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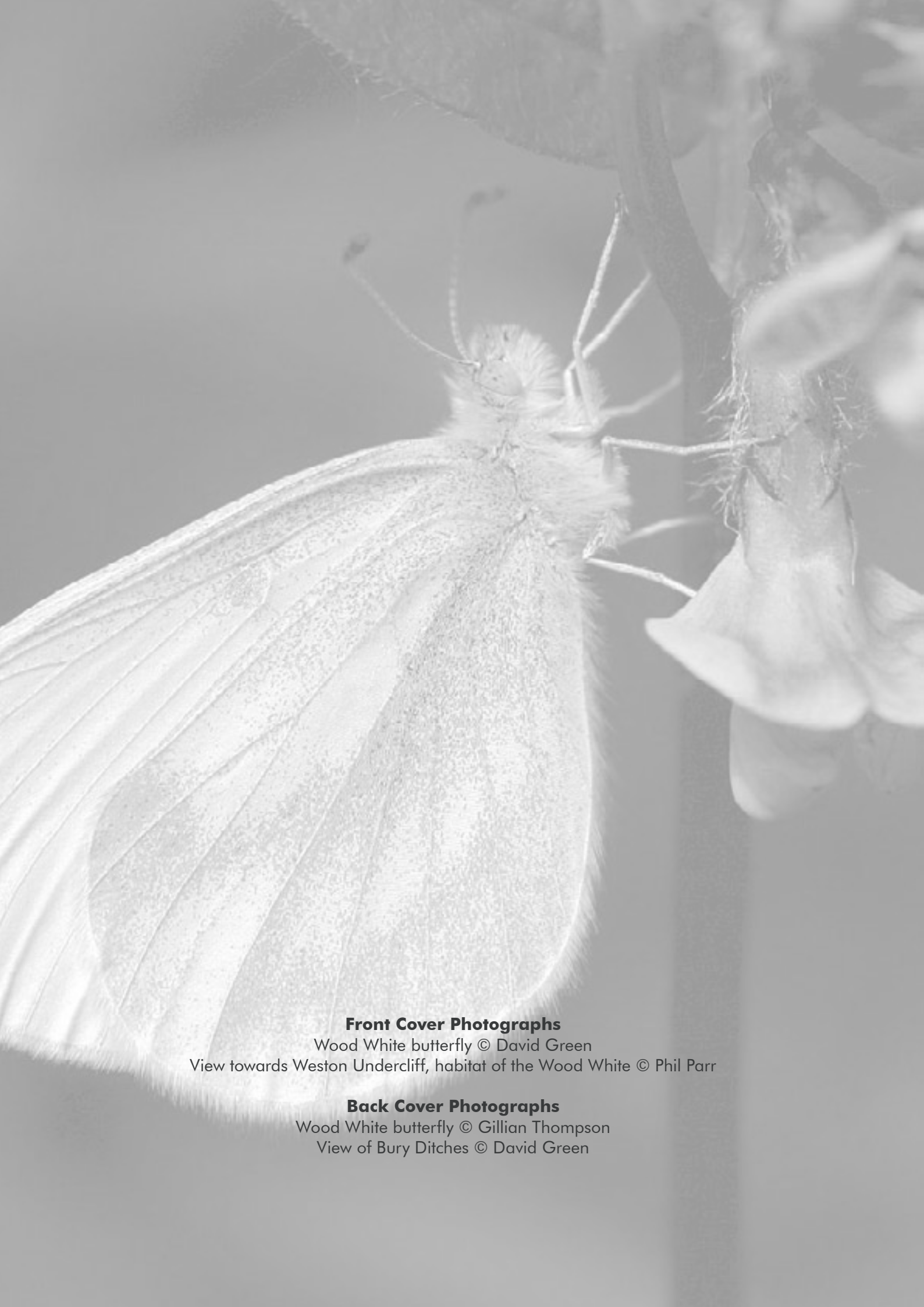


**Conservation for the
Wood White Butterfly
(*Leptidea sinapis*)**

National Sites Dossier

Jenny Joy, Mike Williams and Stephen Jeffcoate
Butterfly Conservation Report S10-16





Front Cover Photographs

Wood White butterfly © David Green

View towards Weston Undercliff, habitat of the Wood White © Phil Parr

Back Cover Photographs

Wood White butterfly © Gillian Thompson

View of Bury Ditches © David Green

Conservation for the Wood White Butterfly (*Leptidea sinapis*)

National Sites Dossier

Compiled by Jenny Joy, Mike Williams and Stephen Jeffcoate

August 2010

Butterfly Conservation Report S10-16

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1. Summary

1. The Wood White (*Leptidea sinapis*) is one of the fastest declining butterflies in the UK and is now a priority species in the national Biodiversity Action Plan. Transect data and other recording shows that it has been lost from many locations and, where still found, its populations are now often small or confined to a limited area of habitat.
2. Mounting concern about the plight of the Wood White led to the start of a National Recovery Project for this butterfly in 2007 with the first workshop being held in 2008. This workshop sought to begin the process of determining the butterfly's current status and determining how best species recovery might be achieved. While valuable information was available from the Butterfly Monitoring Scheme, and this is included in Appendix 1 to this report, it was recognised that a more detailed and comprehensive assessment of the current overall position was required. It was decided to produce a Site Dossier bringing together our current knowledge of known or recent areas where Wood Whites have been recorded.
3. This Site Dossier, therefore, provides a snapshot of the current distribution and status of the Wood White. Information has been gathered from sites throughout the butterfly's known range. For each site, details are provided on location, ownership, the current strength and known history of the butterfly, larval food-plants where known, the main flight periods, recent land management if any, and the existence of Wood White in the wider landscape, including any satellite populations. Each main site included is accompanied by a map showing the primary areas where the Wood White is or was formerly found and, in some cases identifies potential but unoccupied habitat.
4. The dossier shows that the Wood White is now principally found in only four regions of England: South-West (9 sites), South-East (8 sites), West Midlands (21 sites) and East Midlands (12 sites). Populations previously recorded in Ireland are, with the exception of the area around the Burren, now known to be a different species - Réal's Wood White (*Leptidea reali*) - which does not occur in England.
5. Of the 50 known Wood Whites sites included in this dossier, 13 appear to have recently lost their colonies (26%) with these declines being particularly marked in the East Midlands (33%) and South-East (possibly up to 38%). Site declines in the South-West and West Midlands appear to be much less marked (11% and 19% respectively) although some of the losses in the South-East were principally of satellite sites close to main centres of population which only held colonies for a small number of years. In the South-West and the West Midlands region there is some evidence that this butterfly is still extending its range and colonizing new sites. The sites supporting the largest national populations also occur in these regions.
6. Forestry Commission England will continue to play a hugely important role in the future of Wood White in England as 62% of all remaining colonies occur on land which is owned or managed by them.

7. The National Wood White Recovery Project has continued to gain momentum since 2007. A number of field meetings have been held, an e-mail communication system set up, as many sites as possible have been visited, advice has been taken from local experts and talks have been given to local, regional and national groups. This work (in conjunction with the dossier) has shown that Wood White is under-recorded, especially in non-woodland sites and in South-West England (e.g. Devon and Cornwall). It is also under-monitored and education is needed on phenology for this double-brooded species. This is a key to understanding its survival. A 'site' is difficult to define as the flight and breeding areas exist in a larger landscape and vary between generations and between 'good' and 'bad' years. The wider landscape is important, and linkages and corridors should be encouraged. A diverse range of habitats are used including linear habitats e.g. (ex) railways and in good periods there is dispersal away from the 'core sites'. In conclusion, the Wood White population dynamic is much more complex than previously thought.

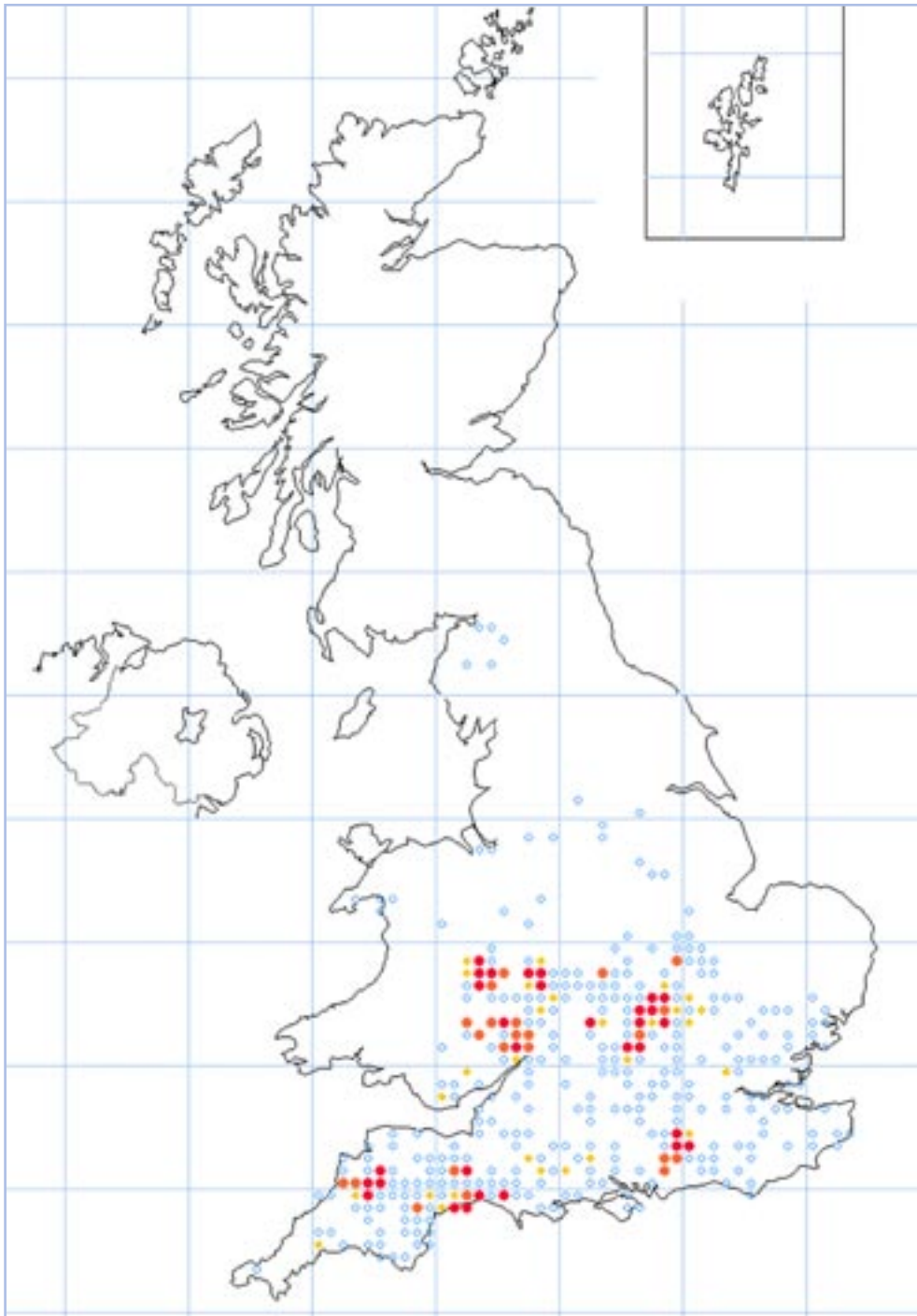
8. An action plan for the Wood White has now been drawn up and is included as Appendix 3 to this report. The Action Plan sets out a series of objectives under 5 broad headings: Species Status, Habitat Ecology, Species Autecology, Management and Education and Publicity which are based on various aspects of Wood White diversity, dynamics and dispersal. Under each heading a series of priority actions are identified together with identified partners and a brief summary of progress so far. This plan is evidence-based, is advisory (and should be interpreted locally as appropriate) but needs more data so that further progress can be made to meet future challenges such as climate change.



Wood White eggs
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2. Introduction

In England, the Wood White butterfly (*Leptidea sinapis*) uses a range of sheltered habitats including woodland rides, scrub edges, disused railways and coastal undercliffs. The larval foodplants are legumes such as *Lathyrus pratensis* Meadow Vetchling, *Lotus pedunculatus* Greater Bird's-foot-trefoil, *Lotus corniculatus* Bird's-foot-trefoil and *Lathyrus linifolius* Bitter-vetch. The larvae move off the foodplant to pupate in surrounding vegetation and the species over-winters as a pupa (McCracken and Warren, 2007).



Wood White distribution map 2000 - 2009

Leptidea sinapis was identified as a UK Biodiversity Action Plan Priority Species in 2007 (Fox *et al.*, 2007). It has a localised distribution in England and Wales and has declined rapidly in Britain over the past few decades, with a long-term population decline (1977-2004) of 64% (Fox *et al.*, 2006). In Appendix 1 of this report we have included national transect data on the Wood White drawn from the UK Butterfly Monitoring Scheme. Although this transect data can be misleading as it includes sites where there has never been a permanent Wood White presence, the transect data has been included as it clearly shows the extent to which the butterfly has declined at monitored sites with a number of recent extinctions at formerly well-established locations.

The ecology, vegetation resource needs, and conservation strategies have not been comprehensively reviewed and updated, however, since the late 1970s and for this reason a National Recovery Project was first proposed in late 2007. Subsequently, a workshop was held in Worcestershire in March 2008 which brought together those involved and interested in Wood White conservation throughout the UK. The event was held in the West Midlands as it had already been identified as a key region for the Wood White butterfly as it was known to be expanding its range in some counties (Joy & Williams, 2008).

The outcome of this workshop was threefold:

- A decision to establish and produce a dossier of 'sites' with a current or recent 'population' of Wood White.
- A recognition of the need for further detailed research on breeding and egg-laying habitats - food-plant use, micro-environment, surrounding vegetation. A form was developed for this purpose.
- A long term goal to draw up an action plan for the Wood White based on the above which would aid the species' recovery.

The present report represents the completion of the first of these outcomes. 50 sites where there have been recent records of the Wood White have been included and the dossier provides information on the butterfly's current status at these sites as a result of individual responses to a questionnaire (see Appendix 2). The individuals who have kindly contributed their site knowledge to this dossier are therefore identified on a site by site basis. For each site, a map has been included showing where possible the main flight areas where the Wood White occurs (and for sites where the butterfly has now disappeared, the historical flight areas). Sites have been grouped geographically within four broad regions (South-West; South-East; West Midlands and East Midlands) and to some extent cross-referenced in an effort to identify those landscapes important for the species. One of the co-authors (S. Jeffcoate) visited many of the sites contained in this dossier in the summer of 2009 and his findings have also informed this report (Jeffcoate, 2009). The dossier provides a snapshot of the current status and distribution of the Wood White and will offer a yardstick against which future conservation efforts might be judged.

Progress has also been made with the second outcome of the workshop with research work being undertaken in 2007, 2008 and 2009 (Clarke and Green 2008, Jeffcoate and Joy *in press*, Clarke *et al.*, *in press.*) and two papers presented at Butterfly Conservation's International Symposium in Reading in March 2010.

The action plan for the Wood White has now been drawn up and is already being implemented (see Appendix 3).

3. Key to site dossier and abbreviations used.

Abbreviations used in the following pages:

BC - Butterfly Conservation
FCE - Forestry Commission England
NE - Natural England
NT - National Trust
NNR - National Nature Reserve
WT - Wildlife Trust
BBOWT - Berks, Bucks and Oxon Wildlife Trust
UTB - Upper Thames Branch of Butterfly Conservation
PAWS - Plantations on Ancient Woodland Sites

Foodplants

BFT - Bird's-foot-trefoil *Lotus corniculatus*
GBFT - Greater Bird's-foot-trefoil *Lotus pedunculatus*
MV - Meadow Vetchling *Lathyrus pratensis*
BV - Bitter-vetch *Lathyrus linifolius*
TV - Tufted Vetch *Vicia cracca*
NLEP - Narrow-leaved Everlasting-pea *Lathyrus sylvestris*

Key to Maps

Red areas correspond to the main flight / breeding areas on sites where Wood White are still considered to be present. On some sites there may be 2009 records to reflect this status but on other sites no recent visits may have taken place to confirm this.

Red dots refer to individual sightings sometimes outside the main flight area (e.g. along the Devon coast).

Purple areas correspond to the flight areas on sites where the Wood White has disappeared and is thought to be extinct. On some of these sites there may have been some records within the last few years so the colony loss is very recent (e.g. Monkwood in Worcestershire). Some of the other sites which fall into this category appear to have been temporary satellite colonies which established after 'good' Wood White years but only survived for a short time.

Green areas refer to potential areas of habitat which may have only recently been created or managed sympathetically for Wood White but where a resident colony has not been confirmed.

On maps where the site boundaries are unclear, a **thick black line** has been added.

Habitat management for the Wood White

Woodland rides

Aim to maintain a continuity of open sunny woodland rides, with grass or scrub margins that are lightly shaded by surrounding trees and have abundant vetches.

Ride Management

Rotational cutting of clearings and rides is most beneficial as it adds variety to vegetation structure. The length of rotation will depend on the individual site and colony size, but can be anything from 2 - 6 years. In all but the largest colonies annual cutting removes too high a proportion of potential breeding habitat. Cutting in autumn and winter months is preferable with ride sides managed alternately. In double brooded colonies, shorter vegetation with patches of bare ground is needed during May and June. This can be created by mowing, tree felling or scarification of ride edges.

Periodic removal of scrub margins is beneficial to keep rides as sunny as possible and to provide suitable conditions for the growth of larval foodplants and nectar sources. Connectivity between existing breeding habitat can be improved by widening overgrown, shaded rides. Scallops and box junctions can also be created to make the breeding habitat more open. Management should be planned in sections to avoid disrupting large areas at any time.

High Forest and Coppicing

Suitable conditions can be provided by ensuring a sequence of felling and replanting to create an uneven-aged forest, combined with the maintenance of a network of sunny rides and glades. Re-introduction of coppicing can also improve woodland structure and provide suitable semi-shaded habitat. A wide ride network is also needed in coppiced woodland.

Hedgerows and grass/scrub mosaics

Maintain open but sheltered habitat containing abundant vetches in and around scrub patches and along adjacent hedgerows.

Grazing

Heavy grazing by either sheep or cattle is generally unsuitable as this removes the tall grass/scrub margins to field edges. Extensive cattle grazing is probably the most suitable regime, but should be combined with periodic cutting of scrub/hedge margins or rotational scrub or hedge management.

Cutting

Periodic grass cutting on sites with no grazing can be beneficial, although this should be done on a long rotation without cutting all suitable areas in any one year. As with grazing, scrub/hedge margins should be cut periodically to create abundant young scrub where vetches and grass can grow through. Scrub and hedges can also be cut on rotation to provide similar suitable conditions.

below Larva on Meadow Vetchling



below Breeding habitat in woodland



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Appendix 5. Wood White Factsheet Update

Factsheet Update

This update is as a result of the National Wood White Conservation Project.

Habitats and Management:

Use of discrete habitat areas - it is now clear that Wood White are not confined to woodland but use a variety of habitat types with the strongest colonies in some non-woodland habitats such as disused brickworks and railway lines. Warmth and shelter are particularly important requirements.

At the landscape level, connectivity between patches, edge effects and box junctions are important. Recent mark-recapture work has shown considerable movement between areas of concentrations of adults and between egg-laying areas, with males moving further and faster than females. They have also shown that movements do occur across potential habitat barriers (i.e. shaded rides without nectar or foodplants).

Use of linear habitats. These are used extensively by Wood Whites with woodland rides, road-sides and disused railway lines all having the potential to be utilised. The 20km linked under-cliff sites in Devon and Dorset appear to house one of the the largest colonies in South West England. The use of linear habitats within the landscape is also important in the context of dispersal in good years and colonisation potential.

Within site diversity is important e.g. early successional habitat (i.e. unshaded open space with warm microhabitat) is needed for early spring emergence, cooler elements for the summer generation. This leads to a difference in foodplant preference between the two broods. On many sites, the early successional habitats that this butterfly requires are largely restricted to ride and forest track edges and are consequently heavily reliant upon sympathetic management.

Wood White populations are in a dynamic relationship with the environment and a landscape scale meta-population is vital for survival with small and isolated populations being especially vulnerable in periods of poor weather.





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