Assessment of the ecological significance of candidate NNR Sites, West Kent: *Lepidoptera (Linnaeus, 1758)*

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Report for Kent Downs National Landscape Unit

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Land management through sheep grazing – West Park

Shenton, D.B., 2024. Assessment of the ecological significance of candidate NNR Sites, West Kent: *Lepidoptera* (Linnaeus, 1758).

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Summary

Moths and butterflies are well represented across the NNR sites.

Whilst a strategic landscape scale approach is critical for Lepidoptera, as with many other taxa, there are some particularly key sites: Ranscombe Farm, Ashenbank Wood, Silverhand Estate, Shorne Woods, Holborough Woods and Jeskyns Community Woodland.

Over 1500 moth species have been recorded and while any are common and widespread the area is also home to a number of rare and or threatened species including 64 Section 41 priority species.

Noteworthy species include Liquorice Piercer (*Grapholita pallifrontana*), Rest Harrow (*Aplasta ononaria*), Figure of Eight (*Diloba caeruleocephala*), Lace Border (*Scopula ornata*) and Gold Cloak (*Phtheochroa schreibersiana*).

The 7 Section 41 butterfly species recorded from one or more of the NNR sites are Small Heath (*Coenonympha pamphilus*), Small Blue (*Cupido minimus*), Dingy Skipper (*Erynnis tages*), Wall (*Lasiommata megera*), White Admiral (*Limenitis camilla*), and White Letter Hairstreak (*Satyrium w-album*). Brown Hairstreak (*Thecla betulae*) is not yet recorded from any of the candidate sites, but it is expanding its range in Kent. This is a species that is likely to turn up in the area

In addition to the Section 41 species, the nationally scarce Adonis Blue is also of note. It is listed as a key feature within the Halling to Trottiscliffe Escarpment SSSI.

A large number of recommendations are detailed in this report. These cover landscape scale and site-specific management as well as recommendations for surveying and monitoring. Headlines from these include the need to more fully strategize and catalogue operations across the NNR sites, to allow for management to be planned at a landscape scale.

Many of our most threatened woodland butterflies and moths are associated with open habitats such as clearings and rides, so a rotational programme of woodland management to maintain and extend these habitats across the NNR should be put in place.

Further surveying and monitoring will be vital in developing a fully detailed understanding of the ecological significance of the NNR and allowing for strategic planning of priorities and actions across the area. For Lepidoptera specifically a range of actions are recommended including continuing existing butterfly transects, implementing a combination of constant effort and ad hoc light trapping and daytime moth surveys and an emphasis on early stages monitoring. The latter is often overlooked but is critically important as observations are direct proof that a particular species is resident at the site.

1. Introduction

1.2. Objectives

- To assess the ecological significance of several sites as part of candidate NNR etc for *Lepidoptera*
- To assess known species of butterfly and moth in the area to identify priority species (or problem species) for the candidate NNR.
- Identification of hotspots for priority species within the candidate NNR.
- Identification of any significant gaps in knowledge of Lepidoptera distribution across the candidate NNR.

1.3. Background

The Kent Downs National Landscape Unit commissioned this work to assess the significance of a proposed National Nature Reserve (NNR) in North Kent for Lepidoptera.

The author, David Shenton, is Kent County Moth Recorder, providing verification support to all who record moths in Kent. David has a particular focus on ‘micro’ moths and maintains a county-wide database of all moth records along with the Kent Moths website. David has previously produced content for the 'State of Nature in Kent’ report (2021).

It is intended that the information in this report will be used to inform a management framework to guide future habitat works to be undertaken across the area and to help build a case for the ecological significance of the area to ultimately lead to the declaration of an NNR.

2. Approach

2.1. Data collection and analysis

Data was collected from a wide range of sources including:

- Data already held by Kent County Council (KCC)
- Data from the Kent and Medway Biological Records Centre (KMBRC)
- County Moth and Butterfly Recorders
- Kent and SE London Branch, Butterfly Conservation
- Kent Moth Group

Expert judgement was also applied to identify the species that may be absent in the data, but which are highly likely to be present.

A rapid literature search, of both published, peer-reviewed papers and 'grey' literature was undertaken (see Section 8 for references and background reading).

2.2. Fieldwork

Several days were spent on site. For Lepidoptera, this was not intended as a detailed survey of the moths and butterflies, although those observed were noted: this included a micro moth recorded for the first time in West Kent (Vice County 16).

The site visits to a selection of sites shown on the map (Annex 1) were to assess the range of habitats present and to identify potential management activities. Sites visited included:

- Ashenbank Wood
- Scalers Hill
- Jeskyns Community Woodlands
- Ranscombe Farm
- Silverhand Estate
- West Park
- Holborough Woodlands
- Shorne Woods Country Park

3. *Findings*

3.1. Assessment of moth species present

A large number of moth species – over 1500 – have been recorded across the candidate sites. This represents approximately 60% of the known moth species in the UK. These range from widespread species such as Heart and Dart (*Agrotis exclamationis*) and Large Yellow Underwing (*Noctua pronuba*), locally distributed species including Lace Border (*Scopula ornata)* and Star-wort (*Cucullia asteris*), and migratory species such as Sliver-striped Hawkmoth (*Hippotion celerio*).

3.2. Priority moth species across the area

64 priority species have been recorded in the candidate site area. The priority species are listed in Annex 2(a). Some of these are listed as priority species for research purposes only but these are included here because scientific research is one of the objectives that NNR's should look to fulfil. Using expert judgement, based on the range of habitats present across these sites at least 10 others are almost certain to be present.

Several species on this list are already likely to be present and have gone unrecorded or are highly likely to colonise the area in the next few years, as they are expanding rapidly in Kent. These could include Barred Tooth-striped (*Trichopteryx polycommata*) (recent healthy colony discovered in the Bluebell Hill chalk pits complex by use of pheromone lures), Fiery Clearwing (*Pyropteron chrysidiformis*), Aspen Leaf-miner (*Phyllonorycter sagitella*), Horehound Longhorn (*Nemophora fasciella).*

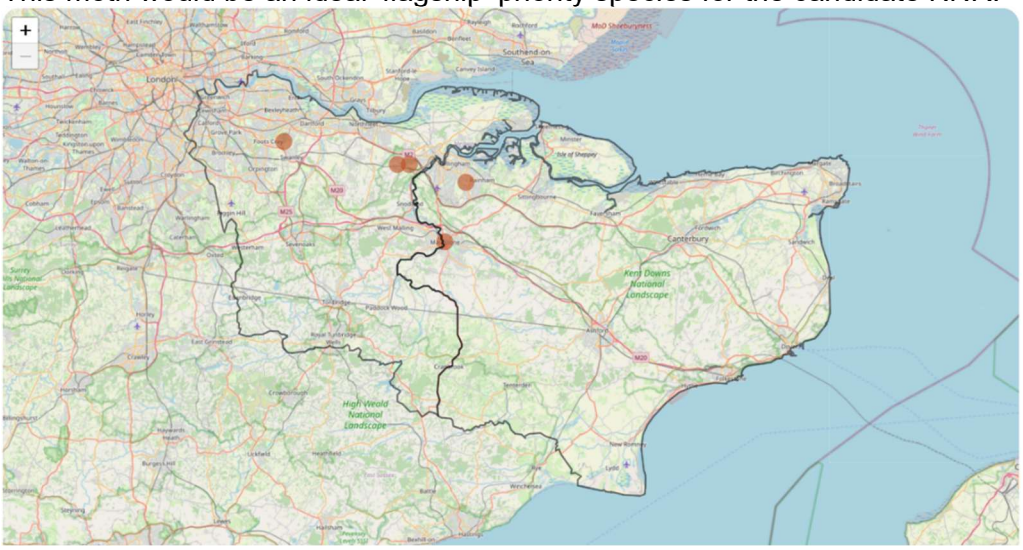
Of the long list of priority species, a few merit individual mention at this stage:

Liquorice Piercer (*Grapholita pallifrontana*)

One of the smaller 'micro moths', a rare, priority species in the UK. The larval foodplant is Wild Liquorice (*Astragalus glycyphyllos*) which is present at several of the candidate NNR sites, perhaps most notably at Ranscombe Farm. This site remains the only one in the area with known records of this moth. A good number of larvae were observed here in June 2024.

Given its status and scarcity, in Kent and across the UK, this is a key species that the candidate NNR sites could help to support – through habitat management, monitoring efforts, and awareness raising and engagement with the public.

This moth would be an ideal 'flagship' priority species for the candidate NNR.



Distribution of Liquorice Piercer in Kent (data to July 2024, Kent Moth Group)

Scabious Leaf-miner (*Phyllonorycter scabiosella*)

Another rare ‘micro’ moth and a key species for action in Kent and Surrey including targeted searches for leaf mines. The larvae mine the leaves of Small Scabious (*Scabiosa columbaria*).

Although the species has not yet been recorded from any of the candidate sites, there is an extant population just to the southwest at Trosley Country Park. As similar habitat is present at some of the candidate sites, this species should be considered as important as part of any NNR.

Straw Belle (*Aspitates gilvaria*)

A rare species in the UK, now known only from a few sites in Kent and Surrey. It favours rough chalk downland habitat. Changes in site management such as neglect, scrub encroachment, and overgrazing can threaten the survival of this species at a given site.

There are records from pre-2000 in an area in the south of Holborough Woods and although there are no recent records, there is an extant population just to the southwest of the candidate area, at Trosley Country Park. Given the presence of its preferred habitat, several locations across the candidate area could support an expansion of this species' range.

This moth would be another priority species for the NNR.

Garden Tiger (*Arctia caja*)

Although well distributed across the UK, in many areas it has seen a significant decline, most noticeably here in the southeast. Nationally, the population has declined 90% since 1968.

This is a highly distinctive species, especially with the striking colouration of the adult moths. However, the large caterpillars are also distinctive: the “Woolly Bear” larvae are often seen walking across open ground when seeking a site for pupation.

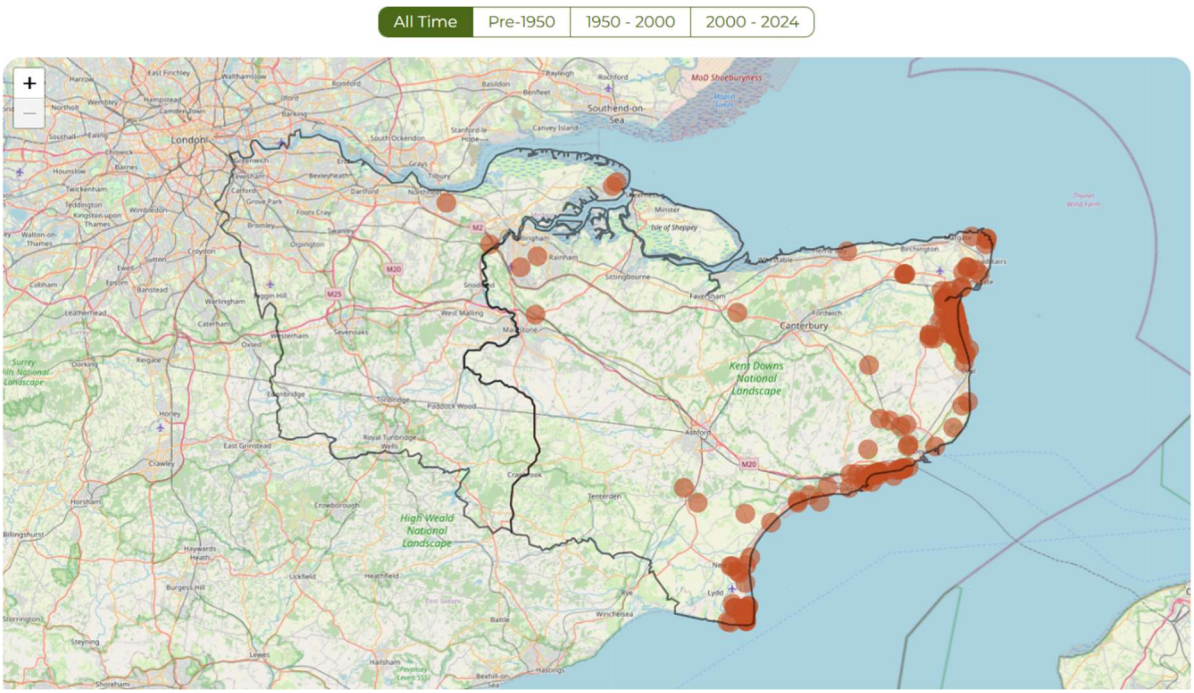
The significant decline of this species and its striking appearance make this an ideal species of focus for the candidate NNR.

In the project area, there are records from around Cuxton, close to Camer Park and adjacent to Holborough Woodlands.

Rest Harrow (*Aplasta ononaria*)

This is a rare Red Data Book (RDB) species that relies on open calcareous grasslands with open swards. It has a severely restricted range in Kent – the county is home to the few resident colonies in the UK. As the common name suggests, larvae feed on Restharrow (*Ononis* spp.).

The scarcity and vulnerability of this moth, restricted to just a few sites, make it an ideal candidate for close attention as part of any NNR in this area. The candidate sites hold suitable habitats and with further management, this moth could become more widely established. As a matter of priority, daytime surveys and light trapping should be targeted to ascertain if this moth is present on other sites in the area.



Rest Harrow distribution in Kent (June 2024, Kent Moth Group)

Within the candidate sites, it had previously only been recorded from Ranscombe Farm. However, recent surveying in July 2024, as part of the NNR project, discovered a population in the Bush Valley on the Silverhand Estate.

Chalk Carpet (*Scotopteryx bipunctaria*)

A species of unimproved calcareous grassland and quarries in Kent with the downs of west Kent being one of its remaining strongholds in the county. Another species that has undergone a significant decrease in its distribution since the 1990s.

Perhaps conspicuous by its absence on any of the candidate sites. A healthy population exists just to the southwest at Trosley Country Park. It should be noted that this site does benefit from regular daytime butterfly transect monitoring and as this moth can be observed by day, this could explain the large number of records from that site. Another strong population exists just to the east across the river around the Bluebell Hill chalk pits.

This would be another key species that the NNR could support.

Pale Eggar (*Trichiura crataegi*)

A species that is undergoing significant long-term declines in terms of both range and abundance. In Kent, it has a very local distribution and since 2000 the majority of records come from the Orlestone/Hamstreet Woods complex. However, there are old records from the northern section of Holborough Woodlands, so candidate sites could still hold populations that have gone unrecorded or could support this species in the future. There are also extant populations in south Essex.

In Kent, as in other parts of the UK, the Pale Eggar can be found in a variety of habitats, primarily woodlands and hedgerows but also scrub and suburban areas. The larvae Feed on a variety of deciduous trees, including hawthorn (*Crataegus* spp.), blackthorn (*Prunus* spinosa), and oak (*Quercus* spp.).

Populations are affected by habitat loss and degradation, particularly in areas where woodlands are fragmented, or development encroaches on its habitat. Conservation efforts

to protect its habitat and promote biodiversity will benefit not only the Pale Eggar moth but also the wider range of species that share its habitat.

Figure of Eight (*Diloba caeruleocephala*)

This species has undergone severe decreases in both abundance and distribution in the UK including here in Kent. It is now only recorded with any consistency from less than a handful of sites.

Its habitats include hedgerows, broadleaved woodland and gardens, all of which are well represented across the candidate NNR area. It has historically been recorded in the north west of the project area, between Jeskyn's Community Woodland and the Silverhand Estate

There are records from sites to the east and to the northwest of the candidate NNR area,as such, efforts to support this species could help to provide connectivity between these areas.

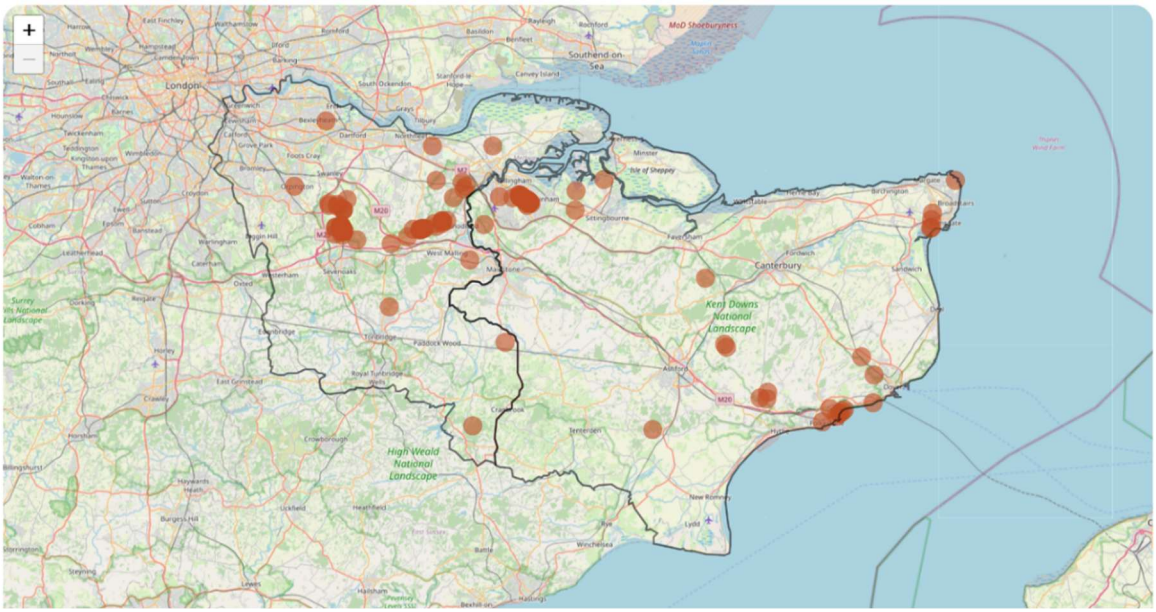
The moth flies late in the year, from mid-September through to early November, so monitoring should take place during this time.

3.3. Other moth species of note

Lace Border (*Scopula ornata*)

During moth surveying in the Bush Valley, Silverhand Estate several specimens of this species were observed at light traps.

A species of concern in West Kent due to its specific habitat requirements and its relatively rare status in the UK. This moth is primarily found in calcareous grasslands which are found within the NNR area.



Distribution of Lace Border in Kent (data to July 2024, Kent Moth Group)

Gold Cloak (*Phtheochroa schreibersiana*)

During a field survey for this report at Jeskyns Community Woodland, an adult was netted flying around Poplar, one of the known larval foodplants. This was the first occurrence of this rare species in West Kent (Vice County 16). There is only one other record from Kent, in Iwade (East Kent, VC15) back in 1923. This species is listed as a provisional Red Data Book species (pRDB).

3.4. Assessment of butterfly species present

A large proportion of the butterfly species present in Kent have been recorded within the candidate NNR sites. These include many widespread species including Peacock (*Aglais io*), Comma (*Polygonia c-album*), Meadow Brown (*Maniola* jurtina), and Speckled Wood (*Pararge aegeria*).

3.5. Priority butterfly species across the area

The 7 Section 41 butterfly species recorded from one or more of the candidate sites are listed in Table 1, below.

Table 1. Section 41 butterfly species present in the candidate NNR area.

Coenonympha pamphilus	Small Heath
Cupido minimus	Small Blue
Erynnis tages	Dingy Skipper
Lasiommata megera	Wall
Limenitis camilla	White Admiral
Satyrium w-album	White Letter Hairstreak
Thecla betulae	Brown Hairstreak*

* Brown Hairstreak is not yet recorded from any of the candidate sites, but it is known to be expanding its range in Kent. This is a species that could well turn up in the area and survey recommendations have been made to help monitor for this species (see section 5.3.2). The presence of this species is likely to impact management recommendations to ensure its survival.

In addition to the Section 41 species, the nationally scarce Adonis Blue is also of note. It is listed as a key feature within the Halling to Trottiscliffe Escarpment SSSI. It is also fully protected under Schedule 5 of the Wildlife and Countryside Act (1981).

Small Heath (*Coenonympha pamphilus*)

This species is extending its range in Kent and is now present in at least 340 tetrads, more than double the amount in 2005-09.

It has been recorded across the candidate sites, albeit at relatively low densities at a number of the sites. There are significant populations just to the south of the candidate site area and across other areas of the Kent Downs. It was observed during site surveys for this report in the meadows within Holborough Woodlands.

The Small Heath is a versatile butterfly that inhabits a range of grassy habitats, including calcareous grasslands, heathlands, rough pastures, roadside verges, and even urban greenspaces. It prefers areas with short, sparse vegetation. It serves as an indicator species for the health of grassland ecosystems in Kent and conservation efforts that support the Small Heath will also benefit a wide range of other wildlife that share its habitat.

Conservation Efforts

Efforts to conserve the Small Heath in Kent involve maintaining and managing suitable grassland habitats. Specific actions include:

- **Habitat Management**:
    - **Grazing**: Appropriate grazing regimes help maintain the short, open grassland structure that the Small Heath prefers. Overgrazing and undergrazing can both be detrimental.
    - **Mowing**: Mowing practices are adjusted to avoid the peak flight periods of the butterfly to prevent killing adults and larvae.
    - **Scrub Clearance**: Periodic removal of encroaching scrub helps keep grassland habitats open and suitable for the Small Heath.
- **Monitoring and Surveys**:
    - Regular surveys and monitoring are conducted to keep track of population sizes and distribution. Citizen science projects and butterfly transects are often used for this purpose.
    - Data collected helps inform conservation strategies and habitat management practices.

Challenges

The Small Heath faces several challenges in Kent:

- **Habitat Loss and Fragmentation**: Urban development, agricultural intensification, and neglect of traditional land management practices can lead to habitat loss and fragmentation.
- **Changes in Agricultural Practices**: The use of pesticides and herbicides, changes in grazing regimes, and the conversion of grasslands to arable land can negatively impact the Small Heath's habitat.
- **Climate Change**: Changes in weather patterns and extreme weather events can affect the availability of suitable habitats and the phenology of the butterfly.

Small Blue (*Cupido minimus*)

The Small Blue (Cupido minimus) is the UK's smallest resident butterfly, and it has a significant presence in Kent. This butterfly is a priority species for conservation due to its declining numbers and the specific habitat requirements it needs to thrive.

The Small Blue typically inhabits calcareous grasslands, which are areas of chalky soil that support a diverse range of plant species. These grasslands provide the necessary conditions for the butterfly's sole larval food plant, Kidney Vetch (Anthyllis vulneraria).

Thriving, new colonies have been found in Kent very recently, including on areas of arable reversion to flower-rich grassland undertaken as part of agri-environment schemes, and populations were used as part of a successful translocation project to reintroduce this species at sites in East Anglia.

Conservation efforts

- **Habitat Management**:
    - **Grazing**: Controlled grazing by livestock helps maintain the short, open sward structure of grasslands that the Small Blue requires.
    - **Scrub Clearance**: Removal of encroaching scrub and invasive plant species helps preserve the open habitat and promotes the growth of Kidney Vetch.
    - **Sowing Kidney Vetch**: In some areas, conservationists actively sow Kidney Vetch seeds to increase the availability of larval food plants.
- **Monitoring and Surveys**:
    - Regular monitoring of known colonies and potential sites is conducted to assess population trends and the effectiveness of conservation measures.

    - Butterfly Conservation and local wildlife groups engage in surveys and research to gather data on the Small Blue's distribution and habitat requirements.

Challenges

- **Habitat Loss**: Development, agricultural intensification, and neglect of traditional grassland management practices can lead to habitat loss and fragmentation.
- **Climate Change**: Changes in climate patterns can affect the availability of suitable habitats and food plants.
- **Invasive Species**: Invasive plants can outcompete native species like Kidney Vetch, reducing the availability of food for larvae.

Adonis Blue (*Polyommatus bellargus*)

This species is particularly significant in Kent, where it has found a suitable habitat due to the region's chalk downlands, including those in the North Kent Woods and Downs NNR. It prefers south-facing chalk grasslands. These areas provide the warm microclimate and the specific food plants that the Adonis Blue requires.

It became very rare in Kent and nationally late last Century but since 2000 it has shown a significant range expansion in Kent. However, it remains unclear whether some of this spread is down to unofficial introductions.

In the NNR area, it is only currently known from Ranscombe Farm.

Conservation efforts

- **Habitat Management**:
    - **Chalk Grassland Restoration**: The Adonis Blue thrives on south-facing chalk grassland. Conservation efforts focus on restoring these grasslands by reducing soil fertility, which encourages the growth of native wildflowers and prevents the encroachment of aggressive grasses and scrub.
    - **Grazing**: Controlled grazing by livestock helps maintain a mosaic of vegetation heights, which is essential for the butterfly's lifecycle, providing both the right conditions for egg-laying and shelter for caterpillars.
    - **Scrub Clearance**: Regular cutting and clearance of scrub are carried out to maintain the open grassland that this butterfly requires.
- **Monitoring and Surveys**:
    - Regular monitoring of known colonies and potential sites is conducted to assess the health of this species across the NNR.
    - Research into the butterfly's ecology, such as its dependence on microclimates and specific plants, informs conservation strategies. Studies on the effects of climate change, habitat fragmentation, and land-use change are also crucial for long-term planning.

Challenges

- **Habitat Loss**: Development, agricultural intensification, and neglect of traditional grassland management practices can lead to habitat loss and fragmentation.
- **Climate Change**: Changes in climate patterns can affect the availability of suitable habitats and food plants.
- **Inbreeding and Genetic Diversity:** As habitats become fragmented, populations of the Adonis Blue can become isolated, leading to inbreeding. This reduces genetic

diversity, which can make populations more vulnerable to disease, environmental changes, and other stresses.

Dingy Skipper (*Erynnis ta*ges)

The Dingy Skipper is a small, brown butterfly that is often mistaken for a moth due to its subdued coloration and low-flying habits. It is one of the more distinctive skippers and has a specialized habitat preference. In Kent, the Dingy Skipper is a species of conservation concern due to its specific habitat requirements and declining numbers in some areas.

The Dingy Skipper has experienced declines in many parts of the UK, including Kent, due to habitat loss and changes in land management. However, targeted conservation efforts have shown positive results in some areas, helping to stabilize and even increase local populations.

The Dingy Skipper favours open, sunny habitats with sparse vegetation. Key habitats include calcareous grasslands, old quarries, disused railway lines, brownfield sites, and coastal dunes. These areas provide the bare ground and sparse vegetation structure that the species needs.

In Kent, the Dingy Skipper is found in suitable habitats across the county, particularly in the chalk grasslands of the North Downs and coastal areas. However, its distribution is patchy, and populations are often small and isolated. In the candidate area, it has been recorded at numerous sites, including on roadside reserves, Holborough Woods, Ranscombe Farm, and Cobham Park Wood.

This is another important indicator species for the health of open grassland habitats in Kent. Conservation efforts that support the Dingy Skipper also benefit a wide range of other species that share its habitat.

Conservation Efforts

Key actions include:

- **Habitat Management**:
    - **Grazing and Scrub Clearance**: Controlled grazing and periodic scrub clearance help maintain the open, sunny conditions preferred by the Dingy Skipper. Grazing prevents the encroachment of tall grasses and scrub.
    - **Bare Ground Creation**: Creating and maintaining areas of bare ground within grasslands provides important basking and egg-laying sites
    - **Vegetation Management**: Ensuring that bird's-foot trefoil and other larval food plants are abundant and well-distributed within the habitat.

- **Monitoring and Surveys**:
    - Regular surveys and monitoring programs are conducted to track population trends and distribution. This data helps inform management practices and conservation strategies.
    - Butterfly Conservation and other local wildlife groups often engage in monitoring activities and citizen science projects.

Challenges

- **Habitat Loss and Fragmentation**: Development, changes in land use, and the abandonment of traditional land management practices can lead to habitat loss and fragmentation.
- **Inappropriate Land Management**: Overgrazing, undergrazing, or lack of habitat management can result in unsuitable conditions for the Dingy Skipper.

- **Climate Change**: Changes in weather patterns and extreme weather events can impact the availability and quality of suitable habitats.

Grizzled Skipper (*Pyrgus malvae*)

The stronghold of this species has always been in the North Downs of West Kent. As a result, it has been recorded at several candidate NNR sites including Cobham Woods, Holborough Woods and the Silverhand Estate. However, the latest data (Easterbrook *et al*, 2022) shows a slight decline in both its distribution and abundance across the study area.

In common with the previous species, Grizzled Skipper is another important indicator species for the health of open grassland habitats in Kent. It can be a difficult butterfly to find and as such may well be under-recorded.

Conservation Efforts

Key actions include:

- **Habitat Management**:
  - **Grazing and Mowing**: Controlled grazing and mowing help maintain the short, open sward structure required by the Grizzled Skipper. Overgrazing and undergrazing can both be detrimental.
  - **Scrub Clearance**: Periodic removal of encroaching scrub helps preserve open habitats and promotes the growth of larval food plants.
  - **Bare Ground Creation**: Creating and maintaining areas of bare ground provides essential basking sites for adults and helps create a warm microclimate that benefits egg-laying and larval development.
- **Monitoring and Surveys**:
  - Regular surveys and monitoring programs track population trends and distribution, informing conservation strategies and management practices. Citizen science projects and butterfly transects are valuable tools for gathering data.
  - Collaboration with Butterfly Conservation and local wildlife groups helps coordinate monitoring efforts and share findings.

Challenges

- **Habitat Loss and Fragmentation**: Urban development, changes in land use, and agricultural intensification lead to habitat loss and fragmentation, making it difficult for populations to thrive.
- **Inappropriate Land Management**: Lack of or inappropriate management, such as overgrazing or abandonment of traditional practices, can render habitats unsuitable for the Grizzled Skipper.
- **Climate Change**: Changes in climate patterns, including warmer winters and wetter summers, can disrupt the butterfly's life cycle and habitat suitability.

Wall (*Lasiommata megera*)

A rather scarce butterfly across the candidate sites with only a small number of records. In the study area, it has been recorded from sites around Shorne and at Ranscombe Farm. The closest significant population is on the Hoo Peninsula. This species saw a decline in the mid to late 2000's but more recently it has begun to recover some of its former range. It remains a species of conservation concern and the decreases are thought to have been due to habitat loss, fragmentation, and changes in land management practices.

The Wall butterfly prefers open, sunny habitats with short, sparse vegetation. Common habitats include coastal grasslands, quarries, disused railway lines, and agricultural margins. It also frequents open woodlands, heathlands, and brownfield sites.

Conservation Efforts

Specific actions include:

- **Habitat Management**:
    - **Grazing and Mowing**: Controlled grazing and mowing regimes help maintain the short, open grassland structure that the Wall butterfly requires. Avoiding intensive grazing or mowing during peak flight periods is crucial to prevent harming the butterflies and their larvae.
    - **Scrub Clearance**: Periodic removal of encroaching scrub and invasive species helps preserve open habitats and promotes the growth of host plants.
    - **Bare Ground Creation**: Maintaining areas of bare ground provides essential basking sites for adults and helps create a warm microclimate that is beneficial for egg-laying and larval development.
- **Monitoring and Surveys**:
    - Regular surveys and monitoring programs track population trends and distribution, informing conservation strategies and management practices. Citizen science projects and transect walks are valuable tools for gathering data.
    - Collaboration with Butterfly Conservation and local wildlife groups helps coordinate monitoring efforts and share findings.

Challenges

- **Habitat Loss and Fragmentation**: Urban development, changes in land use, and agricultural intensification lead to habitat loss and fragmentation, making it difficult for populations to thrive.
- **Inappropriate Land Management**: Lack of or inappropriate management, such as overgrazing or abandonment of traditional practices, can render habitats unsuitable for the Wall butterfly.
- **Climate Change**: Changes in climate patterns, including warmer winters and wetter summers, can disrupt the butterfly's life cycle and habitat suitability.

White Admiral (*Limenitis camilla*)

In Kent, the White Admiral is of particular interest due to its association with ancient woodlands and specific habitat requirements. In the study area, it has been recorded from sites including Great Crabbles Wood, Ranscombe Farm and Cobham Woods.

This species thrives in deciduous woodlands, especially those with a well-developed understory. Key features of its habitat include sunny rides, glades, and woodland edges.

Conservation Efforts

Key actions include:

- **Woodland Management**:
    - **Coppicing and Thinning**: Traditional woodland management techniques such as coppicing and selective thinning help create the dappled light conditions that honeysuckle and other understory plants need to thrive.
    - **Ride and Glade Management**: Maintaining and creating sunny rides and glades within woodlands provide important basking and nectar-feeding opportunities for adult butterflies.

    - **Control of Invasive Species**: Managing invasive plant species that can outcompete honeysuckle and other native flora.
- **Monitoring and Surveys**:
    - Regular surveys and monitoring programs track population trends and habitat conditions. Data gathered helps inform management practices and conservation strategies.
    - Engaging citizen scientists and volunteers in monitoring efforts to broaden the scope and detail of data collection.

Challenges

- **Habitat Loss and Fragmentation**: Urban development, changes in land use, and neglect of traditional woodland management practices can lead to habitat loss and fragmentation.
- **Climate Change**: Changes in climate patterns can affect the availability of suitable habitats and food plants and can also disrupt the butterfly's life cycle.
- **Inappropriate Woodland Management**: Practices that reduce the availability of honeysuckle or alter the structure of the woodland can negatively impact this species

White-letter Hairstreak (*Satyrium w-album*)

This butterfly is primarily associated with elm trees (*Ulmus* spp.), as its larvae feed on elm leaves. In Kent, the White-letter Hairstreak has faced significant challenges due to the decline of elm trees but targeted conservation efforts aim to support and enhance its populations. While the butterfly was once more widespread, the impact of Dutch elm disease has led to a decline in suitable habitats. However, isolated populations persist where elm trees are still present.

In the area of this study, this species is known from a small number of sites focussed in the north of the candidate area around Cobham Woodlands.

The White-letter Hairstreak primarily inhabits areas where habitats include woodland edges, hedgerows, parklands, and urban areas where elm trees have survived or where Dutch Elm disease-resistant cultivars have been planted. This species is currently the flagship species for plans to plant more Dutch Elm disease-resistant Elm (*Ulmus*) cultivars in Kent.

This butterfly would make an ideal ‘flagship’ priority species for the candidate NNR.

Conservation Efforts

Key actions include:

- **Habitat Management**:
    - **Planting Disease-resistant Elms**: Planting and promoting disease-resistant varieties of elm trees to provide a long-term food source for the larvae.
    - **Hedgerow and Woodland Management**: Maintaining and managing hedgerows and woodland edges to ensure the survival of existing elm trees and support the growth of new ones.
    - **Elm Conservation**: Protecting mature elm trees and preventing the spread of Dutch elm disease through careful monitoring and management.
- **Monitoring and Surveys**:
    - Conducting regular surveys to track the distribution and population trends of the White-letter Hairstreak. This includes searching for eggs on elm twigs during the winter when they are more visible.
    - Using citizen science projects to involve the public in monitoring efforts and to gather more comprehensive data on butterfly populations.
- **Community Engagement**:

- Raising awareness about the White-letter Hairstreak and the importance of elm trees for its survival.
- Encouraging landowners, local authorities, and the public to plant disease-resistant elms and to participate in conservation activities.

Challenges

- **Dutch Elm Disease**: The primary threat to the White-letter Hairstreak is the continued impact of Dutch Elm disease, which has decimated elm populations across the UK.
- **Habitat Loss and Fragmentation**: Urban development, agricultural practices, and changes in land use can lead to the loss and fragmentation of habitats that support elm trees and the butterfly.
- **Limited Awareness**: The butterfly's elusive nature and the specific habitat requirements mean that it is less well-known, which can result in lower prioritization for conservation efforts.

In addition to the specific activities and challenges set out above, a key part of any NNR is community engagement. This should include the following:

- Local communities and landowners are encouraged to participate in conservation efforts and to manage their land in ways that benefit these species.
- Education and outreach programmes including guided walks and talks to raise awareness about the importance of grassland, woodland, and other habitats and the species that depend on them.
- Encouraging local communities and landowners to participate in woodland conservation activities and to manage their land in ways that benefit the species on their land.
- Encouraging volunteer participation in monitoring activities to foster a sense of stewardship and community involvement.

3.6. Potential problem species

Oak Processionary Moth (*Thaumetopoea processionea*)

Oak Processionary moth (OPM) is an invasive species that was first identified in the UK in 2006. The moth poses significant risks to both oak trees and human health. Its caterpillars feed on both native and planted oak (*Quercus*) leaves, which can severely weaken the trees and make them more susceptible to other diseases and pests.

The caterpillars are particularly concerning because they have tiny, toxic hairs that can cause skin rashes, eye irritations, sore throat, and in severe cases, respiratory issues in humans and animals. These hairs can be shed and carried by the wind, posing a health risk even without direct contact with the caterpillars.

Efforts to control the spread of OPM in the UK include monitoring and management programs, which involve spraying affected trees with biological pesticides, removing nests, and public awareness campaigns to inform people about the dangers and how to avoid them.

It has not yet been recorded at any of the candidate sites but given the amount of Oak across the area, it could well be expected. The moth is spreading across Kent and has been recorded fairly close at Cliffe Woods to the northeast and Windmill Hill, to the northwest.

Brown-tail (*Euproctis chrysorrhoea*)

The larvae feed on the leaves of a variety of deciduous trees and shrubs and are most often observed on Hawthorn (*Crataegus*) and Blackthorn (*Prunus*). Their feeding can lead to significant defoliation.

As with OPM above, Brown-tail moth larvae can be both a pest to vegetation and a public health concern due to their urticating hairs which can cause extreme irritation if in contact with human skin. Public awareness and proper management are crucial to mitigate their impact.

It has been recorded at many of the candidate sites, including Shorne Woods Country Park, Silverhand Estate, and Ashenbank Wood. It is recorded more frequently as larvae and larval nests than adults.

Pine Processionary Moth (*Thaumetopea pityocampa*)

A moth that is native to southern Europe, parts of North Africa, and the Near East. At this time, it is not established in the UK. However, it poses a potential threat due to its capacity to spread northwards from its native range, likely driven by climate change and accidental human-mediated transport.

The caterpillars have tiny urticating hairs that can cause severe skin rashes, eye irritations, and allergic reactions, including respiratory issues. These hairs can be airborne and pose a risk to anyone near infested trees. Pets and livestock can also be affected if they come into contact with the caterpillars or their hairs.

The caterpillars feed on pine needles, which can lead to defoliation. Severe infestations can weaken trees, making them susceptible to diseases and other pests.

3.7. Hotspots/key sites for Lepidoptera

Whilst a strategic landscape scale approach is critical for Lepidoptera, as with many other taxa, there are also some key sites worthy of individual mention.

Ranscombe Farm – a site that has many records of both priority and more widespread species. The history of sensitive management across this site and the presence of a wide range of habitats and many larval foodplants that support a variety of butterflies and moths make this a key site for Lepidoptera.

Ashenbank Wood – another site that has received significant attention regarding Lepidoptera recording including numerous light trapping sessions for moths over recent years. The moth fauna of the site is perhaps understood more than most candidate sites.

Holborough Woods – a significant expanse of woodland along with flower-rich open areas, meadows, and rides. The range of Lepidoptera using this site will be significant and is already known to include several priority species, despite relatively limited surveying and recording, in particular of moths.

Jeskyns Community Woodland – the diversity of habitats, including large areas of new woodland planting, orchards, meadows, and hedgerows, across this site make this an ideal focus for activity as part of a wider NNR. More detailed monitoring will allow changes to be monitored as the site matures.

With significant visitor infrastructure, this site also lends itself readily to opportunities for engagement and awareness raising with the public. This would be particularly useful for moths given that they are so often overlooked.

Silverhand Estate - provides a contrast to many of the other sites and as such likely to support a different Lepidoptera species assemblage. The large scale of this site and its central location also make this a key site where appropriate management will help to facilitate the movement of Lepidoptera across the landscape including via 'moth motorways' (e.g. Hodgson *et al*, 2022).

Targeted moth surveys in the Bush Valley, Silverhand Estate, in summer 2024, reinforced this. A total of 248 species (approx. 10% of the UK's known moth species) were recorded in a single light-trapping session in late July. The most notable species was Rest Harrow (*Aplasta ononaria*) but Lace Border (*Scopula ornata*) and Yellow-striped Bark Moth (*Harpella forficella*) were also important finds.

3.8. Identification of any significant gaps in knowledge of Lepidoptera distribution across the candidate NNR

A significant number of key species are known to be present at locations very close to the NNR sites. Many of these are not particularly scarce and some are priority species for monitoring and research. It is highly likely that many of these are present on one or more of the NNR sites and that their absence can be attributed to a lack of recording effort. This should be addressed as a matter of priority.

The amount of Lepidoptera records from the various candidate sites varies enormously. Some sites have had a history of butterfly transects and some moth recording, although the latter has often been relatively *ad hoc* at best. Section 5 below includes recommendations for future surveying that would look to address many of these gaps.

4. Discussion

Species conservation can be very effective at the landscape scale, but careful targeting of management, both across the site network and within each site, is essential to maximise the chances of success. The combination of these would likely be optimised through the opportunities and benefits that NNR designation would bring.

Landscape-scale conservation and projects focused on a single butterfly or moth will benefit a suite of other Lepidoptera as well as a wide range of other taxa that have broadly similar habitat requirements. To be successful, landscape-scale conservation needs to involve partnership working, where this is developed through a shared vision and action on the ground. NNR designation would be a real catalyst for this with landscape scale benefits likely to exceed the sum of the actions that may be undertaken on individual sites if managed in isolation.

Such an approach would satisfy many of the Lawton principles (Lawton, 2010), which as a whole emphasise the need for a strategic approach to conservation, moving beyond isolated sites to create a coherent and resilient ecological network. The goal is to ensure that wildlife can thrive and adapt to changes, such as climate change, by having access to a range of habitats and resources across the landscape. As a super NNR, management across these sites should be of low intensity and be able to be carried out in rotation, to ensure there is a mosaic of habitats available at any one time as this brings clear benefits for Lepidoptera and other taxa (e.g. Bubova *et al*, 2015)

Butterflies and moths respond very rapidly to change, positive or negative. This makes them some of the best indicators of the condition of a site or group of sites – they are a real 'canary in the coal mine'. Many can rapidly produce several generations in a year, especially when conditions become more favourable for them.

Entomological investigations, including those for Lepidoptera, are most often focussed on natural habitats, to capture the local species composition and reveal the occurrence of more notable (rare, endangered) species. While Lepidoptera species fitting these criteria are a key component of this report, it is important to note the significant amount of all Lepidoptera species supported across the candidate area. Future work in surveying Lepidoptera should encompass the full range of species present.

In more agriculturally dominated landscapes or urban/peri-urban environments, both of which are represented across the candidate NNR area, similar surveys are usually considered unattractive and, therefore, receive little attention. However, assessing Lepidoptera in these areas of the candidate NNR is just as important as in natural habitats. Not least because they are likely to support a different species assemblage but also because these sites are a key part of the landscape and understanding them will allow consideration of any barriers to species movement or opportunities to provide stepping stones across the landscape. In this context, the "joined" element of the 'Lawton Principles' (Lawton, 2010) – enhancing connectivity between sites - is most pertinent.

Historically, there have been far more studies and surveys on Butterflies. For a candidate NNR, significant effort must also be focussed on moths. The sheer number of moth species known from the candidate area lends itself very well to this. They can also be monitored year-round and in all life stages, for example, leaf mine surveys in summer and particularly through the autumn are highly likely to add a significant number of species to the area list. The importance of surveying moths and the benefits this brings to wider taxa has been highlighted in many papers e.g. Hrubešova *et al*. (2023).

5. Recommendations

5.1. Recommendations for landscape-scale enhancements that will benefit key Lepidoptera species (and many other species across a range of taxa).

- To more fully strategize and catalogue operations across the sites. To allow for management to be planned at a landscape scale and where appropriate can be carried out in rotation and to allow for heterogeneity of management across the NNR. Information on land use legacies will also be important when considering future management (Debinski *et al*, 2011)

- Many of our most threatened woodland butterflies and moths are associated with open habitats such as clearings and rides, so a rotational programme of woodland management to maintain and extend these habitats across the NNR area should be put in place.

- Scrub clearance including permanent removal of some patches of scrub rather than simply cutting back growth should be carried out where resources and equipment allow.

- To consider a seeding programme, spreading of green hay from local donor sites to increase plant species diversity that in turn will support a wide range of moths and butterflies.

- For sites to take full/further advantage of the support that may be available through agri-environment schemes including the Sustainable Farming Incentive, Countryside Stewardship, and the various Defra woodland grants.

- To explore the potential and feasibility for the suite of sites to apply to be part of the Landscape Recovery scheme.

5.2. Recommendations for specific site enhancements

Whilst further, detailed surveys and discussions with landowners and land managers as to the desirability and feasibility of any future site intervention and enhancements will be necessary, from the site visits carried out for this report the following possible examples have been identified:

- Holborough Woodlands:
    - Control of invasive species including Rhododendron and Laurel – to encourage natural ground flora that support a range of Lepidoptera
    - Selective thinning in certain areas, especially of species such as Sweet Chestnut.
    - Establishment or widening of rides – whilst ensuring this does not encourage illegal access and anti-social behaviour.
    - Encouraging an expansion of Aspen and Elm – these were noted to be very sparsely scattered across the site, and both are important larval food plants for Lepidoptera
    - Meadows around Holly Hill House – whilst in the main these appeared to be in good condition there were some areas which were starting to become dominated by stinging nettle (*Urtica dioica*), bramble (*Rubus fructicosus*) and Traveller's Joy (*Clematis vitalba*). Attention to the management of these areas should be a priority.
    - If the arable area is maintained, ensure this has wide margins to buffer the adjacent woodland and provide additional habitat as well as providing for an effective ecotone.

- Ashenbank Wood:

- Although covered by a comprehensive Woodland Trust management plan, development of the NNR could facilitate update and revision of this in light of wider landscape scale activities
- Dominance of Sweet Chestnut in several areas could be managed by selective removal as this species is known to support very few Lepidoptera species. Many Sweet Chestnut on this site are of course fantastic landscape features and these would be retained, however many smaller trees could be selectively thinned to encourage other species that are more favourable to Lepidoptera.

- Silverhand Estate:
  - Where under the control of the Estate, ensure that the roadside verges and any associated hedgerows and trees are managed sympathetically to encourage wildflowers and a wide array of species that will benefit from these. Consider a single annual autumn 'cut and gather' programme for the verges.

- Rochester and Cobham Park Golf Club:
  - Encourage the adoption of a detailed biodiversity management plan to ensure future management at the golf course always takes account of the requirements of key species and takes steps to extend or safeguard areas of suitable habitat. Encourage the sharing of ideas and lessons learned from exemplars including the Biodiversity Management Plan for Canterbury Golf Club (Dance, 2021 and pers comm).

5.3. Recommendations for future surveying and monitoring

Landscape-scale projects must be underpinned by sound ecological research, their design supported by good quality spatial data and their effectiveness measured by a suitable monitoring system. This report, combined with those being produced for a range of other taxa, aims to start this process. However, further surveying and monitoring will be vital in developing a fully detailed understanding of the ecological significance of this candidate NNR and allowing for strategic planning of priorities and actions across the area. For Lepidoptera specifically a range of actions are recommended as set out below.

5.3.1. General approach and methods

- Continue any existing butterfly transects
- Light trapping – a combination of constant effort at a small number of selected sites and more ad-hoc surveys targeted across the wider area. Liaise with Kent Moth Group on moth-related activities.
- Daytime moth surveys – over 100 species of moth are considered to be day-flying with many more also frequently recorded during daylight hours. In addition to specific moth surveys, encourage those carrying out butterfly transects to record all moth sightings.
- Early stages monitoring – often overlooked but critically important as observations are direct proof that a particular species is resident at the site. Surveys to include larvae, leaf mines, larval cases, feeding signs, etc.
- For both day and night surveys, the majority of species will be readily identifiable on-site, or shortly thereafter. However, a small proportion will need to be retained for closer inspection to allow for accurate determination to species level where external characters alone are not reliable. This will usually entail a microscopic examination of the genitalia. These specimens will be retained and inspected accordingly. Such species would otherwise only be recordable at an aggregate or genus level which is not sufficiently accurate when aiming to understand the species on any given site or area.
- Dates for trapping will be dependent on weather conditions. For example, trapping should not take place on days where there has been significant rainfall (ca. > 10 mm) or where significant rainfall or high winds are forecast during the survey session as

these have been shown to have a significant negative effect on the numbers recorded (e.g., Duran *et al*, 2022).

5.3.2. Priority locations for future Lepidoptera surveys

- Individual targeted species monitoring e.g.
    - Liquorice Piercer (*Grapholita pallifrontana*) at Ranscombe Farm and other sites with larval food plant, Wild Liquorice (*Astragalus glycyphyllos*).
    - Winter egg searches on Elm to monitor White-letter Hairstreak. This can be elusive as an adult as it frequents the upper canopy.
    - Winter egg searches on Blackthorn to monitor for the appearance of Brown Hairstreak (*Thecla betulae*).
- Consider new butterfly transects at various sites where gaps exist – constant volunteer effort is required, generally one visit per week in season. Liaise with Butterfly Conservation Kent and SE London Branch on this.
- Establish constant effort light trapping at a minimum of 2-3 locations:
    - Ideally one nighttime session per calendar month
    - range of light traps to be deployed e.g. 125W Mercury Vapour Robinson-style trap, 40W Lucent mobile moth trap, LED Skinner-type traps. This allows for the known variation across moth families in their attraction to different light sources (e.g. Merckx and Slade, 2014).

5.4. Other recommendations

- For the contractor to be available in an advisory capacity to all site managers and advisors, to discuss and agree and the optimal, bespoke habitat management techniques needed at individual sites to achieve these for Lepidoptera.
- Engagement activities to raise awareness
    - Organise a BioBlitz for the public with experts from across taxon groups on hand to help catalogue as much wildlife as possible in a day
    - identify opportunities with local schools
    - Hold moth mornings – revealing contents of moth traps run the previous night
- All records should be submitted to the County Moth Recorders and the County Butterfly Recorder

6. Conclusions

The potential candidate NNR sites support a significant number of important Lepidoptera species. Several of these are priority species or those whose populations or distribution have declined significantly in recent years.

Lepidoptera would support the case for designation as a super NNR as actions for these species would align very well with the objectives for NNRs in England, including the following:

1. **Conservation of Biodiversity**:
    - Protect and enhance populations of rare and threatened species.
    - Maintain and restore natural habitats to ensure ecological integrity and resilience.
    - Conserve genetic diversity within species.
2. **Scientific Research – 'outdoor laboratories'**:
    - Provide sites for scientific research and monitoring to improve understanding of natural processes and inform conservation management.
    - Facilitate long-term ecological studies and environmental monitoring.
3. **Education and Public Awareness**:
    - Engage communities in conservation activities and foster a connection with the natural environment.
    - Promote public understanding and appreciation of nature through educational programs and materials.
4. **Sustainable Management**:
    - Implement sustainable land management practices that support conservation goals.
    - Work in partnership with local communities, landowners, and other stakeholders to achieve conservation objectives.
5. **Climate Change Mitigation and Adaptation**:
    - Adapt management practices to improve the resilience of natural habitats and species to climate change.
    - Enhance the role of NNRs in sequestering carbon and mitigating the impacts of climate change.
6. **Cultural and Recreational Value**:
    - Provide opportunities for responsible public enjoyment and recreation that are compatible with conservation goals.

7. ***Acknowledgements***

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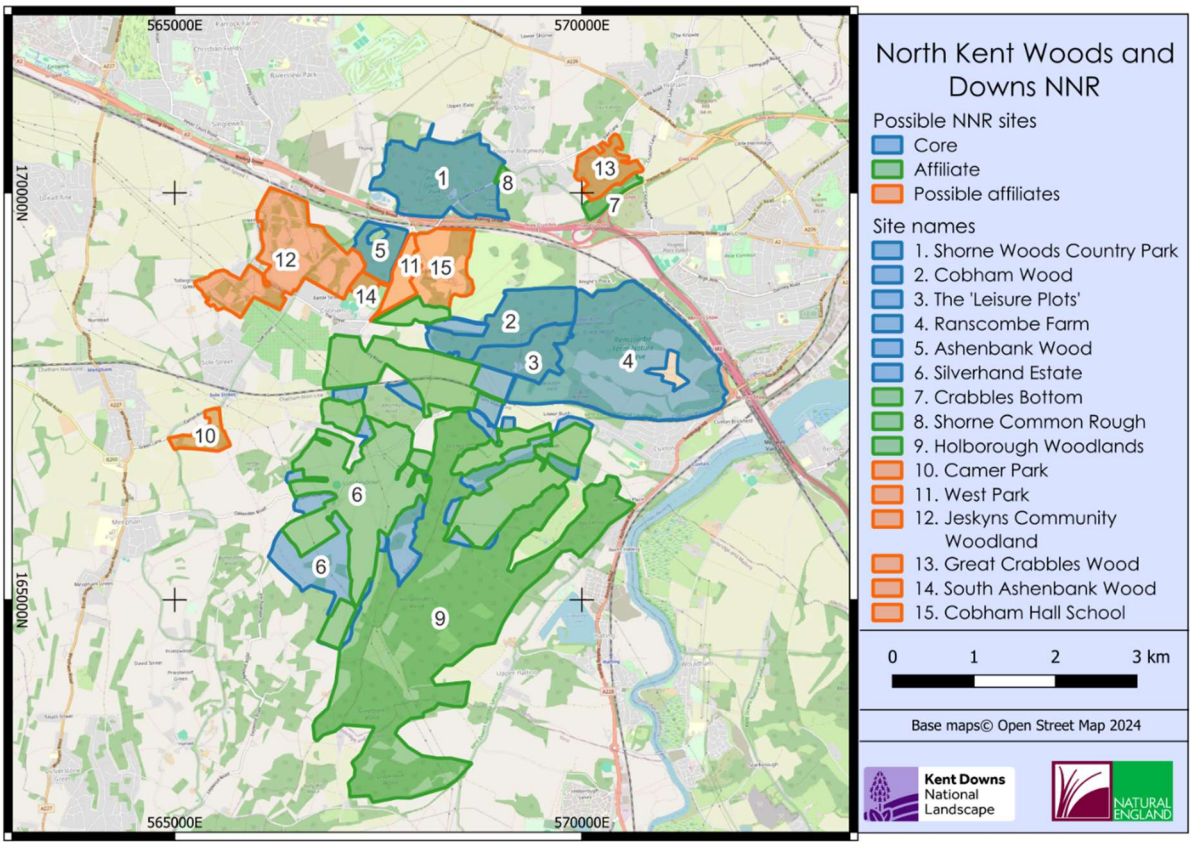
Annex 1 – Possible NNR site locations



Annex 2 – List of Section 41 Lepidoptera species

a) Moths

Acronicta psi	Grey Dagger
Acronicta rumicis	Knot Grass
Anchoscelis helvola	Flounced Chestnut
Anchoscelis litura	Brown-spot Pinion
Agrochola lychnidis	Beaded Chestnut
Allophyes oxyacanthae	Green-brindled Crescent
Amphipoea oculea	Ear Moth
Amphipyra tragopoginis	Mouse Moth
Apamea anceps	Large Nutmeg
Apamea remissa	Dusky Brocade
Aplasta ononaria	Rest Harrow
Aporophyla lutulenta	Deep-brown Dart
Arctia caja	Garden Tiger
Aspitates gilvaria gilvaria	Straw Belle
Asteroscopus sphinx	Sprawler
Atethmia centrago	Centre-barred Sallow
Brachylomia viminalis	Minor Shoulder Knot
Caradrina morpheus	Mottled Rustic
Chesias legatella	Streak
Chesias rufata	Broom-tip
Chiasmia clathrata	Latticed Heath
Diarsia rubi	Small Square-spot
Diloba caeruleocephala	Figure of Eight
Ecliptopera silaceata	Small Pheonix
Ennomos fuscantaria	Dusky Thorn
Ennomos quercinaria	August Thorn
Epirrhoe galiata	Galium Carpet
Eugnorisma glareosa	Autumnal Rustic
Eulithis mellinata	Spinach
Euxoa nigricans	Garden Dart
Grapholita pallifrontana	Liquorice Piercer
Hadena albimacula	White Spot
Hemistola chrysoprasaria	Small Emerald
Hepialus humuli	Ghost Moth
Hoplodrina blanda	Rustic
Hydraecia micacea	Rosy Rustic
Lycia hirtaria	Brindled Beauty
Malacosoma neustria	Lackey
Melanchra persicariae	Dot Moth
Ceramica pisi	Broom Moth
Melanthia procellata	Pretty Chalk Carpet
Litoligia literosa	Rosy Minor
Leucania comma	Shoulder-striped Wainscot

Orthosia gracilis	Powdered Quaker
Pechipogo strigilata	Common Fan-foot
Pelurga comitata	Dark Spinach
Perizoma albulata albulata	Grass Rivulet
Polia bombycina	Pale Shining Brown
Rhizedra lutosa	Large Wainscot
Scopula marginepunctata	Mullein Wave
Scotopteryx bipunctaria	Chalk Carpet
Scotopteryx chenopodiata	Shaded Broad-bar
Spilosoma lubricipeda	White Ermine
Spilosoma lutea	Buff Ermine
Tholera cespitis	Hedge Rustic
Tholera decimalis	Feathered Gothic
Timandra comae	Blood Vein
Trichiura crataegi	Pale Eggar
Tyria jacobaeae	Cinnabar
Watsonalla binaria	Oak Hook-tip
Cirrhia gilvago	Dusky Lemon Sallow
Cirrhia icteritia	Sallow
Xanthorhoe ferrugata	Dark-barred Twin-Spot Carpet
Agrotera nemoralis	Beautiful Pearl
Trichopteryx polycommata	Barred Tooth-striped
Cossus cossus	Goat Moth
Cymatophorina diluta	Oak Lutestring
Dicycla oo	Heart Moth
Ennomos erosaria	September Thorn
Nemophora fasciella	Horehound Long-horn Moth
Phyllonorycter sagitella	Scarce Aspen Midget Moth
Phyllonorycter scabiosella	Surrey Midget Moth
Pyropteron chrysidiformis	Fiery Clearwing

N.B. Shaded rows are species that may be present and currently overlooked due to limited surveying or are considered to have a high potential to colonise the area.

b) Butterflies

Coenonympha pamphilus	Small Heath
Cupido minimus	Small Blue
Erynnis tages	Dingy Skipper
Lasiommata megera	Wall
Limenitis camilla	White Admiral
Melitaea athalia	Heath Fritillary
Satyrium w-album	White Letter Hairstreak
Thecla betulae	Brown Hairstreak

Annex 3 Additional records from 2024 surveys for this report

Species	Common name	Location
Stigmella carpinella	Hornbeam Pigmy	Ashenbank Wood
Pseudopanthera macularia	Speckled Yellow	Ashenbank Wood (WT)
Epermenia chaerophyllella	Garden Lance-wing	Ashenbank Wood (WT)
Parornix anglicella	Hawthorn Slender	Ashenbank Wood (WT)
Psyche casta	Common Sweep	Ashenbank Wood (WT)
Luffia lapidella	Virgin Smoke	Ashenbank Wood (WT)
Phyllonorycter esperella	Dark Hornbeam Midget	Ashenbank Wood (WT)
Phyllonorycter coryli	Nut Leaf Blister Moth	Ashenbank Wood (WT)
Mompha langiella	Clouded Cosmet	Ashenbank Wood (WT)
Petrophora chlorosata	Brown Silver-line	Ashenbank Wood (WT)
Parornix scoticella	Rowan Slender	Ashenbank Wood (WT)
Phyllonorycter quercifoliella	Common Oak Midget	Ashenbank Wood (WT)
Phyllonorycter harrisella	White Oak Midget	Ashenbank Wood (WT)
Infurcitinea argentimaculella	Silver-barred Clothes	Ashenbank Wood (WT)
Stigmella hybnerella	Greenish Thorn Pigmy	Ashenbank Wood (WT)
Celastrina argiolus	Holly Blue	Crabbles Bottom
Psyche casta	Common Sweep	Crabbles Bottom
Stigmella svenssoni	Orange-headed Pigmy	Crabbles Bottom
Tischeria ekebladella	Oak Carl	Crabbles Bottom
Anthophila fabriciana	Common Nettle-tap	Crabbles Bottom
Lyonetia clerkella	Apple Leaf Miner	Crabbles Bottom
Phyllonorycter coryli	Nut Leaf Blister Moth	Crabbles Bottom
Coleophora pennella	Bugloss Case-bearer	Crabbles Bottom
Eremobia ochroleuca	Dusky Sallow	Crabbles Bottom
Phyllonorycter ulmifoliella	Red Birch Midget	Crabbles Bottom
Coptotriche marginea	Bordered Carl	Crabbles Bottom
Coleophora solitariella	Ochreous Case-bearer	Crabbles Bottom
Phyllonorycter acerifoliella	Maple Midget	Crabbles Bottom
Homoeosoma sinuella	Twin-barred Knot-horn	Crabbles Bottom
Synanthedon myopaeformis	Red-belted Clearwing	Crabbles Bottom

Polyommatus icarus	Common Blue	Crabbles Bottom
Phyllonorycter quercifoliella	Common Oak Midget	Crabbles Bottom
Acrobasis consociella	Broad-barred Knot-horn	Crabbles Bottom
Patania ruralis	Mother of Pearl	Crabbles Bottom
Parornix torquillella	Blackthorn Slender	Crabbles Bottom
Dichrorampha acuminatana	Sharp-winged Drill	Crabbles Bottom
Coleophora discordella	Lotus Case-bearer	Crabbles Bottom
Euspilapteryx auroguttella	Gold-dot Slender	Crabbles Bottom
Phyllonorycter esperella	Dark Hornbeam Midget	Crabbles Bottom
Stigmella floslactella	Coarse Hazel Pigmy	Crabbles Bottom
Stigmella lapponica	Drab Birch Pigmy	Crabbles Bottom
Incurvaria pectinea	Pale Feathered Bright	Crabbles Bottom
Coleophora gryphipennella	Rose Case-bearer	Crabbles Bottom
Stigmella aurella	Golden Pigmy	Crabbles Bottom
Celypha lacunana	Common Marble	Crabbles Bottom
Parornix devoniella	Hazel Slender	Crabbles Bottom
Caloptilia semifascia	Maple Slender	Crabbles Bottom
Callisto denticulella	Garden Apple Slender	Crabbles Bottom
Aspilapteryx tringipennella	Ribwort Slender	Crabbles Bottom
Phylloporia bistrigella	Striped Bright	Crabbles Bottom
Phyllonorycter corylifoliella	Hawthorn Midget	Crabbles Bottom
Coleophora hemerobiella	Black-stigma Case-bearer	Crabbles Bottom
Limenitis camilla	White Admiral	Crabbles Bottom
Melanargia galathea	Marbled White	Crabbles Bottom
Chrysoteuchia culmella	Garden Grass-veneer	Crabbles Bottom
Phyllonorycter harrisella	White Oak Midget	Crabbles Bottom
Acrocercops brongniardella	Brown Oak Slender	Crabbles Bottom
Yponomeuta padella	Orchard Ermine	Crabbles Bottom
Acleris schalleriana	Viburnum Button	Crabbles Bottom
Tortrix viridana	Green Oak Tortrix	Crabbles Bottom
Dichrorampha sequana	Square-spot Drill	Crabbles Bottom
Hedya pruniana	Plum Tortrix	Crabbles Bottom
Infurcitinea argentimaculella	Silver-barred Clothes	Crabbles Bottom
Phyllonorycter oxyacanthae	Common Thorn Midget	Crabbles Bottom
Melanthia procellata	Pretty Chalk Carpet	Crabbles Bottom
Aricia agestis	Brown Argus	Crabbles Bottom
Aphantopus hyperantus	Ringlet	Crabbles Bottom
Thymelicus sylvestris	Small Skipper	Crabbles Bottom
Maniola jurtina	Meadow Brown	Crabbles Bottom
Crambus pascuella	Inlaid Grass-veneer	Crabbles Bottom
Yponomeuta cagnagella	Spindle Ermine	Crabbles Bottom
Phyllonorycter messaniella	Garden Midget	Crabbles Bottom
Dyseriocrania subpurpurella	Common Oak Purple	Crabbles Bottom
Camptogramma bilineata	Yellow Shell	Crabbles Bottom
Stigmella hybnerella	Greenish Thorn Pigmy	Crabbles Bottom
Parornix anglicella	Hawthorn Slender	Crabbles Bottom

Bucculatrix ulmella	Oak Bent-wing	Crabbles Bottom
Eudonia mercurella	Small Grey	Crabbles Bottom
Eriocrania salopiella	Small Birch Purple	Crabbles Bottom
Lathronympha strigana	Red Piercer	Crabbles Bottom
Stigmella microtheriella	Nut-tree Pigmy	Crabbles Bottom
Coleophora serratella	Common Case-bearer	Crabbles Bottom
Mompha langiella	Clouded Cosmet	Crabbles Bottom
Gracillaria syringella	Common Slender	Crabbles Bottom
Lyonetia prunifoliella	Striped Bent-wing	Crabbles Bottom
Orgyia antiqua	Vapourer	Crabbles Bottom
Stigmella catharticella	Buckthorn Pigmy	Crabbles Bottom
Maniola jurtina	Meadow Brown	Crabbles Bottom
Euclidia glyphica	Burnet Companion	Horseholders Wood, Holborough Woodlands
Epirrhoe alternata	Common Carpet	Horseholders Wood, Holborough Woodlands
Crambus lathoniellus	Hook-streak Grass-veneer	Horseholders Wood, Holborough Woodlands
Tortrix viridana	Green Oak Tortrix	Horseholders Wood, Holborough Woodlands
Mompha langiella	Clouded Cosmet	Horseholders Wood, Holborough Woodlands
Rhopobota naevana	Holly Tortrix	Horseholders Wood, Holborough Woodlands
Phyllonorycter esperella	Dark Hornbeam Midget	Horseholders Wood, Holborough Woodlands
Nemophora degeerella	Yellow-barred Long-horn	Horseholders Wood, Holborough Woodlands
Phyllonorycter harrisella	White Oak Midget	Horseholders Wood, Holborough Woodlands
Parornix scoticella	Rowan Slender	Horseholders Wood,

		Holborough Woodlands
Coleophora follicularis	Agrimony Case-bearer	Horseholders Wood, Holborough Woodlands
Dyseriocrania subpurpurella	Common Oak Purple	Horseholders Wood, Holborough Woodlands
Phyllonorycter ulmifoliella	Red Birch Midget	Horseholders Wood, Holborough Woodlands
Archips podana	Large Fruit-tree Tortrix	Horseholders Wood, Holborough Woodlands
Phyllonorycter oxyacanthae	Common Thorn Midget	Horseholders Wood, Holborough Woodlands
Callistege mi	Mother Shipton	Horseholders Wood, Holborough Woodlands
Autographa gamma	Silver Y	Horseholders Wood, Holborough Woodlands
Chrysoteuchia culmella	Garden Grass-veneer	Horseholders Wood, Holborough Woodlands
Coleophora gryphipennella	Rose Case-bearer	Horseholders Wood, Holborough Woodlands
Alabonia geoffrella	Common Tubic	Horseholders Wood, Holborough Woodlands
Cameraria ohridella	Horse-Chestnut Leaf-miner	Horseholders Wood, Holborough Woodlands
Patania ruralis	Mother of Pearl	Horseholders Wood, Holborough Woodlands

Coleophora kuehnella	White Oak Case-bearer	Horseholders Wood, Holborough Woodlands
Crambus pascuella	Inlaid Grass-veneer	Horseholders Wood, Holborough Woodlands
Phyllonorycter coryli	Nut Leaf Blister Moth	Horseholders Wood, Holborough Woodlands
Parornix anglicella	Hawthorn Slender	Horseholders Wood, Holborough Woodlands
Digitivalva pulicariae	Fleabane Smudge	Horseholders Wood, Holborough Woodlands
Anthophila fabriciana	Common Nettle-tap	Horseholders Wood, Holborough Woodlands
Pyrausta aurata	Small Purple & Gold	Horseholders Wood, Holborough Woodlands
Phtheochroa schreibersiana	Scarce Gold Conch	Jeskyns Community Woodland
Celypha lacunana	Common Marble	Jeskyns Community Woodland
Rhopobota naevana	Holly Tortrix	Jeskyns Community Woodland
Alabonia geoffrella	Common Tubic	Jeskyns Community Woodland
Tyria jacobaeae	Cinnabar	Jeskyns Community Woodland
Gortyna flavago	Frosted Orange	Jeskyns Community Woodland
Epirrhoe alternata	Common Carpet	Jeskyns Community Woodland
Epermenia chaerophyllella	Garden Lance-wing	Jeskyns Community Woodland

Phyllonorycter messaniella	Garden Midget	Jeskyns Community Woodland
Anthophila fabriciana	Common Nettle-tap	Jeskyns Community Woodland
Acrocercops brongniardella	Brown Oak Slender	Jeskyns Community Woodland
Stigmella hybnerella	Greenish Thorn Pigmy	Jeskyns Community Woodland
Phyllocnistis unipunctella	Poplar Bent-wing	Jeskyns Community Woodland
Patania ruralis	Mother of Pearl	Jeskyns Community Woodland
Rivula sericealis	Straw Dot	Jeskyns Community Woodland
Thyraylia nana	Birch Conch	Jeskyns Community Woodland
Lomographa temerata	Clouded Silver	Ranscombe Farm
Panemeria tenebrata	Small Yellow Underwing	Ranscombe Farm
Dyseriocrania subpurpurella	Common Oak Purple	Ranscombe Farm
Lathronympha strigana	Red Piercer	Ranscombe Farm
Psyche casta	Common Sweep	Ranscombe Farm
Camptogramma bilineata	Yellow Shell	Ranscombe Farm
Anthophila fabriciana	Common Nettle-tap	Ranscombe Farm
Coleophora binderella	Grey Alder Case-bearer	Ranscombe Farm
Paracrania chrysolepidella	Small Hazel Purple	Ranscombe Farm
Yponomeuta cagnagella	Spindle Ermine	Ranscombe Farm
Coleophora serratella	Common Case-bearer	Ranscombe Farm
Coptotriche marginea	Bordered Carl	Ranscombe Farm
Mythimna albipuncta	White-point	Ranscombe Farm
Stigmella aurella	Golden Pigmy	Ranscombe Farm
Patania ruralis	Mother of Pearl	Ranscombe Farm
Yponomeuta plumbella	Black-tipped Ermine	Ranscombe Farm
Autographa gamma	Silver Y	Ranscombe Farm
Eriocrania salopiella	Small Birch Purple	Ranscombe Farm
Celypha lacunana	Common Marble	Ranscombe Farm
Ancylis badiana	Common Roller	Ranscombe Farm
Eana incanana	Bluebell Shade	Ranscombe Farm
Pyronia tithonus	Gatekeeper	Ranscombe Farm
Aphantopus hyperantus	Ringlet	Ranscombe Farm
Pararge aegeria	Speckled Wood	Ranscombe Farm
Vanessa atalanta	Red Admiral	Ranscombe Farm

Psyche casta	Common Sweep	Ranscombe Farm
Incurvaria masculella	Feathered Bright	Ranscombe Farm
Schreckensteinia festaliella	Bramble False-feather	Ranscombe Farm
Adaina microdactyla	Hemp-agrimony Plume	Ranscombe Farm
Callisto denticulella	Garden Apple Slender	Ranscombe Farm
Idaea rusticata	Least Carpet	Ranscombe Farm
Agriphila straminella	Straw Grass-veneer	Ranscombe Farm
Parornix betulae	Brown Birch Slender	Ranscombe Farm
Dichrorampha plumbana	Lead-coloured Drill	Ranscombe Farm
Stigmella aurella	Golden Pigmy	Ranscombe Farm
Yponomeuta cagnagella	Spindle Ermine	Ranscombe Farm
Stigmella salicis	Sallow Pigmy	Ranscombe Farm
Epinotia tenerana	Nut Bud Moth	Ranscombe Farm
Phyllonorycter messaniella	Garden Midget	Ranscombe Farm
Endotricha flammealis	Rosy Tabby	Ranscombe Farm
Elachista gangabella	Yellow-barred Dwarf	Ranscombe Farm
Protodeltote pygarga	Marbled White Spot	Ranscombe Farm
Phyllonorycter harrisella	White Oak Midget	Ranscombe Farm
Parornix anglicella	Hawthorn Slender	Ranscombe Farm
Stigmella catharticella	Buckthorn Pigmy	Ranscombe Farm
Homoeosoma sinuella	Twin-barred Knot-horn	Ranscombe Farm
Stigmella basiguttella	Base-spotted Pigmy	Ranscombe Farm
Autographa gamma	Silver Y	Ranscombe Farm
Ancylis badiana	Common Roller	Ranscombe Farm
Stigmella incognitella	Grey Apple Pigmy	Ranscombe Farm
Phyllonorycter quercifoliella	Common Oak Midget	Ranscombe Farm
Stigmella floslactella	Coarse Hazel Pigmy	Ranscombe Farm
Stigmella samiatella	Chestnut Pigmy	Ranscombe Farm
Pseudargyrotoza conwagana	Yellow-spot Twist	Ranscombe Farm
Phyllonorycter acerifoliella	Maple Midget	Ranscombe Farm
Nemapogon clematella	Barred White Clothes	Ranscombe Farm
Stigmella lemniscella	Red Elm Pigmy	Ranscombe Farm
Dichrorampha consortana	Downland Drill	Ranscombe Farm
Acleris schalleriana	Viburnum Button	Ranscombe Farm
Stigmella hybnerella	Greenish Thorn Pigmy	Ranscombe Farm
Phyllonorycter esperella	Dark Hornbeam Midget	Ranscombe Farm
Stigmella lapponica	Drab Birch Pigmy	Ranscombe Farm
Anthophila fabriciana	Common Nettle-tap	Ranscombe Farm
Clepsis consimilana	Privet Twist	Ranscombe Farm
Mompha langiella	Clouded Cosmet	Ranscombe Farm
Infurcitinea argentimaculella	Silver-barred Clothes	Ranscombe Farm
Dichrorampha sequana	Square-spot Drill	Ranscombe Farm
Dyseriocrania subpurpurella	Common Oak Purple	Ranscombe Farm
Melanargia galathea	Marbled White	Ranscombe Farm
Stigmella microtheriella	Nut-tree Pigmy	Ranscombe Farm
Mompha raschkiella	Little Cosmet	Ranscombe Farm

Etainia louisella	Maple-seed Pigmy	Ranscombe Farm
Gortyna flavago	Frosted Orange	Ranscombe Farm
Petrophora chlorosata	Brown Silver-line	Ranscombe Farm
Phyllonorycter corylifoliella	Hawthorn Midget	Ranscombe Farm
Coptotriche marginea	Bordered Carl	Ranscombe Farm
Lyonetia prunifoliella	Striped Bent-wing	Ranscombe Farm
Phyllonorycter ulmifoliella	Red Birch Midget	Ranscombe Farm
Euspilapteryx auroguttella	Gold-dot Slender	Ranscombe Farm
Phyllonorycter nicellii	Red Hazel Midget	Ranscombe Farm
Luffia lapidella	Virgin Smoke	Ranscombe Farm
Stigmella ulmivora	Barred Elm Pigmy	Ranscombe Farm
Parornix devoniella	Hazel Slender	Ranscombe Farm
Stigmella aceris	Scarce Maple Pigmy	Ranscombe Farm
Lyonetia clerkella	Apple Leaf Miner	Ranscombe Farm
Ethmia terminella	Five-spot Ermel	Ranscombe Farm
Digitivalva pulicariae	Fleabane Smudge	Ranscombe Farm
Capperia britanniodactylus	Wood-sage Plume	Ranscombe Farm
Chrysoteuchia culmella	Garden Grass-veneer	Ranscombe Farm
Parornix carpinella	Hornbeam Slender	Ranscombe Farm
Antispila metallella	Four-spot Lift	Ranscombe Farm
Mompha epilobiella	Common Cosmet	Ranscombe Farm
Marasmarcha lunaedactyla	Crescent Plume	Ranscombe Farm
Bucculatrix bechsteinella	Hawthorn Bent-wing	Ranscombe Farm
Gonepteryx rhamni	Brimstone	Ranscombe Farm
Thymelicus sylvestris	Small Skipper	Ranscombe Farm
Thymelicus lineola	Essex Skipper	Ranscombe Farm
Parornix torquillella	Blackthorn Slender	Ranscombe Farm
Patania ruralis	Mother of Pearl	Ranscombe Farm
Pammene aurana	Orange-spot Piercer	Ranscombe Farm
Phyllonorycter tenerella	Hornbeam Midget	Ranscombe Farm
Bucculatrix albedinella	Elm Bent-wing	Ranscombe Farm
Dichrorampha aeratana	Obscure Drill	Ranscombe Farm
Yponomeuta malinellus	Apple Ermine	Ranscombe Farm
Heliozela hammoniella	Birch Lift	Ranscombe Farm
Dichrorampha acuminatana	Sharp-winged Drill	Ranscombe Farm
Phyllonorycter coryli	Nut Leaf Blister Moth	Ranscombe Farm
Parornix scoticella	Rowan Slender	Ranscombe Farm
Hellinsia lienigianus	Wormwood Plume	Ranscombe Farm
Bohemannia pulverosella	Dusty Apple Pigmy	Ranscombe Farm
Zygaena filipendulae	Six-spot Burnet	Ranscombe Farm
Grapholita pallifrontana	Liquorice Piercer	Ranscombe Farm
Depressaria radiella	Parsnip Moth	Ranscombe Farm
Tischeria ekebladella	Oak Carl	Ranscombe Farm
Phylloporia bistrigella	Striped Bright	Ranscombe Farm
Neotelphusa sequax	Barred Groundling	Ranscombe Farm
Maniola jurtina	Meadow Brown	Ranscombe Farm

Callisto denticulella	Garden Apple Slender	Shorne Woodlands CP
Mompha epilobiella	Common Cosmet	Shorne Woodlands CP
Phyllonorycter oxyacanthae	Common Thorn Midget	Shorne Woodlands CP
Zeiraphera isertana	Cock's-head Bell	Shorne Woodlands CP
Heliozela resplendella	Alder Lift	Shorne Woodlands CP
Crambus pascuella	Inlaid Grass-veneer	Shorne Woodlands CP
Crambus lathoniellus	Hook-streak Grass-veneer	Shorne Woodlands CP
Agrotera nemoralis	Beautiful Pearl	Shorne Woodlands CP
Phyllonorycter corylifoliella	Hawthorn Midget	Shorne Woodlands CP
Limnaecia phragmitella	Bulrush Cosmet	Shorne Woodlands CP
Phyllonorycter ulmifoliella	Red Birch Midget	Shorne Woodlands CP
Mompha raschkiella	Little Cosmet	Shorne Woodlands CP
Petrophora chlorosata	Brown Silver-line	Shorne Woodlands CP
Infurcitinea argentimaculella	Silver-barred Clothes	Shorne Woodlands CP
Archips xylosteana	Variegated Golden Tortrix	Shorne Woodlands CP
Anthophila fabriciana	Common Nettle-tap	Shorne Woodlands CP
Cameraria ohridella	Horse-Chestnut Leaf-miner	Shorne Woodlands CP
Phyllonorycter rajella	Common Alder Midget	Shorne Woodlands CP
Phylloporia bistrigella	Striped Bright	Shorne Woodlands CP
Mompha langiella	Clouded Cosmet	Shorne Woodlands CP
Phyllonorycter esperella	Dark Hornbeam Midget	Shorne Woodlands CP
Lyonetia clerkella	Apple Leaf Miner	Shorne Woodlands CP
Pseudargyrotoza conwagana	Yellow-spot Twist	Shorne Woodlands CP
Patania ruralis	Mother of Pearl	Shorne Woodlands CP
Caloptilia falconipennella	Scarce Alder Slender	Shorne Woodlands CP

Caloptilia elongella	Pale Red Slender	Shorne Woodlands CP
Chrysoteuchia culmella	Garden Grass-veneer	Shorne Woodlands CP
Stigmella lapponica	Drab Birch Pigmy	Shorne Woodlands CP
Phyllonorycter coryli	Nut Leaf Blister Moth	Shorne Woodlands CP
Stigmella hybnerella	Greenish Thorn Pigmy	Shorne Woodlands CP
Stigmella microtheriella	Nut-tree Pigmy	Shorne Woods
Tischeria dodonaea	Small Carl	Shorne Woods
Phyllonorycter klemannella	Dark Alder Midget	Shorne Woods
Tischeria ekebladella	Oak Carl	Shorne Woods
Phyllonorycter coryli	Nut Leaf Blister Moth	Shorne Woods
Mompha raschkiella	Little Cosmet	Shorne Woods
Stigmella samiatella	Chestnut Pigmy	Shorne Woods
Ectoedemia atricollis	Pinch-barred Pigmy	Shorne Woods
Ectoedemia erythrogenella	Coast Bramble Pigmy	Shorne Woods
Stigmella aceris	Scarce Maple Pigmy	Shorne Woods
Parornix anglicella	Hawthorn Slender	Shorne Woods
Phyllonorycter esperella	Dark Hornbeam Midget	Shorne Woods
Phyllonorycter rajella	Common Alder Midget	Shorne Woods
Gypsonoma dealbana	Common Cloaked Shoot	Shorne Woods
Lyonetia clerkella	Apple Leaf Miner	Shorne Woods
Ectoedemia heringi	White-spot Pigmy	Shorne Woods
Phyllonorycter cavella	Gold Birch Midget	Shorne Woods
Coleophora gryphipennella	Rose Case-bearer	Shorne Woods
Infurcitinea argentimaculella	Silver-barred Clothes	Shorne Woods
Psyche casta	Common Sweep	Shorne Woods
Bucculatrix ulmella	Oak Bent-wing	Shorne Woods
Phyllonorycter corylifoliella	Hawthorn Midget	Shorne Woods
Phyllonorycter acerifoliella	Maple Midget	Shorne Woods
Phyllonorycter ulmifoliella	Red Birch Midget	Shorne Woods
Cameraria ohridella	Horse-Chestnut Leaf-miner	Shorne Woods
Stigmella svenssoni	Orange-headed Pigmy	Shorne Woods
Stigmella oxyacanthella	Common Fruit-tree Pigmy	Shorne Woods
Stigmella atricapitella	Black-headed Pigmy	Shorne Woods
Phyllonorycter tenerella	Hornbeam Midget	Shorne Woods
Stigmella incognitella	Grey Apple Pigmy	Shorne Woods
Stigmella regiella	Purple-shot Pigmy	Shorne Woods
Coptotriche marginea	Bordered Carl	Shorne Woods
Stigmella roborella	Common Oak Pigmy	Shorne Woods
Phyllonorycter oxyacanthae	Common Thorn Midget	Shorne Woods
Callisto denticulella	Garden Apple Slender	Shorne Woods
Stigmella floslactella	Coarse Hazel Pigmy	Shorne Woods
Caloptilia stigmatella	White-triangle Slender	Shorne Woods

Luffia lapidella	Virgin Smoke	Shorne Woods
Stigmella salicis	Sallow Pigmy	Shorne Woods
Ectoedemia quinquella	Five-spot Pigmy	Shorne Woods
Acrocercops brongniardella	Brown Oak Slender	Shorne Woods
Stigmella sakhalinella	Small Birch Pigmy	Shorne Woods
Stigmella aurella	Golden Pigmy	Shorne Woods
Ectoedemia albifasciella	White-banded Pigmy	Shorne Woods
Chrysoesthia sexguttella	Six-spot Neb	Silverhand - Roundabout
Celypha lacunana	Common Marble	Silverhand - Roundabout
Neocochylis hybridella	White-bodied Conch	Silverhand - Roundabout
Euspilapteryx auroguttella	Gold-dot Slender	Silverhand - Roundabout
Fomoria septembrella	Hypericum Pigmy	Silverhand - Roundabout
Stigmella continuella	Double-barred Pigmy	Silverhand - Roundabout
Phylloporia bistrigella	Striped Bright	Silverhand - Roundabout
Tyria jacobaeae	Cinnabar	Silverhand - Roundabout
Epiphyas postvittana	Light Brown Apple Moth	Silverhand - Roundabout
Agriphila straminella	Straw Grass-veneer	Silverhand - Roundabout
Autographa gamma	Silver Y	Silverhand - Roundabout
Phyllonorycter coryli	Nut Leaf Blister Moth	Silverhand - Roundabout
Dichrorampha acuminatana	Sharp-winged Drill	Silverhand - Roundabout
Mompha raschkiella	Little Cosmet	Silverhand - Roundabout
Phyllonorycter geniculella	Sycamore Midget	Silverhand - Roundabout
Stigmella floslactella	Coarse Hazel Pigmy	Silverhand - Roundabout
Uncinus obductella	Kent Knot-horn	Silverhand - Roundabout
Ancylis badiana	Common Roller	Silverhand - Roundabout
Dichrorampha sequana	Square-spot Drill	Silverhand - Roundabout
Ematurga atomaria	Common Heath	Silverhand - Roundabout
Stigmella lapponica	Drab Birch Pigmy	Silverhand - Roundabout
Heliozela hammoniella	Birch Lift	Silverhand - Roundabout

Antispila metallella	Four-spot Lift	Silverhand - Roundabout
Stigmella aceris	Scarce Maple Pigmy	Silverhand - Roundabout
Phyllonorycter acerifoliella	Maple Midget	Silverhand - Roundabout
Phyllonorycter messaniella	Garden Midget	Silverhand - Roundabout
Coleophora serratella	Common Case-bearer	Silverhand - Roundabout
Stigmella sakhalinella	Small Birch Pigmy	Silverhand - Roundabout
Stigmella salicis	Sallow Pigmy	Silverhand - Roundabout
Oncocera semirubella	Rosy-striped Knot-horn	Silverhand - Roundabout
Idaea dimidiata	Single-dotted Wave	Silverhand - Roundabout
Pyrausta aurata	Small Purple & Gold	Silverhand - Roundabout
Parornix devoniella	Hazel Slender	Silverhand - Roundabout
Parornix anglicella	Hawthorn Slender	Silverhand - UB yard area
Stigmella speciosa	Barred Sycamore Pigmy	Silverhand - UB yard area
Phyllonorycter geniculella	Sycamore Midget	Silverhand - UB yard area
Stigmella aceris	Scarce Maple Pigmy	Silverhand - UB yard area
Pterophorus pentadactyla	White Plume Moth	Silverhand - UB yard area
Parornix torquillella	Blackthorn Slender	Silverhand - UB yard area
Coleophora gryphipennella	Rose Case-bearer	Silverhand - UB yard area
Phyllonorycter esperella	Dark Hornbeam Midget	Silverhand - UB yard area
Stigmella regiella	Purple-shot Pigmy	Silverhand - UB yard area
Lyonetia clerkella	Apple Leaf Miner	Silverhand - UB yard area
Stigmella hybnerella	Greenish Thorn Pigmy	Silverhand - UB yard area
Phyllonorycter acerifoliella	Maple Midget	Silverhand - UB yard area
Caloptilia semifascia	Maple Slender	Silverhand - UB yard area
Leucospilapteryx omissella	Mugwort Slender	Silverhand - UB yard area

Phyllonorycter tenerella	Hornbeam Midget	Silverhand - UB yard area
Phyllonorycter corylifoliella	Hawthorn Midget	Silverhand - UB yard area
Stigmella perpygmaeella	Least Thorn Pigmy	Silverhand - UB yard area
Camptogramma bilineata	Yellow Shell	Silverhand - UB yard area
Mompha epilobiella	Common Cosmet	Silverhand - UB yard area
Antispila metallella	Four-spot Lift	Silverhand - UB yard area
Parornix finitimella	Pointed Slender	Silverhand - UB yard area
Noctua janthina	Langmaid's Yellow Underwing	Silverhand - UB yard area
Patania ruralis	Mother of Pearl	Silverhand - UB yard area
Coptotriche marginea	Bordered Carl	Silverhand - UB yard area
Anthophila fabriciana	Common Nettle-tap	Silverhand - UB yard area
Phyllonorycter joannisi	White-bodied Midget	Silverhand - UB yard area
Stigmella plagicolella	Scrubland Pigmy	Silverhand - UB yard area
Stigmella microtheriella	Nut-tree Pigmy	Silverhand - UB yard area
Stigmella aurella	Golden Pigmy	Silverhand - UB yard area
Patania ruralis	Mother of Pearl	Silverhand Roundabout
Horisme vitalbata	Small Waved Umber	Silverhand Roundabout
Crassa unitella	Golden-brown Tubic	Silverhand Roundabout
Apotomis betuletana	Birch Marble	Silverhand Roundabout
Scoparia ambigualis	Common Grey	Silverhand Roundabout
Melanthia procellata	Pretty Chalk Carpet	Silverhand Roundabout
Caloptilia semifascia	Maple Slender	Silverhand Roundabout
Agrotis puta	Shuttle-shaped Dart	Silverhand Roundabout
Camptogramma bilineata	Yellow Shell	Silverhand Roundabout
Hoplodrina octogenaria	Uncertain	Silverhand Roundabout

Habrosyne pyritoides	Buff Arches	Silverhand Roundabout
Acentria ephemerella	Water Veneer	Silverhand Roundabout
Endotricha flammealis	Rosy Tabby	Silverhand Roundabout
Evergestis limbata	Dark Bordered Pearl	Silverhand Roundabout
Catoptria pinella	Pearl Grass-veneer	Silverhand Roundabout
Blastobasis adustella	Furness Dowd	Silverhand Roundabout
Perizoma alchemillata	Small Rivulet	Silverhand Roundabout
Acronicta aceris	Sycamore	Silverhand Roundabout
Idaea rusticata	Least Carpet	Silverhand Roundabout
Eupithecia tripunctaria	White-spotted Pug	Silverhand Roundabout
Emmelina monodactyla	Common Plume	Silverhand Roundabout
Limnaecia phragmitella	Bulrush Cosmet	Silverhand Roundabout
Hedya salicella	White-backed Marble	Silverhand Roundabout
Lasiocampa quercus	Oak Eggar	Silverhand Roundabout
Euplagia quadripunctaria	Jersey Tiger	Silverhand Roundabout
Zeiraphera isertana	Cock's-head Bell	Silverhand Roundabout
Hellinsia lienigianus	Wormwood Plume	Silverhand Roundabout
Rheumaptera undulata	Scallop Shell	Silverhand Roundabout
Sphinx pinastri	Pine Hawk-moth	Silverhand Roundabout
Chiasmia clathrata	Latticed Heath	Silverhand Roundabout
Neocochylis hybridella	White-bodied Conch	Silverhand Roundabout
Agriphila tristella	Common Grass-veneer	Silverhand Roundabout
Noctua janthina	Langmaid's Yellow Underwing	Silverhand Roundabout
Apamea crenata	Clouded-bordered Brindle	Silverhand Roundabout
Sitochroa palealis	Sulphur Pearl	Silverhand Roundabout

Borkhausenia fuscescens	Small Dingy Tubic	Silverhand Roundabout
Mythimna impura	Smoky Wainscot	Silverhand Roundabout
Cnephasia longana	Long-winged Shade	Silverhand Roundabout
Pandemis corylana	Chequered Fruit-tree Tortrix	Silverhand Roundabout
Craniophora ligustri	Coronet	Silverhand Roundabout
Notodonta dromedarius	Iron Prominent	Silverhand Roundabout
Cryphia algae	Tree-lichen Beauty	Silverhand Roundabout
Eupithecia simpliciata	Plain Pug	Silverhand Roundabout
Eucosma obumbratana	Two-coloured Bell	Silverhand Roundabout
Cnephasia stephensiana	Grey Tortrix	Silverhand Roundabout
Coleophora salicorniae	Glasswort Case-bearer	Silverhand Roundabout
Epinotia immundana	Common Birch Bell	Silverhand Roundabout
Elachista canapennella	Little Dwarf	Silverhand Roundabout
Epirrhoe alternata	Common Carpet	Silverhand Roundabout
Apotomis turbidana	White-shouldered Marble	Silverhand Roundabout
Idaea biselata	Small Fan-footed Wave	Silverhand Roundabout
Argyresthia goedartella	Golden Argent	Silverhand Roundabout
Eucosma hohenwartiana	Bright Bell	Silverhand Roundabout
Colocasia coryli	Nut-tree Tussock	Silverhand Roundabout
Apotomis sororculana	Narrow-winged Marble	Silverhand Roundabout
Crambus perlella	Satin Grass-veneer	Silverhand Roundabout
Eupithecia inturbata	Maple Pug	Silverhand Roundabout
Cosmia trapezina	Dun-bar	Silverhand Roundabout
Phragmatobia fuliginosa	Ruby Tiger	Silverhand Roundabout
Lymantria dispar	Gypsy Moth	Silverhand Roundabout

Chrysoteuchia culmella	Garden Grass-veneer	Silverhand Roundabout
Hypsopygia glaucinalis	Double-striped Tabby	Silverhand Roundabout
Deilephila elpenor	Elephant Hawk-moth	Silverhand Roundabout
Ptilodon cucullina	Maple Prominent	Silverhand Roundabout
Ligdia adustata	Scorched Carpet	Silverhand Roundabout
Cyclophora annularia	Mocha	Silverhand Roundabout
Biston betularia	Peppered Moth	Silverhand Roundabout
Oncocera semirubella	Rosy-striped Knot-horn	Silverhand Roundabout
Scoparia basistrigalis	Base-lined Grey	Silverhand Roundabout
Monopis laevigella	Skin Moth	Silverhand Roundabout
Hydriomena impluviata	May Highflyer	Silverhand Roundabout
Eilema griseola	Dingy Footman	Silverhand Roundabout
Yponomeuta rorrella	Willow Ermine	Silverhand Roundabout
Xanthorhoe spadicearia	Red Twin-spot Carpet	Silverhand Roundabout
Harpella forficella		Silverhand Roundabout
Idaea aversata	Riband Wave	Silverhand Roundabout
Metalampra italica		Silverhand Roundabout
Blastobasis lacticolella	Wakely's Dowd	Silverhand Roundabout
Eilema depressa	Buff Footman	Silverhand Roundabout
Chloroclystis v-ata	V-pug	Silverhand Roundabout
Calamotropha paludella	Bulrush Veneer	Silverhand Roundabout
Agriphila selasella	Pale-streak Grass-veneer	Silverhand Roundabout
Ditula angustiorana	Red-barred Tortrix	Silverhand Roundabout
Ennomos alniaria	Canary-shouldered Thorn	Silverhand Roundabout
Epiphyas postvittana	Light Brown Apple Moth	Silverhand Roundabout

Eupithecia centaureata	Lime-speck Pug	Silverhand Roundabout
Stenoptilia pterodactyla	Brown Plume	Silverhand Roundabout
Acasis viretata	Yellow-barred Brindle	Silverhand Roundabout
Cydia splendana	Marbled Piercer	Silverhand Roundabout
Anania perlucidalis	Fenland Pearl	Silverhand Roundabout
Caloptilia stigmatella	White-triangle Slender	Silverhand Roundabout
Xestia c-nigrum	Setaceous Hebrew Character	Silverhand Roundabout
Agdistis bennetii	Saltmarsh Plume	Silverhand Roundabout
Spilonota ocellana	Bud Moth	Silverhand Roundabout
Notocelia roborana	Summer Rose Bell	Silverhand Roundabout
Cosmia pyralina	Lunar-spotted Pinion	Silverhand Roundabout
Phyllonorycter nicellii	Red Hazel Midget	Silverhand Roundabout
Pseudargyrotoza conwagana	Yellow-spot Twist	Silverhand Roundabout
Mesapamea didyma	Lesser Common Rustic	Silverhand Roundabout
Scoparia subfusca	Large Grey	Silverhand Roundabout
Ochropleura leucogaster	Radford's Flame Shoulder	Silverhand Roundabout
Bactra furfurana	Mottled Marble	Silverhand Roundabout
Euclidia glyphica	Burnet Companion	Silverhand Roundabout
Anacampsis blattariella	Birch Sober	Silverhand Roundabout
Eupithecia millefoliata	Yarrow Pug	Silverhand Roundabout
Coleophora serratella	Common Case-bearer	Silverhand Roundabout
Coleophora saxicolella	Orache Case-bearer	Silverhand Roundabout
Coleophora deauratella	Red-clover Case-bearer	Silverhand Roundabout
Ochropleura plecta	Flame Shoulder	Silverhand Roundabout
Eudonia mercurella	Small Grey	Silverhand Roundabout

Falcaria lacertinaria	Scalloped Hook-tip	Silverhand Roundabout
Pyrausta aurata	Small Purple & Gold	Silverhand Roundabout
Eucosma cana	Hoary Belle	Silverhand Roundabout
Eremobia ochroleuca	Dusky Sallow	Silverhand Roundabout
Yponomeuta plumbella	Black-tipped Ermine	Silverhand Roundabout
Agapeta hamana	Common Yellow Conch	Silverhand Roundabout
Mesoligia furuncula	Cloaked Minor	Silverhand Roundabout
Philereme transversata	Dark Umber	Silverhand Roundabout
Scopula ornata	Lace Border	Silverhand Roundabout
Cyclophora albipunctata	Birch Mocha	Silverhand Roundabout
Acleris forsskaleana	Maple Button	Silverhand Roundabout
Xestia triangulum	Double Square-spot	Silverhand Roundabout
Eupithecia haworthiata	Haworth's Pug	Silverhand Roundabout
Thyatira batis	Peach Blossom	Silverhand Roundabout
Eilema caniola	Hoary Footman	Silverhand Roundabout
Tinea trinotella	Bird's-nest Moth	Silverhand Roundabout
Opisthograptis luteolata	Brimstone Moth	Silverhand Roundabout
Peribatodes rhomboidaria	Willow Beauty	Silverhand Roundabout
Recurvaria leucatella	White-barred Groundling	Silverhand Roundabout
Hemistola chrysoprasaria	Small Emerald	Silverhand Roundabout
Apamea lithoxylaea	Light Arches	Silverhand Roundabout
Miltochrista miniata	Rosy Footman	Silverhand Roundabout
Noctua pronuba	Large Yellow Underwing	Silverhand Roundabout
Lymantria monacha	Black Arches	Silverhand Roundabout
Phycita roborella	Dotted Oak Knot-horn	Silverhand Roundabout

Cataclysta lemnata	Small China-mark	Silverhand Roundabout
Mythimna albipuncta	White-point	Silverhand Roundabout
Lacanobia oleracea	Bright-line Brown-eye	Silverhand Roundabout
Mythimna ferrago	Clay	Silverhand Roundabout
Ecliptopera silaceata	Small Phoenix	Silverhand Roundabout
Euzophera pinguis	Ash-bark Knot-horn	Silverhand Roundabout
Chilo phragmitella	Reed Veneer	Silverhand Roundabout
Eilema lurideola	Common Footman	Silverhand Roundabout
Hypena proboscidalis	Snout	Silverhand Roundabout
Cilix glaucata	Chinese Character	Silverhand Roundabout
Nonagria typhae	Bulrush Wainscot	Silverhand Roundabout
Eudonia lacustrata	Little Grey	Silverhand Roundabout
Cnephasia asseclana	Flax Tortrix	Silverhand Roundabout
Melanthia procellata	Pretty Chalk Carpet	Silverhand Roundabout
Cnephasia genitalana	Dover Shade	Silverhand Roundabout
Epinotia nanana	Small Spruce Bell	Silverhand Roundabout
Caloptilia rufipennella	Small Red Slender	Silverhand Roundabout
Bryotropha senectella	Dull Red Groundling	Silverhand Roundabout
Acompsia cinerella	Ash-coloured Sober	Silverhand Roundabout
Coleophora paripennella	Dark Thistle Case-bearer	Silverhand Roundabout
Acompsia schmidtiellus	Marjoram Crest	Silverhand Roundabout
Argyresthia brockeella	Gold-ribbon Argent	Silverhand Roundabout
Yponomeuta evonymella	Bird-cherry Ermine	Silverhand Roundabout
Brachmia blandella	Gorse Crest	Silverhand Roundabout
Eucosma fulvana	Fulvous Bell	Silverhand Roundabout

Acrobasis suavella	Thicket Knot-horn	Silverhand Roundabout
Plutella xylostella	Diamond-back Moth	Silverhand Roundabout
Cosmorhoe ocellata	Purple Bar	Silverhand Roundabout
Rivula sericealis	Straw Dot	Silverhand Roundabout
Idaea fuscovenosa	Dwarf Cream Wave	Silverhand Roundabout
Acrobasis advenella	Grey Knot-horn	Silverhand Roundabout
Mythimna pallens	Common Wainscot	Silverhand Roundabout
Hydriomena furcata	July Highflyer	Silverhand Roundabout
Eilema complana	Scarce Footman	Silverhand Roundabout
Monopis weaverella	Carrion Moth	Silverhand Roundabout
Alcis repandata	Mottled Beauty	Silverhand Roundabout
Bryotropha terrella	Cinerous Groundling	Silverhand Roundabout
Timandra comae	Blood-vein	Silverhand Roundabout
Hoplodrina blanda	Rustic	Silverhand Roundabout
Eudonia angustea	Narrow-winged Grey	Silverhand Roundabout
Etainia decentella	Sycamore-seed Pigmy	Silverhand Roundabout
Apamea monoglypha	Dark Arches	Silverhand Roundabout
Colostygia pectinataria	Green Carpet	Silverhand Roundabout
Lathronympha strigana	Red Piercer	Silverhand Roundabout
Agapeta zoegana	Knapweed Conch	Silverhand Roundabout
Celypha lacunana	Common Marble	Silverhand Roundabout
Carcina quercana	Long-horned Flat-body	Silverhand Roundabout
Ostrinia nubilalis	European Corn-borer	Silverhand Roundabout
Synaphe punctalis	Long-legged Tabby	Silverhand Roundabout
Scotopteryx chenopodiata	Shaded Broad-bar	Silverhand Roundabout

Aplasta ononaria	Rest Harrow	Silverhand Roundabout
Watsonalla binaria	Oak Hook-tip	Silverhand Roundabout
Anania coronata	Spotted Magpie	Silverhand Roundabout
Herminia tarsipennalis	Fan-foot	Silverhand Roundabout
Dichomeris alacella	Lichen Sober	Silverhand Roundabout
Hydraecia micacea	Rosy Rustic	Silverhand Roundabout
Subacronicta megacephala	Poplar Grey	Silverhand Roundabout
Acleris comariana	Strawberry Tortrix	Silverhand Roundabout
Evergestis pallidata	Chequered Pearl	Silverhand Roundabout
Ypsolopha dentella	Honeysuckle Moth	Silverhand Roundabout
Mesapamea secalis	Common Rustic	Silverhand Roundabout
Eudonia pallida	Marsh Grey	Silverhand Roundabout
Epinotia brunnichana	Large Birch Bell	Silverhand Roundabout
Eupithecia absinthiata form goossensiata		Silverhand Roundabout
Endothenia marginana	Bordered Marble	Silverhand Roundabout
Coleophora sternipennella	Speckled Case-bearer	Silverhand Roundabout
Coleophora alcyonipennella	Clover Case-bearer	Silverhand Roundabout

Annex 4 – Photographs

Meadows in good condition, Holborough Woodland

Meadows in good condition, Holborough Woodland

Cultivated arable field, Holborough Woodlands

Flower-rich meadows, near Holly Hill

Flower-rich meadows, near Holly Hill

Flower-rich meadows, near Holly Hill

Flower-rich meadows and hedgerows, Jeskyns Community Woodland

Grazed sward, West Park. Limited floristic interest.