Nigrotipula nigra</i>	Diptera	
<i>Oedemera lurida</i>	Coleoptera	
<i>Oedemera nobilis</i>	Coleoptera	
<i>Orthops (Orthops) campestris</i>	Hemiptera	
<i>Othius punctulatus</i>	Coleoptera	
<i>Oxycera rara</i>	Diptera	
<i>Paederus riparius</i>	Coleoptera	
<i>Palloptera quinquemaculata</i>	Diptera	
<i>Palomena prasina</i>	Hemiptera	
<i>Panorpa communis</i>	Mecoptera	
<i>Panorpa germanica</i>	Mecoptera	
<i>Parhelophilus versicolor</i>	Diptera	

Scientific name	Taxonomic group	National status
<i>Perapion curtirostre</i>	Coleoptera	
<i>Perapion violaceum</i>	Coleoptera	
<i>Phania funesta</i>	Diptera	
<i>Pherbellia schoenherri</i>	Diptera	
<i>Pherbina coryleti</i>	Diptera	
<i>Philanthus triangulum</i>	Hymenoptera	Red Data Book 2*
<i>Philonthus cognatus</i>	Coleoptera	
<i>Phryxe vulgaris</i>	Diptera	
<i>Phylidorea ferruginea</i>	Diptera	
<i>Phyllobius pomaceus</i>	Coleoptera	
<i>Pipizella viduata</i>	Diptera	
<i>Pipizella virens</i>	Diptera	
<i>Plagiognathus (Plagiognathus) arbustorum</i>	Hemiptera	
<i>Platycheirus fulviventris</i>	Diptera	
<i>Platycheirus manicatus</i>	Diptera	
<i>Platycheirus tarsalis</i>	Diptera	
<i>Platyrhabdus clypeatus</i>	Hymenoptera	
<i>Poecilus versicolor</i>	Coleoptera	
<i>Polyommatus icarus</i>	Lepidoptera	
<i>Psylliodes affinis</i>	Coleoptera	
<i>Pterostichus diligens</i>	Coleoptera	
<i>Pterostichus nigrita</i>	Coleoptera	
<i>Pterostichus strenuus</i>	Coleoptera	
<i>Quedius curtipennis</i>	Coleoptera	
<i>Rhagio scolopaceus</i>	Diptera	
<i>Rhagonycha fulva</i>	Coleoptera	
<i>Rhagonycha limbata</i>	Coleoptera	
<i>Rhinoncus leucostigma</i>	Coleoptera	
<i>Rhinoncus perpendicularis</i>	Coleoptera	
<i>Rhopalus (Rhopalus) subrufus</i>	Hemiptera	
<i>Rugilus erichsonii</i>	Coleoptera	
<i>Scaeva pyrastris</i>	Diptera	
<i>Scathophaga stercoraria</i>	Diptera	
<i>Scirtes hemisphaericus</i>	Coleoptera	
<i>Silpha atrata</i>	Coleoptera	
<i>Silpha tristis</i>	Coleoptera	
<i>Sitona cylindricollis</i>	Coleoptera	
<i>Sitona suturalis</i>	Coleoptera	
<i>Stenodema (Brachystira) calcarata</i>	Hemiptera	
<i>Stenotus binotatus</i>	Hemiptera	
<i>Stenus aceris</i>	Coleoptera	
<i>Stenus bimaculatus</i>	Coleoptera	

Scientific name	Taxonomic group	National status
<i>Stenus juno</i>	Coleoptera	
<i>Stomis pumicatus</i>	Coleoptera	
<i>Syntomus foveatus</i>	Coleoptera	
<i>Syrphus ribesii</i>	Diptera	
<i>Syrphus vitripennis</i>	Diptera	
<i>Tachinus rufipes</i>	Coleoptera	
<i>Tasgius melanarius</i>	Coleoptera	
<i>Tetanocera elata</i>	Diptera	
<i>Tetanocera ferruginea</i>	Diptera	
<i>Tettigonia viridissima</i>	Orthoptera	
<i>Thereva nobilitata</i>	Diptera	
<i>Thymelicus sylvestris</i>	Lepidoptera	
<i>Tipula paludosa</i>	Diptera	
<i>Tipula vernalis</i>	Diptera	
<i>Tricyphona immaculata</i>	Diptera	
<i>Tropidia scita</i>	Diptera	
<i>Urophora cardui</i>	Diptera	
<i>Urophora quadrifasciata</i>	Diptera	
<i>Vanessa atalanta</i>	Lepidoptera	
<i>Xantholinus linearis</i>	Coleoptera	

*Widely accepted as being much more common than this status suggests; likely to be downgraded.

- **Compartment 3 species list**

Scientific name	Taxonomic group	National status
<i>Acanthosoma haemorrhoidale</i>	Hemiptera	
<i>Actia lamia</i>	Diptera	
<i>Adelphocoris quadripunctatus</i>	Hemiptera	
<i>Aelia acuminata</i>	Hemiptera	
<i>Aglais io</i>	Lepidoptera	
<i>Aglais urticae</i>	Lepidoptera	
<i>Amara tibialis</i>	Coleoptera	
<i>Ammophila sabulosa</i>	Hymenoptera	
<i>Anasimyia contracta</i>	Diptera	
<i>Ancistrocerus gazella</i>	Hymenoptera	
<i>Andrena bicolor</i>	Hymenoptera	
<i>Andrena labiata</i>	Hymenoptera	Notable a*
<i>Andrena minutula</i>	Hymenoptera	
<i>Andrena trimmerana</i>	Hymenoptera	Notable b
<i>Anomoia purmunda</i>	Diptera	
<i>Anthocharis cardamines</i>	Lepidoptera	
<i>Anthocoris nemoralis</i>	Hemiptera	
<i>Aphthona nonstriata</i>	Coleoptera	
<i>Archarius salicivorus</i>	Coleoptera	
<i>Armadillidium vulgare</i>	Isopoda	
<i>Bembecia ichneumoniformis</i>	Lepidoptera	
<i>Beris vallata</i>	Diptera	
<i>Bibio marci</i>	Diptera	
<i>Bombus pascuorum</i>	Hymenoptera	
<i>Bombus humilis</i>	Hymenoptera	Section 42 Priority Species
<i>Bombus jonellus</i>	Hymenoptera	
<i>Bombus lapidarius</i>	Hymenoptera	
<i>Bombus pascuorum</i>	Hymenoptera	
<i>Bombus pratorum</i>	Hymenoptera	
<i>Bombus terrestris</i>	Hymenoptera	
<i>Bombus vestalis</i>	Hymenoptera	
<i>Bombylius major</i>	Diptera	

<i>Calliopum elisae</i>	Diptera	
<i>Calocoris (Calocoris) roseomaculatus</i>	Hemiptera	
<i>Capsus ater</i>	Hemiptera	
<i>Cassida vibex</i>	Coleoptera	
<i>Cerceris arenaria</i>	Hymenoptera	
<i>Cerceris rybyensis</i>	Hymenoptera	
<i>Cheilosia latifrons</i>	Diptera	
<i>Cheilosia pagana</i>	Diptera	
<i>Chorisops tibialis</i>	Diptera	
<i>Chorosoma schillingi</i>	Hemiptera	
<i>Chorthippus parallelus</i>	Orthoptera	
<i>Chrysopilus cristatus</i>	Diptera	
<i>Coelioxys conoidea</i>	Hymenoptera	
<i>Coenonympha pamphilus</i>	Lepidoptera	Section 42 Priority Species; Vulnerable
<i>Colletes similis</i>	Hymenoptera	
<i>Coremacera marginata</i>	Diptera	
<i>Coriomeris denticulatus</i>	Hemiptera	
<i>Corizus hyoscyami</i>	Hemiptera	
<i>Crepidodera fulvicornis</i>	Coleoptera	
<i>Crossocerus distinguendus</i>	Hymenoptera	Na
<i>Crossocerus elongatulus</i>	Hymenoptera	
<i>Crossocerus varus</i>	Hymenoptera	
<i>Crudosilis ruficollis</i>	Coleoptera	
<i>Cryptocephalus aureolus</i>	Coleoptera	
<i>Cupido minimus</i>	Lepidoptera	Legal Protection; Near Threatened; Section 42 Priority Species
<i>Dasysyrphus albostriatus</i>	Diptera	
<i>Deraeocoris (Deraeocoris) flavilinea</i>	Hemiptera	
<i>Dolichopus plumipes</i>	Diptera	
<i>Dolichopus signifer</i>	Diptera	Nationally Scarce
<i>Dolichopus wahlbergi</i>	Diptera	
<i>Dolycoris baccarum</i>	Hemiptera	
<i>Dorytomus taeniatus</i>	Coleoptera	

<i>Dryudella pinguis</i>	Hymenoptera	
<i>Ectemnius ruficornis</i>	Hymenoptera	Notable b
<i>Elasmostethus interstinctus</i>	Hemiptera	
<i>Empis livida</i>	Diptera	
<i>Empis tessellata</i>	Diptera	
<i>Enallagma cyathigerum</i>	Odonata	
<i>Epeolus variegatus</i>	Hymenoptera	
<i>Epistrophe eligans</i>	Diptera	
<i>Epistrophe grossulariae</i>	Diptera	
<i>Eriothrix rufomaculata</i>	Diptera	
<i>Eristalis pertinax</i>	Diptera	
<i>Erynnis tages</i>	Lepidoptera	Section 42 Priority Species
<i>Euclidia glyphica</i>	Lepidoptera	
<i>Eupeodes corollae</i>	Diptera	
<i>Eupeodes luniger</i>	Diptera	
<i>Eurygaster testudinaria</i>	Hemiptera	
<i>Gastrophysa viridula</i>	Coleoptera	
<i>Gymnocheta viridis</i>	Diptera	
<i>Halictus tumulorum</i>	Hymenoptera	
<i>Helophilus pendulus</i>	Diptera	
<i>Herina lugubris</i>	Diptera	
<i>Himacerus (Aptus) mirmicoides</i>	Hemiptera	
<i>Hippodamia variegata</i>	Coleoptera	Notable b*
<i>Hoplomachus thunbergii</i>	Hemiptera	
<i>Hylaeus brevicornis</i>	Hymenoptera	
<i>Hylaeus communis</i>	Hymenoptera	
<i>Hylaeus confusus</i>	Hymenoptera	
<i>Hylaeus dilatatus [Genus inferred]</i>	Hymenoptera	
<i>Hylaeus hyalinatus</i>	Hymenoptera	
<i>Ischnura elegans</i>	Odonata	
<i>Isomira murina</i>	Coleoptera	
<i>Lagria hirta</i>	Coleoptera	
<i>Lasioglossum albipes</i>	Hymenoptera	
<i>Lasioglossum calceatum</i>	Hymenoptera	
<i>Lasioglossum leucozonium</i>	Hymenoptera	

<i>Lasioglossum morio</i>	Hymenoptera	
<i>Lasioglossum villosulum</i>	Hymenoptera	
<i>Lasiommata megera</i>	Lepidoptera	Endangered; Section 42 Priority Species
<i>Lasius fuliginosus</i>	Hymenoptera	
<i>Leptogaster cylindrica</i>	Diptera	
<i>Leucozona lucorum</i>	Diptera	
<i>Liorhyssus hyalinus</i>	Hemiptera	Nationally Scarce
<i>Longitarsus exoletus</i>	Coleoptera	
<i>Lycaena phlaeas</i>	Lepidoptera	
<i>Lygocoris (Lygocoris) pabulinus</i>	Hemiptera	
<i>Lygocoris (Lygocoris) rugicollis</i>	Hemiptera	
<i>Malachius bipustulatus</i>	Coleoptera	
<i>Maniola jurtina</i>	Lepidoptera	
<i>Mecinus pascuorum</i>	Coleoptera	
<i>Megachile leachella</i>	Hymenoptera	Notable b
<i>Megachile maritima</i>	Hymenoptera	
<i>Megalonotus praetextatus</i>	Hemiptera	Notable b
<i>Meligethes fulvipes</i>	Coleoptera	Notable
<i>Meligethes viridescens</i>	Coleoptera	
<i>Microchrysa flavicornis</i>	Diptera	
<i>Micropeza corrigiolata</i>	Diptera	
<i>Minettia fasciata</i>	Diptera	
<i>Myrmeleotettix maculatus</i>	Orthoptera	
<i>Myrmica rubra</i>	Hymenoptera	
<i>Nabis (Dolichonabis) limbatus</i>	Hemiptera	
<i>Neoascia tenur</i>	Diptera	
<i>Neocrepidodera transversa</i>	Coleoptera	
<i>Nephrotoma appendiculata</i>	Diptera	
<i>Nephrotoma submaculosa</i>	Diptera	
<i>Notostira elongata</i>	Hemiptera	
<i>Nysson trimaculatus</i>	Hymenoptera	Notable b*
<i>Ochlodes sylvanus</i>	Lepidoptera	
<i>Oedemera lurida</i>	Coleoptera	
<i>Oedemera nobilis</i>	Coleoptera	

<i>Omocestus viridulus</i>	Orthoptera	
<i>Oplodontha viridula</i>	Diptera	
<i>Osmia aurulenta</i>	Hymenoptera	
<i>Osmia bicornis</i>	Hymenoptera	
<i>Osmia spinulosa</i>	Hymenoptera	
<i>Otiorhynchus sulcatus</i>	Coleoptera	
<i>Oxybelus uniglumis</i>	Hymenoptera	
<i>Oxystoma pomonae</i>	Coleoptera	
<i>Pachygaster leachii</i>	Diptera	
<i>Palomena prasina</i>	Hemiptera	
<i>Panorpa germanica</i>	Mecoptera	
<i>Paragus haemorrhous</i>	Diptera	
<i>Pemphredon inornata</i>	Hymenoptera	
<i>Pentatoma rufipes</i>	Hemiptera	
<i>Phania funesta</i>	Diptera	
<i>Pherbellia cinerella</i>	Diptera	
<i>Pherbellia schoenherri</i>	Diptera	
<i>Philanthus triangulum</i>	Hymenoptera	Red Data Book 2*
<i>Phytocoris (Ktenocoris) varipes</i>	Hemiptera	
<i>Pieris brassicae</i>	Lepidoptera	
<i>Pieris napi</i>	Lepidoptera	
<i>Pipiza noctiluca</i>	Diptera	
<i>Pipiza notata</i>	Diptera	
<i>Pithanus maerkelii</i>	Hemiptera	
<i>Plagiognathus (Plagiognathus) arbustorum</i>	Hemiptera	
<i>Plagiognathus (Plagiognathus) chrysanthemi</i>	Hemiptera	
<i>Platycheirus albimanus</i>	Diptera	
<i>Platycheirus clypeatus</i>	Diptera	
<i>Platycheirus granditarsus</i>	Diptera	
<i>Platycheirus manicatus</i>	Diptera	
<i>Podops inuncta</i>	Hemiptera	
<i>Poecilobothrus nobilitatus</i>	Diptera	
<i>Polydrusus formosus</i>	Coleoptera	Notable a*
<i>Pompilus cinereus</i>	Hymenoptera	

<i>Priocnemis parvula</i>	Hymenoptera	
<i>Pyronia tithonus</i>	Lepidoptera	
<i>Rhagio lineola</i>	Diptera	
<i>Rhagonycha fulva</i>	Coleoptera	
<i>Rhagonycha limbata</i>	Coleoptera	
<i>Rhinusa antirrhini</i>	Coleoptera	
<i>Rhopalum coarctatum</i>	Hymenoptera	
<i>Rhyzobius litura</i>	Coleoptera	
<i>Rivellia syngenesiae</i>	Diptera	
<i>Rutpela maculata</i>	Coleoptera	
<i>Scaeva pyrastris</i>	Diptera	
<i>Sericomyia silentis</i>	Diptera	
<i>Sicus ferrugineus</i>	Diptera	
<i>Siphona geniculata</i>	Diptera	
<i>Sitona humeralis</i>	Coleoptera	
<i>Sitona lineatus</i>	Coleoptera	
<i>Sphaerophoria scripta</i>	Diptera	
<i>Sphecodes geoffrellus</i>	Hymenoptera	
<i>Stenodema (Brachystira) calcarata</i>	Hemiptera	
<i>Stenodema (Stenodema) laevigata</i>	Hemiptera	
<i>Stygnocoris fuliginus</i>	Hemiptera	
<i>Stygnocoris sabulosus</i>	Hemiptera	
<i>Syntomus foveatus</i>	Coleoptera	
<i>Syrirta pipiens</i>	Diptera	
<i>Tachysphex pompiliformis</i>	Hymenoptera	
<i>Tetanocera ferruginea</i>	Diptera	
<i>Tetanocera fuscinervis</i>	Diptera	
<i>Tetrix subulata</i>	Orthoptera	
<i>Thecophora atra</i>	Diptera	
<i>Thecophora fulvipes</i>	Diptera	Notable
<i>Thymelicus sylvestris</i>	Lepidoptera	
<i>Tipula paludosa</i>	Diptera	
<i>Tipula vernalis</i>	Diptera	
<i>Tropidia scita</i>	Diptera	
<i>Trypoxylon attenuatum</i>	Hymenoptera	

<i>Tyria jacobaeae</i>	Lepidoptera	
<i>Vanessa atalanta</i>	Lepidoptera	
<i>Xanthogramma pedissequum</i>	Diptera	
<i>Zygaena filipendulae</i>	Lepidoptera	

*Widely accepted as being much more common than this status suggests; likely to be downgraded.

Appendix III: Compartment SAT Analysis tables

• Compartment 1 SAT analysis

Broad biotope	SAT	SAT code	No. of species	No. of species with conservation status (excluding research-only moths)	Conservation status	Reported condition
open habitats	rich flower resource	F002	28	3	<i>Bombus humilis</i> (NERC Act Section 42); <i>Bombus ruderatus</i> (Notable b; NERC Act Section 42); <i>Bombus humilis</i> (Notable b; NERC Act Section 42)	Favourable (28 species, 15 required)
open habitats	scrub edge	F001	8	2	<i>Crossocerus distinguendus</i> (Notable a); <i>Ectemnius ruficornis</i> (Notable b)	Unfavourable (8 species, 11 required)
open habitats	bare sand & chalk	F111	7	4	<i>Brachinus crepitans</i> (Nationally Scarce); <i>Gabrius osseticus</i> (Notable b); <i>Megalonotus praetextatus</i> (Notable b); <i>Megachile leachella</i> (Notable b)	Unfavourable (7 species, 19 required)
tree-associated	bark & sapwood decay	A212	10	1	<i>Ectemnius ruficornis</i> (Notable b)	Unfavourable (10 species, 19 required)
open habitats	open short sward	F112	9	2	<i>Calosirus terminatus</i> (Notable b); <i>Coenonympha pamphilus</i> (NERC Act Section 42; Vulnerable)	Unfavourable (9 species, 13 required)
open habitats	scrub-heath & moorland	F003	2	1	<i>Thecophora fulvipes</i> (Notable)	Unfavourable (2 species, 9 required)
wetland	reed-fen & pools	W314	1	–	–	Unfavourable (1 species, 11 required)
open habitats	exposed sea-cliff	F113	1	1	<i>Calosirus terminatus</i> (Notable b)	–

- **Compartment 2 SAT analysis**

Broad biotope	SAT	SAT code	No. of species	No. of species with conservation status (excluding research-only moths)	Conservation status	Reported condition
open habitats	rich flower resource	F002	13	5	<i>Bombus sylvarum</i> (Notable b; NERC Act Section 42); <i>Megachile leachella</i> (Notable b)	Unfavourable (13 species, 15 required)
open habitats	scrub edge	F001	4	–	–	Unfavourable (4 species, 11 required)
open habitats	bare sand & chalk	F111	4	2	<i>Gabrius osseticus</i> (Notable b); <i>Megachile leachella</i> (Notable b)	Unfavourable (4 species, 19 required)
tree-associated	bark & sapwood decay	A212	4	–	–	Unfavourable (4 species, 19 required)
open habitats	open short sward	F112	4	1	<i>Lasiommata megera</i> (Endangered; NERC Act Section 42)	Unfavourable (4 species, 13 required)
wetland	reed-fen & pools	W314	1	–	–	Unfavourable (1 species, 11 required)
tree-associated	heartwood decay	A211	1	–	–	Unfavourable (1 species, 6 required)

- **Compartment 3 SAT analysis**

Broad biotope	SAT	SAT code	No. of species	No. of species with conservation status (excluding research-only moths)	Conservation status	Reported condition
open habitats	rich flower resource	F002	30	3	<i>Andrena labiata</i> (Notable a*); <i>Andrena trimmerana</i> (Notable b); <i>Bombus humilis</i> (NERC Act Section 42); <i>Megachile leachella</i> (Notable b)	Favourable (30 species, 15 required)
open habitats	scrub edge	F001	10	2	<i>Crossocerus distinguendus</i> (Notable a); <i>Ectemnius ruficornis</i> (Notable b)	Favourable (10 species, 11 required)
open habitats	bare sand & chalk	F111	11	2	<i>Megalonotus praetextatus</i> (Notable b); <i>Megachile leachella</i> (Notable b)	Unfavourable (11 species, 19 required)
tree-associated	bark & sapwood decay	A212	6	1	<i>Ectemnius ruficornis</i> (Notable b)	Unfavourable (6 species, 19 required)
open habitats	open short sward	F112	10	2	<i>Coenonympha pamphilus</i> (NERC Act Section 42; Vulnerable); <i>Lasiommata megera</i> (Endangered; NECT Act Section 42)	Unfavourable (10 species, 13 required)
open habitats	scrub-heath & moorland	F003	2	1	<i>Thecophora fulvipes</i> (Notable)	Unfavourable (2 species, 9 required)
tree-associated	heartwood decay	A211	1	—	—	Unfavourable (1 species, 6 required)
coastal	saltmarsh & transitional brackish marsh	M311	1	1	<i>Dolichopus signifier</i> (Nationally Scarce)	Unfavourable (1 species, 9 required)

*Widely accepted as being much more common than this status suggests; likely to be downgraded.