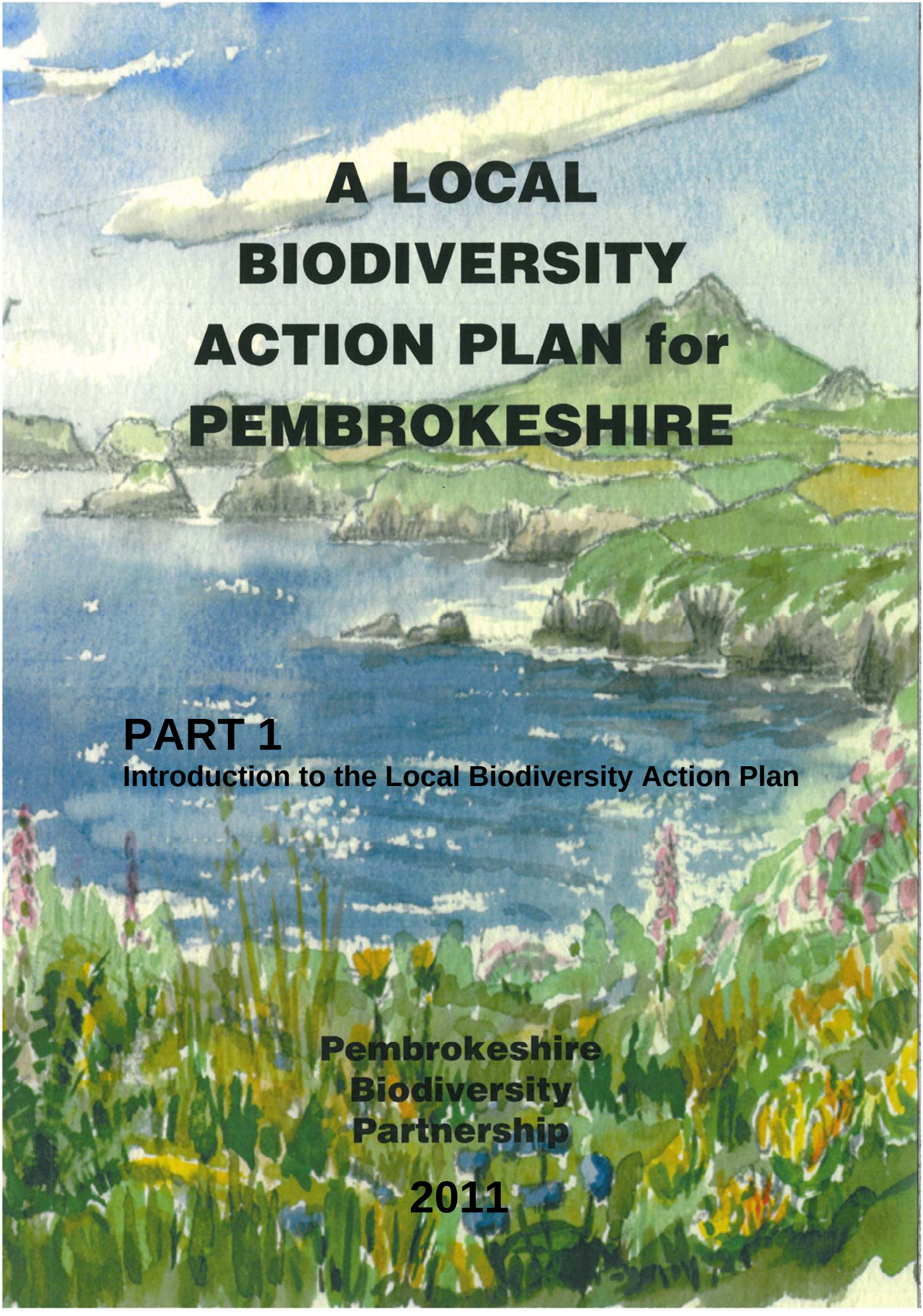

A LOCAL BIODIVERSITY ACTION PLAN for PEMBROKESHIRE

PART 1

Introduction to the Local Biodiversity Action Plan

Pembrokeshire Biodiversity Partnership

2011

Pembrokeshire

Local Biodiversity Action Plan

Part 1:
Introduction to the Local Biodiversity Action Plan

July 2011
This document replaces ‘A Local Biodiversity Action Plan for Pembrokeshire’ published in 2000.

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NB This is a living document some aspects of this document may change, updates will be available on www.pembrokeshire.gov.uk (under the planning menu) and specific links are given in relevant sections.

For further information please contact the Biodiversity Officer 01437 776146 or e-mail biodiversity@pembrokeshire.gov.uk

Website www.pembrokeshire.gov.uk (under the environment, planning menu).
Address:
Pembrokeshire Biodiversity Partnership, c/o Pembrokeshire County Council, Conservation Team, Development Planning, County Hall, Haverfordwest, Pembrokeshire SA61 1TP

INTRODUCTION

1. A Local Biodiversity Action Plan for Pembrokeshire

1.1. The main function of the Pembrokeshire LBAP is to provide a framework and series of action plans, incorporating current and future actions, to achieve the following aim:-
To conserve, enhance and raise awareness of Pembrokeshire's rich biodiversity and to maximise the contribution that it makes to the social, economic and environmental well being of the county, taking into account local, national and international, including European, priorities.

1.2. It covers the area within the County of Pembrokeshire, including the Pembrokeshire Coast National Park, the inshore waters and seabed around the Pembrokeshire coast to 12 miles offshore.

1.3. Further to the publication of the original plan in 2000 there have been several developments and new guidance made available which have led to the requirement for a full review of the Pembrokeshire LBAP to reflect these developments.

1.4. Under Section 40(1) of the Natural Environment and Rural Communities (NERC) Act 2006, all public authorities have a statutory duty to have regard for the purpose of conserving biodiversity in exercising their functions. The purpose of this duty is to ensure that all public bodies are committed to conservation and biodiversity and that it becomes a natural and integral part of policy and decision making.

1.5. In 2007 the new UK List of Priority Species and Habitats was formally approved and published. This list was a result of the most comprehensive analysis ever undertaken in the UK; 1150 species and 65 habitats have been listed as priorities for conservation action under the UK Biodiversity Action Plan (UK BAP).

1.6. Section 42 of the Natural Environment and Rural Communities Act 2006 required the Welsh Assembly to publish a list of the living organisms and habitats which, in their opinion, are of principal importance for the purpose of conserving biodiversity in Wales.

1.7. From the UK List of Priority Species and Habitats and the Section 42 list of habitats and species of principal importance in Wales a list of priority habitats and species has been collated for Pembrokeshire. The Pembrokeshire Priority Habitats and Species List includes UK BAP and Section 42 habitats known to be present and species breeding in the county. In addition to those habitats and species identified at a UK and Welsh level locally distinctive species and habitats that are under threat of loss or degradation are also included. (These lists are found in Appendix A, B and C they contain 35 habitats, 192 species and 71 species of Lepidoptera for monitoring only).

1.8. In Wales, the new approach to BAP delivery[1] will pool expertise and close the gap between those who deliver action in Wales and those who are able to

[1] http://www.biodiversitywales.org.uk/bap_in_wales-27.aspx

provide strategic advice, guidance and support. The new groups are nine Ecosystem Groups, a Species Expert Group and a Wales Biodiversity Policy Group. The Wales Ecosystem Groups and species Lead Partners will work closely with LBAP partnerships.

2. The revised Pembrokeshire LBAP:

Part 1: Introduction to the LBAP

2.1. This document provides a brief background to biodiversity in Pembrokeshire and the role of the Pembrokeshire Biodiversity Partnership (PBP).

2.2. It lists all the UK, Welsh and local BAP priority habitats and species found in Pembrokeshire (Appendix A, B and C) and identifies priorities for action, including priority habitats and species plans where action can be undertaken to maintain and enhance their status (section 9).

2.3. This document will be reviewed every 6 years and can be downloaded from the website www.pembrokeshire.gov.uk (under the planning menu)[2].

Part 2: Biodiversity Action Plans for Pembrokeshire

2.4. Action Plans have been developed for generic, grouped habitats, grouped species and individual species in Pembrokeshire (listed in section 9). These groupings have been selected using guidelines provided by the Wales Biodiversity Partnership[3] Steering Group. The Plans detail targets and actions for the generic (four), grouped habitat (nine), grouped species (seven) and individual species (three) listed in section 9.

2.5. Lead organisations / groups / individuals have been identified to implement the actions set out in the Plans. The successful implementation of these actions will require the continuation of working in partnership with local communities, industry, commerce and individuals.

2.6. The Action Plans are only available in an electronic format as they are dynamic documents which will be amended periodically and contain reports on actions delivered. All amendments to Action Plans will only be made with approval from relevant partners. These Plans are available to download from the Biodiversity Action Plan Reporting System (BARS) website[4]. Status and trend data is available from the BARS website on all Pembrokeshire priority habitats and species, where this information is known.

2.7. BARS is an electronic web-based database which has been developed for the UK. It includes BAPs produced by the private and public sectors. It provides detailed information on the status and trends of species and habitats; targets set; activity taking place; and action planned. Information is available on recorded threats & losses for species and habitats.

[2] http://www.pembrokeshire.gov.uk/content.asp?nav=109&parent_directory_id=646
[3] http://www.biodiversitywales.org.uk
[4] http://www.ukbars.defra.gov.uk/

3. Progress over the last ten years

3.1. A LBAP for Pembrokeshire[5] was first published in 2000 following UK guidance. The original plan explains the background of BAPs and provided detailed information on the biodiversity of Pembrokeshire including habitat descriptions. It contained seven Habitat and 23 Species Action Plans. An additional four Habitats and nine Species Action Plans have been published since 2000 as part of a rolling programme. All these plans are under revision, actions that are still relevant will be included in the new grouped action plans. Many actions from these plans have been delivered by individuals, organisations and through partnership working, examples of some of the work undertaken can be found on page 10.

3.2. In the context of missed EU, UK and Wales targets for halting biodiversity loss the Biodiversity Partnership has committed to the production, in 2011, of a review of biodiversity in Pembrokeshire. The 'State of Wildlife in Pembrokeshire' report has been produced to summarise the condition of LBAP species and habitats and outline the reasons behind this. This report was commissioned by the Pembrokeshire Environment Forum under the Community Plan Leadership Partnership and Pembrokeshire Biodiversity Partnership. It is available on PCC website biodiversity pages www.pembrokeshire.gov.uk (under the planning menu)[6].

[5] A Local Biodiversity Action Plan for Pembrokeshire. Pembrokeshire Biodiversity Partnership October 2000. Available via e-mail from biodiversity@pembrokeshire.gov.uk

[6] http://www.pembrokeshire.gov.uk/content.asp?nav=109&parent_directory_id=646

4. What is Biodiversity?

4.1. Biodiversity encompasses all living plants and animals, and the habitats they depend on. Biodiversity is, literally, life on earth. It is all living plants and animals (including human-kind), their genetic variation and the ecosystems on which they (and we) depend. Biodiversity is everywhere: in gardens, fields, hedgerows, mountains, cliffs and in the sea. Biodiversity represents quality of life. It gives us pleasure, interest and understanding of our environment.

5. Why is biodiversity important?

5.1. Biodiversity is at the heart of ecosystem services

Natural ecosystems provide living creatures with the basic requirements for life; clean air to breathe, food and fresh water to consume. Ecosystems are a driver of natural cycles that make the Earth habitable: including waste recirculation, climate regulation, soil regeneration and nutrient cycling; these cycles rely on a huge number of species to operate effectively. Wetlands, for example, have an important role in flood alleviation and water purification; phytoplankton absorb huge amounts of carbon dioxide; insects help to pollinate plants and crops, helping seeds and fruits grow for us to sow and eat.

These benefits, which are not always readily recognised, are called Ecosystem Services and we rely on them as much as any other organism.

5.2. Biodiversity is essential because of its economic importance and as a source of natural products

The natural environment provides us with ecosystem services and products for free. It is often very easy to forget just how much we rely on biodiversity to provide us with the basics of life. With every breath we take, we consume oxygen produced by forests and seas. Every mouthful of food has been living material that relied on soil, microbes and plants to grow. Plants have provided us with fibres, and timber to build or burn. Medicines for heart disease originate from foxgloves; chemicals extracted from jellyfish are being used in the treatment of cancer. We can never tell which species might prove beneficial so we must try to protect them all from extinction.

Studies have shown that the natural environment is of huge economic importance; wildlife related activities alone in Wales contributes 2.86% of Wales' National Output which equates to around £1426 million per year[7]. The Economics of Ecosystems and Biodiversity estimates that the cost of global biodiversity decline, if current practice continues, could be as much €14 trillion by 2050 (roughly equivalent to 7% of global GDP)[8].

[7] "Wildlife Economy Wales: An Economic Evaluation Scoping Study, 2007" commissioned by the Environment Agency Wales, with the support of Welsh Assembly Government, Countryside Council for Wales and Forestry Commission Wales. www.ccw.gov.uk/publications--research/research--reports/wildlife-economy-wales-an-e.aspx

[8] Braat, L., Ten Brink, P., Bakkes, J., Bolt, K., Braeuer, I., Ten Brink, B., Chiabai, A., Ding, H., Jeuken, M., Kettunen, M., Kirchholtes, U., Klok, C., Markandya, A., Nunes, M., Van Oorschot, M.,

5.3. Biodiversity is an essential part of our cultural heritage
Beyond all the purely practical benefits, interaction with the natural world provides us with the enjoyment, inspiration and spiritual benefits essential to physical and mental well being. At a local level, biodiversity is a particularly important component of local distinctiveness, and a reason why many people visit Pembrokeshire.

5.4. Intrinsic Value
Biodiversity also has 'intrinsic value' – a value in its own right, and is not something that should simply be viewed for its usefulness to humans. Human responsibility toward other living things, and obligations to future generations, provide the impetus for conservation, and this belief was at the heart of the International Convention on Biological Diversity (Rio 1992).

6. The Biodiversity of Pembrokeshire

6.1. Physical context: geology and landform

6.1.1. Pembrokeshire's geology and landform are very varied, especially on the coast. The open, exposed coast is dominated by rugged cliffs that rise to l00m. These are interspersed by sheltered bays and inlets, sometimes with wide, sandy shores, backed by sand dunes. Estuaries such as the Nevern, and the sheltered ria (drowned river valley) that is the Milford Haven Waterway and Daugleddau Estuary provide a sharp contrast to the dramatic cliffs of the open coast. Away from the coast, the interior of Pembrokeshire is dominated by a gently undulating plateau that has been incised by numerous narrow steep-sided river valleys. The largest of these, the Nevern and Gwaun Valleys, are the result of erosion by glacial melt-water from the last ice age. The Preseli Hills dominate the north of the county: essentially two main ridges (highest point 480 m above sea level) separated by the Gwaun Valley. The northern slopes of Mynydd Carningli ridge sweep down to the coast between Fishguard and Newport whilst the northern slopes of Mynydd Preseli form the magnificent sweep of open heathland, bog and flushes that is Brynberian Moor.

6.1.2. Geologically, parts of Pembrokeshire are very old. Pre-Cambrian rocks underlie much of the county, and outcrop as intrusive granites and lavas (again, volcanic in origin) in the St David's area. The older rocks such as the Ordovician and Silurian shales are characteristic of north Pembrokeshire. Upwellings of igneous rock (volcanic in origin) formed the ridges of the Preseli Hills. The younger rocks of much of mid and south Pembrokeshire have eroded to produce the gently rolling plateau surface, which crosses Coal Measures, Old Red Sandstone of the Devonian period and, in the south, Carboniferous Limestone. The limestone cliffs of the south Pembrokeshire coast exhibit classic erosion features such as caves, stacks, arches and "blow holes".

6.1.3. The intertidal and seabed areas around the Pembrokeshire coast are equally varied. Shorelines below the sea cliffs vary from extensive rock platforms to cobble and shingle shores in remote caves. Below low water mark, extensive

Rayment, M., Travisi, C., Walpole, M., 2008. The Cost of Policy Inaction: the Case of Not Meeting the 2010 Biodiversity Target, European Commission.

"plains" of shell gravel and sand are interspersed by submarine cliffs, islets, rocky reefs and stacks.

6.2. Biodiversity: Habitats and Species

6.2.1. Pembrokeshire is the most westerly county in Wales, jutting out into the south-western approaches, at the southern end of the Irish Sea. The strong influences of the sea and the mild oceanic climate are reflected throughout the county in land use and farming as well as in habitats and species, many of which are globally restricted to western maritime areas.

6.2.2. The inshore waters support populations of species that are typical of both cold, northern waters and warmer Mediterranean and Atlantic waters. Much of the seabed is swept by fast tidal currents. The topography of the seabed is as varied as that on land. The colourful plant and animal communities on underwater cliffs and rocky reefs range from dense forests of brown kelp, through meadows of red seaweed to turfs of sponges, sea squirts and anemones, amongst which starfish, sea urchins and crabs graze and scavenge for food. Rocky reefs and cliffs give way to gently undulating plains of sand and shell gravel, inhabited by a variety of surface and burrowing animals.

6.2.3. Bottlenose dolphins, harbour porpoises and grey seals share the water column with many species of fish, and also, at the bottom of the food chain, plankton. Islands such as Skomer, Ramsey, Skokholm and Grassholm, together with parts of the mainland support many thousands of seabirds that nest on the cliffs or in burrows on the islands and feed in the coastal waters around Pembrokeshire.

6.2.4. Inlets and estuaries range in size from the large Milford Haven Waterway and Daugleddau Estuary, one of the finest rias in the UK, to small inlets such as Solva. The southern shores of the Teifi Estuary form part of the northern county boundary. The Milford Haven Waterway and Daugleddau Estuary has a particularly high biodiversity. Current swept underwater cliffs are characterised by diverse sponge communities, in contrast to sheltered estuarine muds that support many species of worms and molluscs, on which thousands of wintering waders and wildfowl feed. Intertidal and subtidal eel-grass beds occur in the Milford Haven Waterway and shallow, muddy bays such as Angle Bay. Saltmarsh has developed in estuaries such as the Gann, Nevern and some of the bays and tributary streams (pills) of the Milford Haven Waterway and Daugleddau Estuary. One of only four examples of coastal lagoons in Wales occurs at the Gann, Dale.

6.2.5. On the open coast, species diversity reflects the wide range of habitats, variation in aspect and degree of exposure to wind and salt, as well as the underlying geology. Habitats include sea cliff grasslands and heath on the more exposed coastal slopes and cliff tops, sand dunes and, in the coastal river valleys, freshwater marshes and fens.

6.2.6. Pembrokeshire's sea cliffs, coastal slopes, cliff tops and headland support some of the finest sea-cliff heath and grassland to be found in the UK. In spring, cliffs and headlands exposed to salt-laden winds are carpeted with familiar maritime species such as thrift, sea campion, sea plantain and spring squill. Other common "cliff-top" species include birds-foot trefoil, kidney vetch,

wild thyme and common centaury. Grasses such as red fescue often form a soft, springy turf. On more sheltered coastal slopes with deeper soils, bracken is widespread, often functioning as a "woodland canopy", beneath which woodland species such as bluebells, primroses, red campion, violets and stitchworts thrive. On the bracken dominated treeless interior plateau of Skomer Island, masses of bluebells create a blue haze across the island in May. The spectacular cliffs are the haunt of choughs and peregrines.

6.2.7. Away from the coast, much of inland, lowland Pembrokeshire is dominated by farmland. Traditional field boundaries, small copses and streams (often in narrow, steep-sided valleys that have cut into the plateau) provide vital corridors for plants and animals to move, linking larger areas of woodland and scrub, with fen and marsh on poorly drained valley bottoms. Additionally, the traditional Pembrokeshire earth stone banks and hedgerows provide valuable sheltered feeding habitats for small mammals such as bats.

6.2.8. Woodland tends to be confined to marginal agricultural land, reflecting the pattern of intensive farming in the county. Semi-natural broadleaved woodland is predominantly oak woodland. Some of the finest examples of oak woodlands occur in the Gwaun and Nevern valleys and in the upper Daugleddau Estuary. These support exceptionally rich lichen communities and populations of ferns e.g. hay-scented buckler fern. Pembrokeshire has important dormouse populations, and many of the woodlands have carpets of classic woodland flowers such as bluebell, wood anemone, wood sorrel and violets. Virtually all oak woodland in Pembrokeshire is lowland rather than upland in character, reflecting the mild oceanic climate. In the south of the county, pockets of ash woodland survive on base-rich soils overlying limestone. Wood pasture is scarce in the country, and is now confined to a few areas in north Pembrokeshire. It was once much more widespread and is particularly associated with the old estates. Wood pasture is a distinctive habitat that is of particular value for lichens and invertebrates. Individual trees can be 300-400 years old, although trees as old as this are now scarce.

6.2.9. Lowland heathland occurs on coastal slopes and headlands, where it is locally extensive (e.g. St David’s Head) as well as on the ridges, slopes and in wide valley bottoms in the Preseli Hills. Many of the inland commons in Pembrokeshire support dry and wet heath, often forming a mosaic with scrub, marshy grassland or fen. Pembrokeshire's heathlands typically comprise a mixture of bell heather, common heather (or ling) and western gorse, with tormentil, heath bedstraw and grasses such as red fescue, common bent or, in wet areas, purple moor grass, rushes and sedges. The slopes of the Preselis are characterised by naturally poor drainage leading to extensive linear flushes, frequently over base-rich boulder clays. These flushes support many rare plants and invertebrates such as western butterwort, bog orchid, marsh club moss and slender green feather moss. They are also important for a range of invertebrates, notably the southern damselfly, for which the Preseli Hills are the Welsh stronghold.

6.2.10. Pockets of species-rich neutral and calcareous grassland occur in parts of the county. The military ranges at Castlemartin have the most extensive flower-rich "meadows" in the county. These are typified by species such as crested dog’s-tail, bird’s-foot trefoil, yellow rattle, black knapweed and cat’s-ear. Road-side verges and church yards are important "refuges" for herb-rich grassland.

Wet marshy grassland dominated by purple moor grass and rushes is much more common. This is frequently species-rich, with sedges, yellow flags, marsh orchids, devil's-bit scabious and whorled caraway. Marshy grassland or "Rhos pasture" is important for the marsh fritillary butterfly, a declining species across Europe. On the slopes and ridges of the Preseli Hills, dry acidic grassland occurs, frequently forming a mosaic with heathland.

6.2.11. Pembrokeshire has one of the highest densities of small lowland wetlands in Wales. These typically include rich fen communities characterised by plants such as meadowsweet, greater tussock sedge, greater pond sedge, purple loosestrife and marsh marigold.

6.2.12. There are few large rivers in the county, although the Eastern and Western Cleddau combined have a significant catchment. Otters are found throughout the catchment, as well as on most of the smaller rivers and streams in the county (and increasingly on the open coast). The elusive water vole is, however, rare in Pembrokeshire. Streams and rivers, sometimes frequented by dippers and grey wagtails, and their bankside and associated marshy and fen vegetation are vital wildlife corridors. Many watercourses support migratory fish such as sea trout and salmon as well as many species of aquatic invertebrates and flowering plants. Open water habitats have been considerably expanded over the past 30-40 years by agricultural irrigation reservoirs and new ponds. Some of the more mature reservoirs support a variety of emergent aquatic vegetation and breeding birds such as little grebe.

6.2.13. Irrigation reservoirs and ponds are integral features of many of Pembrokeshire's farms. Much of farming in the county (especially in the slightly warmer and drier coastal areas) is mixed; with arable root crops such as potatoes, as well as cereals and livestock. Cereal field margins can provide important habitats for a wide range of so-called arable "weeds", many of which are now uncommon. They also support invertebrate populations of value in their own right, but also as an important food source for birds, such as skylarks, linnets and yellowhammers, during the breeding season. Winter stubbles provide valuable food sources for a range of finches, buntings, also skylarks and, on the coast, choughs.

6.2.14. An often overlooked biodiversity resource is artificial structures e.g. buildings of various sorts. In Pembrokeshire, almost the entire populations of bats of all species known to occur in the county use buildings, ranging from castles and stable blocks to modern houses, at some time during the year. Barn owls traditionally use barns and other out buildings. Old stone walls, especially those which have been constructed from limestone and lime-based mortar, frequently support a diverse wall flora, notably ferns, and add an important dimension to the county's flora. Closely associated with dwellings are gardens, which can also support a surprisingly rich biodiversity, from common garden birds to amphibians, dragonflies and damselflies associated with garden ponds.

6.3. Pembrokeshire's biodiversity in a national and international context.

6.3.1. Pembrokeshire is internationally important for many of its coastal, marine and lowland heathland habitats, and also of national importance for others, e.g. ancient semi-natural oak woodland. These habitats support numerous endemic species (i.e. species that occur only in Pembrokeshire), or species for which the county is one of only a handful of sites where they occur in the UK (or

Europe). Some key species, for example greater horseshoe bat and barn owl, are not restricted to designated sites or key habitats and are closely associated with buildings and other man-made structures. Others, for example seabirds and choughs, contribute to the local distinctiveness of the county and many are good indicators of the general "health" of our environment. The national/international significance and importance of Pembrokeshire's biodiversity is reflected by the fact that circa 6% of the total land area is within Sites of Special Scientific Interest (SSSI). There are eight National Nature Reserves, wholly or partly within the county, together with Wales' only Marine Nature Reserve, one of only three to be designated in the UK. There are a number of Special Protection Areas (SPAs) designated under the EU Birds Directive, and Special Areas of Conservation (cSAC) designated under the EU Habitats and Species Directive. These will form Pembrokeshire's, and part of the UK's, contribution to the European Natura 2000 network.

6.3.2. Whilst attention is inevitably focused on rarer species, or on habitats that are covered by international or national designations for nature conservation, the more common species and habitats, and the potential of farmland and of urban spaces to contribute to biodiversity must not be overlooked. More familiar hedgerow flowers or garden birds are also indicators of the general health of the countryside, and losses of these should raise concerns as to the quality of the wider environment.

7. What factors affect biodiversity?

7.1. Biodiversity in Pembrokeshire is influenced by many anthropogenic and natural factors, which are often interconnected and reinforce each other. These can act as a constraint to protecting and enhancing biodiversity.

7.2. There are various plans and strategies that aim to reduce the negative impact some of these factors have on biodiversity; and in some instances mechanisms to limit the impact of these factors are outlined. More information can be found in section 10.

7.3. A ,State of Wildlife in Pembrokeshire report summarises the status of some flagship LBAP species and habitats and outlines reasons for their condition. An overview of some of the factors that may be influencing the status of biodiversity in Pembrokeshire is given in points (6.3.1 – 6.3.6) below.

7.3.1. Climate Change

The climate is changing. Predicted outcomes include extreme weather events and changes in seasonal patterns. During the last ten years some of the warmest winters on record have been experienced in the UK. This has led to some species being recorded in the area, e.g. Dartford warbler and little egret are now breeding in Pembrokeshire as they need mild winters to survive. It has also led to some species numbers declining; there have been noticeably fewer waders visiting in the winter; one of the factors may be that conditions are milder closer to their breeding areas they do not need to migrate as far as the UK. In the more recent sever winters some species have struggled to find sufficient food in frozen ground; wintering chough populations are thought to have been affected by the cold winters of 2009/2010 and 2010 /2011.

7.3.2. Development.
There are some areas in the county with both a high concentration of wildlife and development such as the Milford Haven Waterway designated as Pembrokeshire Marine SAC. Historically development if not mitigated can result in the destruction, degradation and fragmentation of habitats causing species to become isolated and less able to adapt to change. The Authorities should manage the dynamic between development and nature to get the best outcome for wildlife and for people.

7.3.3. Changes in farming practices
Changes in farming practices have been many and varied, historically they have been driven by European and National Policy. Sometimes these changes have led to the destruction, degradation and fragmentation of wildlife habitats. Agri-environment schemes in some areas have been a key factor in delivering biodiversity gain on farmland, helping to redress these trends. However, continued pressure to intensify production could impact marginal land in Pembrokeshire potentially resulting in important sanctuaries for wildlife being lost.

7.3.4. Pollution
Water quality is influenced by a number of factors which include increases in nutrients, pesticides and suspended sediment from soil erosion, affecting wildlife and habitats on land and in rivers and seas. Plastic debris is also a serious problem in the natural environment.

7.3.5. Non-native invasive species
The threats from non-native invasive species to native species and habitats are increasing e.g. Japanese knotweed, Himalayan balsam, and wireweed. The harlequin ladybird for example is a particularly invasive species, out-competing native ladybirds and predating on native insects and their larvae.

7.3.6. Wildlife Crime
Wildlife crime appears in many guises. Locally there are crimes involving native species which are endangered or of conservation concern; cruelty to and the persecution of wildlife and the illegal trade in endangered and protected species. Off-roading on designated sites and areas of common land can be a problem.

7.3.7. Wildlife legislation
The Welsh Assembly Government places considerable emphasis on compliance with international and national legislation that provides statutory protection to many of the species and habitats in Pembrokeshire. Appendix D outlines current wildlife legislation.

8. What evidence is there to know what is happening to Pembrokeshire's biodiversity?

8.1. The partnership is committed to monitoring progress in achieving actions set out in this Local Biodiversity Action Plan, and reviewing priorities. This will include monitoring progress towards the targets and actions set out in the local habitat and species action plans (HAPs and SAPs) and in meeting the strategic actions outlined in **Part 1.**

8.2. **Biodiversity Action**
Pembrokeshire has a long history of biological recording which continues to the present day. Many organisations and agencies have collaborated on survey work contributing to the knowledge and understanding of biodiversity in Pembrokeshire. Volunteers are involved with recording wildlife; specialist County Recorders collate and validate this information. Several groups have been established locally which encourage the observation and recording of wildlife. These include: Wildlife Trust Groups; Pembrokeshire Bird Group; Bat Groups; Pembrokeshire Fungus Recording Network; West Wales Butterfly and Moth Group and Pembrokeshire Invertebrate Group.

8.3. The West Wales Biodiversity Information Centre (WWBIC)[9] was established as a not-for-profit organisation designed to collate and provide information on wildlife and natural history to decision makers, conservation organisations and the general public in the counties of Carmarthenshire, Ceredigion and Pembrokeshire. The centre has been fully functional since September 2007. The WWBIC completes the suite of four local record centres covering the whole of Wales.

9. What is the Role of the Pembrokeshire Biodiversity Partnership (PBP)?

9.1. The PBP was formed in 1998 to develop and implement a LBAP for Pembrokeshire which acts as the principal delivery mechanism locally for the UK BAP. The partnership includes statutory agencies and local authorities, and non-statutory conservation, farming and land-owning organisations.

9.2. A list of Pembrokeshire Biodiversity Partnership members helping to deliver the LBAP is attached at Appendix E. Terms of reference and working guidance for the PBP can be downloaded from this website www.pembrokeshire.gov.uk (under the planning menu)[10].

9.3. The steering group for the partnership comprises Pembrokeshire County Council, Countryside Council for Wales, Pembrokeshire Coast National Park Authority, Wildlife Trust of South and West Wales.

10. What are Pembrokeshire Biodiversity Action Plans?

10.1. The Plan:

- Fulfils the requirements of a local Biodiversity Action Plan[11] and provides an up to date comprehensive framework (Part 1) and action plans (Part 2) for the protection and promotion of Pembrokeshire's natural environment in the context of sustainable development
- Provides a set of detailed action plans for UK priority habitats and species that occur locally as well as those considered to be of local significance;

[9] www.wwbic.org.uk/
[10] http://www.pembrokeshire.gov.uk/content.asp?nav=109&parent_directory_id=646
[11] In accordance with UK and WAG Guidance

- Helps to raise awareness and understanding at all levels of the unique landscape and biodiversity of Pembrokeshire, recognising and celebrating it as one of the County's most precious assets;
- Provides an overview of the natural environment resource;
- Highlights the need for an holistic and integrated approach which recognises the interrelationships and interdependence of the natural environment, the economy, and quality of life;
- Demonstrates the existing and potential contribution that the Natural Environment can make to quality of life and the local economy;
- Provides a framework for recording action being undertaken and mechanisms for monitoring and reporting on progress.
- Identifies a set of performance indicators for biodiversity (Part 2)
- Inspires commitment and action to protect and enhance and manage this resource appropriately
- Provides direction for the Pembrokeshire Biodiversity Partnership (PBP) and others;
- Explains how the plan will be implemented through the shared use of resources
- Highlights the need for participation/involvement and commitment at all levels and across all sectors and disciplines, and the need to work in partnership to achieve the agreed aim;

10.2. A revised list of priority habitat and species BAPs for Pembrokeshire is detailed below. These plans have been identified as priorities for writing and implementing biodiversity action. The Biodiversity steering group will decide on which plans will be written first and identify any new plans to be added to the list below.

10.3. Habitats and species have been grouped into these plans according to Wales Biodiversity Partnership Steering Group guidance.

10.4. The priority habitat and species plans (Part 2) provide details of local targets for the habitats and species associated with the plan and outline the action required to conserve and enhance the associated habitats and species. The actions within these plans have been attributed to specific individuals, organisations and groups.

10.5. The plans will be available to download from the BARS website[12] (Nb. This work is ongoing). Links to the plans can be found on www.pembrokeshire.gov.uk (under the planning menu).

[12] BARS is the UK's Biodiversity Action Plan reporting system. It includes national, local and company Biodiversity Action Plans (BAPs) and the Biodiversity Strategies and Action Plans of all four countries. http://www.ukbars.defra.gov.uk/

10.6. ***Generic Action Plans***
Policy and legislation
Data collection and management
Education and awareness raising
Action plan process

10.7. ***Habitats Action Plans***
Grassland
Heathland
Lowland Farmland
Wetlands
Freshwater
Woodland
Coastal
Brown field / Urban
Marine Habitats

10.8. ***Grouped Species Action Plans***
Bats
Farmland Birds
Reptiles and Amphibians
Grassland Fungi
Coprophagous and other dung related species
Commercial fish species
Cetaceans

10.9. ***Species Action Plans***
Otter
Marsh Fritillary
Brown Hairstreak

10.10. All these habitats and species have been selected for detailed consideration within the revised LBAP as they are of importance, experiencing rapid decline or at high risk at an international, national (UK BAP), Welsh (NERC Section 42 list) or local level.

10.11. Within Pembrokeshire there are many other priority habitats and species which are listed as important at a UK, Welsh and local level. These are detailed in Appendix A: priority habitats and Appendix B: priority species Appendix C: Lepidoptera species listed for monitoring only.

11. 11. Which plans, strategies and guidance link with the LBAP?

11.1. The Partnership promotes ecological competence and best practice through encouraging compliance with and full use of all relevant legislation policy and guidance relating to the natural environment. This commitment extends to securing conformity of newly emerging plans and policies to ensure compliance with the legislative framework for biodiversity and encouraging the adoption of policies and actions to secure cross organisational integration and mainstreaming of biodiversity.

11.2. This requires increased awareness and understanding at all levels through provision of training, information and advice. It is important that biodiversity principles are integrated into decision making across all relevant organisation's service areas and sectors and into all relevant plans and strategies from the outset.

11.3. Equally it is important that nature conservation considerations are taken into account at the earliest stages of planning and designing a project so that they can help to shape and improve policy and design decisions, rather than be seen as a problem or obstacle at a later stage.

11.4. There are a number of national and local strategic plans and initiatives, which provide mechanisms for delivering LBAP objectives and targets on a county-wide basis. This list is not exhaustive and new plans will be developed subsequent to the publication of this document.

11.5. At time of launch (June 2011) a list of some of the relevant plans, strategies and guidance can be found in appendix D.

12. Raising Awareness of Biodiversity

12.1. The Partnership is committed to raising awareness of the importance of biodiversity through

- the active involvement of local communities in the protection, management and enhancement of the natural environment;
- enabling communities to access, appreciate and enjoy wildlife sites;
- provision of support for education and life long learning;
- provision of training, information and advice.

13. Delivering the Action Plan

13.1. The partnership is committed to achieving implementation of the plan through:

- more effective targeting of existing resources;
- more effective collaboration and sharing of resources;
- improved involvement of local communities / volunteer action;
- identifying additional external funding.

14. 14. Examples of biodiversity projects in Pembrokeshire

14.1. Several actions from the original plan have been completed since 2000. The list below gives a flavour of some of the many projects which are delivering actions for biodiversity in Pembrokeshire. To find out more about the specific projects listed you can download reports *(listed in italics)* from the website www.pembrokeshire.gov.uk (under the planning menu)[13]. Links to partner's own websites are also provided where specific reports and updates on biodiversity work that they have undertaken can be viewed.

14.2. Pembrokeshire Coast National Park delivers action on several habitats including heathland, woodland and grassland. Penlan heathland / woodland restoration project covered 70 hectares from 2001, it has been most successful after felling conifers 2001-2005. Over 200 hectares of woodland is managed in the Gwaun valley and North Pembrokeshire, several of these sites are management for dormice.

14.3. Conserving the Park Scheme has re-established or maintained conservation management on thousands of hectares of habitats throughout the Pembrokeshire Coast National Park[14] (PCNP) and is expanding to offer advice to landowners outside the park. The Pembrokeshire Grazing Network[15] has supported much of this work through implementing conservation grazing management on sites where stock were not previously available. The Wildlife Trust of South and West Wales (WTSWW) are using hardy stock e.g. water buffalo at Teifi Marshes and Icelandic ponies on Dowrog Common which has

[13] http://www.pembrokeshire.gov.uk/content.asp?nav=109&parent_directory_id=646
[14] http://www.pcnpa.org.uk/website/default.asp?SID=476&SkinID=4
[15] http://www.grazinganimalsproject.org.uk/gap_site/rhwydwaith_pori_sir_benfro___pembrokeshire_grazing_network.html

helped to create a more diverse habitat by tackling some of the tougher vegetation.

14.4. The National Trust's Heathland Project has restored neglected and/or abandoned lowland and coastal heathland on 30 sites of varied ownership. This follows on from the Heritage Lottery Fund (HLF) Pembrokeshire Living Heathlands project which brought many neglected heathlands into positive management. In total 600ha of heathland is grazed by cattle and Welsh Mountain ponies belonging to the National Trust, commons rights holders and graziers. Cattle grazing by local farms has undergone a fivefold increase since the project started. The project dovetails with the Pembrokeshire Grazing Network.

14.5. The Countryside Council for Wales (CCW) are working with partners and landowners to improve conservation management on all designated sites in Pembrokeshire. Work continues on the management and monitoring of the Skomer Marine Nature Reserve (*MNR updates reports*). The visitor facilities have been significantly upgraded through a WTSWW managed HLF project. The Marine Special Areas of Conservation Relevant Authority Groups (SCA RAG) have or are in the process of developing management plans to protect Pembrokeshire's marine environment from further degradation (*Pembrokeshire Marine Special Area of Conservation Management Plan launched*[16]*)*. Action has been targeted on all designated sites including National Nature Reserves (NNR) and Sites of Special Scientific Interest (SSSI) to bring them into favourable condition. Examples include the work undertaken by the WTSWW to create and manage wetland at Llangloffan Fen SSSI with funding from the Environment Agency Wales and improved access with funding from Pembrokeshire Local Action Network for Enterprise and Development (PLANED). CCW have also designated new local nature reserves at Pembroke Mill Pond[17] and *Freshwater East*. Larger scale projects have been and continue to be developed to help connect up the designated sites with natural habitat and e.g. Living Rivers Project[18].

14.6. The National Trust conservation arable management now extends to 14ha in North Pembrokeshire with the recent addition of land on the Southwood Estate near Newgale. Spring sown cereals with conservation margins and winter stubbles for farmland birds have been established. Cereal crops were sown sparsely in 2009, as an experiment to assess the value of the land for scarce arable plants such as corn marigold. The best land proved to be at Trefrane, on the Southwood Estate, with the appearance of a good range of plants, including the extremely rare small flowered catchfly. The crops were cut and left for farmland birds such as skylark, linnets and starlings.

14.7. The Deepford Brook Catchment Sensitive Farming Demonstration project (2005 – 2008) was designed to promote catchment sensitive farming and reduce the risk of diffuse pollution entering watercourses, which has a detrimental effect on biodiversity. Activity was focussed on two areas; an intensive dairy lowland catchment in South West Wales (Deepford Brook in Pembrokeshire) and two neighbouring upland livestock farming catchments in North Wales (Llafar and Twrch in Gwynedd). The project involved working with farmers to identify diffuse pollution problems and develop solutions tailored to meet the requirements of individual farms with the aim of improving the health of water bodies on a

[16] http://www.pembrokeshiremarinesac.org.uk/english/background/news_c.htm
[17] http://www.pembroke21c.org/millponds.html
[18] http://www.pembsrt.org/newslet.htm

catchment wide basis. Sometimes this would entail work to separate clean and dirty water on farm yards or installing buffer strip fencing along the river to allow natural vegetation to develop.

14.8. Llanerch Bog is a valley bog which was drained, ploughed and unsuccessfully planted with conifers 40 years ago. In 2008 a project began aimed at restoring the bog and surrounding fen and wet woodland communities and to create new wet woodland. Since it began 4 ha of raised bog has been restored and 7.5 ha of developing wet woodland has been enhanced, additional areas of wetland habitats are currently being restored. The rare *Black Bog Ant* (BAP species) is present on the site at its only known location in Pembrokeshire. These works have helped maintain and improve the habitat for this species.

14.9. Other habitat work intended to benefit specific species has been carried out through various projects including *Pools for Pillwort*; *Kestrel Nestbox Project*; *Brown Hairstreak work at West Williamston and Teifi Marshes; and Bastard Balm management at Westfield Pill, both WTSWW Reserves.*

14.10. The West Wales Biodiversity Information Centre has been fully operational since 2007 and is designed to serve information on wildlife and natural history to decision makers, conservation organisations and the general public in West Wales. There have been several projects aimed improving biological data sets including Atlas of Breeding Birds in Pembrokeshire 2003-2007[19]; Dragonfly Atlas work[20]; and the following groups are helping to collate this data Pembrokeshire Invertebrate Group[21]; Pembrokeshire Fungus Recording Network[22]; Seasearch[23] and Sea Trust of South and West Wales[24].

14.11. There have been several projects aimed at raising awareness of Pembrokeshire's biodiversity including talks and guided walks run by various partner organisations. Wildlife on Your Patch, a community based project invites people to explore wildlife in areas important to them. With experts' help, species are identified and a species list and report for each site visited is produced. This is a collaborative project between PBP, (PLANED) and species experts.

14.12. There are several other projects and actions that have built in biodiversity benefits where this is not the main driver, e.g. Woodland management on publicly and privately owned sites has led to hundreds of hectares of woodland being managed sustainably and products developed from the timber at Cilrhedyn and the Timber Store. Wild Fuels – Teifi Reed Project – utilises reed as a fuel, which is cut for conservation management. This project was developed by the PBP wetland group following a feasibility study that CCW commissioned.

[19] http://pembsurveys.blogspot.com/
[20] http://www.dragonflysoc.org.uk/nationalatlas.html
[21] http://pembrokeshireinvertebrategroup.blogspot.com/
[22] www.pembsfungi.org.uk/
[23] http://seasearch.wisshost.net/achievements.htm
[24] http://www.seatrust.org.uk/

Glossary of terms

Agri-environment schemes	Grant aid to encourage landowners to manage land in an environmentally sensitive way
Anthropogenic	Human effects
BAP	Biodiversity Action Plan
Biodiversity	Life on earth
CCW	Countryside Council for Wales
Common land	Land owned collectively or by one person, but over which other people have certain traditional rights, such as to allow their livestock to graze upon it, to collect firewood, or to cut turf for fuel
County Recorder	Nominated individual who collates biological records for a specific area and specific group of species
Coprophagous	Organisms that eat animal dung
Diffuse pollution	Pollution that can not be identified as coming from a single point source
Ecosystem	Combined physical and biological components of an environment
Ecosystem Services	Benefits for human survival from a multitude of resources and processes that are supplied by natural ecosystems
Habitat degradation	Reduction in quality of habitat
Habitat fragmentation	Splitting up of areas of natural habitat with unnatural barriers
HAP	Habitat Action Plan
HLF	Heritage Lottery Fund
Larvae	Distinct juvenile form many animals exist as before metamorphosis (changing) into adults
LBAP	Local Biodiversity Action Plan
Microbe	An organism that is microscopic
MNR	Marine Nature Reserve
NERC Act	Natural Environment and Rural Communities (NERC) Act
NERC Section 42 List	List of habitats and species of principal importance in Wales
NNR	National Nature Reserve
Non-native	Species living outside its native distributional range, which has arrived there by human activity, either deliberate or accidental
PBP	Pembrokeshire Biodiversity Partnership
PCNP	Pembrokeshire Coast National Park
Pembs LBAP List	Pembrokeshire Priority Species and Habitats List
Plankton	Drifting organisms that inhabit water
Phytoplankton	Plant-like component of plankton
SAC	Special Area of Conservation
SAC RAG	Special Area of Conservation Relevant Authorities Group
SAP	Species Action Plan
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
Suspended sediment	Solid sediments (soil / sand etc) floating in water
UDP	Unitary Development Plan
UK BAP	UK Biodiversity Action Plan
UK BAP List	UK List of Priority Species and Habitats
WTSWW	Wildlife Trust of South and West Wales
WWBIC	West Wales Biodiversity Information Centre

Appendix A : List of Pembrokeshire Priority LBAP habitats

Grouped Habitat Action Plans	Pembrokeshire LBAP Habitats
Grassland	Lowland calcareous grassland
	Lowland dry acid grassland
	Lowland meadows
	Purple moorgrass and rush pastures
	Churchyards and cemeteries
Inland Rock	Inland rock outcrop and scree habitats
Heathland	Lowland heathland
	Upland heathland
Lowland Farmland	Arable field margins
	Traditional field boundaries
	Traditional orchards
Wetlands	Blanket bog
	Coastal and floodplain grazing marsh
	Lowland fens
	Lowland raised bog
	Reedbeds
	Upland flushes, fens and swamps
Freshwater	Aquifer-fed naturally fluctuating water bodies
	Eutrophic standing waters
	Mesotrophic lakes
	Oligotrophic and dystrophic lakes
	Ponds
	Rivers
Woodland	Lowland mixed deciduous woodland
	Upland mixed ash woodland
	Upland oak woodland
	Wet woodland
	Wood pasture and parkland
Coastal	Coastal saltmarsh
	Coastal sand dunes
	Coastal vegetated shingle
	Maritime cliff and slope
Brown field / Urban	Gardens and Community Spaces
	Open mosaic habitats on previously developed land
	Road verges
Marine Habitats and species	Blue mussel beds
	Estuarine rocky habitats
	Fragile sponge & anthozoan communities on subtidal rocky habitats
	Intertidal boulder communities
	Intertidal mudflats
	Maerl beds
	Musculus discors beds
	Peat and clay exposures
	Sabellaria alveolata reefs
	Saline lagoons
	Seagrass beds
	Sheltered muddy gravels
	Subtidal mixed muddy sediments
	Subtidal sands and gravels
	Tidal swept channels

Appendix B : List of Pembrokeshire Priority LBAP species

Key -	UK BAP
	LBAP

Classification Group	Scientific Name	Common Name
Mammals	*Arvicola terrestris*	Water vole
Mammals	*Barbastella barbastellus*	Barbastelle bat
Mammals	*Erinaceus europaeus*	West European hedgehog
Mammals	*Lepus europaeus*	Brown hare
Mammals	*Lutra lutra*	Otter
Mammals	*Micromys minutus*	Harvest mouse
Mammals	*Muscardinus avellanarius*	Dormouse
Mammals	*Mustela putorius*	Polecat
Mammals	*Nyctalus noctula*	Noctule bat
Mammals	*Pipistrellus pipistrellus*	Common pipistrelle
Mammals	*Pipistrellus pygmaeus*	Soprano pipistrelle
Mammals	*Plecotus auritus*	Brown long-eared bat
Mammals	*Rhinolophus ferrumequinum*	Greater horseshoe bat
Mammals	*Rhinolophus hipposideros*	Lesser horseshoe bat
Mammals	*Clethrionomys glareolus* race	Skomer vole
Birds	*Alauda arvensis subsp. Arvensis/scotica*	Skylark
Birds	*Alca torda*	Razorbill
Birds	*Alcedo atthis*	Kingfisher
Birds	*Anthus trivialis*	Tree pipit
Birds	*Asio flammeus*	Short-eared owl
Birds	*Carduelis cabaret*	Lesser redpoll
Birds	*Carduelis cannabina subsp. Autochthona/cannabina*	Common linnet
Birds	*Cettia cetti*	Cetti's warbler
Birds	*Charadrius hiaticula*	Ringed plover
Birds	*Cinclus cinclus*	Dipper
Birds	*Circus cyaneus*	Hen harrier
Birds	*Crex crex*	Corncrake
Birds	*Cuculus canorus*	Common cuckoo
Birds	*Dendrocopus minor subsp. Comminutus*	Lesser spotted woodpecker
Birds	*Emberiza citrinella*	Yellowhammer
Birds	*Emberiza schoeniclus*	Reed bunting
Birds	*Falco peregrinus*	Peregrine falcon
Birds	*Falco tinnunculus*	Kestrel
Birds	*Ficedula hypoleuca*	Pied flycatcher
Birds	*Fratercula arctica*	Puffin
Birds	*Hydrobates pelagicus*	Storm petrel
Birds	*Larus argentatus subsp. argenteus*	Herring gull
Birds	*Larus fuscus*	Lesser black-backed gull
Birds	*Locustella naevia*	Common grasshopper warbler
Birds	*Melanitta nigra*	Common scoter
Birds	*Milvus milvus*	Red kite
Birds	*Muscicapa striata*	Spotted flycatcher
Birds	*Numenius arquata*	Eurasian curlew
Birds	*Parus montanus subsp. Kleinschimdti*	Willow tit
Birds	*Parus palustris subsp.*	Marsh tit

	palustris/dresseri	
Birds	*Passer domesticus*	House sparrow
Birds	*Passer montanus*	Eurasian tree sparrow
Birds	*Perdix perdix*	Grey partridge
Birds	*Phoenicurus phoenicurus*	Redstart
Birds	*Phylloscopus sibilatrix*	Wood warbler
Birds	*Picus viridus*	Green woodpecker
Birds	*Prunella modularis subsp. occidentalis*	Hedge accentor
Birds	*Puffinus puffinus*	Manx shearwater
Birds	*Pyrrhocorax pyrrhocorax*	Chough
Birds	*Pyrrhula pyrrhula subsp. pileata*	Common bullfinch
Birds	*Rallus aquaticus*	Water rail
Birds	*Rissa tridactyla*	Kittiwake
Birds	*Saxicola rubetra*	Whinchat
Birds	*Saxicola torquata*	Stonechat
Birds	*Sturnus vulgaris subsp. vulgaris*	Common starling
Birds	*Sula bassana*	Gannet
Birds	*Sylvia undata*	Dartford warbler
Birds	*Turdus philomelos subsp.clarkei*	Song thrush
Birds	*Tyto alba*	Barn owl
Birds	*Uria aalge*	Guillemot
Birds	*Vanellus vanellus*	Northern lapwing
Freshwater Fish	*Alosa alosa*	Allis shad
Freshwater Fish	*Alosa fallax*	Twaite shad
Freshwater Fish	*Anguilla anguilla*	European eel
Freshwater Fish	*Lampetra fluviatilis*	River lamprey
Freshwater Fish	*Osmerus eperlanus*	Smelt
Freshwater Fish	*Petromyzon marinus*	Sea lamprey
Freshwater Fish	*Salmo salar*	Atlantic salmon
Freshwater Fish	*Salmo trutta*	Brown/sea trout
Reptiles and amphibians	*Anguis fragilis*	Slow-worm
Reptiles and amphibians	*Bufo bufo*	Common toad
Reptiles and amphibians	*Natrix natrix*	Grass snake
Reptiles and amphibians	*Vipera berus*	Adder
Reptiles and amphibians	*Zootoca vivipara*	Common lizard
Araneae	*Atypus affinis*	Purse web spider
Coleoptera	*Amara apricaria*	A ground beetle
Coleoptera	*Amphimallon ochraceus*	A chafer
Coleoptera	*Carabus monilis*	A ground beetle
Coleoptera	*Cryptocephalus biguttatus*	A leaf beetle
Coleoptera	*Meloe proscarabaeus*	An oil-beetle
Coleoptera	*Nebria complanata*	Strandline beetle
Coleoptera	*Ochthebius poweri*	A water beetle
Crustacean	*Austropotamobius pallipes*	Freshwater white-clawed crayfish
Diptera	*Asilus crabroniformis*	Hornet robber fly
Ephemeroptera	*Nigrobaetis niger*	Iron blue mayfly
Hymenoptera	*Bombus humilis*	Brown-banded carder-bee
Hymenoptera	*Bombus muscorum*	Moss carder-bee
Hymenoptera	*Bombus ruderarius*	Red-shanked carder-bee
Hymenoptera	*Bombus sylvarum*	Shrill carder-bee
Lepidoptera	*Anania funebris*	White-spotted sable moth
Lepidoptera	*Bembecia muscaeformis*	Thrift clearwing
Lepidoptera	*Boloria euphrosyne*	Pearl-bordered fritillary
Lepidoptera	*Boloria selene*	Small pearl-bordered fritillary

Lepidoptera	*Cupido minimus*	Small blue
Lepidoptera	*Erynnis tages*	Dingy skipper
Lepidoptera	*Eurodryas aurinia*	Marsh fritillary
Lepidoptera	*Plebejus argus*	Silver-studded blue
Lepidoptera	*Pyrgus malvae*	Grizzled skipper
Lepidoptera	*Scotopteryx bipunctaria*	Chalk carpet
Lepidoptera	*Thecla betulae*	Brown hairstreak
Lepidoptera	*Xanthia gilvago*	Dusky-lemon swallow
Mollusca	*Margaritifera margaritifera*	Freshwater pearl mussel
Mollusca	*Ponentina subvirescens*	Hairy green snail
Odonata	*Brachytron pratense*	Hairy dragonfly
Odonata	*Ceriagrion tenellum*	Small red damselfly
Odonata	*Coenagrion mercuriale*	Southern damselfly
Odonata	*Ischnura pumilio*	Scarce blue-tailed damselfly
Orthoptera	*Pseudomogoplistes squamiger*	Scaly cricket

Vascular Plants	*Asparagus prostratus*	Wild asparagus
Vascular Plants	*Aster lynosiris*	Goldilocks aster
Vascular Plants	*Carex divisa*	Divided sedge
Vascular Plants	*Centaurea cyanus*	Cornflower
Vascular Plants	*Centaurium scilloides*	Perennial centaury
Vascular Plants	*Chamaemelum nobile*	Chamomile
Vascular Plants	*Cicendia filiformis*	Yellow centaury
Vascular Plants	*Cytisus scoparius ssp maritimus*	Prostrate broom
Vascular Plants	*Euphrasia anglica*	Glandular eyebright
Vascular Plants	*Euphrasia rostkoviana subsp.montana*	An eyebright
Vascular Plants	*Genista pilosa*	Hairy greenweed
Vascular Plants	*Gentianella anglica*	Early gentian
Vascular Plants	*Gentianella campestris*	Field gentian
Vascular Plants	*Gentianella uliginosa*	Dune gentian
Vascular Plants	*Gymnadena conopsea*	Fragrant orchid
Vascular Plants	*Hammerbya paludosa*	Bog orchid
Vascular Plants	*Hymenophyllum tunbrigense*	Tunbridge filmy fern
Vascular Plants	*Hymenophyllum wilsonii*	Wilsons filmy fern
Vascular Plants	*Juniperus communis*	Juniper
Vascular Plants	*Juniperus communis subsp. hemisphaerica*	A juniper
Vascular Plants	*Limonium binervosum – endemic taxa*	Rock sea lavender (endemic taxa)
Vascular Plants	*Luronium natans*	Floating water plantain
Vascular Plants	*Lycopodiella inundata*	Marsh clubmoss
Vascular Plants	*Lycopodium clavatum*	Stag's – horn clubmoss
Vascular Plants	*Melittis melissophyllum*	Bastard balm
Vascular Plants	*Oenanthe fistulosa*	Tubular water-dropwort
Vascular Plants	*Ononis reclinata*	Small restharrow
Vascular Plants	*Orchis morio*	Green winged orchid
Vascular Plants	*Orobanche purpurea*	Purple broomrape
Vascular Plants	*Pilularia globulifera*	Pillwort
Vascular Plants	*Pinguicula lusitanica*	Pale butterwort
Vascular Plants	*Platanthera bifolia*	Lesser butterfly-orchid
Vascular Plants	*Polypodium australe 'cambrican'*	Southern polypody
Vascular Plants	*Ranunculus tripartitus*	Three-lobed water-crowfoot
Vascular Plants	*Rumex pulcher*	Fiddle dock
Vascular Plants	*Rumex rupestris*	Shore dock
Vascular Plants	*Salicornia pusilla*	Glasswort
Vascular Plants	*Salsola kali subsp. kali*	Prickly saltwort

Vascular Plants	*Scleranthus annuus*	Annual knawel
Vascular Plants	*Scleranthus annuus subsp. annuus*	Annual knawel
Vascular Plants	*Stellaria palustris*	Marsh stitchwort
Vascular Plants	*Veronica spicata*	Spiked speedwell
Vascular Plants	*Vicia orobus*	Wood bitter-vetch
Vascular Plants	*Viola lactea*	Pale dog-violet (heath-violet)

Lichens	*Anaptychia ciliaris subsp. ciliaris*	A lichen
Lichens	*Bacidia incompta*	A lichen
Lichens	*Cladonia peziziformis*	A lichen
Lichens	*Collema fragile*	A lichen
Lichens	*Fulgensia fulgens*	A lichen
Lichens	*Heterodermia leucomelos*	Ciliate strap-lichen
Lichens	*Lobaria pulmonaria*	Lungwort
Lichens	*Megalospora tuberculosa*	A lichen
Lichens	*Physcia tribacioides*	Southern grey physcia
Lichens	*Ramalina polymorpha*	Ramalina polymorpha
Lichens	*Telochistes flavicans*	Golden hair lichen
Lichens	*Wadeana dendrographa*	A lichen
Mosses	*Cephaloziella calyculata*	Entire threadwort
Mosses	*Cryphaea lamyana*	Multi-fruited river moss
Mosses	*Didymodon tomaculosus*	Sausage beard-moss
Mosses	*Ditrichum subulatum*	Awl-leaved ditrichum
Mosses	*Fissidens curvatus*	Portuguese pocket- moss
Mosses	*Fossombronia foveolata*	Pitted frillwort
Mosses	*Funaria pulchella*	Pretty cord-moss
Mosses	*Hamatocaulis vernicosus*	Slender green feather-moss
Mosses	*Leptodon smithii*	Prince of Wales feather-moss
Mosses	*Pallavicinia lyellii*	Veilwort
Mosses	*Petalophyllum ralfsii*	Petalwort
Mosses	*Rhytidiadelphus subpinnatus*	Scarce turf-moss
Mosses	*Tortula wilsonii*	Wilson's pottia
Mosses	*Weissia squarrosa*	Spreading-leaved beardless-moss
Fungi	*Clavaria zollingeri*	Violet coral
Fungi	*Cryptomyces maximus*	Willow blister
Fungi	*Entoloma bloxamii*	Big blue pinkgill
Fungi	*Hygrocybe calyptriformis*	Pink waxcap
Fungi	*Hygrocybe spadicea*	Date waxcap
Fungi	*Microglossum olivaceum*	Olive earthtongue
Stoneworts	*Chara curta*	Lesser bearded stonewort
Stoneworts	*Chara* species	Stoneworts

Marine	*Alkmaria romijni*	Tentacled lagoon worm
Marine	*Ammodytes marinus*	Lesser sandeel
Marine	*Arctica islandica*	Ocean quahog/Icelandic cyprine
Marine	*Asterina phylactica*	Cushion star
Marine	*Atrina fragilis*	Fan mussel
Marine	*Balaenoptera acutorostrata*	Minke whale
Marine	*Balaenoptera physalus*	Fin whale
Marine	*Caretta caretta*	Loggerhead turtle
Marine	*Cetorhinus maximus*	Basking shark
Marine	*Clupea harengus*	Herring

Marine	*Cruoria cruoriaeformis*	Red alga
Marine	*Delphinus delphis*	Common dolphin
Marine	*Dermochelys coriacea*	Leatherback turtle
Marine	*Eunicella verrucosa*	Pink sea-fan
Marine	*Gadus morhua*	Cod
Marine	*Galeorhinus galeus*	Tope shark
Marine	*Globicephala melas (melaena)*	Long-finned pilot whale
Marine	*Grampus griseus*	Risso`s dolphin
Marine	*Halichoerus grypus*	Grey seal
Marine	*Haliclystus auricula*	Stalked jellyfish
Marine	*Hippocampus guttulatus*	Long-snouted seahorse
Marine	*Lagenorhynchus acutus*	Atlantic white-sided dolphin
Marine	*Lagenorhynchus albirostris*	White-beaked dolphin
Marine	*Lamna nasus*	Porbeagle shark
Marine	*Lithothamnion corallioides*	Coral maerl
Marine	*Lophius piscatorius*	Sea monkfish
Marine	*Lucernariopsis campanulata*	Stalked jellyfish
Marine	*Megaptera novaeangliae*	Humpback whale
Marine	*Merlangius merlangus*	Whiting
Marine	*Merluccius merluccius*	European hake
Marine	*Molva molva*	Ling
Marine	*Orcinus orca*	Killer whale
Marine	*Ostrea edulis*	Native oyster
Marine	*Padina pavonica*	Peacock's tail
Marine	*Palinurus elephas*	Crayfish, crawfish or spiny lobster
Marine	*Paludinella littorina*	A lagoon snail
Marine	*Phocoena phocoena*	Harbour porpoise
Marine	*Phymatolithon calcareum*	Common maerl
Marine	*Pleuronectes platessa*	Plaice
Marine	*Prionace glauca*	Blue shark
Marine	*Raja brachyura*	Blonde ray
Marine	*Raja clavata*	Thornback ray
Marine	*Raja undulata*	Undulate ray
Marine	*Scomber scombrus*	Mackerel
Marine	*Solea vulgaris*	Sole
Marine	*Squalus acanthias*	Spiny dogfish
Marine	*Tursiops truncatus*	Bottlenosed dolphin
Marine	*Ziphius cavirostris*	Cuvier`s beaked whale
Marine	*Zostera spp.*	Eel grass

Appendix C Lepidoptera species listed for monitoring only.

These species are identified for monitoring only on the UK BAP list as no other specific action is required at this time, however through monitoring the status of these species, changes in populations trends can be addressed if necessary.

Acronicta psi	Grey dagger
Acronicta rumicis	Knot grass
Agrochola helvola	Flounced chestnut
Agrochola litura	Brown-spot pinion
Agrochola lychnidis	Beaded chestnut
Allophyes oxyacanthae	Green brindled chestnut
Amphipoea oculea	Ear moth
Amphipyra tragopoginis	Mouse moth
Apamea anceps	Large nutmeg
Apamea remissa	Dusky brocade
Aporophyla lutulenta	Deep-brown dart
Arctia caja	Garden tiger
Asteroscopus sphinx	The sprawler
Atethmia centrago	Centre-barred sallow
Blepharita adusta	Dark brocade
Brachylomia viminalis	Minor shoulder-knot
Caradrina morpheus	Mottled rustic
Celaena haworthii	Haworth's minor
Celaena leucostigma	The crescent
Chiasmia clathrata	Latticed heath
Coenonympha pamphilus	Small heath
Cossus cossus	Goat moth
Dasypolia templi	Brindled ochre
Diarsia rubi	Small square-spot
Ecliptopera silaceata	Small phoenix
Ennomos erosaria	September thorn
Ennomos fuscantaria	Dusky thorn
Ennomos quercinaria	August thorn
Entephria caesiata	Grey mountain carpet
Epirrhoe galiata	Galium carpet
Eugnorisma glareosa	Autumnal rustic
Eulithis mellinata	The spinach
Euxoa nigricans	Garden dart
Euxoa tritici	White-line dart
Graphiphora augur	Double dart
Hemistola chrysoprasaria	Small emerald
Hepialus humuli	Ghost moth
Hoplodrina blanda	The rustic
Hipparchia semele	Grayling
Hydraecia micacea	Rosy rustic
Lasiommata megera	Wall
Lycia hirtaria	Brindled beauty
Lycia zonaria subsp. britannica	Belted beauty
Macaria wauaria	V moth
Malacosoma neustria	The lackey
Melanchra persicariae	Dot moth
Melanchra pisi	Broom moth
Melanthia procellata	Pretty chalk carpet
Mesoligia literosa	Rosy minor
Mythimna comma	Shoulder-striped wainscot
Orthonama vittata	Oblique carpet
Orthosia gracilis	Powdered quaker
Pelurga comitata	Dark spinach
Perizoma albulata subsp. albulata	Grass rivulet
Polymixis xanthomista	Black-banded
Rhizedra lutosa	Large wainscot
Scopula marginepunctata	Mullein wave
Scotopteryx chenopodiata	Shaded broad-bar
Spilosoma lubricipeda	White ermine
Spilosoma luteum	Buff ermine
Stilbia anomala	The anomalous
Tholera cespitis	Hedge rustic
Tholera decimalis	Feathered gothic
Timandra comae	Blood-vein
Trichiura crataegi	Pale eggar
Tyria jacobaeae	The cinnabar
Watsonalla binaria	Oak hook-tip
Xanthia icteritia	The swallow
Xanthorhoe ferrugata	Dark-barred twin-spot carpet
Xestia agathina	Heath rustic
Xestia castanea	Neglected rustic

Appendix D: Relevant Plans Strategies and Guidance

This appendix lists the relevant plans, strategies and guidance which provide mechanisms for delivering LBAP objectives and targets in Pembrokeshire. This list is not exhaustive and new plans will be developed subsequent to the publication of this document.

National and Regional

Wales Environment Strategy (Welsh Assembly Government 2006). There are several other strategies which will help deliver the Wales Environment Strategy further details can be found in the Environment Strategy Action Plan 2008 - 2011[25] Reporting on the Wales Environmental Strategy forms the mechanism for reporting on how Section 40(1) of the NERC Act has been met by Welsh Assembly Government and other Public Authorities. Key biodiversity outcomes identified by the strategy include:

The loss of biodiversity has been halted and we can see a definite recovery in the number range and genetic diversity of species, including those species that need very specific conditions to survive.

The wider environment is more favourable to biodiversity through appropriate management, reduced habitat fragmentation and increased extent and interconnectivity of habitats.

Sites of international, Welsh and local importance are in a favourable condition to support the species and habitats for which they have been identified.

The Natural Environment Framework [26] (NEF) - The Welsh Assembly Government's new approach to Biodiversity and Nature defines how biodiversity outcomes can be achieved under the central organising principle of sustainable development. The NEF draws on principles contained in the Wales Environment Strategy, Biodiversity Framework and the ecosystems services approach and aims to add context to existing legislation.

One Wales: One Planet – The Sustainable Development Scheme of the Welsh Assembly Government (May 2009)[27]. It includes the vision: 'Wales has healthy, functioning ecosystems that are biologically diverse and productive and managed sustainably'.

People, Places Futures – The Wales Spatial Plan 2008 provides a framework for the future spatial development of Wales. It seeks to address challenges associated with demographic change, accessibility and the distribution of resources over the next 20 years and to establish new ways of working across Spatial Plan 'Areas'. 'Protecting and enhancing the Area's important environmental assets, maximising their potential through exemplary sustainable development.' Is identified as one of 7 key strategic priorities for the Pembrokeshire the Havens Area.

[25] http://wales.gov.uk/topics/environmentcountryside/epq/envstratforwales/actionplans/2ndactionplan/?lang=en

[26] http://new.wales.gov.uk/about/cabinet/cabinetstatements/2010/100118bio/?skip=1&lang=en

[27] http://wales.gov.uk/topics/sustainabledevelopment/publications/onewalesoneplanet/;jsessionid=WTZMLB2Ky3tnlG4dQfk3mLS2hLbTJXvDzX7HpNhp3FH7Yp4RHW2r!-973892656?lang=en

Welsh Assembly Government Planning policy is set out in Planning Policy Wales[28], Minerals Planning Policy Wales[29] and associated Technical Advice Notes (TANs[30] and MTANs[31]). One of the principles underpinning the Assembly Government's approach to planning policy for sustainable development is 'respect for environmental limits, so that resources are not irrecoverably depleted or the environment irreversibly damaged. This means, for example, contributing to climate protection, protecting and enhancing biodiversity, minimising harmful emissions, and promoting sustainable use of natural resources.'

Technical Advice Note 5[32] Nature Conservation and Planning (2009) provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation.

The Marine and Coastal Access Act 2009[33] includes a new system of marine planning that will cover all key marine activities. It will consolidate and explain the policies relating to the marine area. The marine planning system will guide and direct decision makers and sea users towards a more sustainable use of the sea; ensuring a strong link between policy and individual developments and activities. WAG will be responsible for developing a marine plan or plans for the Welsh marine area, within the context of a UK Marine Policy Statement[34]. These new responsibilities should ensure clean, healthy, safe, productive and biologically diverse oceans and seas, by putting in place better systems for delivering sustainable development of marine and coastal environment.

Woodlands for Wales – WAG's strategy for trees and woodlands[35]
One of the four themes is environmental quality – making a positive contribution to biodiversity, landscapes and heritage, and reducing other environmental pressures.

The WAG Rural Development Plan 2007-13 (formally approved 20 Feb 2008)[36] is complemented by a Pembrokeshire Advance Rural Development Strategy 2007-13, identifies "Improving the environment and countryside, via farmers and landowners" as a priority under 'Axis 3'.

Wales Biodiversity Framework[37] (Wales Biodiversity Partnership 2008)

Wildlife Trust of South and West Wales Biodiversity Action Plan[38]

Shoreline Management Plans[3940], currently under review, provide a policy framework to address the risks to people, the developed, historic and natural environment resulting

[28] http://wales.gov.uk/topics/planning/policy/?lang=en
[29] http://wales.gov.uk/topics/planning/policy/minerals/mineralsplanning?lang=en
[30] http://wales.gov.uk/topics/planning/policy/tans/?lang=en
[31] http://wales.gov.uk/topics/planning/policy/mpgnotes/?lang=en
[32] http://wales.gov.uk/topics/planning/policy/tans/tan5/?lang=en
[33] http://www.defra.gov.uk/environment/marine/legislation/index.htm
[34] Up to date information on progress is available at http://ww2.defra.gov.uk/corporate/
[35] http://www.forestry.gov.uk/forestry/INFD-7GDE7A
[36] http://wales.gov.uk/topics/environmentcountryside/farmingandcountryside/ruraldevelopment/ruraldevelopmentplan4wales2007/ruraldevelopmentplan20072013/?lang=en
[37] http://www.biodiversitywales.org.uk/content/uploads/documents/Guidance%20Legislation/WBP%20Framework%20Master%20WEB%20Eng_opt.pdf
[38] https://www.ukbap-reporting.org.uk/plans/lbap_plans.asp?LBAP=%7B5834D272%2D7061%2D43DC%2D9B32%2D469D4515D555%7D&CO=1
[39] http://www.southwalescoast.co.uk/; http://www.westofwalessmp.org/

from the evolution of the coast and estuaries in a way that does not tie future generations to costly and unsustainable management. There are two emerging Shoreline Management Plans: 'Lavernock Point to St Ann's Head' and 'the West of Wales' which together will provide coverage of Pembrokeshire's shoreline.

The River Basin Management Plan[41] for the Western Wales River Basin District explains the pressures facing the water environment in this river basin district, and the actions that will address them.

Catchment Flood Management Plans[42] The Pembrokeshire and Ceredigion Rivers CFMP gives an overview of the flood risk in the catchments and sets out the Environment Agency's preferred plan for sustainable flood risk management over the next 50 to 100 years.

Local

A Community Plan for Pembrokeshire 2010 - 2025[43] The Community Plan for Pembrokeshire 2010 – 2025 describes the issues that are important to everyone in Pembrokeshire and identifies the approach that a range of organisations will adopt in attempting to tackle them. It identifies objectives for the environment as being to:

- Address the challenge of climate change
- Enhance our natural environment and maintain our cultural and historical distinctiveness

Pembrokeshire Coast National Park Management Plan 2009-2013 provides the framework for collaborative commitment to delivering national park purposes[44]. The Plan identifies policies for collaborative action to improve the biodiversity of the national park.

Planning policy is provided in the Joint Unitary Development Plan[45] (Pembrokeshire County Council) and the Pembrokeshire Coast National Park Authority Local Development Plan[46]. Pembrokeshire County Council is preparing a Local Development Plan which will supersede the JUDP on adoption Local Development Plan Pembrokeshire County Council[47] (deposit plan publication January 2011). Sustainability Appraisal (incorporating Strategic Environmental Assessment) and Habitats Regulations Appraisal underpin preparation of Loc al Development Plans.

Management plans for terrestrial and marine Natura 2000 sites (Special Areas of Conservation; Special Protection Areas; European Marine Site)[48].

Supplementary Planning Guidance for Biodiversity 2007[49]

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[40] http://www.westofwalessmp.org/
[41] http://wfdconsultation.environment-agency.gov.uk/wfdcms/en/westernwales/Intro.aspx
[42] http://www.environment-agency.gov.uk/research/planning/64223.aspx
[43] http://www.pembrokeshire.gov.uk/content.asp?nav=101,1582,1553,1558&parent_directory_id=646&id=18951&d1p1=1
[44] http://www.pcnpa.org.uk/website/default.asp?SID=1258
[45] http://www.pembrokeshire.gov.uk/content.asp?nav=109&parent_directory_id=646&id=5058
[46] http://www.pcnpa.org.uk/website/default.asp?SID=1336&SkinID=5
[47] http://www.pembrokeshire.gov.uk/content.asp?nav=109&parent_directory_id=646&id=11211
[48] http://www.ccw.gov.uk/landscape--wildlife/protecting-our-landscape/special-sites-project-landing.aspx
[49] http://www.pembrokeshire.gov.uk/content.asp?nav=109&parent_directory_id=646&id=4979

Appendix E: Legislative context for biodiversity action in Pembrokeshire

This appendix provides a list and brief explanation of legislation which applies in Pembrokeshire. The legislation sets out the species and habitats which are identified as being in need of protection.

Primary Legislation

European Legislation

- Water Framework Directive
- Marine Strategy Framework Directive
- Environmental Impact Assessment Directive
- Strategic Environmental Assessment Directive
- Habitats Directive (Conservation of Natural Habitats, and Wild Flora and Fauna)
- Wild Birds Directive (Conservation of Wild Birds)
- Environmental Liability Directive (in draft)

UK Legislation

- National Parks and Access to the Countryside Act 1949
- The Protection of Birds Act 1954
- The Wildlife and Countryside Act 1981 (as amended)
- The Protection of Badgers Act 1992
- The Hedgerow Regulations 1997
- Countryside and Rights of Way (CROW) Act 2000 (Section 74)
- Natural Environment and Rural Communities (NERC) Act 2006 (Section 40 – Biodiversity Duty)

In addition, many local, national and internationally rare or vulnerable species are not protected by UK or European law e.g. some Red Data Listed species which are species of high conservation concern. The only legislative protection these species have is through the NERC Act and The Wildlife and Countryside Act. For more information visit the International Union for the Conservation of Nature and Natural Resources (IUCN) website www.iucn-uk.org/

Legislation and Biodiversity

International conventions provide a framework for protecting biodiversity internationally and include The International Convention on the Conservation of Biological Diversity ("Biodiversity") Rio 1992. This Convention commits the United Kingdom, along with 150 other Nations, to the principles of sustainability and the conservation of biological diversity.

European Union directives: Habitats Directive and Bird's Directive provide a framework for protecting and enhancing biodiversity across the Europe. The requirements of these Directives are transposed into UK law via habitat regulations (1994). Central to these Directives is the creation of a network of protected areas across Europe known as 'Natura 2000', which seek to protect habitats and species that are

considered to be of outstanding European significance. The Natura 2000 network comprises:

- Special Protection Areas (SPAs) – to conserve birds listed in the Birds Directive, as well as migratory birds:
- Special Areas of Conservation (SACs) – to conserve the habitat types and animals and plant species listed under the Habitats Directive

The Directive also identifies species that require special measures to conserve / protect or require appropriate management of habitats both inside and outside of SPAs and SACs further information can be found on the JNCC website.

National Legislation. The Wildlife and Countryside Act 1981, requires the Countryside Council for Wales (CCW) to designate Sites of Special Scientific Interest (SSSI). These are notified for their biological and/or geological interest. The purpose of the designation is to maintain the present diversity of plants and animals, to provide a representative sample of national habitats and geological features, and maintain a network of sites as well as individual examples.

National Nature Reserves (NNRs) in Wales are designated by CCW under the National Parks and Access to the Countryside Act 1949. These are either owned, or managed by CCW or held by approved bodies such as Wildlife Trusts. NNRs are established to protect the most important areas of wildlife habitat and geological formations in the UK, and are also areas set aside for scientific research.

The Conservation (Natural Habitats &c.) Regulations 1994 (the Habitats Regulations) (as amended) formally transposed the requirements of the Habitats Directive into National Law.

Most recently The NERC Act 2006 Section 40(1), places a duty on every public authority, in exercising its functions, to "*have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.* This includes, in relation to living organisms or types of habitat, restoring or enhancing a population or habitat. The Welsh Assembly Government has published the Section 42 list of habitats and species of principal importance in Wales. The list contains all UK Biodiversity Action Plan habitats and species known to occur in Wales in addition to species of particular conservation significance in Wales and is required by legislation under the NERC Act (2006) Biodiversity Duty.

Local Sites. There are two types of local site designations; Local Nature Reserves (LNRs) and other non-statutory sites.

LNRs can be designated by the Local Authority, following consultation with CCW, under the 1949 National Parks and Access to the Countryside Act. Local Authorities must either have a legal interest in the land or have reached an agreement with the owner of the land for the land to be managed as a reserve.

Non-statutory sites can be selected by a partnership that can include the Local Authority. In Pembrokeshire the Wildlife Trust South and West Wales has established a range of non-statutory sites which they manage, often promoting a partnership approach to management. These are selected according to a set of standard criteria and cover a wide range of semi-natural habitats, and species. They can also however, include sites which are nationally or internationally designated.

Appendix F : Pembrokeshire Biodiversity Partners

Organisations and groups helping to deliver the LBAP.

Funding Partners
Countryside Council for Wales
Pembrokeshire Coast National Park Authority
Pembrokeshire County Council
Environment Agency Wales

Organisations and Groups
Botanical Society of the British Isles
British Bryological Society
Butterfly Conservation
Cardigan Bay Marine Special Area of Conservation Relevant Authorities Group
Pembrokeshire Research Ornithological Committee
Carmarthen Bay and Estuaries Special Area of Conservation Special Area of Conservation Relevant Authorities Group
Chevron
Country Landowners Association
Dwr Cymru Welsh Water
Farmers Union of Wales
Farming and Wildlife Advisory Group
Field Studies Council
Forestry Commission
Keep Wales Tidy
Marine Conservation Society – Pembs branch
Marine Environmental Monitoring
Ministry of Defence
National Farmers Union – Wales
Pembroke 21 C
Pembrokeshire Bat Group
Pembrokeshire Bird Group
Pembrokeshire Coastal Forum
Pembrokeshire College
Pembrokeshire Darwin Science Festival
Pembrokeshire Fungus Recording Network
Pembrokeshire Invertebrate Group
Pembrokeshire Local Action Network for Enterprise and Development (PLANED)
Pembrokeshire Marine Codes
Pembrokeshire Marine Special Area of Conservation Relevant Authorities Group
Pembrokeshire Outdoor Charter Group
Pembrokeshire Rivers Trust
Plantlife Cymru
Royal Society for the Protection of Birds
Sea Trust of South and West Wales
Seasearch
The National Trust
Wales Biodiversity Partnership
Welsh Assembly Government
West Wales Biodiversity Information Centre
West Wales Butterfly Group
Wildlife Trust of South and West Wales

Appendix G: Habitat and species association tables

		Freshwater							Lowland Farmland			Woodland			Grassland			Heathland		Wetlands				Coastal			Inland Rock	Brown Field / Urban			
		Grouped Freshwater	Rivers	Oligotrophic and Dystrophic Lakes	Ponds	Mesotrophic Lakes	Eutrophic Standing Waters	Aquifer Fed Naturally Fluctuating Water Bodies	Grouped Farmland	Arable Field Margins	Hedgerows	Traditional Orchards	Grouped Woodland	Wood-Pasture & Parkland	Upland Oakwood	Upland Mixed Ashwoods	Lowland Mixed Deciduous Woodland	Wet Woodland	Grouped Grassland	Lowland Calcareous Grassland	Lowland Dry Acid Grassland	Lowland Meadows	Purple Moor Grass and Rush Pastures	Grouped Heathland	Upland Heathland	Lowland Heathland	Grouped Wetlands	Upland Flushes, Fens and Swamps	Coastal and Floodplain Grazing Marsh	Lowland Fens	Reedbeds	Lowland Raised Bog	Blanket Bog	Inland Rock Outcrop and Scree Habitats	Grouped coastal	Maritime Cliff and Slopes	Coastal Vegetated Shingle	Coastal saltmarsh	Coastal Sand Dunes	Grouped urban / brownfield	Open mosaic habitats on previously developed land	Road verges	Gardens and community spaces (cemetaries)	Buildings and other artificial structures
Arvicola terrestris	Water vole		X																									X		X	X											
Barbastella barbastellus	Barbastelle bat										X	X	X	X	X	X	X	X																							
Erinaceus europaeus	West European hedgehog									X	X									X	X	X																X	X	X	
Lepus europaeus	Brown hare									X	X									X	X	X																			
Lutra lutra	Otter		X	X	X	X	X	X										X									X		X	X				X						
Micromys minutus	Harvest mouse									X	X											X							X	X										
Muscardinus avellanarius	Dormouse									X	X		X		X																									
Mustela putorius	Polecat										X	X		X	X	X	X					X																		
Nyctalus noctula	Noctule bat				X								X	X	X	X		X																						
Pipistrellus pipistrellus	Common pipistrelle		X		X						X	X		X	X	X	X	X				X	X						X	X							X		X	
Pipistrellus pygmaeus	Soprano pipistrelle		X		X						X	X		X	X	X	X	X				X	X						X	X							X		X	
Plecotus auritus	Brown long-eared bat										X		X	X																										
Rhinolophus ferrumequinum	Greater horseshoe bat										X		X																											
Rhinolophus hipposideros	Lesser horseshoe bat										X		X	X				X																						
Clethrionomys glareolus race	Skomer vole																																					X			

Pembrokeshire Priority Species List
Non shaded species are UK BAP or Section 42 species
Shaded species are locally improtant

Appendix G: Habitat and species association tables

		Freshwater							Lowland Farmland				Woodland						Grassland					Heathland			Wetlands							Inland Rock	Coastal					Brown Field / Urban				
		Grouped Freshwater	Rivers	Oligotrophic and Dystrophic Lakes	Ponds	Mesotrophic Lakes	Eutrophic Standing Waters	Aquifer Fed Naturally Fluctuating Water Bodies	Grouped Farmland	Arable Field Margins	Hedgerows	Traditional Orchards	Grouped Woodland	Wood-Pasture & Parkland	Upland Oakwood	Upland Mixed Ashwoods	Lowland Mixed Deciduous Woodland	Wet Woodland	Grouped Grassland	Lowland Calcareous Grassland	Lowland Dry Acid Grassland	Lowland Meadows	Purple Moor Grass and Rush Pastures	Grouped Heathland	Upland Heathland	Lowland Heathland	Grouped Wetlands	Upland Flushes, Fens and Swamps	Coastal and Floodplain Grazing Marsh	Lowland Fens	Reedbeds	Lowland Raised Bog	Blanket Bog	Inland Rock Outcrop and Scree Habitats	Grouped coastal	Maritime Cliff and Slopes	Coastal Vegetated Shingle	Coastal saltmarsh	Coastal Sand Dunes	Grouped urban / brownfield	Open mosaic habitats on previously developed land	Road verges	Gardens and community spaces (cemetaries)	Buildings and other artificial structures
Alauda arvensis subsp. Arvensis/scotica	Skylark									X									X					X		X											X	X	X					
Alca torda	Razorbill																																			X								
Alcedo atthis	Kingfisher		X		X	X	X																																					
Anthus trivialis	Tree pipit												X	X	X		X							X		X																		
Asio flammeus	Short-eared owl																							X								X	X											
Carduelis cabaret	Lesser redpoll												X											X																				
Carduelis cannabina subsp. Autochthona/cannabina	Common linnet								X															X												X			X		X	X		
Cettia cetti	Cetti's warbler																													X	X													
Charadrius hiaticula	Ringed plover																																				X							
Cinclus cinclus	Dipper		X																																									
Circus cyaneus	Hen harrier									X													X	X						X		X	X					X						
Crex crex	Corncrake																					X								X														
Cuculus canorus	Common cuckoo										X		X											X						X	X	X	X											
Dendrocopus minor subsp. Comminutus	Lesser spotted woodpecker											X		X			X	X																										
Emberiza citrinella	Yellowhammer								X	X	X													X																				
Emberiza schoeniclus	Reed bunting		X		X																		X		X			X			X	X												
Falco peregrinus	Peregrine falcon																																	X		X				X				
Falco tinnunculus	Kestrel								X					X					X					X										X		X				X				
Ficedula hypoleuca	Pied flycatcher													X	X																													
Fratercula arctica	Puffin																																			X								
Hydrobates pelagicus	Storm petrel																																			X								
Larus argentatus subsp. argenteus	Herring gull																																			X				X				
Larus fuscus	Lesser black-backed gull																																			X								
Locustella naevia	Common grasshopper warbler												X						X					X			X								X									

Pembrokeshire Priority Species List
Non shaded species are UK BAP or Section 42 species
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Appendix G: Habitat and species association tables

		Freshwater							Lowland Farmland				Woodland						Grassland					Heathland			Wetlands							Inland Rock	Coastal					Brown Field / Urban				
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Melanitta nigra	Common scoter																																											
Milvus milvus	Red kite								X				X						X					X																				
Muscicapa striata	Spotted flycatcher								X				X		X																												X	
Numenius arquata	Eurasian curlew																					X	X		X			X	X			X	X					X						
Parus montanus subsp. Kleinschimdti	Willow tit		X										X	X	X	X	X	X																										
Parus palustris subsp. palustris/dresseri	Marsh tit												X	X	X	X	X																											
Passer domesticus	House sparrow								X		X																													X				
Passer montanus	Eurasian tree sparrow		X		X					X	X																																	
Perdix perdix	Grey partridge									X										X	X	X																						
Phoenicurus phoenicurus	Redstart													X	X	X	X								X																			
Phylloscopus sibilatrix	Wood warbler												X		X	X	X																											
Picus viridus	Green woodpecker								X			X		X	X	X	X			X	X					X																	X	
Prunella modularis subsp. occidentalis	Hedge accentor								X		X		X											X						X						X			X	X				
Puffinus puffinus	Manx shearwater																																			X								
Pyrrhocorax pyrrhocorax	Chough																			X	X					X										X			X					
Pyrrhula pyrrhula subsp. pileata	Common bullfinch										X		X											X																X				
Rallus aquaticus	Water rail	X																														X	X											
Rissa tridactyla	Kittiwake																																			X								
Saxicola rubetra	Whinchat									X														X				X				X	X			X								
Saxicola torquata	Stonechat																							X												X			X					
Sturnus vulgaris subsp. vulgaris	Common starling								X										X		X	X																					X	
Sula bassana	Gannet																																			X								
Sylvia undata	Dartford wabler																									X																		
Turdus philomelos subsp.clarkei	Song thrush								X		X		X											X																X				
Tyto alba	Barn owl								X										X					X			X												X		X	X		
Uria aalge	Guillemot																																			X								
Vanellus vanellus	Northern lapwing									X												X	X					X	X	X							X	X			X			

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Alosa alosa	Allis shad		X																																									
Alosa fallax	Twaite shad		X																																									
Anguilla anguilla	European eel		X	X	X	X	X																																					
Lampetra fluviatilis	River lamprey		X	X		X	X																																					
Osmerus eperlanus	Smelt		X	X																																								
Petromyzon marinus	Sea lamprey		X	X																																								
Salmo salar	Atlantic salmon		X	X																																								
Salmo trutta	Brown/sea trout		X	X		X	X																																					
Anguis fragilis	Slow-worm										X		X				X						X			X										X					X		X	
Bufo bufo	Common toad		X		X													X					X							X	X								X		X		X	
Natrix natrix	Grass snake		X		X																		X			X			X	X						X			X		X		X	
Vipera berus	Adder																						X		X	X				X		X		X		X			X		X			
Zootoca vivipara	Common lizard										X											X	X		X	X				X		X		X		X			X		X		X	

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Atypus affinis	Purse web spider																																			X								
Amara apricaria	A ground beetle									X																																		
Amphimallon ochraceus	A chafer																																			X								
Carabus monilis	A ground beetle									X										X																X								
Cryptocephalus biguttatus	A leaf beetle																																											
Meloe proscarabaeus	An oil-beetle																																		X	X								
Nebria complanata	Strandline beetle																																				X		X					
Ochthebius poweri	A water beetle		X		X																															X								
Austropotamobius pallipes	Freshwater white-clawed crayfish		X	X			X	X																																				
Asilus crabroniformis	Hornet robber fly																					X																						
Nigrobaetis niger	Iron blue mayfly		X																																									
Bombus humilis	Brown-banded carder-bee																					X													X									
Bombus muscorum	Moss carder-bee																					X													X									
Bombus ruderarius	Red-shanked carder-bee																					X													X									
Bombus sylvarum	Shrill carder-bee																					X													X									
Anania funebris	White-spotted sable moth								X																											X								
Bembecia muscaeformis	Thrift clearwing																																			X								
Boloria euphrosyne	Pearl-bordered fritillary								X				X	X	X																					X								
Boloria selene	Small pearl-bordered fritillary												X										X				X									X			X					
Cupido minimus	Small blue												X							X															X	X								
Erynnis tages	Dingy skipper												X		X		X			X																X			X		X			
Eurodryas aurinia	Marsh fritillary																						X		X	X									X									
Plebejus argus	Silver-studded blue																			X							X														X			
Pyrgus malvae	Grizzled skipper														X		X			X			X		X	X			X						X						X	X		
Scotopteryx bipunctaria	Chalk carpet																			X																X	X							
Thecla betulae	Brown hairstreak										X				X		X																											
Xanthia gilvago	Dusky-lemon swallow																																											

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Margaritifera margaritifera	Freshwater pearl mussel		X																																									
Ponentina subvirescens	Hairy green snail																																			X								
Brachytron pratense	Hairy dragonfly		X																																									
Ceriagrion tenellum	Small red damselfly		X																																									
Coenagrion mercuriale	Southern damselfly		X																								X																	
Ischnura pumilio	Scarce blue-tailed damselfly		X																																									
Pseudomogoplistes squamiger	Scaly cricket																																			X								

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Asparagus prostratus	Wild asparagus																																			X			X					
Aster lynosiris	Goldilocks aster																			X																X								
Carex divisa	Divided sedge																												X															
Centaurea cyanus	Cornflower									X																																		
Centaurium scilloides	Perennial centaury																																			X			X					
Chamaemelum nobile	Chamomile																									X										X								
Cicendia filiformis	Yellow centaury																								X	X																		
Cytisus scoparius ssp maritimus	Prostrate broom																																			X								
Euphrasia anglica	Glandular eyebright																								X	X										X								
Euphrasia rostkoviana subsp.montana	An eyebright																											X																
Genista pilosa	Hairy greenweed																								X	X																		
Gentianella anglica	Early gentian																			X														X		X			X					
Gentianella campestris	Field gentian																				X																		X					
Gentianella uliginosa	Dune gentian																																						X					
Gymnadena conopsea	Fragrant orchid																			X								X		X														
Hammerbya paludosa	Bog orchid																											X				X	X											
Hymenophyllum tunbrigense	Tunbridge filmy fern														X	X																		X										
Hymenophyllum wilsonii	Wilsons filmy fern														X	X																		X										
Juniperus communis	Juniper																			X														X		X								
Juniperus communis subsp. hemisphaerica	A juniper																																			X								
Limonium binervosum – endemic taxa	Rock sea lavender (endemic taxa)																																			X								
Luronium natans	Floating water plantain		X	X	X	X																			X	X		X		X														
Lycopodiella inundata	Marsh clubmoss			X	X																		X		X	X																		
Lycopodium clavatum	Stag's – horn clubmoss																								X	X																		
Melittis melissophyllum	Bastard balm										X				X																											X		
Oenanthe fistulosa	Tubular water-dropwort																											X	X	X														

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Ononis reclinata	Small restharrow																			X																X								
Orchis morio	Green winged orchid																			X		X														X			X					
Orobanche purpurea	Purple broomrape																																						X					
Pilularia globulifera	Pillwort			X	X	X																	X		X	X		X		X														
Pinguicula lusitanica	Pale butterwort																								X	X		X		X														
Platanthera bifolia	Lesser butterfly-orchid																			X	X	X											X											
Polypodium australe 'cambrican'	Southern polypody																																											X
Ranunculus tripartitus	Three-lobed water-crowfoot				X																				X	X		X		X						X								
Rumex pulcher	Fiddle dock																					X																						
Rumex rupestris	Shore dock																																			X	X		X					
Salicornia pusilla	Glasswort																																					X						
Salsola kali subsp. kali	Prickly saltwort																																				X		X					
Scleranthus annuus	Annual knawel									X											X					X																		
Scleranthus annuus subsp. annuus	Annual knawel									X											X					X																		
Stellaria palustris	Marsh stitchwort																												X	X	X													
Veronica spicata	Spiked speedwell																																			X								
Vicia orobus	Wood bitter-vetch																									X																		
Viola lactea	Pale dog-violet (heath-violet)																								X	X																		

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Anaptychia ciliaris subsp. ciliaris	A lichen										X			X			X																											
Bacidia incompta	A lichen										X			X																														
Cladonia peziziformis	A lichen																									X																		
Collema fragile	A lichen																			X																			X					
Fulgensia fulgens	A lichen																																			X			X					
Heterodermia leucomelos	Ciliate strap-lichen																																			X								
Lobaria pulmonaria	Lungwort										X			X			X	X																										
Megalospora tuberculosa	A lichen																X																											
Physcia tribacioides	Southern grey physcia													X																														
Ramalina polymorpha	Ramalina polymorpha																																			X								
Telochistes flavicans	Golden hair lichen																																			X								
Wadeana dendrographa	A lichen													X																														
Cephaloziella calyculata	Entire threadwort																			X																X								
Cryphaea lamyana	Multi-fruited river moss		X																																									
Didymodon tomaculosus	Sausage beard-moss									X																																		
Ditrichum subulatum	Awl-leaved ditrichum																																											
Fissidens curvatus	Portuguese pocket- moss										X																																	
Fossombronia foveolata	Pitted frillwort				X																					X																		
Funaria pulchella	Pretty cord-moss																			X																X								
Hamatocaulis vernicosus	Slender green feather-moss																											X		X														
Leptodon smithii	Prince of Wales feather-moss										X			X			X																											
Pallavicinia lyellii	Veilwort																															X												
Petalophyllum ralfsii	Petalwort																																						X					
Rhytidiadelphus subpinnatus	Scarce turf-moss																X																											
Tortula wilsonii	Wilson’s pottia																																			X								
Weissia squarrosa	Spreading-leaved beardless-moss									X																																		

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Clavaria zollingeri	Violet coral																					X																					X	
Cryptomyces maximus	Willow blister																									X																		
Entoloma bloxamii	Big blue pinkgill																			X		X																						
Hygrocybe calyptriformis	Pink waxcap																					X																					X	
Hygrocybe spadicea	Date waxcap																																										X	
Microglossum olivaceum	Olive earthtongue																					X																					X	
Chara curta	Lesser bearded stonewort					X																																						
Chara species	Stoneworts					X																																						

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Marine/Morol		Intertidal boulder communities	*Sabellaria alveolata* reefs	Estuarine rocky habitats	Intertidal mudflats	Sheltered muddy gravels	Peat and clay exposures	Seagrass beds	Tidal swept channels	Fragile sponge & anthozoan com. on subtidal rocky hab.	Saline lagoons	Subtidal sands and gravels	Subtidal mixed muddy sediments	Mud habitats in deep water	*Musculus discors* beds	Blue mussel beds	Horse mussel beds	Maerl beds	Coastal saltmarsh	Open Sea	Grouped plan fish	Grouped plan cetaceans
Alkmaria romijni	Tentacled lagoon worm				X						X											
Ammodytes marinus	Lesser sandeel																				X	
Arctica islandica	Ocean quahog/Icelandic					X						X	X									
Asterina phylactica	Cushion star																					
Atrina fragilis	Fan mussel					X						X	X									
Balaenoptera acutorostrata	Minke whale																					X
Balaenoptera physalus	Fin whale																					X
Caretta caretta	Loggerhead turtle																			X		
Cetorhinus maximus	Basking shark																			X		
Clupea harengus	Herring																				X	
Cruoria cruoriaeformis	Red alga																	X				
Delphinus delphis	Common dolphin																					X
Dermochelys coriacea	Leatherback turtle																			X		
Eunicella verrucosa	Pink sea-fan								X													
Gadus morhua	Cod																				X	
Galeorhinus galeus	Tope shark																				X	
Globicephala melas (melaena)	Long-finned pilot whale																					X
Grampus griseus	Risso`s dolphin																					X
Halichoerus grypus	Grey seal																			X		
Haliclystus auricula	Stalked jellyfish						X															
Hippocampus guttulatus	Long-snouted seahorse						X															
Lagenorhynchus acutus	Atlantic white-sided dolphin																					X
Lagenorhynchus albirostris	White-beaked dolphin																					X
Lamna nasus	Porbeagle shark																				X	
Lithothamnion corallioides	Coral maerl																	X				
Lophius piscatorius	Sea monkfish																				X	
Lucernariopsis campanulata	Stalked jellyfish						X															
Megaptera novaeangliae	Humpback whale																					X
Merlangius merlangus	Whiting																				X	
Merluccius merluccius	European hake																				X	
Molva molva	Ling																				X	
Orcinus orca	Killer whale																					X
Ostrea edulis	Native oyster			X	X	X						X	X									
Padina pavonica	Peacock’s tail																					
Palinurus elephas	Crayfish, crawfish or spiny																					
Paludinella littorina	A lagoon snail																					
Phocoena phocoena	Harbour porpoise																					X
Phymatolithon calcareum	Common maerl																	X				
Pleuronectes platessa	Plaice																				X	
Prionace glauca	Blue shark																				X	
Raja brachyura	Blonde ray																				X	
Raja clavata	Thornback ray																				X	
Raja undulata	Undulate ray																				X	
Scomber scombrus	Mackerel																				X	
Solea vulgaris	Sole																				X	
Squalus acanthias	Spiny dogfish																				X	
Tursiops truncatus	Bottlenosed dolphin																					X
Ziphius cavirostris	Cuvier`s beaked whale																					X
Zostera spp.	Eel grass						X															