



Butterfly Conservation

West Midlands

Regional Action Plan

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This regional project has been grant aided by



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Executive Summary

This plan highlights the main conservation priorities for butterfly species, high priority moths, and habitats in the region. The intention is for actions and targets for high priority species to be implemented in the next five years, actions for medium priority species to be implemented in the next five to ten years, and actions for low priority species to be implemented in the next ten years once targets for higher priority species have been achieved. However, as Butterfly Conservation must also be able to react to unforeseen circumstances, there may well be some actions undertaken in the next decade which were not conceived at this time.

The main conservation priorities identified for Butterfly Conservation branches in the region are as follows:

a) Species Protection

- To safeguard all surviving colonies of high and medium priority species
- To seek opportunities to extend breeding areas of high and medium priority species.
- To try to identify the strongest populations of high and medium priority species within the region in the next five years starting with populations inhabiting key areas.
- Encourage survey work to determine the current status of all high and medium priority species in areas where this is unknown.
- Support ecological research which may assist the long term conservation of high and medium priority species.
- Draw up re-establishment programmes for high priority species starting with those which are considered to be the most endangered (i.e. 30-50 colonies remaining in the region). These programmes should concentrate on areas where colonies still exist with the proposed introduction sites having long term security but little chance of natural colonisation.
- To increase the level of moth recording and knowledge of the habitat requirements of high and medium priority species. While moths have been taken into account in the key areas and key sites section of this plan, there are only separate species accounts for six high priority moths. One long term aim should be to produce species action plans for all medium priority moths

b) Monitoring

- To continue to monitor all current transects.
- To increase the level of monitoring to cover more sites in key areas so that any changes in abundance can quickly be identified.
- To increase the level of moth monitoring in the region

c) Liaison

- To closely collaborate with all possible partners to try to ensure that actions and targets identified in this plan are implemented within the proposed time-scales.

- Provide feedback to landowners and land managers and provide them with management recommendations which are realistic and could be maintained in the long term.
- Continue to build on established relationships with other conservation groups in the region and raise the profile of Butterfly Conservation through publicity and education.
- Continue to publish results from monitoring work, management regimes and research projects so that the information can continue to be disseminated both regionally and nationally.

d) Land Acquisition

- To consider acquiring threatened sites containing high and medium priority species as Butterfly Conservation reserves if all other options for safeguard have failed or if this will confer extra benefits for conservation.

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1.1 Background

The Action for Butterflies Project and Regional Action Plans: Their role within Butterfly Conservation and the Biodiversity planning process.

Background to the Biodiversity planning process

At the Earth Summit in Rio de Janeiro in 1992, the UK Government signed the Convention on Biological Diversity which required the development of a national strategy. In early 1994, the Government produced the UK Biodiversity Action Plan which adopted a systematic approach whereby targets are used to focus conservation action. This has since ensured that there is now considerable effort going into the production of Local Biodiversity Action Plans through the Agenda 21 process. Butterfly Conservation is attempting to maximise the benefits for butterflies and moths and their habitats through the Action for Butterflies project.

The Action for Butterflies Project

The project began in 1994 and is funded by the World Wide Fund for Nature (WWF-UK) and the Country Agencies (English Nature, Scottish Natural Heritage, Countryside Council for Wales). It aims to place the conservation work of the Society within an overall framework, aiding the Society at national and local level to develop priorities for action. National Species Action Plans are being written for the 25 most threatened butterflies by the end of 1997. Butterfly Conservation branches are also producing Regional Action Plans for each of 14 regions in the UK to guide action at a local level.

This Regional Action Plan is thus one in a series being drawn up by Butterfly Conservation branches in consultation with staff at the Conservation Office, following a standard format devised following a series of workshops held in 1995 and 1996. The plan is intended to incorporate both national and regional priorities, and to aid the conservation of species and habitats characteristic of the local area.

Regional Action Plans: The Wider Context

As well as guiding BC's own actions, our Regional Action Plans are designed to provide our conservation partners with detailed and sound conservation priorities for Lepidoptera for inclusion in **Local Biodiversity Action Plans**.

1.2 General Aims of the West Midlands and Gloucestershire Regional Action Plan

- To identify butterfly and moth species most at risk within the region
- To outline the site and management requirements of these species
- To identify the most important areas and sites for butterflies and moths within the region
- To highlight further survey, management or monitoring work required

1.3 REGIONAL PRIORITY LIST

The list of species below has been developed from Butterfly Conservation's national priority list using the four criteria listed in Section 1.4.

1.3.1 High priority species nationally important

Pearl-bordered Fritillary
High Brown Fritillary
Marsh Fritillary
Large Blue

1.3.2 High priority species regionally important

Grizzled Skipper
Wood White
Brown Hairstreak
Small Blue
Silver-studded Blue
Northern Brown Argus
Duke of Burgundy
Small Pearl-bordered Fritillary
Large Heath

1.3.3 Medium priority species nationally important

White-letter Hairstreak

1.3.4 Medium priority species regionally important

Dingy Skipper
Green Hairstreak
Chalkhill Blue
White Admiral
Silver-washed Fritillary
Dark Green Fritillary
Wall Brown
Grayling

1.4 Methods used for assigning regional priorities

A species qualified for a higher regional than national rating if it fulfilled any one or more of the following four criteria (see Table 1):

Criteria 1 - The estimated rate of decline was > 22% loss of 10km squares in 17 years (Table 2 in Appendix 1, Page 103).

Criteria 2 - The species occupied < 0.6% of the region's area or there were less than 30 colonies remaining (Table 3 in Appendix 1, Page 104).

Criteria 3 - The region contains > 20% of the national resource of the species (Table 4 in Appendix 1, Page 105).

Criteria 4 - There is sufficient regional justification for change (Table 1 and notes below).

Criteria 4 - As a lack of changes in 10km square records over time (Criteria 1) can still mask real declines at the tetrad or lower level (1km square or less), the following five species have had their priority ratings elevated on the basis of i) known county tetrad declines (see Appendix 2, Pages 108-115) or ii) county concerns about the disappearance of the species on a significant number of sites.

a. **Green Hairstreak** - elevated on the basis of concern about tetrad declines in Herefordshire, Staffordshire, Warwickshire and Worcestershire.

b. **Small Blue** - while the stronghold for this species in the region is in Gloucestershire (where it is not considered to be in decline) it is elevated on the basis of known declines elsewhere (Warwickshire, Staffordshire and Worcestershire).

c. **White Admiral** - elevated on the basis of its tetrad declines in Gloucestershire and Warwickshire and its disappearance from some former sites. It is one of only four Gloucestershire species currently showing tetrad declines.

d. **Small Pearl-bordered Fritillary** - a species thought to be in decline in Gloucestershire and Staffordshire and known to be in decline in Shropshire. More survey work to assess its current status in the region is urgently needed.

e. **Silver-washed Fritillary** - a species known to be in decline in Shropshire and extinct in Warwickshire in 1975 (although an unauthorised release has subsequently re-established it at one site in the county). Although it is not thought to be in decline in Gloucestershire or Herefordshire, more survey work to assess its current status in the region is urgently needed.

The **Duke of Burgundy** is restricted to Gloucestershire and is therefore elevated using Criteria 4 on the basis of its geographic distribution. Also, many colonies are small and isolated.

Although the national medium rating of the **White-letter Hairstreak** has not been changed, this species is thought to be very under-recorded in the region and much commoner than tetrad records suggest. For this reason its rating will be reviewed in five years and lowered if necessary. The rating of the **Marbled White** will also be reviewed at this time as it currently only just misses elevation from low to medium priority using Criteria 3. The **Small Heath** is a species which appears to be undergoing some decline in at least three counties (see Appendix 2) and is causing some concern. The priority rating of this species will be reviewed in five years time and its rating increased if the current tetrad declines continue.

The number of tetrads occupied by each species in all counties in the region forms the basis of many of the comments made in the species accounts (see Table 5, Appendix 1, Page 106).

Table 1. Butterfly species showing a regional change in their national priority rating as judged by implementation of criteria which follow Butterfly Conservation's national guidelines for producing Regional Action Plans (see Bourn, Warren & Kirkland, 1996).

Species	Criteria 1 (Rate of decline)	Criteria 2 (Rarity)	Criteria 3 (Proportion of national resource)	Criteria 4 (regional justification for change)	Priority Rating Change
Dingy Skipper	YES				L to M
Grizzled Skipper	YES				M to H
Wood White	YES		YES		M to H
Green Hairstreak				YES	L to M
Brown Hairstreak	YES	YES			M to H
Small Blue				YES	M to H
Silver-studded Blue		YES			M to H
Northern Brown Argus		YES			Stays H
Chalkhill Blue	YES				L to M
Duke of Burgundy				YES	M to H
White Admiral				YES	L to M
Small Pearl-bordered Fritillary				YES	M to H
Pearl-bordered Fritillary	YES				Stays H
High Brown Fritillary	YES	YES			Stays H
Silver-washed Fritillary				YES	L to M
Dark Green Fritillary	YES				L to M
Marsh Fritillary	YES	YES			Stays H
Wall	YES				L to M
Grayling	YES				L to M
Large Heath		YES			M to H

Notes: Where 'YES' present indicates regional change in priority. Priorities L = Low, M = Medium and H = High.

1.5 High Priority Moths Nationally and Regionally Important

The following 6 species have been identified as high priority moths for this region by Dr Paul Waring (see Bourn, Warren & Kirkland 1996) and all occur in less than 15 ten km squares nationally. Species accounts for these high priority moths are given in section 3.6.

Scarce Hook-tip - *Sabra harpagula*
 Barberry Carpet Moth - *Pareulype berberata*
 Pauper Pug - *Eupithecia egenaria*
 Northern Footman - *Eilema sericea*
 Orange Upperwing - *Jodia croceago*
 White-spotted Pinion - *Cosmia diffinis*

1.6 Medium Priority Moths - Notable species occurring in the region

At present these include all Red Data Book (RDB) species and all nationally notable (Na or Nb) species which are currently known to occur in the region. Current status is taken from Waring, in prep (also see Waring, 1994). It is anticipated that the status of many of these species may change in the next few years as a result of increasing recording levels. For this reason, the status of these medium priority moths will be reviewed in five years time, when there may be sufficient data available to write an action plan for each species. The counties in which these species have recently been recorded are given in section 3.7 and the areas or sites which are known to contain these species are listed in 4.1 and 4.2.

Common Name	Scientific Name	National Status
Cistus Forester	<i>Adscita geryon</i>	Nb
Festoon	<i>Apoda limacodes</i>	Nb
Hornet Moth	<i>Sesia apiformis</i>	Na
Currant Clearwing	<i>Synanthedon tipuliformis</i>	Nb
White-barred Clearwing	<i>Synanthedon spheciformis</i>	Nb
Yellow-legged Clearwing	<i>Synanthedon vespiformis</i>	Nb
Orange-tailed Clearwing	<i>Synanthedon anthraciniformis</i>	Nb
Red-belted Clearwing	<i>Synanthedon myopaeformis</i>	Nb
Red-tipped Clearwing	<i>Synanthedon formicaeformis</i>	Nb
Large Red-belted Clearwing	<i>Synanthedon culiciformis</i>	Nb
Six-belted Clearwing	<i>Bembecia scopigera</i>	Nb
Small Eggar	<i>Eriogaster lanestris</i>	Nb
Satin Lutestring	<i>Tetheella fluctuosa</i>	Nb
Light Orange Underwing	<i>Archiearis notha</i>	Nb
Small Grass Emerald	<i>Chlorissa viridata</i>	Na
Dingy Mocha	<i>Cyclophora pendularia</i>	RDB3
Mocha	<i>Cyclophora annulata</i>	Nb
Lace Border	<i>Scopula ornata</i>	Na

Rosy wave	<i>Scopula emutaria</i>	Nb
Purple-bordered Gold	<i>Idaea muricata</i>	Nb
Dotted Border Wave	<i>Idaea sylvestraria</i>	Nb
Chalk Carpet	<i>Scotopteryx bipunctaria</i>	Nb
Ruddy Carpet	<i>Catarhoe rubidata</i>	Nb
Devon carpet	<i>Lampropteryx otregiata</i>	Nb
Argent and Sable	<i>Rheumaptera hastata</i>	Nb
Cloaked Carpet	<i>Euphyia biangulata</i>	Nb
Barred Carpet	<i>Perizoma taeniata</i>	Na
Lead-coloured Pug	<i>Eupithecia plumbeolata</i>	Nb
Marbled Pug	<i>Eupithecia irriguata</i>	Nb
Pinion-spotted Pug	<i>Eupithecia insigniata</i>	Nb
Valerian Pug	<i>Eupithecia valerianata</i>	Nb
Bleached Pug	<i>Eupithecia expallidata</i>	Nb
Campanula Pug	<i>Eupithecia denotata</i>	Na
Thyme Pug	<i>Eupithecia distinctaria</i>	Nb
Bilberry Pug	<i>Chloroclystis debilata</i>	Nb
Broom-tip	<i>Chesias rufata</i>	Nb
Blomer's Rivulet	<i>Discoloxia blomeri</i>	Nb
Drab Looper	<i>Minoa Murinata</i>	Nb
Waved Carpet	<i>Hydrelia sylvata</i>	Nb
Barred Tooth-striped	<i>Trichopteryx polycommata</i>	Na
Little Thorn	<i>Cepphis advenaria</i>	Nb
Bordered Grey	<i>Selidosema brunnearia</i>	Na
Great Oak Beauty	<i>Boarmia roboraria</i>	Nb
Grass Wave	<i>Perconia strigillaria</i>	Nb
Narrow-bordered Bee Hawk	<i>Hemaris tityus</i>	Na
Broad-bordered Bee Hawk	<i>Hemaris fuciformis</i>	Nb
Dew Moth	<i>Setina irrorella</i>	Na
Orange Footman	<i>Eilema sororcula</i>	Nb
Square-spot Dart	<i>Euxoa obelisca</i>	Nb
Light Feathered Rustic	<i>Agrotis cinerea</i>	Nb
White-marked	<i>Cerastis leucographa</i>	Nb
Silvery Arches	<i>Polia hepatica</i>	Nb
Silver Cloud	<i>Egira conspicillaris</i>	Nb/local
Wormwood	<i>Cucullia absinthii</i>	Nb
Red Sword-grass	<i>Xylena vetusta</i>	Nb/local
Sword-grass	<i>Xylena exsoleta</i>	Nb?Na
Dotted Chestnut	<i>Conistra rubiginea</i>	Nb
Angle-striped Sallow	<i>Enargia paleacea</i>	Nb
Mere Wainscot	<i>Photedes fluxa</i>	Nb
Silky Wainscot	<i>Chilodes maritimus</i>	Nb/local
Rosy Marbled	<i>Elaphria venustula</i>	Nb
Cream-bordered Green Pea	<i>Earias clorana</i>	Nb
Waved Black	<i>Parascotia fuliginaria</i>	Nb
Common Fan-foot	<i>Pechipogo strigilata</i>	Na

2. Sources of information

The production of this Plan was co-ordinated by the West Midlands region conservation sub-committee which includes representation from the three Butterfly Conservation branches covering the region: Gloucestershire, Warwickshire and West Midlands. The following individuals provided much of the information given in this report (with principal contact name(s) given in brackets): Gloucestershire (Guy Meredith), Herefordshire (Andy Nicholls), Shropshire (Jenny Joy), Staffordshire (Philip Hopson and Mark Webb), Warwickshire (Mike Slater) and Worcestershire (Mike Williams). Thanks are due to Dave Brown (Warwickshire), Tony Simpson (Worcestershire), Roger Gaunt (Gloucestershire), Richard Warren (Staffordshire), Michael Harper (Herefordshire), Craig Yates (Staffordshire and Shropshire), David Poynton (Shropshire) and Joan Daniels (Shropshire) for supplying information on moths. In addition to this, a number of individuals were targeted with specific requests concerning particular species including Joan Daniels, Frank Lancaster, Tim Melling, Matthew Oates, David Poynton, Anna Poyser, Roger Smith, Richard Warren, Maurice Waterhouse, Digby Wood and Craig Yates. English Nature officers in the Three Counties Team and the West Midlands Team provided SSSI maps as well as information on Natural Areas for which we are most grateful. Any general reference books or reports used for compiling this report are listed in Appendix 7a with specific references for particular reports mentioned in the species accounts being given in Appendix 7b.

3. Species accounts

The species accounts for high and medium priority butterflies are each divided into six sections: Distribution and Status, Threats, Survey, Monitoring, Management and Actions and Targets.

Mention is only made of low priority butterflies species where there are specific comments to make.

In the monitoring section the number of transects the species is regularly recorded on in the region is stated. Overall, there are **around 35 transects** in the region (although this number does fluctuate). While some species such as the Brimstone are well represented on transects others such as the Grayling are currently poorly represented.

High priority moths accounts are similar to those of the butterflies but with fewer sections.

3.1 High priority species nationally important

3.1a Pearl-bordered Fritillary - *Boloria euphrosyne*

Distribution and Status - A species which is undergoing severe decline and is very local and sparsely distributed (both locally and nationally) with the region being considered to be an important stronghold of this species. Nevertheless, many sites are extremely vulnerable and dependent upon the continuity of sound management practices.

Gloucestershire - Although this species has been recorded from 31 tetrads over the 1989-96 period it has already been lost from many of these. Sparsely distributed in the Cotswolds and Over Severn and lost from several sites in recent years. Probably extinct in the Forest of Dean where recent searches have failed to find any surviving colonies. All sites are in woodland (with one possible exception).

Herefordshire - Currently recorded from 9 tetrads including a strong population at Ewyas Harold Common. Survey work urgently needed to assess current status on other sites.

Shropshire - Restricted to the Oswestry Uplands (where there are at least 3 colonies) and the Wyre Forest. Possibly lost from one site in Shropshire (Llanymynech Rocks) as a result of clematis invading coppiced areas.

Staffordshire - Extinct around 1950 (Burnt Wood). Occasional sightings (e.g. Kinver Edge 1982) do not represent permanent colonies.

Warwickshire - Extinct 1968. Lost from the last site (Oakley Wood) when trees shaded the site.

Worcestershire - Stronghold is the Wyre Forest but also occurs on the southern Malverns (where there are 2 or possibly 3 colonies). Lost from several sites in recent years as a result of lack of management (e.g. Monkwood 1979, Trench Wood 1989).

Threats - Lack of woodland management

- Changing woodland management practices
- Lack of grazing animals on bracken covered sites.
- Problems with arranging appropriate management on common land (i.e. fencing and grazing)

Survey - Reports on the management work and transects records in the Wyre Forest (Worcestershire/Shropshire) (Lancaster, 1993, 1994, 1995, 1996a,1996b, also Bingham 1987, Taylor 1990, Witcomb 1993 pers. comm. to M.Williams). Survey of historical Shropshire sites (Joy, 1992a, 1993a). Study of colonies at Cirencester Park in Gloucestershire (Oates, 1995). Thorough survey carried out in 1997 of all known West Midlands sites as part of national survey funded through ICI (Brereton, in prep.).

Monitoring - Currently recorded on 7 transects in the region (1996) which include 3 transects in the Wyre Forest, 2 transects in Haugh Wood and 1 on Coppet Hill. The only strong population covered is in the Wyre Forest.

Management - FE undertake ride and glade management, scalloping, grassland management in the **Wyre Forest** (Worcestershire/Shropshire) under guidance from BC. EN has carried out considerable management to benefit this species within the NNR including ride work and the restoration of coppice-with-standards. Other areas of the Wyre Forest are also managed by BC volunteers, in particular two small meadows near Coopers Mill and the IMI Testing Station. This species is present on at least 3 managed sites in **Herefordshire** a) Haugh Wood - coppice and ride management by FE (BC on management committee) b) Great Doward - coppice management by Herefordshire Nature Trust and c) Coppet Hill - management by local group with BC now involved in scrub and bracken management. Bracken management is directed at improving the habitat for this species at two sites on the **Shropshire/Montgomeryshire** border (Llyncllys Hill and Llanymynech Golf Course) and is carried out by BC volunteers and golf course ground staff. The Shropshire Wildlife Trust has carried out coppice management for this species on two sites (Jones Rough and Llanymynech Rocks), although this has only been successful at one site (Jones Rough). Management of at least two **Gloucestershire** sites is likely to be beneficial to this species. At Cirencester Park there is regular felling to provide timber for the estate sawmills (privately owned commercial forestry) and, at Miserden, BC has an informal management agreement. This species does not appear to have benefited from bracken management work to improve the habitat for High Browns at one site in the **Malvern Hills** (Joy, 1997).

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor and collate results on all current transects.	Ongoing	Local volunteers
2. Increase the level of monitoring to cover all surviving colonies by at least a spot check, a full species transect or a timed count.	By 2002	Local volunteers, EN, NT, Wildlife Trusts.
3. Provide feedback to landowners and site managers.	By 2002	EN
4. Determine current status in all counties where this is unknown (Gloucestershire, Worcestershire, Herefordshire).	By 2002	Local volunteers, Local Records Centre, EN, County Councils
5. Seek to safeguard all existing colonies and take opportunities to extend suitable breeding areas within or adjacent to surviving colonies.	By 2002	Site owners, EN, County Councils
6. Provide landowners and site managers with information (from the woodland information pack or the species action plan) to help them improve the habitat for this species.	By 2002	EN, Wildlife Trusts, County Councils

7. Assess the success of bracken management regimes currently being undertaken to improve the habitat for this species (Shropshire/Montgomeryshire border).	Ongoing	Wildlife Trusts, CCW, EN
8. Support ecological research aimed at measures that may assist the long term conservation of the species.	By 2002	EN, other grant awarding bodies
9. Consider a programme of re-establishment to former sites as ecological knowledge, opportunity and resources allow in line with the national species action plan drawn up by BC (Barnett & Warren, 1995a).	By 2002	Wildlife Trusts, EN, BC Conservation Committee

3.1b High Brown Fritillary - *Argynnis adippe*

Distribution and Status - A seriously endangered species which only now occurs on a small number of sites in the region where it exists as meta-populations (site names confidential, see Appendix 3). Although only three sites in the Malvern Hills are occupied by this species, these sites cross several county boundaries (Gloucestershire, Herefordshire and Worcestershire) and this can cause confusion.

Gloucestershire - Confined to one site at the southern end of the Malvern Hills

Herefordshire - Present on two commons and in the Malverns.

Shropshire - Extinct (Wyre Forest early 1990s).

Staffordshire - Possibly still present in the Churnet Valley area.

Warwickshire - Extinct (1950s).

Worcestershire - Lost from the Wyre Forest in the late 1980s/early 1990s. More recent occasional reports probably stemming from unauthorised releases. Still present in the Malvern Hills.

Threats - Lack of bracken management

- Fires (especially in the Malverns)

Survey - Work to determine distribution, status and habitat requirements (Oates, 1989; Warren, 1991; 1995 (site dossier-see references); Davies, 1992).

Monitoring - Currently represented on 4 transects in the region. Lost from Wyre Forest East and Haugh Wood north transects in 1987, Knapp and Paper Mill transect 1984. Vegetation monitoring has been carried out on three sites to assess the effect of bracken management regimes on the ground.

Management - Bracken management regimes have been carried out by a number of groups including BC volunteers, local schools, English Nature, the National Trust and the Malvern Hills Conservators. Regimes commonly involve some sort of summer cutting (in blocks or paths) and/or winter raking up of bracken litter. As these regimes have only been implemented in the past 3-4 years, it is still too early to directly relate recent improvements in High Brown numbers to changes in habitat management, although early signs are encouraging (Warren et al, 1997, Joy, 1997).

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor and collate all populations by transects.	Ongoing	Local volunteers
2. Continue to closely monitor changes in population size and habitat and provide feedback to those responsible for site management.	Ongoing	Local volunteers, EN, NT, site owners
3. Carry out further survey work in Staffordshire to assess its current status.	By 2002	EN, RSPB, Staffordshire University
4. Increase the level of vegetation monitoring on sites being managed for this species.	By 2002	NT, Local volunteers, EN, site owners
5. Assess the success of the various bracken management regimes.	Ongoing	EN, NT
6. Seek opportunities to extend suitable breeding areas within or adjacent to their existing habitat.	Ongoing	Site owners
7. Consider a program of re-establishment to former sites as ecological knowledge, opportunity and resources allow in line with the national species action plan drawn up by BC (Barnett & Warren, 1995b).	By 2002	EN, BC Conservation Committee
8. Continue to support ecological research aimed at measures that may assist the long term conservation of the species.	Ongoing	EN

3.1c Marsh Fritillary - *Euphydryas aurinia*

Distribution and Status - Only two colonies present in the region with one of these being a re-establishment which may have already failed. Site names are confidential (see Appendix 3). The species is thus highly endangered in the region.

Gloucestershire - Confined to a site in the Cotswolds which has remained fairly stable over recent years. This species was lost from one other Gloucestershire site in 1990 after having an annual index of 50 in 1989. The reason for this loss is unknown.

Herefordshire - Extinct 1954

Shropshire - Extinct (possibly around 1950s).

Staffordshire - Said to be abundant on Craddocks Moss in 1866 but never recorded since.

Warwickshire - Extinct 1951 (Sutton Park). Not seen after drainage of one area and subsequent grazing and trampling by cattle (P.W. James pers. comm. to R.Smith)

Worcestershire. - Re-established at a wood in 1992 after a previous probable establishment had died out after some fifteen years. The area of suitable habitat is fairly restricted, however, and the butterfly became extinct again in 1996.

Threats - Problem of small size of remaining habitat and extreme isolation

- Lack of continuity of management.
- Over and under-grazing by horses
- Drought

Survey - See below

Monitoring - Gloucestershire colony has been monitored by transects and by larval web counts for three years (Oates, 1996). Former Worcestershire site has been monitored in the same way with data suggesting the re-establishment may have already failed (with no adults or webs being recorded on transect in 1996 and only two adults being seen in 1995).

Management - Gloucestershire site has a long tradition of burning and light grazing by horses which should continue. Worcestershire site area has been managed on a short term coppice rotation (4 years) with annual swathes being cut (with the aim of maintaining an open sunny area with abundant devil's bit scabious). It may be that the suitable area of habitat was too small and isolated to sustain a population in the long term.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor Gloucestershire colony.	Ongoing	Local volunteers
2. Continue to manage Gloucestershire colony.	Ongoing	Site owner
3. Seek opportunities to extend suitable breeding areas within or adjacent to the existing Gloucestershire colony so that it can form a meta-population. This species should be encouraged to colonise nearby areas naturally.	By 2002	Site owners
4. Try to determine present and past grazing regime at Gloucestershire colony.	By 1998	Site owner
5. If the Gloucestershire species fails to colonise any nearby sites within the next five years, consider a re-establishment programme with Lower Woods (Wetmoor) - a former site now under WT management - being one possibility.	By 2007	Gloucestershire Wildlife Trust, EN, BC Conservation Committee

3.1d Large Blue - *Maculinea arion*

Distribution and Status - Currently known from two sites in the Cotswolds where it has been re-introduced. Sites are monitored annually but populations levels remain very low. Nationally this is a very important high priority species with projects being co-ordinated centrally through BC's national office and the Institute of Terrestrial Ecology (ITE).

Gloucestershire - Historically, widespread and locally common in the Cotswolds. Lost in 1976 or 77 shortly before the extinction of the species in England. Re-established at two sites in recent years, present population lower than predicted from population models. Threats include incorrect grazing management, drought and problem of small isolated colonies. Due to the highly confidential nature of the sites, branch involvement has been restricted to monitoring at the initial release site. Further involvement subject to decisions made nationally and by negotiation with site owners.

Herefordshire - Extinct 1864

Shropshire - Only recorded in 1869.

Staffordshire - Never recorded

Warwickshire - Never recorded

Worcestershire - Said to be at Abberley Hill until 1920s (but possibly dubious records).

3.2 High priority species regionally important

3.2a Grizzled Skipper - *Pyrgus malvae*

Distribution and Status - One of the most local species within the region which appears to be in decline and has disappeared from a number of sites. It is not possible to describe a precise trend as only a small number of records are received for this species each year. It is commonly associated with warm sheltered areas of grassland, disused railway lines, old quarries and south facing banks.

Gloucestershire - Widely but locally distributed in the Cotswolds and Forest of Dean. A few records from the Severn Vale. Appears to generally be maintaining current distribution despite losses from some of the well visited sites. While the majority of these sites are managed woodlands, it is also present on spoilheaps, quarries and old railway lines.

Herefordshire - On 6 tetrads but may be under-recorded.

Shropshire - Local and possibly declining (with around 5-10 colonies remaining).

Key area is the Oswestry uplands (where it occurs in limestone grasslands and abandoned quarries). Strong colony remains in Wyre Forest (within IMI boundary).

Staffordshire - Only two (possibly three) sites known (one site is a disused railway line and another a wooded valley).

Warwickshire - Local, 30 known sites with many being identified by recent survey work (although most of these have been on disused railway lines, disused quarries or spoilbanks, at least six sites have been found in woodlands). Lost from 11 sites but still possibly present on 13 others. Lost from Navigation Cutting south, possibly as a result of over-grazing and cattle trampling.

Worcestershire - Appears to have disappeared from some sites and become scarce at others, so now a very local distribution. Most remaining colonies on disused railway lines.

Threats - Lack of appropriate management (e.g. scrub control, grazing) leading to a deterioration in habitat quality.

- Problem of small isolated sites
- Overgrazing (but can be maintained by rabbit damage on some sites)
- Tightening of sward and loss of bare ground
- Re-opening of disused railway lines

Survey - Targeted searches by Warwickshire group discovered 30 colonies. Further targeted searches planned for 1997 (M. Slater, pers comm.). Searches of disused railway lines in the Honeybourne area of Worcestershire in 1996 produced several new colonies (M. Williams, pers comm.).

Monitoring - Currently recorded on 6 transects in the region. In Warwickshire, this species is recorded on 3 transects (Harbury, Ryton and Ufton Fields) and also by 3 species spot transects (one walk only) at Navigation Cutting, Wolfhampcote and Malpass Quarry. Recently lost from a number of transects including Wyre Forest east (1987), Bredon Hill (1993), both Haugh Wood transects (1991) and Wetmoor (1991).

Management - Lost at a site in Staffordshire (Burnt Wood) as a result of natural succession. Advice on management given by BC to Woodland Trust at Laycombe Ditch Wood in Gloucestershire where some clearance work on a south facing slope has been undertaken which may benefit this species. In Warwickshire, the cutting of a drainage ditch at the edge of Ryton Wood temporarily increased the grizzled skipper population as females laid their eggs on plants trailing over the bare ditch's south and east facing surfaces. Scrub management at Trench Wood in Worcestershire is also targeted at this species (and involves short-term coppice rotation and the cutting of annual swathes) and in the Shropshire part of the Wyre Forest, work by BC volunteers and IMI staff is aimed at maintaining open ground where wild strawberry and hence this species can flourish. Creeping cinquefoil colonies require cattle grazing, unless there is a high rabbit population. Wild strawberry colonies require scrub clearance (periodic and targeted where foodplant grows). Agrimony colonies require grazing, plus disturbance to create bare ground e.g. moles, rabbits (Brereton, pers. comm.).

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor six transects and collate results.	Ongoing	Local volunteers
2. Establish more transects at key sites in Gloucestershire (e.g. Breakheart Quarry), Shropshire (Oswestry Uplands) and Warwickshire. Also increase monitoring by annual timed counts on other sites and collate results.	By 2005	Wildlife Trusts, Local volunteers, other land owners.
3. Survey work to a) establish the current status of this species and b) identify the threats for each colony.	By 2005	EN, other grant awarding bodies, land owners, County Councils
4. Provide feedback to landowners to encourage them to improve or maintain habitat quality.	Ongoing	Local volunteers, EN, County Councils
5. Develop a better understanding of the ecological requirements of this species and the best management practices.	By 2010	EN, other grant awarding bodies

3.2b Wood White - *Leptidea sinapis*

Distribution and Status - A declining species which has a national stronghold in the region and is currently recorded on 38 tetrads. While most populations are small there are a number of larger ones.

Gloucestershire - Largely confined to the Forest of Dean and Over Severn with important strongholds in the north-west Forest and Newent Woods. There are at least 3 meta-populations each covering a large area which account for 11 1Km squares plus additional isolated records. One strong colony lost from the Hay Wood area (around 1985) possibly as a result of plantation growth shading rides.

Herefordshire - Around 8 distinct populations, possibly more as they may be under recorded. Recently recorded in the Mortimer Forest, especially in the Mary Knoll valley. Still present at Ewyas Harold Common.

Shropshire - Only two sites known (Wyre Forest and Bucknell Wood) where they are only present in low numbers.

Staffordshire - Extinct (date unknown).

Warwickshire - Extinct around 1986, reason unknown.

Worcestershire - Most remaining colonies are in the west and are small. The only large population is at Monkwood. A small colony still survives along a stretch of disused railway line in Wyre Forest.

Threats - Changes in woodland management leading to increased shadiness

- Changes in ride mowing regimes
- Small size and isolation of many colonies

Survey - None known.

Monitoring - Currently recorded on 6 transects in the region including 2 transects at Monkwood (Worcestershire), 2 at Haugh Wood and 1 at Coppet Hill (all in Herefordshire). Not seen on the Wyre Forest east transect since 91 and the Wyre Forest west transect since 92, although this species does still occur in other parts of the forest.

Management - Rides managed for this species at Monkwood (BC reserve in Worcestershire.) have a 3 tier structure consisting of a central pathway, an inner margin (flailed every 4 years) and an outer coppice margin (managed on a 7 year rotation). Additionally, new areas of coppice with standards are created and cut on varying rotations between 7-20 years (work carried out by contractors, Worcestershire Wildlife Trust staff and volunteers). The population has increased substantially following introduction of this management in 1987. Specific ride management has also been carried out by FE at Haugh Woods, Sned Wood and Wigmore Rolls (all in Herefordshire) and Bucknell Wood (Shropshire) and there has also been some management work on Herefordshire Nature Trust sites. Sites where this species may benefit from more general management work include Highnam Woods (Gloucestershire) and Coppet Hill (Herefordshire) where work has only recently been carried out by BC volunteers (February 97).

Actions and Targets

Action	BC's Targets	Possible Partners
1. Protect all surviving colonies.	By 2002	Site owners, EN, FE, Wildlife Trusts.
2. Continue to monitor key sites and collate results	Ongoing	Local volunteers, site owners, EN, Wildlife Trusts
3. Try to increase the level of monitoring so that all populations are covered by at least an annual spot check or timed count.	By 2002	Local volunteers
4. Continue to survey to assess current status	Ongoing	Local volunteers
5. Closely monitor changes in population size and provide feedback to site managers.	Ongoing	Local volunteers etc.
6. Introduce sympathetic management to all surviving colonies.	By 2002	FE, EN, Wildlife Trusts, site owners
7. Seek opportunities to extend suitable breeding areas within or adjacent to their existing habitat.	By 2002	FE, EN, Wildlife Trusts, site owners.
8. Consider a programme of introductions and re-establishments giving priority to counties where it still exists, but only if the resources are in place to carry out the necessary and ongoing management and only if large areas of habitat can be restored.	By 2010	EN, FE, Wildlife Trusts, BC Conservation Committee.

3.2c Brown Hairstreak - *Thecla betulae*

Distribution and Status - Largely confined to the Grafton Wood area of Worcestershire with occasional records from south Gloucestershire. Only part of the Worcestershire area is an SSSI with the continuing presence of the species being dependent on hedgerow practices of local landowners.

Gloucestershire - Occasional records (thought to stem from colonies originating in north Wiltshire). Recorded at Wetmoor in the 1960's and 1970's (R. Smith pers. comm.) with a final sighting at Inglestone Common in the early 80s.

Herefordshire - Extinct (1899).

Shropshire - Extinct (around 1900).

Staffordshire - Have never been any reliable records.

Warwickshire - Extinct 1972. Lost from Warwick Park and surrounding area as a result of wholesale blackthorn removal, from the Austy Wood area probably as a result of cyclical hedge trimming. Probably also lost from 2 other sites (1 in the Princethorpe Woods complex and 1 at Broadwell) as a result of changes in hedgerow management. The majority of hedges in both of these areas are now annually flailed.

Worcestershire - currently recorded on 11 tetrads.

Threats - Inappropriate hedgerow management.

Survey - A detailed study to determine the distribution, status and size of the Worcestershire colony was made in 1993 (Mabbett & Williams, 1994) and this work has continued. A project designed to initiate contact between BC and local farmers and landowners was undertaken in 1995 (Barker, 1995a) with a colour leaflet subsequently produced detailing advice on best management practice (Barker, Warren & Williams, 1996).

Monitoring - Annual winter egg counts were initiated by the late Jack Green from 1969 onwards and have been undertaken by BC volunteers from 1987-1996 and are planned to continue. Wider searches undertaken to map exact distribution, currently recorded from 26 1km squares (1997).

Management - In Worcestershire has included the following a) modification of farmers hedge cutting practice (with rotational hedge cutting every 2-5 years recommended) b) additional planting of blackthorn whips in hedgerows to fill gaps and provide egg laying sites, c) cutting of key breeding hedgerows in late July/early August rather than during winter months and d) the coppicing of over-mature blackthorn. BC has worked with English Nature, Farming Wildlife Advisory Group (FWAG), Worcestershire Wildlife Consultancy, Hereford and Worcester County Council and local landowners.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Protect Worcestershire population	Ongoing	Site owners, EN
2. Continue to monitor Worcestershire population by winter egg counts.	Ongoing	Local volunteers
3. Seek opportunities to extend the habitat.	By 2002	Site owners
4. Continue to disseminate information to landowners, locally and nationally, interested in introducing specific management for this species.	Ongoing	EN, FWAG, Hereford & Worcester County Council.
5. Continue to target individual landowners with specific proposals for improved hedgerow management within key breeding area.	Ongoing	Local volunteers, MAFF, FRCA, EN.
6. Improve overall management around the key Worcestershire area through Countryside Stewardship.	By 2002	MAFF / FRCA
7. Acquire a suitable area with good breeding habitat (or the potential to promote such habitat) as a Butterfly Conservation reserve.	By 2010	EN, Wildlife Trust
9. Consider a programme of introductions and re-establishments (such as to Lower Woods in south Gloucestershire), but only if the resources are in place to carry out the necessary and ongoing management and if large areas of suitable habitat can be restored and maintained in the long term.	By 2005	EN, Wildlife Trusts, BC Conservation Committee.

3.2d Small Blue - *Cupido minimus*

Distribution and Status - A species which has recently undergone declines in all counties except Gloucestershire

Gloucestershire - Still widely distributed and locally common in the Cotswolds which is an important component of the national status of this species. Specific searches for this species since 1981 have identified its presence in 145 1KM squares. A metapopulation existing in hills south of Cheltenham was thought to be extinct but then recorded again at one of the outlier sites in 1995.

Herefordshire - Extinct 1911

Shropshire - Probably extinct. No recent sightings.

Staffordshire - In decline with only three recent site records (Manifold Valley, Saltwells and Wyrley Common) with the latter two of these almost certainly introductions.

Warwickshire - Known to still exist at five locations but now extinct at 9 others since 1970. Lost from 2 sites (Ufton Fields west and Oxhouse Farm) as a result of scrub invasion, and from 2 others (Stockton Cutting and Nelsons Quarry) due to a combination of rabbit activity, scrub invasion and disappearance of the butterfly's foodplant.

Worcestershire. - Extinct. Recorded on a disused railway line near Broadway (Woodroffe, 1995) but is now believed to be extinct at this site.

Threats - Agricultural improvement

- Decline in habitat quality
- Vulnerability to undergrazing and overgrazing, particularly sheep grazing during summer.
- Droughts
- Residential and leisure development
- Lack of appropriate grassland management
- Increase in rabbit numbers

Survey - Targeted searches in Warwickshire of all old and possible sites from 94-96 with all remaining colonies now believed to be identified (articles in Warwickshire Butterfly and Transect Reports 92-96). Project to investigate known sites and advise on priorities for practical management (Barker, 1995b).

Monitoring - Currently recorded on 6 transects in the region of which 4 are in Gloucestershire (Stinchcombe A & B, Rodborough Common and Prestbury Hill) and 2 in Warwickshire (Ufton and Harbury Spoilbank). Egg searches have sometimes been successful even when no adults have been seen on the transect (e.g. Ufton Fields and Harbury Spoilbank, Warwickshire 1995). All 5 Warwickshire sites for this species are annually checked. At one Worcestershire site a transect was set up in 1995 (after 1994 records) but none were seen.

Management - Management recommendations put forward by BC and adopted by the Warwickshire Wildlife Trust on two sites which are nature reserves (Harbury Spoilbank and Ufton Fields). On 3 Warwickshire sites small scallops (5-10m) have been cut in areas of scrub and at one site (Harbury Spoilbank) strategic planting of kidney vetch from local seed took place in the winter of 96/97 although it is too early to say how successful this has been.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor on existing transects, and collate results.	Ongoing	Local volunteers, site owners
2. Increase level of monitoring in the Cotswolds so that any changes in abundance can be more easily identified.	By 2002	Local volunteers, EN, site owners
3. Increase the level of monitoring outside the Cotswolds so that all sites are covered by at least one annual spot transect or timed count.	By 2002	Local volunteers, Wildlife Trusts
4. Draw up management recommendations and give feedback to landowners and land managers.	By 2002	Local volunteers, EN, County Councils
5. Seek opportunities to extend breeding areas to form a network of linked habitats so the species is more secure.	By 2002	Site owners, EN, Wildlife Trusts, County Councils
6. Resist residential and leisure developments threatening individual sites.	Ongoing	EN, Wildlife Trusts, County Councils
7. Ensure habitat creation opportunities are not missed.	Ongoing	County Councils
8. Survey to assess current status in counties where this is unclear.	By 2002	EN, Local Records Centres, Wildlife Trusts
9. Consider a programme of introductions and re-establishments, but only if the resources are in place to carry out the necessary and ongoing management and if habitat can be restored on a large viable scale.	By 2002	EN, BC Conservation Committee.

3.2e Silver-studded Blue - *Plebejus argus*

Distribution and Status - Present only on one site in Shropshire (Prees Heath)

Gloucestershire - Extinct 1929

Herefordshire - Extinct 1908

Staffordshire - Never recorded

Warwickshire - Extinct 1928/29 (Packington)

Worcestershire - Never recorded

Threats - Sand and gravel extraction

- Development for leisure facilities

- Habitat deterioration through lack of management

Survey - Detailed ecological survey carried out in 1991 with support from WWF as a result of a planning application to extract sand and gravel and develop the site as a golf course (Joy, 1992b). Introduction of 50 adults from Prees Heath to Thurstaston Common on the Wirral appears to have been successful (Hinde, 1992, 1994, 1995).

Monitoring - Peak flight transect usually undertaken annually (e.g. Joy, 1992b) which has sections on Prees Heath and on the adjacent Intervention Grain Store compound.

Management - English Nature currently have a management agreement with both the site owners (Prees Heath Limited) and the managers of the Intervention Grain Store compound. The Intervention Store carries out management of the compound themselves (under instructions from Shropshire BC) with the work on Prees Heath being carried out by Butterfly Conservation volunteers, Commoners and local residents.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor abundance by peak transect count.	Ongoing	EN
2. Increase level of monitoring to a full transect (or at least a full transect during the Silver-studded Blue flight period).	By 2002	EN, Local volunteers.
3. Continue to ensure that the management plan for the SSSI is carried out within the Intervention Grain Store area and on the heath and maintain close liaison with Grain Store managers.	Ongoing	Intervention Grain Store managers, EN
4. Continue to maintain close contact with Prees Heath Common Campaign group and local people. Arrange work days to suit all parties.	Ongoing	Prees Heath Common Campaign Group, EN
5. Try to acquire the site as a nature reserve.	Ongoing	Shropshire Wildlife Trust, Prees Heath Common Campaign Group, site owners, grant-making bodies, Local District Council, Shropshire County Council.
6. Look for opportunities to extend areas of suitable habitat.	Ongoing	EN, site owners, Local District Council, Shropshire County Council

3.2f Northern Brown Argus - *Aricia artaxerxes*

Distribution and Status - Endangered on a regional level, only occurring in north Staffordshire and declining at national level. Although only one well known location is a Staffordshire Wildlife Trust reserve (site confidential, see Appendix 3), other colonies do probably exist in the locality (Richard Warren, pers comm). While the Trust has recently introduced pony grazing to control scrub encroachment onto the grassland areas of the reserve, the impact on the butterfly is not known. Site records for 1996 include 2 seen by Mark Webb and 15 seen on 14/7 (record sent to Trust).

Threats - Possibly over-grazing (site currently grazed by a combination of sheep and horses)
 - Possibly lack of appropriate management (due to lack of knowledge)

Survey - Anna Poyser made a number of visits during the 1995 flight period to determine the main flight area (report held by P. Hopson).

Monitoring - None at present

Management - No specific management for this species at present.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Protect all known colonies	By 2002	Staffordshire Wildlife Trust, EN, NT.
2. Set up monitoring programme and provide feedback to the Staffordshire Wildlife Trust.	By 1999	Local volunteers
3. Further survey work to a) determine population size and b) identify core breeding areas.	By 2002	Staffordshire Wildlife Trust, local volunteers
4. Liaise with Staffordshire Wildlife Trust to ensure that a management plan is drawn up to take into account the specific habitat requirements of this species (see national species action plan Ravenscroft & Warren, 1996).	By 2002	Staffordshire Wildlife Trust
5. Carry out surveys of wider area to find out whether this butterfly is still extant at other sites.	By 2002	Local volunteers, NT
6. Encourage appropriate habitat management in areas around known colonies and encourage natural range expansion.	By 2002	EN, local volunteers, County Council

3.2g Duke of Burgundy - *Hamearis lucina*

Distribution and Status - This species is now restricted to Gloucestershire with the Cotswolds being considered as a national stronghold for this species. Although it is widely distributed within this area (with some evidence of a recent range expansion), many colonies are rather small and isolated.

Gloucestershire - Currently recorded on 67 tetrads (although there are a number of larger sites the majority are single tetrad sites).

Herefordshire - Extinct 1954. Former records from Broadmore Common adjacent to Haugh Wood which is now being managed by the Wye Valley Countryside Service.

Shropshire - Extinct. Said to have occurred in Church Stretton area in 1896.

Staffordshire - Never recorded

Warwickshire - Re-discovered in the Ettington Park area May 1986, last recorded May 1987. Lost as a result of large scale scrub clearance combined with changes in grassland management (R. Smith pers comm to M. Slater).

Worcestershire - Three localities mentioned in Victoria County History but no modern records.

Threats - Lack of management causing decline in cowslip numbers

- Problem of small isolated sites
- Over-grazing and/or whole-site grazing (also affecting other species and reducing habitat diversity).

Survey - Detailed survey of Leckhampton Hill (managed by Cheltenham Borough Council) in 1990 when adults and eggs were counted (R. Mabbett *pers. comm.* to M. Williams).

Monitoring - Currently recorded on 2 transects in Gloucestershire (a strong colony at Rodborough and a small colony at Prestbury Hill)

Management - Scrub control at Leckhampton Hill from 1986-90.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor sites by transects.	Ongoing	Local volunteers, Wildlife Trusts, site owners.
2. Increase the level of monitoring giving priority to sites whose management has recently changed.	By 2002	Local volunteers, Wildlife Trusts, site owners.

3.2h Small Pearl-bordered Fritillary - *Boloria selene*

Distribution and Status - A local species which is declining severely in some areas

Gloucestershire - Currently recorded on 22 tetrads. Largely confined to the Forest of Dean with sporadic Cotswold records possibly of released specimens.

Herefordshire - Recently recorded from 7 tetrads.

Shropshire - Local and present on some 10-20 sites with a strong population in the Wyre Forest. Not recently recorded on some sites (Wem and Whixall Mosses) where the causes of the losses are unknown.

Staffordshire - Six recent site records with two recently confirmed locations (Mark Webb, pers comm.). Lost at one site (Burnt Wood) despite attempts by the Staffordshire Wildlife Trust to improve the habitat for this species.

Warwickshire - Lost from Wappenbury Wood 1960 and Coleshill Bog 1961. Re-establishment carried out at Ryton Wood in 1995. In 1996 singletons were recorded from 2 adjacent woods (Wappenbury and Bull & Butcher) and 3 were recorded on the Ryton transect.

Worcestershire - Very local and now confined to the Wyre Forest and the Malverns plus one or two surviving localities in the west. Much more geographically restricted in the Wyre Forest than the Pearl-bordered and generally seen in lower numbers, although population levels have recently increased in response to woodland management.

Threats - Lack of management

- Drying out of sites where marsh violets are utilised

Survey - Reports on management work and transect records in the Wyre Forest (Shropshire/Worcestershire) (Lancaster 1993, 1994, 1996a, 1996b). Shropshire survey of historical sites (Joy, 1992a, 1993a). Habitat survey of all woods in the Princethorpe complex in Warwickshire in 1992 in preparation for species re-establishment (M. Slater, butterfly reports 93/94).

Monitoring - Currently recorded on 6 transects in the region which include 3 in the Wyre Forest (Worcestershire/Shropshire), a common outside Bromyard (Herefordshire) and Ryton Wood (Warwickshire). No records on Whixall Moss transect (Shropshire) since 1991. Only 5 on Malvern Hills transect in 95 and none in 96.

Management - FE undertakes ride and glade management, scalloping, grassland management in the Wyre Forest under guidance from BC. English Nature has also carried out management work beneficial to this species. Other areas of the Wyre Forest have also been opened up by BC volunteers. FE are also scalloping and widening rides for this species at Bucknell Wood in Shropshire and in the Mortimer Forest in Herefordshire where BC volunteers have also been involved in the ride widening work in the Aston valley (see Joy & Boardman, 1995).

This species also appears to be benefitting from restorative management work being carried out at Doley Common in Staffordshire. Like the Pearl-bordered, this species does not appear to be benefitting from bracken management on the Malverns being carried out primarily for the High Brown Fritillary.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor five current transects and collate results.	Ongoing	Local volunteers, site owners
3. Increase the level of monitoring to cover five more colonies at least to the level of annual timed counts or a full transect during the flight period of this species.	By 2002	Site owners, EN, Wildlife Trusts, local volunteers.
4. Survey to assess a) current status and b) the larval foodplants being utilised in all counties.	By 2002	EN, FE, NT, Wildlife Trusts, County Councils, other land owners.
5. Provide landowners and site managers with feedback and information (such as the Woodlands Pack) to help them improve the habitat for this species..	By 2002	Local volunteers, Wildlife Trusts, County Councils
6. Support ecological research aimed at measures that may assist the long term conservation of the species.	Ongoing	EN, other grant awarding bodies
7. Consider a programme of re-establishment to former sites in areas where the species still exists in line with the national species action plan drawn up by BC (Barnett & Warren, 1995c).and where a network of potential suitable sites can be realistically managed in the long term to sustain a meta-population of this species.	By 2002	EN, BC Conservation Committee

3.2i Large Heath - *Coenonympha tullia*

Distribution and Status - only present on two sites in Shropshire (Whixall and Wem Mosses) which represent the southernmost edge of its English range.

Gloucestershire - Never recorded

Herefordshire - Never recorded

Shropshire - Whixall Moss is now part of a National Nature Reserve (NNR) which has been jointly managed by English Nature and the Countryside Council for Wales since 1991. Wem Moss is part of the same NNR but is managed by the Shropshire Wildlife Trust as one of their nature reserves.

Staffordshire - Extinct pre-1900 (Chartley Moss, date unknown) probably as a result of major drainage work in the 1890s.

Warwickshire - Never recorded

Worcestershire - Never recorded

Threats - Small size of suitable habitat at Wem Moss

- Agricultural practices (e.g. deepening of drainage ditches around Wem Moss)
- Scrub encroachment (bog myrtle at Wem Moss)
- Increasingly high winter water levels at Whixall Moss

Survey - Various projects to identify breeding areas and to set up a butterfly transect at Whixall Moss (Joy & Westhead, 1990; Joy, 1991; Joy, 1992c) and to assess the effect of raised water levels on larvae (Joy, 1995; Joy & Pullin, in press). Annual report by P. Boardman on butterfly transect results at Whixall since 1993.

Monitoring - Currently recorded on 2 transects established at Whixall Moss in 1992. No monitoring of Wem colony at present although the site is regularly visited by BC members.

Management - Scrub has recently been removed from large areas of Wem Moss by contractors working for the Shropshire Wildlife Trust. BC volunteers have also carried out work at Wem Moss in the past and concentrated on clearing scrub from the main Large Heath breeding area which is now very small (approximately 100 x 200m). English Nature have undertaken a massive scrub clearance and drain blocking programme at Whixall Moss since 1991 to try to re-instate sphagnum bog over the entire peat surface (after it had been decimated by commercial cutters). The impact of these changes on Large Heath larval survival is not yet known but a research project is ongoing.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Try to ensure that English Nature continues to give priority to butterfly transects at Whixall Moss.	Ongoing	EN
2. Increase the level of monitoring at Wem Moss to at least a annual timed count or a full transect during the flight period of the Large Heath.	By 2002	Shropshire Wildlife Trust
3. Continue BC involvement with site managers with the aim of ensuring future management takes on board the ecological requirements of the Large Heath.	Ongoing	EN, Shropshire Wildlife Trust
4. Continue to support ecological research which is currently assessing the impact of increased water levels on larvae.	Ongoing	EN

3.3 Medium priority species nationally important

3.3a White-letter Hairstreak - *Strymonidia w-album*

Distribution and Status - Generally thought to be under-recorded and more widespread than distribution maps indicate. For this reason, its regional priority rating will be reviewed in five years when it may go down to low priority.

Gloucestershire - Widespread, thinly recorded.

Herefordshire - Currently recorded on 18 tetrads and under-recorded.

Shropshire - Recorded on 11 tetrads.

Staffordshire - Probably under-recorded but still 10 recent site records.

Warwickshire - Revival after decline and returning to much of its expected range.

Now recorded in 65 tetrads. Absent from urban areas.

Worcestershire - Now more numerous after recent decline. Larval searches during May have produced many new records including from roadside Elm suckers.

Threats - Dutch Elm disease

- Destruction of hedgerow elm trees
- Hedge maintenance (simultaneous layering of all elm suckers rather than in stages)
- Reluctance on the part of landscape architects and landowners to include Elm sp. in new planting schemes.

Survey - 3 year national survey to assess status (Davies, 1985, 1986). Surveys by Mitchell (1980s) and Shirley (1990s) found it in 80-90% of tetrads searched in North Warwickshire (both pers comm to M. Slater).

Monitoring - Currently recorded on 15 transects in the region (the highest number ever), including Haugh Wood south (Herefordshire), Perry Wood (Worcestershire) and Hampton Wood (Warwickshire) where it is seen in good numbers. It is also recorded on 2 evening hairstreak walks at Ryton Wood and Pagets Lane in Warwickshire (see Slater, 1990).

Management - Planting of new elms (Wych Elm favoured as it is the most disease resistant native species) occurs in some areas. At Upton Warren Nature Reserve in Worcestershire, Elms are coppiced at the first sign of Dutch Elm disease, which helps to stem the spread of the disease and ensures a succession of healthy suckers on which the butterfly can lay. A number of hybrid disease-resistant Elms Sapporo 'Autumn Gold' have been planted at various sites (including 6 in Warwickshire and 1 in Staffordshire) but, while it is known that larvae will feed on this variety in captivity, there is no evidence so far of eggs being laid under natural conditions. A colony present at junction 14 of the M6 which would have been destroyed by a proposed motorway widening project has been translocated to a new nearby site (Boardman & Joy, 1997).

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor on existing transects and collate results.	Ongoing	Local volunteers, FE
2. Continue to encourage planting of Wych Elm in suitable areas and the coppicing of diseased Elm..	Ongoing	County Councils and Local District Councils
3. Increase level of recording by either a) evening transect walks (see Slater, 1990) or b) encouraging larval searches in May.	By 2005	Local volunteers, land owners.

3.4 Medium priority species regionally important

3.4a Dingy Skipper - *Erynnis tages*

Distribution and Status - Local but widespread distribution in the region and currently considered to be undergoing major accelerating decline in all counties apart from Gloucestershire. Many colonies exist on post industrial habitats, old railway lines, reclaimed amenity sites or woodland meadows.

Gloucestershire - Widespread (>100 tetrads) but local. A lot of very strong colonies, no decline noted.

Herefordshire - Only recently recorded in two tetrads.

Shropshire - Currently recorded on 12 tetrads. Local and possibly declining. Key area is Oswestry uplands where it exists in abandoned quarries.

Staffordshire - In decline. Seventeen recent site records.

Warwickshire - Survey work has confirmed the presence of this species on 16 sites and its apparent absence on 8 other previously known sites. There are at least another 31 sites that need further survey work to accurately assess the current status of this species. Many of the confirmed losses are from woodlands and there are a number of post industrial habitats in the north of the county which should be considered vulnerable due to tree planting. Lost at Navigation Cutting south possibly through over-grazing and cattle trampling.

Worcestershire - Local and possibly declining (only around 5-10 colonies remaining). Most populations exist in relatively low numbers. A number of recent losses from woodland locations e.g. Monkwood and Wyre Forest east transect.

Threats - Absence of appropriate woodland management

- Development or improvement schemes such as house building and tree planting.
- Decline in habitat quality on unmanaged grassland sites due to natural succession to woodland.

Survey - Targeted searches of Warwickshire sites gave figures mentioned above. These searches are planned to continue into 97 and 98 (M. Slater, pers. comm).

Monitoring - Currently recorded on 8 transects in the region. Recently lost from at least six transects (possibly nine) including Wyre Forest east in 1992/93 (Worcestershire/Shropshire), Haugh Wood in 1990/91 (Herefordshire) and Ryton Wood in 1994 (Warwickshire), although it may still be present elsewhere within these large woodland systems. In Warwickshire it is recorded on 2 transects (Harbury and Ufton) and on 3 species spot checks (one walk only) at Navigation Cutting, Wolfhampcote and Malpass Quarry.

Management - Shropshire BC gives advice to Shropshire Wildlife Trust who actively manage at least 3 sites (Llanymynech Rocks, Llyncllys Common and Dolgoch Quarry) where this species is present although no specific management is targeted at this species.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor on transects and collate results.	Ongoing	Local volunteers
2. Increase the level of monitoring so that more sites are covered at least to the level of spot checks or full species transects/timed counts.	By 2005	Wildlife Trusts, local volunteers
3. Survey to a) assess current status and b) try to identify possible reasons for losses.	By 2005	EN, Local volunteers, County Councils
4. Seek opportunities to target landowners with advice on beneficial management.	Ongoing	EN, Wildlife Trusts, County Councils
5. Monitor the effect of tree planting schemes on this species.	By 2005	County Councils, local District Councils
6. Develop a better understanding of the ecological requirements of this species and the best management practices.	By 2010	EN, other grant awarding bodies

3.4b Green Hairstreak - *Callophrys rubi*

Distribution and Status - A generally scarce species which appears to be undergoing decline in most counties apart from Gloucestershire but which may be under-recorded. It is usually only present in low numbers although some sites continue to support good numbers. Can persist at very low population levels and caution needs to be exercised in interpreting long term trends.

Gloucestershire - Currently recorded on 81 tetrads. Widely distributed in the Cotswolds. Also occurs in the Forest of Dean.

Herefordshire - Only recently recorded on 2 tetrads and in decline

Shropshire - Only known to be present on 10-20 sites but likely to be under-recorded. Some very large populations on some moorland localities e.g. Long Mynd

Staffordshire - Only 13 recent site records but almost certainly under-recorded.

Warwickshire - Only recently recorded from 9 sites. Thought to be lost from 6 of its 29 historical sites although there are still a further 14 sites where its status is uncertain. It appears to be in decline at Sutton Park which is its best known and most extensive historical site. May have been lost from Navigation Cutting south possibly through over-grazing and cattle trampling, from Kineton C.A.D. when earth works and farming operations were carried out and from Flecknoe Embankment when all scrub was removed from the area where the small colony was located. Local species action plan written (Slater, 1996a).

Worcestershire - Currently recorded on 5 tetrads. Very local, concentrated in the west and possibly under recorded.

Threats - Vigorous scrub control on managed sites

- Decline in habitat quality on unmanaged sites due to natural succession to woodland.
- Problem of small isolated sites

Survey - Targeted searches of Warwickshire sites in 1996 found it to be absent from all but 7 sites. The Warwickshire branch plans to have more targeted searches for this species in 1997. Regularly reported in late July/early August from the Malverns, a considerably later date than at any other sites (D. Wood pers. comm.).

Monitoring - Currently recorded on 10 transects in the region including Prestbury Hill, and Stinchcombe Hill (Gloucestershire), Malvern Hills and Common Hill (Herefordshire), Harbury Spoilbank (Warwickshire) and Whixall Moss (Shropshire). Species spot checks (one walk only) also at Navigation Cutting, Wolfhampcote and Malpass Quarry (Warwickshire).

Management - At Harbury and Navigation in Warwickshire, removal of hawthorn (while selectively maintaining shelter) has allowed populations to increase. Small scallops (7-20m) cut into scrub have increased the numbers recorded on transects but care needs to be exercised in retaining key hawthorn bushes which are used territorially by perching males. The aim is to create a mosaic grassland with around 20% scrub cover for perching and shelter.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor on transects and collate results.	Ongoing	Site owners
2. Survey to a) assess current status and b) rate of loss.	By 2005	EN, Wildlife Trusts, Local Councils, local volunteers
3. Identify sites where management work may improve the habitat and provide feedback to site managers.	By 2005	Site owners, County Councils and Local District Councils
4. Support ecological research aimed at promoting measures that will assist the long-term conservation of the species.	By 2010	EN, other grant making bodies

3.4c Chalkhill Blue - *Lysandra coridon*

Distribution and Status - This species is restricted to Gloucestershire but is widely distributed in the Cotswolds. Although some populations are very large many are also small and numbers are generally much lower than they were in the late 1980s.

Threats - Undergrazing and overgrazing

- Scrub encroachment
- Agricultural improvement

Survey - None known

Monitoring - Currently recorded on 4 transects in Gloucestershire (Prestbury Hill, Rodborough and Stinchcombe A & B) with some sites such as Stinchcombe Hill recording large fluctuations in numbers.

Management - The Cotswolds Commons and Beechwoods NNR are managed by English Nature and are regularly grazed. Grazing has also been re-introduced to the Bill Smylie (Prestbury Hill) BC reserve.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor key sites such as Stinchcombe Hill by transects and collate results.	Ongoing	Local volunteers
2. Increase level of monitoring to a network so that any changes in abundance can be more easily identified.	By 2010	Local volunteers, EN, site owners, Wildlife Trust

3.4d White Admiral - *Ladoga camilla*

Distribution and Status - A species which is showing considerable regional variation with apparent declines in Gloucestershire and Warwickshire in recent years but range expansion elsewhere (e.g. Worcestershire and Shropshire). In general, it is a widely but locally distributed species within the region with strong populations in a number of places including Ryton Wood (Warwickshire), Trench Wood and Monkwood (Worcestershire). Generally recovered its pre-1960 status with a number of new colonisations at sites from which it has never previously been recorded.

Gloucestershire - Widely but locally distributed with most records being in the Forest of Dean. Around 5-10 sites in Severn Vale. Although populations do appear to fluctuate over the years it does appear to be possibly in decline at present. Apparently present in low numbers in the Cotswolds (possibly as a result of unauthorised introductions).

Herefordshire - Recorded on 12 tetrads with a particularly strong colony at Haugh Wood.

Shropshire - Two sites known prior to 1995 (Chorley Wood and Wyre Forest) with an additional breeding colony identified in 1996 (Dudmaston Estate). Occasional singletons recorded elsewhere.

Staffordshire - Recent records in the south of the county e.g. Kinver Edge and Highgate Common which suggest colonisation.

Warwickshire - Known to be present on 16 sites and apparently absent on 7 other previously known localities. Nine other sites yet to be visited to assess current status. It has recently colonised a number of sites including Hartshill Hayes (1990) and Bentley Wood (singletons seen in 95 and 96). Last recorded from Willenhall Wood in 1995 when the wood was cleaned up after a plane crash. Despite losses it appears to be expanding its range northwards. Local species action plan written (Slater, 1996b).

Worcestershire - Considerable expansion in range since the mid 1980s especially in the north of the county. Population levels especially at newly colonised sites still increasing.

Threats - Inappropriate woodland management leading to habitat deterioration and/or loss of larval foodplant (honeysuckle).

Survey - Two Shropshire sites surveyed in detail (Joy, 1993b, Joy, 1996a). Targeted searches of all known Warwickshire sites from 1994-96 (results given above) with further searches of potential woods being planned for 97/98 (M. Slater, pers comm).

Monitoring - Currently recorded on 17 transects in the region including the Wyre Forest (Worcestershire/Shropshire), Ryton Wood and Hampton Wood (both in Warwickshire), Haugh Wood (Herefordshire) and Lower Wood in Gloucestershire. Newly recorded at Wyre Forest west (1990), Chaddesley Wood (1992), Monkwood (1986), Shelfheld Coppice (1994), Hampton Wood (1995) and Uffmoor Wood (1996). No transects record this species in Shropshire outside the Wyre Forest, although a spot check route was established on one site as a result of survey work (Joy, 1993a).

Management - Trees with abundant honeysuckle should be retained on sites containing this species and considerable care should be taken when thinning mature trees. White Admirals have responded well to ride widening at Monkwood and Trench Wood (Worcestershire) and at Ryton Wood (Warwickshire) which has increased the amount of edge habitat and encouraged bramble blossom for nectaring. Two Shropshire sites are now actively managed for this species. One under a management agreement with English Nature and the other under guidance from BC. Work on both these sites involves the preservation of honeysuckle in potentially important breeding areas, glade creation and management, and ride widening.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor on transects and collate results.	Ongoing	Local volunteers
2. Increase the level of monitoring to cover more sites to at least the level of a spot check or a full species transect.	By 2005	Local volunteers, EN, NT
3. Continue to monitor changes in its distribution and status.	Ongoing	Local volunteers
4. Continue BC involvement in site management at key sites (e.g. Haugh Wood, Chorley Wood, Wyre Forest and Ryton Wood).	Ongoing	EN, FE, NT
5. Seek opportunities to target landowners with advice on beneficial management which might encourage them to maintain or improve the habitat.	Ongoing	Site owners, County Councils, Wildlife Trusts

3.4e Silver-washed Fritillary - *Argynnis paphia*

Distribution and Status - The region's commonest fritillary which has declined markedly in the east of the region but generally maintained its populations in the west. The Wyre Forest remains the stronghold in the region.

Gloucestershire - Widely recorded from woodland areas in the south/mid Cotswolds and Forest of Dean.

Herefordshire - Recently recorded from 30 tetrads.

Shropshire - Probably present on 5-10 sites in the county. Several more sites identified since 1993 survey.

Staffordshire - Occasional sightings.

Warwickshire - Extinct (1970-75). Unofficially released into the Wappenbury woodland complex in 1987 and 88 with a small colony resulting from this release existing in low numbers at nearby Ryton Wood since 1990. Local species action plan written (Slater, 1996c).

Worcestershire - Very local but good population in the Wyre Forest. Small numbers reported elsewhere most years including Monkwood, Forest of Feckenham and parts of the Malvern Hills.

Threats - Coniferisation of woodlands
- Neglect of forests.

Survey - Management work and transect records in the Wyre Forest (Lancaster, 1993, 1994, 1996a & b)), historical sites in Shropshire (Joy, 1994a & b). Targeted search of all recent and historical sites in Warwickshire from 1994-96 identified 3 possible sites though only 1 probable colony (M. Slater, pers comm; history and management in Slater, 1990-96) which stems from the original release (see above).

Monitoring - Currently recorded on 17 transects in the region including those in the Wyre Forest (Worcestershire/Shropshire), Ryton Wood (Warwickshire), Lineover Wood and Lower Wood (both in Gloucestershire) and Haugh Wood (Herefordshire)

Management - There is no doubt that a combination of regular felling and general woodland management work (e.g. thinning and maintaining rides) has maintained/improved the habitat for this species on a variety of sites including the Wyre Forest, Mortimer Forest (Herefordshire) and Llynclys Common (Shropshire). However, the work is rarely specifically targeted at this species.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor all transects which include this species and collate results.	Ongoing	FE, Local volunteers
2. Continue to monitor changes in population size and habitat and provide feedback to those responsible for habitat management.	Ongoing	Local volunteers, site managers and owners.
3. Survey to assess current status in counties where this is unknown (Worcestershire, Herefordshire).	By 2005	EN, FE, NT, County Councils, Wildlife Trusts
4. Provide landowners and site managers with information (such as the woodlands pack) to help them improve the habitat for this species.	Ongoing	Site owners, County Councils, Wildlife Trusts
5. Seek opportunities to extend suitable breeding areas within or adjacent to their existing habitat.	Ongoing	EN, FE
6. Support ecological research which may promote the long term conservation of the species.	By 2010	EN, other grant awarding bodies

3.4f Dark Green Fritillary - *Argynnis aglaja*

Distribution and Status - A scarce species with strongholds in the south and west of the region where it is mainly associated with limestone grassland. However, it does also occur on upland commons in Herefordshire and Shropshire where it breeds within bracken stands. There is now some evidence of a slight recovery with a number of new sightings in the past few years which include the Knapp and Papermill transect in Worcestershire (first sighting in 12 years of recording), Bredon Hill also in Worcestershire and Lineover Wood in Gloucestershire, although these may represent vagrant individuals rather than evidence of colonisation.

Gloucestershire - Currently recorded on 62 tetrads (while there are a number of larger sites the majority are single tetrad sites) and widely distributed in the Cotswolds. Major improvements over the past 2-3 years.

Herefordshire - Probably only present on <10 sites mainly in the north of the county. Presence at some sites masked by occurrence of High Brown Fritillary. Good numbers were recorded on Ewyas Harold Common in 1996. Survey work is needed to assess its current status on other sites.

Shropshire - Key remaining areas are the Oswestry Uplands and the Stretton Hills. The strong population in the Stretton Hills has been identified as a result of survey work carried out for English Nature (by J.Joy) in 1997. Some recent losses (e.g. Earl's Hill).

Staffordshire - Occasional sightings (e.g. singleton at Cannock Chase 1995) but unlikely to be resident.

Warwickshire - Extinct 1985 (possibly due to habitat destruction in the Ufton Hill farm area and habitat fragmentation and scrub invasion in the Harbury SSSI area).

Worcestershire - Recently only sporadic records from the Malvern Hills and Bredon Hill together with occasional vagrants elsewhere. Not recorded from the Wyre Forest since 1982. Two new site records for 1997 are Windmill Hill and Tunnel Hill Meadows (both Worcestershire Wildlife Trust nature reserves).

Threats - Increase in grazing pressure as a result of management change

- Increase in rabbit population
- Abandonment of sites

Survey - Of historical Shropshire sites (Joy, 1994a).

Monitoring - Currently recorded on 7 transects in the region including Prestbury Hill, Rodborough, Stinchcombe A and B (all in Gloucestershire).

Management - No specific work targeted at this species but it may have benefited from a) bracken management work which has been carried out to improve the habitat for other butterflies (e.g. at Llanymynech Golf Course and Llyncllys Hill on the Shropshire/Montgomeryshire border) and b) the grassier conditions which have resulted from management on a number of bracken covered sites (e.g. Bircher Common in Herefordshire).

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor on transects and collate results.	Ongoing	Local volunteers
2. Determine whether any recent research has identified any grassland management regimes which might be suitable for this species and advise landowners/relevant authorities accordingly.	By 2005	EN, ITE
3. Encourage research into the ecological requirements of the species especially in bracken stands.	By 2010	EN, other grant awarding bodies

3.4g Wall Brown - *Lasiommata megera*

Distribution and Status - A scarce butterfly throughout the region which still appears to be undergoing significant decline. There are no signs of a recovery and there is a growing list of sites from which this species has been lost. This species is known to have experienced several expansions and contractions since recording began. In the 1860s a series of cold wet summers caused a large decline while more recently there has been expansion in the late 1970s followed by dramatic declines in the mid 1980s and some recovery in the late 1980s. It is very difficult to assess whether the present alarming decline throughout much of England and Wales is part of this cycle or due to some undetermined and reversible habitat change.

Gloucestershire - Currently recorded on 79 tetrads. Previously recorded throughout the county but sharp decline over the past ten years. Stronghold now the north Cotswolds. Used to be a common roadside species.

Herefordshire - Recorded on 18 tetrads. Only singletons in the last 3 years.

Shropshire - Local species usually seen in ones or twos. Not enough data to comment about any changes in abundance.

Staffordshire - 21 recent site records but considered to be undergoing major decline.

Warwickshire - Currently recorded on 57 tetrads although absent from two thirds of the recording area. Remaining stronghold is band of colonies running from Southam in the south east to Tamworth in the north east. All evidence suggests that this species is declining on managed nature reserves as well as in the wider countryside. Declines are most severe in neglected post industrial habitats, neglected woodlands and intensively farmed areas.

Worcestershire - In decline since the mid 1980s has disappeared from several sites and is in low numbers elsewhere. Very few surviving colonies.

Threats - Reason for decline not clearly understood as numbers have fallen on both managed and unmanaged sites.

Survey - None known

Monitoring - Formerly recorded on 20 transects in the region. Strongest monitored colony is at Prestbury Hill (Gloucestershire) where the annual index was 63 in 1996 (compared with a maximum annual index of 3 on all other regional sites). The annual index at Windmill Hill in Worcestershire has declined from 200 in 1983 to just 1 in 1996. There is now an increasing list of transects from which this species has been lost including Ryton Wood 1991 (Warwickshire), Perry Wood 1990 (Worcestershire), Wyre Forest east 1990 (Worcestershire), Stinchcombe Hill 1994 (Gloucestershire) and Haugh Wood north and south (1994)

Management - At Navigation Cutting in Warwickshire, female wall browns have been found to lay their eggs on dry grass growing over old concrete conduit for cables. Although this area is now kept clear, it is too early to say whether this work will benefit the wall brown population. No specific management for this species known from elsewhere in the region although it is likely to benefit from general management work such as moderate scrub control.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor and collate results from transects	Ongoing	Local volunteers
2. Continue to monitor changes in its distribution and status.	Ongoing	Local volunteers, site owners
3. Survey former locations in all counties where current status of this species is not clear to determine the extent of the decline.	By 2005	EN, Wildlife Trusts
4 Support ecological research aimed at promoting measures that will assist the long-term conservation of this species if current declines continue.	By 2005	EN, other grant awarding bodies

3.4h Grayling - *Hipparchia semele*

Distribution and Status - A very localised species in the region with strongholds on old industrial land in Gloucestershire and Shropshire.

Gloucestershire - Currently recorded on 20 tetrads. Widely but sparsely distributed along the Cotswold edge with declines over the past ten years. Widespread in Forest of Dean on old industrial land.

Herefordshire - Only recent records are from the Malverns.

Shropshire - Between 10-20 colonies. Most frequently on post industrial workings such as lead mines but also on several former hillforts. May be under-recorded.

Staffordshire - Extinct some time this century (date unknown).

Warwickshire - Has never been recorded in the county

Worcestershire - Recorded on Malvern Hills but evidence of recent decline.

Threats - Reclamation of industrial land (mainly Gloucestershire and Shropshire)

- Declines in grazing
- Lack of management

Survey - Special survey of Forest of Dean (D. Lane pers comm. to R. Mabbett). Survey work on threatened sites in Shropshire (Poynton, 1993; Joy, 1996b).

Monitoring - Currently recorded on 2 transects in Gloucestershire which are Prestbury Hill and Stinchcombe A and Malvern Hills in Worcs, where it was recorded in 1996 after a gap of 8 years. Recently lost from two transects (Stinchcombe B in 1992 and Nagshead (Gloucestershire) in 1994).

Management - BC involvement at Lightmoor Tip (Gloucestershire) over planning application. BC volunteers have carried out scrub clearance work on one Shropshire site to prevent identified breeding areas from becoming overgrown. This species may also have benefit from general management regimes such as grazing and scrub clearance.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor on transects and collate results.	Ongoing	Local volunteers, site owners
2. Survey work to establish a) current status (giving priority to Gloucestershire and Shropshire sites and the Malvern Hills) and b) identify likely breeding areas.	By 2005	County Councils, EN, Wildlife Trusts, site owners
3. Encourage appropriate grazing regimes on managed sites.	By 2005	EN, BC
4. Provide feedback (from transects and survey work) to site managers so that suitable management recommendations can be made to maintain or improve the habitat.	By 2005	Site owners and managers, EN, County Councils

3.5 Low Priority Species

Mention is only made of species where there are specific comments to make.

3.5a Essex Skipper - *Thymelicus lineola*

Distribution and Status - A species which appears to have recently colonised the region and may be under recorded.

Gloucestershire - A few historic records then reported in 1996, rapid colonisation from south and recorded on 18 tetrads.

Herefordshire - No historic records.

Shropshire - No historic records

Staffordshire - No historic records

Warwickshire - First county record near Flecknoe 1992. Systematic search of each tetrad between Northants border and south Rugby in 1994 revealed it to be present in 7 tetrads (Warwickshire Butterfly and Transect Report, 1994). Similar searches again carried out in 1995 and 1996 have shown that it has continued to expand its range and is now recorded in 27 tetrads which include west and north Rugby (M. Slater, pers. comm.).

Worcestershire - Only one historical record from Arley c. 1900 although this may have been wrongly labelled.

Monitoring - Present on Prestbury Hill (Gloucestershire) but not recognised by transect recorders as it is very similar to the small skipper. Also present on Harbury and Knowle Hill transects in Warwickshire.

Management - None targeted at this species at present although it has been recorded on many roadside verges in south-east Gloucestershire

Actions and Targets

Action	BC's Targets	Possible Partners
1. Increase awareness of the possible presence of this species and provide information regarding identification.	Ongoing	Wildlife Trusts, local volunteers
2. Survey to assess current status.	Ongoing	Local volunteers
3. Inform County Councils of presence of species on road side verges and the management of them	By 2000	County Councils

3.5b Small Skipper - *Thymelicus sylvestris*

Distribution and Status - recorded on 37 transects in the region and usually widespread and common.

3.5c Large Skipper - *Ochlodes venata*

Distribution and Status - recorded on 32 transects in the region. In lower numbers at many transects in early 90s as a result of drought conditions but has now generally recovered.

3.5d Brimstone - *Gonepteryx rhamni*

Distribution and Status - A widespread and common species recorded throughout the region. Distribution generally reflects the distribution of the main larval foodplants - alder buckthorn and purging buckthorn.

Gloucestershire - widespread and common

Herefordshire - recorded on 27 tetrads.

Shropshire - probably still widespread and common but possibly in decline.

Staffordshire - recorded on 21 tetrads with a strong colony at Burnt Wood.

Warwickshire - widespread and common (although it appears to have declined in areas where large-scale hedgerow removal has occurred)

Worcestershire - widespread and common.

Monitoring - Currently recorded on 31 transects in the region

Management - Planting of buckthorns has been carried out on a variety of urban and rural sites to encourage this species to breed e.g. at Great Doward by the Herefordshire Nature Trust and can be successful as early as the first year. Buckthorns are under coppice rotation at Monkwood in Worcestershire which is probably the ideal and are pollarded at Ryton Wood in Warwickshire (as they are susceptible to rabbit grazing). Females show a marked preference for laying eggs on young buckthorn.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor on transects and collate results.	Ongoing	Local volunteers
2. Disseminate information on habitat management to landowners.	Ongoing	County Councils, Wildlife Trusts

3.5e Orange-tip - *Anthocharis cardamines*

Distribution and Status - Widespread and common in most counties.

Threats - Agricultural improvement
- Changes in grassland management practices

Survey - To estimate tetrad occupancy and to search for eggs and adults (Lamb & Slater, pers comm, briefly mentioned in Warwickshire Butterfly and transect report 1995). Study of habitat preferences at Mill Green park near Cannock (D. Wynne-Jones pers. comm. to M. Williams).

Monitoring - Currently recorded on 37 transects in the region.

Management - Many sites containing this species are not cut or grazed until mid-July.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor on transects and collate results.	Ongoing	Local volunteers
2. Continue to disseminate information on habitat management.	Ongoing	Local volunteers, County Councils

3.5f Purple Hairstreak - *Quercusia quercus*

Distribution and Status - A species which is commonly over looked but thought to be widely distributed throughout the region.

Gloucestershire - Common but under-recorded.

Herefordshire - Recorded on 11 tetrads but almost certainly under-recorded.

Shropshire - Present on most suitable sites

Staffordshire - Recorded on 11 tetrads, under-recorded.

Warwickshire - Present on most suitable sites

Worcestershire - Recorded on 25 tetrads, under-recorded.

Threats - Neglect of woodlands

- Removal of Oaks

Survey - Traditionally a grossly under-recorded species. When specialist evening surveys were carried out in Warwickshire (Mitchell, 1980s; Shirley, 1990s; Slater, 1993, all pers comms to M. Slater), it was found in almost every tetrad or 1km square.

Monitoring - Currently recorded on 17 transects. However, this transect data is generally unreliable as few adults are seen at ground level in most seasons. A more reliable method of assessing this species is by evening transects such as that started in Ryton Wood in Warwickshire (Slater, 1990) using similar criteria to daytime walks.

Management - In Warwickshire, hairstreak walks have suggested that increases in butterfly numbers (and ants) may possibly be linked to oak thinning and cutting the understorey. Numbers then start to decline as the understorey regrows.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Increase level of recording	By 2005	Local volunteers
2. Encourage evening visits to potential habitat	Ongoing	Local volunteers

3.5g Brown Argus - *Aricia agestis*

Distribution and Status - Always considered to be a scarce butterfly in the region outside of the Cotswolds which appears to undergo periods of decline followed by range expansion. It has spread substantially in some areas over the last 5-10 years.

Gloucestershire - Decline in the Cotswolds during the 1980s but has now recovered and is very strong. Widely distributed in the Cotswolds, local records in the Forest of Dean and very few from the Severn Vale.

Herefordshire - No records since 1985.

Shropshire - Present only in low numbers on several sites. All recent records are from the Oswestry Uplands (with the one exception being Prees Heath).

Staffordshire - Two known sites: Saltwells NR and a disused railway line at Consall Forge.

Warwickshire - Decline followed by partial recovery and now has been recorded on many new sites. Reason for change unclear but may be due to set aside or a change in the predominant larval foodplant (rock rose is only known to be utilised on one site with geranium species being utilised on others).

Worcestershire - Local distribution but recent colonisation of new sites some of which are on set aside. Strongly associated with herb-rich habitats in an early stage of succession.

Threats - Decline in habitat quality

- Temporary nature of recently colonised sites (such as set asides)
- Development

Survey - Barker (1994) confirmed the colonisation of new sites in Worcestershire and Warwickshire. Many of these sites were in early stages of succession and were considered to be susceptible to habitat change. Also few Warwickshire colonies were on protected sites such as nature reserves or SSSIs. Targeted surveys also in Warwickshire from 1993-96 to visit historical and other likely sites (Pain et al., pers comm to M. Slater) with results suggesting strong recolonisation of woodland sites.

Monitoring - Currently recorded on 16 transects in the region with many of these in the Cotswolds (e.g. Prestbury Hill, Stinchcombe A & B and Rodborough) and in Warwickshire (e.g. Hampton Wood, Harbury and Knowle Hill). Its recent appearance on a couple of transects in Worcestershire (Cleeve Prior, 1989 and Windmill Hill, 1992) provide further evidence that it may be increasing its range.

Management - No specific management projects for this species are known. Returned to Hampton and Ryton Woods in Warwickshire after rides were widened and the wood was opened up.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor on transects and collate results.	Ongoing	Local volunteers
2. Continue to monitor changes in its distribution and status within the region.	Ongoing	Local volunteers
3. Survey work to a) establish the current status of this species and b) identify the foodplants being utilised.	By 2010	EN, Wildlife Trusts
4. Seek opportunities to extend suitable breeding areas within or adjacent to their existing habitat.	Ongoing	Site owners, County Councils, Wildlife Trusts
5. Support ecological research aimed at the long term conservation of the species.	By 2010	EN, other grant awarding bodies

3.5h Common Blue - *Polyommatus icarus*

Distribution and Status - Widespread and locally common in all counties. Although it may be expanding or maintaining its range in some areas (as it colonises post-industrial sites) it may be declining in others.

Monitoring - Currently recorded on 37 transects in the region.

3.5i Holly Blue - *Celastrina argiolus*

Distribution and Status - A species whose numbers have historically shown great fluctuations from year to year. Although, low numbers have been recorded in the region since 1991 (with only two transects out of 28 producing an index into double figures in 1995), numbers substantially improved in 1996 suggesting recovery. Still undoubtedly under-recorded throughout the region.

Management - Areas around existing holly have been cleared at Ryton Wood in Warwickshire but it is too early to say whether it has been successful.

3.5j Marbled White - *Melanargia galathea*

Distribution and Status - A species which is currently consolidating its position on sites at the edge of its range as well as continuing to colonise new areas.

Gloucestershire - Widespread and common. Recorded on >200 tetrads in 95/96/97.

Herefordshire - Currently recorded on 21 tetrads

Shropshire - Several widespread singleton records.

Staffordshire - Only 3 recent site records. A strong colony exists at Saltwells Nature Reserve (although this is believed to be an introduction and there have also been records from nearby sites) and a 1996 record for Highgate Common.

Warwickshire - Recorded on 72 tetrads in 95/96 and likely to be found elsewhere. Possible northwards expansion.

Worcestershire - Mainly present in the south of the county but with some northward expansion in recent years, especially to sites in the Droitwich area. Some suggestion that it may be benefitting from set-aside but this requires further research.

Threats - Overgrazing

- Lack of management leading to scrub encroachment

Survey - None known

Monitoring - Currently recorded on 25 transects in the region. In 1996 annual indexes were particularly high at Windmill Hill (Worcestershire), Harbury and Ufton Fields (Warwickshire), and Prestbury Hill (Gloucestershire). The 1996 total at Prestbury Hill was an incredible 1555.

Management - Grassland management and scrub clearance to benefit this species at Great Doward (Herefordshire Nature Trust). This species has also increased at Harbury (Warwickshire) since a scrub/grassland mosaic was created along the transect route..

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor on transects and collate results.	Ongoing	Local volunteers
2. Continue to monitor changes in its distribution and status.	Ongoing	Local volunteers
3. Support research to investigate the possibility that this species is benefiting from set-aside.	By 2010	EN, FWAG

3.5k Small Heath - *Coenonympha pamphilus*

Distribution and Status - A species which has always been considered to be common and widespread but is now suffering declines at many sites. Populations are strongest in Gloucestershire but even here there is some evidence of decline (e.g. at Prestbury Hill and Stinchcombe Hill) and there are very few recent casual records from anywhere in the region. The major losses have been from woodland sites (outside of Gloucestershire) and this species is still maintaining its presence on limestone grasslands (and possibly in bracken/acid grassland habitats).

Gloucestershire - Widespread (on 219 tetrads) but evidence of decline

Herefordshire - Only recently recorded on 13 tetrads.

Shropshire - Present in low numbers on many sites but good numbers in some areas (e.g. Prees Heath, Long Mynd, Clee Hill/Catherton Common area. Probably under-recorded.

Staffordshire - County decline but appears to be maintaining presence on heathland.

Warwickshire - Currently recorded on 101 tetrads. Evidence of long term decline dating back to the 1970s. Considerable declines in the early 90's followed by small recovery in 1996. Became extinct at Ryton Wood in 1990 when the grasslands along the main rides remained uncut for 4 consecutive years.

Worcestershire - Declines on many monitored sites.

Threats - Increased shading or neglect of woodlands
- Changes in grassland management

Survey - None known

Monitoring - Currently recorded on 20 transects in the region which virtually all show a downward trend in numbers with some recovery over past two years. Recently lost from at least 10 (possibly 11) transects including Lake View Park in 1991 (Warwickshire), two Wyre Forest transects in 1992 (Shropshire/Worcestershire), Trench Wood in 1992 and Monkwood in 1994 (both in Worcestershire). The only exceptions to this downward trend are Gloucestershire sites such as Rodborough Common and Prestbury Hill where numbers have increased..

Management - No specific management targeted at this species at present although is likely to benefit from general management work such as scrub removal. The reasons behind many of the current losses are unknown as they have occurred on both managed and unmanaged sites.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Continue to monitor on transects and collate results.	Ongoing	Local volunteers
2. Continue to monitor changes in its distribution and status.	Ongoing	Local volunteers, ITE
3. Support ecological research aimed at promoting measures that will assist the long term conservation of the species if current declines continue.	By 2010	EN, other grant awarding bodies

3.6 High Priority Moths Nationally and Regionally Important

The following information has been extracted from Dr Paul Waring's draft of 'An Atlas of the Nationally Scarce and Threatened Macromoths of Great Britain' (Waring, in prep.).

3.6a Scarce Hook-tip - *Sabra harpagula*

Distribution and Status - This species has a very restricted distribution in Britain and appears to be confined to woodland the Wye Valley on the border of Monmouthshire and Gloucestershire. However, it is found regularly in the Wye Valley and the population appears to be stable. It may well be more widely distributed in Gloucestershire than current records suggest. (**RDB 3 - Rare**)

Threats - Extensive felling of Small-leaved Lime

Management - Ideally cutting small areas of lime in rotation

Actions and Targets

Action	BC's Targets	Possible Partners
1. Further survey of Wye valley woodlands to determine its current status.	By 2002	Local volunteers, land owners
2. Support ecological research on habitat preferences so that the likely impact of woodland management schemes can be assessed	By 2005	EN, FE
3. Continue to provide feedback to the land owners or managers of any sites where this species is found so that they can be maintained in the long term.	Ongoing	Wildlife Trusts, EN, County Councils

3.6b Barberry Carpet - *Pareulype berberata*

Distribution and Status - Only 3 wild breeding colonies of this species are known in Britain one of which is in Gloucestershire. However, as adults are occasionally reported light-trapped elsewhere there may well be other colonies yet to be found. **(RDB 1 - Endangered)**

Threats - Removal of *Berberis* spp. (the larval foodplant) largely because of the presence of Wheat-rust fungus (*Puccinia graminis*)

- General hedgerow removal and mechanised trimming
- Fire damage

Survey - 4 larvae seen at Gloucestershire site in 1995 (data from P.Waring) compared with three each on similar searches in 1988 and 1989 (Waring, 1991).

Management - A captive breeding programme and trials to establish new colonies are underway as part of an English Nature recovery programme. The Gloucestershire colony is restricted to a fraction of the available *Berberis* and a programme to rear and translocate stock to other parts of the site should be implemented.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Survey to try to locate any undiscovered colonies	By 2002	Local volunteers, land owners
2. Continue to provide feedback to the land owners or managers of any sites where this species is found so that they can be maintained in the long term.	Ongoing	Wildlife Trusts, EN, County Councils

3.6c Pauper Pug - *Eupithecia egenaria*

Distribution and Status - Only known to still exist in five small areas of the country. One of these is the Wye valley in Gloucestershire and Monmouthshire where it is well established. (RDB 3 - Rare)

Threats - Diseases of lime trees, or tree felling as larvae feed on lime trees (*Tilia* species).

Management - Mature stands of flowering Lime trees need to be maintained in all areas where this very local moth has been recorded with new generations of trees replacing older ones. Recent thinnings of various stands of limes in the Wye Valley have been a cause for concern but the moth has survived them.

Action and Targets

Action	BC's Targets	Possible Partners
1. Ensure that the Wye Valley population continues to be visited.	Ongoing	Local volunteers, EN, site owners.
2. Survey to assess current status elsewhere. Mature avenues of limes should be searched as well as those in ancient woodlands	By 2005	EN, other grant awarding bodies, local volunteers.
3. Provide feedback to landowners and site managers wherever this species is found and help them maintain the habitat for this species.	By 2010	EN, County Councils, site owners, site managers,

3.6d Northern Footman - *Eilema sericea*

Distribution and Status - This moth is endemic to Britain, though whether it is a separate species or a special race of *E. complana* has long been debated. Only known locality for this species is Whixall Moss (Shropshire) although there are also several singleton records elsewhere in Shropshire. **(RDB 3 - Rare)**

Threats - Reclamation and the drying out of sites where it may still exist
- Possibility of Whixall Moss becoming too wet.

Survey - Craig Yates and Ian Wallace (Liverpool Museum) both regularly visit Whixall Moss to look for this species.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Survey to assess current status on Whixall Moss and other nearby sites.	By 2002	Local volunteers, EN.
2. Support ecological research aimed at measures that may assist the long term conservation of the species	By 2005	EN

3.6e Orange Upperwing - *Jodia croceago*

Distribution and Status - No colonies currently known although there are post-1980 reports of this moth from 6 counties which represent the corners of the historical range and include Shropshire where a record is mentioned by Riley (1991) but is unconfirmed. **(RDB 1 - Endangered)**

Threats - Lack of extensive oak coppice may be a major threat as larvae feed on Oak *Quercus* spp. Decline in Britain may be part of more widespread decline in Europe for which the causes are unknown.

Actions and Targets

Action	BC's Targets	Possible Partners
1. Increase awareness among recorders about the potential presence of this species which may yet still be resident in Britain	Ongoing	Local volunteers, invertebrate survey teams
2. Encourage moth recorders to visit suitable habitats at appropriate times of year (adults fly September to April)	By 2002	Local volunteers

3.6f White-spotted Pinion - *Cosmia diffinis*

Distribution and Status - Until the 1970s this species was widespread and well represented in central and southern England and parts of Wales. There are now only scarce reports of this species sparsely scattered throughout its former range with no recent records from this region. (**Notable A**)

Threats - Dutch Elm disease (as English Elm and Wych Elm are the larval foodplant)

Survey - Moth was widespread in Warwickshire in 1975 but by 1977 Elms were dying on a large scale and the moth was no longer found (D.Brown pers. comm. to P.Waring).

Actions & Targets

Action	BC's Targets	Possible Partners
1. Carry out survey work to determine if this species is present giving priority to historical sites.	By 2002	Local volunteers
2. Protect and conserve stands of English Elm and Wych Elm on any sites where it is found	Where applicable	Land owners, site managers Wildlife Trusts, County Councils

3.7 Medium Priority Moths Regionally Important

The table below lists all medium priority moths and indicates the counties where they are still known to occur.

Key to Counties

- 1 Gloucestershire
- 2 Herefordshire
- 3 Shropshire
- 4 Staffordshire
- 5 Warwickshire
- 6 Worcestershire

Common Name	Counties where species are known to occur
Cistus Forester	1, 4
Festoon	6
Hornet Moth	6
Currant Clearwing	2, 4, 6
White-barred Clearing	1, 2, 4, 6
Yellow-legged Clearwing	6
Orange-tailed Clearwing	2, 6
Red-belted Clearwing	6
Red-tipped Clearwing	5
Large Red-belted Clearwing	3, 5, 6
Six-belted Clearwing	1, 4, 5, 6
Small Eggar	1
Satin Lutestring	1, 2, 3, 6
Light Orange Underwing	2, 4, 5, 6
Small Grass Emerald	6
Dingy Mocha	3
Mocha	1, 2, 3, 6
Lace Border	1
Rosy wave	3
Purple-bordered Gold	3
Dotted Border Wave	6
Chalk Carpet	1, 5
Ruddy Carpet	1, 5, 6
Devon carpet	1
Argent and Sable	1, 2, 3, 4, 5, 6
Cloaked Carpet	1, 2, 5, 6
Barred Carpet	4
Lead-coloured Pug	1, 6
Marbled Pug	1, 2
Pinion-spotted Pug	1, 5, 6

Species	Counties where species known to occur
Valerian Pug	1, 2, 4
Bleached Pug	1, 2
Campanula Pug	2, 5, 6
Thyme Pug	1, 4
Bilberry Pug	3, 4, 6
Broom-tip	1, 2, 3, 4, 6
Blomer's Rivulet	1, 2, 3, 4, 6
Drab Looper	1, 2, 3, 6
Waved Carpet	1, 2
Barred Tooth-striped	6?
Little Thorn	1, 2
Bordered Grey	3
Great Oak Beauty	1, 3, 5, 6
Grass Wave	3, 4, 5, 6
Narrow-bordered Bee Hawk	3
Broad-bordered Bee Hawk	3
Dew Moth	1
Orange Footman	1
Square-spot Dart	2, 5, 6
Light Feathered Rustic	1, 4, 5
White-marked	1, 2, 6
Silvery Arches	2, 3, 4, 6
Silver Cloud	2, 5, 6
Wormwood	4, 6
Red Sword-grass	1
Sword-grass	2*, 4
Dotted Chestnut	1, 2
Angle-striped Sallow	2, 3, 4, 5, 6
Mere Wainscot	5, 6
Silky Wainscot	1, 6
Rosy Marbled	6
Cream-bordered Green Pea	5
Waved Black	2, 3, 4, 5, 6
Common Fan-foot	1, 6

* only as migrant

4. Key Areas and Key Sites for Butterflies and Moths

This section gives details of the key butterfly and moth areas in the region which are separated on a county basis.

Key Areas are defined as those containing the highest concentrations of high and medium priority species and are listed in Section 4.1. The approximate **locations** of these areas are shown on **Map 1** (on the next page).

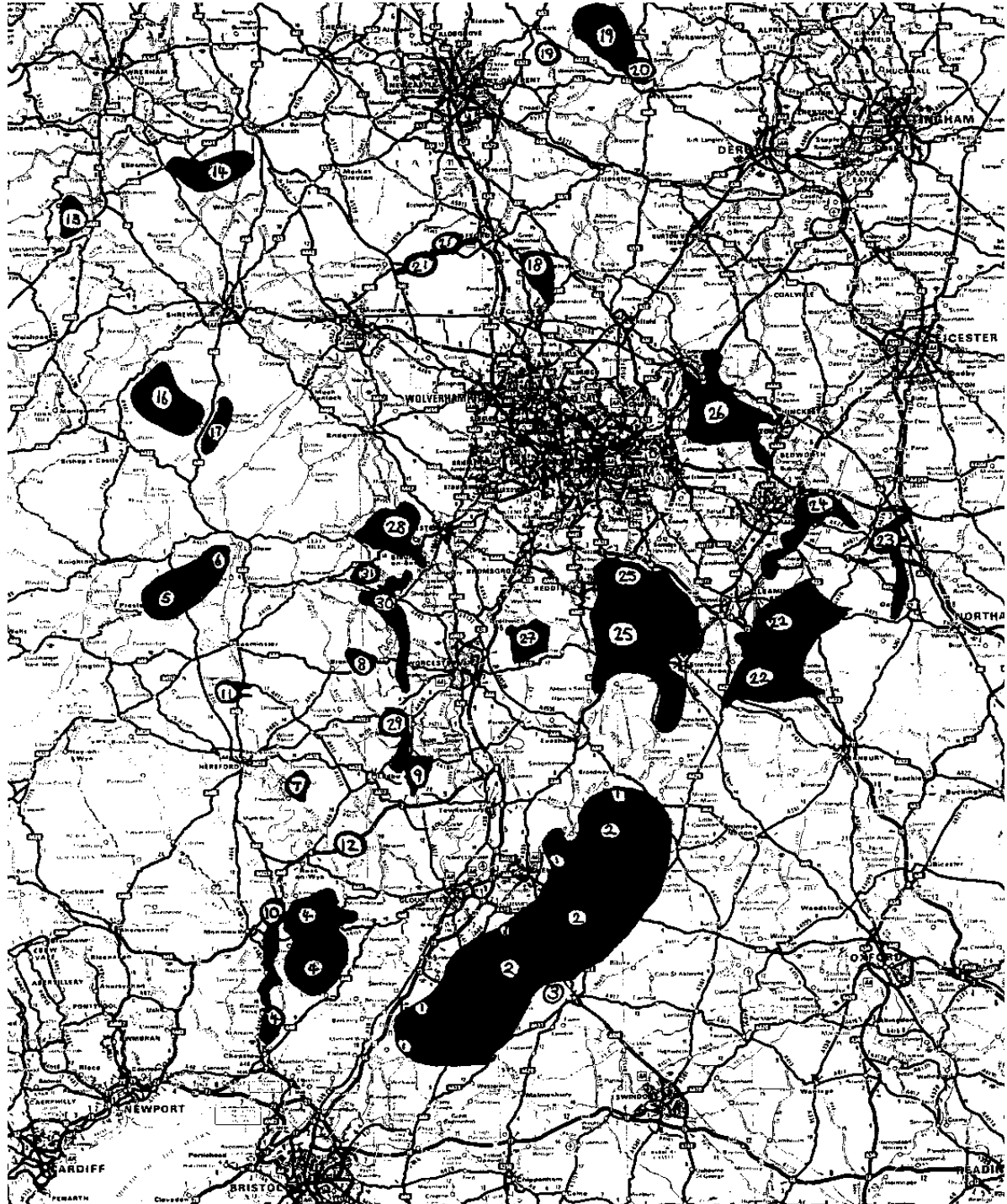
Key Sites which do not fall in key areas are listed in section 4.2 and contain a variable number of high and medium priority species.

To be consistent with the Natural Area framework recently developed by English Nature and the Countryside Commission, the **Natural Area** is identified for each key area and site. **Listings of Key Areas, Key Sites and Priority Butterfly Species by Natural Area are given in Appendix 5** together with English Nature's Natural Area map for England.

Detailed maps showing the precise location of **all Key Areas and Key Sites** listed in this plan are given in Appendix 6 (Page 125 onwards)

While all Key Areas and Key Sites have their butterfly species listed, notable moth species are only listed for key areas and sites where they are known. Notes on any other moth species of particular interest are also included with their national status in brackets.

Map 1: Locations of Key Butterfly/Moth Areas within the West Midlands and Gloucestershire.



4.1 Key Areas

4.1a Gloucestershire

1. Cotswold Edge
2. Cotswold Plateau and Valleys
3. Cirencester Park Woodlands,
4. Forest of Dean and Wye Valley Woodlands.

The Gloucestershire Wildlife Trust has a wildlife key site scheme, under which many sites have been identified and details provided to landowners and councils to reduce the risk of habitat loss. The Trust criteria for butterfly key sites are based on BC criteria for species priority. Well over 200 sites qualify with (probable colonies of) priority species recorded within the past 5 years, and many more sites have older records within the past 20 years. In many cases, the sites also qualify for other reasons (e.g. habitat). The Gloucestershire areas and sites listed in 4.1a and 4.2a include the majority of the butterfly key sites in the county. It is not practical to list all of the sites in this document.

1. Cotswold Edge - A collection of areas with unimproved limestone grassland. Some of these are commons with open access, and all have some form of public access. Two large areas (and one other) support Grayling colonies. Most support colonies of several uncommon species.

Natural Area - Cotswolds

Butterfly species breeding	Regional Priority
Grizzled Skipper	High
Small Blue	High
Duke of Burgundy	High
Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
Chalkhill Blue	Medium
Silver-washed fritillary	Medium
Dark Green Fritillary	Medium
Wall Brown	Medium
Grayling	Medium

Notable moth species recorded since 1990	National Status
Cistus Forester	Nb
Six-belted Clearwing	Nb
Lace Border	Na
Chalk Carpet	Nb
Pinion-spotted Pug	Nb

Bleached Pug	Nb
Thyme Pug	Nb
Drab Looper	Nb

One other moth species of interest in this area is the Pimpinel Pug *Eupithecia pimpinellata* (local).

2. Cotswold Plateau & Valleys - Many areas of unimproved grassland (including some commons) of varying sizes, some very small. Also many areas of woodland, of which very few now support Pearl-bordered Fritillary. The Large Blue reintroduction is within this area, and the Adonis Blue has also occurred here in the past two years (unofficial introduction?). Many colonies of uncommon species.

Natural Area - Cotswolds

Butterfly species breeding	Regional Priority
Pearl-bordered Fritillary	High
Marsh Fritillary	High
Grizzled Skipper	High
Large Blue	High
Small Blue	High
Duke of Burgundy	High
Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
Chalkhill Blue	Medium
Silver-washed fritillary	Medium
Dark Green Fritillary	Medium
Wall Brown	Medium

Notable moth species recorded since 1990	National Status
Small Eggar	Nb
Ruddy Carpet	Nb
Barberry Carpet	RDB1
Marbled Pug	Nb
Valerian Pug	Nb
Blomer's Rivulet	Nb
Drab Looper	Nb
Great Oak Beauty	Nb
Dew Moth	Na
Light Feathered Rustic	Nb
White-marked	Nb
Dotted Chestnut	Nb

One other moth species of interest is the Red-necked Footman *Atolmis rubricollis* (local).

3. Cirencester Park Woodlands: Overley, Oakley & Hailey Woods - A large area of actively managed private woodland, supporting Gloucestershire's only remaining extensive colony of Pearl-bordered Fritillary.

Natural Area - Cotswolds

Butterfly species breeding	Regional Priority
Pearl-bordered Fritillary	High
Duke of Burgundy	High
Grizzled Skipper	High
Dingy Skipper	Medium
White-letter Hairstreak	Medium
Silver-washed fritillary	Medium

4. Forest of Dean and Wye Valley Woodlands - Very large areas of forestry, with some small areas of heathland. Numerous locations for Small Pearl-bordered Fritillary. White Admiral is present, but not at all common. Some good locations for Wood White. Several Grayling colonies. Very heavily sheep-grazed in places, butterflies are not as common as one would expect (similar to the New Forest in this respect). Appears to have lost Pearl-bordered Fritillary in recent years.

Natural Area - Dean Plateau and Wye Valley

Butterfly species breeding	Regional Priority
Grizzled Skipper	High
Wood White	High
Small Pearl-bordered Fritillary	High
Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
White Admiral	Medium
Silver-washed fritillary	Medium
Grayling	Medium

Notable moths recorded since 1990	National Status
White-barred Clearwing	Nb
Six-belted Clearwing	Nb
Scarce Hook-tip	RDB3
Satin Lutestring	Nb
Mocha	Nb
Ruddy Carpet	Nb
Devon Carpet	Nb
Argent and Sable	Nb
Cloaked Carpet	Nb
Lead-coloured Pug	Nb

Pauper Pug	RDB3
Bleached Pug	Nb
Broom-tip	Nb
Blomer's Rivulet	Nb
Waved carpet	Nb
Drab Looper	Nb
Little Thorn	Nb
Great Oak Beauty	Nb
Orange Footman	Nb
Light Feathered Rustic	Nb
White-marked	Nb
Red Sword-grass	Nb
Dotted Chestnut	Nb
Common Fan-foot	Na

Other moths recorded in this area include Forester *Adscita statices* (local), Clouded Buff *Diacrisia sannio* (local), Alder Kitten *Furcula bicuspis* (local) and Red-necked Footman *Atolmis rubricollis* (local).

4.1b Herefordshire

5. North Herefordshire Woodlands and Commons
6. Mortimer Forest Woodlands
7. Haugh Wood Complex
8. Bromyard and mid Herefordshire Commons
9. South Malverns, Eastnor Park
10. Doward and Coppet
11. Queen's Wood (Dinmore)
12. Queen's Wood (Dymock)

5. North Herefordshire Woodlands and Commons - This area contains a number of important sites such as Wigmore Rolls, Wapley Hill, Brampton Bryan, Bircher Common, Byton Common etc. While a number of these are under the control of Forest Enterprise (Wigmore Rolls, Wapley Hill etc) and the National Trust manages Bircher Common, others are privately owned and not well protected or managed.

Natural Area - Clun and North West Herefordshire Hills

Butterfly species breeding	Regional Priority
Pearl-bordered Fritillary	High
High Brown Fritillary	High
Wood White	High
Small Pearl-bordered Fritillary	High
Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
Silver-washed fritillary	Medium
Dark Green Fritillary	Medium
Wall Brown	Medium
Grayling	Medium

Notable moths	National Status
Satin Lutestring	Nb
Blomer's Rivulet	Nb
Drab Looper	Nb
White-marked	Nb

One other moth species recorded at Brampton Bryan is the Anomalous *Stilbia anomala* (local).

6. Mortimer Forest Woodlands - a large area of FE managed woodland immediately to the south and west of Ludlow on the Herefordshire/Shropshire border. Large areas have been coniferised and lost much of their butterfly interest but some important species still hold on in pockets of suitable habitat. Butterfly species list included in North Herefordshire list. Moths species recorded here include Silvery Arches (Nb) and Wood Tiger *Parasemia plantaginis* (local).

Natural Area - Clun and North West Herefordshire Hills

7. Haugh Wood Complex - a complex of woodlands to the east of Hereford under the management of Forest Enterprise, the Hereford Nature Trust and private owners. The area also includes Broadmoor Common which is managed by the Hereford & Worcester Countryside Service.

Natural Area - Dean Plateau and Wye Valley

Butterfly species breeding	Regional Priority
Pearl-bordered Fritillary	High
Grizzled Skipper	High
Wood White	High
Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
White Admiral	Medium
Silver-washed fritillary	Medium
Wall Brown	Medium

Notable moths	National Status
Argent and Sable	Nb
Bleached Pug	Nb
Campanula Pug	Na
Broom-tip	Nb
Drab Looper	Nb
White-marked	Nb
Silver Cloud	Nb/local
Dotted Chesnut	Nb

Other moths recorded in this area include Lunar Hornet *Sesia bembeciformis* (common) and a micromoth *Phylloronycter distentella*.

8. Bromyard and mid Herefordshire Commons - a series of commons in the Bromyard area, the majority of which have lost their Lepidoptera interest. Bringsty remains of considerable importance and holds a number of priority species. This area also includes the Brockhampton Woodlands which are managed by the National Trust.

Natural Area - Central Herefordshire

Butterfly species breeding	Regional Priority
High Brown Fritillary	High
Grizzled Skipper	High
Small Pearl-bordered Fritillary	High
Dark Green Fritillary	Medium

Notable moths	National Status
Blomer's Rivulet	Nb
Silver Cloud	Nb/local

9. South Malverns, Eastnor Park - (included in Worcestershire Malvern Hills, see below).

Natural Area - Malvern Hills and Teme Valley

Notable moths *	National Status
Six-belted Clearwing	Nb
Light Orange Underwing	Nb
Mocha	Nb
Campanula Pug	Na
Broom-tip	Nb
Drab Looper	Nb
Square Spot Dart	Nb
White-marked	Nb
Silver Cloud	Nb/local
Dotted Chesnut	Nb
Waved Black	Nb

* some recorded on the Malverns and some at nearby Ledbury.

10. Doward and Coppet Hill Area - an area of rich habitat diversity including woodland, limestone grassland, acid grassland and mixed scrub. Doward is partly covered by SSSI and there have been recent attempts to designate Coppet Hill as a local nature reserve. Attempts have recently been made to draw up and implement management plans for this area but this has proved to be difficult as it is an area with complex ownership.

Natural Area - Dean Plateau and Wye Valley

Butterfly species breeding	Regional Priority
Pearl-bordered Fritillary	High
Grizzled Skipper	High
Wood White	High
Small Pearl-bordered Fritillary	High
Green Hairstreak	Medium
White-letter Hairstreak	Medium
White Admiral	Medium
Silver-washed Fritillary	Medium
Wall Brown	Medium

Notable moths	National Status
Orange-tailed Clearwing	Nb

Mocha	Nb
Drab Looper	Nb
Waved Carpet	Nb
Little Thorn	Nb

The Coronet *Craniophora ligustri* (local?common) has also been recorded in this area.

11. Queen's Wood (Dinmore) - An important area for butterflies and moths north of Hereford. It includes Wellington Wood which is a country park managed by the Hereford and Worcester Countryside Service.

Natural Area - Central Herefordshire

Butterfly species breeding	Regional Priority
White Admiral	Medium
Silver-washed Fritillary	Medium

Notable moths	National Status
Light Orange Underwing	Nb
Drab Looper	Nb
Angle-striped Sallow	Nb

The micromoth *Phylloronycter distentella* has also been recorded in this area.

12. Queen's Wood (Dymock) - an important woodland area which is an outlier from the Forest of Dean and contains a number of important butterfly and moth species. A large proportion of this area is under the control of Forest Enterprise.

Natural Area - Dean Plateau and Wye Valley

Butterfly species breeding	Regional Priority
Pearl-bordered Fritillary	High
Wood White	High
White Admiral	Medium
Silver-washed Fritillary	Medium

Notable moths	National Status
White-barred Clearwing	Nb
Argent and Sable	Nb
Bleached Pug	Nb
Broom-tip	Nb
Drab Looper	Nb
Little Thorn	Nb
Silver Cloud	Nb/local

4.1c Shropshire

13. Oswestry Uplands
14. North Shropshire Meres and Mosses
15. Shropshire Wyre Forest
16. Stiperstones/Long Mynd
17. Stretton Hills

One other area to be considered for inclusion is **Telford's Green Network**. This network contains a number of pitmound sites which are known to support Green Hairstreak and Dingy Skipper colonies (identified by 1997 survey work) and may well also support other significant butterfly or moth species.

13. Oswestry Uplands - An area of calcareous grasslands and uplands with associated habitats. There are seven nature reserves managed by the Shropshire Wildlife Trust as well as other areas managed for their wildlife interest (e.g. golf course land). Further survey work needs to be carried out on abandoned industrial workings (mainly former quarries) in the area to determine their current butterfly interest.

Natural Area - Oswestry Uplands

Butterfly species breeding	Regional Priority
Pearl-bordered Fritillary	High
Grizzled Skipper	High
Small Pearl-bordered Fritillary	High
Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
Silver-washed fritillary	Medium
Dark Green Fritillary	Medium
Wall Brown	Medium
Grayling	Medium

14. North Shropshire Meres and Mosses - Part of the Mosses and Meres Natural Area (which continues into Cheshire and Staffordshire) with wetland habitats illustrating the full range of natural succession from open water through swamp and carr to mire formation. Many of the SSSIs in this area are being designated as the Midlands Meres and Mosses RAMSAR site (a wetland of international importance) with Fenn's and Whixall Mosses proposed as a Special Area of Conservation (SAC) to reflect its importance in a European context.

Natural Area - Mosses and Meres

Butterfly species breeding	Regional Priority
Small Pearl-bordered Fritillary	High
Large Heath	High
Dingy Skipper	Medium

Green Hairstreak	Medium
White-letter Hairstreak	Medium

Notable Moths	National Status
Northern Footman	RDB2
Large Red-belted Clearwing	Nb
Dingy Mocha	RDB3
Mocha	Nb
Rosy Wave	Nb
Purple-bordered Gold	Nb
Bordered Grey	Na
Grass Wave	Nb
Narrow-bordered Bee Hawk	Na
Broad-bordered Bee Hawk	Nb
Angle-striped Sallow	Nb
Waved Black	Nb

All the above are recent (since 1990) moth records from Whixall Moss. Additional Whixall records of interest include Forester *Adscita statices* (local), Birch Mocha *Cyclophora pendularia* (local), Ruddy Highflyer *Hydriomena ruberata* (local), Grey Scalloped Bar *Dyscia fagaria* (local), Alder Kitten *Furcula bicuspis* (local), Four-dotted Footman *Cybosia mesomella* (local), Wood Tiger *Parasemia plantaginis* (local), Triple-spotted Clay *Xestia ditrapezium* (local), Light Knot Grass *Acrionicta menyanthidis* (local) and Double Kidney *Ipimorpha retusa* (local).

There may yet be a number of other sites for regionally important butterfly and moth species in this area as only a proportion of the sites have been surveyed in any detail. For example, one nearby site has recently been found to support Northern Footman (RDB2), Argent and Sable (Nb), Purple Bordered Gold (Nb) as well as Forester *Adscita statices* (local), Small Scallop *Idaea emarginata* (local), Marsh Pug *Eupithecia pygmaeata* (local) and is now the only known site for Clouded Buff *Diacrisia sannio* (local) in the county.

15. **Shropshire Wyre Forest** (included with Worcestershire Wyre Forest, see below).

Natural Area - Midlands Plateau

16. **Stiperstones/Long Mynd** - A large portion of land on the Stiperstones is managed by English Nature as a NNR and is designated as SSSI, while significant areas on the Long Mynd are owned by the National Trust. There are several Small Pearl-bordered Fritillary colonies in this area as well as a significant number of abandoned lead mine workings supporting Dingy Skipper, Green Hairstreak and Grayling colonies as well as some interesting moths. Dark Green Fritillary have recently been recorded on the Long Mynd (1997) and Silver-washed Fritillary are present on one site managed by Forest Enterprise.

Natural Area - Shropshire Hills

Butterfly species breeding	Regional Priority
Small Pearl-bordered Fritillary	High
Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
Silver-washed Fritillary	Medium
Dark Green Fritillary	Medium
Wall Brown	Medium
Grayling	Medium

Notable Moths	National Status
Broom-tip	Nb
Pale Pinion	Nb

Other moths recorded in this area include Forester *Adscita statures* (local), Ruddy Highflyer *Hydriomena ruberata* (local), Scarce Silver Y *Syngrapha interrogationis* (local), Beautiful Snout *Hypena crassalis* (local) and a micro-moth on cowberry *Olethreutes mygindiana* (David Poynton, pers. comm.).

17. Stretton Hills - This area includes Caer Caradoc, The Lawley, Hope Bowdler, Gaer Stone and Ragleth Hill. It has only been identified as significant area for butterflies in 1997 as a result of a survey carried out (by J.Joy) for English Nature. As this survey found Dark Green Fritillary to be present in virtually every valley searched, this area must now be regarded as highly significant for this species in the region. Only one tiny part of this area is an SSSI (Comley Quarry) with most of the land consisting of bracken covered slopes which are heavily sheep-grazed. Further survey work in this area may well locate additional significant species such as Small Pearl-bordered Fritillary.

Natural Area - Shropshire Hills

Butterfly species breeding	Regional Priority
Green Hairstreak	Medium
White-letter Hairstreak*	Medium
Silver-washed Fritillary	Medium
Dark Green Fritillary	Medium

* Singleton record only but plenty of Elm around.

4.1d Staffordshire

18. Cannock Chase
19. Staffordshire Moorlands
20. Manifold valley/Dovedale
21. Gnosall Railway Line

18. Cannock Chase - the largest and most important area of heathland remaining in Staffordshire. Most important areas for Lepidoptera are around Brockton, the Oldacre Valley and Sherbrook Valley. A large proportion of this area is an SSSI.

Natural Area - Midlands Plateau

Butterfly species breeding	Regional Priority
Small Pearl-bordered Fritillary	High
Dingy Skipper	Medium
Green Hairstreak	Medium

Notable Moths	National Status
Argent and Sable	Nb
Grass Wave	Nb
Silvery Arches	Nb
Angle-striped Sallow	Nb

Other moths recorded here include Golden-rod Brindle *Lithomoia solidaginis* (local), Clouded Buff *Diacrisia sannio* (local), Beautiful Brocade *Lacanobia contigua* (local) and Heath Rustic *Xestia agathina* (local).

19. Staffordshire Moorlands - This area contains a number of important sites including an RSPB reserve (Coombes Valley), a large Staffordshire Wildlife Trust reserve (300 acres) on the Leek Moors (Black Brook) and other sites along the Churnet Valley. A good proportion of the area is SSSI and the National Trust manages some of the other land within this area. There is a shortage of recent records for this area apart from Coombes Valley and further survey is required. It may still contain colonies of High Brown and Small Pearl-bordered Fritillaries which have been recorded in the recent past.

Natural Area - Potteries and Churnet Valley

Butterfly species breeding	Regional Priority
High Brown Fritillary?	High
Grizzled Skipper	High
Small Pearl-bordered Fritillary?	High
Dingy Skipper	Medium
Green Hairstreak	Medium
Wall Brown	Medium

Notable Moths	National Status
Bilberry Pug	Nb

Other moth species of note recorded are Beautiful Snout *Hyperia crassalis* (local), Glaucous Shears *Papestra biren* (local), Golden-rod Brindle *Lithomoia solidaginis* (local), Light Knot Grass *Acronicta menyanthidis* (local) and Brindled Ochre *Dasypolia templi* (local).

20. Manifold Valley/Dovedale - part of the Derbyshire Dales lying within Staffordshire. Best known locality is Castern Wood Nature Reserve managed by the Staffordshire Wildlife Trust. Further survey work is planned to identify further key sites within area. Current status of Small Blue requires confirmation.

Natural Area - White Peak

Butterfly species breeding	Regional Priority
Grizzled Skipper	High
Northern Brown Argus	High
Small Blue?	High
Dingy Skipper	Medium

Notable Moths	National Status
Cistus Forester	Nb
Barred Carpet	Na
Thyme Pug	Nb
Light Feathered Rustic*	Nb

Other moth species of note recorded in this area include Northern Rustic *Standfussiana lucerneae* (local), and Brindled Ochre *Dasypolia templi* (local).

* this moth species is also included in a list of species trapped at Calton (a village just to the west of this area) which shows a remarkable mix of moorland and limestone species including Autumn Green Carpet *Chloroclysta miata* (local), Red Carpet *Xanthorhoe munitata* (common) and Thyme Pug *Eupithecia distinctaria* (Nb) (R. Warren, pers. Comm.).

21. Gnosall Railway Line Area - a disused railway line with associated limestone flora extending westwards from the village of Gnosall. A local leisure group co-ordinates management in association with the site owners (Staffordshire County Council). Limestone flora possibly established as a result of limestone chippings being used to establish the footpath. While it initially supported micro-Lepidoptera associated with a calcareous habitat, these have now declined. The Grizzled Skipper also appears to be in decline at this site with only 1 or 2 sightings in 1996.

Natural Area - Mosses and Meres

Butterfly species breeding	Regional Priority
Dingy Skipper	Medium
Grizzled Skipper	Medium
Green Hairstreak	Medium
Wall Brown	Medium

One moth species of particular interest is the Blackneck *Lygephila pastinum* (local) which has only recently appeared in Staffordshire.

4.5 Warwickshire

- 22. Southam Lias Grassland and Quarries
- 23. Great Central Disused Railway and Spoilbanks
- 24. Princethorpe Woodlands
- 25. South Western Woodlands and Associated Grasslands
- 26. North Warwickshire Post Industrial Habitats and Surrounding Grasslands and Woods

22. Southam Lias Grassland and Quarries - The largest extent of calcareous grasslands in Warks. The majority of important sites in this area are SSSIs with three of them being Warwickshire Wildlife Trust reserves. The area contains all of the Small Blue sites in the county as well as a number of Dingy Skipper, Grizzled Skipper and Green Hairstreak colonies.

Natural Area - Midland Clay Pastures

Butterfly species breeding	Regional Priority
Grizzled Skipper	High
Small Blue	High
Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
White Admiral	Medium
Wall Brown	Medium

Notable Moths	National Status
Six Belted Clearwing	Nb
Light Orange Underwing	Nb
Chalk Carpet	Nb
Light Feathered Rustic	Nb
Silky Wainscot	Nb

Another moth species recorded here is the Ruddy Highflyer *Hydriomena ruberata* (local).

23. Great Central Disused Railway and Spoilbanks - A prime area of disused railway with larger than average cuttings and rich diverse grasslands. Although the majority of important butterfly sites in this area are designated as wildlife areas or local nature reserves, only one site is part SSSI and little active management for butterflies is taking place apart from Navigation Cutting which is managed by Warwickshire BC. This area is still a stronghold for the Wall Brown.

Natural Area - Midland Clay Pastures

- (small part is in Trent Valley and Rises - north of Rugby)

Butterfly species breeding	Regional Priority
Grizzled Skipper	High
Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
Wall Brown	Medium

Notable Moths	National Status
Six-Belted Clearwing	Nb

The Forester *Adscita staites* (local) has also been recorded in this area.

24. Princethorpe Woodlands - A large collection of ancient and semi-ancient woodlands interconnected by ancient hedgerows and disused gravel workings. Although this area contains a number of regionally important species only two key sites are SSSI's (Ryton Wood and Brandon Marsh) with introduced colonies of Silver-washed and Small Pearl-bordered fritillaries being present in Ryton Wood. Three sites are Warwickshire Wildlife Trust reserves (Ryton Wood, Wappenbury Wood and Brandon Marsh) with one other (Brandon Wood) being a private nature reserve and at least four sites in this area supporting White Admirals.

Natural Area - Midland Clay Pastures

Butterfly species breeding	Regional Priority
Grizzled Skipper	High
Small Pearl-bordered Fritillary*	High
Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
White Admiral	Medium
Silver-washed Fritillary*	Medium
Wall Brown	Medium

* re-established

Notable Moths	National Status
Hornet Clearwing	Nb
Red-tipped Clearwing	Nb
Light Orange Underwing	Nb
Cloaked Carpet	Nb
Great Oak Beauty	Nb
Mere Wainscot	Nb
Silky Wainscot	Nb
Cream Bordered Green Pea	Nb

25. South Western Woodlands and Associated Grasslands - Remnants of ancient and semi-ancient woodlands and plantations interspersed by unimproved grasslands. Very few sites in this area are SSSIs or nature reserves with the exception of Grove Hill which is a Warwickshire Wildlife Trust reserve and Wilmcote Rough (also known as Copmill Hill) which is an SSSI although it is not managed. Oversley Wood is of exceptional importance for moths.

Natural Area - Severn and Avon Vales

Butterfly species breeding	Regional Priority
Grizzled Skipper	High
Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
White Admiral	Medium
Wall Brown	Medium

Notable Moths	National Status
Large Red Belted Clearwing	Nb
Six Belted Clearwing	Nb
Light Orange Underwing	Nb
Lace Border	Na
Ruddy Carpet	Nb
Argent and Sable	Nb
Cloaked Carpet	Nb
Pinion Spotted Pug	Nb
Alder Kitten	Nb
Silver Cloud	Na
Angle Striped Sallow	Nb
Mere Wainscot	Nb
Waved Black	Nb

Lace Border and Cloaked Pug *Eupithecia abietaria* (Uncommon) only known to be present on one site in 1979 and since then it has become very overgrown. Other moths recorded in the area include Ruddy Highflyer *Hydriomena ruberata* (local), Pimpinel Pug *Eupithecia pimpinellata* (local) and Alder Kitten *Furcula bicuspis* (local).

26. North Warwickshire post industrial habitats and surrounding grasslands and woods - an area of old quarry workings, coalfields and railways with remnant woodland and heath. Alvecote Pools is an SSSI, the heathland on Grendon Common is in stewardship management and part of the area is a country park which is run by the County Council.

Natural Area - Part Trent Valley and Rises
- Part Midlands Plateau

Butterfly species breeding	Regional Priority
Dingy Skipper	Medium
White-letter Hairstreak	Medium
Wall Brown	Medium

Notable Moths	National Status
Square Spot Dart	Nb

Pimpinel Pug *Eupithecia pimpinellata* (local) has also been recorded in this area.

4.6 Worcestershire - Information on local moth species for key Worcestershire areas is given in Appendix 9 as the moth information arrived too late for it all to be included in the main document.

- 27. Forest of Feckenham
- 28. Wyre Forest Area
- 29. The Malvern Hills
- 30. West Worcestershire Hills
- 31. Western Dingle Woodlands

27. Forest of Feckenham - an area of extensive ancient semi-natural woodland with a long history of coppice management well into the present century. The only surviving area for the Brown Hairstreak is centred around Grafton and Roundhill Woods, the former of which is an SSSI and has recently been purchased by Butterfly Conservation and the Worcestershire Wildlife Trust. The area also includes Trench Wood, an important wood for Lepidoptera known since Victorian times, which is also managed as a nature reserve by Butterfly Conservation and the Worcestershire Wildlife Trust. The colony of Marsh Fritillary which probably stemmed from an initial introduction in the 70s has recently died out. Hornhill Wood is managed as coppice with standards woodland by the county trust.

Natural Area - Severn and Avon Vales

Butterfly species breeding	Regional Priority
Grizzled Skipper	High
Brown Hairstreak	High
White-letter Hairstreak	Medium
White Admiral	Medium
Silver-washed fritillary	Medium

Notable Moths	National Status
Festoon	Nb
Yellow-legged Clearwing	Nb
Six-belted Clearwing	Nb
Light Orange Underwing	Nb
Mocha	Nb
Lead-coloured Pug	Nb
Drab Looper	Nb
Great Oak Beauty	Nb
Angle-striped Sallow	Nb
Waved Black	Nb

28. Wyre Forest Area - A large expanse of forest in Worcestershire and Shropshire where the majority of the area is under the control of English Nature and Forest Enterprise but where other organisations manage small areas (e.g. the IMI rocket testing area managed by Royal Ordnance). The Forest contains significant populations of Pearl-bordered and Small Pearl-bordered Fritillary as well as a number of medium

priority species. Large areas of the Forest are an SSSI which has recently had its boundaries extended. Considerable management effort has been expended in recent years aimed at enhancing habitat for Fritillary species.

Natural Area - Midlands Plateau

Butterfly species breeding	Regional Priority
Pearl-bordered Fritillary	High
Grizzled Skipper	High
Wood White	High
Small Pearl-bordered Fritillary	High
Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
White Admiral	Medium
Silver-washed fritillary	Medium

Notable Moths	National Status
White-barred Clearwing	Nb
Yellow-legged Clearwing	Nb
Red-belted Clearwing	Nb
Large Red-belted Clearwing	Nb
Satin Lutestring	Nb
Argent and Sable	Nb
Bilberry Pug	Nb
Broom-tip	Nb
Drab Looper	Nb
Great Oak Beauty	Nb
Silvery Arches	Nb
Silver Cloud	Nb/local
Angle-striped Sallow	Nb
Waved Black	Nb
Common Fan-foot	Na

29. The Malvern Hills - Significant area for High Brown, Grayling and other Fritillary species. Most of the important areas for fritillaries are contained within the SSSI and are under the management of Malvern Hills Conservators, although one particularly important area forms part of a private deer park.

Natural Area - Malvern Hills and Teme Valley

Butterfly species breeding	Regional Priority
Pearl-bordered Fritillary	High
High Brown Fritillary	High
Grizzled Skipper	High
Wood White	High
Small Pearl-bordered Fritillary	High

Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
White Admiral	Medium
Silver-washed fritillary	Medium
Dark Green Fritillary	Medium
Wall Brown	Medium
Grayling	Medium

Notable Moths	National Status
Hornet Moth	Na
Pinion-spotted Pug	Nb
Broom-tip	Nb
Drab Looper	Nb
Square-spot Dart	Nb

30. West Worcestershire Hills - a ridge of mainly limestone stretching north from the Malverns up to and including the Abberley Hills. Area includes Penny Hill Bank NR which is managed by WWT and has a good butterfly list and a number of privately owned quarries. Away from Penny Hill Bank the area is under-recorded.

Natural Area - Malvern Hills and Teme Valley

Butterfly species breeding	Regional Priority
Grizzled Skipper	High
Wood White	High
Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
Dark Green Fritillary	Medium
Wall Brown?	Medium

31. Western Dingle Woodlands - a series of woodlands along the Teme Valley which with one or two exceptions are completely unmanaged. Some of the woodlands are protected by SSSI designation and the Worcestershire Wildlife Trust has three reserves at Hunthouse Wood, Hanley Dingle and Pennels Bank Wood. The former has been particularly managed to benefit its butterflies and now supports a good population of Silver-washed Fritillary. Area generally under-recorded.

Natural Area - Malvern Hills and Teme Valley

Butterfly species breeding	Regional Priority
Small Pearl-bordered Fritillary	High
Silver-washed Fritillary	Medium
White-letter Hairstreak	Medium

4.2 Key Sites (not in key areas)

Sites only listed at the beginning of county sections if more than one included.

4.2a Gloucestershire

32. Wetmoor Woods (= Lower Woods) - Large woodland now owned by the Glos. Wildlife Trust. Very good for White Admiral and Silver-washed Fritillary. Former Marsh Fritillary colony died out in recent past, former Brown Hairstreak colony but no records for quite a long time. Excellent scope for influencing future management. Species list incomplete.

Natural Area - Bristol, Avon Valleys and Ridges

Butterfly species breeding	Regional Priority
White Admiral	Medium
Silver-washed Fritillary	Medium

4.2b Herefordshire

33. Ewyas Harold Common - a bracken covered common in west Herefordshire which still contains important species. Nearby sites from which there are few records need to be revisited. Whitfield Court and the Black Mountains are of considerable significance for moths.

Natural Area - Black Mountains and Golden Valley

Butterfly species breeding	Regional Priority
Pearl-bordered Fritillary	High
Grizzled Skipper	High
Wood White	High
Small Pearl-bordered Fritillary	High
Dingy Skipper	Medium
Green Hairstreak	Medium
Dark Green Fritillary	Medium
Wall Brown	Medium

Notable Moths	National Status
Marbled Pug*	Nb
Little Thorn*	Nb

* Recorded at Whitfield Court

Other locally important moth species recorded in the Black Mountains are Northern Eggar *Lasiocampa quercus* (common), Yellow-ringed Carpet *Entephria flavicinctata* (Nb), Wood Tiger *Parasemia plantaginis* (local) and Ruby Tiger *Phragmatobia fuliginosa* (common) where the subspecies *borealis* is present.

4.2c Shropshire

34. Prees Heath - one of the largest areas of lowland heathland habitat remaining in Shropshire which supports the last Silver-studded Blue butterfly colony in the Midlands. It is a good site for moths with over 160 species recorded here since 1983 (Craig Yates, pers. comm.). While part of the site is an SSSI, most of the site is used as agricultural land with heathland fragments being confined to former airfield runways. This site continues to be under threat from future sand and gravel extraction. Attempts by BC to acquire the site as a reserve have so far been unsuccessful.

Natural Area - Mosses and Meres

Butterfly species breeding	Regional Priority
Silver-studded Blue	High
Dingy Skipper	Medium
Green Hairstreak	Medium

Notable Moths	National Status
Red Sword-grass	Nb

Other moth species recorded here include Forester *Adscita statices* (local), Heath Rustic *Xestia agathina* (local) and Blackneck *Lygephila pastinum* (local).

4.2c Staffordshire

35. Baggeridge Country Park
36. Doley/Hollies Common
37. Burnt Wood
38. Highgate Common
39. Needwood Forest
40. Bunkers Hill Wood

35. Baggeridge Country Park - a reclaimed/partly landscaped former coal mine/spoil heaps site in South Staffordshire. Ringlet were unofficially introduced here in 1996 with the possibility of Marbled White introduction in 1997.

Natural Area - Midlands Plateau

Butterfly species breeding	Regional Priority
Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
Wall Brown	Medium

36. Doley/Hollies Common - two adjoining commons of differing characteristics. Hollies Common contains bracken with oak scrub whereas Doley Common is a wet meadow of particular significance because of its colony of Small Pearl-bordered Fritillary (the likely larval foodplant being marsh violet). Further study of other Lepidoptera interest is required. Doley Common is an SSSI.

Natural Area - Mosses and Meres

Butterfly species breeding	Regional Priority
Small Pearl-bordered Fritillary	High

37. Burnt Wood - a Staffordshire Wildlife Trust reserve which is part SSSI and included here on the basis of its moths. It is the only Staffordshire locality for the Peacock Moth *Semiothisa notata* (local), and was the first Staffordshire site to record the Pale Oak Beauty *Serraca punctinalis*. It has supported Small Pearl-bordered Fritillary butterflies in the past (with recent attempts by the Staffordshire Wildlife Trust to improve the habitat for this species) with good numbers of Brimstone being recorded here recently.

Natural Area - Mosses and Meres

Notable Moths	National Status
Light Orange Underwing*	Nb
Argent and Sable	Nb
Bilberry Pug	Nb
Grass Wave	Nb

Silvery Arches	Nb
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Other moths recorded here include Beautiful Snout *Hypena crassalis* (local), Great Prominent *Peridea anceps* (local), Blossom Underwing *Orthosia miniosa** (local), Golden-rod Brindle *Lithomoia solidaginis* (local), Welsh Wave *Venusia combrica* (local), Yellow-barred Brindle *Acasis viretata* (local), Barred Umber *Plagodis pulveraria* (local) and Least Black Arches *Nola confusalis* (local).

* Singleton records

38. Highgate Common - a site containing both woodland and open heathland habitats which is fairly close to the Wyre Forest. It contains an interesting variety of flora and fauna and is managed by Staffordshire County Council. It is a good site for Ringlets and Purple Hairstreak with White Admiral only recently being recorded here and singleton records for Marbled White and Green Hairstreak.

Natural Area - Midlands Plateau

Butterfly species breeding	Regional priority
Green Hairstreak?*	Medium
White Admiral	Medium

Notable Moths	National Status
White-barred Clearwing	Nb
Argent and Sable	Nb

Other moth species of particular interest include Birch Mocha *Cyclophora albipunctata* (local), Scorched Carpet *Ligdia adustata* (local)* and Barred Chestnut *Diarsia dahli* (local)*. (Ken and Wendy Wheatley, pers comm.)

*Singleton records

39. Needwood Forest - scattered relics of ancient forest. The remains of a royal forest covering 10,000 acres between the valleys of Dove and Trent. It contains rich woodland flora and several SSSIs including Forest Banks and Brakenhurst which are both privately owned. The Staffordshire Wildlife Trust have recently acquired a reserve in this area which is part wood pasture with ancient oaks.

Natural Area - Needwood and South Derbyshire Claylands

Butterfly species breeding	Regional priority
White-letter Hairstreak	Medium

Notable Moths	National Status
Argent and Sable	Nb
Blomer's Rivulet	Nb

40. Bunkers Hill Wood - a recent 'discovery'. A Woodland Trust wood near Stourbridge but just in Staffordshire. Recent moth trapping (by Dave Friday) has already produced a list of 159 species of Lepidoptera including some which formerly occurred at Burnt Wood but have now died out.

Natural Area - Midlands Plateau

Notable Moths	National Status
Silvery Arches	Nb
Sword Grass	Nb?Na

Other moth species of interest include Scorched Wing *Plagodis dolabraria* (local), Brindled White-spot *Paradarisa extersaria* (local) and Least Black Arches *Nola confusalis* (local).

4.2d Warwickshire

41. Sutton Park

42. Whichford and Wolford Woods

41. Sutton Park - Heathland site on the edge of Birmingham which has recently been declared an NNR. A significant number of moth species have been recorded here.

Natural Area - Midlands Plateau

Butterfly species breeding	Regional Priority
Green Hairstreak	Medium
White-letter Hairstreak	Medium

Notable Moths	National Status
Grass Wave	Nb

The Alder Kitten moth *Furcula bicuspis* (local) has also been recorded here.

42. Whichford and Wolford Woods - A small area of semi-ancient woodlands which are designated as SSSI's and are botanically very rich. Woford Wood is being managed as a commercial woodland with the wildlife interest being enhanced wherever possible.

Natural Area - Cotswolds

Butterfly species breeding	Regional Priority
White Admiral	Medium

Notable Moths	National Status
Campanula Pug	Na

4.2e Worcestershire

43. Monkwood
44. Bredon Hill
45. Upton-Malvern Railway Line
46. Honeybourne Railway
47. Rhaetic Limestones

43. Monkwood - A Butterfly Conservation/Worcestershire Wildlife Trust reserve which is an SSSI and is actively managed by volunteers. It is managed in part as coppice with standard and contains a significant number of high and medium priority species such as Wood White, White Admiral and Silver-washed Fritillary. Its importance is enhanced by its proximity to Monkwood Green, also an SSSI and that it also holds a number of important moths.

Natural Area - Severn and Avon Vales

Butterfly species breeding	Regional Priority
Wood White	High
Dingy Skipper	Medium
Green Hairstreak	Medium
White-letter Hairstreak	Medium
White Admiral	Medium
Silver-washed fritillary	Medium

Notable Moths	National Status
Yellow-legged Clearwing	Nb
Light Orange underwing	Nb
Lead-coloured Pug	Nb
Drab Looper	Nb
Silver Cloud	Nb/local
Waved Black	Nb

Other moth species recorded at Monkwood given in Appendix 9. Moths recorded at nearby Shrawley Wood include the Brindled White-spot *Paradarisa extersaria* (local) and the micromoth *Dichomeris ustalella* (this site being the only British locality for this species).

44. Bredon Hill - an outlier of the Cotswolds but lacking many of the key species. Good for a range of grassland species and because of its proximity to the Cotswolds and generally sympathetic management future colonisation of other species is always a possibility. Indeed there is evidence that Dark Green Fritillary has succeeded in recolonising the area in recent years

Natural area - Severn and Avon Vales

Butterfly species breeding	Regional Priority
Dark Green Fritillary	Medium
White letter Hairstreak	Medium
Wall Brown?	Medium

The Netted Pug *Eupithecia venosata* (local) has also been recorded here.

45. Upton-Malvern Railway Line - a stretch of disused line which has lost a number of important species in recent years. Outside of Brotheridge Green NR (managed by Worcestershire Wildlife Trust) it is poorly recorded. Contains reasonably strong Marbled White populations.

Natural area - Severn and Avon Vales

Butterfly species breeding	Regional Priority
Dingy Skipper?	Medium
White letter Hairstreak	Medium

46. Honeybourne railway - part of the former Cheltenham-Broadway-Stratford railway. Several stretches of line are of importance for Grizzled Skipper and the railway formerly held a small colony of Small Blue near Broadway. Apart from the Broadway site where a group of BC volunteers cleared scrub in the winter of 95/96 there has been no management. The line has no statutory protection and is under threat from road improvements and the reopening of the old line. Further recording required.

Natural area - Part Severn and Avon Vales
Part Cotswolds

Butterfly species breeding	Regional Priority
Grizzled Skipper	High

47. Rhaetic Limestones - located in the Evesham area, these are important for a number of grassland species. The Worcestershire Wildlife Trust manages reserves at Windmill Hill and Cleeve Prior. The largest populations of Marbled White butterflies in the county occur here and it is the only surviving area where Wall Browns have been regularly reported, although even here populations are now extremely low.

Natural Area - Severn and Avon Vales

Butterfly species breeding	Regional Priority
Dark Green Fritillary	Medium
Wall Brown	Medium

Moth species recorded here include the Ruddy Carpet (Nb), Shaded Pug *Eupithecia subumbrata* (local), Pale Shining Brown *Polia bombycina* (local?Notable) and Brown Scallop *Philereme vetulata* (local).

5. Survey

Survey work has generally increased in the region in the last few years in response to the request for butterfly records for the millennium atlas. This atlas will be produced by Butterfly Conservation in the year 2000 and will use records obtained over the 1995 to 1999 period so it can provide up-to-date information on all species. Nevertheless, while some counties in the region are very well recorded with the majority of tetrads now being covered in most areas (e.g. Warwickshire), other counties in the region are still very under-recorded (e.g. Staffordshire and Shropshire). Local Butterfly Conservation groups are aware of this problem and have tried to overcome it. In 1996, Philip Hopson undertook a recording campaign in Staffordshire where local media and recorders were both targeted. In 1997, West Midlands BC plans to have a series of MAD (Millennium Atlas Days) in the region which will target areas which are under-recorded but thought to potentially contain interesting butterfly habitat. Shropshire County Council have also produced a butterfly leaflet (in conjunction with Shropshire BC) as part of their Biodiversity Challenge project which aims to try to get people recording butterflies in the county.

Longer term aims for the BC groups in the region are to increase the level of survey work directed at high priority species in the next five years so that all sites are covered by at least a species spot check (one visit per year). Sites containing medium priority species will also be surveyed more regularly giving priority to those species which are rarest in the region or sites which have the greatest concentrations of these species.

In addition to general survey work, Butterfly Conservation will continue to support survey work targeted at specific species or sites (such as past projects on the Small Blue and the Silver-studded Blue) when the need arises (e.g. when sites are under threat from development or there is concern about the long term survival of a colony).

6. Monitoring

Some 30+ sites in the region are monitored weekly by means of transect walks according to the guidelines set down by the Institute of Terrestrial Ecology. Some of these site records date back to the early eighties and data is held by the branch on computer. Many sites are nature reserves or other sites with special protection and there is an under-representation of sites more typical of the countryside as a whole. The data has formed the basis of annual reports produced by West Midlands Butterfly Conservation since 1987 which have compared the performance of species across sites and attempted to interpret general trends in butterfly populations. The aim will be to continue the present level of site monitoring, especially at key regional sites for butterflies, and to look for opportunities to expand the scheme to cover important species not well represented on transects e.g. Northern Brown Argus and Grayling and areas which hold good assemblages of priority species e.g. Forest of Dean.

7. Management

7.1 Site management

The branches within the region are involved in the management of a number of sites where the level of involvement varies from a) giving advice to the site managers to b) organising BC work parties on nature reserves or important butterfly areas owned or managed by other organisations or to c) managing our own BC reserves. Throughout the winter there is usually at least one work party in the region every weekend with management days now extending into the summer with the advent of cutting bracken for Fritillaries.

Sites managed with assistance from BC

Bircher Common (Herefordshire)
Bringsty Common (Herefordshire)
Broadway Railway Line (Worcestershire)
Coppet Hill (Herefordshire)
Grafton/Roundhill Wood Complex (Worcestershire)
Hampton Wood (Warwickshire)
Harbury Spoilbank (Warwickshire)
Haugh Woods (Herefordshire)
Llynclys Common (Shropshire)
Malvern Hills (part) (Worcestershire)
Mortimer Forest (part) (Herefordshire)
Navigation Cutting (Warwickshire)
Ryton Wood (Warwickshire)
Stinchcombe Hill (Gloucestershire)
Ufton Fields (part) (Warwickshire)
Wyre Forest (part) (Shropshire/Worcestershire)

BC Reserves

Grafton Wood (Worcestershire)
Monkwood (Worcestershire)
Prestbury Hill (Gloucestershire)
Trench Wood (Worcestershire)

7.2 Habitat management

Habitats of particular concern to BC groups in the region include:

a) **Chalk/Limestone grasslands** - as both under-grazing and over-grazing can threaten regionally important butterfly species, the maintenance of desirable grazing levels is crucial. BC will investigate the most effective means of producing guidance on the management of these grasslands. Tree planting and road and housing developments are also threats in some areas.

b) **Woodlands** - although more active woodland management has started in many areas, there are still many sites which would benefit from better management. BC aims to maintain its contacts with organisations carrying out this sort of work to ensure that i) the work is successful in creating suitable habitat for regionally important butterfly species and ii) that it continues in the long term. It is better to focus resources on a smaller number of woods which already contain regionally important species (or are close to sites containing these species) and where the work can be sustained in the long term, rather than encouraging new woodland management projects on sites some distance away which no longer contain these species. BC will also continue to provide woodland managers with relevant information such as BC's Woodland Pack.

c) **Heathland** - BC, along with other local organisations, will try to ensure that no further loss of this habitat occurs within the region. A number of heathland sites in the region contain concentrations of medium priority and, occasionally, high priority species.

d) **Roadside verges** - BC will ensure that i) habitat creation opportunities are not missed during road construction projects and ii) provide information to the relevant authorities on appropriate mowing regimes so that butterflies colonising these areas are not immediately destroyed.

e) **Post-industrial habitats** - Many regionally important sites occur on this type of habitat (e.g. in quarries or on the spoilheaps from old mine working). BC will be alert to the increasing threats to this sort of habitat (the majority being from development, landfill or from reclamation schemes) as well as trying to ensure that active management (such as scrub removal) is carried out when necessary.

f) **Old railway lines** - Another sort of habitat which frequently turns up regionally important species. As many of these sites were abandoned some years ago, their suitability for butterflies may be diminishing. For this reason, BC members will be encouraged to visit any former railway lines in their area to determine the species present as well as being alert to threats from development schemes. BC will seek ways of protecting and ensuring suitable management of the most important sections.

g) **Bracken communities** - These contain all the remaining colonies of High Brown Fritillaries in the region together with a significant number of the Pearl-bordered and Small Pearl-bordered Fritillary colonies. Bracken communities which are suitable for Fritillary butterflies frequently occur on marginal land or commons which have had a history of grazing or on woodland edges where the abandonment of coppice has led to suitable Fritillary habitat being restricted to the wood margins. While bracken management regimes are still largely experimental (as they have only been running for 3 to 4 years at best), it is important that the results from these regimes are disseminated to other conservation groups who may have Fritillary colonies breeding in bracken communities so that they can learn from these early experiences (see Joy, 1997). At present, bracken management regimes in the region usually consist of some sort of summer cutting and/or the raking up of bracken litter in winter.

8. Other activities

Priorities in the region are as follows:

- i) To raise the profile of Butterfly Conservation in the region by a) continuing our involvement with other conservation organisations and b) by continuing to contact local media about special events or particular species.
- ii) To try to recruit more members and increase the number of active members.
- iii) To hold training days for a) butterfly and moth identification, b) butterfly and moth management, c) transect monitoring and d) work party and field trip leaders.

9. Review

This plan will be reviewed annually. This review will take the form of a short annual progress report which will comment on the implementation of the main aims and will be discussed at a meeting of the regional Conservation Committee. There will be a more thorough review every five years where species priority ratings will be re-assessed and the plan updated.

10. Appendices 1 & 2 (3 - 8 are bound separately)

Appendix 1 - Methods used for assigning regional priorities

Criteria 1. Rates of decline estimates

Table 2 indicates the butterfly species showing declines in the West Midlands and Gloucestershire region when 10km square records from 1970 to 1982 (taken from Heath, Pollard and Thomas, 1984) were compared with 10km square computer records from 1990 to 1996 (West Midlands records from Andy Nicholls and Gloucestershire records from Guy Meredith). The mid points of these two recording periods (1970-82, mid point 1976; 1990-96, mid point 1993) was used to give a 17 year time period for these decline estimates. If these decline estimates were > 22% over 17 years (which is equivalent to the > 32% loss of 10km squares in 25 years given in Bourn, Warren & Kirkland, 1996 (assuming a linear decline over time)) then the species qualified for a higher regional than national rating. Species whose regional priorities have been increased by this method are indicated by (*) and shown in bold. Nevertheless, as 10km square records can mask declines at the tetrad or lower levels (1km squares or less), there were several other species whose priority ratings were increased on the basis of i) county declines at the tetrad level or ii) county concerns over numerous site losses (see page 3 and Appendix 2).

Table 2.

Species	10km square records 1970-82	10km square records 1990-96.	17 year decline estimate
Dingy Skipper *	86	64	26%
Grizzled Skipper*	64	44	31%
Wood White *	28	20	29%
Brown Hairstreak*	12	2	83%
Small Blue	28	24	14%
Chalkhill Blue*	18	14	22%
Duke of Burgundy	17	15	12%
Small Pearl-bordered Frit	31	28	10%
Pearl-bordered Fritillary *	36	20	44%
High Brown Fritillary *	25	5	80%
Silver-washed Fritillary	51	48	6%
Dark Green Fritillary*	37	28	24%
Marsh Fritillary*	15	5	67%
Wall *	147	91	38%
Grayling*	24	17	29%
Small Heath	136	126	7%

Table 3. The rarity of species within the region in terms of area occupied or number of colonies remaining. Criteria 2 in national guidelines for assigning regional species priorities from national priorities (Bourn, Warren & Kirkland, 1996). Species showing a priority rating change are given in bold and indicated by (*).

	Total number of tetrad records in region (1993-96)	Occupies < 0.6% of area?	Less than 30 colonies remaining?	Comments
Dingy Skipper	185			
Grizzled Skipper	121			
Essex Skipper	45			
Wood White	38	0.88	border-line	30-40 colonies
Brown Hairstreak *	4	YES	YES	
Purple Hairstreak	284			
White-letter Hairstreak	225			
Small Blue	87			
Silver-studded Blue *	2	YES	YES	
Brown Argus	225			
Northern Brown Argus *	2	YES	YES	
Chalkhill Blue	62			40-80 colonies
Duke of Burgundy	67			60-80 colonies
White Admiral	88			
Small Pearl-bordered Frit	52		Possibly	just over 30c?
Pearl-bordered Fritillary	48		Possibly	just over 30c?
High Brown Fritillary *	12	YES	YES	
Silver-washed Fritillary	149			
Dark Green Fritillary	77			
Marsh Fritillary *	2	YES	YES	
Wall	207			
Marbled White	393			
Grayling	31	0.72	Possibly	just over 30c?
Large Heath *	2	YES	YES	

Notes: The figures in column 1 refer to total number of **tetrads** (2x2km squares) and not 10km squares as used in Table 2. Regional tetrad totals only included for uncommon species which might qualify. Total number of regional tetrads is around 4290 which includes those on the boundaries. If 'YES' given in the table then their regional priority is increased using this criteria. Pearl-bordered fritillary, Small Pearl-bordered Fritillary and Grayling just fail to increase their priority rating and changes could be made on the basis of a gain or loss of one colony.

Table 4. The proportion of the national resource for species within the region (Criteria 3 in national guidelines for assigning regional species priorities from national priorities (Bourn, Warren & Kirkland, 1996)). If a region holds 20% or more of the total number of UK sites for a particular species then it has an increased regional priority rating. Note this table gives the most recent data on the total number of 10km squares occupied by species in the region (1993-96) whereas the 10km square records used in Table 1 are from 1990-96.

	Number of Grid Squares or colonies (c) in region	Number of Grid Squares or colonies needed for priority change (i.e. >20% of national resource)	Does this apply to West Midlands region?
Dingy Skipper	51	>118	
Grizzled Skipper	36	>78	
Wood White *	17c	>16c	YES
Brown Hairstreak	4	>32	
Small Blue	24	>39	
Silver-studded Blue	1	>21	
Northern Brown Argus	1	>14	
Chalkhill Blue	13	>40	
Duke of Burgundy	14	>23	
White Admiral	35	>48	
Small Pearl-bordered Frit	22	>147	
Pearl-bordered Fritillary	18	>66	
High Brown Fritillary	4	>21	
Silver-washed Fritillary	43	>74	
Dark Green Fritillary	25	>120	
Marsh Fritillary	2	>37	
Wall	66	>250	
Marbled White	76	>78	border-line
Grayling	15	>114	
Large Heath	1	>60	

Notes: regional totals only included for species which might qualify.

Table 5. The number of tetrads occupied by each species on a county basis. County totals are based on records received over varying lengths of time due to differences in county recording projects.

County (records from)	Gloucs (89-96)	Hereford (93-96)	Shrops (93-96)	Staffs (93-96)	Warks (95-96)	Worcs (93-96)
Species						
Small Skipper	305	>50	41	24	348	59
Large Skipper	259	48	29	21	308	51
Dingy Skipper	135	2	12	17	15	4
Grizzled Skipper	66	6	5	3	35	6
Essex Skipper	18				27	
Wood White	17	16	2			3
Brimstone	309	27	13	21	237	31
Large White	442	>50	56	36	286	>70
Small White	442	>50	60	37	444	>70
Green-veined White	437	>50	58	36	435	81
Orange Tip	344	>50	35	34	410	47
Green Hairstreak	81	2	11	13	23	5
Brown Hairstreak						4
Purple Hairstreak	96	11	19	11	100	25
White-letter Hairstreak	94	18	11	10	65	12
Small Copper	248	34	41	20	198	
Small Blue	80			2	4	0
Silver-studded Blue			2			
Brown Argus	149	0	1	1	65	8
Northern Brown Argus				2		
Common Blue	350	>50	30	19	229	50
Holly Blue	282	20	6	18	88	22
Chalkhill Blue	62					
Duke of Burgundy	67					
White Admiral	34	12	4	1	30	16
Small Tortoiseshell	472	>50	64	>30	432	83
Peacock	433	>50	47	>30	386	66
Comma	255	>50	23	18	221	47
Small Pearl-bordered Frit	22	7	11	3	1	7
Pearl-bordered Fritillary	31	9	5			3
High Brown Fritillary	1	9	0	1?		2
Silver-washed Fritillary	93	30	12		1	12
Dark Green Fritillary	62	7	4	1?		3
Marsh Fritillary	1					0
Speckled Wood	418	>50	65	>25	317	74
Wall	79	18	14	21	57	5
Marbled White	273	21	1	2	72	20
Grayling	20		9			2
Gatekeeper	503	>50	56	>30	477	87
Meadow Brown	523	>50	72	36	466	>100

County (records from)	Gloucs (89-96)	Hereford (93-96)	Shrops (93-96)	Staffs (93-96)	Warks (95-96)	Wores (93-96)
Ringlet	374	>50	38	5	289	50
Small Heath	219	13	32	15	101	22
Large Heath			2			

Please note that many of the differences between counties, especially for the commoner and more widespread species reflect differences between levels of recording rather than actual relative scarcity or abundance.

Appendix 2 - County tetrad summary sheets

The county summary sheets do not always list tetrad records for the same recording years as different counties have had recording projects running for varying lengths of time.. As before (see Page 103), the mid-points of the two recording periods was used to give a time-span for any decline estimates in each county. However it should be noted that tetrad increases can still mask real declines as they can simply reflect the increased level of recording which has occurred in most counties.

1. Gloucestershire

Species	Tetrad records 81-88	Tetrad Records 89-96	Tetrad Change	9-year decline estimate
Small Skipper	220	305	UP	
Large Skipper	207	259	UP	
Essex Skipper	4	18	UP	
Dingy Skipper	116	135	UP	
Grizzled Skipper	40	66	UP	
Wood White	12	17	UP	
Brimstone	206	309	UP	
Large White	299	442	UP	
Small White	241	442	UP	
Green-veined White	268	437	UP	
Orange Tip	215	344	UP	
Green Hairstreak	68	81	UP	
Brown Hairstreak	-	-	-	
Purple Hairstreak	64	96	UP	
White-letter Hairstreak	21	94	UP	
Small Copper	156	248	UP	
Small Blue	76	80	UP	
Silver-studded Blue	-	-	-	
Brown Argus	109	149	UP	
Northern Brown Argus	-	-	-	
Common Blue	273	350	UP	
Holly Blue	99	282	UP	
Chalkhill Blue	63	62	DOWN	2%
Duke of Burgundy	57	67	UP	
White Admiral	40	34	DOWN	15%
Small Tortoiseshell	329	472	UP	
Peacock	265	433	UP	
Comma	179	255	UP	
Small Pearl-bordered Frit.	20	22	UP	
Pearl-bordered Fritillary	41	31	DOWN	24%
High Brown Fritillary	1	1	NO CHANGE*	
Silver-washed Fritillary	75	93	UP	
Dark Green Fritillary	62	62	NO CHANGE	
Marsh Fritillary	2	1	DOWN*	
Speckled Wood	297	418	UP	
Wall	153	79	DOWN	48%
Marbled White	206	273	UP	
Grayling	29	20	DOWN	31%
Gatekeeper	269	503	UP	
Meadow Brown	348	523	UP	
Ringlet	275	374	UP	
Small Heath	207	219	UP	
Large heath	-	-	-	

* these figures discount known artificial introductions and strays

Note - a '-' indicates species not recorded.

2. Herefordshire

Species	Tetrad records 83-92	Tetrad Records 93-96	Tetrad Change	8-year decline estimate
Small Skipper	17	>50	UP	
Large Skipper	15	48	UP	
Essex Skipper	-	-	-	
Dingy Skipper	4	2	DOWN	50%
Grizzled Skipper	4	6	UP	
Wood White	8	16	UP	
Brimstone	2	27	UP	
Large White	25	>50	UP	
Small White	22	>50	UP	
Green-veined White	23	>50	UP	
Orange Tip	18	>50	UP	
Green Hairstreak	3	2	DOWN	33%
Brown Hairstreak	-	-	-	
Purple Hairstreak	6	11	UP	
White-letter Hairstreak	10	18	UP	
Small Copper	11	34	UP	
Small Blue	-	-	-	
Silver-studded Blue	-	-	-	
Brown Argus	1	0	DOWN	100%
Northern Brown Argus	-	-	-	
Common Blue	17	>50	UP	
Holly Blue	24	20	DOWN	17%
Chalkhill Blue	-	-	-	
Duke of Burgundy	-	-	-	
White Admiral	5	12	UP	
Small Tortoiseshell	25	>50	UP	
Peacock	25	>50	UP	
Comma	20	>50	UP	
Small Pearl-bordered Frit.	7	7	NO CHANGE	
Pearl-bordered Fritillary	8	9	UP	
High Brown Fritillary	9	9	NO CHANGE	
Silver-washed Fritillary	12	30	UP	
Dark Green Fritillary	5	7	UP	*D?
Marsh Fritillary	-	-	-	
Speckled Wood	31	>50	UP	
Wall	10	18	UP	
Marbled White	8	21	UP	
Grayling	-	-	-	
Gatekeeper	20	>50	UP	
Meadow Brown	33	>50	UP	
Ringlet	23	>50	UP	
Small Heath	10	13	UP	
Large heath	-	-	-	

Note -*D indicates species thought to be in decline despite tetrad increases

3. Staffordshire

Species	Tetrad records 83-92	Tetrad Records 93-96	Tetrad Change	8-year decline estimate
Small Skipper	12	24	UP	
Large Skipper	17	21	UP	
Essex Skipper	-	-	-	
Dingy Skipper	16	17	UP	*D
Grizzled Skipper	3	3	NO CHANGE	
Wood White	-	-	-	
Brimstone	9	21	UP	
Large White	31	36	UP	
Small White	31	37	UP	
Green-veined White	25	36	UP	
Orange Tip	30	34	UP	
Green Hairstreak	16	13	DOWN	19%
Brown Hairstreak	-	-	-	
Purple Hairstreak	4	11	UP	
White-letter Hairstreak	10	10	NO CHANGE	
Small Copper	21	20	DOWN	5%
Small Blue	1	2	UP	*D
Silver-studded Blue	-	-	-	
Brown Argus	0	1	UP	
Northern Brown Argus	4	1	DOWN	75%
Common Blue	22	19	DOWN	14%
Holly Blue	20	18	DOWN	10%
Chalkhill Blue	-	-	-	
Duke of Burgundy	-	-	-	
White Admiral	0	1	UP	
Small Tortoiseshell	29	>30	UP	
Peacock	24	>30	UP	
Comma	10	18	UP	
Small Pearl-bordered Frit.	4	3	DOWN	25%
Pearl-bordered Fritillary	-	-	-	
High Brown Fritillary	0	1?	?	
Silver-washed Fritillary	-	-	-	
Dark Green Fritillary	-	1?	?	
Marsh Fritillary	-	-	-	
Speckled Wood	16	>25	UP	
Wall	17	21	UP	*D
Marbled White	0	2	UP	
Grayling	-	-	-	
Gatekeeper	8	>30	UP	
Meadow Brown	20	36	UP	
Ringlet	2	5	UP	
Small Heath	18	15	DOWN	
Large heath	-	-	-	

4. Shropshire

Species	Tetrad records 83-92 or 70- 89*	Tetrad Records 93-96	Tetrad Change	Declines
Small Skipper	16	41	UP	
Large Skipper	12	29	UP	
Essex Skipper	-	-	-	
Dingy Skipper	5	12	UP	*D
Grizzled Skipper	3	5	UP	*D
Wood White	2	2	NO CHANGE	*D
Brimstone	5	13	UP	
Large White	21	56	UP	
Small White	14	60	UP	
Green-veined White	20	58	UP	
Orange Tip	9	35	UP	
Green Hairstreak	3	11	UP	
Brown Hairstreak	-	-	-	
Purple Hairstreak	6	19	UP	
White-letter Hairstreak	0	11	UP	
Small Copper	15	41	UP	
Small Blue	-	-	-	
Silver-studded Blue	1	1	NO CHANGE	
Brown Argus	1	1	NO CHANGE	*D
Northern Brown Argus	-	-	-	
Common Blue	12	30	UP	
Holly Blue	6	6	NO CHANGE	
Chalkhill Blue	-	-	-	
Duke of Burgundy	-	-	-	
White Admiral	1	4	UP	
Small Tortoiseshell	19	64	UP	
Peacock	23	47	UP	
Comma	14	23	UP	
Small Pearl-bordered Frit.	22*	11	DOWN	50%*
Pearl-bordered Fritillary	13*	5	DOWN	62%*
High Brown Fritillary	6*	0	DOWN	100%*
Silver-washed Fritillary	27*	12	DOWN	56%*
Dark Green Fritillary	7*	4	DOWN	43%*
Marsh Fritillary	-	-	-	
Speckled Wood	28	65	UP	
Wall	8	14	UP	
Marbled White	1	1	NO CHANGE	
Grayling	12*	9	DOWN	25%*
Gatekeeper	22	56	UP	
Meadow Brown	20	72	UP	
Ringlet	13	38	UP	
Small Heath	9	32	UP	
Large heath	2	2	NO CHANGE	

Note - a '*' indicates 15 year decline estimates made using data from Riley (1991)

5. Warwickshire

Species	Tetrad records 70-94	Tetrad Records 95-96	Range estimated in tetrads	Estimated decline
Small Skipper	705	349	705	0
Large Skipper	705	308	656	7%
Essex Skipper	0	27	124	
Dingy Skipper	55c*	15	38c*	31%
Grizzled Skipper	55c*	35	36c*	35%
Wood White	11	0	0	100%
Brimstone	705	237	642	9%
Large White	705	286	705	0
Small White	705	444	705	0
Green-veined White	705	435	705	0
Orange Tip	705	410	656	7%
Green Hairstreak	32c*	23	15c*	53%
Brown Hairstreak	4c	0	0	100%
Purple Hairstreak	705	100	705	0
White-letter Hairstreak	599	65	479	20%
Small Copper	705	198	656	7%
Small Blue	16c*	4	6c*	63%
Silver-studded Blue	-	-	-	
Brown Argus	302	65	252	17%
Northern Brown Argus	-	-	-	
Common Blue	680	229	612	10%
Holly Blue	705	88	705	0
Chalkhill Blue	-	-	-	
Duke of Burgundy	1c*	0	0	100%
White Admiral	23c*	30	16c*	30%
Small Tortoiseshell	705	432	705	0
Peacock	705	386	705	0
Comma	705	221	627	11%
Small Pearl-bordered Frit.	11c*	1	1c*	100% pre-1961
Pearl-bordered Fritillary	-	-	-	
High Brown Fritillary	-	-	-	
Silver-washed Fritillary	18c*	1	1c*	100% 1970-75
Dark Green Fritillary	7c*	0	0	100%
Marsh Fritillary	-	-	-	
Speckled Wood	630	317	705	11% expansion
Wall	705	57	120-416	41-83%
Marbled White	360?	72	180	0
Grayling	-	-	-	
Gatekeeper	595	477	705	0
Meadow Brown	705	466	705	0
Ringlet	622	289	578	7%
Small Heath	705	101	486	31%
Large heath				

Note: * figures refer to number of **colonies** not tetrads

6. Worcestershire

Species	Tetrad records 83-92	Tetrad Records 93-96	Tetrad change	8-year decline estimate
Small Skipper	42	59	UP	
Large Skipper	41	51	UP	
Essex Skipper	-	-	-	
Dingy Skipper	7	4	DOWN	43%
Grizzled Skipper	6	6	NO CHANGE	*D
Wood White	6	3	DOWN	50%
Brimstone	40	31	DOWN	23%
Large White	66	>70	UP	
Small White	46	>70	UP	
Green-veined White	59	81	UP	
Orange Tip	47	47	NO CHANGE	
Green Hairstreak	7	5	DOWN	29%
Brown Hairstreak	3	4	UP	
Purple Hairstreak	19	25	UP	
White-letter Hairstreak	12	12	NO CHANGE	
Small Copper	35	43	UP	
Small Blue	1	0	DOWN	100%
Silver-studded Blue	-	-	-	
Brown Argus	7	8	UP	
Northern Brown Argus	-	-	-	
Common Blue	46	50	UP	
Holly Blue	41	22	DOWN	46%
Chalkhill Blue	-	-	-	
Duke of Burgundy	-	-	-	
White Admiral	9	16	UP	
Small Tortoiseshell	60	83	UP	
Peacock	58	66	UP	
Comma	40	47	UP	
Small Pearl-bordered Frit.	5	7	UP	
Pearl-bordered Fritillary	6	3	DOWN	50%
High Brown Fritillary	3	2	DOWN	33%
Silver-washed Fritillary	10	12	UP	
Dark Green Fritillary	2	3	UP	
Marsh Fritillary	1	0	DOWN	100%
Speckled Wood	56	74	UP	
Wall	9	5	DOWN	44%
Marbled White	21	20	DOWN	5%
Grayling	1	2	UP	
Gatekeeper	48	87	UP	
Meadow Brown	59	>100	UP	
Ringlet	47	50	UP	
Small Heath	33	22	DOWN	33%
Large heath	-	-	-	