Sea cliff and slope

(Reviewed in 2004; updated 2007)

1. A Definition

Devon's sea cliffs and slopes are some of the most dramatic and widely appreciated landscape features of the county. They are home to a rich and highly adapted diversity of wildlife and provide unique opportunities to view extensive and spectacular geological exposures, which provide a rich scientific and educational resource of national and international importance.

Sea cliffs and slopes comprise a mosaic of habitats and geological exposures found at the junction between the sea and the land. The lower limits of the habitat are marked by the base of the cliff feature and its upper limits defined by the cliff top or a break in slope resulting from land slippage – typically due to coastal erosion or the top of a steep coastal slope where it intersects a more level land surface.

Soft rock cliffs are characterised by slumped cliff faces that gradually become vegetated. Hard rock cliffs are often sheer faces with ledges where plants can establish themselves. Depending on exposure, substrate and degree of slope, various communities may be locally present. This plan embraces unenclosed coastal grasslands, coastal heath and habitats which are often present in a mosaic on cliffs and slopes such as woodland, wetland and scrub.

The geology of Devon is one of the most interesting, varied and complex in Europe; indeed Devon is the only county in Britain to give its name to a geological system of world-wide recognition - the Devonian. From the early Devonian Period, around 400 million years ago, there is only one major geological time period not to have proven deposits in the County, the Neogene. The great variety of environments and processes which have taken place over this long interval have produced the wonderful diversity of rock types and fossiliferous deposits we see today.

Sea cliffs and coastal slopes form part of this prime geological resource, superbly exposing a wide range of different rock types and units representing most of the County's geological history. Not surprisingly, therefore, some of

the key features of the Dorset and East Devon World Heritage Site are sea-cliff exposures.

2. Why an Action Plan?

Because this habitat and feature comprises a relatively narrow strip of land and because it is often intensively used for recreation, Devon's sea cliffs and slopes are subjected to a concentration of human use that is probably unrivalled in Devon.

Sea cliffs and slopes are vulnerable to a range of potential threats; erosion from walkers and climbers, encroachment by adjacent farmland, and the invasion of non-native plants such as rhododendron and hottentot fig. Changing farming practices have serious consequences for cliff and slope habitats, such as cessation of grazing and consequent invasion of scrub. Natural erosion - an essential coastline process which maintains the feature and habitat - can be threatened by coastal protection works.

There is a need to ensure management of sea cliff and slope to balance the requirements of wildlife conservation, recreation and tourism, coastal protection and agriculture.

3. Characteristic wildlife

Sea cliffs and slopes are a challenging environment for plants and animals; exposure to gale-force winds and salt spray, steep slopes with thin soils, frequent erosion and landslides, all contribute to forming unique and characteristic wildlife assemblages.

Encrusting lichens are often abundant; the pollutant-free, moist maritime air proving the ideal milieu for scores of species. Lichens cling to rock where few other life forms can exist.

Plants like thrift and sea campion, carpet cliffs in spring and summer, their springy tussocks are to be found even in small rock crevices with the scantest amounts of soil. In some places, spectacular swathes of bluebells are found. The fleshy leaves of plants such as rock samphire and stonecrop are an adaptation to life in a desiccating environment.

Insects abound, pollinating the profusion of flowering plants; bees and wasps burrow into light soils and soft geological deposits, many species of crickets and grasshopper bask in sunny hollows.

In summer, birds are much in evidence. Seabirds such as gulls, kittewakes, auks and fulmars breed on inaccessible ledges, kestrels and buzzards ride the breeze, songbirds such as stonechat and wheatear feed on the abundance of insects on the more vegetated slopes.

4. Special species

The following species of conservation concern are associated with sea cliff and slope in Devon. Species marked (p) are 'Species of Principal Importance in England' (NERC Act, S.41).

- **Birds**: Razorbill, guillemot, kittiwake, rock pipit, peregrine, puffin, herring gull (p), fulmar, cirl bunting (p), Dartford warbler, stonechat

- **Moths**: Rustic (p), whitespot, black banded, scarce blackneck, chalk carpet (p), grass eggar, beautiful gothic, hoary footman, thrift clearwing, micro-moths: *Scrobipalpula tussilaginis*, *Epischnia bankesiella*, *Agdistis staticis.*

- **Other Invertebrates**: hornet robber-fly (p) oil beetle *Meloe proscarabaeus* (p), mining bee *Andrena hattorfiana*, cuckoo bee *Nomada guttulata*, great green bush-cricket, grey bush-cricket, spiders *Episinus maculpes*, *Callilepis nocturna*.

- **Vascular plants**: Small hare's ear, early gentian (p), white rock rose, Lundy cabbage (p), shore dock (p), thrift, goldilocks aster, honewort, tree mallow, small rest-harrow, sea campion, Nottingham catchfly, purple gromwell, white horehound, autumn squill, lanceolate spleenwort, wild cabbage, dotted sedge, dwarf mouse-ear, musk stork's bill, rush-leaved fescue, sea barley (p), slender bird's-foot-trefoil, toothed medick, rock stonecrop, twiggy mullein, Bithynian vetch, yellow vetch, wood vetch, clustered clover, suffocated clover, rock sea-lavender, maidenhair fern, whitebeams *Sorbus anglica*, *S. devoniensis, S. subcuneata* (p), *S. vexans* (p), *S. porrigentiformis*.

- **Lichens**: Golden hair-lichen (p), *Ramalina siliquosa*, *Rocella fuciformis*, *Heterodermia leucomelos*.

- **Mosses**: Cordate beard moss, *Weissia multicapsularis* (p), *Weissia perssonii*, triangular pygmy moss (p).

- **Fungi**: Cage fungus *Clathrus ruber*, *Sirobasidium brefeldianum*, purple jelly fungus *Tremella moriformis*, *Lepidomyces subcalceus*, *Herteroacanthella acanthophysa, Brevicellicium exile*, *Trechispora clanculare*.

5. Special geodiveristy features

Key Geological Features, including potential Global Geosites, well represented in rocky foreshore exposures in Devon include:

- Stratigraphical (Phanerozoic): Devonian (marine) carbonates and clastics
- Permian-Triassic red-bed sequence

- Lower Jurassic, classic marine Hettangian-Toarcian
- Sub-Albian regional unconformity
- Stratigraphical (Quaternary): Late Pleistocene interglacial/glacial, cave/beach sediments (Saalian-Weichselian)
- Stratigraphical (Quaternary): Late Pleistocene International (OIS7, 5e) raised beaches
- Palaeontological: Early Jurassic marine reptiles and insects
- Igneous and metamorphic geology: Igneous rocks linked to the northern European Variscan fold-belt
- Geomorphological features, erosional and depositional processes, and landscapes: Landslides (both relic and active)
- Geomorphological features, erosional and depositional processes, and landscapes: Erosional structure/lithology-controlled coast
- Historic, for development of geological science: Early Jurassic (Lias) vertebrate faunas
- *Structural: Variscan nappes and allochthon/ parautochthon of Devon and Cornwall

Other important Earth Science features include:

- Devonian igneous rocks
- Lower Carboniferous stratigraphy and palaeontology (marine)
- Upper Carboniferous stratigraphy and palaeontology (marine and non-marine)
- Permian 'red bed' deposits (SW and N Devon)
- Permian-Triassic low temperature hydrothermal mineralisation
- Albian (upper Lower Cretaceous) stratigraphy and palaeontology (marine)
- Cenomanian to Coniacian (Upper Cretaceous) stratigraphy and palaeontology (marine)
- Palaeogene ('Tertiary') igneous rocks (the Lundy granite and associated dykes)
- Palaeogene-Neogene ('Tertiary') tropical weathering features
- Quaternary glacial and periglacial deposits and landforms

In 2001 the coastline from Orcombe Rocks, Exmouth, Devon and Studland Bay, Dorset was designated as the 'Jurassic Coast Natural World Heritage Site'. It represents one of the best exposed sections through the entire Jurassic System in the world, with contiguous Triassic and Cretaceous sequences respectively below and above; 185 million years of Earth History exposed along the 95 miles of coastline.

6. Current extent (1998)

Sea cliff and slope habitats in Devon amount to approximately 1,200 ha and occur widely around both of the County's coastlines. Since the habitat is confined to a relatively narrow zone, the total area of land may appear relatively small, but the richness and diversity of wildlife and geology makes it

an extremely important feature of Devon's countryside.

7. Current problems for sea cliff and slope in Devon

Lack of **grazing** or use of inappropriate stock leading to encroachment of scrub/bracken onto maritime grassland and heath, and obscuring geological exposures and geomorphological features. Overgrazing may be a problem in some places (including that by rabbits), leading to reduction in habitat diversity. Uncertainty about future availability of appropriate livestock due to CAP reform may contribute to this issue

Fertilising, ploughing up, reseeding and silage production on grassland bordering cliff slopes and planting of arable crops as close as possible to the cliff edge, causes a narrowing - and in some extreme cases loss - of the band of semi-natural cliff vegetation, and reduction in plant species diversity.

Illegal or uncontrolled **burning** threatening coastal heath ecosystem.

Recreation pressure leading to degradation or destruction of the more fragile plant communities, geomorphological features and to disturbance of cliff-nesting birds. Dog-walking may cause disturbance of grazing animals. Certain delicate geological sites may be susceptible to erosion or damaged by irresponsible specimen collecting

Encroachment by non-native invasive plants such as rhododendron, hottentot fig, sycamore, holm oak andcotoneaster may cause a reduction in the naturalness of some coastal woodlands, and in many cases smothers less competitive native plant species.

Interruption of the natural processes of erosion. Coastal protection schemes may have a detrimental effect by reducing the erosion necessary for the colonisation of a characteristic flora on recently-exposed ground, and by reducing exposure sites for geological educational and research. In some cases, increased erosion in areas beyond coastal protection works - for instance due to sediment starving of beaches down drift and consequent erosion of natural protection may destroy habitat and threaten certain delicate geological features. Alternatively, increased erosion may lead to demands for coastal protection works which would further damage coastal processes, habitats and geological features

Climate change will result in a 'squeeze' of maritime cliff communities locally, as a result of increased storminess and sea level rise leading to increased coastal erosion. Alhough most hard rock cliffs are relatively resistant to such changes, migration of the habitat inland would be expected in softer areas, again with increased demands for coastal protection works.

Canine **urinary and faecal pollution** is a threat to certain rare vascular plants where use by dog-walking public is high Fertiliser use on cliff-top fields is also a threat to certain plant species which require nutrient-poor conditions.

Routine use of **certain veterinary products**, particularly the avermectin range of anti-parasitic drugs, poses a threat to wildlife, particularly dung-feeding invertebrates and their predators.

Atmospheric pollution from South Wales may be reducing the abundance and diversity of lichens, especially on the North Devon coast, although the prevailing SW wind probably limits the potential for this.

Inappropriate management of woodlands that occur on maritime slopes, such as intensive pheasant rearing.

Lack of awareness of geological issues and the scientific and heritage significance of geological materials, leading to a lack of appropriate management regimes (including insufficient scrub clearance, footpath or access road construction across delicate geomorphological features, and either an absence of effectively managed protection for geological features, including fossils, or alternatively unnecessarily restrictive regimes)

Lack of understanding on the part of land managers and the general public of cliff and slope habitats and geological issues, and hence public relations difficulties when undertaking management tasks such as scrub cutting/burning, which may appear to some as destroying wildlife habitats.

Lack of information on the extent of the various habitat components of sea cliff and slope in the County, the wildlife they support, especially invertebrates, and appropriate forms of management. Includes a lack of readily available information on the location, nature and sensitivity of key geological and geomorphological features.

Availability and adequacy of **grant aid** for management on SSSIs and elsewhere may sometimes restrict management options.

Aspirations to **buffer maritime cliff and slope** and to increase the extent of semi-natural habitat further inland may conflict with the conservation needs of wildlife associated with arable land e.g. cirl bunting & a declined “arable weed” flora. In addition, ploughing of coastal grassland and conversion to arable land with a primary aim to provide winter stubble amongst which birds such as cirl bunting can feed has the potential to increase soil erosion which may have implications for soft underlying Quaternary deposits, such periglacial head.

Locally – as in Torbay - rare mineral or fossil deposits can attract **inappropriately motivated collectors** and the resulting disturbance of and damage to key geological exposures has included the use of rock saws to remove specimens. Such sites may also be vulnerable to collecting by

uninformed amateur groups. Such collecting offers no scientific or heritage gain, as the material is typically lost into a private collection or global marketplace. In certain circumstances the operation may also be illegal, especially in the context of a protected site.

Most geologists (*including* amateur), however, and geological societies and educational institutions now apply national guidelines for the responsible use of sites, including concerning sample collecting for educational and scientific purposes. Responsible site use such as this is beneficial to conservation and both raises awareness of broader issues concerning the habitat, as well as improving the documentation and understanding of the features being studied.

Many new geological discoveries have been made in this way, although there is currently no centralised repository for the site and specimen records generated. As a result, key documentary information of potentially great value to conservation bodies, site managers and science is not being recorded. In addition, key specimens representing facets of Devon's rich geological heritage are being 'lost' as deposition in a Devon-based museum is not always encouraged or promoted. Conservation in a museological context is a natural extension of site-based conservation.

8. Recent changes in extent

Actual *losses* of stretches of sea cliff and slope habitats are rare, but degradation, due to the factors summarised above, may have affected a large proportion of this habitat, although no figures are available. The picture is not necessarily one of loss or degradation, as some areas, such as the soft-geology cliffs of East Devon, experience renewal and extension of areas of cliff and slope, due to the relatively high incidence of landslides in that part of the County.

Recent gains in extent of maritime grassland have been made as a result of bracken and scrub control works and the reintroduction of suitable grazing regimes.

Progress towards reduction in extent of rhododendron has been made on Lundy and in cliff woodland on the Exmoor coast.

Damage to localised geological features through irresponsible/illegal activities is recorded by Natural England (and formerly by English Nature), but is only an important issue at a few sites. At one such site, however (Hope's Nose, Torquay) virtually the entirely surface expression of a unique mineralogical resource has been removed by illegal collectors, in part at least to supply a global trade.

9. Current site protection

Blackstone Point, Lundy, Plymouth Sound and Estuaries, Sidmouth to West Bay, South Devon Shore Dock and Tintagel-Marsland-Clovelly Coast have been confirmed as Special Areas of Conservation (SACs) under the EC Habitats Directive. Berry Head to Sharkham Point forms part of the South Hams SAC.

A large proportion of Devon's sea cliff and slope lie within SSSI's, including, from east to west on the south coast, and from west to east on the north coast :

Axmouth to Lyme Regis NNR, Sidmouth to Beer Coast SSSI, Ladram Bay to Sidmouth SSSI, Otter Estuary SSSI, Budleigh Salterton Cliffs SSSI, , Exe Estuary SSSI, Dawlish Cliffs SSSI, Babbacombe Cliffs SSSI, Hope's Nose to Walls Hill SSSI, Meadfoot Sea Road SSSI, Daddihole SSSI, Dyers Quarry SSSI, Roundham Head SSSI, Saltern Cove SSSI, Berry Head to Sharkham Point SSSI (and NNR), Froward Point SSSI, Prawle Point to Start Point SSSI, Salcombe-Kingsbridge Estuary SSSI, Bolt Head to Bolt Tail SSSI, Wembury Point SSSI, Erme Estuary SSSI, Plymouth Sound, Shores and Cliffs SSSI, Western King SSSI, Marsland to Clovelly Coast SSSI, Hobby to Peppercombe SSSI, Mermaid's Pool to Bowden Gut SSSI, Westward Ho! Cliffs SSSI, Fremington Quay Cliffs SSSI, Saunton to Baggy Point Coast SSSI, Mill Rock SSSI, Barricane Beach SSSI, Morte Point SSSI, Hele, Sampson's and Combe Martin Bays SSSI, West Exmoor Coast and Woods SSSI, Exmoor Coastal Heaths SSSI, Blackstone Point SSSI, Lundy SSSI (also an NNR/ MNR).

Axmouth to Lyme Regis Undercliffs, Lundy and Berry Head to Sharkham Point are National Nature Reserves.

Sugar Loaf and Saltern Cove (Torbay) and Kingsbridge Estuary are Local Nature Reserves

A number of County Geological Sites (CGS) have been established to conserve coastal exposures which include key areas of sea cliff and slope. A number of County Geological Sites (CGS) have been established to conserve coastal exposures which include key areas of rocky foreshore exposure. The recent establishment of a database of CGS in Devon will ultimately facilitate their listing.

10. Current positive initiatives for sea cliff and slope in Devon

- The County Geological Sites (CGS) and County Wildlife Sites (CWS) schemes identify non-statutory sites of (at least) County importance for their geology and wildlife, and provide planning authorities with this information to steer development away from such sites or to ameliorate potential damage. Devon RIGS Group (see below) and Devon Wildlife

Trust co-ordinate the identification of CGS and CWS, respectively.

- Devon RIGS (Regionally Important Geological/Geomorphological Sites) Group promotes geological conservation, by working with local authorities, landowners and others, and provides advice, on request on County Geological Sites and the management needed to retain or enhance their geological interest. The RIGS Group is undertaking detailed Local Authority surveys, those completed include: North Devon AONB, mining districts in West Devon, Torbay, Exeter, South Hams, East Devon, Teignbridge, Teign Estuary and Dartmoor.

- The Ussher Society is a forum for presenting and discussing the results of geological research into Earth heritage sites in the South West of England. These results are published annually in *Geoscience in south-west England*.

- The British Geological Survey has recent completed new surveys of parts of the County (including Plymouth and Torbay). New geological maps have been published, supported by a descriptive memoirs (Plymouth) and a brief review (Torbay).

- Devon Educational register of Geological Sites provides a web-based resource for educational groups and includes over 80 CGSs and SSSIs (www.devon.gov.uk/geology). A significant number of these sites include rocky foreshore areas.

- Devon County Council and Natural England have supported Devon RIGS Group in the establishment of a database of County Geological Sites, including descriptions, maps and photographs. Some of this information is available via the newly established Devon RIGS website.

- Torbay is now a 'European Geopark', a programme supported by UNESCO. Details of the English Riviera Geopark can be found here: www.englishrivierageopark.org.uk

- The development of the UNESCO-supported Global Geosites initiative provides a context within which the international importance of certain geological and geomorphological features of Devon's sea cliffs and slopes can be independently demonstrated.

- The Dorset and East Devon 'Jurassic Coast' World Heritage site has implications for sites near the coast of East Devon and a Local Geodiversity Action Plan has been prepared.

- Natural England (formerly English Nature) have a PSA (Public Service Agreement) target of 95% of SSSIs into Favourable Condition by 2010 and are working with landowners and managers to find ways of achieving this on maritime cliff and slope sites.

- Shoreline Management Plans, which set out the coastal defence plans for the Devon coast, have important implications for erosion processes of sea cliff and slope, and hence its biodiversity and Earth heritage interest.

- The NT owns and manages a large proportion of all cliff and slope in Devon and is restoring most of these to better condition through scrub and bracken works followed by reintroduction of appropriate grazing regimes

- Local Authorities' Coast and Countryside Management Services (formerly Heritage Coast Services), whose objectives include to conserving and managing the best stretches of undeveloped coastline, and facilitating its enjoyment by the public, taking into account the needs of agriculture and of economic and social factors pertaining to coasts.

- Lundy Seabird Recovery Project run by a partnership made up of EN (now NE), RSPB, the National Trust and the Landmark Trust to eradicate rats. The eradication appears to have been successful.

- South West Coast Path Partnership, which aims to maintain the coastal footpath and increase public enjoyment of the coastal environment, operating through local Coast and Countryside Management Services of Local Authorities.

- Areas of Outstanding Natural Beauty (AONB) are designated by Natural England (formerly the Countryside Commission) and managed by AONB Partnerships led by local authorities and including a wide range of stakeholders. These Partnerships aim to conserve and enhance the natural beauty of such areas. A management plan has been produced for each AONBs.

- The Cirl Bunting Project, spear-headed by RSPB, is concentrating efforts to restore coastal habitats to conditions favoured by the cirl bunting and other arable and coastal grassland wildlife. A key objective is the management of neglected cliff sites in Devon Ploughing of permanent grassland sites to provide winter stubble for feeding birds, however, may have implications for other features (see 'Current Problems').

- Following the return of the chough to Cornwall in 2001 and the subsequent sightings of birds further east, the Chough Partnership, made up of RSPB, Natural England and the National Trust, is looking to work with other landowners in suitable areas of Devon to secure more suitable habitat in Devon for the chough (a rare species of crow) which became extinct as a breeding bird in the county in about 1910.

- Torbay Coast and Countryside Trust has a programme of clearing scrub and re-establishing grazing on coastal sites, including at Hope's Nose and Berry Head, to restore limestone grassland.

- Natural England (formerly English Nature) and Environment Agency Shoreline Management, Habitat Change and European Sites project, which aims to identify potential losses and gains due to coastal process.

- Research into coastal zone management is being progressed by the EU TERRA initiative on living coastlines, through Devon and Cornwall county councils.

11. Biodiversity planning context

National BAP Context

Habitats of Principal Importance in England (NERC Act, S.41):

- Maritime Cliff and Slopes

Current national BAP targets can be viewed on the Biodiversity Action Reporting System (BARS).

Regional BAP Context

Regional targets for priority BAP habitats can be found on the website of Biodiversity South West.

Associated Action Plans within the Devon BAP:

- Caves, karst and limestone habitats
- Cirl bunting
- Cities, towns and villages
- Devon whitebeam and related species
- Estuaries (including saltmarsh and seagrass beds)
- Flower-rich meadows and pastures
- Golden hair-lichen
- Great green bush-cricket
- Greater horseshoe bat
- Lowland heathland
- Oak woodland
- Pearl-bordered fritillary
- Periglacial landscapes
- Pits, quarries and cuttings
- Primrose
- Rocky foreshore

12. Biodiversity objectives and targets for sea cliff and slope in Devon

Objective 1

Maintain and where appropriate improve areas of high nature conservation interest that are currently in good condition for wildlife and/or Earth heritage interests.

Targets:

- Appropriate management is continued on sites already in sympathetic management.
- Land designated SSSI is being managed in ways that will maintain it in favourable condition by 2010.
- Other important wildlife areas also have suitable management regimes in place by 2010.

Objective 2

Restore to good condition areas of high nature conservation interest that have become degraded through neglect or inappropriate management.

Targets:

- Identify priority sites for restoration by 2010.
- Establish management regimes that would lead to restoration on 50% of priority sites by 2010, and of 95% of sites by 2015.

Objective 3

Re-creation of sea cliff and slope habitats in areas that have been lost to other land uses.

Targets:

- Identify sites in need of, and suitable for, re-creation and incorporate in appropriate plans by 2010.

- Five priority re-creation sites to be established between 2004 and 2010.

Objective 4

Establish buffer zone habitats between intensively managed agricultural land and semi-natural cliff and slope habitats.

Targets:

- Buffer zones to be established around 90% of land designated SSSI by 2010.
- Buffer zones to be established around 90% of other important wildlife areas by 2015.

Objective 5

Ensure the natural processes of erosion and sediment movement continue to operate on all areas of conservation interest, with due regard to essential coastal protection of settlements.

Targets:

- No new sea defences or upgrading of existing sea defences unless there is an overriding benefit to society in social, economic or environmental terms.
- Natural processes of erosion and sediment movement are restored to all currently defended localities, wherever possible and appropriate.

Objective 6

Foster continuing and increased understanding and awareness by landowners and managers of management practices which encourage wildlife and maintain Earth heritage features on sea cliffs and slopes.

Target:

- All landowners and managers are well informed about maritime cliff and slope nature conservation management needs by 2010.

Objective 7

Foster increased understanding and awareness, by the general public, of the importance and need to conserve sea cliff and slope, the pressures it faces, and ways in which it can be conserved and enhanced.

Targets:

- Incorporate elements highlighted in Devon Biodiversity Action Plan into existing information publications at their next review.
- Provide information for visitors to all key sites of geological and ecological importance, including interpretation schemes, guides and web-based resources.
- Promote codes of good practice for visitors, including those using the geological resource

Objective 8

Improve understanding and documentation of the sea cliff and slope areas of Devon in terms of the ecology of their fauna and flora, their geological features and the processes, including human-induced and natural, that affect them.

Targets:

- Establish a county geological records centre to gather and manage site records and reports.
- Encourage the reporting of new discoveries and deposition of important specimens on county-based institutions.

13. Wider benefits from pursuing these objectives

The pursuit of the objectives and targets set out above will not only benefit the biodiversity and geological heritage of sea cliff and slope. Conservation has wider benefits and advantages for society, by providing a resource that is the basis of many aspects of the local economy, and by adding to the quality of life of the people of Devon in ways that are beyond financial measure. Enhancing the biodiversity and protecting the geological heritage of sea cliffs and slopes will also, therefore, enhance the interests of society as a whole. Some of these wider benefits are as follows.

- **Enhanced opportunities for recreation and tourism**: Devon's coastal cliffs and surrounding slopes are a tremendous attraction to tourists and others pursuing outdoor recreation. By conserving, enhancing and presenting (e.g. through interpretative provision) the wildlife and Earth heritage features of these places, there will be benefits to the economy from both traditional tourism and the increasingly important "green" tourism industries.

- **Promotion of traditional farming activities of Devon's coast**: Many of the management objectives set out in this plan call for the reinstatement of traditional farming practices, such as grazing and traditional burning regimes, thereby reinstating elements of traditional culture to the environment.

- **Protection of Devon's heritage of cliff-top archaeology**: Archaeological remains abound on certain stretches of the County's coast. Efforts to conserve and enhance wildlife and Quaternary geological and geomorphological features and increase interpretative facilities will also benefit archaeological features.

- **Enhancing the collections and raising the profile and role of county-based museums:** The conservation of geological materials, especially fossils and minerals, involves aspects of both site and specimen conservation. Specimen collecting is also and essential part of the scientific and educational process. In many cases, conservation on-site is also not an option as the natural processes of weathering and erosion and the risk of inappropriate collection make it essential to remove the specimen or specimens from the site on which it was found and place it in a secure location. Working with county-based museums will ensure that such material remains available for future study and display, including for raising awareness of Devon's rich geological heritage, thereby fulfilling a number of the key functions of such institutions.

14. Priority or indicative actions for sea cliff and slope in Devon

Action	Key Partners
1. Ensure that all sites of cliff and slope are designated appropriately for their wildlife or geological features according to relevant selection criteria, e.g. CWS, SSSI, CGS, NNR, SAC.	NE; DWT; DRIGSG
2. Encourage owners and managers of cliff and slope sites to take up funded management schemes such as Environmental Stewardship.	NE; DWT; NT; RSPB; FWAG
3. Promote appropriate management, including coastal grazing, for nature conservation and especially ensuring sympathetic management takes place alongside the South West Coast Path (including in relation to potential damage to sensitive geological and geomorphological features)	NE; CCMS; LAs; ENPA; NT; DWT; RSPB; FWAG; DRIGSG
4. Seek opportunities to re-create and/ or restore semi-natural habitats and geological features on sites formerly supporting them.	NE; ENPA; NT; FWAG; DWT; DRIGSG

Action	Key Partners
5. Ensure that all geological sites at risk from over-use (including over-collection of specimens) are identified and measures taken to inform and improve management.	NE; NT; LAs; DWT; DRIGS Grp
6. Ensure that appropriate SMPs and other strategic documents allow for natural processes to continue and take biodiversity and Earth heritage into account. Where coastal defences are necessary, explore 'soft' engineering options.	LAs; EA; NE; DWT; DRIGSG
7. Promote understanding amongst the public and particularly amongst landowners and managers of cliff and slope environment including appropriate codes of conduct for user groups e.g. climbers, geologists, walkers, etc.	NE; SWCP Team; DWT; RSPB; CCMS; DCC; NT; FWAG; DRIGSG
8. Monitor key cliff and slope habitats, species and Earth heritage features to ensure their management and use is not leading to a loss of quality or heritage value	NE; DWT ; NT; ENPA; RSPB; BC; DBWPS; BSBI; DIF; DRIGSG
9. Ensure Devon Biodiversity Records Centre hold records of data collected on all cliff and slope sites.	All
10. Establish a geological records centre for Devon and promote the reporting and recording of new finds.	DRIGSG, museums, universities, DCC, landowners including NT

Sea Cliff and Slope Action Plan Champion - National Trust

Abbreviations used in text and table

AONB	Area of Outstanding Natural Beauty
BAP	Biodiversity Action Plan
BC	Butterfly Conservation
BSBI	Botanical Society of the British Isles
CCMS	Coast and Countryside Management Services of Local Authorities
CGS	County Geological Site (= RIGS/ Regionally Important Geological/ Geomorphological Site
CS	Countryside Stewardship
DBRC	Devon Biodiversity Records Centre
DBWPS	Devon Bird Watching and Preservation Society
DIF	Devon Invertebrate Forum
DCC	Devon County Council
DRIGSG	Devon RIGS Group
DWT	Devon Wildlife Trust
EA	Environment Agency
ENPA	Exmoor National Park Authority
ESA	Environmentally Sensitive Area
FWAG	Farming and Wildlife Advisory Group
LA	Local Authority
NE	Natural England
NNR	National Nature Reserve
NT	National Trust
RIGS	Regionally Important Geological and Geomorphological Site
SMP	Shoreline Management Plan
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SSSI	Site of Special Scientific Interest
SWCP	South West Coast Path
WES	Wildlife Enhancement Scheme