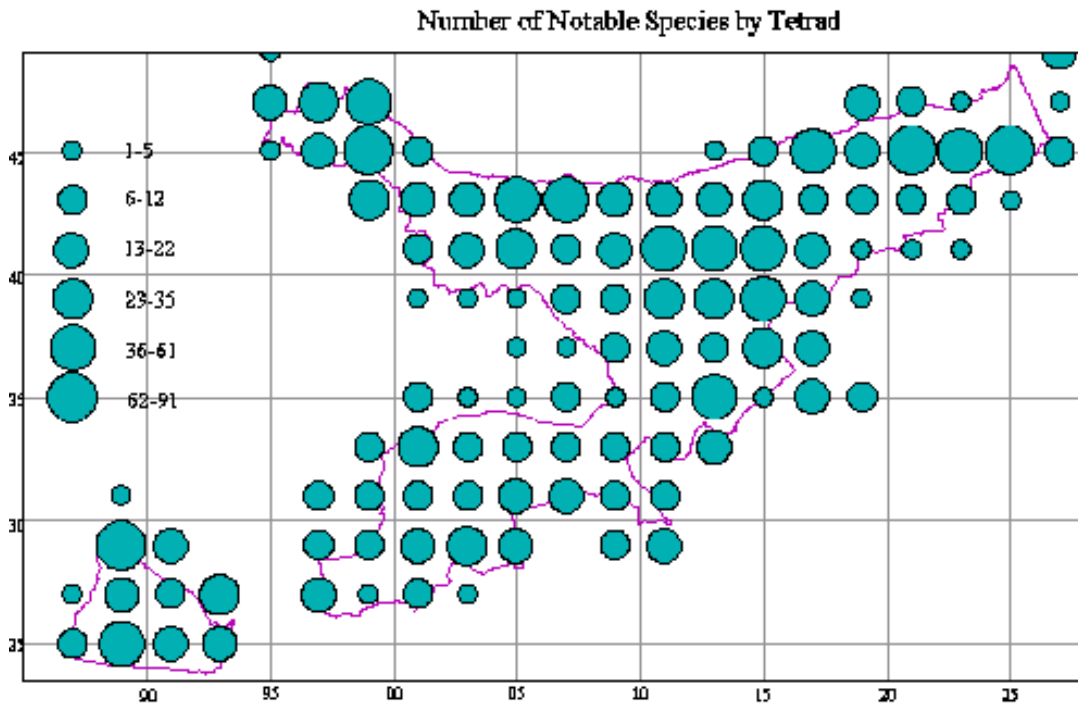


Notable Species Diversity and Distribution

Figure 19. Distribution of notable species by tetrad



The number of notable species in each tetrad (2 x 2 km) has been calculated for West Somerset District, including those tetrads that only partially overlap the district. A total of 115 tetrads were found in west Somerset.

The average number of notable species in a tetrad is 18. The highest number of notables found is 91, in tetrad SS94X at Dunster Marshes.

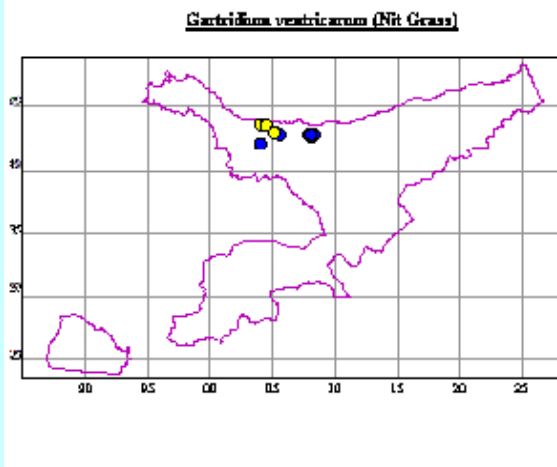
There are clearly areas with a collection of tetrads with high numbers of notables. These are at Bridgwater Bay SSSI, Dunster Marshes and The Quantocks. The small island of West Somerset District near Dulverton also has higher than average numbers of notables as does part of the coast near Watchet.

Species Distribution Maps

A selection of high status species have been chosen for more detailed examination. They will help to illustrate the range of important species found in West Somerset District that are of conservation concern. Those species chosen for action plans are not included as they are dealt in more detail later in this document.

Figures 20 to 33 show the distribution of selected species in West Somerset.

Figure 20 Distribution of Nit Grass in West Somerset.



Nit Grass is a Red Data Book species and a County Notable. It can be found in dry, open sandy or calcareous grassland in Southern Britain especially near the sea. It numbers fluctuate a great deal from year to year (from a few to several thousand plants). Records of this species have been steadily increasing in Somerset since 1987 due to increased recording effort.

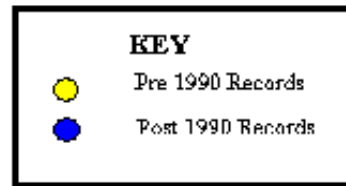


Figure 21 Distribution of Rough Marshmallow in West Somerset.

Rough marshmallow is a Red Data Book Species, of National Conservation Concern and County Notable. It is found in only two Counties in Britain, in Somerset and in Kent. This species can be found in field borders and scrub/wood margins. Factors affecting its survival are type of crop planted and the weather at the time of germination.

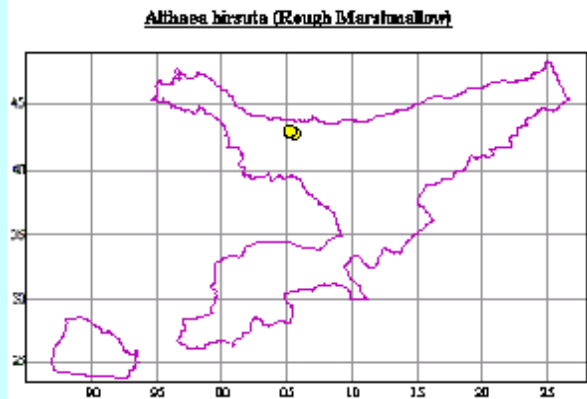
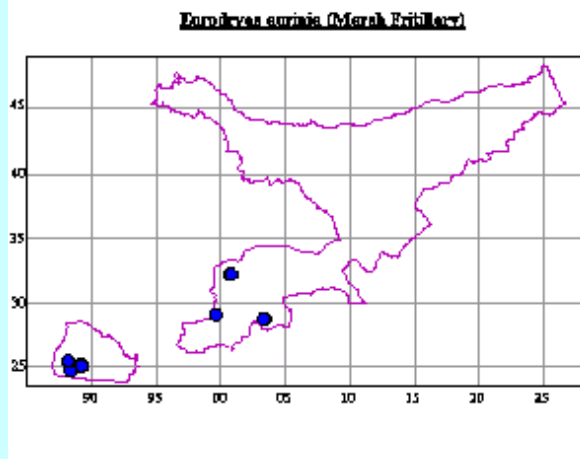


Figure 22 Distribution Marsh Fritillary of in West Somerset.



The Marsh Fritillary is a National Priority Short list Species, listed on Annex II of the EC Habitats and Species Directive, a County Notable and Legally protected. Most colonies are found on marshy grassland and woodland clearings. Devil's Bit Scabious (*Succisa pratensis*) is needed for the caterpillars to feed on. This species is estimated to have decreased by about 60 % in the last 150 years. Factors that are thought to have contributed to this are agricultural intensification, reduction in grazing pasture, and slow colonisation of new sites

Figure 23 Distribution of Nightjar in West Somerset.

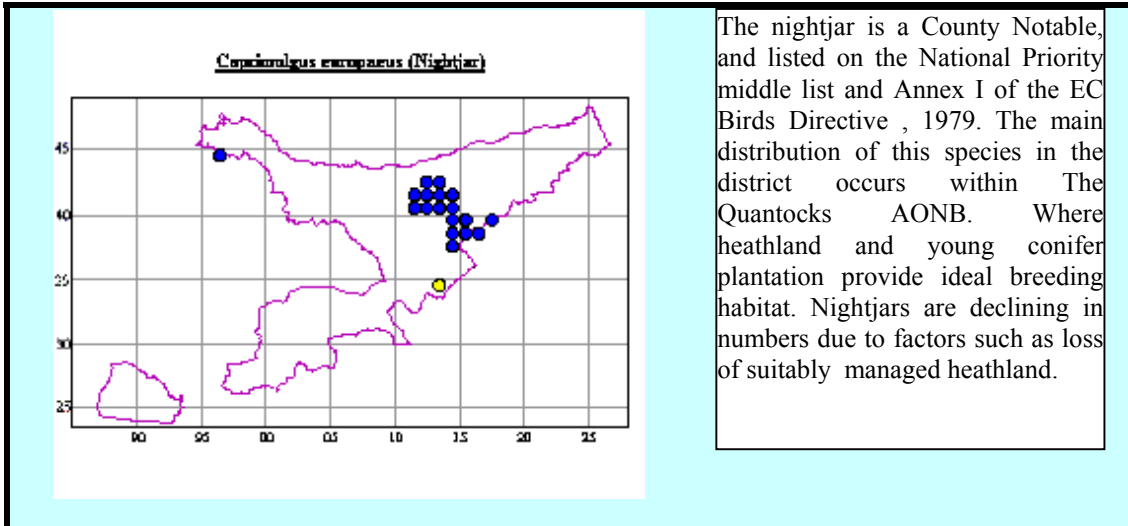
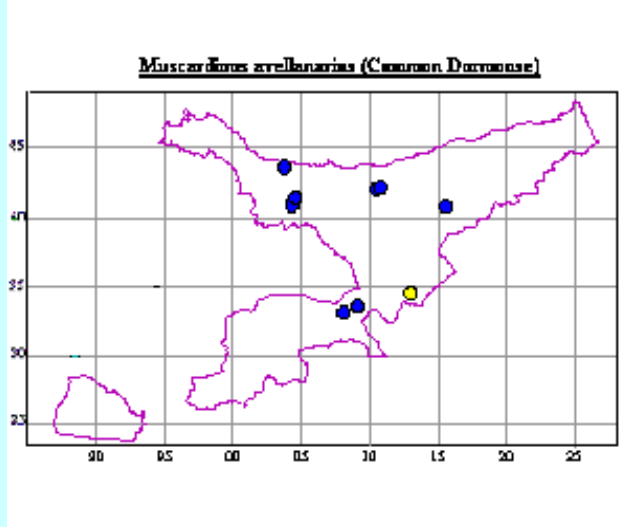


Figure 24. Distribution of Grey Partridge in West Somerset.



Figure 25 Distribution of Common Dormouse in West Somerset.



This species is a National Priority species (short list) and a County Notable. It is widespread in Europe, although in Britain it is in the northern part of its range and therefore limited to southern and western counties. This species is declining in numbers and range and is affected by factors such as loss of broadleaf woodland, reduction or change in management of woodland and fragmentation of habitat.

Figure 26. Distribution of Dartford Warbler in West Somerset.

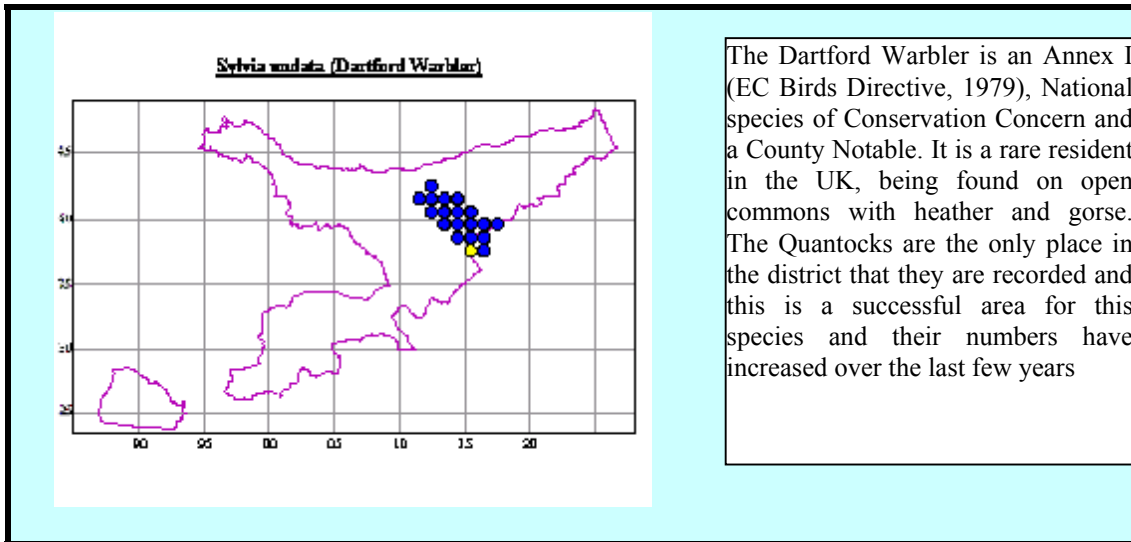


Figure 27. Distribution of Brown Hairstreak Butterfly in West Somerset.

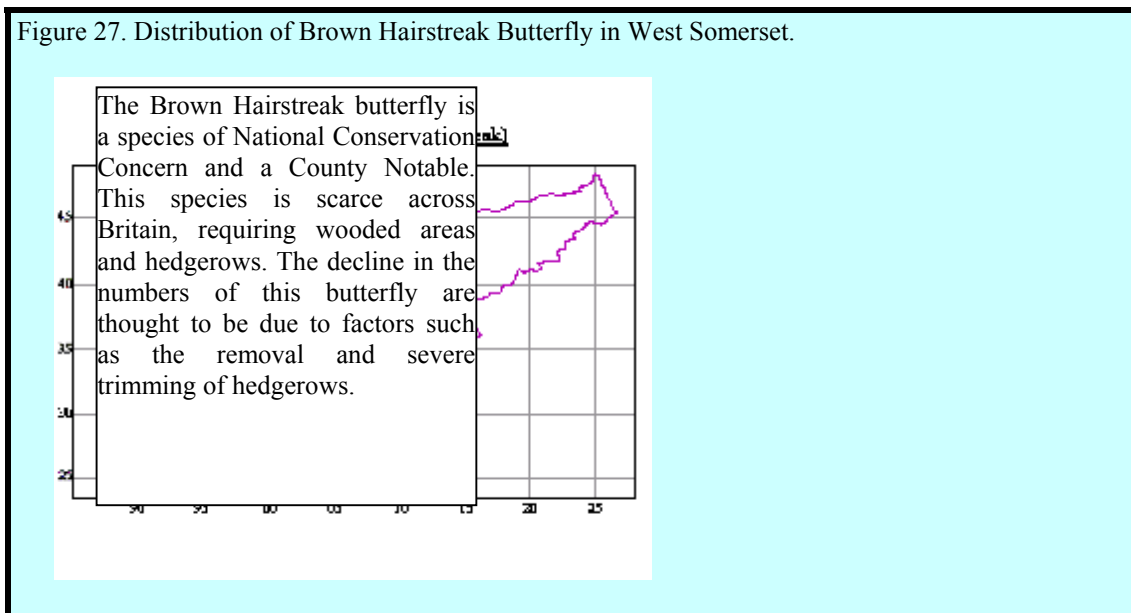


Figure 28. Distribution of Brown Long-eared Bat in West Somerset.

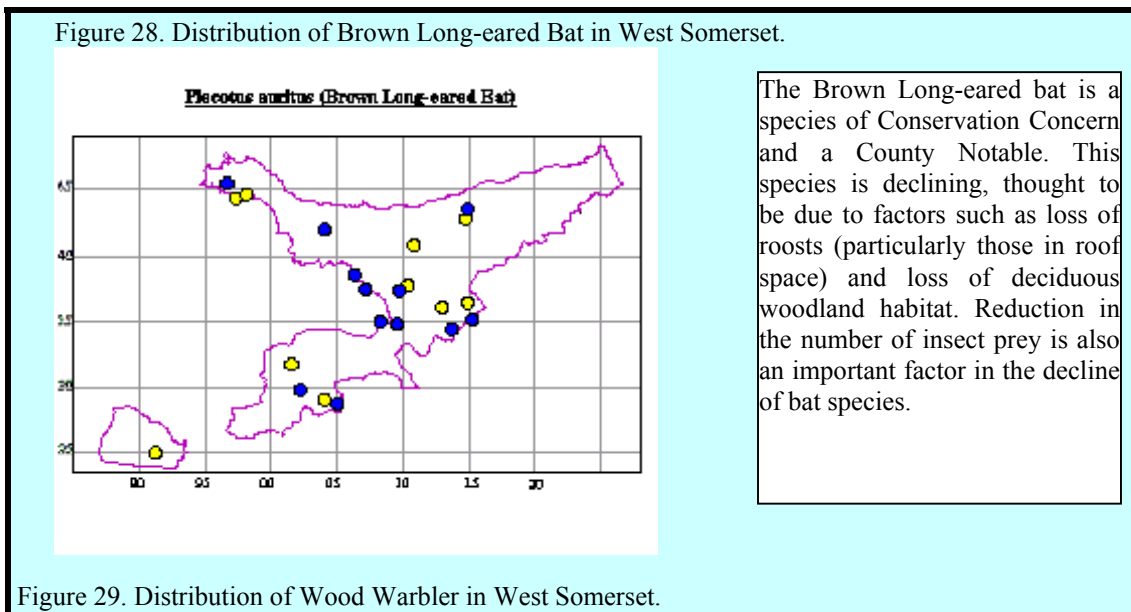
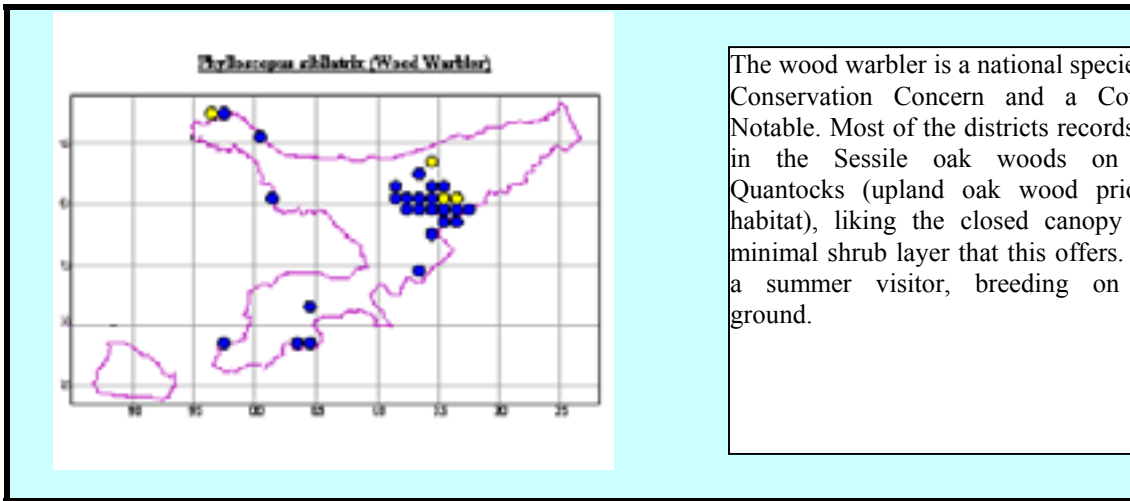


Figure 29. Distribution of Wood Warbler in West Somerset.



The wood warbler is a national species of Conservation Concern and a County Notable. Most of the districts records are in the Sessile oak woods on the Quantocks (upland oak wood priority habitat), liking the closed canopy and minimal shrub layer that this offers. It is a summer visitor, breeding on the ground.

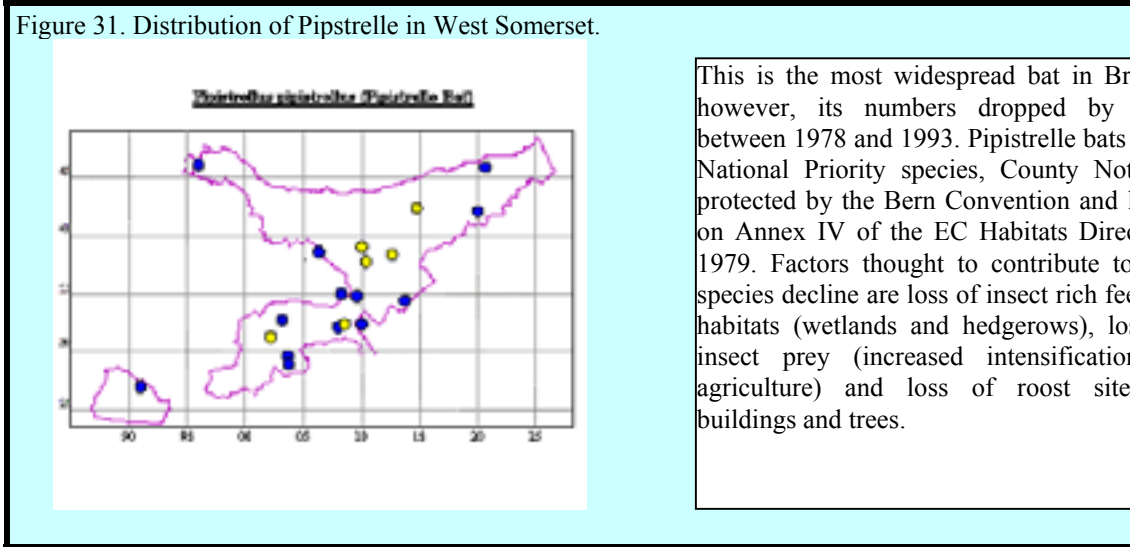
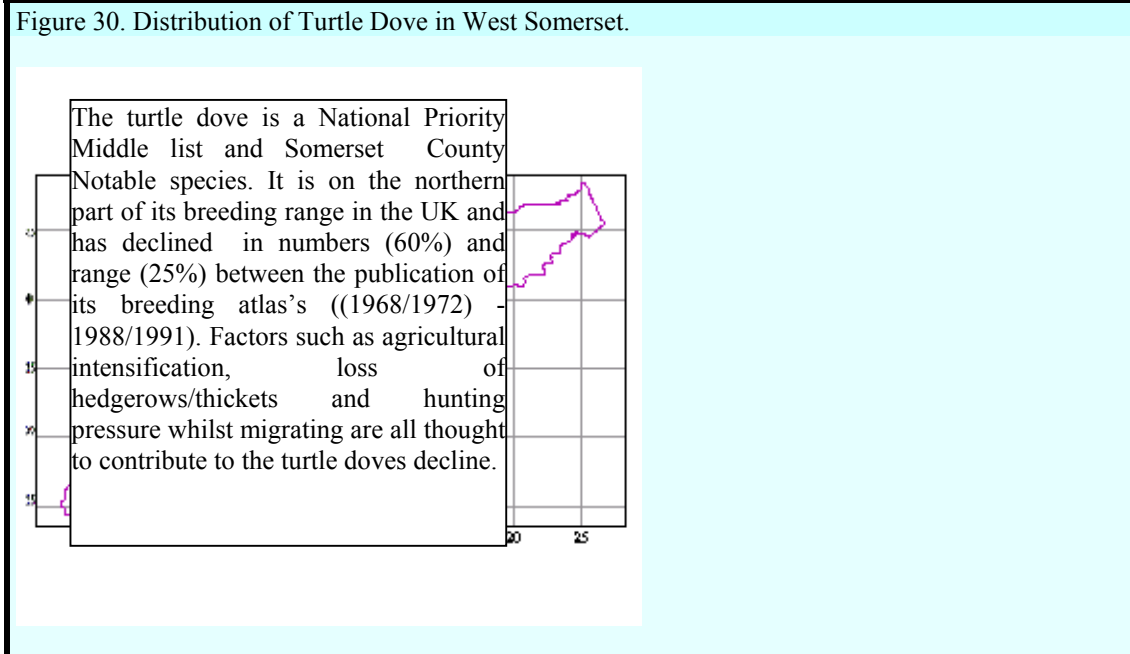
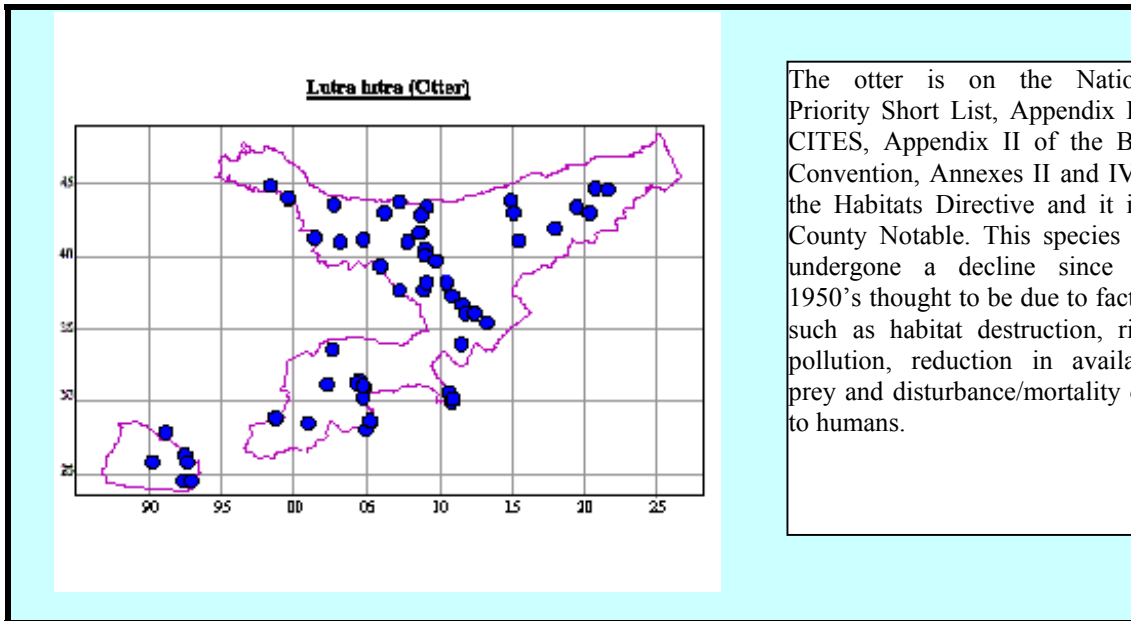
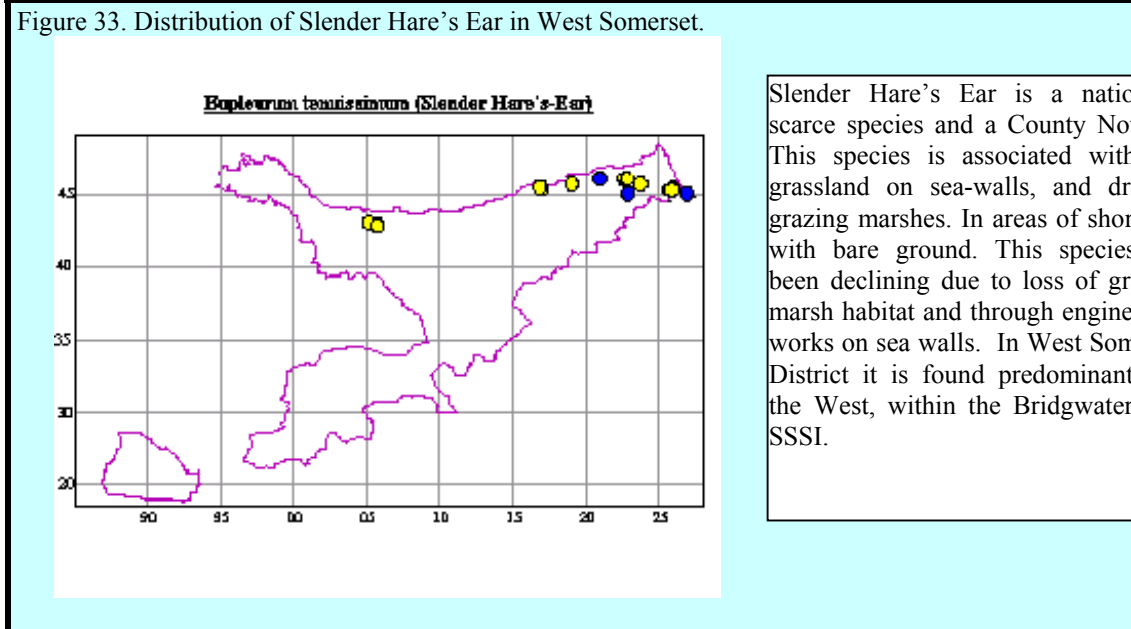


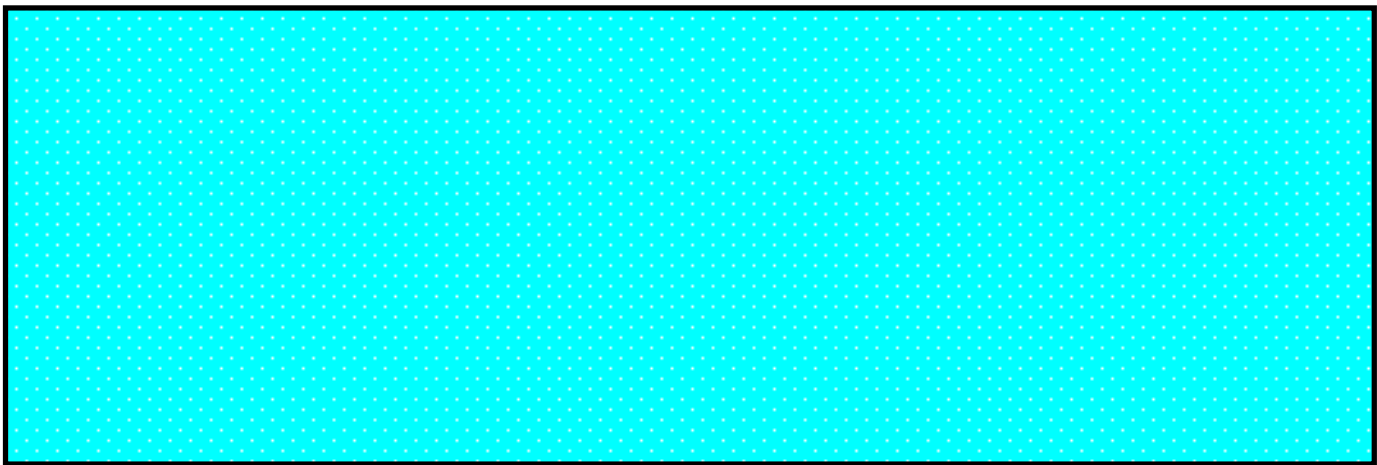
Figure 32. Distribution of Otter in West Somerset.



The otter is on the National Priority Short List, Appendix I of CITES, Appendix II of the Bern Convention, Annexes II and IV of the Habitats Directive and it is a County Notable. This species has undergone a decline since the 1950's thought to be due to factors such as habitat destruction, river pollution, reduction in available prey and disturbance/mortality due to humans.



Slender Hare's Ear is a nationally scarce species and a County Notable. This species is associated with dry grassland on sea-walls, and drained grazing marshes. In areas of short turf with bare ground. This species has been declining due to loss of grazing marsh habitat and through engineering works on sea walls. In West Somerset District it is found predominantly in the West, within the Bridgwater Bay SSSI.



Prime Biodiversity Areas

Introduction

The audits of habitats and species have looked at the diversity to be found in West Somerset District as two separate entities. This does not, however, give a true indication of the interaction between species and habitats and the dependency they have on one another for their existence. This chapter is about combining these two audits and using the habitat and species information to indicate how biodiversity is distributed. The biodiversity 'hot spots' are the **Prime Biodiversity Areas** (PBA's) within the district. They typically contain a large amount of semi-natural habitat and a large number of notable species. PBA's are dominated by evaluated sites (SSSI's and CWS's), as might be expected as they are assigned for their conservation importance. The land in between these evaluated sites is often underestimated for its conservation value as attention is directed toward the special status sites.

Identifying Prime Biodiversity Areas

The methodology for choosing PBA's is detailed in Appendix 2 and is the same as has been used in previous district's biodiversity action plans.

In brief this methodology looks at the district tetrad by tetrad (2 km by 2 km), combining the number of notable species with the semi-natural habitat for each tetrad. This gives a biodiversity index.

The indexes are then size scaled and plotted on a distribution map. In certain areas clusters of high scoring tetrads will emerge. These are the areas that are rich in notable species, semi-natural habitat, or both, and are identified as Prime Biodiversity Areas. In West Somerset District this process has produced 4 Prime Biodiversity areas.

The tetrad with the highest biodiversity score is taken as the central point from which to define the boundary ensuring that at the core is an area of high conservation value. The boundary is then extended to connect to nearby land with a high biodiversity value. Defining the boundaries of PBA's is detailed in Appendix 2.

West Somerset District Prime Biodiversity Areas

The four PBA's in West Somerset are illustrated in Figure 34. They are listed below.

- **Dulverton Island**
- **Quantock Hills (Great Hill to West Quantoxhead)**
- **Dunster Marshes**
- **Bridgwater Bay (Wick and Knighton)**

Figure 34 The distribution of Prime Biodiversity Areas in West Somerset District.

Quantock Hills (Great Hill to West Quantoxhead) PBA

West Somerset holds the majority of the Quantock Hills PBA 2634 ha of the 3777 ha. The rest of the area is made up from Taunton Dean 729 ha and Sedgemoor 414 ha. Within West Somerset District 1913 ha is protected through SSSI status and 31 ha has CWS status.

The centre tetrad of this PBA is 13P (grid reference for the middle of this tetrad (2 Km²) is ST 130410). This tetrad had a high T-score (total score) of 1196.

The habitats within this PBA are predominantly Lowland Heathland (about 690 ha) and Upland Oak Woodland (about 270 ha). Other priority habitats include lowland neutral hay meadow maritime cliffs and slopes and wood pasture and parkland. Some parkland sites are included in The Quantocks SSSI such as Crowcombe Park whilst the lowland neutral hay meadow is protected through Ge-Mare Fields SSSI. The maritime cliff and slope habitat is included in Blue Anchor to Listock Cliff CWS.

Figure 35 The Quantock Hills (Great Hill to West Quantoxhead) PBA.

Bridgwater Bay, Wick and Knighton PBA.

Bridgwater Bay PBA is in the West of the district covering 1596 ha. The majority of Bridgwater Bay PBA can be found in Sedgemoor, with the total area covered being 7493 ha. Within this area is Bridgwater Bay SSSI, which in West Somerset covers 1092 ha. (68%) of

the PBA. There is about 69 ha of CWS within this PBA (4%). The majority of this PBA (about 72%) is covered by special conservation status.

The central tetrad of this PBA is 24M (grid reference for the middle of this tetrad (2Km²) ST250450). This tetrad's T-score was 815.

The priority habitats found in this area of high biodiversity include Mudflats (7584 ha), Coastal Saltmarsh (44 ha), Lowland neutral hay meadow (35 ha). Other priority habitats found in this PBA include; vegetated shingle, maritime cliffs and slopes, sand dunes and saline lagoons. These are all included in the Bridgwater Bay SSSI except for part of the maritime cliff and slope habitat which is covered along its length by the Blue Anchor to Lilstock CWS.

Figure 36 Bridgwater Bay, Wick and Knighton PBA.

Dunster Marshes PBA.

This PBA covers 451 ha. There are no SSSI's and 141 ha of CWS's (30 % of the area) in this area of high biodiversity.

This PBA's central tetrad is 94X (the grid reference for the centre of this tetrad (2Km²) is SS990450). This tetrad had a T-score of 544.

The largest area of priority habitat to be found in this PBA is vegetated shingle (7 ha), followed by reedbed (5 ha). Other priority habitats found in this PBA include sand dunes and wet woodland. These habitats are protected through Dunster Marshes CWS.

Figure 37 Dunster Marshes PBA.

Dulverton Island PBA.

Dulverton island PBA covers 373 ha, containing within this 78 ha of CWS's (21% of the area).

The central tetrad for this PBA is 82Z (central grid reference for this tetrad (2 Km²) is SS 890270). This tetrad had a T-score of 490.

This area has 8 ha of wet woodland and 6 ha of lowland neutral hay meadow other priority habitats include upland oak wood and purple moor grass and rush pasture. These habitats are protected through CWS status

Figure 38 Dulverton Island PBA.

Section B

The State of Biodiversity in

West Somerset District



Summary of the Biodiversity Resource of West Somerset District.

Habitats

West Somerset District contains 4962 ha semi-natural habitat within the SSSI's and CWS's, this approximates to 21% of the total land area.

Annex I Habitats of the EU Habitats Directive, 1992 can be found in Table 6

Table 6 indicating the Annex 1 Habitats of the district.

Annex 1 Habitats
Dry Heaths
Residual alluvial forests
Calcareous grassland (lowland)
Molinia meadows on chalk and clay
Upland Oak Wood
Semi-natural dry grasslands and scrub land on calcareous substrates <i>[Festuco-Brometalia]</i>

Of the 46 priority habitats outlined by the Steering Group 21 are present in West Somerset District. The priority habitats for which the area is known cover about 2835 hectares or about 11 % of the total area of the district. These are listed below:

Table 7 the priority habitats of West Somerset District

Priority Habitats	
Mudflats	Coastal Vegetated Shingle Structure
Lowland Heathland	Maritime Cliff and slopes
Coastal and Floodplain Grazing Marsh	Reedbeds
Upland Oakwood	Coastal Sand Dune
Lowland Wood Pastures and Parkland	Fens
Lowland Dry Acid Grassland	Saline Lagoons
Coastal Saltmarsh	Upland Mixed Ash Woodland
Lowland Neutral Hay Meadows and Pastures	*Ancient and/or Species-Rich Hedgerows
Purple Moor Grass and Rush Pastures	*Sabellaria
Wet Woodlands	*Cereal Field Margins
Lowland Calcareous Grassland	* <i>Habitats for which the area is not known</i>

Species

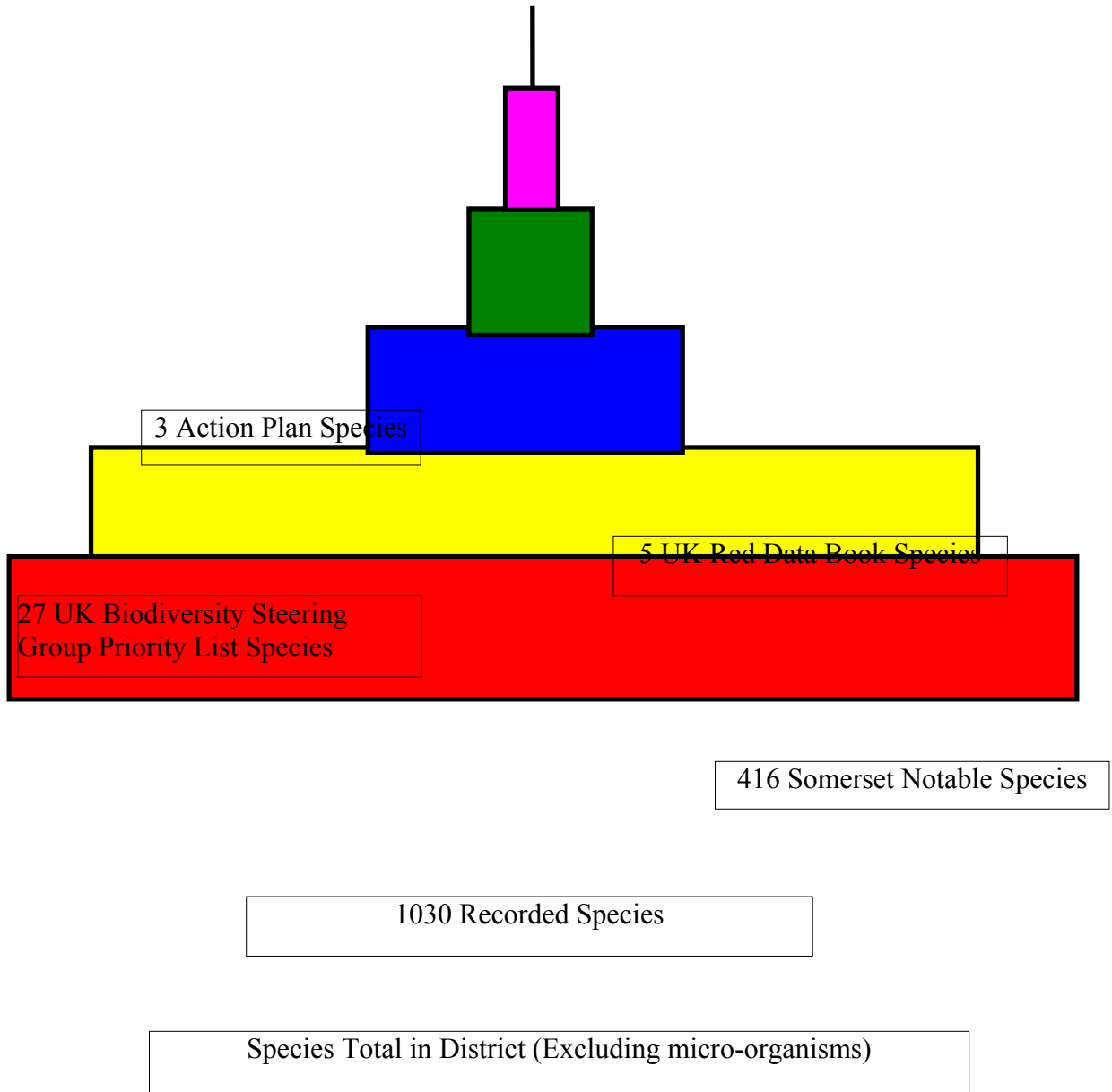
This district currently has 1030 recorded species of flora and fauna.

Of the species recorded in West Somerset District the following have special legal or conservation status:

- **Eleven Species On Annex II Or IV Of The European Habitats Directive, 1992.**
- **Fifteen Species Listed On Annex I Of The EU Birds Directive, 1979.**
- **Thirty-two species have Special Legal Protection**
- **Five UK Red Data Book Species**
- **Twenty-seven UK Biodiversity Steering Group Priority List Species**
- **Four hundred and sixteen County notable Species**

Figure 39. The biodiversity species resource of West Somerset District.

The Biodiversity Species Resource of West Somerset District



Action for Prime Biodiversity Areas

Introduction

All of the identified PBA's contain a high concentration of evaluated sites These can be seen in the table below:

Table 8. Analysis of PBA's and evaluated sites.

Prime Biodiversity Area	PBA area ha	CWS area in PBA ha	% cover by CWS	SSSI area in PBA ha	% cover by SSSI	CWS and SSSI (ha)	% NOT in CWS+SSSI
Bridgwater Bay (Wick and Knighton)	1596	69	4%	1092	68%		
Dunster Marshes	451	141	31%	-	-		
Dulverton Island	437	78	17%	-	-		
Quantock Hills (Great Hill to West Quantoxhead)	2634	31	1%	1910	73%		
TOTALS	5118	319	6%	3002	59%	3319	35 %

The evaluated Sites for West Somerset District as a whole can be seen in the table below.

Table 9. Summary of analysis of PBA's and evaluated sites.

District area (ha)	PBA (ha)	PBA %	CWS (ha)	CWS %	SSSI (ha)	SSSI %
25668	5118	20%	928	4%	3038	12%

The district has 5118 ha of PBA which is about 20 % of its total area. The total PBA area has 6 % CWS and 59 % SSSI coverage. This means that within the PBA's there is 1799 ha (35 % of the total PBA area) that is not protected by some conservation status. It is these areas which have the most potential for increasing their biodiversity and that of the surrounding sites. They are not only of value as wildlife corridors connecting up existing sites but have potential for increasing the range of habitats and species.

The PBA approach aims to:

- Reverse the current trend of habitat fragmentation through the linkage of existing evaluated sites, using the surrounding land as wildlife corridors.
- To restore the intervening land to provide large blocks of semi-natural habitat, thereby reducing the chance of isolating species and habitats, safeguarding genetic diversity and providing the contiguous habitat needed for wide ranging species.

With limited resources it is important to target funds to areas where they will be most effective. It is these so called Prime Biodiversity Areas where the maximum benefits to wildlife can be achieved. PBA's are not designated sites, and should not be used as constraints but more as areas of opportunities to focus resources.

It should be noted that the methodology for identifying PBA's includes only semi-natural habitat identified in County Wildlife Sites and SSSI's in the Analysis.

Existing Initiatives Within PBA's

The Quantocks Management Plan is currently being revised. This document is produced by a partnership of interested organisations to provide a co-ordinated approach to managing the Quantock Hills Area of Outstanding Natural Beauty (AONB).

Bridgwater Bay (Wick and Knighton) PBA is within the Severn Estuary Ramsar site.

Countryside Stewardship Schemes. Covers the whole of West Somerset District. This scheme allows land owners and managers to obtain a grant from MAFF for carrying out positive landscape enhancement that provides benefits for wildlife and landscapes. This scheme is not restricted to a defined area although County Wildlife Sites are given some priority. The setting of targets and administration of this scheme are carried out by the Farming and Rural Conservation Agency (FRCA), which administers the scheme on behalf of MAFF.

Action for Prime Biodiversity Areas

Each organisation and individual with any influence on land use and management within the identified Prime Biodiversity Areas should consider specific actions that would contribute to the conservation of biodiversity within them. The following list is of potential actions that should be considered a start point and is in no way exhaustive.

- Landowners and managers: review the management of any land held within the PBA's. Consider whether the management of existing habitat is within the guidelines available, and whether there are opportunities for extending habitats through restoration some examples are; planting of woodland, raising of water levels, meadow restoration, leaving buffer areas. Actions are likely to be supported through schemes specifically for such work.
- Focusing land purchasing of conservation land-owning organisations such as the RSPB, Somerset Wildlife Trust, Butterfly Conservation and National Trust to name but a few. These organisations could identify key areas of land within PBA's where the conservation of biodiversity would be best achieved through their ownership and management. Of particular suitability might be parts of SSSI's, CWS's, or land that would link existing sites, especially where the land to be linked is already under conservation ownership.
- Organisations providing financial support for land management: Analyse the existing pattern of support scheme agreements (e.g. Countryside Stewardship) within the PBA's and the potential that they may have to support existing PBA objectives. This will help to highlight where targeting of schemes will be most effective. This could also be used to review and amend the shortfall of such schemes in relation to their uptake by landowners and managers and their suitability in achieving conservation aims.

Biodiversity - Planning for the Future

Two of the PBA areas within West Somerset are shared with other districts. Bridgwater Bay Wick and Knighton PBA is shared with Sedgemoor district. Quantock Hills (Great Hill to West Quantoxhead) PBA is shared with Taunton Deane and Sedgemoor district. The Dulverton Island PBA and Dunster Marshes PBA are both contained wholly within West Somerset District.

Although the PBA's that extend into districts other than West Somerset are named differently and under different administrative units they are part of the same ecological unit. This is a

problem that is encountered when carrying out biodiversity planning on an administrative rather than natural area basis.

PBA's are identified in relation to the average Biodiversity of the district and therefore the quality of PBA will vary from district to district depending upon its own unique biodiversity.

A County overview of all the districts biodiversity is expected to be conducted as West Somerset District is the last district to have a Biodiversity Action Plan written for it. This will combine information from all of the action plans as well as using the original data to assess Somerset's biodiversity based on the average biodiversity scores for the whole county. This may lead to the loss of some of the lower scoring PBA's in districts with lower biodiversity. Although these PBA's will still be important at the district level at the county level they will be less significance.

The down-sizing of the scale that action is being taken for biodiversity is very important. From the national targets we are looking at the district level to make action more feasible and easier to monitor. From this scale it is hoped that action will be taken at a smaller level again. Action at the parish level would be an ideal way to increase public involvement, awareness and understanding. There are important priority habitats that are predominantly found outside of SSSI's and CWS's such as Species Rich Hedgerows and Cereal Field Margins. Community groups are in an ideal situation to document and conserve these resources. There are many species that are often found outside of conservation status sites, because they are wide ranging and therefore need to be conserved in the broader countryside. Of particular importance are priority species such as Otter, Brown Hare, Water Vole and the many farmland birds such as Skylark, Bullfinch and Grey Partridge. Every Parish will have its own particular areas of good biodiversity and through sympathetic management will not only benefit wildlife but also proved a better environment in which to live.

Relationship Between PBA Actions and Species and Habitat Action Plans

The selection of species and habitats for action plans and the PBA areas are entirely independent processes and carried out for different purposes. There should not, therefore, be any geographical correlation between the two. However, the areas of highest biodiversity interest are quite likely to contain species and habitats of conservation importance and therefore may contain species and habitats for which plans have been written in this Biodiversity Action Plan. These are listed in Table 10 below.

Table 10. PBA's and action plan species and habitats.

Priority	Bridgwater Bay (Wick and Knighton) PBA	Dunster Marshes PBA	Dulverton Island PBA	Quantock Hills (Great Hill to West Quantoxhead)
Habitats	Vegetated Shingle	Vegetated Shingle	Purple Moor Grass and Rush Pasture	Upland Oak Woodland and Lowland Heathland.
Species	Water Vole, Skylark	Skylark		Skylark, Lesser Horseshoe Bat

Habitat and Species Action Plans

Introduction

A key function of Local Biodiversity Action Plan is to ensure the implementation of national Action Plans through local action. This ensures that national targets are being met whilst taking into account locally important habitats, species and needs.

The criteria outlined in the “UK Local Issues Advisory Groups - Guidance notes 4” This shows how to identify priorities and the setting of targets for species and habitats and can be found in appendix 3.

West Somerset District Action Plans

Table 11 shows the habitats chosen to have action plans written for them.

Table 11. Habitats for which action plans have been written.

HABITAT	UK Priority
Lowland Heath	✓
Upland Oak Woodland	✓
Vegetated Shingle	✓
Purple Moor Grass and Rush Pasture	✓
Sabellaria Reef	✓

The habitat action plans cover about 52 % of the priority habitats in West Somerset District.

The species action plans are not intended to restrict conservation to the chosen three as there are many species that would be suitable targets for the focus of conservation. The species for which action plans have been written will benefit the habitats that they are associated with and can be seen below in Table 12

Table 12. Species for which action plans have been written.

SPECIES	Priority listing	Associated Priority habitat
Lesser Horseshoe Bat	Long list	Species-Rich Hedgerows, Upland Oak Woodland, Wet Woodland
Skylark	Short list	Species-Rich Hedgerows, Arable Field Margins and all unimproved grasslands (e.g. Purple moor grass and rush pasture, lowland dry acid grassland, lowland hay meadow, lowland calcareous grassland and grazing marsh)
Water Vole	Short list	Fens, Reedbeds (as well as rivers and streams)

Action plans for the priority habitats and species that occur in West Somerset District but have not got an action plan can be found in Appendix **.

Action Plan Format and Content

The action plans have been written following the format of the Steering Group Report. They contain details where available of the national and regional action plans where it is relevant to West Somerset District. Further detail has been added for action at the local scale specifically

for this district. This will provide all the relevant information within one document as many individuals will not have access to the national and regional plans.

Co-ordination

For successful implementation of the action plans it is important that West Somerset District Council, as commissioners of the plan, should invite an appropriate organisation to actively co-ordinate the plan. This should occur in conjunction with annual monitoring of progress by the district council.

Each co-ordinator will be responsible for:

- Ensuring that actions are implemented by key players.
- Identifying and using funds to implement the plan.
- Reviewing the effectiveness of the plan and using this information to amend it as necessary.

HABITAT ACTION PLAN : LOWLAND HEATHLAND

LOWLAND HEATHLAND AND BIODIVERSITY

Lowland heathland supports a large number of specialised species many of which are entirely dependent upon it for survival. Much of the wildlife found here can be easily disturbed and this habitat provides a safe haven from man's activities.

- *Mammals* Red deer,
- *Birds* Nighjar (p), Woodlark (p), Dartford Warbler (p), Stonechat (p)
- *Reptiles* Common lizard, Adder.
- *Butterflies* Grayling
- *Vascular Plants* Heather, Bell heather, Western gorse (p), sundews

(p) = priority list

Current Status

Definition

Within the heathland habitat ericaceous shrubby species can be found such as heather, gorse and cross-leaved heath. Lowland heathland is generally found below 300 metres, although in the South West it can occur at up to 400 metres altitude. Upland heath, as its name suggests is found above these altitudes. Lowland heathland is often associated with other habitats such as acidic grassland, scrub, scattered trees, bog and open water amongst the predominant dwarf shrub vegetation. This mosaic of habitats found with lowland heathland will increase the diversity of species that an area is able to support.

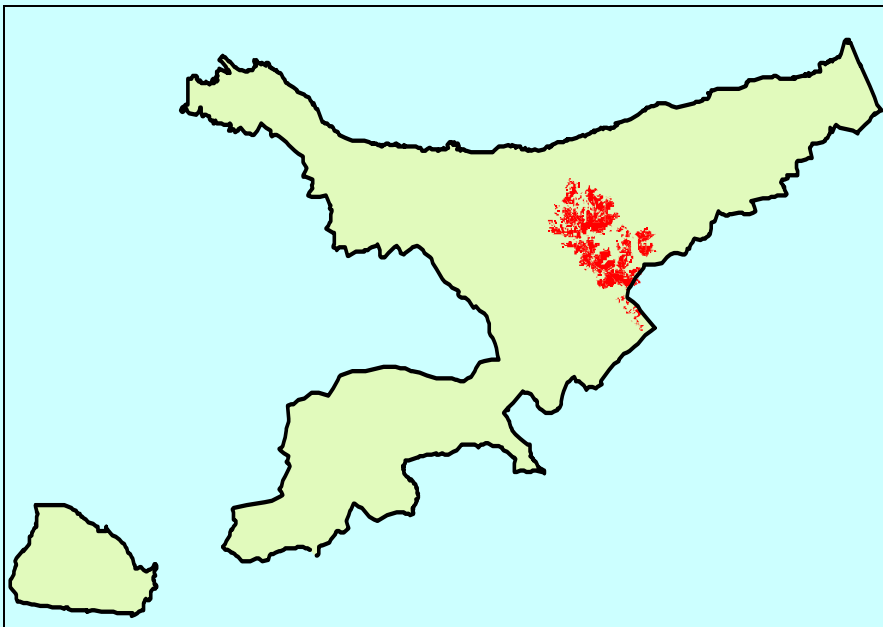
Distribution

The total area of lowland heathland in the UK is about 58000 ha, about 20% of the international total. The South West regional total is about 14,500 ha. In West Somerset there is about 700 ha of this habitat which is approximately 2.7 % of the total area.

Local Status

The lowland heathland in West Somerset is protected through SSSI status on the Quantocks. There is ** ha of this habitat in this district.

Figure 13. Heathland. Actual scale.



Current Factors Affecting The Habitat

Historical change

Loss of habitat has occurred on most of the main heathland blocks in the South West over the last 200 years. Mainly to Agricultural improvement and deforestation.

Uncontrolled burning has been a threat to bryophyte and lichen-rich heathland.

Current Factors

Lack of awareness in both local and visiting users of The Quantocks can result in erosion of heathland into tracks. This applies particularly to vehicles, which are capable of destroying heathland and creating tracks in a very short space of time when they are driven away from designated routes. The tracks eventually become so eroded that drivers go around them, widening the path of destroyed heath. Problems can also arise from non-vehicle use when activities such as horse-riding, bicycling and 'mass walking' are not controlled.

Eroded areas of heathland change the hydrology of the area, speeding up the runoff of rainwater which carries exposed topsoil with it.

Lack of conservation management leading to tree and scrub encroachment. Invasive species such as *Rhododendron ponticum* and bracken can also be a problem on heathland through shading out of the ground plants.

Livestock farming can lead to localised nutrient enrichment through dung and the feeding of supplementary feedstuffs. This encourages non-heath species to grow resulting in degradation and eventually loss of heathland.

Cattle may have to be used to graze heathland rather than sheep where fencing is poor repair, these larger animals can lead to poaching of the ground and degradation of the heathland.

In areas of potential heathland regeneration a lack of protective designation can limit the size of this habitat and increase fragmentation, both of which make it vulnerable to degradation and loss. Uncontrolled heath fires can damage heathland and can help the invasion of aggressive species such as bracken and *Rhododendron ponticum*. Repeated burnings can result in grass replacing the heath.

Current Action

Legal Status

The Quantock lowland heathland is within the Quantock SSSI and the Quantock AONB.

Management, research and guidance

Management of the heathland involves a burning regime in conjunction with scrub removal and grazing by sheep (predominantly) or exmoor ponies.

English nature is providing funding for the removal of *Rhododendron ponticum*, a highly invasive species.

Management of bracken such as spraying or bruising to kill it preventing further invasion and restores areas of heathland

The National Trust owns farmland within the Quantock SSSI at Great Marrow Hill and West Hill and where low intensity sheep grazing will help to promote the growth of heath species in the long term. They are also trying to regenerate heathland on 100 acres at Broomfield Hill.

The Countryside Stewardship Scheme covers the whole of England and can help towards the cost of heathland management and recreation. The Quantocks is a target area for this scheme, however, funds are limited.

Forestry Authority promote the restoration of heathland where it has been lost to forestry with the replanting of an equal area of wood elsewhere.

Management of lowland heathland is carried out through EN's Wildlife Enhancement Agreements within SSSI areas.

Research has been carried out into the distribution and spread of bracken *get details from chris.*

Educational boards are used in car parks to increase visitors awareness of the local heathland area that they are visiting. An overview of the heathland on The Quantocks and its conservation importance

Action Plan Objectives And Proposed Targets

National

Maintain and improve all existing (58,000 ha in the UK) lowland heathland.

Encourage re-establishment of a further 6,000 ha (10% of the estimated potentially suitable land) of heathland with the emphasis on linking existant heathland. TARGET: by 2005

Regional

Maintain the integrity of all existing heathland blocks through ensuring protection from damage and loss through statutory and non-statutory means. TARGET: ongoing

Ensure that all heathland blocks are managed appropriately (e.g. scrub removal for many sites) to restore and enhance their biodiversity. TARGET: 2005

Re-establish 3,500 ha of lowland heathland in the region, consolidating the existing major blocks / complexes. TARGET: 2010.

Ahieve an increase in community awareness and appreciation of heathlands and their conservation requirements in all key heathland complexes. TARGET: by 2000

Local

Maintain the current extent of heathland on the Quantocks.

Continue with management and of the heathland, particularly addressing those areas in most need of restoration.

Increase the area of heathland where suitable and without replacing habitats of important conservation status.

Increase awareness amongst the local community and visitors as to the importance and managment requirements of heathland and its associated species.

Proposed Action With Lead Agencies

Policy and Legislation

Promote the reversion of conifer plantation to heathland where suitable in the next design plan review. ACTION: FE (by 2005)

Promote the awarding of grants and their uptake for conversion of land to heathland, where suitable, to complement that which is available for broadleaved woodland. ACTION: FA, FWAG, QW, WSP, SWT (ongoing)

Use statutory powers to prevent the use of vehicles except on agreed routes across the heathland. Enforce this control through rangers on site. ACTION: QW. (ongoing)

Encourage landowners to participate in the Countryside Stewardship scheme to promote management of the heath. QW, FWAG, WSP. (*XX% of farms byXXX*).

Site Safeguard and Management

Ensure that all *Rhododendron ponticum* is eradicated within the SSSI both on heathland and woodland to prevent reseeding. If this is not possible ensure that funding is secure for future management and control of this invasive species. ACTION: EN, QW, SWT, LA. (2005/ongoing).

After eradicating the majority of heathland vehicle erosion ensure that other pressures such as horse riding, bicycle riding and walking do not become a problem. ACTION: QW (ongoing)

Try to burn the heath in as small as possible sections to provide a mosaic of age structures and allow wildlife to escape the burn. ACTION: EN, QW (ongoing).

Promote sheep / pony grazing regime to the southern area of heathland on the Quantocks (Ash Hill Common and Will's Neck) to counteract the invasion of scrub and prevent poaching.

EN	English Nature
WSP	Wildlife Sites Project
SWT	Somerset Wildlife Trust
SOS	Somerset Ornithological Society
QW	Quantock Warden
FE	Forestry Enterprise
LA	Local Authority

Advisory

committees? for the commoners what has chris set up - how could advisory work be bettered.

Future research and monitoring

Implement a five year survey of upland birds to enable the monitoring of populations. ACTION: EN, QW, SOS. (2002)

Monitor the distribution of Bracken and scrub to prevent it shading out heath plants.

Communication and Publicity

Undertake publicity campaign on the conservation importance and mangement requirements of lowland heathland. ACTION: QW, SWT. (ongoing).

QUANTOCK HABITAT ACTION PLAN: UPLAND OAK WOOD

BIODIVERSITY ASSOCIATED WITH UPLAND OAK WOODLAND

Biodiversity of Upland Oak Wood	
Mammals	Dormouse, Lesser Horseshoe Bat, Noctule Bat, Pipistrelle Bat.
Birds	Redstart, Tree pipit, Wood Warbler, Pied Flycatcher
Moths	Double Line
Vascular plants	Filmy fern, Hay Scented Buckler Fern,
Fungi	Hericiium erinaceum
Lichens	Lobaria pulmonaria,

Current Status

and animal communities. Upland Oakwood is on Annex 1 of the EC Habitats Directive.

Definition:

The canopy of upland oak wood is dominated by Oak (generally sessile although locally pedunculate) and Birch trees. These woods generally occur above 200m. but may be found as low as sea level. where conditions are harsh (thin acid soils and steep slopes). The understorey is mainly composed of Holly, Rowan and Hazel with ground flora varying according to soil type and grazing regime. The UK upland oak woodland is internationally important due to its extent and distinctive plant

Distribution:

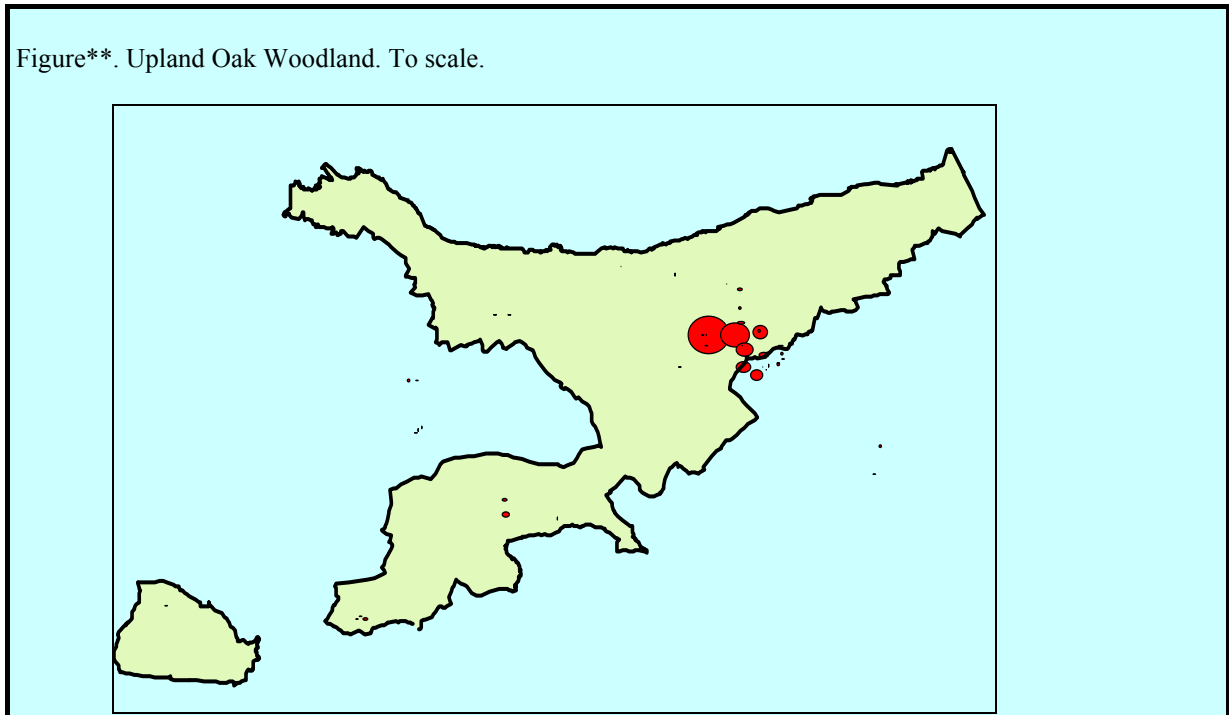
The exact amount of upland oak woodland in the UK is not known, however, it is believed to be in the region of 70,000 - 100,000 ha. In the South West there is thought to be about 4,700 ha. with 2,800 ha of this being split between Exmoor and the Quantocks. There is about 343.247 ha, approximately 1.34% of West Somersets area.

Local Status

The majority of the 343 ha upland oak woodland in West somerset is contained within The Quantock SSSI.

protection of woods in West Somerset SSSI, CWS, NT

Figure**. Upland Oak Woodland. To scale.



Factors Affecting The Habitat

Historical change:

Over approximately the last 60 years the nation has lost 30 - 40 % of its upland semi-natural woodland. The majority of the decline has been due to replanting with conifers, clearance for quarries, conversion to rough grazing and development. The amount of inappropriate planting has decreased in recent years. The following factors are seen to have an affect on this habitat:

Current factors:

The invasive growth and regeneration of non-native species such as rhododendron, cherry laurel sycamore and beech. *Rhododendron ponticum* is very invasive and reduces the conservation value of a wood through shading of ground plants. Over the Exmoor and Quantock Natural Area *Rhododendron ponticum* has affected as much as 5% of the SSSI's woodland.

Over-grazing by sheep and deer over much of the range of upland oak woods. This prevents regeneration of trees and limits the ground flora. Natural regeneration can be difficult to utilise under the Woodland Grant Scheme.

Air pollution has a negative impact on lichen and bryophyte communities through acidification of the tree's bark.

Areas may be undergrazed allowing bramble to take over moss and bryophyte rich ground flora.

Management of the wood in an unsympathetic manner by not following recommended guidelines. Felling rates, working methods, grant aid provision and species planted all need to be carried out with care.

Loss of local genetic stock through planting with trees from non-native source.

Pheasant rearing can be locally damaging to the woodland.

Tidying up of woodlands by removing dead wood or damaged trees reduces the habitat available for specialist invertebrate and fungi communities.

Current Action

Legal status

Habitat protection is given by the Wildlife and Countryside Act 1981 and the resulting SSSI network. Approximately 20 - 30 % of the resource is thought to have been notified as SSSI's or equivalent.

Western acidic oakwood is listed on Annex 1 of the EC Habitats Directive and the government is proposing several areas as Special Areas of Conservation (SACs).

National forestry policies aim to avoid conversion of broadleaved woodland to other land uses. Felling licences are normally required if the management of the land is not under plans approved by the Forestry Authority. To receive these licences or grant-aid management of semi-natural habitat has to be in accordance with guidelines published by the Forestry Authority.

Grants available from the Forest Authority are the Woodland Improvement Grant and Annual Management Grant. Local Authorities issue Tree Preservation Orders, provide woodland management advice and free trees.

Veteran trees initiative, developed by English Nature and partner organisations (including SERC) promotes the importance of old trees for their invertebrate, lichen and saprophytic

flora. In Somerset the Veteran trees have been surveyed to assess their distribution and management advice.

SSSI area

The communities of lower plants found in association with western oak woodland are recognised as internationally important including the bryophytes, epiphytic lichens and fungi. **?LEGAL PROTECTION?**

Management, research and guidance

The Forestry Authority has published guides to the management of semi-natural woodland, including one for upland woods. These build upon advice previously given by conservation agencies and NGO's.

Action Plan Objectives And Proposed Targets

National

To maintain the existing area of upland oakwood and improve its condition, by a mixture of management for timber (majority as low intensity high forest), as sheltered grazing and minimum intervention.

Whilst not encroaching on other habitats of high nature conservation value, expand the area of upland oakwood by about 10% on to currently open ground. Through some planting but preferably through natural regeneration by 2005.

Identify and promote the restoration of approximately 10% of former upland oak woodland that has been degraded by planting with conifers or invasion by rhododendron.

South West Regional

Maintenance of existing area of upland oakwood.

Increasing the area of upland oakwoodland under conservation management by 10% by 2005.

Increase the area of upland oakwood by 2% by 2010 avoiding other habitats of nature conservation value.

Local

Proposed Action With Lead Agencies.

Plan Co-Ordination And Review

Policy and legislation

Site safeguard and management

Advisory

International

Future research and monitoring

Communications and publicity

Key Players

BIODIVERSITY AND UPLAND OAK WOODLAND ON THE QUANTOCKS

FUNGI

PLANT

Lichens

ANIMAL

Red deer frequent.

BIRD

birds that might be found in this type of woodland are breeding pied flycatcher (*Ficedula hypoleuca*), wood warbler (*Phylloscopus sibilatrix*) and redstart (*Phoenicurus phoenicurus*). Ravens and buzzard are also known to breed there.

Goshawk sighted in Quantocks?

Dipper (national target species), tree pipit (national target species)

whitethroat (national target species)

stonechat national target species

INVERTEBRATE

rare invertebrates associated with dead wood such as Stag Beetle (*Lucanus cervus*) (county notable, Biodiversity steering group short list national target species) speckled wood, silver washed fritillary and purple hairstreak butterflies.

Quantock biological survey: rare deadwood beetles *Thylamus limbatus* and *Orchesia undulata* (beneath bark on fallen oak) (ST 143403

Kilve *T limbatus* and *Pediacus dermestoides*

Extinct: Red Kites last bred in the 1850's

REFERENCES

Dr. P.F. Ulf-Hansen, D. C. Boyce. 1997 Natural Area Profile Exmoor and the Quantock Hills. Consultation Draft. English Nature

HABITAT ACTION PLAN: PURPLE MOOR GRASS AND RUSH PASTURES

BIODIVERSITY ASSOCIATED WITH PURPLE MOOR GRASS AND RUSH PASTURES

Biodiversity Associated with Purple Moor Grass And Rush Pastures	
Birds	Skylark (<i>Alauda arvensis</i>) (c), Barn Owl (<i>Tyto alba</i>) (c), Curlew (<i>Numenius arquata</i>) (c), Snipe (<i>Gallinago gallinago</i>) (c).
Reptiles	Adder (<i>Vipera berus</i>) (c)
Butterflies	Marsh Fritillary (<i>Eurodryas aurinia</i>) (p), Small Pearl-bordered Fritillary (<i>Boloria selene</i>) (c).
Plants	Meadow Thistle (<i>Cirsium dissectum</i>), Lousewort (<i>Pedicularis sylvatica</i>), Saw Wort (<i>Serratula tinctoria</i>).

(p) = Biodiversity Steering Group 'priority' list
(c) = Species of Conservation Concern.

Current Status

approximately 42 ha (0.2% of its area) is covered by purple moor grass and rush pasture.

Definition

Occurs on poorly drained usually acidic soils in lowland areas of high rainfall in western Europe. The vegetation is distinct and consists of various species-rich types of fen-meadow and rush pasture. Purple moor grass, *Molinia caerulea*, and rushes, usually sharp-flowered rush, *Juncus acutiflorus*, are usually abundant.

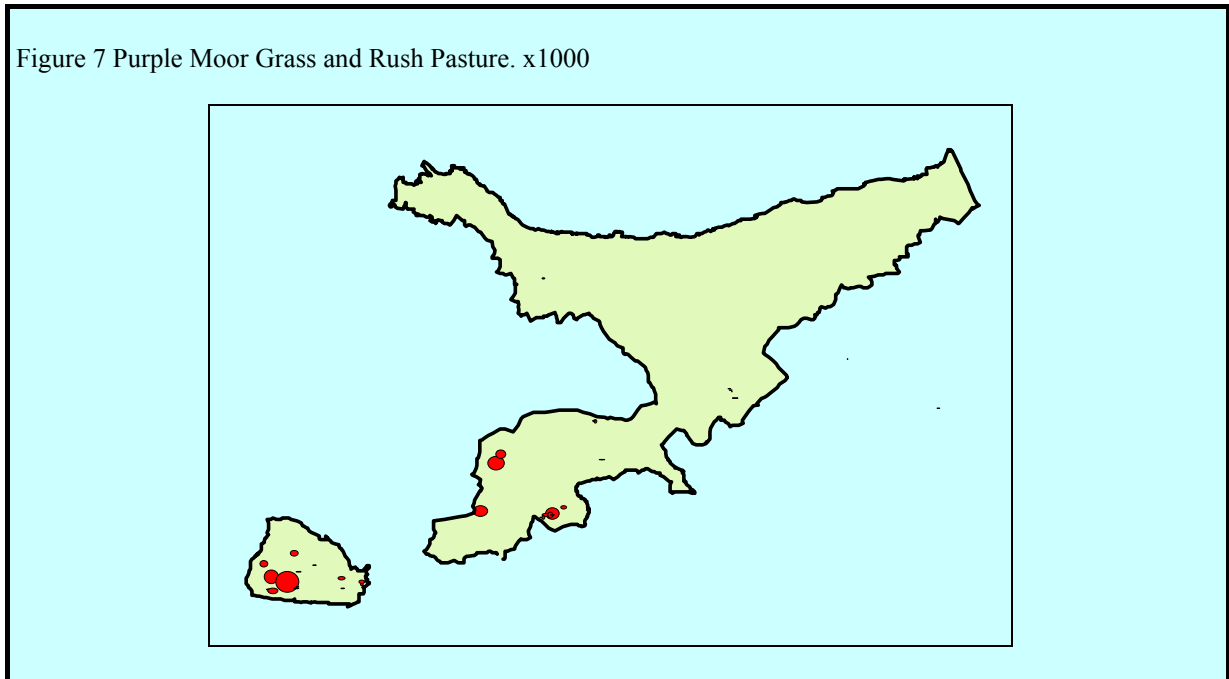
Local Status

This habitat is highly dispersed and fragmented in West Somerset District. However, many of the sites that are still remaining are managed for conservation either through Wildlife Trust ownership such as Huish Moor or through management agreements with English Nature. The majority of sites are protected through County Wildlife Site status with one SSSI.

Distribution

The total amount of this habitat type in the UK is estimated as 56,000 ha. In West Somerset

Figure 7 Purple Moor Grass and Rush Pasture. x1000



Current Factors Affecting The Habitat

Agricultural Factors Resulting in Loss of this Habitat.

Agricultural improvement through drainage, cultivation and fertiliser applications.

Inappropriate management, including overgrazing by sheep and too frequent burning.

Agricultural abandonment, leading to rankness and scrub encroachment through lack of grazing

Planting of trees can lead to the loss of this habitat.

Development

Habitat loss and disturbance due to developments such as housing and road constructions.

Fragmentation

Division of habitat and isolation of the remaining fragments occur with intensification of farming and development.

Current Action

Legal Status

Two of the Purple moor grass and rush pasture sites within West Somerset District are SSSI's: Briggins moor and Roebuck Meadows. Both of these sites are Molinia on chalk and clay habitats listed on Annex 1 of the EC Habitats Directive.

Management, research and guidance

Countryside stewardship schemes do include this habitat under the Culm Grass option.

The Devon Wildlife Trust, with assistance from the EN has produced a map based inventory of sites in Devon and a related newsletter.

Some County Wildlife Sites are managed by conservation organisations such as The Somerset Wildlife Trust owning Huish Moor and Butterfly Conservation owning Haddon Moor.

Action Plan Objectives And Proposed Targets

National

Secure sympathetic management of at least 5,000 ha in England of purple moor grass and rush pasture by the year 2000.

Initiate experimental attempts to re-create 500 ha of purple moor grass and rush pasture on land adjacent to, or nearby, existing sites, by the year 2005.

Local

Target all known sites of purple moor grass and rush pasture to ensure conservation management of this habitat.

Prevent further fragmentation of this habitat.

Promote the formation of a agri-environment scheme or extension of a current one to promote the management of this habitat.

Increase public awareness of the value and management of this habitat.

Proposed Action With Lead Agencies

Policy and Legislation

Focus on implementing an agri-environment scheme to actively promote the restoration and

recreation of this habitat in West Somerset District. ACTION: MAFF, WSDC, FWAG (ongoing).

Site Safeguard and Management

Target known sites of purple moor grass and rush pasture under private ownership promoting the importance and conservation management of this habitat to prevent further deterioration and decline. ACTION: EN, SWT, WSP, FWAG, FRCA (ongoing).

Examine the potential of land adjacent to established purple moor grass and rush pasture to try and extend the area of this habitat within the District. This is of particular importance in the Dulverton island area where sites are closer together and it may be possible to reverse fragmentation. ACTION: SWT, EN, SERC, WSP, FWAG, FRCA (ongoing).

Advisory

Support and encourage initiatives to provide advisory booklets, information and other services to owners and managers of purple moor grass and rush pasture. ACTION: EN, WSDC, SWT, FWAG, FRCA (ongoing).

Monitoring and research

Find and map all the purple moor grass and rush pasture habitat and seek to conserve them within local development plans. ACTION: EN, SWT, WSDC (by 2002).

Communication and Publicity

Encourage the dissemination of information concerning the management and value of this habitat to landowners and the wider community through leaflets and information boards where appropriate. ACTION: EN, SWT, WSP FWAG (ongoing)

Encourage the making of a documentary on the wildlife of purple moor grass and rush

pasture, to increase public appreciation of the habitat. ACTION: DoE, EN, JNCC.

- Marsh Fritillary
- Skylark
- Adder

Connections with other Action plans.

Abbreviations

WSD	-	West Somerset District Council
EN	-	English Nature
WSDC	-	West Somerset District Council
FWAG	-	Farming and Wildlife Advisory Group
FRCA	-	Farming and Rural Conservation Association
SERC	-	Somerset Environmental Record Centre
WSP	-	Wildlife Sites Project
MAFF	-	Ministry of Agriculture Fisheries and Food

HABITAT ACTION PLAN: COASTAL VEGETATED SHINGLE

Biodiversity Associated with Vegetated Shingle	
Plant	endemic Sea Lavender's (<i>Limonium spp.</i>) (p), Horned poppy (<i>Glaucium flavum</i>), Sea Fern (<i>Catapodium marinum</i>).

Current Status

vegetation are comparatively rare even within the UK.

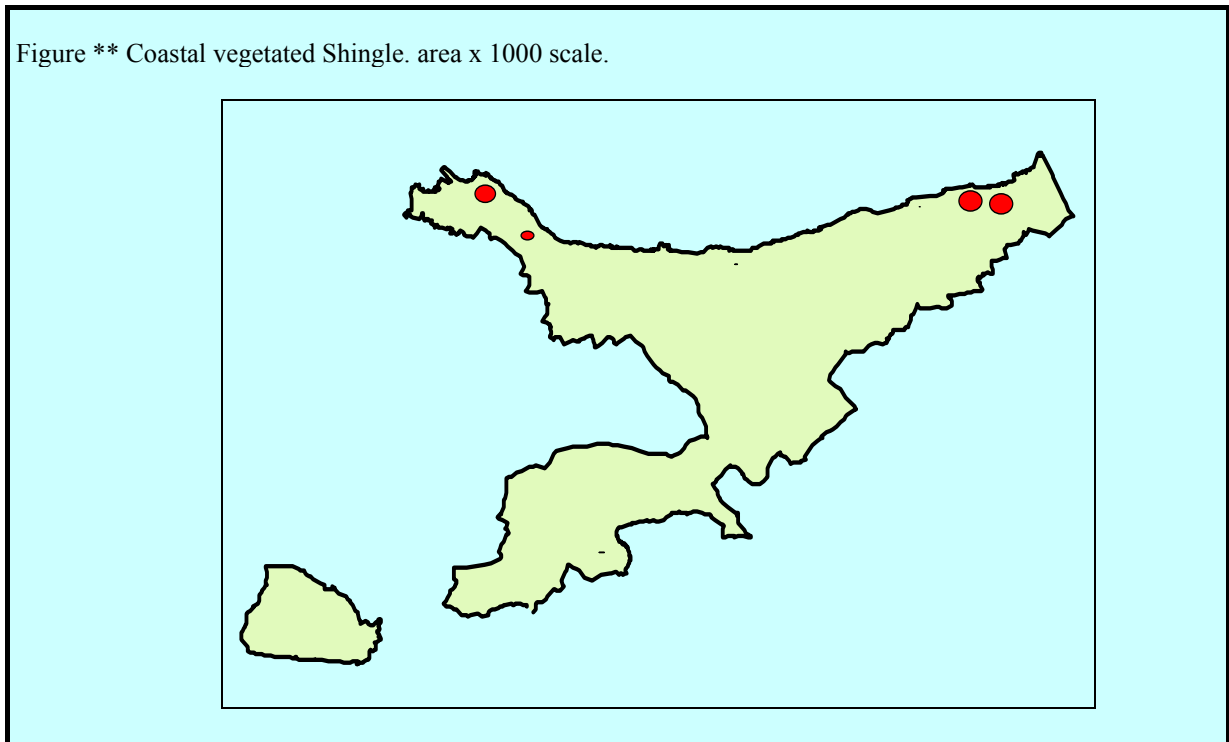
Definition

Shingle is sediment with parcel sizes in the range 2-200 mm. It is a globally restricted coastal sediment type, however, it is widely distributed around the coast of the UK. Most of the shingle is within reach of storm wave action therefore remaining mobile so that vegetation is restricted to temporary and mobile strandline communities. Shingle structures stable enough to support perennial

Distribution

There is estimated to be some 5,000 ha of vegetated shingle in the UK. In West Somerset about 0.07% of the area is vegetated shingle amounting to 18 ha. This is found in two main areas within the Bridgwater Bay SSSI and National Nature Reserve (NNR) and on Dunster Beach with 2.5 ha of CWS status and 4.5 ha with no special conservation status.

Figure ** Coastal vegetated Shingle. area x 1000 scale.



Current Factors Affecting The Habitat

and by offshore aggregate extraction or by artificial redistribution of material within the site.

Sediment Supply

The ongoing development of vegetated shingle depends on a supply of shingle. This may be due to storm events rather than continuously. Frequently this process is interrupted due to coastal defence structures

NATURAL mobility

Shingle is rarely stable in the long term. Many structures exhibit continuous longshore drift, and ridges lying parallel to the shoreline tend to be rolled over towards the land by wave action in storm events. This movement has a knock-on effect on low-lying habitats behind

the shingle. Movement is likely to be accelerated by climate change resulting in sea level rise and increased storminess.

Exploitation

Shingle has long been thought of as a convenient source of aggregates and been subject to varying degrees of extraction resulting in severe alterations in morphology and vegetation.

Building has occurred on shingle structures (e.g. defence structures, industrial plants and housing).

Disturbance

Shingle vegetation is fragile access by vehicles and even on foot has damaged many sites.

Dumping of waste materials such as tarmac and 'alien' soil degrade the quality of the habitat and have the potential to destroy it.

The movement of the shingle for flood defence occurs mainly at Dunster site in West Somerset District (from Warren Point to Dunster Beach) occurs at least alternate years. This may be having an adverse affect on the stabilisation of the shingle ridges and the succession of plant communities.

Grazing

In some areas vegetated shingle has been traditionally grazed, this management has now mostly ceased leading to domination by willow carr.

Current Action

Legal status

Vegetated shingle is a rare habitat; all major and some minor examples have been notified as SSSI or ASSI's. The vegetated shingle in West Somerset District occurs in two areas, one within the Bridgwater Bay SSSI and NNR

the other without SSSI status (it is within a CWS).

Management research and guidance

Many shingle sites have been damaged in the past and there is little positive management of the habitat. It is often impossible to control recreational use by third parties.

The government has a number of publications: DoE's "Policy guidelines for the coast" and "Planning Policy Guidance- Coastal Planning (PPG20)", and SO's "Coastal Planning" (NPPG13. MAFF and EA have also produced a "Strategy for flood and Coastal Defence in England and Wales" and DoE has produced "Coastal Zone Management - Towards best practise

Action Plan Objectives And Proposed Targets

National *

Prevent further net loss of the existing vegetated shingle structures totalling about 5,800 ha. (Local variations due to natural processes should be accepted).

Prevent where possible further exploitation of, or damage to, existing vegetated shingle sites through human activities and maintain the quality of existing plant and invertebrate communities which are currently in optimal condition.

Research and test methodologies for the restoration of damaged shingle structures and their vegetation.

Restore where possible those parts of shingle structures whose geomorphology and vegetation have been damaged or destroyed, including landward transitions.

Local

Highlight the importance of this habitat in West Somerset District and ensure its protection.

Protect this habitat from damaging operations.

Proposed Action With Lead Agencies

Policy and Legislation

Promote the use of alternative flood defence mechanisms rather than movement of shingle. So that shingle habitat has the potential to develop into vegetated shingle (naturally). ACTION: EA, EN, WSDC (by 2010).

Site Safeguard and Management

Ensure that sites of vegetated and potential vegetated shingle are afforded some conservation protective status. ACTION: EA, SERC, WSDC (by 2002).

Advisory

Ensure that all landowners, users and managers are aware of the importance and vulnerability of this habitat. ACTION: EN, SWT, WSP, EA (ongoing).

Future Research and Monitoring

Instigate a program to monitor the status and distribution of shingle, particularly important to monitor change after the cessation of its use in flood defence works. ACTION: EN, EA, SWT, WSDC (ongoing)

** The national action plan is currently in draft form so may be subject to changed objectives, estimates.*

District is **Coastal Sand Dune**. These develop on beaches where there is adequate supply of sediment and it is allowed to dry out at low tide. This allows the particles to be blown inland and collect where further dispersal is prevented by colonising vegetation. Partially vegetated dunes can be found behind the vegetated shingle at Dunster and at Minehead golf course.

This habitat supports a large number of highly specialised species including many that are nationally scarce. Biodiversity associated with this habitat include

PLANTS: Sandcatchfly (*Silene conica*), Suffocated Clover (*Trifolium suffocatum*), Mossy Stonecrop (*Crassula tillaea*), Smooth Cat's ear (*Hypochoeris glabra*), Fragrant Evening Primrose (*Oenothera stricta*), Prickly Saltwort (*Salsola kali*), Hare's Foot Clover (*Trifolium arvense*), Hop Trefoil (*Trifolium campestre*), Bulbous Meadow-Grass (*Poa bulbosa*), Dune Fescue (*Vulpia fasciculare*) Clary (*Salvia horminoides*), Soapwort (*Saponia officinalis*) and Fingered Saxifrage (*Saxifraga tridactylites*).

INVERTEBRATES: Archer's Dart (*Agrotis vestigialis*), Cresecent Dart (*Agrotis trux*) and Brown Argus butterfly (*Aricia agestis*).

The threats associated with this habitat in West Somerset are:

- Loss through sea defence works, either by burial or movement.
- Tipping of alien soils or other foreign waste materials.
- Management for amenity value (e.g. seeding areas for grass) which will crowd out nationally scarce species
- Trampling, for some species only, other species such as Suffocated Clover and Mossy Stonecrop appear to thrive in trampled areas.

Abbreviations

WSD	-	West Somerset District Council
WSDC	-	West Somerset District Council
EA	-	Environment Agency
EN	-	English Nature
WSP	-	Wildlife Sites Project

HABITAT ACTION PLAN SABELLARIA REEF

BIODIVERSITY ASSOCIATED WITH SABELLARIA REEF

Biodiversity Associated with Sabellaria	
Seaweed's	<i>Palmaria palmata</i> , <i>Polysiphonia</i> spp., <i>Ceramium</i> spp., <i>Wenteromorpha</i> spp., <i>Ulva lactuca</i>
Fauna	Barnacles, Mussels, Dogwhelks, winkles small crabs and blennies. polychaetes such as; <i>Fabricia sabella</i> and syllids.

CURRENT STATUS

Description

Sabellaria alveolata (*S. alveolata*) reefs are formed by the honeycomb worm *Sabellaria alveolata*. This species is a polychaete worm that builds tubes from small particles of mud and sand. These tubes are tightly packed and have a honeycomb appearance forming 'reefs' which can be 30-50 cm thick. *Sabellaria alveolata* are mainly found on the bottom third of the shore but can stretch between the mean high water of neap tides and the shallow subtidal. Reefs need hard substrata to form, such as pebbles or bedrock and a good supply of suspended sand grains. The larvae settle more readily on existing or dead colonies. This species has a very variable recruitment and the cover in any one place may vary a lot over a number of years.

National Distribution

In Britain *S. alveolata* reefs are found only on shores with moderate water movement in the South and West. The British Isles are the northern part of this species range, which extends South to Morocco.

Local Distribution

This species is found along the West Somerset coastline, with an length of reef extending Eastwards from Minehead. The distribution and extent of this species along West Somerset's Coastline are not known. Extensive subtidal reefs of *S. alveolata* are found within the Severn Estuary and therefore are likely to occur in this district.

There is evidence from the Bristol Channel, North Cornish Coast and North Wales that this species range is declining. The causes of this have not been proposed and in the light of this species' natural variability it is difficult to assess how significant changes are in the long term.

Current Factors Affecting *S. alveolata* Reef

Human Factors

Due to the intertidal location of this species they are vulnerable to trampling pressure from tourists. There are particular locations within West Somerset where tourist pressure might be high such as on leisure beaches.

This species is particularly vulnerable to effects from shoreline development. These effects might be positive or negative depending upon the nature of the changes. Loss of sand for the construction of their tubes is a major factor for the loss of this species in parts of Europe, however, burial of *S. Alveolata* for more than a few days will result in mortality.

Environmental Factors

S. Alveolata, due to their intertidal location, are capable of withstanding large scale changes in the amount of sand around them, even burial for a few days. However, prolonged burial will result in mortality.

The highly variable recruitment of this species is likely to be affected by several ecological factors, including larva supply. However, at the present time this process is not fully understood.

S. alveolata are at the northern end of their range in Britain and are adversely affected by the cold. Cold spells may cause the reef to die back for many years, particularly on the upper parts of the shore where they are more exposed.

Current Action

Legal Status

S. alveolata reefs are not designated with special conservation status alone, but several

do fall within SSSI's and SAC's. In West Somerset District some *S. alveolata* subtidal reefs are likely to fall within the Severn Estuary proposed Special Area of Conservation (pSAC).

Management, Research and guidance

There is very little active research on *S. alveolata* in Britain at present. Although a few small scale local surveys are being conducted.

A report summarising the dynamics and sensitivity of biogenic reefs, including *S. alveolata* reefs, was recently commissioned for the UK Marine SAC Project.

It is likely subtidal *S. alveolata* reefs are likely to fall within the Severn Estuary proposed Special Area of Conservation (pSAC) and will be monitored by English Nature (EN) and Countryside Council for Wales (CCW). This will be part of the site management when submitted to the European Commission as a candidate Special Area of Conservation (cSAC).

Action Plan Objectives and Targets

Determine the distribution and extent of *S. alveolata* reefs in West Somerset District.

Maintain the existing reef's quality and extent.

Ensure that all *S. alveolata* reefs are afforded some conservation protection and protected where possible from adverse impacts.

Proposed Action With Lead Agencies

Policy and Legislation

Ensure that *S. alveolata* reef is included in the assessment of shore operations, such as shingle movement, aggregate extraction and sand deposition. Harmful effects of these

operations should be minimised if not stopped where they have harmful effects on the *S. Alveolata* reef. ACTION: EN, EA, WSDC (ongoing)

Site Safeguard and Management

In areas with extensive *S. alveolata* reefs ensure that developments likely to affect them (particularly sea defences and breakwaters which can disrupt sediment supply) are subject to environmental impact assessment. ACTION: EA, EN, WSDC (ongoing).

Ensure that site specific management and protection, including monitoring and research are included the pSAC of the Severn Estuary. ACTION: DoE, EN

Advisory

Ensure that conservation officers and the public are made aware of *S. alveolata* reefs. Use posters and leaflets (to be produced by 2003). ACTION: DoE, EN, WSDC, SWT. (by 2004)

Future Research and Monitoring

Determine the extent and quality of *S. alveolata* reefs in West Somerset District. Compare where possible to previous data. ACTION: EN, SWT, WSDC, SERC, (by 2003)

Undertake surveys of reefs in areas of different amounts of recreational activity to determine the impact that this has on the *S. Alveolata*. ACTION: EN, EA, WSDC (by 2010)

Communication and Publicity

Display information on boards in car parks and on beaches about the natural history and conservation of *S. alveolata*. This will help to highlight the conservation and natural history of this species whilst helping to minimise

negative impacts from trampling. ACTION:
EN, WSDC, SWT (by 2005)

References

The key reference used in the National Action Plan was the UK Marine SAC's task 1.1 report by Holt T. J. Rees E. I., Hawkins S. J. and Seed R., (1998) *Biogenic Reefs: An Overview of Dynamic and Sensitivity Characteristics for Conservation Management of Marine SAC's* (in preparation).

Abbreviations

WSDC	-	West Somerset District Council
EN	-	English Nature
EA	-	Environment Agency
DoE	-	Department of the Environment
SWT	-	Somerset Wildlife Trust
SERC	-	Somerset Environmental Record Centre