

Butterfly Conservation

Regional Action Plan

South-west England

(Cornwall, Devon, & Somerset)

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Action for Biodiversity



Cornwall branch BC

Devon branch BC

West Country branch BC
(Somerset and Bristol)

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1. INTRODUCTION

1.1. Background

1.1.1. The Action for Butterflies project and Regional Action Plans: their role within Butterfly Conservation and 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 on biodiversity. 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 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.

1.1.2. The Action for Butterflies Project

The project began in 1994 and is funded by the World Wide Fund for nature (WWF-UK) and the Countryside Agencies (English Nature, Scottish Natural Heritage, Countryside Council for Wales). It aims to place the conservation work of the Butterfly Conservation within an overall framework, aiding the Society at national and local level to develop priorities for action. National Species Action Plans have been written for the 25 most threatened butterflies and for 31 of the most threatened moths. Butterfly Conservation branches are producing Regional Action Plans for each of the 14 regions in the UK to guide action at a local level.

This Regional Action Plan is one of a series drawn up by Butterfly Conservation branches in consultation with staff at the Conservation Office, following a standard format devised after a series of workshops held in 1995 and 1996 (Bourn *et al.*, 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.

1.1.3. Regional Action Plans: the wider context

As well guiding BC's own actions, our Regional Action Plans are designed provide our conservation partners with detailed and sound conservation priorities for Lepidoptera for inclusion in local biodiversity initiatives. Biodiversity Action Plans are in place for the south-west region as a whole, and for Cornwall and Devon, in addition to plans for Torbay, Dartmoor, Exmoor and the Mendips. These initiatives are ongoing, and it is hoped that this Plan will be used to inform conservation action in these areas.

1.2. Area covered

This report covers the Isles of Scilly, Cornwall, Devon and Somerset. It also covers the area around Bristol comprising the Watsonian Vice-county 6 (north Somerset).

The boundaries of the recording area in the Bristol region is confused because the Bristol Regional Environmental Records Centre (BRERC) used to cover a recording area in west Gloucestershire east of the River Severn which included part of Vice-county 34. The recording activities of BRERC have now become more closely linked to the planning needs of the local authorities and to the area covered by the Avon Wildlife Trust. This Plan excludes Vice-county 34 except where convenient, e.g. for the Silky Wave which has the largest populations on the Gloucestershire side of the Avon Gorge.

1.3. General Aims

- 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 in the region
- To highlight further survey, management or monitoring work required

2. SOURCES OF INFORMATION

The production of this plan was co-ordinated by the south-western three branches of Butterfly Conservation: Cornwall, Devon and the West Country Branch. This plan is the result of preparatory work begun by these branches in 1997 (especially by Roger Sutton and Simon Mitchell) and followed by discussions in its final stages at branch meetings in Cornwall and Devon, as well as by individuals branch members in Somerset. Constructive comments on the final draft were made by the following people: Ray Barnett, Paul Butters, Maurice Edmonds, Stephen Hoskin, Robin Howard, Pete Hurst, David Land, Roy McCormick, Simon Mitchell, Gary Pilkington, John Robbins, Lee Slaughter, Roger Sutton, Tim Dingle and John Wachter. A large number of people took part in the preparation of this plan and provided much of the information, in particular the following: John Breeds, Dudley Cheesman, Bill Deakins, Richard Fox, Dave Green, Bob Heckford, Barry Henwood, Roger Lane, Mark Parsons, Tony Liebert and Roger Thornett. John Worth prepared the tables for assessing regional priorities for the butterflies.

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Keith Brown, Chairman of the Somerset Moth Group, for the newly published *A Provisional Atlas of the Somerset Macro-Moths*.

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English Nature (Devon and Somerset) for providing copies of their Natural Area profiles.

3. REGIONAL PRIORITIES FOR MOTHS AND BUTTERFLIES

3.1. Methods Using Assigning Regional Priorities For Moths And Butterflies

3.1.1. National priorities for butterflies

Butterfly Conservation has developed criteria for assessing national priority species (Bourn, *et al.*, 1996). Following these criteria, butterfly species found in Britain have been identified as High, Medium and Low Priority species. Species found in the region are listed with their national priority rating in Table 1. The priorities of the Biodiversity Steering Group report do not exactly match the priorities established by Butterfly Conservation. Regional priorities may differ from national priorities (Section 3.1.4).

3.1.2. Methods used for assigning regional priorities for butterflies

In accordance with Butterfly Conservation's guidelines (Bourn, *et al.*, 1996), a species qualifies for a higher regional than national rating if it fulfils one or more of the following criteria:

1. It has suffered a rate of regional decline over the last 25 years greater than 32% at a 10km square level or 50% at a tetrad level (Table 1, column 3).

2. It currently occupies less than 0.6% of the tetrads within the region (i.e. less than 3804 tetrads) or there are less than 30 colonies present (Table 1, column 4). (The total number of tetrads occupied by each butterfly species within the region is given in Appendix 1; this data is taken from the forthcoming Millennium Butterfly Atlas, to be published by BC in 2000).

3. Its presence in the region represents over 20% of the total number of UK sites (Table 1, column 5). This is based on the total number of 10km squares, rather than the number of colonies as the extent of a colony can be difficult to determine. (The total number of 10km squares occupied by each butterfly species within the region and nationally is given in Appendix 2).

Rates of change have been calculated from the distribution maps in Heath and Pollard (1984), which cover the years 1970-1982, and the provisional maps from the forthcoming BC Atlas for 2000 (Appendix 2).

An additional criteria (Criteria 4) was used to raise the priority ratings where there is sufficient regional justification for change (Table 1, column 6). Criteria 4 was applied to the Wood White because of concern about a decline in numbers within its range which has not yet been reflected at the 10km square level. It has apparently disappeared from a range of sites (e.g. Hawkerland and Ashclyst Forest in Devon), appears to have been in serious decline in Haldon Forest since 1997 and is now very rare in Cornwall.

3.1.3. National priorities for moths

National priorities for moths are based on their national distributions rather than on rates of decline, due to insufficient data being available on rates of change.

Butterfly Conservation has developed criteria for assessing national priority species. According to these criteria, high priority macro-moth species are those that occur nationally in less than 15 10km squares, based on Waring's 1994 review (Waring, 1994) and those species listed in the Biodiversity Steering Group Report: Action Plans. However, because there are 20 BAP species within the region, these are listed as high priority species; all other RDB and Long List moths are listed as medium priority nationally important (Table 2).

Waring's 1994 review excludes micro-moths and the Biodiversity Steering Group Report lists only 5 micro-moths, with an additional species listed in the UK Biodiversity Group Tranche 2 Action Plans, Volume IV invertebrates. Of these 6 species, only *Epischmia banksiella* occurs in the region. In addition to this species, a range of micro-moths occurring in the region are considered as medium priority nationally important based on their occurrence in less than 15 10km squares nationally (Table 2). All nationally notable (Na or Nb) species are considered to be as medium priority regionally important (Appendix 2).

3.1.4. Methods used for assigning regional priorities for moths

Criteria 1, 2 and 3 used for assigning regional priorities for butterflies (section 3.1.2) cannot be used for moths due to insufficient data. However, some species are found in Britain only or mainly in the south-west region; these are listed as medium priority nationally important. Brief notes are provided about these species of special conservation importance in Section 5.2.

TABLE 1: NATIONAL AND REGIONAL PRIORITIES FOR BUTTERFLIES IN CORNWALL, DEVON AND SOMERSET

Species	National priority	regional decline over last 25 years Criteria 1	% of tetrads in the region in 1999 Criteria 2	Proportion of total UK resource Criteria 3	Regional justification for change Criteria 4	Regional priority where different from national priority
Lulworth Skipper	Medium	-100%	0%	0%		
Essex Skipper		+50%	0.63%	3.0%		
Small Skipper		+16%	16.64%	12%		
Large Skipper		+24%	18.93%	11.6%		
Grizzled Skipper	Medium	+42%	3.94%	15.8%		
Dingy Skipper	Medium	+85%	5.57%	13.8%		
Wood White	Medium	0	1.26%	6.6%	High	
Brimstone		+25%	21.85%	11.8%		
Large White		+10%	33.78%	6.8%		
Small White		+14%	34.75%	7.4%		
Green-veined White		+10%	32.15%	5.6%		
Orange Tip		+32%	30.42%	6.7%		
Green Hairstreak		+30%	6.73%	11.8%		
Brown Hairstreak	Medium	+23%	12.09%	42.3%		High
Purple Hairstreak		+15%	7.94%	12%		
White-letter Hairstreak	Medium	+1%	2.26%	6.5%		
Small Copper		+14%	21.92%	8.2%		
Small Blue	Medium	+31%	0.89%	4.8%		
Silver-studded Blue	Medium	- 12%	1.05%	23%		High
Brown Argus		+39%	5.28%	10.1%		
Common Blue		+14%	26.37%	7.2%		
Chalkhill Blue		- 28%	0.6%	10.3%		Medium
Adonis Blue	Medium	+22%	0.13%	11.5%		High
Holly Blue		+66%	15.67%	11.7%		
Large Blue	High	0	0.13%	71.4%		
Duke of Burgundy	Medium	+18%	0.55%	12.4%		High
White Admiral		+16%	2%	9.5%		
Purple Emperor	Medium	+250%	0.18%	7.9%		High
Small Tortoiseshell		+51%	37.54%	6.4%		
Red Admiral		+25%	36.54%	6.7%		
Peacock		+14%	32.68%	7.2%		
Comma		+39%	18.80%	11.6%		
Small Pearl-bordered Fritillary	Medium	+23%	6.55%	13.5%		
Pearl-bordered Fritillary	High	-2%	3.02%	20.2%		
High Brown Fritillary	High	-13%	1.5%	47.8%		

Dark Green Fritillary		+25%	6.1%	11%	
Silver-washed Fritillary		+12%	12.57%	21.1%	Medium
Marsh Fritillary	High	+27%	2.97%	20.1%	
Glanville Fritillary	Medium	+100%	0.08%	7.7%	
Heath Fritillary	High	0	0.81%	64.3%	
Speckled Wood		+14%	32.44%	8.6%	
Wall		+7%	17.32%	10.3%	
Gatekeeper		+15%	33.75%	12.8%	
Marbled White		+48%	17.74%	22.7%	Medium
Grayling		- 7%	3.13%	10.3%	Medium
Meadow Brown		+7%	33.41%	6.1%	
Ringlet		+27%	19.72%	8.1%	
Small Heath		+5%	12.93%	6.6%	

4. BUTTERFLY ACCOUNTS

4.1. High Priority Butterflies

4.1.1. Wood White - *Leptidea sinapis*

Distribution and Status - A local species with scattered colonies in areas with grass/scrub mosaics or mature woodland with lightly shaded open rides (including conifer plantations). A regional decline has been masked by more widespread recording. Isolated records are probably in some cases the result of mis-identifications. For further information on the status, ecology and habitats of this species in Britain see the national Species Action Plan (Warren & Bourn, 1998).

Cornwall - There are occasional sightings on culm grasslands in north Cornwall near the boundary with Devon. More widespread in north Cornwall in the early part of the 20th century.

Devon - Around 14 colonies scattered throughout the county, with colonies along the East Devon cliffs, on the Haldon Hills, in the Cookworthy area and in the Dunsdon Farm NNR. In Devon, the Wood White occupies 3 main habitat types: open conifer plantation, culm grassland with associated scrub and hedgerows, and scrubby coastal undercliff.

Somerset & Bristol - About 4 main sites (all on Forestry Commission land), with several peripheral colonies on the north slopes of the Blackdowns.

Threats - Changes in woodland management leading to the loss in continuity of open rides and glades
Inappropriate management of woodland ride edges

Survey - None known.

Monitoring - Currently recorded on transects at Buckland Wood, Ruttersleigh Common and Witch Lodge Fields (all in Somerset).

Management - Management occurs at 2 sites in Somerset with brush cutting.

Actions and Targets

Action	BC's targets	Possible partners
1. Identify all colonies especially in Cornwall and Somerset	By 2005	Site owners, Wildlife Trusts
2. Work to protect all surviving colonies	Ongoing	Site owners, National Trust, Forest Enterprise
3. Consider a programme of re-introduction to old sites in north Cornwall	By 2020	North Cornwall District Council, English Nature, Cornwall Wildlife Trust, National Trust
4. Seek to protect the largest colonies through management agreements and reserve acquisition	By 2005	EN, Wildlife Trusts, FE, FRCA

4.1.2. Brown Hairstreak - *Thecla betulae*

Distribution & Status - Probably an under-recorded species and likely to be more common than currently realised, especially in Devon. The region is an important stronghold for this species. Searches in winter for eggs has been the most successful method of obtaining distributional data. This butterfly is especially vulnerable to unsuitable hedgerow management (i.e. cutting more than once every two years). For further information on the status, ecology and habitats of this species in Britain see the national Species Action Plan (Bourn & Warren, 1998a).

Cornwall - No recent records

Devon - Widely distributed in central Devon and Torbay; largely absent from the north-west and south-west (especially Dartmoor), although careful searching in these areas may result in more records, especially in the South Brent and Plymouth areas. Devon is the main national stronghold for this species.

Somerset & Bristol - Found near Dulverton, in a broad band between the Poldens and Blackdowns and from the mid-Quantocks to the Devon border.

Threats - Annual hedge trimming which destroys large numbers of eggs
Loss of hedgerows with Blackthorn
The tidying-up of scrubby areas

Surveys - Detailed surveys were made in Devon (e.g. by S.G. Madge) which produced many additional records.

Monitoring - Currently recorded on three transects (North Wyke in Devon and Mount Fancy and West Sedgemoor in Somerset).

Management - The Torbay Coast and Countryside Trust are producing an action plan targeted at a range of terrestrial invertebrates, which will include the Brown Hairstreak. A BC leaflet is available on the management of hedgerows for hairstreaks.

Actions and Targets

Action	BC's targets	Possible partners
1. Educate landowners on suitable hedge management using BC leaflets	Ongoing	FWAG County Councils, Devon Hedge Group
2. Survey under-recorded areas to establish true status in Devon, Somerset (and north Cornwall)	By 2005	local volunteers, county wildlife trusts
3. Continue to monitor and collate results on all current transects.	Ongoing	

4.1.3. Silver-studded Blue - *Plebejus argus*

Distribution & Status - Generally associated with heathland (inland and coastal), but also found on sand dunes in Cornwall. Most colonies are linked to form meta-populations, but isolated populations occur, particularly on heathland sites in Cornwall (e.g. Breney Common) and in Devon. It is a sedentary butterfly, but females may travel some distance to colonise new areas. The larva requires a warm microclimate at ground level on bare soil or in short vegetation so that sparse heathland or Marram-dominated semi-fixed dune with abundant bare ground provide ideal habitats. The larvae are tended by ants, most often *Lasius alienus*, *Lasius psammophilus* or *Lasius niger*, so that habitat conditions have to be suitable for one or other of these species. Cornwall and Devon are strongholds for this species. For further information on the status, ecology and habitats of this species in Britain see the national Species Action Plan (Ravenscroft & Warren, 1996).

Cornwall - Extensive colonies occur on 3 sand dune systems on north Cornwall, where the larval foodplant is Common Bird's-foot Trefoil. Extensive populations occur on maritime heathland (on the Lizard and on both the north and south coasts); these populations are linear and it can be difficult to separate colonies. 5-6 inland heathland colonies are known, where the larval foodplant is generally heather species.

Devon - An uncommon species confined to about 12 sites, mainly on the east Devon pebblebed commons and the Bovey Heath area. Coastal colonies occur, e.g. at Bolt Head, where the larval foodplant is probably Bell Heather or Western Gorse; Common Bird's-foot Trefoil is probably used at Start Point.

Somerset & Bristol - No recent records.

Threats - Lack of appropriate heathland management

- Extinction of isolated colonies where natural recolonisation is not possible
- Pine and scrub growth on heathland sites, especially in Devon
- Sand extraction and scrub encroachment are potential threats to dune colonies

Surveys - Detailed surveys have been undertaken in Cornwall on inland and coastal heathland sites and on disused metalliferous mine sites. The Cornwall Biodiversity Initiative has prepared a schedule of research for this species, which includes surveys and regular monitoring.

Monitoring - Currently recorded on 3 transects in Cornwall (Gear Sands, Gwithian Pit and Gwithian Towans, e.g. Spalding & Foster, 1999, Spalding, 2000a) and population estimates were made for Gear Sands in 1996 (Haes, *et al.*, 1996). Studies are being carried out on metapopulations on metalliferous mine sites. In Devon, a transect is regularly walked at Aylesbeare/Harpford Commons RSPB reserve and colonies at Bolt Head and Hawkerland Valley are regularly surveyed.

Management - Management for Silver-studded Blue has been carried by Cornwall Wildlife Trust at Breney Common nature reserve; management here includes the clearance of invasive European Gorse. The Clinton & Devon Estates are actively managing for SSB in Devon. The National Trust manages Bolt Head partly for this species by scrub clearance and sheep grazing.

Actions and Targets

This species is identified as a key species in the east Devon Heathlands Biodiversity Action Plan.

Action	BC's targets	Possible partners
1. Identify all colonies in Devon and Cornwall	Ongoing	Local volunteers
2. Continue to monitor on current transects and establish timed counts at key sites	Ongoing	Cornwall County Council, National Trust
3. Work to ensure survival of small colonies on isolated sites by encouraging suitable management	Ongoing	County Councils, district councils, English Nature, Wildlife Trusts, National Trust
4. Restore populations to former sites occupied post-1970, using re-introductions if necessary.	by 2010	County Councils, district councils, English Nature, Wildlife Trusts, National Trust, MOD & Christie Estate (at Braunton Burrows)
5. Liaise with landowners and managers to ensure suitable management	Ongoing	County Councils, district councils, English Nature, Wildlife Trusts, National Trust

4.1.4. Adonis Blue - *Lysandra bellargus*

Distribution & Status - A local, highly sedentary species restricted to areas of short turf on chalk and limestone grassland in southern England. A marked decline in England between 1950 and the 1980's has been followed by a partial recovery associated with increases in rabbit populations. The distribution of this species is to some extent limited by the distribution of its larval foodplant Horseshoe Vetch, which does not occur in Cornwall and may no longer occur on the Devon coast near Torquay. For further information on the status, ecology and habitats of this species in Britain see the national Species Action Plan (Bourn & Warren, 1998b).

Cornwall - No records.

Devon - Previously recorded in east Devon (1978) and in the Torbay area - no current records.

Somerset & Bristol - Introduced to Draycott Sleights in 1988 where it survived until 1994; it is possible that this site is too cold for this species. Now recorded in 5 tetrads. Natural colonisation is now unlikely, considering the isolated nature of former sites.

Threats - Loss of unimproved grassland through agricultural improvement
Lack of suitable management e.g. lack of grazing by farm stock and rabbits
Increasing fragmentation and isolation of sites

Surveys - None known.

Monitoring - None known.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Promote beneficial grassland management in former sites	Ongoing	SWT, EN, landowners,
2. Undertake feasibility study for a potential introduction programme	By 2050	SWT, EN,
3. Depending on the results of a feasibility study, restore populations to the 1970-1982 distribution, using re-introductions if necessary	By 2010	SWT, EN

4.1.5. Large Blue - *Maculinea arion*

Distribution & Status - Became extinct in Britain in 1979, its last site being in Devon, to which it was re-introduced in 1983. Extinction was due to a range of factors, but especially changes in farming practices leading to longer turf and scrub encroachment; the introduction to Britain of myxomatosis and subsequent loss of rabbit grazing was also a key factor. Now the subject of a major re-introduction programme (under the umbrella organisation the Joint Committee for the Re-establishment of the Large Blue Butterfly) using stock originally from Sweden. Many of the existing and potential re-introduction sites are confidential; however it has now been introduced to in 5-7 sites in Britain (all of but one in the south-west region). For further information on the status, ecology and habitats of this species in Britain see the national Species Action Plan (Barnett, L.K. & Warren, M.S. 1995a).

Cornwall - Last recorded in 1973 at the Tidna. Once widespread especially on the north Atlantic coast, but also near Lands End. It is hoped that the first re-introduction to Cornwall will occur in the summer of 2000.

Devon - Previously chiefly recorded between Bolt Head and Bolt Tail in south Devon and from the border with Cornwall north to Hartland Quay, but also recorded from three sites in southern Dartmoor. One of the Dartmoor sites was the last colony in Britain, becoming extinct in 1979. Re-introduced to this site in 1983 and subsequently to a neighbouring site; it persists at both sites.

Somerset & Bristol - Became extinct in Somerset in the mid 20th century, and since successfully re-introduced to 3 sites in the Mendips and Poldens; it has subsequently formed new colonies. One of these colonies is now large enough to provide donor stock for re-introductions elsewhere in the region.

Threats - Difficulties in fine-tuning grazing management
Drought
Isolation of re-introduced colonies

Surveys - All known former sites were resurveyed by I.T.E. in 1997 and 1998 to assess site suitability for re-introductions.

Monitoring - All re-introduction sites are fully monitored as part of the re-introduction programme, with regular transects, egg and larval counts, and estimates of the abundance of the ant *Myrmica sabuleti*. A small group of landowners and nature conservation organisations are working together to re-create suitable habitat in north Cornwall and Devon. The re-instatement of chalk downland in the Poldens includes as one of its objectives the re-introduction of the Large Blue to these hills.

Management - Management targeted for the Large Blue is carried out on all re-introduction sites in Devon and Somerset. Targeted management is also in progress at a range of potential sites in Cornwall, Devon and Somerset by the National Trust, Somerset Wildlife Trust and Millfield School.

Actions and Targets

The Cornwall Biodiversity Initiative has prepared an action plan for this species, which is designed to fit into the national action plan.

Action	BC's targets	Possible partners
1. Assist in re-introduction to a range of sites on the north Atlantic coast	By 2005	I.T.E, EN, National Trust
2. Assist site owners with habitat management	Ongoing	National Trust, private landowners
3. Assist site owners with wardening & monitoring	Ongoing	I.T.E, EN, SWT, National Trust, private landowners
4. Assist national re-introduction programme led by BC national	Ongoing	National Trust, private landowners, Wildlife Trusts

4.1.6. Duke of Burgundy - *Hamearis lucina*

Distribution & Status - This species is restricted in the region to Somerset where it occurs on calcicolous grassland and in open woodland, in particular on calcareous clay sites in the Blackdowns. For further information on the status, ecology and habitats of this species in Britain see the national Species Action Plan (Bourn & Warren, 1998c).

Cornwall - No records

Devon - No recent records

Somerset & Bristol - Found in about 10 colonies, including a small colony near Bath. There have been 2 re-establishments (Thurlbear Quarrylands and Witch Wood) and 2 introductions (Hatch Court and Shutes Farm). Releases at West Sedgemoor (an RSPB reserve) in 1996 and Breach Wood in 1997 both failed to establish.

Threats - Lack of suitable management leading to a decline in abundance of the larval foodplant
Over-grazing e.g. by rabbits
Under-grazing, leading to invasion by scrub and increased amounts of shade

Surveys - Surveys in Somerset have been based on the known distribution of Cowslip, but no new Duke of Burgundy colonies have been found. Surveys have also been carried out in Devon in 2000 by Maurice Edmonds and Roger Sutton where Cowslips have been recorded, but without success.

Monitoring - All known sites are regularly monitored. Currently recorded on four transects in Somerset (Buckland Wood, Thurlbear Quarrylands, Witch Lodge Fields and Worley Hill).

Management - 7 sites are currently in management. Great Breach Wood and Thurlbear Wood are managed by Somerset Wildlife Trust. Adcombe is managed by the Woodland Trust. Thurlbear Quarrylands, Witch Wood and Buckland Wood are managed by BC. Management is generally by brush cutting in winter to create suitable habitat for Cowslips. The Forestry Commission manage their sites by flailing and the use of herbicides. Management at Thurlbear Wood is carried out under a grant from the EN Reserves Enhancement Scheme. Part of Buckland Wood has been fenced to control rabbit grazing. This species is one of 6 targeted in the Forestry Authority's Coppice for Butterflies Challenge grant scheme launched in 1996. In addition to this scheme, there is a standard Woodland Improvement Grant available to cover 50% of the costs of coppicing for threatened butterflies.

Actions and Targets

Action	BC's targets	Possible partners
1. Continue to monitor sites by transects	Ongoing	Local volunteers
2. Maintain suitable habitat on all known sites	Ongoing	Somerset Wildlife Trust, Forestry Commission, Woodland Trust, Millfield School
3. Where appropriate, encourage the take-up of agri-environment schemes to assist in the management of sites	Ongoing	FRCA
4. Maintain suitable management of a range of former sites for possible natural re-colonisation	Ongoing	Somerset Wildlife Trust, private landowners
5. Link existing reserves to areas of suitable habitat by the creation of wildlife corridors.	Ongoing	Somerset Wildlife Trust

4.1.7. Purple Emperor - *Apatura iris*

Distribution & Status - The scattered south-western colonies are peripheral to the English stronghold for this species in central southern England. Isolated records may indicate the presence of a colony or be of wandering individuals or bred specimens which have escaped or been released. All colonies in the region are thought to be small. For further information on the ecology and habitats of this species in Britain see the BC booklet (Willmott, 1990). A national Action Plan for this species has recently been completed (Bourn & Warren, 2000a)

Cornwall - No records.

Devon - Status unclear, with most records of singletons.

Somerset & Bristol - Recent records from east Somerset and near Taunton indicate that one or more colonies may exist in Somerset, but it has gone from the site at Cogley Wood. A re-establishment was attempted at Great Breach Woods but it has now died out here.

Threats - None known.

Surveys - Surveys have been made at Cogley Wood and in the Taunton area.

Monitoring - None known.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey existing and former sites	Ongoing	DWT, SWT, EN
2. Promote suitable management in potential sites (using the BC booklet to provide advice)	Ongoing	Local volunteers, private landowners, DWT, SWT, EN,

4.1.8. Pearl-bordered Fritillary - *Boloria euphrosyne*

Distribution & Status - Once widespread in Cornwall & Devon, now restricted to mainly to Devon and east Cornwall. Most colonies are small and highly vulnerable to extinction. It breeds in the region mainly on south-facing bracken-covered hillsides with abundant violets, but still occurs in some woodland clearings. There is still confusion with some recorders over separating this species from Small Pearl-bordered Fritillary (based mainly on times of emergence) with the result that its current distribution in some areas is still not known with certainty. Small colonies may survive despite no records being made in some years. For further information on the status, ecology and habitats of this species in Britain see the national Species Action Plan (Barnett & Warren, 1995b and its update Brereton *et al.*, 1999).

Cornwall - Restricted to about 7 colonies in east Cornwall, including an isolated coastal colony near Looe. Most colonies are small with the exception of one on the Cornish side of the Marsland nature reserve which is one of the strongest colonies in the region. Recent maps give a misleading impression as several local extinctions have occurred since the 1990s. Isolated records occur in West Penwith (including a 1999 record) but no colony is known here. All records are currently from areas of bracken and scrub.

Devon - Still several colonies (about 75) but with several local extinctions since 1990. There appears to have been a marked decline in most of Devon except Dartmoor, which with 60 sites now forms the stronghold for this species in the region (an estimated 20% of recorded UK sites occur on Dartmoor). All but a handful of colonies are from areas of bracken and/or scrub.

Somerset & Bristol - Not recorded here in 1999 and now believed to be locally extinct. Last seen in 2 colonies (1 in the Poldens, 1 on Exmoor), and lost since 1990 from the Blackdowns. The former colony in the Poldens occurred in woodland coppice.

Threats - Lack of grazing in bracken habitat and consequent succession to scrub
Overgrazing and "poaching" on grassland
Decline in coppicing
Large-scale frequent burning
Bracken eradication measures
Widescale clearance of European Gorse which provides sheltered habitat
Other inappropriate management leading to grassing over, crowding out violets and cooling habitat

Surveys - The national surveys conducted by BC in 1997, 1998 and 1999 covered all present and recent sites; three new sites were discovered in Cornwall during this survey. The DNPA have undertaken a Park-wide survey of potential sites (Baker, 1997) and produce a report detailing all findings including mark-recapture experiments.

Monitoring - Specially targeted transects are monitored on several sites. In Cornwall, transects are walked at Bunny's Hill, Tuckingmill, Marsland, Valency Valley and other sites. In Devon, transects are monitored at Ashclyst Forest, Castle Drogo, Haldon Forest (where large numbers are recorded), Lydford and the Large Blue re-introduction sites X and Y. A transect at Stover Country Park is planned.

Annual meetings of the SW Threatened Fritillaries Action Group are organised by BC to agree monitoring responsibilities for sites. Regular meetings of the Cornwall Fritillary Group organised by North Cornwall District Council are held to agree monitoring and management protocols for Cornwall.

Management - Management takes two forms (woodland coppicing and bracken control) depending on the habitat type. Targeted management has taken place on a number of sites in Devon. In particular, the Dartmoor ESA was launched in 1994 and agreements now cover a number of sites and numerous potentially important bracken slopes. The scheme enforces prescriptions aimed at maintaining habitats on a whole farm or common basis. The following sites elsewhere in Devon are managed for this species: Ashclyst Forest (by the National Trust), Dunsford (by the Devon Wildlife Trust) Haldon, Plym Forest and Lydford (by the Forestry Commission). Management at Haldon by rotational strip mowing has been particularly successful. The National Trust is involved in a scheme on Piddledown Common. Great Torrington Common is managed by the Torrington Commoners Association for a range of fritillaries including this species with advice from BC. Pearl-bordered Fritillary has appeared in new compartments at Marsland nature reserve following scrub clearance.

Actions and Targets

The Cornwall Biodiversity Initiative has prepared an action plan for this species. Under this plan, restoration of suitable habitats throughout the butterfly's former range is proposed within coastal grasslands and woodland valleys in west Cornwall, the north coast, south-east Cornwall and the fringes of Bodmin Moor. Possible re-introduction to west Cornwall by 2005 is also proposed; this depends partly on whether former colonies here can be re-discovered.

An Action Plan has been prepared for this species by the Dartmoor National Park A key objective of this plan is to establish management agreements or other conservation management over 65% of Pearl-bordered Fritillary sites and by seeking better management of suitable bracken stands enable this species to increase its number of sites by 10% in the next 10 years.

Action	BC's targets	Possible partners
1. Encourage suitable management on all existing sites	Ongoing	Landowners, National Trust, CWT, DWT, Forest Enterprise, Dartmoor National Park
2. Survey all potential sites, including recently surveyed sites, especially in Cornwall	Ongoing	Local volunteers
3. Establish regular monitoring on 7 of the largest sites throughout the region	By 2005	Local volunteers, National Trust, DWT, Forest Enterprise, Dartmoor National Park
4. Encourage protection of	By 2005	Landowners, National

largest sites through management agreements and/or reserve acquisition		Trust, DWT, Forest Enterprise, Dartmoor National Park
5. Reinstate woodland coppicing at a range of sites	Ongoing	Forest Enterprise, Woodland Trust, private owners
6. Following habitat restoration re-introduce to 3 sites in Somerset	By 2010	SWT
7. Encourage appropriate woodland management through woodland grant scheme	Ongoing	FA
8. Survey west Cornwall for potential sites and re-introduce to 1 site if no colonies are found	By 2005	Local volunteers
9. Work with others to produce an information leaflet on ecology and habitat requirements	By 2005	National Trust, SWT
10. Interested parties to meet annually	Ongoing	All
11. Raise awareness of the importance of bracken habitats	Ongoing	Local volunteers

4.1.9. High Brown Fritillary - *Argynnis adippe*

Distribution & Status - Occurs on violet-rich bracken covered hillsides with adjacent woodland. One site (in Cornwall) is in woodland, although bracken is present here. Much declined in recent years, the picture is confused by sightings of singletons far from known colonies. High Brown Fritillaries are known to be able to fly at least 5 kilometres between sites. Similarity with the Dark Green Fritillary may have led to confusion as to the past distribution of this species. For further information on the status, ecology and habitats of this species in Britain see the national Species Action Plan (Barnett & Warren, 1995c).

Cornwall - Lost from a range of woodland and bracken/scrub sites since 1970, and now only found with regularity at Welcombe and Marsland nature reserve on the north Cornwall/Devon border. Isolated records (e.g. at Kynance Cove) appear to be of stray individuals and are unlikely to be associated with Cornish colonies.

Devon - Devon is one of the national strongholds for this species; an estimated 33% of the recorded UK sites occur on Dartmoor. The main populations occur on Dartmoor, where there are 5 geographic clusters centred on the Dart Valley, the Upper Teign, Walkham valley, the Haytor area and the Bovey Valley. There are 2 geographic clusters on the Devon side of Exmoor (centred on the Heddon Valley and East Lynn valley). There are also records from a range of other sites, especially north of Plymouth, Great Torrington Common and the Hartland Peninsula (near the only Cornish site). A few isolated records have occurred in north-east Devon, but these may not represent colonies. Many of these colonies lie on land owned by the National Trust.

Somerset & Bristol - Exmoor is the stronghold for this species, with about 2-3 colonies (Bossington and Room Hill). Now extinct from all Mendip and Blackdown Hills sites and lost from all south Somerset woods in the last 20-30 years.

Threats - Lack of grazing in bracken habitat and consequent succession to scrub
Abandonment of traditional bracken management
Overgrazing and poaching
Afforestation, especially with conifers
Breakdown in metapopulation structures as a result of habitat fragmentation
Reduction of coppicing

Surveys - A large number of surveys have been made in the region of future, existing and potential sites. For Somerset see Abbot (1992), Abbot & Clarke (1993), Oates (1989 & 1991) & Vickery (1993). For Devon see Baker (1992), Clements (1994), Coombes (1992 & 1993), Grove, Knight & Baldock (1992), Oates (1989), Warren (1994), & Warren, Baker & Oates (1995). For Cornwall see Clarke & Grove (1992) and Spalding (1998).

Monitoring - The population at Welcombe and Marsland is regularly monitored. In Devon, transects (with timed counts during the flight period) were established at 10 colonies during 1991-1993, in addition to the long-established Bovey Valley transect. Aish Tor, Dunsford Wood, West Down, Bagtor, Luckey Tor, Roborough and Yarner Common have all been

monitored. 7 sub-sites in the Heddon Valley complex are monitored by the National Trust and BC. The results of the Dartmoor surveys are summarised in the confidential report by Warren, Baker & Oates (1995).

Annual meetings of the SW Threatened Fritillaries Action Group are organised by BC to agree monitoring responsibilities for sites. Regular meetings of the Cornwall Fritillary Group organised by North Cornwall District Council are held to agree monitoring and management protocols for Cornwall.

Management - Management for High Brown takes place on a number of Dartmoor and Exmoor sites and there are in place a number of management agreements under Countryside Stewardship, ESA and National Park protocols encouraging appropriate stocking and/or bracken cutting regimes for a range of sites including Cranbrook Castle (DNP/MAFF), Dunsford (MAFF), Hembury (MAFF), Whiddon Park (MAFF) and Yarner Common (MAFF). A leaflet giving advice on bracken management for fritillaries has been prepared by BC.

Bracken ride cutting in June takes place at the following sites: Aish Tor (DWT), Blackadon (DWT), Cranbrook Castle (commoners via DNP), Heddon Valley area (NT), Luckey Tor (DWT), Mansley Combe (NT), Mounsey (SWT), Myrtleberry Cleave (NT), Trendlebere Combe (EN) and West Down (EN & friends of Tavistock Commons). Scrub clearance and grazing are in place at Piddletown Common (NT) and Dunsford (DWT). Autumn swiping and glade clearance have been undertaken at Dunsford Woods (DWT). Winter cattle grazing is in place at Bossington Hill (NT). Great Torrington Common is managed by the Torrington Commoners Association with advice from BC for a range of fritillaries including this species.

Actions and Targets

The Cornwall Biodiversity Initiative has prepared an action plan for this species. This aims to seek the restoration of favourable management to former and potential sites including the Seaton valley LNR, the Woodland Trust reserve at Canceleave, the Tidna and sites on the fringes of Bodmin Moor. If suitable habitat can be restored, it is hoped to introduce the butterfly to at least 2 sites in Cornwall. Members of BC Cornwall are managing a captive-rearing programme using stock taken from Dartmoor.

An Action Plan has been prepared for this species by the Dartmoor National Park This aims to establish management agreements or other conservation management over 80% of High Brown Fritillary sites and by seeking better management of suitable bracken stands enable this species to increase its number of sites by 10% in the next 10 years.

Action	BC's targets	Possible partners
1. Consider acquisition of reserves with colonies	Ongoing	BC (national), DWT, SWT
2. Assist in appropriate management of colonies	Ongoing	NT, DWT, DNP, ENP, MAFF, EN
3. Advise land managers on suitable management	Ongoing	BC (national)
4. Examine the feasibility of re-introducing to Cornwall as part of local biodiversity initiative	By 2005	NT, EN, Caradon DC, WT
5. Continue to monitor existing sites and monitor additional sites	Ongoing	DNP, ENP, EN, DWT
6. Interested parties to meet annually	Ongoing	All

4.1.10. Marsh Fritillary - *Eurodryas aurinia*

Distribution & Status - A declining species, found mainly on damp unimproved neutral or acid grasslands. Colonies are often small, prone to large fluctuations in size and hence can be difficult to detect in poor years. The distribution of this species is poorly known, especially in Cornwall, partly because casual recording is often based on the presence of adults rather than larvae (larval surveys can be the most productive way of obtaining distribution data). Population fluctuations can be partly dependent on population changes in 2 species of parasitic wasp in the genus *Cotesia*. For further information on the status, ecology and habitats of this species in Britain see the national Species Action Plan (Barnett & Warren, 1995d).

Cornwall - Most abundant on the mid-Cornwall moors and parts of Bodmin Moor, but much declined in recent years in the west and on the culm measures of north Cornwall. One site in east Cornwall was recently converted to flax-growing.

Devon - Devon is a national stronghold; in 1990 85 of the 432 confirmed UK colonies were in Devon, and it is still widespread on Dartmoor (44 colonies, representing 10% of the UK colonies), in north Devon on the culm measures and on Witheridge and Rackenford Moors.

Somerset & Bristol - About 6 sites are known, mostly in the Blackdown Hills and on Exmoor. However, many sites have been lost in the last 10 years, including Ashcott, Charterhouse, Dags Lane Drove, Hollow Marsh, Langford Heathfield, Rosyclose Copse and Street Heath. In 1997 re-introductions were attempted at Folly Farm (which failed) and at Freshmoor (which is still surviving).

Threats - Fragmentation of sites and loss of meta-population structure
Inappropriate management, especially loss of grazing, leading to scrub encroachment (e.g. willow scrub)
Overgrazing, especially when combined with winter feeding
Improvement of suitable land e.g. by drainage, fertilising or conversion to arable
Creation of ponds leading to loss of habitat and the drying out of wetlands

Surveys - BC are co-ordinating surveys of UK sites for this species in a 2 year programme (1999-2000); parts of the region have been surveyed as part of this programme. Between 1997 and 2000, DNPA undertook a Park-wide survey covering over 400 sites. Marsh Fritillary sightings were included in an invertebrate survey of mid-Cornwall moors (Spalding & Haes, 2000) but the most comprehensive surveys for this species in mid-Cornwall were by Hobson (1977a; 1977b). Detailed surveys of larval webs have been made at Breney Common CWT nature reserve 1997-1999 and several places in Devon.

Monitoring - Regular monitoring of larval webs occurs in north Devon. Gary Pilkington carries out regular monitoring at Volehouse Moor nature reserve and a transect is walked at Dursdon and Bradworthy Moors. The DNPA carries out monitoring on management agreement sites and in some sites on behalf of the Duchy of Cornwall. DWT monitor some sites. In Somerset, transects are monitored for this species at Buckland Wood. Regular monitoring has taken place on Goss Moor NNR since 1996 and annually at Breney Common CWT nature reserve.

Management - The DNPA have offered 21 year management agreements to owners of the most floristically rich culm measures grassland sites and 50% of the Marsh Fritillary colonies on Dartmoor are now covered at least partially by these agreements. Part of the Culm Measures and the mid-Cornwall Moors have been proposed as a SAC, partly due to the presence of this species. DWT manage a range of reserves for this species. The Culm Grassland Working Group has been established since 1991 as a forum for information exchange concerning management. In Cornwall, Goss Moor NNR and Breney CWT reserve are partly managed for this species. Most sites in Somerset are reserves or on SSSI's. BC has prepared a leaflet and factsheet which provide details of suitable management regimes for Marsh Fritillary.

Actions and Targets

Several action plans have been prepared for this species as part of local biodiversity initiatives, e.g. for Cornwall, for Devon and for the "South-West" (Cornwall, Devon, Somerset, Gloucestershire, Wiltshire and Dorset). This action plan is designed to conform to these plans.

A re-introduction has been proposed for Haddon Moor in Somerset. However, it should be noted that insufficient time has elapsed since the disappearance of Marsh Fritillary from this site to consider a re-introduction here. Any proposed re-introduction should be from a similar site and should not take too much stock. For these reasons, re-introductions are not included as one of the proposed actions.

Action	BC's targets	Possible partners
1. Resurvey all previous and present sites to establish status	In 2005	Local volunteers
2. Encourage suitable habitat management for known colonies, especially on nature reserves	Ongoing	DWT, CWT, EN, DNPA, ENP, FRCA
3. Acquire one site in Cornwall as a BC nature reserve	By 2005	Local volunteers
4. Encourage suitable habitat management adjacent to occupied sites	By 2005	DWT, CWT, EN, DNPA, ENP, FRCA
5. Monitor the 3 largest colonies in each of Cornwall, Somerset & Devon	Ongoing	DWT, CWT, EN, DNPA, ENP
6. Monitor populations of associated parasitic wasp <i>Cotesia</i> spp.	Ongoing	DWT, CWT, CISFBR
7. Establish habitat association with Double Line moth	Ongoing	SMG, DMG
8. Run site based training days for advisers	Ongoing	DWT, CWT, EN, DNPA, ENP, FRCA

4.1.11. Heath Fritillary - *Mellicta athalia*

Distribution & Status - Following a serious decline in Britain in the 1960s and 1970s, the Heath Fritillary has now partly recovered due to more suitable habitat management and re-introductions. In the south-west, this species occupies warm sheltered combes on Exmoor and abandoned strawberry fields in Cornwall. It has now disappeared from former woodland sites in Cornwall and Devon. For further information on the status, ecology and habitats of this species in Britain see the national Species Action Plan (Barnett & Warren, 1995e).

Cornwall - Restricted to 2 colonies near Luckett, both owned by the Duchy of Cornwall. At both sites, it occurs in sheltered open areas coniferous woodland, where the larvae feed mainly on Ribwort Plantain.

Devon - Once widespread and now known definitely only at Lydford, where it was re-introduced using stock from Cornwall in 1993, 9 years after its disappearance from this site. It occurs mainly on the BC reserve along a disused railway cutting but also in adjacent coniferous woodland owned by Forest Enterprise (although breeding is not proven here). The larval foodplant here is mainly Ribwort Plantain. Now probably lost from Yealescombe Water and Oakford (not seen for last 2 years).

Somerset & Bristol - Exmoor is the stronghold in Britain, with about 16 colonies, occurring in short heathy vegetation. The larval foodplant here is mainly on Cow-wheat but Foxglove is regularly used. Additional colonies may be discovered here with further survey work and a new colony was found in 1999. However, the number of occupied sites has fallen almost 50% since peaking in 1989-90, with low numbers recorded at most sites.

Threats - Inappropriate management leading to scrub encroachment onto grassland habitat and loss of larval foodplant
Lack of burning to control scrub encroachment

Surveys - Detailed surveys of Exmoor were carried out in the 1980s (Jarman, 1985-1988) and in 1999 (Feber, *et al.*, 2000). Surveys of existing and former sites in Devon have been undertaken frequently and comprehensively.

Monitoring - Both colonies in Cornwall are regularly monitored and the site at Greenscombe Wood is part of the national transect recording scheme. The site at Lydford is regularly monitored. The National Trust and the Exmoor Natural History Society do much of the monitoring of sites on Exmoor. A transect is walked at Bincombe in Somerset.

Management - Both sites in Cornwall are managed for this species by the Duchy of Cornwall with advice from English Nature and BC. BC volunteers (with help from contractors) undertake scrub clearance at the Lydford nature reserve and the Forestry Commission have designed their forest plan for the adjacent woodland to include clear felling areas for the butterfly to move into. Management of Exmoor sites is mainly by the National Trust which maintains suitable habitat by a variety of methods, including rotational burning and grazing with sheep, ponies and cattle.

Actions and Targets

The Cornwall Biodiversity Initiative has prepared an action plan for this species. This includes promotion of strategic re-introductions into suitable restored and managed habitats. English Nature and the National Trust are reviewing the management of sites on Exmoor following recent declines in this key area.

Action	BC's targets	Possible partners
1. Monitor colonies at Lydford, Greenscombe Wood and the network of key sites on Exmoor	Ongoing	Local volunteers
2. Manage the BC reserve at Lydford	Ongoing	Local volunteers
3. Survey for new colonies on Exmoor	By 2005	Local volunteers, Exmoor Natural History Society, ENP, EN
4. Re-survey former sites in Devon	By 2005	Local volunteers
5. Assist in the management of sites on Exmoor	Ongoing	ENP, NT,
6. Re-introduce to former site at Herodsfoot in Cornwall.	By 2010	FE

4.2. Medium Priority Butterflies Nationally Important

4.2.1. Dingy Skipper - *Erynnis tages*

Distribution and Status - A local species with generally small scattered colonies, which occur in a variety of open sunny self-maintained habitats with abundant bare ground including disused railways lines, old quarries, woodland clearings, coastal grasslands and sand dunes. It is more common in the east of the region. A regional decline has been masked by more widespread recording. However, colonies are often small and the butterfly may be overlooked. There is a partial second brood in most years with adults flying in late July and August. For further information on the status, ecology and habitats of this species in Britain see the national Species Action Plan (Bourn *et al.*, 2000).

Cornwall - Much declined in recent years, with few recent records for west Cornwall. Uncommon even on sand dunes and with no records for disused mine sites, this species is commonest on coastal grasslands and sheltered inland sites in woodland and scrub.

Devon - Small colonies are scattered throughout the county, especially on the cliffs of east Devon, on the sand dunes at Braunton Burrows, inland at Haldon Forest and in sheltered meadows on the edges of Dartmoor. Strong colonies occur on sheltered meadows at Welcombe and Marsland nature reserve.

Somerset & Bristol - Several colonies in a variety of early successional stage habitat, especially on open grassland sites, although absent from Exmoor and the Quantocks.

Threats - Loss of open clearings in woodland

Lack of appropriate management of unimproved grassland leading to longer turf and increasing scrub

Overgrazing

Continuing fragmentation and isolation of habitats

Survey - None known.

Monitoring - Currently recorded on at least 15 transects in the region, although not necessarily recorded every year (Gear, Lundy Bay and Lockett in Cornwall; Lydford in Devon; Buckland Wood, Cross Plain, Draycott Sleights, Folly Farm, Hartley Field, Hinkley Point, Stoke Camp, Thurlbear Quarrylands, Ubley Warren, Witch Lodge Fields and Worley Hill in Somerset).

Management - No specific management projects for this species are known, although management at Welcombe and Marsland nature reserve is geared towards a range of butterflies including Dingy Skipper (by cutting at the end of the season).

Actions and Targets

Action	BC's targets	Possible partners
1. Continue to monitor sites by transects	Ongoing	Site owners
2. Survey sites with previous records and sites with suitable habitat	Ongoing	Local volunteers
3. Identify the 3 largest colonies in each county and assess management requirements	By 2005	Wildlife Trusts, EN, National Trust, private landowners

4.2.2. Grizzled Skipper - *Pyrgus malvae*

Distribution and Status - A local species with generally small scattered colonies, which occur in a variety of early successional stage habitat with short turf and abundant bare ground, e.g. woodland clearings, disused railways lines, old quarries, roadside embankments, coastal grasslands and sand dunes. A regional decline has been masked by more thorough recording, but still a widespread species and possibly overlooked in places. For further information on the status, ecology and habitats of this species in Britain see the national Species Action Plan (Brereton *et al.*, 1998).

Cornwall - Much declined in recent years, with about 3 remaining colonies. It has largely disappeared from woodland sites because of shading out of rides; shading is also a threat to the colony on an abandoned railways line in mid-Cornwall. The largest colonies are on the calcicolous grasslands on the dunes at Penhale Dunes.

Devon - About 30 colonies throughout the county, including a sand dune colony at Braunton Burrows, a conifer plantation colony at Haldon, an old railway line at Lydford and a few colonies in woodland clearings.

Somerset & Bristol - Several colonies in a variety of early successional stage habitat.

Threats - Loss of open clearings in woodland

Lack of appropriate management leading to longer turf and loss of bare ground

Lack of recently abandoned industrial habitat suitable for new colonies

Survey - Targeted searches in mid Cornwall found only one new colony (at Goss Moor)

Monitoring - Currently recorded on 10 transects in the region (Lydford in Devon, Buckland Wood, Cross Plain, Draycott Sleights, Folly Farm, Stoke Camp, Thurlbear Quarrylands, Ubley Warren, Witch Lodge Fields and Worley Hill in Somerset), and occasionally recorded on the transect at Gear Sands in Cornwall. The small population at Marsland is regularly monitored.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Continue to monitor sites by transects	Ongoing	Site owners, Cornwall County Council
2. Work to protect some surviving colonies by scrub clearance where necessary	Ongoing	Site owners
3. Survey sites with previous records and sites with suitable habitat	Ongoing	Wildlife Trusts, local naturalist groups
4. Identify the 3 largest colonies in each county and assess management requirements	By 2005	Wildlife Trusts, EN, National Trust, Forest Enterprise, private landowners
5. Seek to protect the largest colonies through management agreements and reserve acquisition	By 2005	Landowners, FRCA, EN
6. Obtain detailed information on the ecology of this species, including the preferred larval foodplants	Ongoing	Local volunteers

4.2.3. White-letter Hairstreak - *Satyrrium w-album*

Distribution and Status - Following a dramatic decline due to the widespread incidence of Dutch elm disease, a number of new colonies have been found especially in Devon. A highly sedentary species, often hard to find and therefore easily overlooked, it may be more widespread than currently realised.

Cornwall - Last recorded in Cornwall in 1985, and always uncommon.

Devon - The number of confirmed sites has increased since 1992 when a detailed survey started, mainly in south-east Devon. At all but one site breeding occurs on flowering Wych Elm; two thirds of these sites are on limestone.

Somerset & Bristol - About 40 colonies throughout Somerset, in addition to some in the Bristol area.

Threats - Dutch elm disease

Hedge maintenance and destruction of hedgerow elm trees

Survey - Detailed surveys have been undertaken in Devon by BC volunteers. Former sites are currently being searched for flowering Wych Elms, following which they are searched for eggs. No detailed surveys are known in Cornwall.

Monitoring - Currently recorded on 2 transects in Somerset (Folly Farm and Rodney Stoke).

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Continue to survey areas with significant Wych Elm populations	Ongoing	
2. Encourage planting of resistant elm varieties in suitable areas and the coppicing of diseased Elm	Ongoing	

4.2.4. Small Blue - *Cupido minimus*

Distribution and Status – Always scarce in the region, this species has declined in recent years. Habitats occupied include calcareous grassland, sand dunes, disused quarries and coastal undercliff. Often restricted to small areas, it is possibly overlooked in some areas. The larval foodplant Kidney Vetch is widespread (especially in coastal areas), more so than the butterfly. The Small Blue has been selected as a key species associated with lowland calcareous grassland by the Torbay Coast and Countryside Trust. For further information on the status, ecology and habitats of this species in Britain see the national Species Action Plan (Bourn & Warren, 2000b).

Cornwall – No known colonies, but a single record from near Rock sand dunes in 1991 suggests that a small colony might be present nearby. Releases were made in west Cornwall between 1982 and 1983 (Morton, 1985), but were unsuccessful (perhaps because of differences in the phenology of Kidney Vetch in west Cornwall)

Devon – Never common in Devon, where it was always restricted to the south-east and north-west. Currently known from only 2 sites (Braunton Burrows & the disused Lummaton Quarry in Torquay), having disappeared from a number of sites. Both colonies are very small. One possible reason for local extinctions is fluctuations in the abundance of Kidney Vetch on some sites. There have been several temporary colonies on the coastal limestones in Torbay

Somerset & Bristol – Found at 6 sites within the Mendips on calcareous grassland. The current status of the 2 colonies outside the monitored sites is unknown.

Threats – Scrub encroachment
Over-grazing

Survey – Sites in Somerset are actively surveyed for this species; additional effort is proposed. Volunteer effort is being sought in Devon; the discovery of a new site in Torbay in 1999 indicates that there is a possibility of undiscovered colonies on the coastal calcareous grassland of east Devon. No surveys are carried out in Cornwall.

Monitoring – The 4 Somerset sites on nature reserves are monitored annually. The colony on Dolebury Warren is monitored by the Avon Butterfly Project and by the Avon Wildlife Trust. In addition, currently recorded on 2 transects in Somerset (Draycott Sleights and Stoke Camp).

Management – Three sites in Somerset are managed by wildlife trusts, one colony is managed by BC, and Braunton Burrows is managed by the MOD. The site at Torquay is owned by Torbay Borough Council. The Torbay Coast and Countryside Trust are producing an action plan targeted at a range of terrestrial invertebrates, which will include the Small Blue.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey areas with larval foodplant to determine current distribution, especially in east Devon	By 2005	Local volunteers
2. Continue to monitor on existing transects and collate results	Ongoing	Local volunteers
3. Draw up management recommendations for landowners and farmers	Ongoing	Local volunteers, wildlife trusts, EN, FRCA, FWAG
4. Work with the Torbay Coast and Countryside Trust to highlight the importance of the Small Blue	Ongoing	TCCT

4.2.5. Chalkhill Blue - *Lysandra coridon*

Distribution and Status - A local species confined to chalk and limestone downs where its foodplant Horseshoe Vetch grows. The south-west region is on the extreme edge of its national distribution.

Cornwall - No recent records and unlikely to have bred here.

Devon - Used to breed in east Devon on maritime chalk grasslands, where the larval foodplant Horseshoe Vetch still occurs. These colonies may have been the result of stray females wandering from adjacent colonies in Dorset. The last record is from 1981.

Somerset & Bristol - There are two main centres: the Poldens and the Mendips, with good colonies near Weston-super-Mare e.g. at Brean Down and Hellenge Hill.

Threats - Lack of grazing leading to scrub encroachment
Over-grazing leading to absence of suitable foodplant clumps for egg-laying
Agricultural improvement

Survey - Surveys of the Mendips were undertaken by BC in 1988 and 1998.

Monitoring - Currently recorded on 5 transects in Somerset (Bannerdown Common, Kings Weston Hill, No-one Cottage, Rodney Stoke and Stoke Camp).

Management - The BC reserve at Stoke Camp and the SWT reserve of Draycott Sleights are managed for a range of butterflies including this species. Stoke Camp is grazed for a minimum of 10 weeks from September each year. Some sites in the Poldens are managed by scrub removal. Scrub control is carried out at Bannerdown near Bath.

Actions and Targets

Action	BC's targets	Possible partners
1. Continue to monitor key sites by transects and foodplant surveys	Ongoing	Local volunteers
2. Continue management of the BC sites at Stoke Camp	Ongoing	Local volunteers
3. Continue scrub control on sites such as at Bannerdown	Ongoing	Freeholders
4. Survey sites where Horseshoe Vetch has been recorded	Ongoing	Local volunteers

4.2.6. Small Pearl-bordered Fritillary - *Boloria selene*

Distribution and Status – Widely distributed throughout the region with scattered colonies occupying a range of habitats, including damp grassland and wet heath, open deciduous woodland, limestone grasslands (in Somerset) and with small colonies on dune grassland. Small colonies are often prone to local extinctions, but an undoubted decline since 1950 has been masked by increased recording in recent years. A partial second brood occurs frequently, especially in coastal areas. For further information on the status, ecology and habitats of this species in Britain see the national Species Action Plan (Barnett & Warren, 1995f).

Cornwall - Largely restricted to the coastal heaths and grasslands and damp unimproved meadows, having been lost from most woodland. Still widespread but with mainly small colonies.

Devon – Still widespread (e.g. on the coast and on Dartmoor), but with fewer records from the extreme east of Devon and mid-Devon north of Okehampton.

Somerset & Bristol - There are still several sites in the Blackdowns, with some colonies on Exmoor, but several colonies are becoming increasingly isolated with the resulting danger of local extinctions with no possibility of natural recolonisation. There is also one main colony at Dolebury Warren.

Threats - Changes in woodland management, leading to the loss of open areas
Abandonment of unimproved grassland, leading to invasion by scrub
Agricultural improvement and drainage of damp grassland habitat

Survey – No surveys currently known.

Monitoring – Currently recorded on 14 transects in the region (Gear Sands, Gwithian Towans and Lundy Bay in Cornwall; Ashclyst Forest, Little Breach, Lydford and Site X in Devon; Cross Plain, Haddon Moor, Langford Heathfield, Mounsey, Mount Fancy, Ruttersleigh Common and Ubley Warren in Somerset).

Management – Part of the Welcombe and Marsland nature reserve is managed for this species. A leaflet giving advice on bracken management for fritillaries has been prepared by BC.

Actions and Targets

Action	BC's targets	Possible partners
1. Encourage protection of all large colonies through management agreements	Ongoing	Dartmoor National Park, wildlife trusts, National Trust, Heritage coast services
2. Include SPBF in agri-environment agreement schemes	Ongoing	Landowners, FWAG, FRCA, EN
3. Encourage restoration of suitable habitat where there is potential for re-establishing a network of populations	Ongoing	EN, wildlife trusts
4. Advise on habitat restoration on potential and former sites	Ongoing	FRCA, FWAG
5. Establish the ecological requirements of the coastal populations	Ongoing	Local volunteers

4.2.7. Silver-washed Fritillary - *Argynnis paphia*

Distribution & Status - Widespread but never common throughout the region, occurring in open woodland and even along hedgerows. Tolerates shadier woodland than the other fritillaries.

Cornwall - Widespread in central and eastern Cornwall, very local in the west where it is associated with small areas of woodland.

Devon - Widely distributed throughout Devon, especially on the fringes of Dartmoor, and probably in all the larger woodlands.

Somerset & Bristol - Widely distributed in areas of woodland throughout Somerset, including the fringes of Exmoor. The variety *ab valezina* is found regularly within Cheddar Gorge.

Threats - Changes in woodland management leading to increased shade.

Surveys - Surveys in woodland in west Cornwall by John Wachter have produced only 2 sites (Trevarno and Godolphin).

Monitoring - Currently recorded on 21 transects (Bodmin Beacon, Godolphin in Cornwall; Ashclyst Forest, Little Breach, Lydford, Site X, Yarner Wood in Devon; Buckland Wood, Ebbor Gorge, Hartley Field, Langford Heathfield, Mounsey, Mount Fancy, No-one Cottage, Rodney Stoke, Ruttersleigh Common, Stoke Camp, Thurlbear Quarrylands, West Sedgemoor, Witch Lodge Fields and Worley Hill in Somerset).

Management - Part of the Welcombe and Marsland nature reserve is managed for this species.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey under-recorded areas, especially west Cornwall	By 2010	Local volunteers

4.2.8. Glanville Fritillary – *Melitaea cinxia*

Distribution and Status – Restricted in the region to one introduced colony in Somerset. One of Britain’s rarest butterflies, it is otherwise confined to the Isle of Wight with occasional colonies in Hampshire. Its dependence on metapopulations is likely to make it more vulnerable than many species, since it depends on the availability of a range of potential sites for future colonisation. The Somerset colony occupies coastal grassland, which is one of the two main habitat types occupied in Britain (the other is south-facing chalk downland). This species is not considered high priority regionally important as the colony was introduced. For further information on the status, ecology and habitats of this species in Britain see the national Species Action Plan (Bourn & Warren, 1997).

Cornwall – No records.

Devon – No records.

Somerset & Bristol – Introduced to Sand Point (owned by the National Trust) in 1983, where it still survives in small numbers with from 3 to 12 larval webs counted annually between 1993 and 1999. Introduced colonies often fail within 10 years (Oates & Warren, 1990). This species is more mobile than many butterflies, but no newly colonised sites are known.

Threats – Loss of larval foodplant through scrub encroachment
Drought
Increased grazing by rabbits
Loss of genetic viability due to isolation

Survey –.None known.

Monitoring - Regular larval web counts.

Management – The National Trust manage the site; management includes Bramble control.

Actions and Targets

Action	BC's targets	Possible partners
1. Monitor population of the colony	Ongoing	National Trust; ABG
2. Promote beneficial management of the site	Ongoing	National Trust
3. Discourage future introductions	Ongoing	English Nature

4.2.9. Marbled White - *Melanargia galathea*

Distribution & Status – Fairly common on dry unfertilised grassland throughout the region apart from west Cornwall and showing a real increase in distribution partly at least due to a decrease in grazing, e.g. by rabbits.

Cornwall – Restricted to east Cornwall, especially on coastal grasslands and the culm measures of north-east Cornwall. Colonies appear to move westwards in dry summers. Many colonies are extremely small and isolated and prone to local extinctions; there are large populations at Welcombe and Marsland.

Devon – Recorded throughout Devon except the higher parts of Dartmoor. Widespread on roadside verges, lightly grazed meadows, railway embankments and damp alluvial meadows.

Somerset & Bristol – Widespread throughout the area on rough grassland

Threats – Over-grazing leading to loss of longer grass habitat
Under-grazing and consequent scrub encroachment
Unnecessary cutting of roadside verges

Surveys - None known.

Monitoring – Currently recorded on 24 transects (Little Breach and Site X in Devon; (Bannerdown Common, Buckland Wood, Cross Plain, Delacourt, Draycott Sleights, Ebbor Gorge, Folly Farm, Ham Wall, Hartley Field, Hinkley Point, Kings Weston Hill, Langford Heathfield, Mounsey, Mount Fancy, No-one Cottage, Rodney Stoke, Stoke Camp, Thurlbear Quarrylands, Ubley Warren, West Sedgemoor, Witch Lodge Fields and Worley Hill in Somerset).

Management – Part of the Welcombe and Marsland nature reserve is managed for this species.

Actions and Targets

Action	BC's targets	Possible partners
1. Continue to monitor sites by transects and collate results	Ongoing	Local volunteers
2. Continue to monitor changes in distribution	Ongoing	Local volunteers

4.2.10. Grayling - *Hipparchia semele*

Distribution & Status - Widely scattered colonies occur throughout the region, but it is absent from large areas of Somerset and north Devon. Mainly a coastal species, Grayling occurs in a wide variety of habitats, most often on maritime grassland & heathland but also on acid short-turf grasslands and inland lowland heath. In Cornwall several colonies occur on abandoned metalliferous mine sites and in quarries (Spalding, 1995); colonies also occur on calcareous grasslands, e.g. sand dunes in Cornwall and Devon and limestone grasslands in Somerset. The distribution of breeding populations may be confused because many records are of singletons, possibly wandering some distance from colonies. However, the Grayling is most under threat on the calcareous grassland sites.

Cornwall - Widespread on the coast and inland on post-industrial sites (mine sites, quarries, disused railways) and heathland, e.g. on the Lizard heathlands.

Devon - Widespread on the fringes of Dartmoor and on lowland heath in east Devon and Bovey Heath, together with colonies on the north and south coasts.

Somerset & Bristol - Mainly limited to the limestone areas of the Mendip and Brean areas, but also fairly common on Exmoor and found on the Blackdowns. Also found at Trooper's Hill within the Bristol conurbation.

Threats - Lack of grazing (including by rabbits) with consequent increase in turf height and loss of open areas
Reclamation of post-industrial sites with subsequent loss of bare ground habitat and associated short turf grassland

Surveys - A large number of invertebrate surveys of abandoned metalliferous mine sites in Cornwall have taken place since 1994 (e.g. Spalding & Haes, 1995) which include records of this species.

Monitoring - Currently recorded on 5 transects (Gear Sands, Godolphin and Gwithian Towans in Cornwall; Site X in Devon; Draycott Sleights in Somerset).

Management - The BC reserve at Stoke Camp is managed for this and a range of other butterfly species.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey sites to ascertain true status in Somerset	Ongoing	
2. Protect all calcareous grassland sites	Ongoing	SWT, NT
3. Protect abandoned metalliferous mine sites in Cornwall	Ongoing	Kerrier District Council, Carrick District Council, Cornwall County Council

4.3. Low Priority Butterflies

4.3.1. Essex Skipper - *Thymelicus lineola*

Distribution & Status – This species may be under-recorded but is possibly advancing into the region, with recent confirmed sightings in Somerset.

Cornwall – Introduced to a site near Lostwithiel in east Cornwall in 1994.

Devon – Occasional records but no recent confirmed records.

Somerset & Bristol – Recorded from 27 1km squares mainly in east Somerset; some sightings remain unconfirmed.

Threats – None known.

Surveys - Surveys of Cornish sand dunes have failed to prove its presence at these sites.

Monitoring – None known.

Management – No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey sites, especially roadside verges, to ascertain current status	Ongoing	Local volunteers

4.3.2. Purple Hairstreak - *Quercusia quercus*

Distribution & Status – A widespread species which is probably more common than current records indicate, occurring in both large and small woods and even along wooded hedgerows.

Cornwall – Widespread in woodland in east Cornwall but in isolated scattered colonies in central and west Cornwall. A lack of records in the last 10 years may be either due to in a decline in recording effort or the result of local extinctions.

Devon – Widespread, but with fewer records for north-west Devon.

Somerset & Bristol – Widespread in woodlands throughout the area.

Threats – Removal of oak trees.
Fragmentation of wooded landscape

Surveys - Probably an under-recorded species. Woodland surveys in west Cornwall by John Wachter have produced only 4 new sites.

Monitoring – None known.

Management – No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey existing and former sites, especially in west Cornwall	By 2010	Local volunteers CISFBR

4.3.3. Brown Argus *Aricia agestis*

Distribution & Status – Always considered a scarce butterfly on the edge of its UK range, the colonies in Cornwall are isolated from the national populations. Mainly a coastal butterfly in the region (where it occupies sand dunes and maritime grassland), but with several inland colonies especially south-east of Dartmoor (on acid grassland, woodland rides and quarries) and in east Somerset (on calcareous grassland). Probably increasing locally in recent years. The distribution is confused because of inaccurate recording and isolated specimens seen a long way from known colonies; Brown Argus appears to be more mobile than most of the Blue butterflies. The main foodplant in Somerset is Rock-rose and others; Crane's-bills and Stork's-bill are used in Devon and Cornwall.

Cornwall – Mainly on the north coast, with strong populations on the sand dunes; also inland and on the south coast of west Cornwall.

Devon – Mainly on the south coast with scattered colonies around Braunton and south-east of Dartmoor.

Somerset & Bristol – Mainly on calcareous grassland where the larval foodplant is Rock-rose, but also on Cranesbill species on set-aside.

Threats – The temporary nature of set-aside habitat
Lack of management leading to scrub encroachment

Surveys - Some surveys have been made on the north Cornish sand dunes.

Monitoring – Currently recorded on 14 transects (Gear Sands and Gwithian Towans in Cornwall; Little Breach in Devon; Bannerdown Common, Cross Plain, Draycott Sleights, Folly Farm, Hinkley Point, Kings Weston Hill, No-one Cottage, Rodney Stoke, Stoke Camp, Ubley Warren and Worley Hill in Somerset).

Management – No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Continue to monitor on transects and collate results	Ongoing	Cornwall County Council
2. Survey potential sites and identify foodplants being used	Ongoing	Local volunteers

4.3.4. White Admiral - *Ladoga camilla*

Distribution & Status – The region has always been on the edge of the national range for this butterfly, and it was absent from most of the area in the early part of the century. Following a range expansion in the 1930s and 1940s, it now occurs in scattered colonies in east Somerset and in larger woodlands in east Devon. Attempted re-introductions (e.g. to Plym Forest and the Welcombe and Marsland nature reserve) have failed.

Cornwall – No reliable breeding colonies. A re-introduction attempt at Marsland by RSNC in the 1980s failed.

Devon – Scattered colonies in woodland east of Dartmoor.

Somerset & Bristol – Currently only found in the Somerset levels; not recorded in the Blackdowns for several years.

Threats – Increased shade in unmanaged woodland and conifer plantations

Surveys - None known.

Monitoring – Monitored at Ashclyst Forest by the Ashclyst Forest Butterfly and Wildlife Group.

Management – No specific management projects for this species are known. Some removal of conifers at Stover Park should open up breeding areas for this species.

Actions and Targets

Action	BC's targets	Possible partners
1. Continue to monitor transects and collate results	Ongoing	Local volunteers
2. Continue to monitor changes in distribution	Ongoing	Local volunteers

4.3.5. Dark Green Fritillary - *Argynnis aglaja*

Distribution & Status – Widely scattered colonies occur throughout the region, with large coastal populations (especially on sand dunes) and colonies on rough grassland and in open woodland.

Cornwall – Mainly a coastal species, with extensive colonies on sand dunes, on open cliffs with maritime grassland and heath, and in sheltered coastal valleys in north Cornwall. Also inland on rough grassland and open heathland, often where bracken scrub occurs.

Devon – Mainly a coastal species but also on the fringes of Dartmoor on rough grassland and open heathland; also occasionally in open woodland. One site (Maiden Down) was drained for work associated with the M5.

Somerset & Bristol – The strongest colonies are on Exmoor and on the Mendips, but it also occurs on the Poldens, Blackdowns and Quantocks.

Threats – Over-grazing with the consequent loss of larval foodplants and nectar sources
Development

Surveys - A targeted survey was undertaken in the Mendips in 1997.

Monitoring – Currently recorded on at least 7 transects in the region.

Management – Part of the Welcombe and Marsland nature reserve is managed for this species. An attempt was made to manage Westbury Beacon for this species, but no co-operation from the owners was available.

Actions and Targets

Action	BC's targets	Possible partners
1. Continue to monitor sites	Ongoing	Local volunteers
2. Encourage suitable management at a range of sites	Ongoing	DNP, ENP, SWT, NT

4.3.6. Wall - *Lasiommata megera*

Distribution & Status – Widespread throughout the region but with large annual fluctuations in abundance. Often triple-brooded in Cornwall and Devon.

Cornwall – Recorded throughout Cornwall, but especially common on the coast; also found on Cornish hedges, disused railway lines, abandoned quarries and mines, farm tracks and footpaths.

Devon – Recorded throughout Devon, particularly in coastal areas, although absent from the highest parts of Dartmoor.

Somerset & Bristol – Found locally throughout the area; fairly common on the fringes of Exmoor.

Threats – Reclamation of post-industrial sites with subsequent loss of bare ground habitat and associated short turf grassland
Loss of grazing with consequent scrub encroachment

Surveys - A large number of invertebrate surveys of abandoned metalliferous mine sites in Cornwall have taken place since 1994 (e.g. Spalding & Haes, 1995) which include records of this species.

Monitoring – Monitored on several transects throughout the region.

Management – No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Continue to monitor and collate results from transects	Ongoing	Local volunteers Cornwall County Council
2. Continue to monitor changes in its distribution and status	Ongoing	Local volunteers

4.4. Butterflies extinct in the region

4.4.1. Lulworth Skipper - *Thymelicus acteon*

Distribution & Status - Previous records for Cornwall are almost certainly the result of errors. It used to breed in south-east Devon near to the established colonies in Dorset, but it has not been seen there since 1967. There are no records for Somerset.

Actions and Targets - No action is proposed for this species.

4.4.2. Large Tortoiseshell - *Nymphalis polychloros*

Distribution & Status - Its status in the region has never been clear, but south Devon was in the early 20th Century one of the national strongholds. The last breeding colony here was probably in the Plym valley (last recorded in 1954). It was never clearly resident in Cornwall; although occasional records still occur, many of these are likely to be the result of misidentification, released individuals or migrants. The last breeding record for the Avon area was probably about 1918 but an introduced colony flourished for a few years in the 1980s at Bourton Combe, south--west of Bristol.

Actions and Targets - No action is proposed for this species.

5. MOTH ACCOUNTS

5.1. High Priority (BAP) Moths

5.1.1. Silky Wave - *Idea dilutaria*

Distribution & Status - Three populations are known in the UK, 2 in Wales and one near Bristol (UK Biodiversity Group, 1999).

Cornwall - No records

Devon - No records

Somerset & Bristol - Recorded in the Avon Gorge, where it has been known since 1851. It occurs on open south-facing ledges and is more common here than once thought.

Threats - Scrub encroachment and the loss of open areas where Common Rock-rose grows.

Surveys - Detailed surveys in 1995 by the Bristol & District Moth Group found the moth along the Gorge from the suspension bridge to north of the Durdham Down gully. Other gorges in the district could support populations.

Monitoring - Most sites are difficult to access; however, detailed studies are in progress by members of the Bristol & District Moth Group (Barnett, Evans & Pym, 1996).

Management - Durdham Down is an SSSI.

Actions and Targets

Action	BC's targets	Possible partners
1. Work to ensure sites are suitably managed	Ongoing	Local authority BDMG
2. Survey other gorges in the area	By 2010	BDMG

5.1.2. Chalk Carpet - *Scotopteryx bipunctaria*

Distribution & Status - Inhabiting calcareous downland.

Cornwall - Occasional records in east Cornwall, almost certainly vagrants.

Devon - Restricted to the calcareous cliffs in south-east Devon including Torquay and Teignmouth.

Somerset & Bristol - Recorded in the Mendips and Poldens.

Threats - Scrub encroachment on calcareous grassland

Surveys - None known.

Monitoring - None known.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey suitable calcareous grassland in Devon and Somerset	Ongoing	Local volunteers DMG SMG

5.1.3. Argent and Sable - *Rheumaptera hastata*

Distribution & Status - Confusion with other Geometrid species means that the distribution of this species in the region is poorly understood. It occurs in birch woodland flying during the day; it may tend to stay in the canopy, escaping detection.

Cornwall - Occasional records in east Cornwall, but unlikely to breed here.

Devon - Last recorded at Drum Bridges, Stover in 1970.

Somerset & Bristol - Rarely recorded, with post-1980 records near Glastonbury and in the Blackdowns.

Threats - None known.

Surveys - The Devon Moth Group are looking for this species, so far without success.

Monitoring - The site at Buckland will be monitored in 2000.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey suitable birch woodland in Cornwall, Devon and Somerset	Ongoing	Local volunteers DMG SMG

5.1.4. Waved Carpet - *Hydrelia sylvata*

Distribution & Status - Widespread throughout the region in open woodland, especially in east Cornwall and north Devon.

Cornwall - Widespread and often common, although mainly restricted to the east.

Devon - Widespread and probably under-recorded; occurring especially on the fringes of Dartmoor and in woodland in north Devon.

Somerset & Bristol - Rarely recorded with scattered records from north and south Somerset (8 tetrads since 1980) and a single known site in the Bristol area.

Threats - None known.

Surveys - None known.

Monitoring - None known apart from regular trapping at known sites, e.g. the Penrose Estate in west Cornwall. Several of the Cornish records were made during systematic field work by the Caradon Field and Natural History Club.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey suitable woodland sites in Devon and Somerset	Ongoing	Local volunteers DMG SMG

5.1.5. Drab Looper - *Minoa murinata*

Distribution & Status - Restricted in the region to Somerset, on the edge of one of the two main population centres in the UK. Found in open woodland (especially coppice) where Wood Spurge grows (UK Biodiversity Group, 1999).

Cornwall - No records.

Devon - No records.

Somerset & Bristol - Never common, recorded from north Somerset (at Westhay and Great Breach Wood) and in the Bristol area.

Threats - Cessation of woodland coppice management.

Surveys - None known.

Monitoring - None known.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey suitable sites	Ongoing	Local volunteers BDMG SMG
2. Monitor known populations	Ongoing	Local volunteers BDMG SMG
3. Advise on appropriate woodland management	Ongoing	Local volunteers BDMG SMG

5.1.6. Narrow-bordered Bee Hawk-moth - *Hemaris tityus*

Distribution & Status - Widespread in a range of habitats, including wet acid grassland, acid bogs, and heathland (UK Biodiversity Group, 1999), often in association with Marsh Fritillary (all the known Dartmoor sites are located within Marsh Fritillary colonies). The national decline has not been replicated here, and this region is a national stronghold for this species.

Cornwall - Widespread with scattered records throughout Cornwall, but with strongholds in wet heathland on Bodmin Moor and the culm measure grasslands of north Cornwall.

Devon - Widespread with scattered records throughout Devon, on acid heaths and the east Devon pebble beds, with 9 known sites on Dartmoor; also found in north Devon at Hartland.

Somerset & Bristol - Widespread with scattered records (11 tetrads since 1980) throughout the area, including Bannerdown and Shapwick Heath, but not seen on the Blackdowns for several years.

Threats - Fragmentation of sites and loss of meta-population structure
Inappropriate management, especially loss of grazing, leading to scrub encroachment (e.g. by willow scrub)
Overgrazing, especially when combined with winter feeding, with subsequent loss of nectar sources and larval foodplants
Improvement of suitable land e.g. by drainage, fertilising or conversion to arable
Creation of ponds

Surveys - Between 1997 and 2000, DNPA undertook a Park-wide survey covering over 400 sites. The DNPA has the objective of obtaining an accurate picture of its distribution within the national park by 2001.

Monitoring - No detailed monitoring is known. Larval counts are difficult to make as the larvae drop off the foodplant, although evidence of feeding can be observed. Counts of adults can be made providing suitable nectar sources are monitored. One site on Bodmin Moor is regularly checked for adults, but no detailed counts are made.

Management - The DNPA have offered 21 year management agreements to owners of the most floristically rich culm measure grassland sites and all the Narrow-bordered Bee Hawk-moth colonies on Dartmoor are now covered at least partially by these agreements. The DNPA has the objective of obtaining a minimum of 90% of sites under management agreements within the national park and/or within the ESA by 2005. The Culm Grassland Working Group has been established since 1991 as a forum for information exchange concerning management.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey all present and former sites	Ongoing	Local volunteers, DMG
2. Encourage suitable habitat management of a network of sites	Ongoing	EN, FRCA, land owners
3. Establish a regular monitoring programme on key sites	By 2005	Local volunteers

5.1.7. Light Feathered Rustic - *Agrotis cinerea*

Distribution & Status - Widespread but local in southern England, occupying on a range of habitats especially calcareous downland and sea-cliffs.

Cornwall - No records.

Devon - Rarely recorded, with 5 post-1970 records, including near Bideford, at Chardstock and at Yarner Wood.

Somerset & Bristol - Scattered records (16 tetrads since 1980), throughout Somerset and in the Bristol area, including Broadway Acres, Crowcombe Heathfield, Dolebury Warren, Great Breach Wood, Porlock, Thurlbear Wood and Westonzoyland

Threats - Scrub encroachment following the cessation of grazing

Surveys - None known.

Monitoring - None known.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey suitable habitat in Devon and Somerset	Ongoing	Local volunteers BDMG DMG SMG

5.1.8. Lunar Yellow Underwing - *Noctua orbona*

Distribution & Status - A declining species, apparently gone from Cornwall and Devon, but still present in Somerset.

Cornwall - Not recorded in Cornwall since 1959.

Devon - No recent records.

Somerset & Bristol - Scattered records throughout the area (3 tetrads since 1980), including Crowcombe Heathfield, Middle Hope and Sandbay Beach.

Threats - Not known.

Surveys - None known.

Monitoring - None known.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey former sites throughout the region	Ongoing	Local volunteers DMG BDMG SMG
2. Monitor populations at known sites	Ongoing	Local volunteers DMG BDMG SMG

5.1.9. Square-spotted Clay - *Xestia rhomboidea*

Distribution & Status - A declining species inhabiting deciduous woodland. Confusion with other similar *Xestia* species means that the distribution of this species in the region is poorly understood.

Cornwall - No records.

Devon - No recent confirmed records.

Somerset & Bristol - Two post-1980 records, one from the Bristol area and one from the Porlock area.

Threats - Not known.

Surveys - None known.

Monitoring - None known.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey all present and former sites in Devon & Somerset	By 2010	BDMG DMG

5.1.10. White Spot - *Hadena albimacula*

Distribution & Status - This species occurs in localised populations on shingle or calcareous cliffs where the larvae feed on Nottingham Catchfly (UK Biodiversity Group, 1999). The Devon population is one of only a few populations known in the UK.

Cornwall - No definite records; old records are probably the results of misidentification or of migrants.

Devon - Previous records between Sidmouth and Beer, also found at Colyton. The only post 1980 Devon records are at Branscombe in 1985 and at Beer in 1997.

Somerset & Bristol - No records.

Threats - Loss of foodplant through scrub encroachment
Recreation, small scale coastal development and coastal defence work

Surveys - The Beer area was targeted by the Devon Moth Group in 1997 in an attempt to confirm old records.

Monitoring - None known.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey former sites in Devon	Ongoing	DMG
2. Advise land owners on management for this species	Ongoing	DMG Landowners

5.1.11. Double Line - *Mythimna turca*

Distribution & Status - Widespread in the region, where it occupies wet grasslands, open moorland, maritime grassland and open woodland (UK Biodiversity Group, 1999). Even in grassland it may be associated with scrub and woodland edge habitat (Spalding, 2000b). There is no reason to suppose that this species is declining in Cornwall or Devon but declines may have occurred in Somerset.

Cornwall - Widespread from near Lands End to Marsland in the north, occasionally common. It occurs in a variety of habitat, including moorland on Bodmin Moor, wet grassland and heath in the mid-Cornwall moors, and occasionally on maritime grassland. A few sites are in open woodland.

Devon - Widespread with at least 39 post-1970 records, occupying a range of habitats especially culm measure grassland (e.g. Dunsdon N.N.R.) and open woodland (e.g. at Plym Forest and Haldon Forest); also on cliffs (e.g. at Babbacombe Bay) and possibly on Dartmoor. This species can be plentiful where it occurs, e.g. at Lydford reserve.

Somerset & Bristol - Recorded from a range of sites (mainly open woodland) especially on the fringes of Exmoor. Absent from the Bristol area.

Threats - Agricultural improvement of wet grassland.

Over-grazing

Changes in woodland management leading to the shading out of woodland rides and glades.

Surveys - Surveys are being carried out in Cornwall by BC 1999-2000.

Monitoring - Monitoring is carried out on Goss and Tregoss NNR by BC.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey all former and suitable sites to establish current distribution.	Ongoing	DMG Local volunteers SMG
2. Ensure that Double Line is included in site management documents for all relevant SSSIs	Ongoing	DMG Local volunteers SMG
3. Establish regular monitoring programme on key sites, eg on Goss Moor	By 2005	EN, Local volunteers

5.1.12. Black-banded - *Polymixis xanthomista statices*

Distribution & Status - An entirely coastal species (UK Biodiversity Group, 1999), represented in Britain by a separate subspecies which is different from the continental form both in colour and habitat. It has been recorded from the Torbay area to the Isles of Scilly and north to the Lynton area, sometimes forming extensive colonies. This region forms the UK stronghold for this species, which is otherwise found only in Pembrokeshire, Cardiganshire and the Isle of Man. Probably under-recorded because of difficult access to steep cliff habitat and late season flight period.

Cornwall - Widespread along the coast. Possibly to be found wherever its foodplant of Thrift occurs.

Devon - Mainly recorded from the north coast in recent years, especially from Hartland Point to Ilfracombe. No recent records from the south coast but could be present here.

Somerset & Bristol - No records.

Threats - No threats known.

Surveys - None known.

Monitoring - None known.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey suitable habitat in Devon, Cornwall and the Isles of Scilly	Ongoing	DMG

5.1.13. Orange Upperwing - *Jodia croceago*

Distribution & Status - The south-west was one of the strongholds for this species; 2 out of the 5 UK post-1980 records were from here (one each for Devon and Cornwall). A record of a singleton from Stover Park in Devon in 1999 has not been backed up by additional sightings, despite numerous searches of this area.

Cornwall - Not recorded since 1983.

Devon - Recorded in small numbers on the southern edge of Dartmoor, especially in the Bovey Tracey area (Stover, Chudleigh Knighton, Great Plantation and Yarner) which was one of the main population centres; the sighting in 1999 was from this area. Also recorded on the Devon coast of Exmoor in 1933.

Somerset & Bristol - No recent records.

Threats - Cessation of oak coppicing

The tidying-up of oak woodland with the subsequent loss of small shrubby oaks

Surveys - Detailed searches have been carried out on a number of sites throughout the region, using light traps, sugar, beating for larvae and adults, and searching willow and ivy blossom. Positive and negative results are being collated as part of the Rare and Threatened Moth Project.

Monitoring - None known.

Management - An attempt to create suitable habitat at Hessenford (its last site in Cornwall) by coppicing oak trees was apparently unsuccessful (Spalding, 1997a).

Actions and Targets

The Cornwall Biodiversity Initiative has prepared a schedule of research for this species (including surveys, and targeted autecological studies), which is linked into the national Species Action Plan (UK Biodiversity Group, 1999).

Action	BC's targets	Possible partners
1. Continue to survey former sites using a range of survey methods	Ongoing	Local volunteers
2. Advise and assist management of current site at Stover Park	Ongoing	DMG
3. Ensure that one former site in each county is appropriately managed	By 2010	Local volunteers, EN, land owners
4. Initiate a captive breeding programme	By 2005	Local volunteers, EN
4. In collaboration with the Rare and Threatened Moth Project develop opportunities for its introduction to one former site in each county	By 2010	Local volunteers, EN, land owners
5. Undertake targeted autecological studies	By 2010	Local volunteers

5.1.14. Scarce Merveille du Jour - *Moma alpium*

Distribution & Status - This species is associated with mature oak trees in semi-natural ancient woodland within 80km of the coast (UK Biodiversity Group, 1999). Colonies in Cornwall and Devon are isolated from the main centres of population in Wiltshire, Hampshire and Sussex. Its association with mature woodland may mean that it still survives undetected in former sites.

Cornwall - Recorded from a single extensive woodland (mainly coniferous plantation) site in east Cornwall.

Devon - Recorded from Roborough Wood in north Devon in 1983 and found near Great Torrington in 1998 and again in 1999. Old records from near Plymouth may be worth investigation.

Somerset & Bristol - No records.

Threats - Felling and replanting of woodland.

Surveys - Targeted surveys in north Devon have resulted in the species being re-discovered there; similar surveys in west Cornwall have failed to produce any positive records.

Monitoring - The site in east Cornwall is regularly monitored (Spalding, 1995).

Management - No specific management projects for this species are known.

Actions and Targets

The Cornwall Biodiversity Initiative has prepared a schedule of research for this species, which includes surveys.

Action	BC's targets	Possible partners
1. Survey former sites in Cornwall and Devon	Ongoing	DMG Local volunteers

5.1.15. White-spotted Pinion - *Cosmia diffinis*

Distribution & Status - Never common in the region, mainly restricted to south-east Devon, parts of Somerset with a scattering of records in Cornwall. There are no post-1990 records for the region.

Cornwall - Always restricted to east Cornwall, with 3 post-1980 records. One of these sites (Marsland) is a CWT/DWT reserve.

Devon - No recent records; old records mainly from south-east Devon.

Somerset & Bristol - Scattered records in Somerset, with 6 post-1980 records from north Somerset and Bristol.

Threats - Dutch elm disease and loss of epicormic growth on mature trees.

Surveys - None known.

Monitoring - None known.

Management - No specific management projects for this species are known.

Actions and Targets

The Cornwall Biodiversity Initiative has prepared a schedule of research for this species (including surveys), which is linked into the national Species Action Plan (UK Biodiversity Group, 1999).

Action	BC's targets	Possible partners
1. Survey all sites with post-1980 records by beating for larvae and with light traps	Ongoing	Local volunteers DMG BDMG SMG
2. Initiate a programme of captive breeding	By 2005	Local volunteers DMG BDMG SMG EN
3. Identify 3 potential reintroduction sites (1 in each county) and ensure appropriate management	By 2005	Local volunteers DMG BDMG SMG EN, landowners, DWT
4. Following suitable site management, re-introduce into 3 sites	By 2010	Local volunteers DMG BDMG SMG EN, landowners, DWT

5.1.16. Four-spotted Moth - *Tyta luctuosa*

Distribution & Status - Following a massive decline since the 1930s, this species now occupies scattered colonies in central and southern England, preferring warm, south-facing grassland slopes where its foodplant Field Bindweed occurs (UK Biodiversity Group, 1999). Currently occurs in at least one site in Somerset.

Cornwall - No 20th century records.

Devon - Old records only, although possibly widespread before 1930s.

Somerset & Bristol - Recorded at five sites in south Somerset, although only one of these might form a colony. Recorded from Curry Rivel (1994) and Ham Hill (1986).

Threats - Successional changes in vegetation and subsequent loss of open vegetation and bare ground
 Habitat loss due to agricultural intensification
 Loss of rabbit grazing

Surveys - None known.

Monitoring - None known.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey all current and former sites in Somerset	Ongoing	Local volunteers BDMG SMG
2. Seek to ensure suitable management at all known sites	By 2005	Local volunteers BDMG SMG Landowners
3. If necessary, restore to suitably managed site in Somerset	By 2010	Local volunteers BDMG SMG Landowners

5.1.17. Scarce Blackneck - *Lygephila cracca*

Distribution & Status - Confined in Britain to this region, where it occurs on the north coast of Cornwall, Devon and Somerset. Currently known from only 4 sites since 1990, there appears to have been a significant decline in recent years, with records between 1960 and 1982 from only 4 out of 11 10km squares where it was previously known. This decline may be the result of lack of recording effort. However, the moth depends on early successional habitat on rock slippages and is therefore highly vulnerable to loss of habitat through landslips or ranker vegetation crowding out the foodplant. The moth does not appear to utilise foodplant growing in cliff-top woodland.

Cornwall - Recently recorded only from Marsland Mouth; previously recorded from the Dizzard, and may still be present there.

Devon - Previously recorded from Babbacombe Mouth, Foreland Point, Hartland Point and Portledge, and still at the well-known site of Bucks Mills and Hartland.

Somerset & Bristol - Recorded in 2 tetrads since 1980 in the Porlock area and at Culborne Woods.

Threats - Loss of colonies through landslips
Habitat succession to ranker vegetation

Surveys - Targeted surveys are carried out by the ENP and others in Somerset (including a new Wood Vetch site near Minehead). A survey of National Trust in Cornwall and Devon is planned for 2000.

Monitoring - The colony at Marsland Mouth is regularly monitored. The well-known site at Bucks Mills is a target for collectors. Monitoring may be by using light traps or larval searches (although much of the suitable habitat is largely inaccessible).

Management - Management is proposed at a Wood Vetch site in Somerset where scrub will be cleared and the ground scraped to encourage foodplant growth.

Actions and Targets

The Cornwall Biodiversity Initiative has prepared a schedule of research for this species, which includes surveys, monitoring and targeted autecological studies.

Action	BC's targets	Possible partners
1. Survey all existing and former sites	By 2005	DMG SMG Local volunteers National Trust ENP
2. Continue to monitor the Marsland site and encourage monitoring of other sites	Ongoing	EN, National Trust, DWT, ENP, DMG SMG
3. Liaise with landowners about the presence of the moth	Ongoing	National Trust, DWT, ENP
4. Ensure that moth collectors are aware of its threatened status in Britain	Ongoing	National Trust, DWT, ENP
5. Create additional habitat for Wood Vetch on coastal cliffs	By 2010	EN, National Trust, DWT, ENP
6. Conduct targeted autecological research	By 2005	EN, ENP, NT, DMG, SMG
7. Highlight the importance of this species nationally	Ongoing	BC national

5.1.18. Buttoned Snout - *Hypena rostralis*

Distribution & Status - Occasionally recorded in Somerset as part of a group of records in the Bristol Channel - Severn area. Nationally much declined (UK Biodiversity Group, 1999). .

Cornwall - One record in 1983, possibly a migrant.

Devon - No recent records.

Somerset & Bristol - 2 post-1980 records from the Bristol area and 2 record post 1980 records from the Porlock area.

Threats - Clearance of Hop in gardens and hedgerows.

Surveys - None known.

Monitoring - None known.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey all current and former sites in Cornwall, Devon & Somerset	By 2005	BDMG DMG SMG
2. Ensure suitable management is in place at all known colonies in Somerset	Ongoing	BDMG SMG DMG Landowners FRCA
3. Establish a captive rearing programme	By 2005	BDMG SMG DMG
4. If no colonies are found in Somerset, re-introduce to one former site following appropriate management	By 2010	BDMG SMG DMG Site owners FRCA

5.1.19. White-line Snout - *Schrankia taenialis*

Distribution & Status - Widely distributed though local over much of southern England and probably under-recorded because of its similarity to other Snouts. The ecology of this species is poorly known; it occupies a variety of habitats, especially damp woodland.

Cornwall - Widespread in east Cornwall, mainly in woodland.

Devon - Widespread, with at least 27 post-1970 records; many of the records are from south Devon, but this may reflect recorder activity rather than the true distribution of this species.

Somerset & Bristol - Widespread.

Threats - None known.

Surveys - None known.

Monitoring - None known apart from regular trapping at known sites, e.g. the Penrose Estate in west Cornwall.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey suitable habitat to determine current status	By 2005	BDMG SMG DMG

5.1.20. Common Fan-foot - *Pechipogo strigilata*

Distribution & Status - Nationally much declined, with scattered records in woodland in central and southern England (UK Biodiversity Group, 1999). Confined in the region to Somerset and Bristol, and probably always uncommon in Cornwall and Devon. The ecology of this species is poorly known.

Cornwall - Occasional records in west and central Cornwall, last recorded in 1977.

Devon - No recent records.

Somerset & Bristol - Recorded from a range of sites, including the Avon Gorge, Great Breach Wood, Westbury-sub-Mendip and Weston-super-Mare, but with no post-1990 records.

Threats - Changes in woodland management, possibly leading to the loss of humid areas with abundant leaf litter.

Surveys - None known.

Monitoring - None known.

Management - No specific management projects for this species are known.

Actions and Targets

Action	BC's targets	Possible partners
1. Conduct targeted autecological research to inform habitat management	Ongoing	BC national
2. Survey present and former sites to determine current status	By 2005	BDMG SMG
3. Ensure suitable management is in place at all known colonies in Somerset	Ongoing	BDMG SMG DMG Landowners FRCA

TABLE 2: MEDIUM PRIORITY MOTHS NATIONALLY IMPORTANT

Log no.	Scientific name	Common name	GB status	IoS	Cwll	Devon	S/B	BAP
54	<i>Stigmella auromarginella</i>		PRDB1			Y		
101	<i>Stigmella pyri</i>		PRDB2			Y		
109	<i>Stigmella prunetorum</i>		PRDB3		Y	Y		
174	<i>Heterogenea asella</i>	The Triangle	RDB3			Y		LL
184	<i>Luffia lapidella</i>		PRDB2		Y			
204	<i>Infurcitinea albicomella</i>		PRDBK		Y	Y		
216a	<i>Nemapogon inconditella</i>		PRDB1			Y		
258	<i>Leucoptera lathyrioliella</i>		PRDBK			Y		
277	<i>Oinophila v-flava</i>	Yellow V Moth	PRDB3	Y		Y		
340a	<i>Phyllonorycter staintoniella</i>		RDB1		Y			
367	<i>Phyllocnistis xenia</i>		pRDB2			Y		
542	<i>Coleophora serpylletorum</i>		PRDBK		Y			
612	<i>Elachista collitella</i>		PRDBK			Y		
615	<i>Elachista cahorsensis</i>		PRDBK		Y			
634	<i>Schiffermuelleria grandis</i>		PRDB1			Y	Y	
651	<i>Oecophora bractella</i>		pRDB3			Y		
653	<i>Aplota palpella</i>		pRDB1			Y		
697a	<i>Agonopterix kuznetzovi</i>		pRDB1		Y		Y	
711	<i>Agonopterix curvipunctosa</i>		pRDB1				Y	
742	<i>Monochroa lutulentella</i>		RDBK			Y		
743	<i>Monochroa elongella</i>		RDBI			Y		
795	<i>Prolita solutella</i>		RDBK		Y			
823a	<i>Scrobipalpa tussilaginis</i>		RDBI			Y		
839	<i>Nothris congressariella</i>		RDB3	Y	Y	Y		
848a	<i>Syncopacma suecicella</i>		RDB1		Y			
887	<i>Mompha lacteella</i>		pRDB3		Y	Y	Y	
896	<i>Cosmopterix orichalcea</i>		pRDB3		Y			
990	<i>Aphelia unitana</i>		pRDB2			Y		
1052	<i>Acleris umbrana</i>		pRDB1		Y	Y		
1066	<i>Celypha woodiana</i>		pRDB2				Y	
1069	<i>Celypha aurofasciana</i>		pRDBK			Y		
1101	<i>Endothenia ustulana</i>		pRDB3			Y		
1131	<i>Epinotia subsequana</i>		pRDB3		Y	Y		
1225	<i>Pammene obscurana</i>		pRDB3		Y			
1228a	<i>Pammene ignotata</i>		pRDB1			Y		
1244	<i>Cydia gemmiferana</i>		pRDB1			Y		
1249	<i>Cydia prunivorana</i>		pRDB1			Y		
1277	<i>Dichrorampha senectana</i>		pRDBK		Y			
1384	<i>Phlyctaenia stachydalis</i>		RDBK		Y	Y	Y	
1446	<i>Salebriopsis albicilla</i>		RDB3				Y	
1482	<i>Homoeosoma nimbella</i>		RDBK	Y	Y			
1487	<i>Agdistis staticis</i>		pRDB3		Y	Y	Y	
1493	<i>Buckleria paludum</i>		pRDB3			Y		
1500	<i>Platyptilia calodactyla</i>		pRDB3			Y		
1511	<i>Merrifieldia tridactyla</i>		pRDB1		Y			
1635	<i>Malacasoma castrensis</i>	Ground Lackey	RDB3			Y		LL
1842a	<i>Eupithecia sinuosaria</i>	Goosefoot Pug	RDBK				Y	
2226	<i>Leucochlaena oditis</i>	Beautiful Gothic	RDB3		Y	Y		LL
2346	<i>Photedes morrisii morrisii</i>	Morris's Wainscot	RDB1			Y		
2354	<i>Luperina nickerlii leechi</i>	Sandhill Rustic	RDB1		Y			LL
2402	<i>Heliothis maritima warneckei</i>	Shoulder-striped Clover	RDB3		Y			LL
2478	<i>Hypena obsitalis</i>	Bloxworth Snout	RDBK		Y	Y		LL

Log number taken from Bradley (1998).

5.2. Medium Priority Moths Nationally Important

This section includes all RDB and Biodiversity Long list species found in the region (Table 2). Brief notes are provided about those species of special conservation importance (e.g. because in Britain they occur only or mainly in this region).

5.2.1. *Infurcitinea albicomella*

Distribution & Status - Post-1969 UK records are only from Kynance Cove in Cornwall and from Torquay in Devon, although it is widely distributed in Europe. The larvae feed on general detritus and there may be a close association with bare ground. Previously recorded from Morecambe and near Durham.

Actions and Targets - Survey suitable habitat. Scrub control may be necessary at the known sites.

5.2.2. *Nemapogon inconditella*

Distribution & Status - Recorded in Britain only once at Knighton Heath, south Devon in 1979. Difficult to distinguish from other *Nemapogon* species, and possibly over-looked elsewhere.

Actions and Targets - Survey known site and critically examine *Nemapogon* specimens in collections.

5.2.3. Yellow V Moth - *Oinophila v-flava*

Distribution & Status - In Britain generally confined to warehouses and cellars, except on the Isles of Scilly where it is found in the open.

Actions and Targets - Survey suitable habitat.

5.2.4. *Phyllonorycter staintoniella*

Distribution & Status - Known in Britain only in west Cornwall in the St Agnes area.

Actions and Targets - Survey suitable habitat where it foodplant Hairy Greenweed occurs in Cornwall. Ensure appropriate habitat management.

5.2.5. *Nothris congressariella*

Distribution & Status - Confined in Britain to Cornwall, the Isles of Scilly and Lundy; also recorded from the Channel Islands and possibly from Brittany. The larval foodplant Balm-leaved Figwort is itself a RDB species.

Actions and Targets - Survey suitable habitat where its foodplant occurs.

5.2.6. *Syncopacma suecicella*

Distribution & Status - Confined in Britain to the Lizard in Cornwall.

Actions and Targets - Survey suitable habitat where its foodplant Hairy Greenweed occurs.

5.2.7. *Batrachedra parvulipunctella*

Distribution & Status - Confined in Britain to the Lizard in Cornwall.

Actions and Targets - Survey suitable habitat on the Lizard.

5.2.8. *Acleris umbrana*

Distribution & Status - Rarely recorded in Britain and possibly now restricted to Devon.

Actions and Targets - Survey former and current sites.

5.2.9. *Salebriopsis albicilla*

Distribution & Status - Confined in Britain to woodland in north Somerset and the Wye Valley. Recently recorded from Leigh Woods, Kings Wood and Lime Breach Wood in north Somerset.

Actions and Targets - Survey suitable habitat where the larval foodplant Small-leaved Lime *Tilia cordata* occurs.

5.2.10. Merrifieldia tridactyla

Distribution & Status - In Britain confined to the Lizard in Cornwall, where the larvae feed on Wild Thyme. Possibly found elsewhere along the Cornish coast.

Actions and Targets - Survey coastal sites in Cornwall and north Devon where Wild Thyme occurs.

5.2.11. Morris's Wainscot *Chortodes morrisii morrisii*

Distribution & Status - In Britain confined to grassy slopes and undercliffs along the coastal strip between Sidmouth in Devon to Charmouth in Dorset.

Actions and Targets - Survey coastal sites to establish current presence and monitor known sites.

5.2.12. Sandhill Rustic - *Luperina nickerlii leechi*

Distribution & Status - In Britain this sub-species is confined to a single site in west Cornwall; it is separated by over 300km from colonies of the two other British sub-species which are found in Wales and Lancashire, and Kent, Essex and Suffolk. The colony is regularly monitored (Spalding, 1997b). Suitable habitat in Cornwall and Devon has been surveyed without success. A single specimen was found near in Bude; no colony has been nearby. Nationally this species occurs on sand dunes and in salt marshes.

Actions and Targets - Continue to monitor colony. Survey suitable habitat in the Isles of Scilly. Survey sand dune and salt marsh habitat near Bude. The Cornwall Biodiversity Initiative has prepared a schedule of research for this species, which includes surveys, monitoring and genetic research.

5.2.13. Bloxworth Snout - *Hypena obsitalis*

Distribution & Status - Previously thought to be a rare migrant to Britain, now known to be breeding on the south Devon coast near Torquay and Brixham and possibly in Cornwall at Boscastle. The autumn adults overwinter and seem able to survive in frost-free close to the sea. The Devon sites are frequently visited by moth collectors.

Actions and Targets - Survey Boscastle area to confirm presence at this site. Monitor colonies in Devon. The Torbay Coast and Countryside Trust are producing an action plan targeted at a range of terrestrial invertebrates, which will include the Bloxworth Snout.

5.3. Medium Priority Moths Regionally Important

A large number of nationally notable species have been recorded in the region since 1970 (Appendix 3). These are listed as Medium Priority Moths Regionally Important.

5.4. High Priority Moths probably extinct in the region

5.4.1. Black-veined Moth - *Siona lineata*

Distribution & Status - Now restricted in the UK to Kent (UK Biodiversity Group, 1999), this species is recorded from Sedgemoor in the past. It occurs on lowland calcareous grassland (usually with Tor-grass) where the larvae feed on Marjoram. (Marjoram is widespread in suitable habitat in Somerset). One of the national BAP targets is to reintroduce it to a series of sites within its former range to establish 10 new viable populations by 2005.

Actions and Targets

Action	BC's targets	Possible partners
1. Identify 3 suitable reintroduction sites within 1-2 km of each other and ensure appropriate management	By 2005	EN, local volunteers, SWT
2. Initiate a programme of captive breeding	By 2005	EN, local volunteers, SWT
3. Re-introduce to 3 sites	By 2010	EN, local volunteers, SWT

5.4.2. Pale Shining Brown - *Polia bombycina*

Distribution & Status - Following a substantial national decline, this species is now extinct in the region, although it has been found nearby in Gloucestershire. The last records for Somerset are probably from Over Compton in 1971, and from Devon at Sampford Peverel in 1955. There are no 20th century records for Cornwall. The main habitat is scrubby grassland on light calcareous soils (UK Biodiversity Group, 1999), which are widespread in Somerset.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey former and potential sites in Somerset	Ongoing	Local volunteers BDMG

5.4.3. Brighton Wainscot - *Oria musculosa*

Distribution & Status - There has been a major decline in this species, with post-1980 records only from Wiltshire, Hampshire, Berkshire and Oxfordshire (UK Biodiversity Group, 1999). Previously recorded in Somerset at Over Compton in 1971 (possibly a windblown wanderer). Primarily associated with cereal field margins. There are no records for Cornwall and one 1899 record for Devon.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey former and potential sites in Somerset	Ongoing	Local volunteers BDMG

5.4.4. Clay Fan-foot - *Paracolax tristalis*

Distribution & Status - There has been a major decline in this species in the UK and it is currently mainly restricted to Kent, Sussex and Surrey (UK Biodiversity Group, 1999). There are no records for Cornwall and Devon, but it has been recorded in the Avon Gorge (1973-1975). The decline may have been caused by changes in woodland management especially the cessation of coppicing.

Actions and Targets

Action	BC's targets	Possible partners
1. Survey former sites in Somerset	Ongoing	Local volunteers BDMG

6. KEY AREAS FOR BUTTERFLIES AND MOTHS

6.1. Introduction

This section describes the key areas and sites for butterflies and moths in the region. The approximate locations of these sites are shown on Maps 1 and 2.

Key areas are those which have a significant concentrations of populations of High and Medium Priority species. These areas are based on discrete geographical areas which may contain a variety of habitat types.

Key sites also have significant concentrations of populations of High and Medium Priority species, but are smaller, isolated sites that do not fall within the key areas.

Key areas and sites have been selected on the basis of the presence in 1999 of breeding colonies of butterflies or post-1980 records of moths where there is good reason for those moth species still to be present (i.e. the habitat does not appear to have changed). Different categories have been used for moths and butterflies because moth recording has been less comprehensive than for butterflies.

Some species recorded in an area may be in low numbers, may be wanderers from adjacent sites or may occupy atypical habitat. Because some species are more important in some areas than others, the estimated regional significance (high, medium or low) of each key area or site for each species found there is provided. These categories are broadly based but are intended to provide an idea of how important each key area or site is for each priority species recorded and may be used to inform to management decisions.

The inclusion of areas or sites in this report does not imply that they have open access.

6.2. Key Areas

6.2.1. Cornwall and the Isles of Scilly

6.2.1.1. Bodmin Moor - A large area of granite upland with acid bog, heathland and upland grasslands, fringed by steep valleys with semi-natural ancient woodland. The sheltered valleys on the south-western fringes of the moor are especially important for colonies of Pearl-bordered Fritillary. The acid grasslands are important for Double Line; the more sheltered areas of wet grassland and heath are important for Marsh Fritillary and Narrow-bordered Bee Hawk-moth.

Natural Area - Bodmin Moor

Butterfly species breeding	Regional priority	Estimated regional significance of area
Pearl-bordered Fritillary	High	High
Marsh Fritillary	High	High
Small Pearl-bordered Fritillary	Medium	Medium
Silver-washed Fritillary	Medium	Medium
Grayling	Medium	Medium

Moth species breeding	Regional priority	Estimated regional significance of area
Waved Carpet	High	Medium
Narrow-bordered Bee Hawk-moth	High	High
Double Line	High	High
<i>Biselachista eleochariella</i>	Medium	High
Alder Kitten	Medium	Medium
Devon Carpet	Medium	Medium

6.2.1.2. Isles of Scilly - This collection of islands occupies the most south-westerly part of the region and experiences an exceptionally mild climate. Maritime heath and grassland dominate, and woodland is scarce. The island is especially important for the number of migrant species which have been found here, but the number of resident species is low. There are now medium or high priority resident species breeding here.

Natural Area - The Isles of Scilly

Moth species breeding	Regional priority	Estimated regional significance of area
Black-banded	High	Low
<i>Psychoides filicivora</i>	Medium	Medium
Yellow V-moth	Medium	High
<i>Nothris congressariella</i>	Medium	High
<i>Scobipalpa ocellatella</i>	Medium	High
<i>Ogoconia caradjai</i>	Medium	High
<i>Cochylis pallidana</i>	Medium	High
<i>Crociosema plebejana</i>	Medium	Medium
<i>Pediasia contaminella</i>	Medium	Medium
<i>Eudonia lineola</i>	Medium	Low
<i>Evergestis extimalis</i>	Medium	Medium
<i>Mecyna asinalis</i>	Medium	Medium
<i>Dolicharthria punctalis</i>	Medium	Low
<i>Ancylosis bistriatella</i>	Medium	Medium
<i>Homoeosoma nebulella</i>	Medium	Medium
<i>Homoeosoma nimbella</i>	Medium	High
Grass Eggar	Medium	Low
Jasione Pug	Medium	Medium
Red-necked Footman	Medium	Low
Hoary Footman	Medium	Medium
Kent Black Arches	Medium	High
Square-spot Dart	Medium	Medium
Crescent Dart	Medium	Medium
Sand Dart	Medium	Medium
L-album Wainscot	Medium	Medium
Feathered Brindle	Medium	Low
Webb's Wainscot	Medium	Low

6.2.1.3. The Lizard - This area, which includes the most southerly point in mainland Britain, has a mild oceanic climate and a distinctive geology. The key habitats are extensive areas of lowland heath, with maritime grassland and rock exposures on slate and serpentine cliffs. Small areas of scrubby Willow woodland and Phragmites reed-bed occur in places.

Natural Area - The Lizard

Butterfly species breeding	Regional priority	Estimated regional significance of area
Silver-studded Blue	High	Medium
Marsh Fritillary	High	High
Small Pearl-bordered Fritillary	Medium	Medium
Grayling	Medium	Medium

Moth species breeding	Regional priority	Estimated regional significance of area
Black-banded	High	High
<i>Stigmella filpendulae</i>	Medium	Medium
<i>Stigmella prunetorum</i>	Medium	High
<i>Psychoides filicivora</i>	Medium	Medium
<i>Infurcitinea albicomella</i>	Medium	High
Red-tipped Clearwing	Medium	Medium
Six-belted Clearwing	Medium	Medium
<i>Glyphipterix schoenicolella</i>	Medium	Medium
<i>Coleophora lassella</i>	Medium	Medium
<i>Elachista cahorsensis</i>	Medium	High
<i>Agonopterix kuznetzovi</i>	Medium	High
<i>Agonopterix bipunctosa</i>	Medium	Medium
<i>Eulamphrotes phaella</i>	Medium	Medium
<i>Bryotropha basaltinella</i>	Medium	Medium
<i>Lita solutella</i>	Medium	High
<i>Scobipalpa ocellatella</i>	Medium	Low
<i>Caryocolum vicinella</i>	Medium	Medium
<i>Syncopacma suecicella</i>	Medium	High
<i>Oegoconia caradjai</i>	Medium	Medium
<i>Batrachedra parvulipunctella</i>	Medium	High
<i>Cochylis pallidana</i>	Medium	High
<i>Crociosema plebejana</i>	Medium	Medium
<i>Mecyna asinalis</i>	Medium	Low
<i>Dolicharthria punctalis</i>	Medium	Low
<i>Merrifieldia tridactyla</i>	Medium	High
Hoary Footman	Medium	Medium
Small Grass Emerald	Medium	High
Grass Wave	Medium	High

Square-spot Dart	Medium	High
Crescent Dart	Medium	High
Sand Dart	Medium	Medium
Barrett's Marbled Coronet	Medium	Medium
L-album Wainscot	Medium	Medium
Devonshire Wainscot	Medium	High
Beautiful Gothic	Medium	High
Feathered Brindle	Medium	Medium
Shouldered-striped Clover	Medium	High

6.2.1.4. The Mid-Cornwall Moors - These moors once formed an extensive area of lowland heath across the central spine of Cornwall. Now fragmented into smaller areas of wet and dry heath, Purple Moor-grass moorland with valley mire, open water and large areas of Willow carr and European Gorse scrub. Many of these moors are SSSIs and several are nature reserves. Goss and Tregoss is a National Nature Reserve. These areas form one of the strongholds for Marsh Fritillary and Double Line in the region.

Natural Area - Cornish Killas and Granites

Butterfly species breeding	Regional priority	Estimated regional significance of area
Silver-studded Blue	High	High
Marsh Fritillary	High	High
Dingy Skipper	Medium	Low
Grizzled Skipper	Medium	Medium
Small Pearl-bordered Fritillary	Medium	medium
Grayling	Medium	Medium

Moth species breeding	Regional priority	Estimated regional significance of area
Waved Carpet	High	Low
Double Line	High	High
<i>Biselachista eleochariella</i>	Medium	High
<i>Cosmopterix orichacea</i>	Medium	High
Valerian Pug	Medium	Medium
Reed Dagger	Medium	High

6.2.1.5. The north-coast sand dune systems - These extensive dune systems include the Hayle-Mexico Towans, Penhale Sands and Rock Dunes. The dominant habitat is Marram semi-fixed dune grassland, with extensive areas of *Festuca* dominated rabbit-grazed turf and smaller areas of mobile sand. The Penhale dunes hold the largest colony in Cornwall of Silver-studded Blue.

Natural Area - Land's End to Minehead

Butterfly species breeding	Regional priority	Estimated regional significance of area
Silver-studded Blue	High	High
Dingy Skipper	Medium	Low
Grizzled Skipper	Medium	High
Small Pearl-bordered Fritillary	Medium	Low
Grayling	Medium	Medium

Moth species breeding	Regional priority	Estimated regional significance of area
<i>Coleophora conyzae</i>	Medium	High
<i>Bryotropha basaltinella</i>	Medium	Medium
<i>Eudonia lineola</i>	Medium	Medium
Grass Eggar	Medium	High
Sand Dart	Medium	High

6.2.2. Devon

6.2.2.1. Bovey Basin and Heath - These lowland heaths are based on soils of varying acidity which have developed from drift deposits overlaying clays. These areas are fringed by belts of semi-natural woodland and scrub. One of the main colonies of Silver-studded Blue in Devon occurs here. The last sighting of Orange Upperwing was made here in 1999 and this species may breed here (although no additional sightings have been made despite numerous searches in this area).

Natural Area - South Devon

Butterfly species breeding	Regional priority	Estimated regional significance of area
Silver-studded Blue	High	Medium
Pearl-bordered Fritillary	High	High
Brown Hairstreak	High	Medium
Dingy Skipper	Medium	Low
Grizzled Skipper	Medium	Medium
Small Pearl-bordered Fritillary	Medium	Low
Silver-washed Fritillary	Medium	Low

Moth species breeding	Regional priority	Estimated regional significance of area
Orange Upperwing	High	High
Square-spotted Clay	High	High
Red-necked Footman	Medium	Medium
Orange Footman	Medium	Medium
Plain Clay	Medium	Medium

6.2.2.2. Culm Grasslands - This area obtains its name from the underlying sedimentary geology (mainly sandstones and shales). The culm grasslands are species-rich pastures, typical of poorly drained acid soils, which support a suite of Purple Moor-grass and rush communities. This habitat is nationally known as Rhôs pastures. This area is nationally important for Marsh Fritillary. Many sites are now managed as nature reserves by the Devon Wildlife Trust; Dunsdon Farm is a NNR.

Natural Area - The Culm

Butterfly species breeding	Regional priority	estimated regional significance of area
Brown Hairstreak	High	High
Marsh Fritillary	High	High
Wood White	High	High
Dingy Skipper	Medium	Low
Marbled White	Medium	Medium

Moth species breeding	Regional priority	Estimated regional significance of area
Double Line	High	Medium
Narrow-bordered Bee Hawk-moth	High	Medium

6.2.2.3. Dartmoor - A large area of granite upland with acid bog, heathland and upland grasslands, fringed by steep valleys with semi-natural ancient woodland. The higher moorland areas are important for Marsh Fritillary, with 44 colonies, representing 10% of the UK colonies. Other species associated with moor and heath include Double Line and Narrow-bordered Bee Hawk-moth. The adjacent open woodlands with south-facing bracken-covered slopes are nationally important for High Brown Fritillary and Pearl-bordered Fritillary. The last British (and first re-introduction) site for Large Blue was on gorse-covered hillside at the southern edge of Dartmoor. The fringes of Dartmoor are also important for Brown Hairstreak. Key sub-areas on the fringes of Dartmoor include the Upper Bovey Valley (e.g. for High Brown Fritillary and Pearl-bordered Fritillary), the Upper Dart Valley (e.g. for High Brown Fritillary, Pearl-bordered Fritillary, Marsh Fritillary, Large Blue), the Upper Teign Valley (e.g. for High Brown Fritillary, Pearl-bordered Fritillary, Marsh Fritillary, Wood White) and the West Down, Grenofen & Walkham Valley area (e.g. for High Brown Fritillary and Pearl-bordered Fritillary).

Natural Area - Dartmoor

Butterfly species breeding	Regional priority	Estimated regional significance of area
Large Blue	High	High
Pearl-bordered Fritillary	High	High
High Brown Fritillary	High	High
Marsh Fritillary	High	High
Brown Hairstreak	High	High
Wood White	High	Medium
Dingy Skipper	Medium	Low
Grizzled Skipper	Medium	Low
Small Pearl-bordered Fritillary	Medium	Medium
Silver-washed Fritillary	Medium	Medium
Marbled White	Medium	Low
Grayling	Medium	High

Moth species breeding	Regional priority	Estimated regional significance of area
Waved Carpet	High	Medium
Narrow-bordered Bee Hawk-moth	High	High

Double Line	High	High
White-line Snout	High	Medium
Devon Carpet	Medium	Medium
Marbled Pug	Medium	Medium
Bilberry Pug	Medium	High
Blomer's Rivulet	Medium	Medium
Horse Chestnut	Medium	Medium
Dotted Carpet	Medium	Medium
Alder Kitten	Medium	Low

6.2.2.4. East Devon Commons (Pebble Bed Heaths) - A large area (about 1100 hectares) of mainly dry lowland heath dominated by Purple Moor-grass and heather species. Much of the area is SSSI and an SPA and is covered by the East Devon District Council BAP. It holds the main Devon colony of Silver-studded Blue (with over 2000 adults seen in 1996).

Natural Area - Devon Redlands

Butterfly species breeding	Regional priority	estimated regional significance of area
Silver-studded Blue	High	High
Wood White	High	Medium
Small Pearl-bordered Fritillary	Medium	Low
Silver-washed Fritillary	Medium	Low
Marbled White	Medium	Low
Grayling	Medium	Medium

Moth species breeding	Regional priority	Estimated regional significance of area
The Mocha	Medium	Medium
Dotted Border Wave	Medium	Medium
Horse Chestnut	Medium	Medium

6.2.2.5. Great Torrington Area - This area includes a series of commons at Great Torrington, Weare Giffard and Langtree Common and ancient semi-natural woodlands at Roborough and in the Torridge valley. This is an important area for Pearl-bordered and High Brown Fritillary, in addition to the woodland moths Scarce Merveille du Jour and Waved Carpet. Marsh Fritillary used to occur at Torrington Common but has now disappeared.

Natural Area - The Culm

Butterfly species breeding	Regional priority	estimated regional significance of area
Pearl-bordered Fritillary	High	High
High Brown Fritillary	High	High
Small Pearl-bordered Fritillary	Medium	Low
Silver-washed Fritillary	Medium	Medium
Marbled White	Medium	Low

Moth species breeding	Regional priority	Estimated regional significance of area
Waved Carpet	High	Low
Double Line	High	Medium
Scarce Merveille du Jour	High	High
White-line Snout	High	Medium
<i>Celypha aurifasciana</i>	Medium	Medium
<i>Phlyctaenia stachydalis</i>	Medium	High
The Triangle	Medium	High

6.2.2.6. Sidmouth-Axmouth coastal strip - Hard and soft vertical cliffs predominate between Seaton and Sidmouth; much of the maritime cliff-top habitat has been lost here to agricultural improvement, but calcareous grassland and scrub remain near the cliff edge and on steep slopes. East of Seaton, the coastline contains extensive sections of unprotected soft cliffs with a slumped profile; the variety of habitats on the Undercliffs create suitable conditions for many insect species, especially those associated with hotspots on bare ground created by slippage or erosion. This section of cliff is the only UK sites for Morris's Wainscot and has some of the largest populations of Wood White in Devon.

Natural Area: Lyme Bay

Butterfly species breeding	Regional priority	estimated regional significance of area
Wood White	High	High
Dingy Skipper	Medium	High
Marbled White	Medium	Low

Moth species breeding	Regional priority	Estimated regional significance of area
Waved Carpet	High	Medium
White Spot	High	High
Morris's Wainscot	Medium	High

6.2.2.7. Torbay Prime Biodiversity Area - The Torbay area supports a broad range of habitats including calcareous grassland, sea cliff and slope, hedgerbanks, abandoned quarries and urban habitat. These habitats, in association with a broad range of key species, make this area a strong candidate as a Prime Biodiversity Area; key invertebrates include Small Blue, Brown Hairstreak and Bloxworth Snout.

Natural Area - South Devon

Butterfly species breeding	Regional priority	Estimated regional significance of area
Brown Hairstreak	High	Low
Dingy Skipper	Medium	Low
Small Blue	Medium	High
Silver-washed Fritillary	Medium	Low
Marbled White	Medium	Low

Moth species breeding	Regional priority	estimated regional significance of area
Chalk Carpet	High	High
White-line Snout	High	Low
<i>Infurcinea albicomella</i>	Medium	High
<i>Ischnoscia borreonella</i>	Medium	Medium
<i>Eulamprotes phaeella</i>	Medium	Medium
Valerian Pug	Medium	Low
Hoary Footman	Medium	Low
Red-necked Footman	Medium	Medium
Jersey Tiger	Medium	High
Crescent Dart	Medium	Low
Barrett's Marbled Coronet	Medium	Low
L-album Wainscot	Medium	Medium
Devonshire Wainscot	Medium	Low
Bloxworth Snout	Medium	High

6.2.2.8. Welcombe and Marsland - This nature reserve, managed by Gary Pilkington for DWT and CWT, includes extensive wooded valleys and open maritime grassland above steep cliffs. The woodland contains areas of marsh and sheltered glades in the valley bottoms; bracken covered south-facing slopes provide suitable habitat for the only Cornish colony of High Brown Fritillary. On the soft coastal shales, slippages create open habitat suitable for Scarce Black-neck.

Natural Area - Land's End to Minehead

Butterfly species breeding	Regional priority	estimated regional significance of area
Pearl-bordered Fritillary	High	High
High Brown Fritillary	High	High
Marsh Fritillary	High	Low
Dingy Skipper	Medium	Medium
Small Pearl-bordered Fritillary	Medium	Low
Silver-washed Fritillary	Medium	Low
Marbled White	Medium	Low

Moth species breeding	Regional priority	estimated regional significance of area
Waved Carpet	High	Low
Scarce Blackneck	High	High
Thrift Clearwing	Medium	Low
Barrett's Marbled Coronet	Medium	Low

6.2.2.9. Witheridge & Rackenford Moors - The culm grassland sites of Knowstone and Rackenford Moors and Hare's Down are SSSIs and with others form a candidate Special Area of Conservation for their Purple Moor-grass meadows and Marsh Fritillary populations.

Natural Area - The Culm

Butterfly species breeding	Regional priority	estimated regional significance of area
Marsh Fritillary	High	Low
Small Pearl-bordered Fritillary	Medium	Low
Marbled White	Medium	Low

Moth species breeding	Regional priority	Estimated regional significance of area
Double Line	High	Medium
Narrow-bordered Bee Hawk-moth	High	Medium

6.2.3. Somerset

6.2.3.1. Key Areas

The key areas are centred on the six hill ranges, to which many of the high and medium species are restricted. However, the following species exist outside these key areas: Grizzled Skipper, Brown Hairstreak, White-letter Hairstreak, Silver-washed Fritillary, Marsh Fritillary, Glanville Fritillary, Marbled White and Grayling.

6.2.3.2. Exmoor and Brendons - Exmoor supports a considerable diversity of wildlife habitat including blanket bog, valley mire, Purple Moor-grass moorland, bracken scrub, upland heath and western heath with sea-cliffs with valley oakwoods on the edges of the moor. Exmoor is a national park (partly in Devon) with its own BAP. The fringes of Exmoor support nationally important colonies of Heath Fritillary.

Natural Area - Exmoor and The Quantocks

Butterfly species breeding	Regional priority	estimated regional significance of area
High Brown Fritillary	High	High
Marsh Fritillary	High	Medium
Heath Fritillary	High	High
Small Pearl-bordered Fritillary	Medium	Low
Silver-washed Fritillary	Medium	Low
Marbled White	Medium	Low
Grayling	Medium	Low

Moth species breeding	Regional priority	Estimated regional significance of area
Waved Carpet	High	Low
Narrow-bordered Bee Hawk-moth	High	Medium
Light-feathered Rustic	High	High
Scarce Blackneck	High	High
Square-spotted Clay	High	High
Double Line	High	Medium
Buttoned Snout	High	High
White-line Snout	High	Low
<i>Schiffermuelleria grandis</i>	Medium	High
<i>Aphelia unitana</i>	Medium	High
Currant Clearwing	Medium	Low
Grass Eggar	Medium	Low
Satin Lutestring	Medium	Low
The Mocha	Medium	Medium
Dotted Border Wave	Medium	Low
Devon Carpet	Medium	Low
Cloaked Carpet	Medium	Low

Lead-coloured Pug	Medium	Low
Bleached Pug	Medium	Low
Bilberry Pug	Medium	Low
Blomer's Rivulet	Medium	Medium
Horse Chestnut	Medium	Medium
Dotted Carpet	Medium	Low
Great Oak Beauty	Medium	High
Grass Wave	Medium	Medium
Alder Kitten	Medium	Low
Red-necked Footman	Medium	Low
Orange Footman	Medium	Low
Hoary Footman	Medium	Low
Square-spot Dart	Medium	Low
Crescent Dart	Medium	Low
Dotted Chestnut	Medium	Low
Angle-striped Sallow	Medium	High
Webb's Wainscot	Medium	Low
Silky Wainscot	Medium	Low

6.2.3.3. The Quantocks - These hills cover a smaller area than Exmoor, with a range of habitats including western and upland heath, bracken scrub and valley mire, with parkland and western oakwoods on the lower slopes.

Natural Area - Exmoor and The Quantocks

Butterfly species breeding	Regional priority	estimated regional significance of area
Brown Hairstreak	High	medium
Silver-washed Fritillary	Medium	Medium
Marbled White	Medium	Low
Grayling	Medium	Low

Moth species breeding	Regional priority	Estimated regional significance of area
Light-feathered Rustic	High	High
Lunar Yellow Underwing	High	High
Small Eggar	Medium	High
Small Grass Emerald	Medium	Medium
Dotted Border Wave	Medium	Low
Oblique Striped	Medium	Medium
Ruddy Carpet	Medium	Low
Devon Carpet	Medium	Low
Cloaked Carpet	Medium	Low
Lead-coloured Pug	Medium	Low
Bilberry Pug	Medium	Low
Blomer's Rivulet	Medium	Low

Little Thorn	Medium	High
Horse Chestnut	Medium	Medium
Dotted Carpet	Medium	Low
Great Oak Beauty	Medium	High
Red-necked Footman	Medium	Low
Small Black Arches	Medium	High
Square-spot Dart	Medium	Low
Plain Clay	Medium	Low
Silver Cloud	Medium	High
Star Wort	Medium	High
Dotted Chestnut	Medium	Medium
Angle-striped Sallow	Medium	High

6.2.3.4. The Blackdowns - A small area (partly in Devon) of upland with areas of calcareous and acid grasslands, with abundant hedgerows. Parts of the area has been designated an ESA.

Natural Area - Blackdowns

Butterfly species breeding	Regional priority	estimated regional significance of area
Wood White	High	High
Brown Hairstreak	High	Medium
Duke of Burgundy	High	High
Marsh Fritillary	High	Medium
Dingy Skipper	Medium	Low
Grizzled Skipper	Medium	Low
White-letter Hairstreak	Medium	Medium
Small Pearl-bordered Fritillary	Medium	Low
Silver-washed Fritillary	Medium	Low
Marbled White	Medium	Low

Moth species breeding	Regional priority	estimated regional significance of area
Currant Clearwing	Medium	Low
Grass Eggar	Medium	Low
Satin Lutestring	Medium	Medium
Mocha	Medium	Medium
Dotted Border Wave	Medium	Low

6.2.3.5. The Poldens - A small range of hills running east-west with extensive areas of calcareous grassland and ash-maple woodlands. The steep south-facing hills are important for a range of butterflies especially the Chalkhill Blue. The Large Blue has been successfully reintroduced here. A large downland restoration project for the East Poldens is being managed by the Somerset Wildlife Trust.

Natural Area - Mid-Somerset Hills

Butterfly species breeding	Regional priority	estimated regional significance of area
Brown Hairstreak	High	Medium
Duke of Burgundy	High	High
Large Blue	High	High
Dingy Skipper	Medium	Low
White-letter Hairstreak	Medium	Medium
Silver-washed Fritillary	Medium	Low
Marbled White	Medium	Low

Moth species breeding	Regional priority	estimated regional significance of area
Chalk Carpet	High	Medium
Argent & Sable	High	High
Drab Looper	High	High
Light-feathered Rustic	High	High
White-spotted Pinion	High	High
Cistus Forester	Medium	High
Red-tipped Clearwing	Medium	Medium
Six-belted Clearwing	Medium	Medium
Small Eggar	Medium	High
The Mocha	Medium	Medium
Oblique Striped	Medium	Medium
Ruddy Carpet	Medium	Low
Devon Carpet	Medium	Low
Marbled Pug	Medium	Low
Valerian Pug	Medium	Low
Yarrow Pug	Medium	Low
Blomer's Rivulet	Medium	Low
Large Thorn	Medium	High
Alder Kitten	Medium	Low
Red-necked Footman	Medium	Low
Orange Footman	Medium	Low
Small Black Arches	Medium	High
Dotted Chestnut	Medium	Medium
Silky Wainscot	Medium	Low
Cream-bordered Green Pea	Medium	Low

6.2.3.6. The Mendips - These hills form a ridge running east-west with extensive areas of ash-maple woodland and calcareous grassland on the steep slopes, and with mesotrophic grasslands on the more level areas. The limestone grasslands support a wide range of butterflies (about 43 species) including colonies of the re-introduced Large Blue. A Mendip Biodiversity Action Plan has been prepared.

Natural Area - Mendip Hills

Butterfly species breeding	Regional priority	estimated regional significance of area
Large Blue	High	High
Pearl-bordered Fritillary	High	Medium
Dingy Skipper	Medium	Low
Grizzled Skipper	Medium	Low
Small Pearl-bordered Fritillary	Medium	Low
Silver-washed Fritillary	Medium	Low
Marbled White	Medium	Medium

Moth species breeding	Regional priority	Estimated regional significance of area
Chalk Carpet	High	Medium
Waved Carpet	High	Low
Narrow-bordered Bee Hawk-moth	High	Low
Light-feathered Rustic	High	High
White-spotted Pinion	High	High
Forester	Medium	Medium
Cistus Forester	Medium	High
Currant Clearwing	Medium	Low
Red-tipped Clearwing	Medium	Medium
Small Eggar	Medium	High
The Mocha	Medium	Medium
Dotted Border Wave	Medium	Low
Juniper Carpet	Medium	High
Bleached Pug	Medium	Low
Blomer's Rivulet	Medium	Low
Sloe Carpet	Medium	High
Grass Wave	Medium	Low
Red-necked Footman	Medium	Low
Orange Footman	Medium	Low
Square-spot Dart	Medium	Low
Plain Clay	Medium	Low
Silver Cloud	Medium	High
Dotted Chestnut	Medium	Medium

6.3. Key Sites

6.3.1. Cornwall

6.3.1.1. Boscastle and the Valency Valley - This area includes coastal cliffs, maritime grassland and sheltered wooded valleys.

Natural Area - Land's End to Minehead

Butterfly species breeding	Regional priority	estimated regional significance of area
Pearl-bordered Fritillary	High	High
Small Pearl-bordered Fritillary	Medium	Low
Silver-washed Fritillary	Medium	Low
Marbled White	Medium	Low

Moth species breeding	Regional priority	Estimated regional significance of area
<i>Stigmella prunetorum</i>	Medium	High
<i>Agonopterix kutznetzovi</i>	Medium	High
<i>Agonopterix bipunctosa</i>	Medium	Medium
<i>Oegoconia caradjai</i>	Medium	Medium
<i>Mutuuraia terrealis</i>	Medium	Medium
<i>Epischnia bankesiella</i>	Medium	Medium
Alder Kitten	Medium	Medium
Barrett's Marbled Coronet	Medium	Medium
Bloxworth Snout	Medium	High

6.3.1.2. Herodsfoot - A series of conifer plantations in the upper Looe valley which used to be important for Heath Fritillary and are still important for a range of moth species including the only Cornish population of Scarce Merveille du Jour. There are old records for Double Line but it may no longer be present here.

Natural Area - Cornish Killas and Granites

Butterfly species breeding	Regional priority	estimated regional significance of area
Silver-washed Fritillary	Medium	Low

Moth species breeding	Regional priority	Estimated regional significance of area
Waved Carpet	High	Low
Scarce Merveille du Jour	High	High
<i>Argolamprotes micella</i>	Medium	Medium

<i>Glyphipterix forsterella</i>	Medium	Medium
<i>Phlyctaenia stachydalis</i>	Medium	High
Devon Carpet	Medium	Medium
Bleached Pug	Medium	Medium
Bilberry Pug	Medium	Medium

6.3.1.3. Kenidjack - This area of West Penwith supports maritime grassland, maritime heath, rock face communities and coastal seepages.

Natural Area - Land's End to Minehead

Butterfly species breeding	Regional priority	estimated regional significance of area
Silver-studded Blue	High	Medium
Small Pearl-bordered Fritillary	Medium	Low

Moth species breeding	Regional priority	Estimated regional significance of area
Double Line	High	Medium
Thrift Clearwing	Medium	Medium
<i>Dolicharthria punctalis</i>	Medium	Medium
Grass Eggar	Medium	Medium
Square-spot Dart	Medium	Medium
Crescent Dart	Medium	Medium
Barrett's Marbled Coronet	Medium	Medium
Devonshire Wainscot	Medium	Medium

6.3.1.4. Luckett - This area of sheltered grasslands, semi-natural broad-leaved woodland and coniferous plantation is managed for wildlife by the Duchy of Cornwall with advice from English Nature. It is the most important site in Cornwall for the Heath Fritillary.

Natural Area - Cornish Killas and Granites

Butterfly species breeding	Regional priority	estimated regional significance of area
Heath Fritillary	High	High
Small Pearl-bordered Fritillary	Medium	Low
Silver-washed Fritillary	Medium	Low
Marbled White	Medium	Low

Moth species breeding	Regional priority	Estimated regional significance of area
Waved Carpet	High	Medium
<i>Elachista regificella</i>	Medium	High
<i>Argolamprotes micella</i>	Medium	Medium
<i>Olethreutes arcuella</i>	Medium	Medium
<i>Eriopsela quadrana</i>	Medium	High
<i>Eucosmomorpha albersana</i>	Medium	Medium
Bilberry Pug	Medium	Medium

6.3.1.5. Marazion - This area includes the RSPB reserve (with abundant Willow carr and Phragmites reed-bed) and the adjacent coast, including St Michael's Mount. There are no high or medium priority butterflies associated with this site.

Natural Area - Start Point to Land's End

Moth species breeding	Regional priority	estimated regional significance of area
<i>Luffia lapidella</i>	Medium	High
<i>Eudonia delunella</i>	Medium	Medium
Devon Carpet	Medium	Low
Webb's Wainscot	Medium	Medium
Silky Wainscot	Medium	Medium

6.3.1.6. Penrose, Helston - This National Trust estate consists of a variety of habitats including semi-natural broadleaved woodland, conifer plantation, maritime grassland and the sand/shingle of Loe Bar, which has the only population of Sandhill Rustic moth in the region.

Natural Area - Start Point to Land's End

Butterfly species breeding	Regional priority	estimated regional significance of area
Small Pearl-bordered Fritillary	Medium	Medium
Grayling	Medium	Low

Moth species breeding	Regional priority	estimated regional significance of area
Waved Carpet	High	Medium
Black-banded	High	Medium
White-line Snout	High	Medium
<i>Psychoides filicivora</i>	Medium	Medium
<i>Homoeosoma nebulella</i>	Medium	Medium
Trift Clearwing	Medium	Low

Grass Eggar	Medium	Low
Ruddy Carpet	Medium	Low
Devon Carpet	Medium	Low
Red-necked Footman	Medium	Low
Orange Footman	Medium	Medium
Hoary Footman	Medium	Low
Sand Dart	Medium	Low
Barrett's Marbled Coronet	Medium	Low
L-album Wainscot	Medium	Low
Feathered Brindle	Medium	Low
Sandhill Rustic Moth	Medium	High

6.3.1.7. The lower Seaton Valley - This steep sheltered valley is dominated by semi-natural broad-leaved woodland, although large areas have been planted with conifers. Many of the woodland rides have been shaded out with the result that some high priority species such as High Brown Fritillary and Pearl-bordered Fritillary have been lost from this area in recent years. This site was the last Cornish sites for Orange Upperwing. The site reaches the sea at Seaton, where there are extensive areas of maritime grassland. Part of the valley is a Local nature Reserve.

Natural Area - Cornish Killas and Granites

Butterfly species breeding	Regional priority	estimated regional significance of area
Dingy Skipper	Medium	Low
Small Pearl-bordered Fritillary	Medium	Low
Silver-washed Fritillary	Medium	Low
Marbled White	Medium	Low

Moth species breeding	Regional priority	Estimated regional significance of area
Waved Carpet	High	Low
Orange Upperwing	High	High
White-line Snout	High	Medium
<i>Argolamprotes micella</i>	Medium	Medium
<i>Crociosema plebejana</i>	Medium	Medium
<i>Mecyna asinalis</i>	Medium	Medium
<i>Idaea sylvestraria</i>	Medium	High
Ruddy Carpet	Medium	Medium
Cloaked Carpet	Medium	Medium
Valerian Pug	Medium	Medium
Bleached Pug	Medium	Medium
Red-necked Footman	Medium	Medium
Square-spot Dart	Medium	Medium
L-album Wainscot	Medium	Medium
Dotted Chestnut	Medium	Medium

6.3.2. Devon

6.3.2.1. Ashclyst Forest - A largely broad-leaved woodland planted at the beginning of the 19th century on enclosed and common land, now owned by the National Trust with some commercial woodland production and management for wildlife. A number of butterflies have recently ceased to breed here, including Marsh Fritillary (last bred 1971), White-letter Hairstreak (1976), High Brown Fritillary (1983), Wood White (1986) and Grizzled Skipper (1992). Purple Emperor, last seen in 1989, may still be present. Pearl-bordered Fritillary is still present at three locations and Brown Hairstreak still occurs. The butterflies here are monitored by the Ashclyst Forest Butterfly and Wildlife Group (formed 1996).

Natural Area - Blackdowns

Butterfly species breeding	Regional priority	estimated regional significance of area
Brown Hairstreak	High	Low
Pearl-bordered Fritillary	High	Medium
Dingy Skipper	Medium	Low
Small Pearl-bordered Fritillary	Medium	Medium
Silver-washed Fritillary	Medium	Medium
Marbled White	Medium	Low

Moth species breeding	Regional priority	estimated regional significance of area
White-line Snout	High	Medium
The Mocha	Medium	Medium
Horse Chestnut	Medium	Low
Orange Footman	Medium	Medium

6.3.2.2. Bolt Head - This headland with maritime grassland is owned and managed by the National Trust. This is an important site for Silver-studded Blue.

Natural Area - South Devon

Butterfly species breeding	Regional priority	estimated regional significance of area
Silver-studded Blue	High	Medium
Small Pearl-bordered Fritillary	Medium	Low
Marbled White	Medium	Low
Grayling	Medium	Low

Moth species breeding	Regional priority	estimated regional significance of area
Grass Eggar	Medium	low

6.3.2.3. Braunton Burrows - A large sand dune system owned by the Christie Estate and managed by the MOD with advice and grant-aid from English Nature. Formerly a National Nature Reserve, with 24 breeding butterfly species recorded. The Small Blue colony is restricted to an area about 200x50 metres; this small area is managed for this butterfly. The sand dunes now support a good colony of Marbled White, which since the first record in the 1970s have flourished here following a decrease in rabbit grazing. Silver-studded Blues were recorded here in the past, but the last record was 1972.

Natural Area - Land's End to Minehead

Butterfly species breeding	Regional priority	estimated regional significance of area
Dingy Skipper	Medium	High
Grizzled Skipper	Medium	Medium
Small Blue	Medium	High
Marbled White	Medium	Medium
Grayling	Medium	Low

Moth species breeding	Regional priority	Estimated regional significance of area
Double Line	High	Low
Grass Eggar	Medium	Low
Hoary Footman	Medium	Low
Crescent Dart	Medium	Low
Sand Dart	Medium	Low
Portland Moth	Medium	High
Shore Wainscot	Medium	Low

6.3.2.4. Dunsdon Farm - An extensive area of culm grassland characterised by a series of small meadows and thick hedgerows, with areas of marshy grassland. It is important for Marsh Fritillary and a range of moths (Spalding, 1989).

Natural Area - The Culm

Butterfly species breeding	Regional priority	Estimated regional significance of area
Marsh Fritillary	High	Medium
Wood White	High	High
Marbled White	Medium	Low

Moth species breeding	Regional priority	Estimated regional significance of area
Double Line	High	Medium
Narrow-bordered Bee Hawk-moth	High	Medium

6.3.2.5. Haldon Forest - This woodland is site owned by the Forestry Commission and partly managed for nature conservation. Part of the site (under power lines and along woodland rides) is managed specifically for butterflies.

Natural Area - South Devon

Butterfly species breeding	Regional priority	estimated regional significance of area for this species
Pearl-bordered Fritillary	High	Medium
Wood White	High	High
Dingy Skipper	Medium	Medium
Grizzled Skipper	Medium	Medium
Small Pearl-bordered Fritillary	Medium	Medium
Silver-washed Fritillary	Medium	Low

Moth species breeding	Regional priority	estimated regional significance of area
Double Line	High	low

6.3.2.6. Lydford - A disused railway line at the edge of a conifer plantation, purchased by BC in 1996 and managed for a range of butterflies especially Heath Fritillary which was re-introduced to the site in 1993. Marsh Fritillary is recorded here occasionally (e.g. in 1998) and sporadic colonisations are likely from a colony about 3km away.

Natural Area - South Devon

Butterfly species breeding	Regional priority	estimated regional significance of area for this species
Pearl-bordered Fritillary	High	Medium
Heath Fritillary	High	High
Wood White	High	High
Dingy Skipper	Medium	Low
Grizzled Skipper	Medium	Low
Small Pearl-bordered Fritillary	Medium	Low
Silver-washed Fritillary	Medium	Low
Marbled White	Medium	Low

Moth species breeding	Regional priority	estimated regional significance of area
Double Line	High	Medium
Waved Carpet	High	Low
<i>Phlyctaenia stachydalis</i>	Medium	Medium
Dotted Carpet	Medium	Medium

6.3.2.7. Lynton - The area of coast from Woody Bay to Malmesmead is characterised by steep cliffs topped by maritime grassland and by steep wooded valleys. The key species here are High Brown Fritillary and Scarce Blackneck.

Natural Area - Land's End to Minehead

Butterfly species breeding	Regional priority	estimated regional significance of area for this species
High Brown Fritillary	High	Medium
Small Pearl-bordered Fritillary	Medium	low

Moth species breeding	Regional priority	estimated regional significance of area
Double Line	High	Medium
Scarce Black-neck	High	High
Waved Carpet	High	Low
Barred Carpet	Medium	High

6.3.2.7. Slapton Ley - This National Nature Reserve forms an extensive area of reed bed, rich fen and willow carr fringing the largest natural freshwater lake in south-west England, and includes adjacent areas of shingle beach and semi-natural broad-leaved woodland. The site, especially the reedbed constituent, is important for moths and Barrett's Marbled Coronet has been identified as one of the key species present (Riley & Pulteney, 1998).

Natural Area - Lyme Bay

Butterfly species breeding	Regional priority	estimated regional significance of area
Silver-washed Fritillary	Medium	Low

Moth species breeding	Regional priority	estimated regional significance of area
White-line Snout	High	Low
<i>Aristotelia brizella</i>	Medium	Medium
Ruddy Carpet	Medium	Low
Jersey Tiger	Medium	High
Orange Footman	Medium	Low
Crescent Dart	Medium	Medium
Barrett's Marbled Coronet	Medium	Low
Feathered Brindle	Medium	Medium
Beautiful Gothic	Medium	Medium
L-album Wainscot	Medium	Medium
Webb's Wainscot	Medium	High
Silky Wainscot	Medium	High
Cream-bordered Green Pea	Medium	Low

6.3.3. Somerset

6.3.3.1. Avon Gorge - A range of habitats occur in this steep limestone gorge, including calcareous grassland, scrub and woodland. The key species is Silky Wave

Natural Area - Bristol, Avon valley and Ridges

Butterfly species breeding	Regional priority	estimated regional significance of area for this species
White-letter Hairstreak	Medium	Medium

Moth species breeding	Regional priority	estimated regional significance of area
Silky Wave	High	High
White-line Snout	High	Low
Satin Lutestring	Medium	Medium
The Mocha	Medium	Medium
Marbled Pug	Medium	Low
Bleached Pug	Medium	Low
Blomer's Rivulet	Medium	Low
Little Thorn	Medium	High
Red-necked Footman	Medium	Low
Clay Fan-foot	Medium	High

6.3.3.2. Dolebury Warren - An area of calcareous grassland surrounded by woodland managed by the National Trust.

Natural Area - The Mendips

Butterfly species breeding	Regional priority	estimated regional significance of area for this species
Small Blue	Medium	High

Moth species breeding	Regional priority	estimated regional significance of area
Chalk Carpet	High	Medium
Light Feathered Rustic	High	High
White-spotted Pinion	High	Medium
Forester	Medium	Medium
Cistus Forester	Medium	High
Currant Clearwing	Medium	Low
Orange-tailed Clearwing	Medium	High
The Mocha	Medium	Medium
Blomer's Rivulet	Medium	Medium
Red-necked Footman	Medium	Low

Orange Footman	Medium	Low
Dotted Chestnut	Medium	Medium

6.3.3.3. Sand Point - A small area of south-facing headland owned by the National Trust with maritime grassland and scrub. The key species here is Glanville Fritillary, introduced without permission here.

Natural Area - Severn Estuary

Butterfly species breeding	Regional priority	estimated regional significance of area for this species
Glanville Fritillary	Medium	High
Marbled White	Medium	Low

Moth species breeding	Regional priority	estimated regional significance of area
Small Eggar	Medium	Medium

6.3.3.4. Thurlbear Quarrylands - This BC nature reserve has a range of butterflies, including a re-introduced population of Duke of Burgundy.

Natural Area - Blackdowns

Butterfly species breeding	Regional priority	estimated regional significance of area for this species
Duke of Burgundy	High	Medium
Dingy Skipper	Medium	Medium
Grizzled Skipper	Medium	Low
Silver-washed Fritillary	Medium	Low
Marbled White	Medium	Low

Moth species breeding	Regional priority	estimated regional significance of area
Six-belted Clearwing	Medium	Low
Small Eggar	Medium	Medium
The Mocha	Medium	Low
Dotted Chestnut	Medium	Low

6.3.3.5. West Sedgemoor - Part of this is managed by the RSPB for Brown Hairstreak as well as for birds. Nearby is one of the few sites in Somerset for Four-spotted.

Natural Area - Somerset Levels and Moors

Butterfly species breeding	Regional priority	estimated regional significance of area for this species
Brown Hairstreak	High	Medium
Silver-washed Fritillary	medium	Low
Marbled White	Medium	Low

Moth species breeding	Regional priority	Estimated regional significance of area
The Four-spotted	High	High

7. SURVEY

A considerable amount of survey work has been undertaken throughout the region by individuals and organisations. Targeted surveys were undertaken as part of the preparation of the Devon atlas (Bristow, *et al.*, 1993) and the atlas for south-east Cornwall (Frost & Madge, 1991). The Devon branch of BC are working closely with the Devon Moth Group to avoid duplication of effort. Assistance from the Wildlife Trusts and their volunteers would be very helpful in general survey work.

In addition, targeted surveys have been made on the following species:

- Double Line: adult records and larval sites
- Orange Upperwing: surveys of former sites
- Scarce Merveille du Jour: surveys of former sites in Cornwall and Devon
- Essex Skipper: surveys of Small Skipper sites and road embankments
- Brown Hairstreak: surveys along hedgerows for eggs in winter
- White-letter Hairstreak: surveys for eggs where elms occur
- Marsh Fritillary: ongoing surveys as part of a national project
- High Brown Fritillary: site surveys covering Somerset, Devon and Cornwall
- Pearl-bordered Fritillary: ongoing surveys as part of a national project
- Brown Argus: targeted surveys
- Silver-studded Blues: studies of metapopulations on sand dunes, inland metalliferous mine sites and coastal heaths
- Small Pearl-bordered Fritillary: targeted surveys
- Grayling: targeted surveys

There appear to be no data exchange protocols between the various recording organisations within the region and it is often unclear where the key data sets are kept. The situation is complicated by the need for record centres to charge consultants for data, which may occur even when the consultants are working directly for nature conservation organisations. In addition, some record centres place restrictions upon the use and release of data by third parties.

The publication of local atlases and lists and the forthcoming national butterfly atlas all provide a useful data resource. Computerised data sets are available within the region but may hold erroneous or doubtful records and it is important that all such records are validated by qualified personnel. The keeping and distribution of records depends very much on the dedicated work of a few individuals, many of whom have contributed to this Plan. The aim of BC should be to increase co-ordinated survey work throughout the region, in particular to avoid duplication of site visits and to keep surveyors up-to-date with the latest discoveries. To achieve this target, and to take a greater role in moth recording, BC should provide assistance with personnel and computer technology for BC members, members of other nature conservation and recording organisations, and the general public. However, there will always be scope for individually targeted work on favourite species; this kind of work can make an important contribution to our knowledge of the distribution of species within the region.

8. MONITORING

A number of butterfly transects are monitored throughout the region (Table 3).

In addition to these transects, the following species are being regularly monitored at some or all of their sites:

- Silver-studded Blue (Cornwall)
- High Brown Fritillary
- Pearl-bordered Fritillary (Cornwall & Devon)
- Small Pearl-bordered Fritillary
- Brown Argus (Cornwall)
- Marsh Fritillary
- Sandhill Rustic moth (Cornwall)
- Scarce Black-neck
- Scarce Merveille du Jour (Cornwall & Devon)
- Silky Wave

Rothamsted traps are monitored at North Wyke, Starcross and Yarner Woods (Devon) and Nettlecombe Court (Somerset).

TABLE 3: BUTTERFLY TRANSECTS IN CORNWALL, DEVON AND SOMERSET IN 1999

Site	County	Organiser	key species
Aish Tor	Devon	John Randall; BC	High Brown Fritillary
Ashclyst Forest	Devon	Roger Thornett; BC	Pearl-bordered Fritillary; Small Pearl-bordered Fritillary, Silver-washed Fritillary
Aylesbeare Common	Devon	Lesley Kerry; RSPB	Silver-studded Blue
Bannerdown Common	Somerset	Shirley O'Brien, BC	Chalkhill Blue; Marbled White
Bincombe, Exmoor	Somerset	National Trust	Heath Fritillary
Bodmin Beacon	Cornwall	NCHCS	Silver-washed Fritillary
Buckland Wood	Somerset	Roger Sutton; BC	Dingy Skipper; Grizzled Skipper; Wood White; Duke of Burgundy; Silver-washed Fritillary; Marsh Fritillary; Marbled White
Bunny's Hill	Cornwall	Phil Harris; BC	Pearl-bordered Fritillary
Cross Plain	Somerset	Adrian Woodhall, NT	Dingy Skipper; Grizzled Skipper; Small Pearl-bordered Fritillary; Marbled White
Delacourt	Somerset	Jane Brickwood, BC	Marbled White
Draycott Sleights	Somerset	Jo & Ian Burfield	Dingy Skipper; Grizzled Skipper; Small Blue; Large Blue; Marbled White; Grayling
Deer Park Wood	Cornwall	Alec Mackonochie; BC	Heath Fritillary; Silver-washed Fritillary; Marbled White
Dursdon & Bradworthy Moors	Devon	Kevin Bastow	Marsh Fritillary
Ebbor Gorge NNR	Somerset	English Nature	Silver-washed Fritillary; Marbled White
Folly Farm	Somerset	Avon Wildlife Trust	Dingy Skipper; Grizzled Skipper; White-letter Hairstreak; Marbled White
Gear Sands	Cornwall	A. Spalding/CJ Neil; Cornwall County Council	Dingy Skipper; Silver-studded Blue; Small Pearl-bordered Fritillary; Grayling
Godolphin	Cornwall	Stephen Hoskin; BC	Silver-washed Fritillary; Grayling
Gwithian Green	Cornwall	Cornwall County Council	-
Gwithian Pit	Cornwall	John Wacher	Silver-studded Blue
Gwithian Towans	Cornwall	ECM Haes; Cornwall County Council	Silver-studded Blue; Small Pearl-bordered Fritillary; Grayling
Haddon Moor	Somerset	BC	Small Pearl-bordered Fritillary
Ham Wall	Somerset	M.S. Johnson, RSPB	Marbled White
Hartley Field	Somerset	Roger Sutton; BC	Dingy Skipper; Silver-washed Fritillary; Marbled White
Heddon Valley & Trentishoe	Devon	A. Barton; NT	High Brown Fritillary
Hinkley Point	Somerset	John Burrell	Dingy Skipper; Marbled White
Kings Weston Hill	Somerset	Avon Wildlife Trust	Chalkhill Blue; Marbled White
Langford Heathfield	Somerset	SWT	Small Pearl-bordered Fritillary; Silver-washed Fritillary; Marbled White
Little Breach	Devon	BC	Small Pearl-bordered Fritillary; Silver-washed Fritillary; Marbled White
Luckett (Greenscombe Wood)	Cornwall	Alec Mackonochie; BC	Dingy Skipper; Heath Fritillary; Small Pearl-bordered Fritillary; Silver-washed Fritillary; Marbled White
Lundy Bay	Cornwall	National Trust	Dingy Skipper; Small Pearl-bordered Fritillary
Lydford Railway Line	Devon	Tom Sleep; Jim Braven; BC	Dingy Skipper; Grizzled Skipper; Heath Fritillary; Pearl-bordered Fritillary; Small Pearl-bordered Fritillary; Silver-washed Fritillary
Mounsey	Somerset	David Northcote-Wright	Small Pearl-bordered Fritillary; Silver-washed Fritillary; Marbled White
Mount Fancy (West)	Somerset	Roger Sutton; BC	Brown Hairstreak; Small Pearl-bordered Fritillary; Silver-washed Fritillary; Marbled White
No-one Cottage	Somerset	Andrew George	Chalkhill Blue; Silver-washed Fritillary; Marbled White
North Wyke Agricultural Research Station	Devon	Roger Smith	Brown Hairstreak
Piddledown Common & Castle Drogo	Devon	Mick Jones NT	Pearl-bordered Fritillary
Rodney Stoke NNR	Somerset	English Nature	White-letter Hairstreak; Chalkhill Blue; Silver-washed Fritillary; Marbled White

Ruttersleigh Common	Somerset	Roger Sutton; FE	Wood White; Small Pearl-bordered Fritillary; Silver-washed Fritillary
Site X	Devon	David Land; BC	High Brown Fritillary; Pearl-bordered Fritillary; Small Pearl-bordered Fritillary; Silver-washed Fritillary; Large Blue; Marbled White; Grayling
Stoke Camp	Somerset	D. Cheesman, H. Cole, M. Ridge, H. Welford; BC	Dingy Skipper; Grizzled Skipper; Small Blue; Chalkhill Blue; Silver-washed Fritillary; Marbled White
Thurlbear Quarrylands	Somerset	Mike Ridge, BC	Dingy Skipper; Grizzled Skipper; Duke of Burgundy; Silver-washed Fritillary; Marbled White
Trendlebeer Coombe-Becka/Yarner Wood	Devon	L. Austin; Phil Page EN	Silver-washed Fritillary
Tuckingmill, St Breward	Cornwall	Phil Harris, BC	Pearl-bordered Fritillary
Ubley Warren	Somerset	Nigel Milbourne, SWT	Dingy Skipper; Grizzled Skipper; Small Pearl-bordered Fritillary; Marbled White
Valency Valley	Cornwall	Jeff Cherrington, National Trust	Pearl-bordered Fritillary
Wembury	Devon	Amanda Wilkinson	-
West Down & Walkham Valley/Upperton Combe	Devon	Norman Baldock; John Randall	High Brown Fritillary
West Sedgemoor	Somerset	RSPB	Brown Hairstreak; Silver-washed Fritillary; Marbled White
Witch Lodge Fields	Somerset	Roger Sutton; FE	Dingy Skipper; Grizzled Skipper; Wood White; Duke of Burgundy; Silver-washed Fritillary; Marbled White
Worley Hill	Somerset	Geoff Brunt, Millfield School	Dingy Skipper; Grizzled Skipper; Duke of Burgundy; Silver-washed Fritillary; Marbled White

9. MANAGEMENT

9.1. Site management

The branches within the region are involved with the management of a number of sites where the level of involvement varies from giving advice to site managers, organising work parties or managing our own BC reserves.

9.2. Sites managed with assistance from BC

Berry Head (Devon)
Bovey Heath (Devon)
Brenay Common (Cornwall)
Buckland (Somerset)
Godolphin Wood (Cornwall)
Gwithian Towans (Cornwall)
Gwithian Green (Cornwall)
Haldon Butterfly Walk (Devon)
Hartley Copse (Somerset)
Little Breach (Devon)
Lydford (Devon)
Mount Fancy (Somerset)
Newton Woods (Devon)
Orley Common (Devon)
Ruttersleigh (Somerset)
Sites X and Y (Devon)
Stoke Camp (Somerset)
Stover Country Park (Devon)
Torrington Commons (Devon)

9.3. Key management issues

9.3.1. Post-industrial habitats

The post-industrial landscape of Cornwall, Devon and Somerset, especially the abandoned metalliferous mining sites with abundant heathland and bare ground, are key habitats for land reclamation. Priority butterflies (e.g. Silver-studded Blue and Grayling) may be lost during land reclamation, in addition to more widespread species such as Wall Brown. Abandoned quarries may be important for a range of butterflies and moths, including Small Blue at Torquay. Early successional habitat occurs at many of these sites, e.g. along disused railway lines on Goss Moor and at Lydford; these are especially important for Grizzled Skipper. Grayling occur at a post-industrial site at Trooper's Hill in Bristol.

9.3.2. Bracken covered hillsides

The management of south-facing bracken covered hillsides involves a range of management regimes, including bracken cutting and grazing with cattle, sheep and ponies. These management regimes are especially important for the conservation of High Brown Fritillary and Pearl-bordered Fritillary. A leaflet giving advice on bracken management for fritillaries has been prepared by BC.

9.3.3. Calcareous grasslands

The management of grasslands in the Somerset hills involves the control of scrub encroachment and the establishment of suitable grazing regimes. In particular, decisions need to be taken on which priority species are to be targeted so that grazing regimes can be devised for those species, i.e. heavy grazing for butterflies such as Large Blue, light grazing for species such as Marbled White. Grazing regimes may need to be devised so that livestock are taken off site when egg-laying is underway and during the early stages of larval development.

9.3.4. Woodlands

Many of the butterflies traditionally associated with woodland have been lost in these habitats following the cessation of traditional woodland management practices and increased shade. The return to traditional management has been successfully practised at a number of sites, including Marsland nature reserve and Stover Country Park, and species such as High Brown Fritillary, Pearl-bordered Fritillary and White Admiral have benefited as a result.

9.3.5. Wetlands and marshy grasslands

The drainage of wetlands and marshy grasslands and subsequent conversion to arable land has had an important effect on populations of priority species such as Marsh Fritillary. Scrub encroachment, especially by Willow, can lead to the drying out of these areas with resultant loss of valuable habitat. It can be difficult to maintain suitable levels of light/moderate grazing on poor quality damp grasslands. BC has prepared a leaflet and factsheet which provide details of suitable management regimes for Marsh Fritillary.

9.3.6. Heathlands

Surveys on heathland in Cornwall (e.g. Spalding and Haes, 2000) indicate that one of the key factors leading to loss of heathland habitat is lack of management. Without suitable targeted management (e.g. by grazing or burning), heathland becomes even-age, with poor structural diversity and little bare ground. Warmth-loving species such as Silver-studded Blue and Grayling may disappear from the sites such as Bovey Heath.

9.3.7. Maritime grasslands

Many of these maritime grasslands are self-maintaining habitats, especially where exposed to strong westerly winds. However, scrub encroachment can be a major problem, especially in the more sheltered areas such as occur at Torbay, leading to the loss of priority species such as Scarce Black-neck. It is important to establish suitable grazing regimes on these habitats (Oates, 1999).

9.3.8. Hedgerows

Hedgerows and their associated verges are important for a range of species, including Brown Hairstreak and Marbled White. Unsuitable management (e.g. flailing at the wrong time of year and the use of herbicides) can be very harmful to these species. BC has prepared a leaflet (Hedgerows for Hairstreaks) which provide details of suitable management regimes for Brown Hairstreak.

10. OTHER ACTIVITIES

Priorities in the region are as follows:

- To raise the profile of Butterfly Conservation in the region by expanding our involvement with other conservation organisations in the region
- To take part in local biodiversity initiatives
- To recruit more members and increase the number of active members
- To hold field meetings where people can learn about identification and habitat management
- To provide advice and practical management help on nature reserves and in the wider countryside
- To link in with the National Biodiversity Network and the local record centres, ensuring that human resources are focused efficiently without duplication of recorder effort.

11. 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. There will be a more thorough review every five years where species priority ratings will be re-assessed and the plan updated.

APPENDIX 1: NUMBER OF TETRADS OCCUPIED BY EACH BUTTERFLY SPECIES IN CORNWALL, DEVON, SOMERSET AND BRISTOL AND THE PROPORTION OF THE TOTAL NUMBER OF TETRADS (3804) OCCUPIED IN THE REGION

	No of tetrads in Cornwall	No of tetrads in Devon	No of tetrads in West Country	Total	Proportion of occupied tetrads in the region
Lulworth Skipper	0	0	0	0	0.00%
Essex Skipper	1	0	23	24	0.63%
Small Skipper	91	214	328	633	16.64%
Large Skipper	108	223	389	720	18.93%
Grizzled Skipper	4	26	120	150	3.94%
Dingy Skipper	21	60	131	212	5.57%
Wood White	1	21	26	48	1.26%
Brimstone	96	253	482	831	21.85%
Large White	220	384	681	1285	33.78%
Small White	214	449	659	1322	34.75%
Green-veined White	160	341	722	1223	32.15%
Orange Tip	133	283	741	1157	30.42%
Green Hairstreak	26	98	132	256	6.73%
Brown Hairstreak	0	281	179	460	12.09%
Purple Hairstreak	22	84	196	302	7.94%
White-letter Hairstreak	0	29	57	86	2.26%
Small Copper	175	284	375	834	21.92%
Small Blue	0	2	32	34	0.89%
Silver-studded Blue	21	19	0	40	1.05%
Brown Argus	14	29	158	201	5.28%
Common Blue	160	344	499	1003	26.37%
Chalkhill Blue	0	0	23	23	0.60%
Adonis Blue	0	0	5	5	0.13%
Holly Blue	123	249	347	719	18.90%
Large Blue	0	1	4	5	0.13%
Duke of Burgundy	0	0	21	21	0.55%
White Admiral	0	44	32	76	2.00%
Purple Emperor	0	1	6	7	0.18%
Small Tortoiseshell	216	439	733	1428	37.54%
Red Admiral	287	470	633	1390	36.54%
Peacock	207	380	656	1243	32.68%
Comma	95	229	391	715	18.80%
Small Pearl-bordered Fritillary	47	85	117	249	6.55%
Pearl-bordered Fritillary	19	68	28	115	3.02%
High Brown Fritillary	1	26	31	58	1.52%
Dark Green Fritillary	32	77	123	232	6.10%
Silver-washed Fritillary	45	169	264	478	12.57%

Marsh Fritillary	13	30	70	113	2.97%
Glanville Fritillary	0	0	3	3	0.08%
Heath Fritillary	2	3	26	31	0.81%
Speckled Wood	236	380	618	1234	32.44%
Wall	171	187	301	659	17.32%
Gatekeeper	182	415	687	1284	33.75%
Marbled White	28	203	444	675	17.74%
Grayling	19	45	55	119	3.13%
Meadow Brown	219	428	624	1271	33.41%
Ringlet	123	240	387	750	19.72%
Small Heath	62	136	294	492	12.93%

APPENDIX 2: THE NUMBER OF 10KM SQUARES OCCUPIED BY BUTTERFLY SPECIES IN THE REGION COMPARED WITH NATIONAL RESULTS

	10km squares in Heath & Pollard 1984	10km squares in the region in 2000	10km squares in Britain in 2000	Proportion of 10km squares in the region in 2000
Lulworth Skipper	2	0	12	0.00%
Essex Skipper	10	20	650	3.08%
Small Skipper	151	175	1465	11.95%
Large Skipper	147	182	1569	11.60%
Grizzled Skipper	43	61	386	15.80%
Dingy Skipper	47	87	632	13.77%
Wood White	21	21	319	6.58%
Brimstone	128	160	1355	11.81%
Large White	172	190	2786	6.82%
Small White	169	192	2599	7.39%
Green-veined White	175	193	3423	5.64%
Orange Tip	138	182	2723	6.68%
Green Hairstreak	93	121	1025	11.80%
Brown Hairstreak	56	63	149	42.28%
Purple Hairstreak	106	122	1014	12.03%
White-letter Hairstreak	34	37	573	6.46%
Small Copper	166	190	2326	8.17%
Small Blue	13	15	312	4.80%
Silver-studded Blue	26	23	100	23.00%
Brown Argus	51	71	705	10.07%
Common Blue	166	190	2641	7.19%
Chalkhill Blue	29	21	203	10.34%
Adonis Blue	9	11	96	11.46%
Holly Blue	110	183	1571	11.65%
Large Blue	3	4	5	80%
Duke of Burgundy	11	13	105	12.38%
White Admiral	31	36	379	9.50%
Purple Emperor	2	7	89	7.87%
Small Tortoiseshell	128	193	3041	6.35%
Red Admiral	154	193	2883	6.69%
Peacock	167	190	2653	7.16%
Comma	125	174	1503	11.58%
Sm Pearl-bordered Fritillary	82	101	750	13.47%
Pearl-bordered Fritillary	57	56	277	20.22%
High Brown Fritillary	31	27	57	47.37%
Dark Green Fritillary	88	110	999	11.01%
Silver-washed Fritillary	124	139	660	21.06%
Marsh Fritillary	48	61	304	20.07%

Glanville Fritillary	0	1	13	7.69%
Heath Fritillary	9	9	14	64.29%
Speckled Wood	170	193	2238	8.62%
Wall	162	173	1677	10.32%
Gatekeeper	165	189	1474	12.82%
Marbled White	102	151	664	22.74%
Grayling	82	76	735	10.34%
Meadow Brown	178	190	3093	6.14%
Ringlet	143	181	2239	8.08%
Small Heath	147	154	2341	6.58%

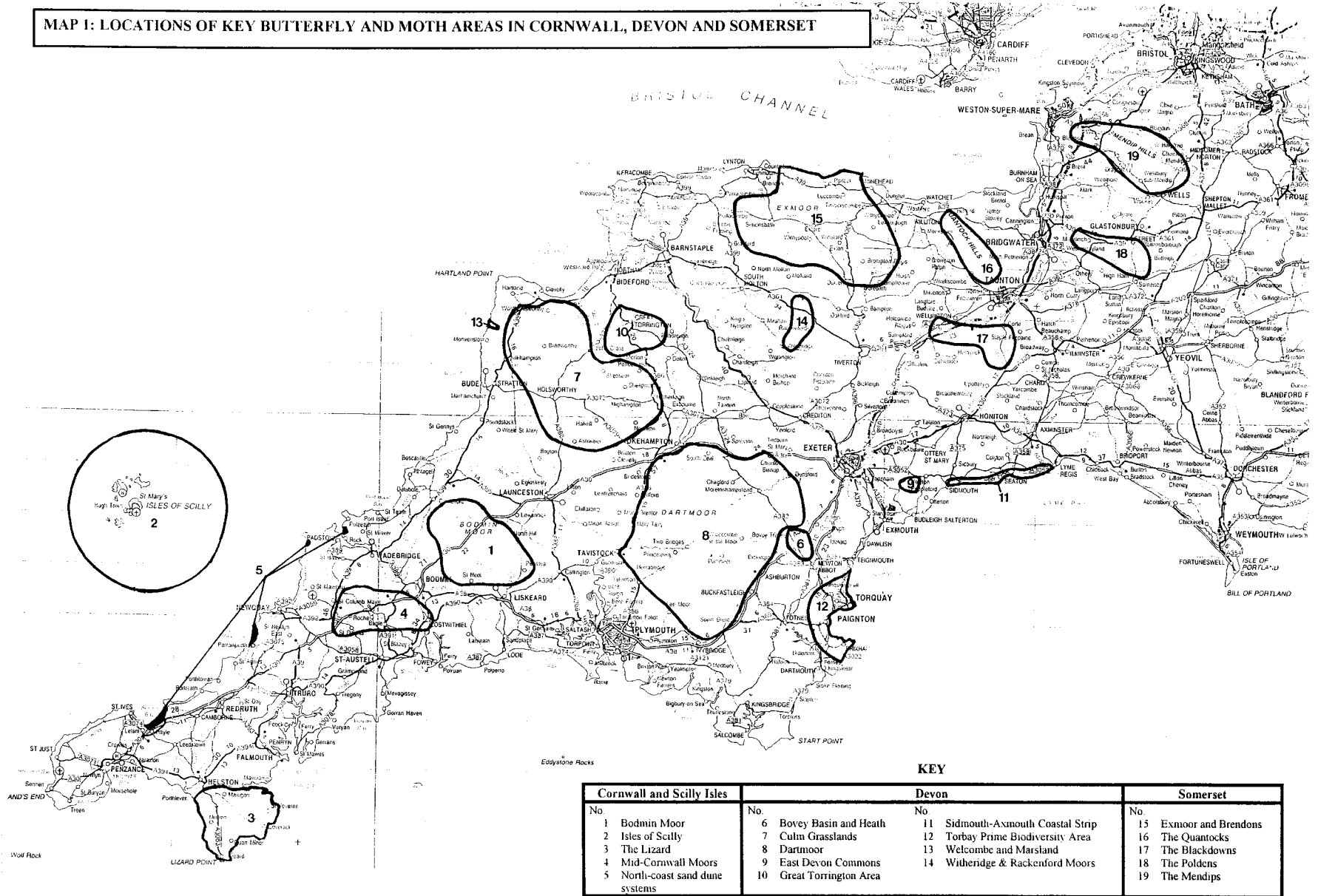
APPENDIX 3: NATIONALLY NOTABLE MOTHS RECORDED IN THE REGION SINCE 1970

Log no.	Scientific name	Common name	GB status	IoS	Cwll	Dev	Somers et	BAP
7	<i>Eriocrania chrysolepidella</i>		Nb		Y	Y	Y	
49	<i>Trifurcula eurema</i>		Nb		Y			
57	<i>Stigmella filipendulae</i>		Nb		Y	Y		
82	<i>Stigmella paradoxa</i>		not known				Y	
118	<i>Enteucha acetosae</i>		Nb			Y		
162	<i>Cossus cossus</i>	Goat Moth	Nb		Y	Y	Y	LL
163	<i>Adscita statices</i>	The Forester	Nb				Y	
164	<i>Adscita geryon</i>	Cistus Forester	Nb				Y	
173	<i>Apoda limacodes</i>	The Festoon	Nb				Y	
200	<i>Psychoides filicivora</i>		Nb	Y	Y	Y	Y	
205	<i>Ischnoscia borreonella</i>		Nb			Y		
220	<i>Nemapogon clematella</i>		Nb		Y	Y	Y	
370	<i>Sesia apiformis</i>	Hornet Moth	Nb		Y	Y	Y	
373	<i>Synanthedon tipuliformis</i>	Currant Clearwing	Nb		Y	Y	Y	
374	<i>Synanthedon vespiformis</i>	Yellow-legged Clearwing	Nb		Y	Y	Y	
375	<i>Synanthedon spheciformis</i>	White-barred Clearwing	Nb				Y	
377	<i>Synanthedon flaviventris</i>	Sallow Clearwing	Nb				Y	
378	<i>Synanthedon andrenaeformis</i>	Orange-tailed Clearwing	Nb				Y	
379	<i>Synanthedon myopaeformis</i>	Red-belted Clearwing	Na				Y	
380	<i>Synanthedon formicaeformis</i>	Red-tipped Clearwing	Nb		Y	Y	Y	
381	<i>Synanthedon culiciformis</i>	Large Red-belted Clearwing	Nb			Y	Y	
382	<i>Bembecia scopigera</i>	Six-belted Clearwing	Nb		Y	Y	Y	
383	<i>Bembecia muscaeformis</i>	Thrift Clearwing	Nb	Y	Y	Y	Y	
392	<i>Glyphipterix schoenicolella</i>		Nb		Y	Y		
394	<i>Glyphipterix forsterella</i>		Nb		Y	Y		
431	<i>Yponomeuta sedella</i>		Nb		Y	Y		
477	<i>Phaulermis dentella</i>		not known				Y	
521	<i>Coleophora conyzae</i>		Nb		Y	Y	Y	
552	<i>Coleophora lassella</i>		Nb		Y	Y		
580	<i>Coleophora sylvaticella</i>		Nb		Y	Y		
586	<i>Coleophora adjunctella</i>		Nb		Y	Y	Y	
593	<i>Elachista regificella</i>		Nb		Y	Y	Y	
626	<i>Biselachista serricornis</i>		Nb		Y	Y		
628	<i>Biselachista eleochariella</i>		Nb		Y			
699	<i>Agonopterix bipunctosa</i>		Nb		Y			
718	<i>Ethmia dodeceae</i>		Nb			Y	Y	
731a	<i>Eulamprotes phaeella</i>		Notable		Y	Y		
733	<i>Eulamprotes wilkella</i>		Nb				Y	
734	<i>Argolamprotes micella</i>		Notable		Y	Y	Y	
753	<i>Aristotelia brizella</i>		Nb		Y	Y		
766	<i>Teleiodes scriptella</i>		Nb				Y	
777	<i>Bryotropha basaltinella</i>		Nb		Y	Y		
790	<i>Chionodes fumatella</i>		Nb				Y	
791	<i>Chionodes distinctella</i>		Nb			Y		
813	<i>Scrobipalpa salinella</i>		Notable		Y			
814	<i>Scrobipalpa ocellatella</i>		Notable	Y	Y	Y	Y	
826	<i>Caryocolum vicinella</i>		Nb		Y	Y		
827	<i>Caryocolum alsinella</i>		Notable		Y	Y	Y	
845	<i>Syncopacma sangiella</i>		Nb				Y	
861	<i>Telephila schmidtii</i>		Nb			Y	Y	
870a	<i>Oegoconia caradjai</i>		Nb	Y	Y	Y	Y	
877	<i>Stathmopoda pedella</i>		Nb				Y	
880	<i>Mompha langiella</i>		Nb		Y	Y	Y	
881	<i>Mompha terminella</i>		Nb		Y	Y	Y	
889	<i>Mompha divisella</i>		Na		Y	Y		
926	<i>Phalonidia manniana</i>		Nb		Y	Y		
958	<i>Cochylidia subroseana</i>		Nb		Y	Y		
967	<i>Cochylis pallidana</i>		Nb	Y	Y	Y	Y	
1034	<i>Spatalistis bifasciana</i>		Nb		Y	Y	Y	
1067	<i>Celypha rurestrana</i>		Nb			Y		
1069	<i>Celypha aurofasciana</i>		Nb		Y	Y		
1080	<i>Olethreutes arcuella</i>		Nb		Y	Y	Y	
1112	<i>Bactra robustana</i>		Nb	Y	Y	Y	Y	
1157	<i>Crociosema plebejana</i>		Na	Y	Y	Y	Y	
1164	<i>Zeiraphera rufimitrana</i>		Nb		Y			
1206	<i>Clavigesta sylvestrana</i>		Nb		Y	Y		

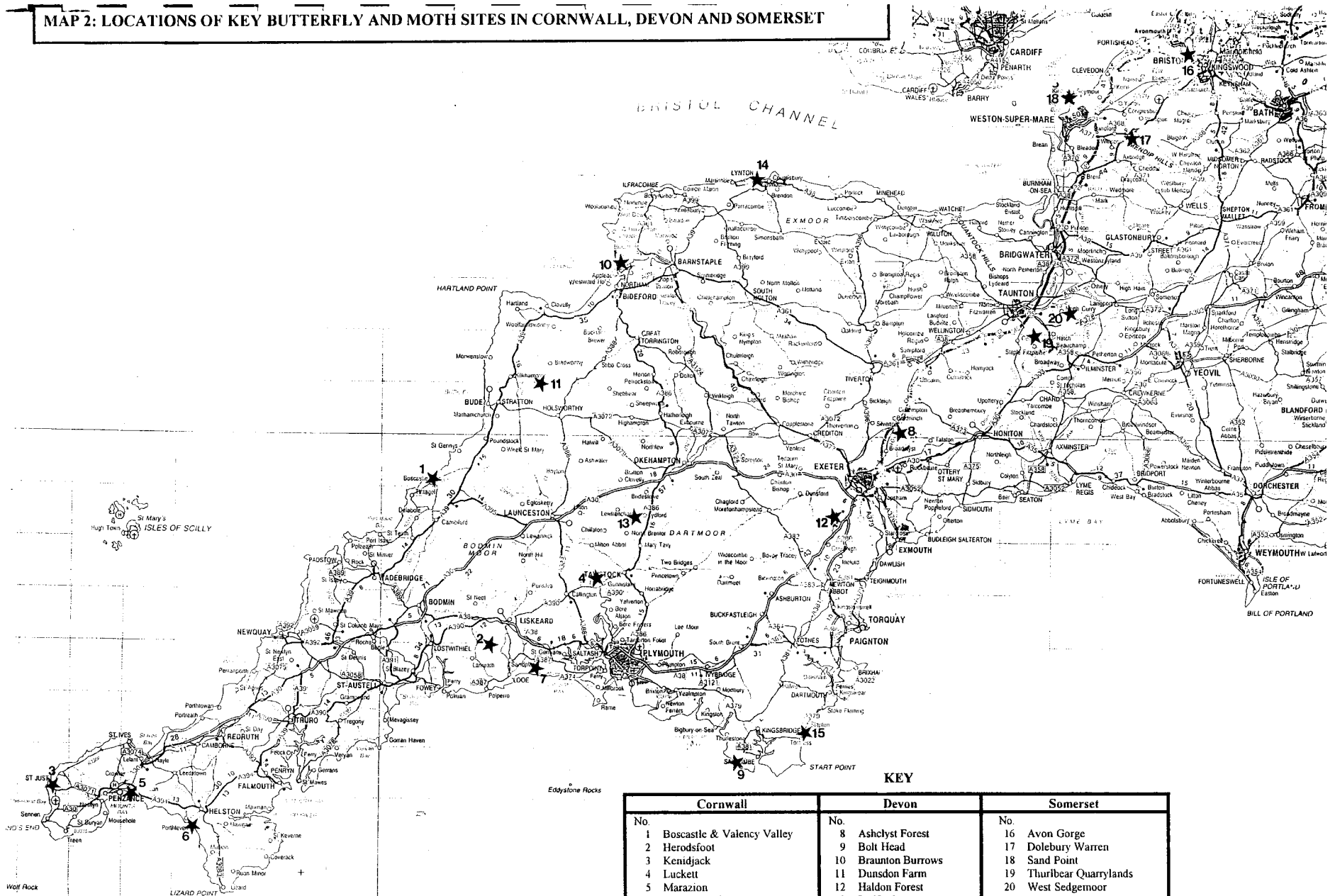
1217	<i>Eucosmomorpha albersana</i>		Nb		Y	Y	Y	
1220	<i>Collicularia microgrammana</i>		Nb		Y	Y	Y	
1229	<i>Pammene albuginana</i>		Nb		Y	Y	Y	
1236	<i>Pammene fasciana</i>		Nb		Y	Y	Y	
1237	<i>Pammene germmana</i>		Nb		Y	Y	Y	
1238	<i>Pammene ochsenheimeriana</i>		Nb		Y	Y		
1277	<i>Dichrorampha senectana</i>		Nb		Y	Y		
1280	<i>Dichrorampha consortana</i>		Nb		Y			
1292	<i>Calamotropha paludella</i>		Nb			Y		
1299	<i>Crambus hamella</i>		Nb			Y		
1321	<i>Thisanotia chrysonuchella</i>		Nb				Y	
1323	<i>Pediasia contaminella</i>		Nb	Y	Y	Y		
1324	<i>Pediasia aridella</i>		Nb		Y	Y	Y	
1335	<i>Scoparia ancipitella</i>		Nb				Y	
1341	<i>Eudonia lineola</i>		Nb	Y	Y	Y	Y	
1343	<i>Eudonia delunella</i>		Nb		Y	Y	Y	
1357	<i>Evergestis extimalis</i>		Nb	Y	Y	Y		
1379	<i>Mutuuraia terrealis</i>		Nb		Y	Y	Y	
1397	<i>Mecyna asinalis</i>		Nb	Y	Y	Y	Y	
1399	<i>Dolicharthria punctalis</i>		Nb	Y	Y	Y	Y	
1414	<i>Synaphe punctalis</i>		Nb		Y	Y	Y	
1441	<i>Onocera semirubella</i>		Nb			Y	Y	
1449	<i>Microthrix similella</i>		Nb		Y	Y		
1456	<i>Epischnia banksiella</i>		Na		Y	Y		LL
1467	<i>Ancylosis oblitella</i>		Nb	Y	Y	Y	Y	
1480	<i>Homoeosoma nebulella</i>		Nb	Y	Y	Y	Y	
1486	<i>Apomyelois bistriatella neophanes</i>		Nb	Y	Y	Y		
1633	<i>Trichiura lanestris</i>	Small Eggar	Nb			Y	Y	LL
1636	<i>Lasiocampa trifolii</i>	Grass Eggar	Na	Y	Y	Y	Y	
1647	<i>Drepana cultaria</i>	Barred Hook-tip	Nb				Y	
1656	<i>Tetheela fluctuosa</i>	Satin Lutestring	Nb				Y	
1662	<i>Archiearis notha</i>	Light Orange Underwing	Na				Y	
1670	<i>Chlorissa viridata</i>	Small Grass Emerald	Na		Y	Y	Y	
1676	<i>Cyclophora annulata</i>	The Mocha	Nb			Y	Y	
1687	<i>Scopula ornata</i>	Lace Border	Na				Y	
1691	<i>Scopula emutaria</i>	Rosy Wave	Nb				Y	
1701	<i>Idaea sylvestraria</i>	Dotted Border Wave	Nb		Y	Y	Y	
1718	<i>Phibalapteryx virgata</i>	Oblique Striped	Nb				Y	
1735	<i>Catarhoe rubidata</i>	Ruddy Carpet	Nb		Y	Y	Y	
1751	<i>Lampropteryx otegiata</i>	Devon Carpet	Nb		Y	Y	Y	
1771	<i>Thera juniperata</i>	Juniper Carpet	Nb				Y	
1793	<i>Euphyia biangulata</i>	Cloaked Carpet	Nb		Y	Y	Y	
1814	<i>Eupithecia plumbeolata</i>	Lead-coloured Pug	Nb		Y	Y	Y	
1818	<i>Eupithecia irriguata</i>	Marbled Pug	Nb		Y	Y	Y	
1820	<i>Eupithecia insigniata</i>	Pinion-spotted Pug	Nb				Y	
1821	<i>Eupithecia valerianata</i>	Valerian Pug	Nb		Y	Y	Y	
1833	<i>Eupithecia expallidata</i>	Bleached Pug	Nb		Y	Y	Y	
1836	<i>Eupithecia denotata jasionea</i>	Jasione Pug	Na	Y	Y			
1836	<i>Eupithecia denotata denotata</i>	Campanula Pug	Na				Y	
1841	<i>Eupithecia millefoliata</i>	Yarrow Pug	Nb				Y	
1843	<i>Eupithecia distinctaria</i>	Thyme Pug	Nb		Y	Y	Y	
1845	<i>Eupithecia pimpinellata</i>	Pimpinell Pug	Nb/local				Y	
1861	<i>Chloroclystis debiliata</i>	Billberry Pug	Nb		Y	Y	Y	
1863	<i>Anticollix sparsata</i>	Dentated Pug	Na				Y	
1865	<i>Chesias rufata rufata</i>	Broom-tip	Nb		Y		Y	LL
1872	<i>Discoloxia blomeri</i>	Blomer's Rivulet	Nb		Y	Y	Y	
1901	<i>Cepphis advenaria</i>	Little Thorn	Nb				Y	
1905	<i>Pachycnemia hippocastanaria</i>	Horse Chestnut	Nb			Y	Y	
1911	<i>Ennomos autumnaria</i>	Large Thorn	Nb				Y	
1938	<i>Selidosema brunnearia</i>	Bordered Grey	Na				Y	
1939	<i>Cleora cinctaria</i>	Ringed Carpet	Na				Y	
1942	<i>Alcis jubata</i>	Dotted Carpet	Nb		Y	Y	Y	
1943	<i>Hypomecis roboraria</i>	Great Oak Beauty	Nb				Y	
1959	<i>Aleucis distinctata</i>	Sloe Carpet	Nb				Y	
1970	<i>Perconia strigillaria</i>	Grass Wave	Nb		Y	Y	Y	
1983	<i>Hemaris fuciformis</i>	Broad-bordered Bee Hawk-moth	Nb				Y	LL
1996	<i>Furcula bicuspis</i>	Alder Kitten	Nb		Y	Y	Y	
2017	<i>Closter pigra</i>	Small Chocolate-tip	Nb				Y	
2039	<i>Atolmis rubicollis</i>	Red-necked Footman	Nb	Y	Y	Y	Y	
2043	<i>Eilema sororcula</i>	Orange Footman	Nb		Y	Y	Y	LL

2045	<i>Eilema caniola</i>	Hoary Footman	Nb	Y	Y	Y	Y	
2062	<i>Spilosoma urticae</i>	Water Ermine	Nb			Y	Y	LL
2067	<i>Euplagia quadripunctaria</i>	Jersey Tiger	Nb		Y	Y		
2075	<i>Meganola strigula</i>	Small Black Arches	Na				Y	LL
2076	<i>Meganola albula</i>	Kent Black Arches	Nb	Y	Y	Y	Y	
2080	<i>Euxoa obelisca grisea</i>	Square-spot Dart	Nb	Y	Y	Y	Y	
2083	<i>Euxoa cursoria</i>	Coast Dart	Nb				Y	
2090	<i>Agrotis trux lunigera</i>	Crescent Dart	Nb	Y	Y	Y	Y	
2093	<i>Agrotis ripae</i>	Sand Dart	Nb	Y	Y	Y	Y	
2099	<i>Actebia praecox</i>	Portland Moth	Nb				Y	
2103	<i>Eugnorisma depuncta</i>	Plain Clay	Nb			Y	Y	
2131	<i>Xestia rhomboidea</i>	Square-spotted Clay	Nb				Y	
2140	<i>Cerastis leucographa</i>	White-marked	Nb		Y	Y	Y	
2149	<i>Polia hepatica</i>	Silvery Arches	Nb				Y	
2152	<i>Sideridis albicolon</i>	White Colon	Nb			Y	Y	
2153	<i>Heliophobus reticulata</i>	Bordered Gothic	Na				Y	
2169	<i>Hadena luteago barrettii</i>	Barrett's Marbled Coronet	Na		Y	Y	Y	
2181	<i>Egira conspiciaris</i>	Silver Cloud	Na				Y	
2201	<i>Mythimna litoralis</i>	Shore Wainscot	Nb	Y	Y	Y	Y	
2202	<i>Mythimna l-album</i>	L-album Wainscot	Nb	Y	Y	Y	Y	
2206	<i>Mythimna putrescens</i>	Devonshire Wainscot	Na		Y	Y	Y	
2211	<i>Cucullia absinthii</i>	The Wormwood	Nb				Y	
2217	<i>Cucullia asteris</i>	Star-wort	Nb				Y	
2230	<i>Aporophyla australis</i>	Feathered Brindle	Nb	Y	Y	Y		
2260	<i>Conistra rubiginea</i>	Dotted Chestnut	Nb		Y	Y	Y	
2276	<i>Xanthia ocellaris</i>	Pale-lemon Sallow	Na				Y	
2290	<i>Simyra albovenosa</i>	Reed Dagger	Na				Y	
2313	<i>Enargia palacea</i>	Angle-striped Sallow	Nb				Y	
2325	<i>Apamea oblonga</i>	Crescent Striped	Nb				Y	
2348	<i>Photodes elymi</i>	Lyme Grass	Nb				Y	
2349	<i>Photodes fluxa</i>	Mere Wainscot	Nb				Y	
2373	<i>Archanara sparganii</i>	Webb's Wainscot	Nb	Y	Y	Y	Y	
2391	<i>Chilodes martimus</i>	Silky Wainscot	Nb		Y	Y	Y	
2396	<i>Elaphria venustula</i>	Rosy Marbled	Nb					
2418	<i>Earias clorana</i>	Cream-bordered Green Pea	Nb		Y	Y	Y	
2435	<i>Diachrysia chryson</i>	Scarce Burnished Brass	Na				Y	
2475	<i>Parascotia fuliginaria</i>	Waved Black	Nb				Y	
2485	<i>Hypenodes humidalis</i>	Marsh Oblique-barred	Nb			Y	Y	
2494	<i>Paracolax tristalis</i>	Clay Fan-foot	Na				Y	

MAP 1: LOCATIONS OF KEY BUTTERFLY AND MOTH AREAS IN CORNWALL, DEVON AND SOMERSET



MAP 2: LOCATIONS OF KEY BUTTERFLY AND MOTH SITES IN CORNWALL, DEVON AND SOMERSET



Cornwall		Devon		Somerset	
No.		No.		No.	
1	Boscastle & Valency Valley	8	Ashclyst Forest	16	Avon Gorge
2	Herodsfoot	9	Bolt Head	17	Dolebury Warren
3	Kenidjack	10	Braunton Burrows	18	Sand Point
4	Luckett	11	Dunsdon Farm	19	Thurlbear Quarrylands
5	Marazion	12	Haldon Forest	20	West Sedgemoor
6	Penrose, Helston	13	Lydford		
7	Lower Seaton Valley	14	Lynton		
		15	Slapton Ley		

GENERAL SOURCES OF INFORMATION

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ABBREVIATIONS USED IN TEXT

ABG	Avon Butterfly Group
BC	Butterfly Conservation
BDMG	Bristol and District Moth Group
CISFBR	Cornwall and Isles of Scilly Federation of Biological Recorders
CWT	Cornwall Wildlife Trust
DMG	Devon Moth Group
DNPA	Dartmoor National Park Authority
DWT	Devon Wildlife Trust
EN	English Nature
ENP	Exmoor National Park
FA	Forest Authority
FE	Forest Enterprise
FRCA	Farming and Rural Conservation Agency
FWAG	Farming and Wildlife Advisory Group
MAFF	Ministry of Agriculture, Fisheries and Food
NNR	National Nature Reserve
NT	The National Trust
NCDC	North Cornwall District Council
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SMG	Somerset Moth Group
SWT	Somerset Wildlife Trust
TCCT	Torbay Coast and Countryside Trust
WT	Woodland Trust