

BUTTERFLY CONSERVATION UPPER THAMES BRANCH

Wood White Species Champion Report 2021

Nick Board



A cold, wet spring meant that the first sighting of Wood White in North Bucks on the 27th May was two weeks later than the previous year. However, a warm period during early June produced a surge of sightings peaking during the period 7th – 24th June. This led to a second brood during August

On the 9th June, Wicken Wood produced ten sightings and Leckhampstead forty-one, a tremendous result for what is a relatively small wood. Credit must go to the Landowner who is passionate about preserving the wildlife in his wood and who is always keen to learn more about managing the wood to achieve this. With his cooperation we are hopeful that the wood will become a fully recognised transect from 2022

On the 1st June, in the north of the county, Killwick and Great Wood produced nineteen sightings between them whilst to the south on the county boundary the Bucknell Wood transect was hit hard by the current programme of tree felling and underwood clearance. However, the Hazelborough south transect remained stable with good numbers recorded. (More details for that area can be found on the Beds & Northants Branch website)

Although sightings were down again during 2020, a big thank you to those who reported sightings to me and I would urge you to please keep searching along the North Bucks/ South Northants border for those undiscovered colonies.

I have also attached a copy of the Wood White status assessment report completed by Butterfly Conservation during 2021. This is a national overview of the status of the species and examines how the species is faring at a fairly broad scale so it quite different from previous assessment reports. I hope you find the report interesting and informative.

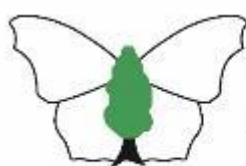
The Status of the Wood White *Leptidea sinapis* in the UK

Butterfly Conservation Report Number S21-16

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**Butterfly
Conservation**

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National Trust

Forestry England

Status of the Wood White *Leptidea sinapis* in the UK

Summary

- The Wood White has undergone long term declines in both distribution and abundance and is now primarily found in localised areas of southern and central England.
- The species is associated with a range of habitats including open areas of woodland, scrub, coastal undercliffs and brownfield sites.
- Habitat is highly ephemeral, often being suitable for five years or less, and requires conservation management including scrub clearance, the creation of scallops and glades, ditch management and management of rides. Sites on coastal undercliffs are maintained naturally by slippages and erosion of the soft rock which regularly provides new habitat
- The butterfly has undergone a long-term decline in abundance of 83% between 1979 and 2020 but since 1987 this population trend has largely stabilised or increased.
- The occupancy trend displays a decline of 80% between 1990 and 2019.
- There was no significant difference in the status of sites between the 2005-2009 and 2015-2019 assessment periods.
- The area occupied by the species at sites in both the 2005-2009 and 2015-2019 assessment periods displayed a significant increase, attributable to conservation activity on sites.
- Fragmentation of sites is a particular problem in Eastern England with the mean distance between occupied areas 7.08 km, much higher than the maximum known dispersal distance.

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1. Introduction

The Wood White *Leptidea sinapis* is a species of butterfly classified as a high priority by Butterfly Conservation in the UK Conservation Strategy 2016-2025 and a Section 41 species under the Nature Environment and Rural Communities Act 2006 (UK Government, 2006; Butterfly Conservation, 2019). Trends for woodland biodiversity are alarming with data across multiple taxonomic groups showing strong declines, particularly for woodland specialist species (Fox *et al.*, 2015; DEFRA, 2020). The Wood White has undergone long term declines in both distribution and abundance and is now primarily found in localised areas of southern and central England (Fox *et al.*, 2015). A few colonies extend across the Welsh border in the Forest of Dean.

The species is associated with a range of habitats including open areas of woodland such as rides and glades, woodland edge and scrub, coastal undercliffs and brownfield sites including disused quarries and railway lines. Shelter and warmth are important for the species alongside availability of foodplants including Meadow Vetchling *Lathyrus pratensis*, Bitter Vetch *Lathyrus linifolius*, Greater Bird's-foot-trefoil *Lotus pedunculatus* and Bird's-foot-trefoil *Lotus corniculatus*. Habitat is highly ephemeral, often being suitable for five years or less, and requires conservation management including scrub clearance, the creation of scallops and glades, ditch management and management of rides. Sites on coastal undercliffs are maintained naturally by slippages and erosion of the soft rock which regularly provides new habitat.

Due to the long-term decline in the species considerable conservation attention has been given to the butterfly since the production of the first national dossier in 2010 (Joy *et al.*, 2010). This has been achieved through dedicated projects focused on restoring and connecting habitat at a landscape scale. The scope of this review is to determine the impacts of these activities and status of sites at a national scale since the publication of previous dossier.

2. Methods

Population Trend

A population trend for the species was compiled using abundance data collected as part of the UK Butterfly Monitoring Scheme (UKBMS). A total of 88 transects and timed counts have contributed data towards the Wood White population trend between 1976 and 2019. Two trends were produced, one across the entire time series (1979-2020) and another over the most recent 10-year time period (2011-2020).

Occupancy Trend

Distribution data were analysed using data from 1990-2019 held in the Butterflies for the New Millennium (BNM) database. Due to biases in recording at different sites and time periods a statistical approach called occupancy modelling was used to account for any inherent biases. This allowed for estimates of real underlying change in the distribution of the species. Trends were limited to data collected from 1990 onwards as the number of annual records prior to 1990 regularly fell below 50, reducing the power of the analysis (Dennis *et al.*, 2017).

Status Assessment

QGIS version 3.16 was used to compile boundaries of sites and occupied areas. A site was defined as the boundary of a continuous block of woodland or cliff section. Sites were defined regardless of land ownership as many woodlands have multiple owners which

would artificially inflate the number of sites for the purpose of this assessment. This definition of site resulted in some site boundaries from the previous dossier in 2010 being merged into one site. Sites were defined in this way to ensure consistency across different regions and to facilitate comparisons in future assessments. The latter is particularly true for larger sites where the butterfly moves around the site between status assessment periods as it tracks the availability of suitable habitat. Data was attributed to the sites layer, including habitat, network, management, designated features, agri-environment schemes and occupied areas. For a full list of included attributes see Appendix 1.

Each site was attributed a status based on four categories for the 2005-2009 and the 2015-2019 status assessment periods respectively (Table 1). The former corresponds to the status or an adaption of the status as defined in (Joy *et al.*, 2010). Designation of status over a five-year period incurs some limitations, for instance a population may be classified as being occupied in the period despite having rapidly declined to extinction in the final year of the assessment period. Similarly, the assessment takes no account of the size of the population and may define a satellite site with only two or three records as being occupied. A McNemar's test was used to determine if the status of sites classified as occupied or unoccupied/extinct differed between the status assessment periods of 2005-2009 and 2015-2019. Sites categorised as either unverified or unknown were excluded from this analysis.

Table 1. The four status categories each site was accredited against.

| Status | Description |
|--------------------|--|
| Occupied | A known site containing a colony, multiple colonies or suitable habitat where two or more adults were recorded within the period 2015-2019. |
| Unoccupied/Extinct | A site with a previous colony either historically or defined in Joy <i>et al.</i> (2010) but with no records or knowledge of presence between 2015-2019. |
| Unverified | A site that has had single records or where the status of the site is not known due to access difficulties preventing surveys. |
| Unknown | A site where a colony was not previously known. Applies to the 2005-2009 assessment period only. |

Occupied Area

Occupied area was mapped using QGIS 3.16 to highlight exact areas used by the Wood White in 2005-2009 and 2015-2019. Occupied areas were defined based on surveys of suitable habitat, distribution of Wood White records in the BNM database and local knowledge of the species distribution. There are some discrepancies with the resolution of this data at certain sites or between regions depending on the level of knowledge of the site and recording level which may result in either an overestimated or underestimated occupied area in some instances. A paired t-test was used to determine if the area of sites occupied in both the 2005-2009 and 2015-2019 assessment periods significantly differed.

Distance to Nearest Colony

The distance to the nearest occupied colony at another site was calculated in QGIS 3.16 using the Measure Tool. Distances were measured between the two closest points of the occupied area boundaries layer. For the majority of sites with just one occupied area this is appropriate but for larger sites such as the Forest of Dean this measurement is less

appropriate given the number of colonies spread internally over a large area of the woodland.

Site Advice Visits

Butterfly Conservation's Site Activity Recording Database (SARD), is used to capture information on staff visits to sites across the UK for any species of Lepidoptera or non-Lepidoptera target species. The database captures data on the visit's purpose (advise, management and monitoring) and the primary and secondary butterfly and moth species targets. Data has been gathered since 2001 in England and is used to analyse and report on conservation activities. Data was extracted from SARD for site visits where the Wood White was listed as a primary or secondary butterfly target. Boundaries mapped in the SARD database differed slightly from those presented in this assessment and the data was therefore manipulated to the format presented here to determine the number of visits per site.

Designations and Agri-Environment Schemes

Using available layers from the Natural England open data portal, a spatial query in QGIS 3.16 was used to investigate whether designations such as Sites of Special Scientific Interest (SSSI) or National Nature Reserves (NNR), and agri-environment schemes such as Environmental Stewardship or Countryside Stewardship overlapped with site boundaries.

Management

Management information was collated for each site and described in brief notes such as ride management or scrub clearance. Where management details could not be provided the site management was listed as being unknown.

Ownership

Ownership of sites was determined using staff and volunteer knowledge alongside available ownership boundary layers for Forestry England, National Trust, the Wildlife Trusts and Butterfly Conservation. Sites were attributed ownership into these categories. Where sites have multiple owners a semi-colon was placed between these.

3. Results

Status of Sites

A total of 109 sites were identified in the 2015-2019 assessment period with 56.9% listed as occupied, 14.7% as unoccupied/extinct and 28.4% as unverified. The status of occupied and unoccupied/extinct sites between those identified in 2010 (Joy *et al.*, 2010) and this current assessment did not differ significantly. Table 2 highlights the change in status between the two assessment periods.

- 37 sites were occupied in both assessment periods.
- 11 occupied sites have been discovered since the previous dossier that were previously described as unknown.
- Nine sites that were occupied in the previous assessment are listed as unoccupied/extinct in the current assessment and ten sites unoccupied/extinct in the previous assessment are listed as occupied.
- Five sites have remained unoccupied/extinct since the previous assessment.
- 31 sites (28.4%) in the current assessment are unverified in terms of status

Table 2. Number of sites with their corresponding status between the 2005-2009 and the 2015-2019 assessment periods*.

| | | Status 2015-2019 | | |
|-------------------------|--------------------|------------------------|----------|------------|
| | | Unoccupied/ Extinct | Occupied | Unverified |
| Status 2005- 2009 | Unoccupied/Extinct | 5 | 10 | 2 |
| | Occupied | 9 | 37 | 7 |
| | Unknown | 0 | 11 | 16 |
| | Unverified | 2 | 4 | 6 |

**Example of how to use the above chart to obtain the number of sites occupied in both assessment periods. First start at Status 2005-2009 and move to the occupied row. Then scan down the occupied column below Status 2015-2019 until you reach the cell that crosses both the occupied row and column. The number of sites occupied in both assessment periods in this instance is 37.*

Population Trend

The long-term population trend displayed a highly significant ($p < 0.001$) decline of 83% between 1979-2020 (Fig.1). The majority of this decline occurred up to the year 1987 with a subsequent stabilisation or increase in the population trend. The short-term trend between 2011-2020 displayed a non-significant increase of 117%.

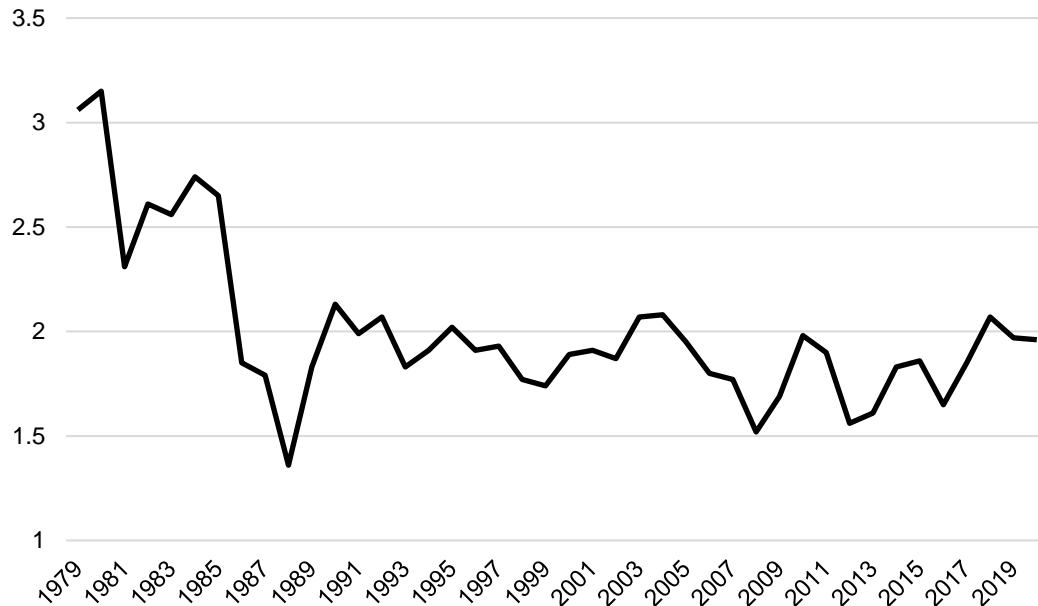


Figure 1. Abundance trend for the Wood White.

Occupancy Trend

The butterfly occupied 357 10 km squares pre-2000, 85 10 km squares between 2000-2009, and 70 10 km squares between 2010-2019 (Fig.2). Declines have been severe across the entire range of the butterfly.

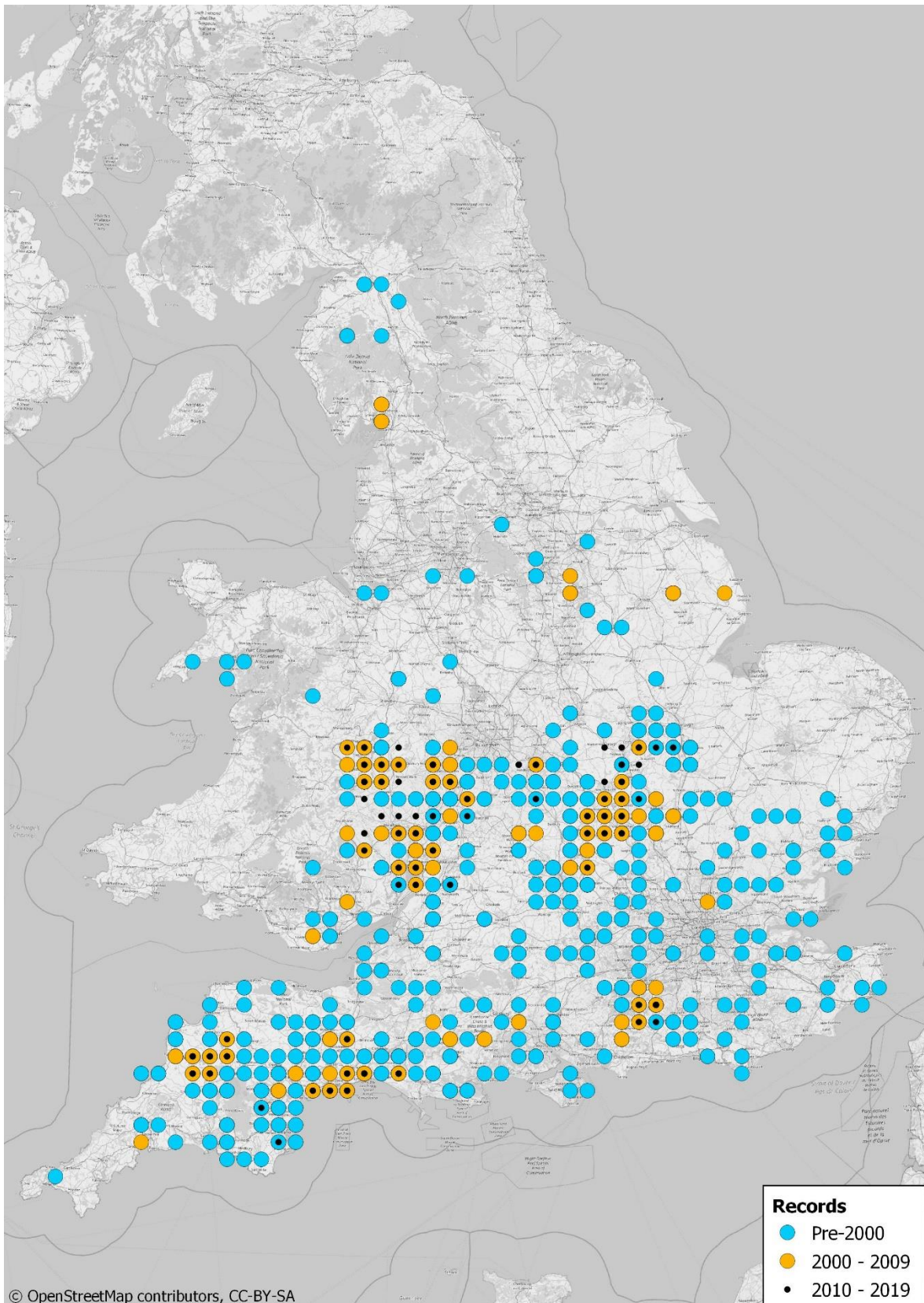


Figure 1. Distribution of the Wood White at the 10km scale based on records in the BNM database.

Occupancy trends displayed a severe decline of 80% between 1990-2019 ($p < 0.001$) and a short-term decline of 54% between 2010-2019 ($p < 0.05$)(Fig.3)

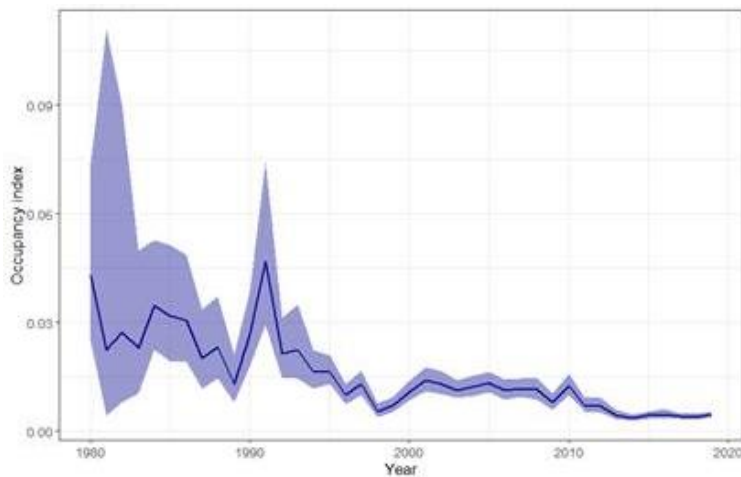


Figure 2. Occupancy trend for the Wood White.

Occupied Area

Between 2015-2019 Wood White was found to occupy 610.2 ha across 62 sites ($m= 9.8$ ha, $SD= 13.2$ ha, $n=62$) compared to the assessment between 2005-2009 where the species occupied 215.8 ha across 36 sites ($m= 6.0$, $SD= 6.8$ ha, $n= 36$)(Fig.4). Out of the 37 sites identified as occupied in both assessment period 26 had available data to map occupied area in both periods. For these 26 sites with occupied area mapped in both assessment periods (2005-2009 and 2015-2019) the area occupied was significantly higher in the latter assessment ($t= -3.2915$, $p<0.01$). Of the 26 sites only four decreased in occupied area. The largest decline was at Chiddingfold Forest-Kingspark Wood, West Sussex (10.3 ha loss) and the greatest increase was in the Forest of Dean East, Gloucestershire (62.7 ha increase). The majority of sites had small occupied areas, with 51.6% in the 0-5 ha category and 21.0% in the 5-10 ha category. Only 27.4% sites had an occupied area of 10 ha or greater (Appendix 2).

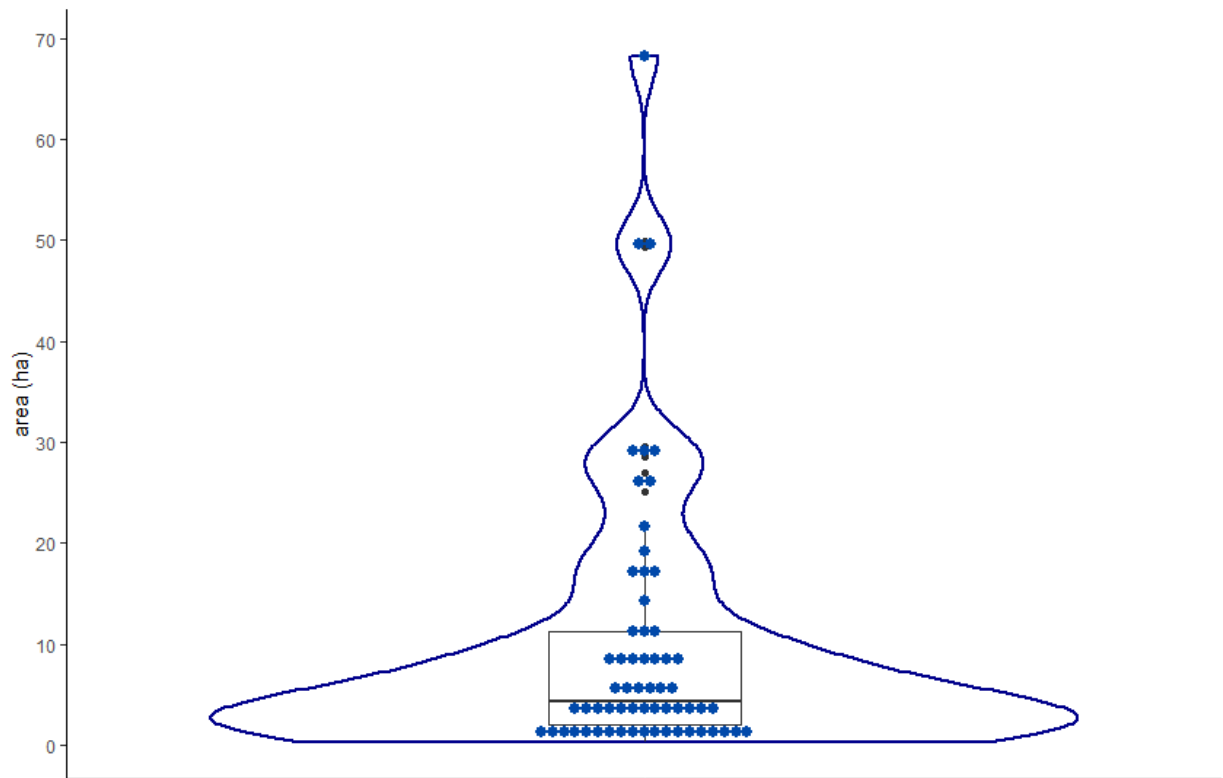


Figure 3. Occupied area in hectares of each site. Each site is represented by a blue dot, the blue outline depicts the distribution of the data and underlying boxplot shows the median value, upper and lower quartiles and the maximum and minimum values

Distance to Nearest Colony

Distance to the nearest colony at another site ($m= 3.29$ km, $SD= 4.59$ km, range= 0.33 – 28.15 km, $n=62$) varied greatly across sites (Fig.5). A total of 56.5% of occupied areas were within 2.0 km of an occupied area at another site. Distance to nearest colony also varied in accordance with region with mean distance for South East England (2.10 km), West Midlands (2.82 km), South West England (3.36 km) and East England (7.08 km).

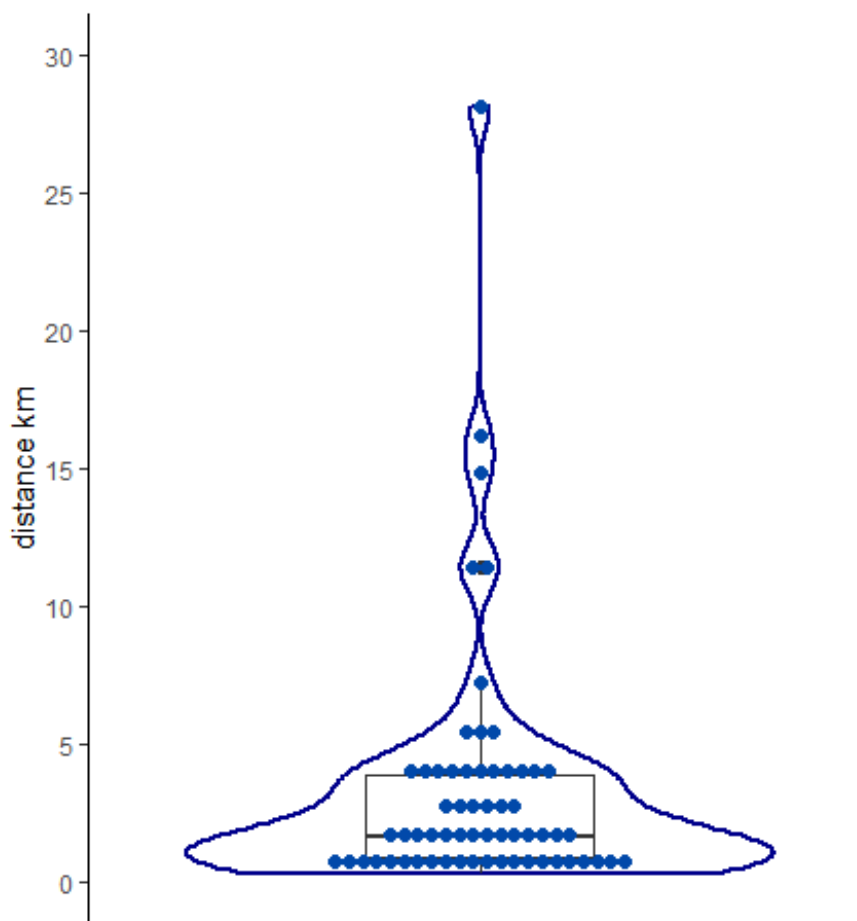


Figure 4. Distance in kilometres to the nearest neighbouring colony outside of the site. Each site is represented by a blue dot, the blue outline depicts the distribution of the data and underlying boxplot shows the median value, upper and lower quartiles and the maximum and minimum values.

Site Advice Visits

A total of 1635 site visits have been undertaken for the Wood White since recording began in 2001 (*Table 3*). The visits carried out by staff cover 58.3% of the sites described in this assessment, with 69.4% of visits in the West Midlands, 19.6% in South East England, 8.9% in East England and 2.0% in South West England. A total of 14.4.% of the visits could not be attributed to a site identified in this assessment.

Table 3. Site visits to Wood White sites by staff between 2001 and 2020 recorded in the SARD database.

| Site Name | Visits |
|---|---------------|
| Monkwood | 174 |
| Bury Ditches | 139 |
| Wigmore Rolls | 109 |
| Mortimer Forest | 77 |
| Salcey Forest | 68 |
| Hazelborough Forest South | 64 |
| Blakeridge Wood | 63 |
| Siege Wood, Lea and Paget's Wood and Nupend | 52 |

| | |
|--|----|
| Bucknell Wood | 50 |
| Chiddingfold Forest- Tugley Wood | 47 |
| Grafton Wood | 43 |
| Wyre Forest | 41 |
| Haugh Wood | 38 |
| Sywell Wood | 37 |
| Blackhill and Sowdley Wood | 25 |
| Radnor Wood | 25 |
| Forest of Dean West | 23 |
| Forest of Dean East | 22 |
| Sidney Wood | 22 |
| Park Gorse | 21 |
| Yardley Chase | 21 |
| Purslow Wood | 20 |
| Croft Wood | 19 |
| Hog Wood/Cantebury Copse | 19 |
| Hardwick Wood | 18 |
| Hopton Wood | 18 |
| Chiddingfold Forest- Kingspark Wood | 16 |
| Hay Wood | 14 |
| Geddington Chase | 10 |
| Sned Wood | 10 |
| Whitfield Wood | 9 |
| Laundimer Wood | 8 |
| Shobdon Hill Wood | 8 |
| Walcot Wood - National Trust | 8 |
| Devereux Park | 7 |
| Mere Hill Wood | 6 |
| Wicken and Leckhampstead Wood | 6 |
| Whistley Wood | 5 |
| Ebernoe Common | 4 |
| Ockeridge Wood | 4 |
| Stroud Wood | 4 |
| Ramscombe Coppice and Shaver's End Quarry | 3 |
| Trench Wood | 2 |
| Woodhampton Wood | 2 |
| Broomy Green, Backbury Hill and Frith Wood | 1 |
| Cookworthy Moor | 1 |
| Dymock Forest | 1 |
| Fermyn Woods | 1 |
| Frillinghurst Wood | 1 |
| Haven Cliff's to Culverhole | 1 |
| Kilnsey Wood | 1 |
| Little Horton Wood | 1 |
| Meeth Quarry | 1 |
| Powerstock Common | 1 |
| Ryton and Bubbenhall Wood | 1 |
| Salden Railway Cutting | 1 |
| Stanton Lacy | 1 |

| | |
|---|-------------|
| Stokepark Wood | 1 |
| The Spittles | 1 |
| Vann Wood | 1 |
| Walcott Wood | 1 |
| Weston Undercliff, Coxe's Undercliff and Hooken Undercliffs | 1 |
| Not attributed | 236 |
| Total | 1635 |

The number of site advisory visits has increased since SARD recording began with a small increase after the production of Joy *et al.* (2010) to 350 visits between 2011-2015 followed by a more dramatic increase to 1151 visits between 2016-2020 (Fig.6).

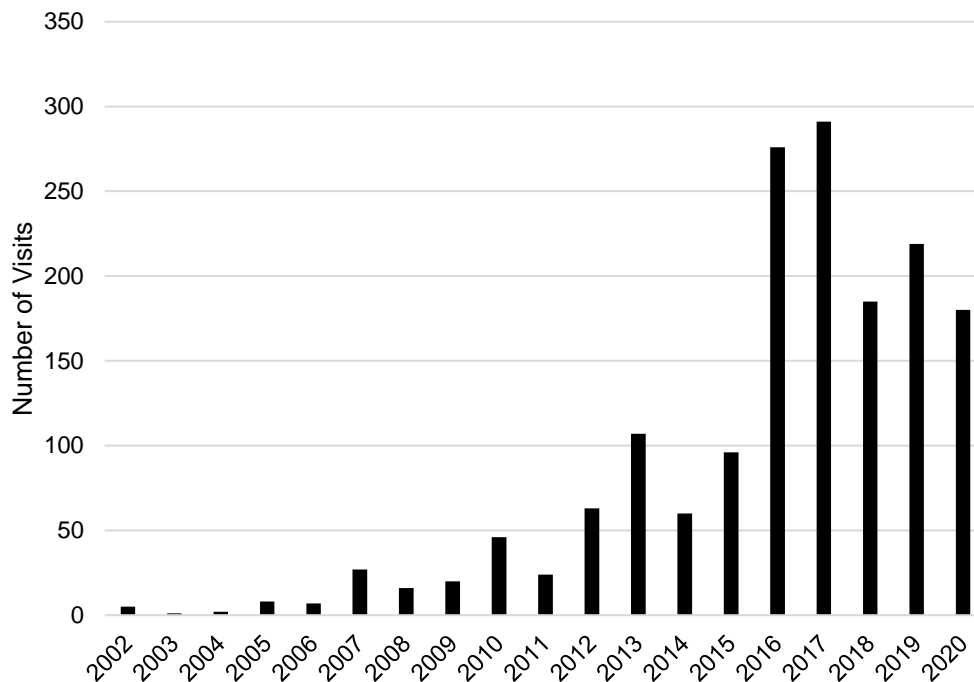


Figure 5. Number of site visits per calendar year for the Wood White.

Designations and Agri-Environment Schemes

The occupied sites (n=62) are covered by a range of designations with SSSI's intersecting 37.1% and NNR's 8.1% of the occupied areas found on sites. Only 11.3% of sites had an Environmental Stewardship scheme that intersected the occupied area during 2015-2019. Similarly, only 17.7% of sites had a Countryside Stewardship scheme that intersected the occupied area in 2015-2019. Three sites (4.8%) with mapped occupied areas overlapped with woodland management schemes available under Countryside Stewardship.

Management

A total of 42.2% of sites have documented management details. Documented management of sites was mostly a mixture of management types including ride management, coppice, mowing and glade creation. The management details of 47.7% sites are unknown and 10.1% are not managed.

Ownership

The key findings from ownership was that 42.2% of sites had either complete or partial land ownership by Forestry England and 48.6% had either complete or partial private land ownership. Other sites were owned by NGO's such as the National Trust and the Wildlife Trusts.

4. Discussion

The Wood White has undergone dramatic historic declines in abundance with a stabilisation and slight increase in fortunes since 1987. Increased conservation activity directed towards the species, reflected by an increase in staff site visits has likely aided the recent, albeit non-significant, increase in the species population trend. The species is vulnerable to site level extinction due to its requirements for highly ephemeral habitat. Regular provision of habitat is key to increasing abundance and allowing the persistence and expansion of the species to new areas.

There has been an increase in the number of occupied sites since the previous dossier, largely attributable to reintroductions in the West Midlands, expansion of the butterfly to adjacent sites in good years and increased recording intensity. The butterfly is clearly mobile with a range of sites defined as unverified with singleton records. There was no significant change in the status of sites between the two assessment periods for sites listed as occupied or unoccupied/extinct in both. This reflects the relatively low-resolution approach of assessments at a site level with no indication of population size. Increasing monitoring coverage would be useful for future assessments due to the current lack of available data or paucity of monitoring data at some sites in the UKBMS.

Investigating the occupied area of each site provides much more detail on the current conservation status with a significant increase in the area utilised by the species at sites occupied in both assessment periods. This reflects the increased activity of staff, volunteers and other organisations as displayed by the SARD dataset since the previous dossier. A limitation of site visit data in the SARD database is that it doesn't currently capture volunteer only activity which has clearly been important for the species alongside activities of other organisations such as Forestry England. This positive story highlights how partnership working with other organisations at a landscape scale can increase the available habitat for the species over time.

This assessment found that only 58.6% of occupied areas were within the maximum known dispersal distance (2113 m) of another occupied area (Clarke *et al.*, 2011). Only the mean distance between occupied areas in South East England were within this maximum dispersal distance. This potentially underestimates the ability of the species to disperse given the number of sites identified with single sightings, or records far from suitable habitat. Whilst larger dispersal distances can occur they are however likely to be infrequent. The wider landscape will also be an important factor in dispersal with areas surrounding sites in the West Midlands more wooded than Eastern England for example. Isolation for sites in East England was more extreme than other areas with an average distance between colonies of 7.1 km, highlighting this as a factor that limits potential expansion. This is unsurprising in a region where the main land use is agriculture.

5. Conclusions

This status assessment displays an interesting array of stories for the Wood White since the last dossier. It is a species that has undergone severe long-term declines in both abundance and distribution, which highlights how widespread the species once was in the wider landscape. More recently there have been increases in the population trends and

the area of occupied habitat has increased at the site level significantly since the previous assessment. This can be related to the increase in conservation activity directed towards the species, which has dramatically increased since the previous dossier. As the butterfly requires regular habitat management to provide suitable habitat over time this has been a positive outcome. There are however challenges remaining for the species, particularly with regard to connectivity between colonies with many sites displaying isolation figures greater than the known dispersal limits of the species.

6. Acknowledgements

We wish to thank the various Butterfly Conservation branches, Kate Wollen of Forestry England, and Simon Barker of the National Trust for their help with mapping sites and occupied areas. Their detailed knowledge, expertise and enthusiasm for the species has helped make this assessment possible.

7. References

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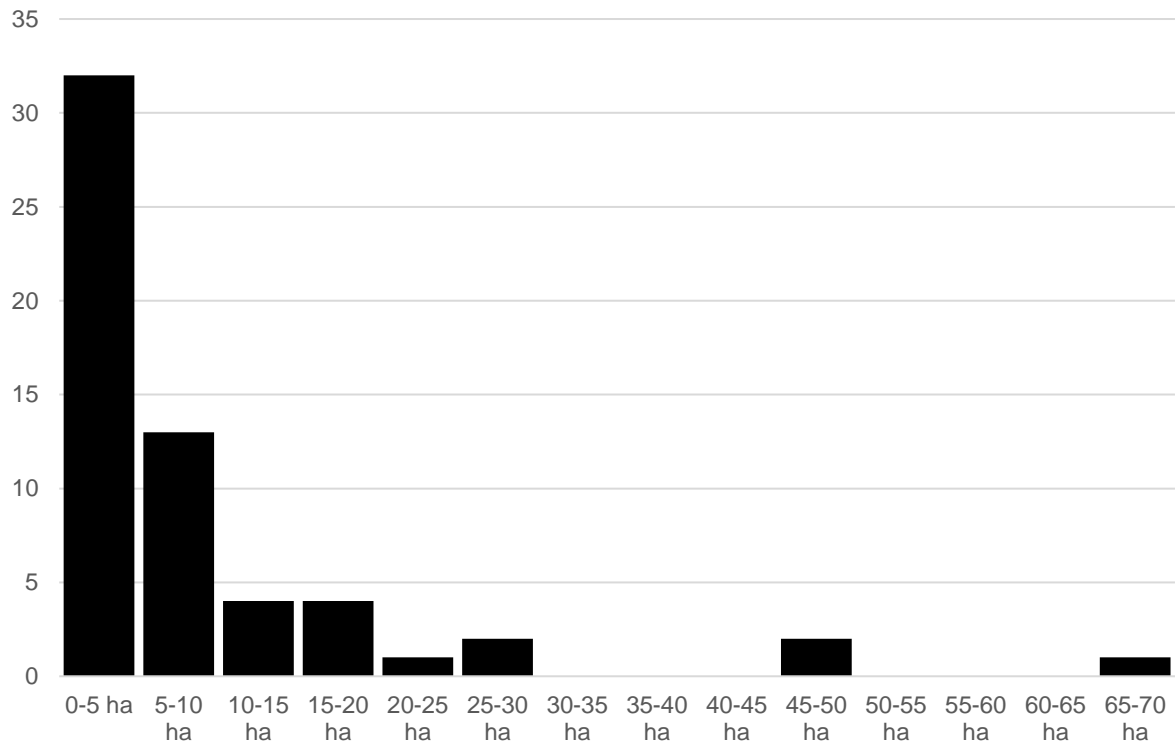
Appendices

Appendix 1- Metadata for the attributes provided in the layer Wood White Sites.

| Header Title | Metadata |
|-------------------|--|
| Uniqie_ID | ID unique to the specific site. |
| Site_Name | Name of the site from OS Base maps or staff. |
| Grid_Reference | Central grid reference of the site derived QGIS. |
| Network | Network the site is part of. Networks are defined as sites that overlap when a 2 km buffer was applied in QGIS. |
| Altitude | Mean altitude in metres of the site using DEM layers available from the US Geological Survey. |
| Aspect | Mean aspect in degrees of the site derived from DEM layers available from the US Geological Survey. |
| Monitoring | Defines whether the site is monitored using a transect or a timed count with data present in the UK Butterfly Monitoring Scheme database. |
| Status 2010 | Status of the site during the 2005-2009 status assessment period. Defined using four categories as explained in Table 1 and based upon Joy <i>et al.</i> (2010). |
| Status 2020 | Status of the site during the 2015-2019 status assessment period. Defined using four categories as explained in Table 1. |
| Last Record | Year of last record as defined in the BNM or local recorder knowledge. |
| Management | Short list of management undertaken on the sites. These were grouped into the broad categories of coppice, glades, mowing, none, ride management, ride management advice, scrub clearance and unknown. |
| Ownership | Ownership of the site, split into conservation NGO, Forestry England, National Trust, and private owner. |
| Primary_Habitat | The primary habitat present on the site based on Google Earth aerials, and priority habitat inventory and ancient semi-natural woodland layers available on the Natural England data portal. |
| Secondary_Habitat | The secondary habitat present on the site based on Google Earth aerials, and priority habitat inventory and ancient semi-natural woodland layers available on the Natural England data portal. |
| BC_Branch | The Butterfly Conservation branch the site overlaps with. |
| BC_Region | The Butterfly Conservation region the site overlaps with. |
| Vice_County | The vice county the site overlaps with. |
| Country | The county or unitary authority the site overlaps with. |
| Local_Authority | The local authority the site overlaps with. |
| SSSI | If the word SSSI is present in this column the site overlaps with a SSSI. |
| NNR | If the word NNR is present in this column the site overlaps with a NNR. |
| National_Park | The name of a national park is provided if a site overlaps with a national park. |
| AONB | The name of a AONB is provided if a site overlaps with an AONB. |
| Notes | Extra notes about the site |
| ES Scheme | A 1 is provided if the occupied area of a site overlaps with an active Environmental Stewardship agreement between 2015-2019. A 2 corresponds to a site that overlaps with an Environmental Stewardship but this overlap doesn't occur with the occupied area between 2015-2019. |

| | |
|--------------------|---|
| CS Scheme | A 1 is provided if the occupied area of a site overlaps with an active Countryside Stewardship agreement between 2015-2019. A 2 corresponds to a site that overlaps with a Countryside Stewardship agreement but this overlap doesn't occur with the occupied area between 2015-2019. |
| ASNW | If the word ASNW is present in this column the site overlaps with an ASNW. |
| BC_Landscape | The Butterfly Conservation landscape the site overlaps with. |
| Distance to Colony | Distance in metres to the nearest occupied area found within another site. |
| Occupied Area 2010 | The total occupied area for the site in hectares between 2005-2009. |
| Occupied Area 2020 | The total occupied area for the site in hectares between 2015-2019. |
| SARD_visits | The number of visits carried out by staff as recorded in SARD between 2001-2020. |

Appendix 2. Number of sites per 5 ha occupied area categories.



Appendix 3- Site name as used in this status assessment along with details of occupied area, distance to nearest colony and county

| Site_Name | Status 2005-2009 | Status 2015-2019 | Occupied Area 2005-2009 | Occupied Area 2015-2019 | Distance to Nearest Colony km | Number of SARD visits | Local Authority |
|---|------------------|------------------|-------------------------|-------------------------|-------------------------------|-----------------------|------------------|
| Blackhill and Sowdley Wood | Unverified | Occupied | | 0.3 | 1.6 | 25 | Shropshire |
| Blaisdon Wood, Flaxley Woods and Welshbury Hill | Occupied | Unverified | 0.2 | | n/a | | Gloucestershire |
| Blakeridge Wood | Extinct | Occupied | | 1.5 | 1.9 | 63 | Shropshire |
| Brampton Wood | Unknown | Unverified | | | n/a | | Northamptonshire |
| Brandon Marsh | Unknown | Occupied | | 3.8 | 2.8 | | Warwickshire |
| Broadmeands Plantation, Highermoor and Upcott South | Unknown | Occupied | | 2.9 | 3.2 | | Devon |
| Broomy Green, Backbury Hill and Frith Wood | Extinct | Occupied | | | n/a | 1 | Herefordshire |
| Bucknell Wood | Occupied | Occupied | 5.0 | 5.0 | 1.2 | 50 | Northamptonshire |
| Bucknell Wood | Occupied | Extinct | | | n/a | 50 | Shropshire |
| Bury Ditches | Occupied | Occupied | 12.0 | 8.8 | 0.7 | 139 | Shropshire |
| Busland Wood | Unknown | Unverified | | | 1.3 | 1 | Herefordshire |
| Checkley | Unknown | Occupied | | 25.1 | 0.5 | | Herefordshire |
| Chiddingfold Forest-Kingspark Wood | Occupied | Occupied | 16.3 | 6.0 | 0.9 | 16 | West Sussex |
| Chiddingfold Forest-Tugley Wood | Occupied | Occupied | 16.3 | 27.0 | 0.9 | 47 | Surrey |
| Chinkwell Wood | Unknown | Unverified | | | n/a | | Buckinghamshire |

| | | | | | | | |
|--|------------|------------|------|------|------|----|------------------|
| Circuit Moor and Ratherton Moor Plantation | Unverified | Occupied | | 1.2 | 1.3 | | Devon |
| Cold Oak Copse | Unverified | Unverified | | | n/a | | Northamptonshire |
| Cookworthy Moor | Occupied | Occupied | 5.5 | 9.4 | 1.7 | 1 | Devon |
| Crainleigh Brickyards | Unknown | Occupied | | 0.7 | 0.4 | | Surrey |
| Croft Wood | Unverified | Unverified | | | n/a | 19 | Herefordshire |
| Devereux Park | Extinct | Occupied | | 3.2 | 1.3 | 7 | Herefordshire |
| Dymock Forest | Occupied | Occupied | | 0.2 | 5.9 | 1 | Herefordshire |
| Easton Wood | Unverified | Extinct | | | n/a | | Northamptonshire |
| Ebernoe Common | Occupied | Unverified | | | n/a | 4 | West Sussex |
| Edge Common | Unknown | Unverified | | | n/a | | Gloucestershire |
| Ewyas Harold Common | Extinct | Extinct | | | n/a | | Herefordshire |
| Fermyn Woods | Occupied | Extinct | | | n/a | 1 | Northamptonshire |
| Forest of Dean East | Occupied | Occupied | 5.5 | 68.3 | 3.9 | 22 | Gloucestershire |
| Forest of Dean West | Occupied | Occupied | 3.4 | 8.3 | 3.9 | 23 | Herefordshire |
| Frillinghurst Wood | Unknown | Unverified | | | n/a | 1 | Surrey |
| Geddington Chase | Unknown | Occupied | | 14.3 | 14.9 | 10 | Northamptonshire |
| Grafton Wood | Extinct | Occupied | | 9.2 | 4.3 | 43 | Worcestershire |
| Green Norton Pocket Park | Unknown | Unverified | | | n/a | | Northamptonshire |
| Hardwick Wood | Extinct | Occupied | | 2.4 | 0.3 | 18 | Northamptonshire |
| Haugh Wood | Occupied | Occupied | 19.4 | 49.9 | 0.5 | 38 | Herefordshire |
| Haven Cliff's to Culverhole | Occupied | Occupied | 1.3 | 8.5 | 2.6 | 1 | Devon |
| Hay Wood | Unknown | Occupied | | 3.9 | 16.2 | 14 | Warwickshire |
| Hazelborough Forest South | Occupied | Occupied | 3.1 | 17.5 | 3.6 | 64 | Buckinghamshire |
| Hog Wood/Cantebury Copse | Occupied | Occupied | | 1.9 | 1.1 | 19 | Surrey |

| | | | | | | | |
|---------------------|------------|------------|------|------|------|-----|------------------|
| Hopton Wood | Occupied | Unverified | | | n/a | 18 | Shropshire |
| Horne Wood | Occupied | Extinct | | | n/a | | Northamptonshire |
| Horton Wood | Unverified | Unverified | | | n/a | | Northamptonshire |
| Humble Glades | Occupied | Occupied | | 1.0 | 1.8 | | Devon |
| Kilnsey Wood | Unverified | Extinct | | | n/a | 1 | Shropshire |
| Kingcombe Meadows | Occupied | Unverified | 0.1 | | n/a | | Dorset |
| Laundimer Wood | Occupied | Unverified | | | n/a | 8 | Northamptonshire |
| Leworthy Plantation | Unknown | Occupied | | 2.4 | 1.3 | | Devon |
| Ley Park | Occupied | Occupied | 1.1 | 0.6 | 4.2 | | Gloucestershire |
| Little Horton Wood | Unknown | Occupied | | 1.2 | 1.0 | 1 | Northamptonshire |
| Little Linford Wood | Occupied | Occupied | | 4.3 | 3.6 | | Milton Keynes |
| Little Witley | Unknown | Occupied | | 0.2 | 1.4 | | Worcestershire |
| Manorhill Copse | Unverified | Unverified | | | n/a | | Surrey |
| Massers Wood | Unknown | Occupied | | 0.3 | 0.4 | | Surrey |
| Meeth Quarry | Occupied | Occupied | | 29.6 | 11.4 | 1 | Devon |
| Mere Hill Wood | Occupied | Occupied | | 1.4 | 0.4 | 6 | Herefordshire |
| Monks Wood | Extinct | Occupied | | 0.8 | 28.1 | | Cambridgeshire |
| Monkwood | Extinct | Occupied | | 10.3 | 0.4 | 174 | Worcestershire |
| Moorland Quarry | Unknown | Unverified | | | n/a | | Devon |
| Mortimer Forest | Occupied | Occupied | | 28.6 | 7.3 | 77 | Herefordshire |
| Neroche Forest | Occupied | Extinct | 24.7 | | n/a | | Somerset |
| Newent Woods | Occupied | Occupied | 3.7 | 6.2 | 4.1 | | Gloucestershire |
| Ockeridge Wood | Extinct | Occupied | | 1.4 | 0.4 | 4 | Worcestershire |
| Park Gorse | Unverified | Occupied | | 1.8 | 1.1 | 21 | Shropshire |
| Park Wood | Unknown | Unverified | | | n/a | | Herefordshire |
| Polebrook Airfield | Extinct | Unverified | | | n/a | | Northamptonshire |
| Powerstock Common | Occupied | Unverified | 9.8 | | n/a | 1 | Dorset |

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|---|------------|------------|------|------|-----|----|------------------|
| Purslow Wood | Occupied | Occupied | 3.2 | 4.0 | 3.0 | 20 | Shropshire |
| Quoditchmoor Plantation | Occupied | Occupied | 2.0 | 2.8 | 1.7 | | Devon |
| Radnor Wood | Occupied | Occupied | 3.9 | 4.2 | 0.7 | 25 | Shropshire |
| Ramscombe Coppice and Shaver's End Quarry | Unverified | Occupied | | 2.3 | 4.5 | 3 | Worcestershire |
| Roadford Lake | Unverified | Unverified | | | n/a | | Devon |
| Roundhill Wood | Unknown | Unverified | | | n/a | | Worcestershire |
| Rowburrow Wood | Extinct | Unverified | | | n/a | | Herefordshire |
| Rushbeds Wood | Extinct | Extinct | | | n/a | | Buckinghamshire |
| Ryton and Bubbenhall Wood | Occupied | Occupied | 2.2 | 11.5 | 2.8 | 1 | Warwickshire |
| Salcey Forest | Occupied | Occupied | 3.6 | 16.8 | 1.0 | 68 | Northamptonshire |
| Salden Railway Cutting | Occupied | Extinct | 17.0 | | n/a | 1 | Buckinghamshire |
| Shobdon Hill Wood | Occupied | Occupied | 1.2 | 3.3 | 1.8 | 8 | Herefordshire |
| Sidney Wood | Occupied | Occupied | | 3.2 | 1.1 | 22 | Surrey |
| Siege Wood, Lea and Paget's Wood and Nupend | Occupied | Occupied | | 5.3 | 0.5 | 52 | Herefordshire |
| Sned Wood | Occupied | Occupied | | 6.3 | 0.4 | 10 | Herefordshire |
| Stanton Lacy | Extinct | Extinct | | | n/a | 1 | Shropshire |
| Stokepark Wood | Unknown | Occupied | | 3.2 | 1.5 | 1 | Milton Keynes |
| Stroud Wood | Occupied | Occupied | 1.2 | 7.5 | 5.0 | 4 | Surrey |
| Summer Leys | Unknown | Unverified | | | n/a | | Northamptonshire |
| Sywell Wood | Occupied | Occupied | 0.8 | 3.9 | 0.3 | 37 | Northamptonshire |
| The Spittles | Extinct | Occupied | | 29.0 | 1.6 | 1 | Dorset |
| Tiddesley Wood | Unknown | Unverified | | | n/a | | Worcestershire |
| Tingewick Wood | Unknown | Unverified | | | n/a | | Buckinghamshire |
| Trench Wood | Extinct | Occupied | | 2.7 | 4.3 | 2 | Worcestershire |

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|---|------------|------------|------|------|------|-----|------------------|
| Tywell Plantation | Unknown | Unverified | | | n/a | | Northamptonshire |
| Vann Wood | Occupied | Unverified | 4.1 | | n/a | 1 | Surrey |
| Walcot Wood - National Trust | Occupied | Extinct | 0.5 | | n/a | 8 | Shropshire |
| Walcott Wood | Unknown | Unverified | | | n/a | 1 | Shropshire |
| Wappenbury Wood | Unknown | Unverified | | | n/a | | Warwickshire |
| Ware Landslips | Occupied | Occupied | 1.5 | 17.0 | 1.6 | | Dorset |
| Westdown Farm | Unverified | Unverified | | | n/a | | Devon |
| Weston Undercliff, Coxe's Undercliff and Hooken Undercliffs | Occupied | Occupied | 21.6 | 49.3 | 3.8 | 1 | Devon |
| Whistley Wood | Occupied | Occupied | | 6.2 | 3.6 | 5 | Northamptonshire |
| Whitecross Green Wood | Occupied | Extinct | | | n/a | | Oxfordshire |
| Whitfield Wood | Occupied | Extinct | 0.1 | | n/a | 9 | Buckinghamshire |
| Wicken and Leckhampstead Wood | Occupied | Occupied | 3.4 | 12.1 | 5.7 | 6 | Buckinghamshire |
| Wigmore Rolls | Occupied | Occupied | 13.1 | 8.8 | 2.4 | 109 | Herefordshire |
| Witley Common | Extinct | Extinct | | | n/a | | Surrey |
| Witney Wood | Extinct | Extinct | 0.3 | | n/a | | Herefordshire |
| Wolford Wood | Occupied | Extinct | 3.5 | | n/a | | Warwickshire |
| Woodhampton Wood | Unknown | Unverified | | | n/a | 2 | Herefordshire |
| Wyre Forest | Occupied | Occupied | 1.7 | 19.1 | 11.5 | 41 | Worcestershire |
| Yardley Chase | Occupied | Occupied | 3.4 | 21.6 | 2.2 | 21 | Northamptonshire |

Who we are

Butterfly Conservation is the UK charity dedicated to saving butterflies and moths.

Why butterflies and moths matter

Butterflies and moths are important parts of the ecosystem. They are beautiful and inspirational and people enjoy seeing them in their gardens and the countryside. They are sensitive to change and their fortunes help us assess the health of our environment. Two-thirds of butterfly and moth species are in decline. This is a warning that cannot be ignored.

What we do

Butterfly Conservation maintains and enhances landscapes for butterflies and moths. We provide advice to landowners and managers on how to conserve and restore habitats. We gather extensive butterfly and moth data and conduct research to provide the scientific evidence that underpins our work. We have an established record of reversing declines. We run programmes for more than 100 threatened species and are involved in conserving hundreds of sites and reserves. We rely on donations, memberships and grants to fund our work.

With your support we can help butterflies and moths thrive.

www.butterfly-conservation.org

Butterfly Conservation

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