

North Thames Estuary and Marshes Terrestrial Invertebrate Survey

F111 and F112 Assemblage Sampling at the DHL
Landfill Site in East Tilbury (sub-compartment 'H4')

February 2026

Natural England Commissioned Report NECR622

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Foreword

The DHL landfill site to the west of Coalhouse Fort was surveyed in 2024 to determine its quality for terrestrial invertebrates and collect evidence to assess the case for notification as a Site of Special Scientific Interest (SSSI). The report does not itself make a case for notification, rather it provides an objective record of survey findings to support Natural England's independent assessment of special interest.

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Executive Summary

The targeted Species Assemblage Types (SATs) for sub-compartment 'H4' are those within the 'open biotope' and are the F111 'bare sand and chalk' and F112 'open short sward' assemblages. These are the two key assemblages associated with post-industrial land across the local area.

The assessment appraised the targeted key features of the survey area (sub-compartment 'H4') through intensive recording of invertebrates across suitable areas.

A total of 138 species were recorded from the sampling locations including 16 with a nationally significant status. This list includes a number of important species, most notably the shrill carder bee (*Bombus sylvarum*), a nationally rare but characteristic species of the Thames Estuary with a remaining stronghold in the area.

Neither of the targeted SATs (both F111 and F112) reached favourable condition or came close to their respective threshold scores (although it should be noted that the sampling was not a Common Standards Monitoring survey, where a measure of 'favourability' is the primary metric). Part of this is thought to be owing to the poor weather but also the lack of suitable habitat currently present on the site. The lack of suitability can be pointed at two reasons, a lack of bare ground and excessive, uncontrolled grazing. It is advised to read this report alongside others from recent years for this survey compartment, including the invertebrate survey for Natural England in 2022, and the invertebrate survey for the Lower Thames Crossing project in 2017-18. A 2023 vascular plant survey for Natural England is also relevant.

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1 Introduction and background

- 1.1 Conops Entomology Ltd. was commissioned in April 2024 by Natural England to undertake a survey of land to the west of Coalhouse Fort.
- 1.2 The scope is to undertake an invertebrate survey to inform a proposed extension to the existing Mucking Flats and Marshes Site of Special Scientific Interest (SSSI) through the targeted recording of invertebrates in areas of potential invertebrate value adjacent and near to the existing SSSI. For the sub-compartment 'H4' the proposed features of potential value are the two similar assemblages, the F111 'bare sand and chalk' and F122 'open short sward'.

Survey area location and context

- 1.3 The survey area is located at grid reference TQ6809176422 is approximately 68ha. It comprises a former landfill site, restored to grassland several decades ago.
- 1.4 It is located ~1km west of Coalhouse Fort and to the east are found further riverside landfill sites undergoing restoration. Further afield lies Tilbury Docks to the west and the villages of Mucking and Stanford-le-Hope to the east. The survey area is a large unit of land that can therefore act as a bridge or 'stepping stone' between these other key invertebrate areas within the landscape of the North Thames Estuary.
- 1.5 The survey area comprises a matrix of tall grassy swards and scattered scrub with areas of heavily grazed short turf. These short turf patches are dominated by buttercups (*Ranunculus* spp.) and white clover (*Trifolium repens*) with lesser amounts of bird's-foot trefoils (*Lotus* spp.). Other recent survey reports for Natural England (including plant / habitat surveys in 2023, in preparation) of this land indicate that the narrow-leaved bird's-foot trefoil *L. tenuis*, is prevalent here. This species provides an important forage resource for bees in particular.
- 1.6 Photographs of the sample locations can be found in Appendix 3.

Table 1: Sampling Location Details

Sampling locations	OS grid reference (centre point)	Habitat notes
Sample location 1	TQ6825676190	Short flowery turf with white clover and <i>Lotus</i> . Surrounded by tall swards and nearby to scrub fringes.
Sample location 2	TQ6799876309	Part of a cluster of short turf areas with white clover, buttercups and <i>Lotus</i> .
Sample location 3	TQ6798476633	Short turf with buttercups, white clover and <i>Lotus</i> . Surrounded by tall grassy swards with umbellifers and flowering bramble (<i>Rubus fruticosus</i> agg.).
Sample location 4	TQ6823776579	Part of a cluster of short turf areas with white clover, buttercups and <i>Lotus</i> with tall yellow composites (<i>Hieracium</i> spp.) and some meadow vetchling (<i>Lathyrus pratensis</i>) amongst the tall swards.

Map 1: DHL Survey Compartment (Sub compartment H4)

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Sampling methods and timings

Sweep netting

1.7 Sweep Netting and spot sampling was undertaken on a 'free form' basis targeting areas of potential high activity such as structural interfaces, flowering swards and patchy bare ground.

1.8 Forty-five minutes of free form sweep, and spot sampling was undertaken at each sampling location.

Suction sampling

1.9 Suction sampling using a petrol vacuum sampler was used to supplement the aerial netting and pitfall trapping. A minimum of ten minutes of active (not including sorting material in a tray) suction sampling was undertaken at each location.

Pitfall trapping

1.10 Four sets of three-by-three grids of pitfall traps (9 in total, per grid) were installed across the survey area, well away from the exterior scrubby edges (36 traps in total). The pitfall traps were left in situ for seven days.

1.11 Pitfall trap locations:

1. TQ6825676190
2. TQ6799876309
3. TQ6798476633
4. TQ6823776579

1.12 Pitfall traps were made from half pint plastic cups that were covered with a 10mm metal grid, placed over the top to reduce bi-catch of small mammals, reptiles and amphibians.

1.13 The traps were half-filled with a 50:50 solution of polypropylene glycol: water and a drop of detergent.

Survey Timing

Table 2: Survey Dates and Weather Conditions

Visit Date	Weather Conditions	Temperature
22 May 2024	Sunny	21-23°C

Visit Date	Weather Conditions	Temperature
03 June 2024	Sun and cloud	20°C
19 June 2024	Sunny	20-22°C

2 Results Summary

2.1 A site total of 138 species from the sampled groups were recorded during the surveys.

2.2 A total of 16 species recorded have a national status (table 4), though it is recognised by many of the national recording schemes that a number of these no longer warrant their current status and that they may need revising, in particular the bees, wasps, and ants for which the statuses are no longer reliable. This total does not include research-only-moths. Similarly, some species may also warrant upgrading.

2.3 The full list of species recorded for the site is provided in Appendix 2.

Table 3: Species Breakdown

Sampling location	Total no. of species recorded	Total no. of species of importance [Note 1]	Species of importance (%)
Whole survey area	138	16 [Note 1]	11.6

[Note 1: Some species do not warrant nationally significant status.]

Table 4: Species of Conservation Importance

A list of conservation status definitions can be found in Appendix 1 and should be read in conjunction with Table 4, particularly the 'National/local status' column.

Scientific name	Vernacular name	National/local status	Habitat preferences and species notes
<i>Bombus humilis</i>	Brown-banded carder bee	NERC Act Section 41	Open sites with varied swards, including tall, loose swards and strong

Scientific name	Vernacular name	National/local status	Habitat preferences and species notes
			flowering patches with Fabaceae and Lamiaceae.
<i>Bombus sylvarum</i>	Shrill carder bee	Notable B; NERC Act Section 41	Varied swards with strong flowery resources including Fabaceae, Asteraceae and Lamiaceae.
<i>Brachinus crepitans</i>	Bombardier beetle	Nationally Scarce	Open, patchy and parched swards.
<i>Coenonympha pamphilus</i>	Small heath butterfly	Vulnerable; NERC Act Section 41	Open patchy swards with fine-leaved grasses including fescues (<i>Festuca</i> spp.) and bents (<i>Agrostis</i> spp.).
<i>Dorycera graminum</i>	Phoenix fly	Provisionally Nationally Scarce; provisionally Near Threatened; NERC Act Section 41 [Note 2]	On a wide range of open sites from arable field margins to brownfields. An apparent association with umbellifers (Apiaceae). Now common in the southeast and east of England.
<i>Gracilia minuta</i>	A longhorn beetle	Nationally Scarce	Saproxyllic species, often on fruit trees such as apples (<i>Malus domestica</i> agg.).
<i>Hypera melancholica</i>	A weevil	Notable B	Open, patchy and parched swards, often on calcareous sites.
<i>Lasioglossum malachurum</i>	A solitary bee	Notable B [Note 2]	Open, patchy and parched swards.
<i>Lasioglossum pauxillum</i>	A solitary bee	Notable A [Note 2]	Open, patchy and parched swards, often with yellow composites (Asteraceae).

Scientific name	Vernacular name	National/local status	Habitat preferences and species notes
<i>Lasioglossum xanthopus</i>	A solitary bee	Notable B	Open, patchy and parched swards, often on calcareous sites and at soft rock exposures.
<i>Lasiommata megera</i>	Wall butterfly	Endangered; NERC Act Section 41	Open patchy swards over parched ground with a range of grasses.
<i>Nomada fucata</i>	A nomad bee	Notable A [Note 2]	Parasite on <i>Andrena flavipes</i> . Now very common.
<i>Pedius longicollis</i>	a ground beetle	Nationally Scarce	Associated with drawdown zones in marshes and at pond edges.
<i>Platynaspis luteorubra</i>	A ladybird	Notable A [Note 2]	Tall swards and scrub.
<i>Podagrica fuscipes</i>	A leaf beetle	Nationally Scarce	Open habitats with mallows (<i>Malva</i> spp.).
<i>Zacladus exiguus</i>	A weevil	Notable B	On open habitats with crane's-bills (<i>Geranium</i> spp.).

[Note 2: Accepted as being more common than this status suggests; likely to be downgraded.]

Table 5: SAT Table. Taken from Webb and others (2017)

Cells are left blank where no species with conservation status were identified.

Broad biotope	SAT	SAT code	No. of species	No. of species with conservation status (excluding research-only moths)	Species with a Conservation status	Reported condition [Note 3]
Open habitats	Rich flower resource	F002	12	6	<i>Bombus humilis</i> (S41); <i>Bombus sylvarum</i> (Nb; S41); <i>Nomada fucata</i> (Na [Note 3]); <i>Lasioglossum malachurum</i> (nb [Note 3]); <i>Lasioglossum pauxillum</i> (Na [Note 3]); <i>Lasioglossum xanthopus</i> (Nb)	Unfavourable (12 species, 15 required)
Open habitats	Open short sward	F112	8	2	<i>Coenonympha pamphilus</i> (VU; S41); <i>Lasiommata megera</i> (EN; S41)	Unfavourable (8 species, 13 required)
Open Habitats	Bare sand & chalk	F111	5	1	<i>Brachinus crepitans</i> (NS)	Unfavourable (5 species, 19 required)
Tree-associated	Bark & sapwood decay	A212	2	1	<i>Gracilia minuta</i> (NS)	Unfavourable (2 species, 19 required)
Open Habitats	Scrub edge	F001	2			Unfavourable (2 species, 11 required)

[Note 3: Accepted as being more common than this status suggests; likely to be downgraded.]

3 Discussion

Limitations

- 3.1 2024 experienced a series of low-pressure systems resulting in poor weather including increased rainfall, cloud cover, and below-normal temperatures. The result has been a widely noted depression of invertebrate abundance, particularly flying insects such as flies, bees, and wasps. This has led to problems in surveying for species, particularly as this year's poor weather also follows extreme adverse events in 2023, with it being in the top five warmest years on record and the top ten wettest for England with many areas seeing persistent rain for protracted periods of time (Met Office, 2024). This challenging weather was off the back of the record-breaking intense heat of 2022. The interpretation of results, including SAT favourability, should bear this in mind.
- 3.2 The landfill site is unofficially grazed by ponies. As a consequence, pitfall traps were impacted by ponies at three of the four pitfall locations. Not all traps were destroyed at each location however, so representative surface-running invertebrates were collected from all open areas of the site. It is likely however that the effect of ponies will have lowered the total number of species found by this passive trapping method.

Habitats and SATs

- 3.3 The survey area is represented by a range of habitats broadly covering the 'open biotope' but owing to the presence of scrub and scattered trees, the 'tree-associated' biotope is also highlighted by two assemblage types.
- 3.4 The two tree-associated SATs noted are the 'bark and sapwood decay' SAT (A212) and the 'scrub edge' SAT (F001). Neither are strongly represented but the A212 does include the Nationally Scarce longhorn beetle *Gracilia minuta*. The most valuable attribute of the scrub is that it provides structural complexity, Spring blossom and a location for lekking, shelter and foraging for other species more associated with open swards such as solitary wasps and bees.
- 3.5 The assemblage that is most prominent in the analysis is the cross-cutting 'rich flower resource' F002 with 12 species of fidelity (where the threshold for favourable condition is 15). This is a strong total, however given the site's location and its potential, it is suggested that the SAT score is below what would be expected for a post-industrial site in south Essex. The assemblage does however include some significant species including the NERC Act Section 41 shrill carder bee (*Bombus sylvarum*) and brown-banded carder bee (*B.humilis*), although the cross-cutting nature of this assemblage does mean that these species also occur in other SATs.

- 3.6 The 'open short sward' assemblage (F112) possesses a suite of 8 high fidelity species (where the threshold is 13 species) and therefore falls short of being in favourable or 'good' condition. The reason for this is in part owing to the lack of plants in flower at the time of survey. Despite the short swards being in places abundant with Fabaceae, few were in flower during the whole of the survey period (mid-May to late-June). Some of this is thought due to the poor weather of 2024 that appears to have delayed flowering times of plants, especially common and narrow-leaved bird's-foot trefoils (*Lotus corniculatus* and *L. tenuis*). The other reason is that the short sward areas are preferentially targeted by the grazing ponies over the tall grasses. This has resulted in a patchwork of overgrazed short swards amongst tall rank grass. Neither component currently provides sufficient flowers (both diversity and abundance) for an on-site resource of pollinating insects.
- 3.7 Reinforcing the above, there is a poorly represented 'bare sand and chalk' assemblage (F111) with five species of fidelity (where the threshold is 19). There are hardly any exposed substrates within the survey area, with any open areas dominated by closely cropped dense short swards. Consequently, the corresponding bare ground invertebrates such as ground-nesting bees and wasps and surface-running beetle faunas are lacking.

Species

- 3.8 The survey has recorded 138 species and 16 species identified by Pantheon as being of conservation value. This equates to 11.6% of the species recorded having a significant status. This is a low to moderate total of species and moderate percentage of scarce species; however, this number of scarce species will be lower once the bees, wasps, and ants review is published (Species Status Review of the Aculeate Hymenoptera, in prep, Natural England Species Status reviews series).
- 3.9 The invertebrate diversity recorded during the survey, although considered low for a site of this type (i.e. brownfield in character and location), does still reflect the types of species the landfill site is important for. The most important of these is considered to be the landscape-scale dependant bumblebees operating as meta-populations: the shrill carder bee (*B. sylvarum*) and brown-banded carder bee (*B. humilis*). There is a comparatively small resource of bees and wasps on the site recorded in 2024, in part owing to the grazing pressures on the short swards, lack of bare and patchy-bare ground, and also the poor weather impacting the flowering of plants and flying insect activity. Outside the survey area though, for example along adjacent footpaths, there appears to be a greater diversity of solitary bees and wasps, so it may be that these species do utilise the site but are below the levels of easy detection and only intermittently nest on the site, preferring the open friable ground outside the site in which to nest.

3.10 The presence of the wall butterfly (*Lasiommata megera*) is another species that may depend on wider landscape resources as it needs to find suitable open, parched and patchy mosaics of early succession in which to lay its eggs. This F112 assemblage is limited on the site and often infrequent on all sites too, so a landscape resource of this feature is important to sustain a robust and viable metapopulation of the butterfly.

4 Conclusions

4.1 The DHL landfill site superficially looks in good condition. It is a large site with a good matrix of grassland and scrub. On closer scrutiny however it can be seen that much of the tall swards are losing value and becoming rank and the short swards struggle to flower owing to the horse grazing (notwithstanding the issues of the poor weather of 2024 delaying flowering times). The site also lacks the critical bare ground component that helps elevate the opportunities to the key invertebrate assemblages associated with post-industrial land; the F111 and F112 SATs.

4.2 It is likely that the species richness of the site is greater than what is highlighted in this report and expressed in the survey result tables and from this survey (see full survey results in Appendix 2). However, it is not thought that the compartment is currently of exceptionally high quality as it is advancing towards mid-succession with no evidence of management interventions to increase the open mosaic patchwork of bare ground and short flowery swards.

4.3 The site has significant potential to become a very important and rich reservoir of species owing to the large area and subsequent opportunities this can provide.

4.4 Strategically, being a large stepping stone between Tilbury and Mucking, the compartment's location further increases its potential value and also its importance to the Thames Estuary invertebrate metapopulation robustness and resilience.

4.5 In order to tap into this potential and elevate the compartment's status, simple and effective interventions can be undertaken that will rapidly increase the site's invertebrate diversity (see below).

5 Recommendations

Open, patchy bare ground

5.1 The overriding issue with the site is the lack of bare ground and early succession. The site is largely a mid-successional site with small patches of short swards. There is little

to no bare ground across the entire site. Therefore, it is advised that, if possible, a rolling cycle of turf scraping is undertaken to re-set and kick-start succession.

5.2 Areas to target should be areas of low floristic diversity, most notably tall, rank grass swards. Stripped vegetation should be removed from the central area of the site but can be banded at the extreme peripheries to create nutrient-rich bands that can be allowed to succeed to stands of ruderal vegetation, further increasing the flower-foraging potential of the site.

5.3 The site may also be suitable for the importation of substrates to benefit invertebrate assemblages. Favourable materials used elsewhere in the locality include Pulverised Fuel Ash (PFA), chalk, sand / gravel and river dredgings. If such materials can be sourced, their placement and design should be discussed with the landowner and Natural England and may require an Environmental Permit from the Environment Agency.

Grazing

5.4 One of the other inhibiting factors to the site's potential is the current grazing regime. This should be better managed, if possible, either through a reduction in total horse numbers or through the creation of more optimal horse grazing areas to reduce the pressure on existing short sward patches.

5.5 This can be done through 'topping' (i.e. cutting to reduce height and remove thatch) of tall and rank grass so that it becomes palatable to the horses. Long term, this will also hopefully increase the short sward flowering component on the site.

5.6 Consideration could also be given to the type of grazing stock used, to reduce reliance upon more selective grazing animals, and encourage the grazing of taller grass areas through less fussy grazers, should the opportunity arise.

Scrub fringe

5.7 Scrub is an important interface with open flowery habitats and short turf/bare ground. An appropriate balance should be struck between scrub and open grassland habitats, depending on the objectives of site management. This will inevitably favour one group over another, however in the Thames Estuary it is typically the open / bare and short grass swards that are in short supply.

5.8 It is also important for Spring blossom.

5.9 However, it needs to be monitored so that it does not become too dominant across the site. It is recommended that a long-term monitoring strategy is devised in order to

assess the footprint of the scrub. This can be through aerial imagery analysis (including drone footage), on site habitat mapping or fixed-point photography.

5.10 It is recognised that the DHL landfill site supports a diversity of wildlife, and consequently optimal management requirements for terrestrial invertebrates may need to be balanced against other species groups, such as breeding birds. Survey reports for other species groups for this site should be read in conjunction with this report to achieve balanced recommendations.

6 Appendix

Appendix 1: Conservation Status

Appendix 2: Survey Results

Appendix 3: Photographs

Appendix 1: Conservation Status

Table 6: Definitions of Conservation Status

Criteria	Category	Category	Definition
Pre IUCN (2001)	RDB1	Red Data Book 1: Endangered	Species that are known or believed to occur as only a single population within one 10-km square of the National Grid.
Pre IUCN (2001)	RDB2	Red Data Book 2: Vulnerable	Species declining throughout their range or in vulnerable habitats.
Pre IUCN (2001)	RDB3	Red Data Book 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.
Pre IUCN (2001)	NS A	Nationally Scarce - 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-

Criteria	Category	Category	Definition
			recorded groups, between eight and 20 vice counties.
Pre IUCN (2001)	NS B	Nationally Scarce – 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.
Pre IUCN (2001)	NS	Nationally Scarce - 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 (2001)	EX	Extinct	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.
IUCN (2001)	CR	Critically Endangered	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.
IUCN (2001)	EN	Endangered	A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for

Criteria	Category	Category	Definition
			Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.
IUCN (2001)	VU	Vulnerable	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.
IUCN (2001)	NT	Near Threatened	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.
IUCN (2001)	LC	Least Concern	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.
IUCN (2001)	DD	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 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 2: Survey results

Only species with a national status higher than Least Concern have been annotated. All others are common or local species and the corresponding cell in the table has been left empty.

Table 7: Survey Results

Scientific name	Family	Order	National status
<i>Agriotes lineatus</i>	Elateridae	Coleoptera	
<i>Agriotes sputator</i>	Elateridae	Coleoptera	
<i>Agrypnus murinus</i>	Elateridae	Coleoptera	
<i>Aleochara bipustulata</i>	Staphylinidae	Coleoptera	

Scientific name	Family	Order	National status
<i>Aleochara lanuginosa</i>	Staphylinidae	Coleoptera	
<i>Amara aenea</i>	Carabidae	Coleoptera	
<i>Amara convexior</i>	Carabidae	Coleoptera	
<i>Amara lunicollis</i>	Carabidae	Coleoptera	
<i>Amara plebeja</i>	Carabidae	Coleoptera	
<i>Amara tibialis</i>	Carabidae	Coleoptera	
<i>Ammophila sabulosa</i>	Sphecidae	Hymenoptera	
<i>Andrena chrysoseles</i>	Andrenidae	Hymenoptera	
<i>Andrena dorsata</i>	Andrenidae	Hymenoptera	
<i>Andrena labialis</i>	Andrenidae	Hymenoptera	
<i>Andrena minutula</i>	Andrenidae	Hymenoptera	
<i>Aricia agestis</i>	Lycaenidae	Lepidoptera	
<i>Aspidapion radiolus</i>	Apionidae	Coleoptera	
<i>Bembidion lunulatum</i>	Carabidae	Coleoptera	
<i>Bembidion obtusum</i>	Carabidae	Coleoptera	
<i>Bembidion properans</i>	Carabidae	Coleoptera	
<i>Bombus humilis</i>	Apidae	Hymenoptera	Section 41 Priority Species
<i>Bombus pratorum</i>	Apidae	Hymenoptera	

Scientific name	Family	Order	National status
<i>Bombus sylvarum</i>	Apidae	Hymenoptera	Notable B; Section 41 Priority Species
<i>Brachinus crepitans</i>	Carabidae	Coleoptera	Nationally Scarce
<i>Bruchus rufimanus</i>	Chrysomelidae	Coleoptera	
<i>Bruchus rufipes</i>	Chrysomelidae	Coleoptera	
<i>Callophrys rubi</i>	Lycaenidae	Lepidoptera	
<i>Cantharis lateralis</i>	Cantharidae	Coleoptera	
<i>Cantharis rustica</i>	Cantharidae	Coleoptera	
<i>Capsus ater</i>	Miridae	Hemiptera	
<i>Ceratapion carduorum</i>	Apionidae	Coleoptera	
<i>Chaetocnema hortensis</i>	Chrysomelidae	Coleoptera	
<i>Cheilosia latifrons</i>	Syrphidae	Diptera	
<i>Cheilosia proxima</i>	Syrphidae	Diptera	
<i>Chloromyia formosa</i>	Stratiomyidae	Diptera	
<i>Chrysotoxum bicinctum</i>	Syrphidae	Diptera	
<i>Chrysotoxum festivum</i>	Syrphidae	Diptera	
<i>Closterotomus norwegicus</i>	Miridae	Hemiptera	
<i>Closterotomus norwegicus</i>	Miridae	Hemiptera	

Scientific name	Family	Order	National status
<i>Coelositona cambricus</i>	Curculionidae	Coleoptera	
<i>Coenonympha pamphilus</i>	Nymphalidae	Lepidoptera	Section 41 Priority Species; Vulnerable
<i>Cordylepherus viridis</i>	Malachiidae	Coleoptera	
<i>Coriomeris denticulatus</i>	Coreidae	Hemiptera	
<i>Corizus hyoscyami</i>	Rhopalidae	Hemiptera	
<i>Demetrias atricapillus</i>	Carabidae	Coleoptera	
<i>Dioctria atricapilla</i>	Asilidae	Diptera	
<i>Dolycoris baccarum</i>	Pentatomidae	Hemiptera	
<i>Dorycera graminum</i>	Ulidiidae	Diptera	Provisionally Nationally Scarce; provisionally Near Threatened; Section 41 Priority Species [Note 4]
<i>Drusilla canaliculata</i>	Staphylinidae	Coleoptera	
<i>Empis tessellata</i>	Empididae	Diptera	
<i>Eristalinus sepulchralis</i>	Syrphidae	Diptera	
<i>Eristalis arbustorum</i>	Syrphidae	Diptera	
<i>Euclidia glyphica</i>	Erebidae	Lepidoptera	
<i>Eupeodes luniger</i>	Syrphidae	Diptera	

Scientific name	Family	Order	National status
<i>Eurydema (Eurydema) oleracea</i>	Pentatomidae	Hemiptera	
<i>Formica cunicularia</i>	Formicidae	Hymenoptera	
<i>Gracilia minuta</i>	Cerambycidae	Coleoptera	Nationally Scarce
<i>Gyrohypnus fracticornis</i>	Staphylinidae	Coleoptera	
<i>Harpalus affinis</i>	Carabidae	Coleoptera	
<i>Helophorus aequalis</i>	Hydrophilidae	Coleoptera	
<i>Hypera melancholica</i>	Curculionidae	Coleoptera	Notable B
<i>Hypera postica</i>	Curculionidae	Coleoptera	
<i>Ischnopterapion loti</i>	Apionidae	Coleoptera	
<i>Ischnopterapion virens</i>	Apionidae	Coleoptera	
<i>Lasioglossum lativentre</i>	Halictidae	Hymenoptera	
<i>Lasioglossum malachurum</i>	Halictidae	Hymenoptera	Notable B [Note 4]
<i>Lasioglossum pauxillum</i>	Halictidae	Hymenoptera	Notable A [Note 4]
<i>Lasioglossum xanthopus</i>	Halictidae	Hymenoptera	Notable B
<i>Lasiommata megera</i>	Nymphalidae	Lepidoptera	Endangered; Section 41 Priority Species

Scientific name	Family	Order	National status
<i>Lasius niger</i>	Formicidae	Hymenoptera	
<i>Legnotus limbosus</i>	Cydnidae	Hemiptera	
<i>Leptogaster cylindrica</i>	Asilidae	Diptera	
<i>Leptopterna dolabrata</i>	Miridae	Hemiptera	
<i>Limonius poneli</i>	Elateridae	Coleoptera	
<i>Maniola jurtina</i>	Nymphalidae	Lepidoptera	
<i>Melanargia galathea</i>	Nymphalidae	Lepidoptera	
<i>Meligethes aeneus</i>	Nitidulidae	Coleoptera	
<i>Melinopterus sphacelatus</i>	Scarabaeidae	Coleoptera	
<i>Microlestes minutulus</i>	Carabidae	Coleoptera	
<i>Neocrepidodera ferruginea</i>	Chrysomelidae	Coleoptera	
<i>Nomada fucata</i>	Apidae	Hymenoptera	Notable A [Note 4]
<i>Notiophilus substriatus</i>	Carabidae	Coleoptera	
<i>Ochlodes sylvanus</i>	Hesperiidae	Lepidoptera	
<i>Oedemera nobilis</i>	Oedemeridae	Coleoptera	
<i>Ophonus ardosiacus</i>	Carabidae	Coleoptera	
<i>Opomyza germinationis</i>	Opomyzidae	Diptera	

Scientific name	Family	Order	National status
<i>Orthonevra nobilis</i>	Syrphidae	Diptera	
<i>Othius laeviusculus</i>	Staphylinidae	Coleoptera	
<i>Oxystoma pomonae</i>	Apionidae	Coleoptera	
<i>Paederus littoralis</i>	Staphylinidae	Coleoptera	
<i>Parhelophilus versicolor</i>	Syrphidae	Diptera	
<i>Pedius longicollis</i>	Carabidae	Coleoptera	Nationally Scarce
<i>Pemphredon inornata</i>	Crabronidae	Hymenoptera	
<i>Peritrechus geniculatus</i>	Lygaeidae	Hemiptera	
<i>Phaedon tumidulus</i>	Chrysomelidae	Coleoptera	
<i>Phalacrus fimetarius</i>	Phalacridae	Coleoptera	
<i>Philonthus carbonarius</i>	Staphylinidae	Coleoptera	
<i>Philonthus cognatus</i>	Staphylinidae	Coleoptera	
<i>Phyllobius virideaeris</i>	Curculionidae	Coleoptera	
<i>Pipizella viduata</i>	Syrphidae	Diptera	
<i>Platynaspis luteorubra</i>	Coccinellidae	Coleoptera	Notable A [Note 4]
<i>Podagrica fuscipes</i>	Chrysomelidae	Coleoptera	Nationally Scarce
<i>Podops inuncta</i>	Pentatomidae	Hemiptera	

Scientific name	Family	Order	National status
<i>Poecilobothrus nobilitatus</i>	Dolichopodidae	Diptera	
<i>Poecilus cupreus</i>	Carabidae	Coleoptera	
<i>Polyommatus icarus</i>	Lycaenidae	Lepidoptera	
<i>Protapion fulvipes</i>	Apionidae	Coleoptera	
<i>Ptomaphagus subvillosus</i>	Leiodidae	Coleoptera	
<i>Quedius schatzmayri</i>	Staphylinidae	Coleoptera	
<i>Quedius semiaeneus</i>	Staphylinidae	Coleoptera	
<i>Quedius semiobscurus</i>	Staphylinidae	Coleoptera	
<i>Rhagonycha fulva</i>	Cantharidae	Coleoptera	
<i>Rhinoncus pericarpus</i> (pre 2014 type revision)	Curculionidae	Coleoptera	
<i>Rhyzobius litura</i>	Coccinellidae	Coleoptera	
<i>Sicus ferrugineus</i>	Conopidae	Diptera	
<i>Simplocaria semistriata</i>	Byrrhidae	Coleoptera	
<i>Sitona hispidulus</i>	Curculionidae	Coleoptera	
<i>Sitona lineatus</i>	Curculionidae	Coleoptera	
<i>Sitona obsoletus</i>	Curculionidae	Coleoptera	
<i>Sphaerophoria scripta</i>	Syrphidae	Diptera	

Scientific name	Family	Order	National status
<i>Sphecodes ephippius</i>	Halictidae	Hymenoptera	
<i>Sphecodes geoffrellus</i>	Halictidae	Hymenoptera	
<i>Stenodema</i> (<i>Brachystira</i>) <i>calcarata</i>	Miridae	Hemiptera	
<i>Stenus ossium</i>	Staphylinidae	Coleoptera	
<i>Stictopleurus abutilon</i>	Rhopalidae	Hemiptera	
<i>Subcoccinella</i> <i>vigintiquattuor punctata</i>	Coccinellidae	Coleoptera	
<i>Syntomus</i> <i>obscuroguttatus</i>	Carabidae	Coleoptera	
<i>Tachyporus hypnorum</i>	Staphylinidae	Coleoptera	
<i>Tachyporus pusillus</i>	Staphylinidae	Coleoptera	
<i>Thecophora atra</i>	Conopidae	Diptera	
<i>Thelaira nigrina</i>	Tachinidae	Diptera	
<i>Trechus quadristriatus</i>	Carabidae	Coleoptera	
<i>Tyria jacobaeae</i>	Erebidae	Lepidoptera	
<i>Tytthaspis</i> <i>sedecimpunctata</i>	Coccinellidae	Coleoptera	
<i>Urophora stylata</i>	Tephritidae	Diptera	
<i>Volucella bombylans</i>	Syrphidae	Diptera	
<i>Xanthogramma</i> <i>pedissequum</i>	Syrphidae	Diptera	

Scientific name	Family	Order	National status
<i>Zacladus exiguus</i>	Curculionidae	Coleoptera	Notable B

[Note 4: Widely accepted as being much more common than this status suggests; likely to be downgraded.]

Appendix 3: Photographs



H01 shows the view across the site. Note the lack of flowers, and the tall grassy sward no longer grazed by horses that prefer shorter grass on which to graze.



H02 One of the short turf sample areas. Note the lack of flowers and heavily cropped sward surrounded by tall, ungrazed false oat-grass swards



H03 One of the short turf sample areas. Low flowering plant diversity, primarily white clover and buttercups.



H04 Mid-successional state. The compartment holds significant potential but requires interventions to introduce bare ground and enable more areas to be grazed by horses to reduce pressure on remaining short sward areas

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