STATE OF WILDLIFE IN PEMBROKESHIRE

A study on the current state of the flora and fauna in Pembrokeshire

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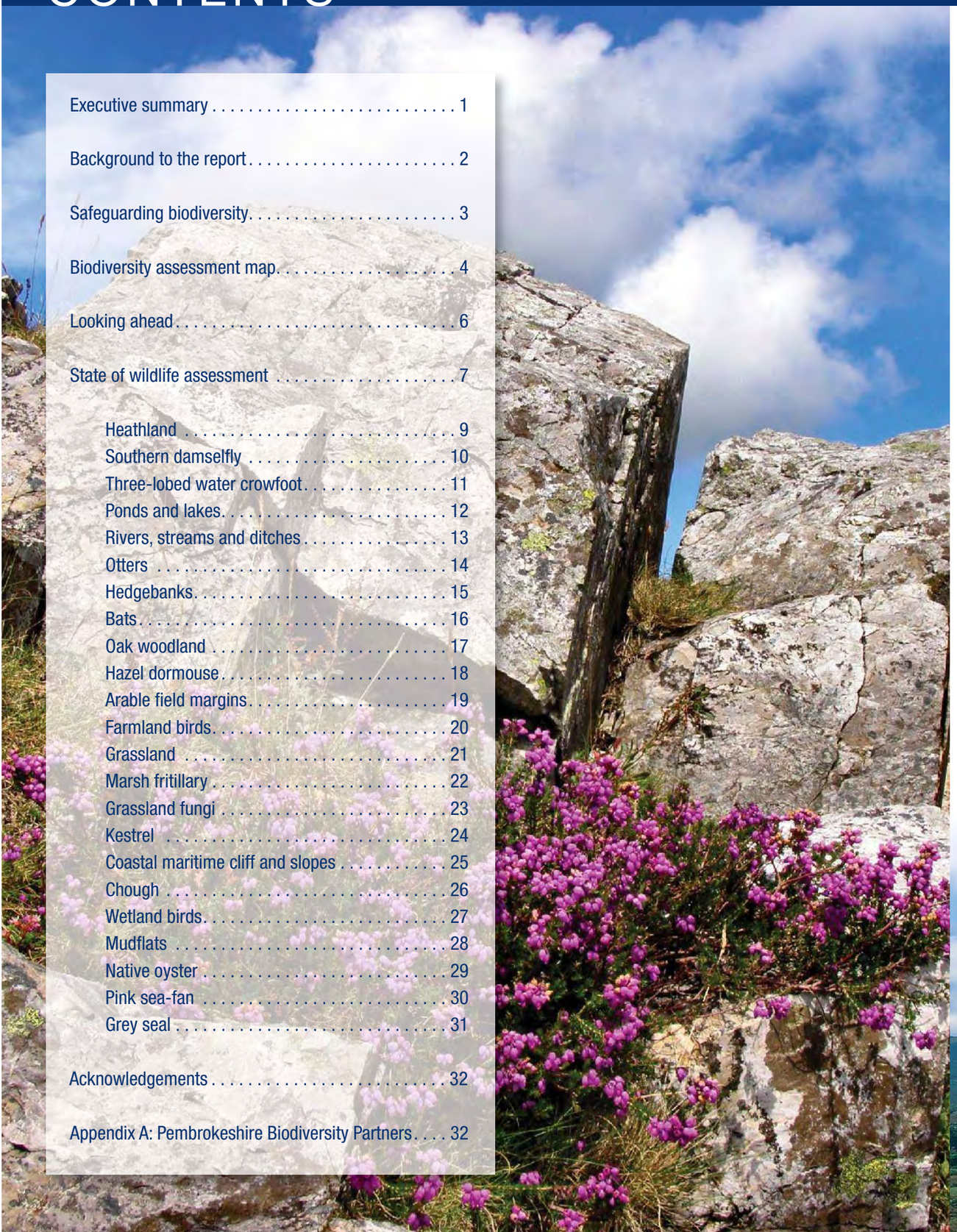


EXECUTIVE SUMMARY

Pembrokeshire is internationally and nationally renowned for its biodiversity. Many of the coastal, marine, heathland and woodland habitats support species for which the county is one of only a handful of sites in the UK, or Europe.

In this context the report has been jointly commissioned by the Pembrokeshire Environment Forum under the Pembrokeshire Community Planning Leadership Partnership and the Pembrokeshire Biodiversity Partnership. The aim of the report is to identify some of Pembrokeshire's foremost species and habitats and examine their distribution, status, management and importance within the overall biodiversity of the county. Flagship species and habitats have been chosen that provide an indication of the general health of Pembrokeshire's wildlife. The purpose of this snapshot is to provide a realistic view of the state of wildlife in Pembrokeshire. It is hoped that it will help inform the general public and decision makers alike, and will aid the integration of biodiversity issues into other plans and strategies within the County.

Over the last 10 years since the original Local Biodiversity Action Plan was published, greater emphasis has been placed not only on the intrinsic value but also the economic value of wildlife. It is understood that for Wales to develop sustainably we must value the environment, as it provides essential functions such as pollination of food plants, water purification, climate regulation and flood alleviation. This directly affects our quality of life, any further degradation of these functions or the environment could impact our wellbeing. As a result of this increased awareness it is hoped greater consideration and protection will be placed on biodiversity, and the natural environment will feature more strongly in decision making.

The findings of this report (having considered a total of 10 species, 4 groups of species and 9 habitats across the county) highlights the need for better baseline data. Of these species and habitats some conservation management improvements have been made and certain sites are recovering and species numbers are increasing. Other habitats are declining in quality and some species populations are decreasing. To be able to comprehensively assess the status of Pembrokeshire's species and habitats more research, surveys and ultimately funding is needed.

Key observations include:

- Otter numbers and sites with three-lobed water-crowfoot are increasing.
- The condition of heathland and coastal cliffs and slopes has improved on selected sites.
- Southern damselfly, skylark, yellowhammer and starlings are particularly under threat.
- The condition of grassland and hedgebanks are generally declining in the wider environment.
- The status of dormice and marsh fritillaries is unclear and further research is required.

INTRODUCTION

Background to the report

2010, International Year of Biodiversity, was the year the Welsh Assembly Government (WAG) along with other European Governments aimed to halt biodiversity loss. It also marks 10 years since the launch of Pembrokeshire's Local Biodiversity Action Plan (LBAP), which set out information on Pembrokeshire's biodiversity and detailed actions to safeguard wildlife.

This report is in response to these events, which considers the status of biodiversity, updates baseline information from the LBAP and reflects on actions undertaken in the last 10 years. This publication also looks forward at actions which may help stabilise and enhance wildlife in Pembrokeshire it therefore complements the revised LBAP, which will be launched in 2011.

The species and habitats have been chosen to give an overview of the diversity and trends within Pembrokeshire's unique and iconic environment. This report covers some but not all of the species and habitats included in the Pembrokeshire LBAP. There is a great deal of work being undertaken on the species and habitats, not covered here, which is crucial to conservation of biodiversity within Pembrokeshire.

This report has been produced by the Biodiversity Implementation Officer in consultation with members of the Pembrokeshire Biodiversity Partnership.

The Pembrokeshire Biodiversity Partnership was formed in 1998 to develop and implement the LBAP for Pembrokeshire. The partnership includes statutory agencies and local authorities, and non-statutory conservation, farming and land-owning organisations. A list of the partnership organisations and groups helping to deliver the LBAP is available in Appendix A.

Partner organisations and individuals have, over the last 10 years, been working on a range of projects to deliver biodiversity actions across Pembrokeshire. A few of the highlights of work undertaken between 2000 and 2010 include:

- The designation of several new sites for their wildlife value including Special Areas of Conservation (SAC), Special Protection Areas (SPA), Sites of Special Scientific Interest (SSSI) and Local Nature Reserves (LNR).
- Large scale habitat re-creation and restoration projects, for example Pembrokeshire Living Heathland restored 30 neglected and/or abandoned heathland sites and a total of 600 hectares of heathland are now grazed.
- Species protection projects have successfully maintained or increased populations of brown hairstreak butterflies, bastard balm and the numbers of pools supporting pilwort and three-lobed water crowfoot.
- Biological data sets have improved, most notably the Atlas of Breeding Birds in Pembrokeshire 2003-2007.
- Awareness of biodiversity issues in Pembrokeshire has increased through a coordinated effort by conservation partners organising public events and encouraging volunteers to record and report sightings.

Safeguarding biodiversity

The national and international importance of Pembrokeshire's biodiversity is reflected by the number of sites designated in the county for their wildlife value. A number of European protected sites, Special Protection Areas (SPA) and Special Areas of Conservation (SAC) have been established in Pembrokeshire which contribute to the European Natura 2000 network. The county supports several European Protected Species including bats, dormouse and marsh fritillaries. At a UK level there are eight National Nature Reserves (NNR), wholly or partly within the county, together with Wales' only Marine Nature Reserve (MNR), one of only three to be designated in the UK. Overall about 6% of the total land area is within Sites of Special Scientific Interest (SSSI). Approximately a third of the county is designated as National Park with the dual purpose to conserve and enhance the natural beauty, wildlife and cultural heritage of the National Park and to promote opportunities for the understanding and enjoyment of the special qualities of the National Park by the public.

The Natural Environment and Rural Communities (NERC) Act 2006 ensures public bodies, such as Local Authorities, Statutory Nature Conservation Organisations (SNCOs) and relevant Authorities consider the conservation of biodiversity whilst undertaking their duties.

Brown long-eared bats © Annie Haycock

The Welsh Assembly Government (WAG) places considerable emphasis on compliance with the NERC Act and other international and national legislation and this provides protection to many of the species and habitats in Pembrokeshire. There are also several local plans and strategies that help reduce negative impacts on biodiversity such as the Marine SAC management plan, and Pembrokeshire County Council (PCC) and Pembrokeshire Coast National Park Authority's (PCNPA) Local Development Plans (LDP).

Much conservation work is achieved through the collaboration between conservation agencies, land owners and managers. Management agreements protect and enhance biodiversity both on designated sites and in the wider environment. Projects include the Pembrokeshire Grazing Network (PGN), which has over the last 10 years become an essential part of successful conservation management throughout the county. Several schemes have worked with farmers to enhance biodiversity including Tir Gofal and projects with the Environment Agency and WAG such as catchment sensitive farming schemes and advisory services.

Pembrokeshire has a long history of biological recording and many organisations and agencies have collaborated on survey work, contributing to the knowledge and understanding of biodiversity in the county. Volunteers are involved with recording wildlife and specialist County Recorders collate and validate this information. Several groups have been established locally which encourage the observation and recording of wildlife including the Pembrokeshire Bird Group, Bat Groups, Invertebrate Group, Sea Trust of South and West Wales, Pembrokeshire Fungus Recording Network (PFRN), and the West Wales Butterfly and Moth Group.

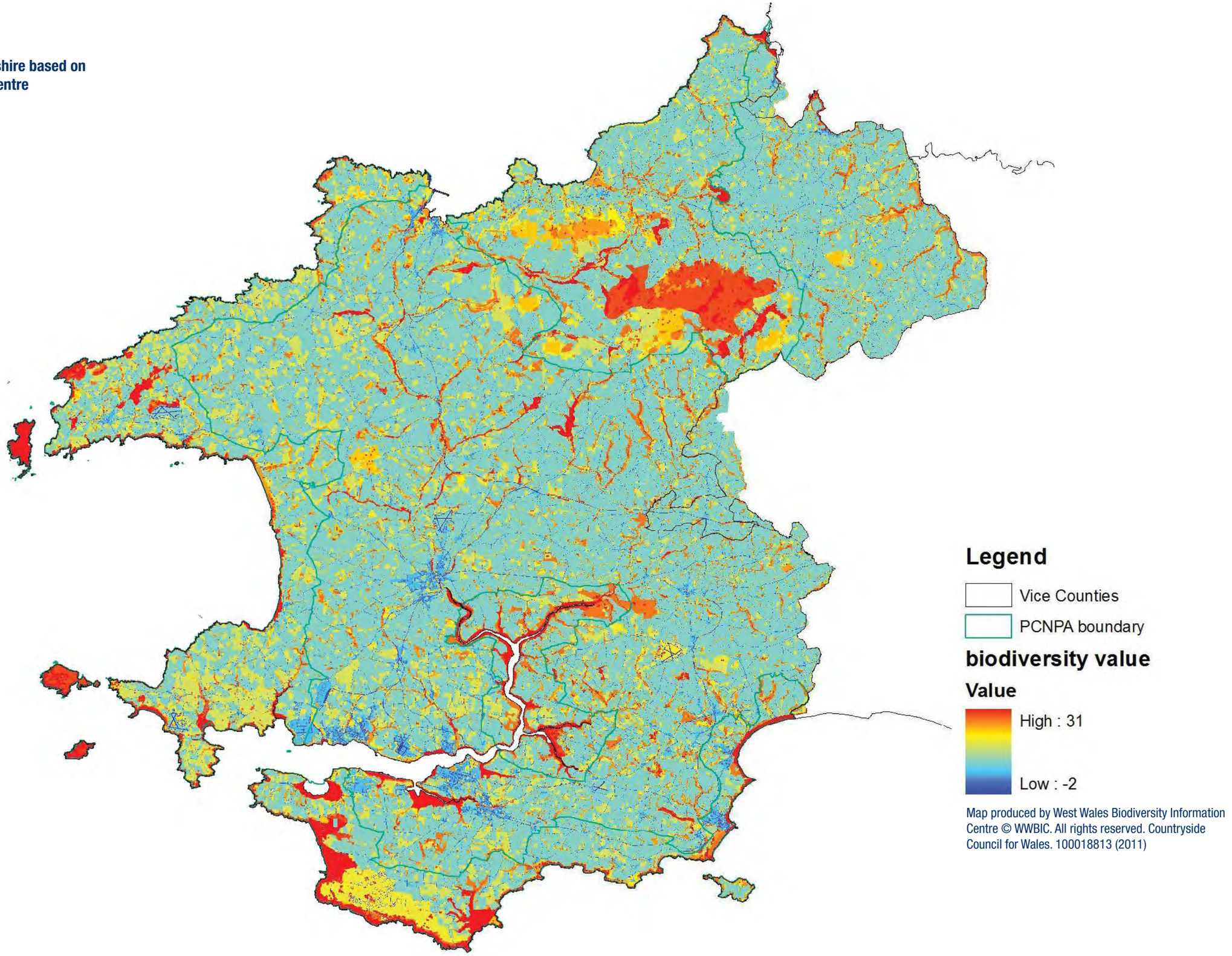
The West Wales Biodiversity Information Centre (WWBIC) collates information on wildlife across the counties of Carmarthenshire, Ceredigion and Pembrokeshire. It is then able to provide comprehensive records to decision makers, conservation organisations and the general public for use to preserve and enhance biodiversity across west Wales. WWBIC has been heavily relied on for this report and many of the status assessments and maps were based on the Centre's data.

In 2010 PCNPA commissioned WWBIC to produce a Biodiversity Assessment for the whole of Pembrokeshire (figure 1). The assessment was made by scoring terrestrial features with different biodiversity values. The final map is a result of the sum of values for four component layers: species, habitats, designated sites and connectivity. The areas shown in red have the highest biodiversity value. Caution should be exercised when studying the map as the information available is heavily dependent on recorder effort. Details of the full methodology can be accessed from WWBIC. This map will be used to help inform decisions in land use and provides a tool to investigate potential connectivity projects.

CCW has devised a similar mapping system, LANDMAP, but it does not interrogate biodiversity data in as much detail as the Biodiversity Assessment of Pembrokeshire. LANDMAP is a Wales wide information system which can also be used in decision-making; this considers several landscape features, including biodiversity.

BIODIVERSITY ASSESSMENT MAP

Figure 1
Biodiversity Assessment of Pembrokeshire based on West Wales Biodiversity Information Centre data holdings as of September 2010



Looking ahead

Biodiversity in Pembrokeshire is affected by many human influenced and natural factors, which are often interconnected and reinforce each other. Specific factors which could have an impact on the future status of particular habitats and species are highlighted in this report, but there are also a number of factors that are common to all wildlife in Pembrokeshire.

Climate change has the potential to significantly impact wildlife and the wider landscape of Pembrokeshire. The potential effects of this are relatively unknown but with the likelihood of more extreme climatic conditions and changes in seasonal patterns and sea level, populations already struggling to survive will be placed under more pressure. Changes in species are already evident: the Dartford warbler and little egret are now breeding in Pembrokeshire, benefiting from some of the warmest winters on record in the early part of the last decade. More recently the severe winters of 2009/2010 and 2010/2011 have significantly affected the wintering chough populations which have struggled to find sufficient food in the frozen ground.

Intensification of farming practice, driven by European and National Policy have and are continuing to have a detrimental impact on wildlife. Over the last 10 years agri-environment schemes have, in some areas, been a key factor in delivering biodiversity gain on farmland, helping to redress these trends. Glas Tir will be offering grants to farmers to manage their land, one of the most significant changes from Tir Gofal, the previous scheme, is the inclusion of additional funding for targeted elements. These elements will be designed to focus on actions including biodiversity, carbon storage and flood alleviation.

In the past, development, when not mitigated for, has resulted in the degradation and fragmentation of some habitats causing species to become isolated. It is hoped the recent changes in planning guidance and the adoption and development of new Local Development Plans will help protect wildlife from these negative impacts. There is potential for species and habitat requirements to be mitigated for and built into schemes and changes in land use, enhancing rather than degrading biodiversity.

Some native species are very adaptable to changes in the landscape and populations may increase as a result. This can be detrimental to other native species, which struggle to survive with the increase in competition from the more adaptable species. There is also competition from non-native, invasive species which are causing significant changes to native flora and fauna, for example Japanese knotweed, Himalayan balsam, and wireweed. With no natural predators these species can take over areas unless they are manually removed or treated with herbicide.

With stricter environment controls in place, pollution incidents are fortunately reduced compared to 30 years ago. There are however still major problems with man-made materials, particularly plastic, in the marine environment. Awareness of this problem is improving, manufacturers are reducing the amount of non-biodegradable packaging used, and WAG has introduced legislation to ensure retailers will soon have to charge for single-use carrier bags. Even with these new measures the prolific use of plastic over the last 40 years will be a legacy that stays with us for many more years.


Little egret © Annie Haycock

Pollution also affects water quality throughout the county, both in freshwater and marine environments and has the potential to impact wildlife and habitats. It is influenced by a number of factors which include increases in nutrients, pesticides and suspended sediment from soil erosion.

Faced with increasing challenges to the natural environment, a new sustainable approach is needed to address these issues. The traditional focus on small sites and species protection needs to be developed to look at protecting and enhancing areas of habitat connecting the wider landscape.

WAG are developing a Natural Environment Framework called A Living Wales. The framework aims to provide a more holistic approach to the environment with a stronger focus on sustainable land and marine management in Wales. As part of this framework they are reviewing how Assembly sponsored agencies that deal with environmental issues (Countryside Council for Wales, Environment Agency Wales, Forestry Commission for Wales) currently deliver their work, and have proposed the development of a single environmental body. The framework will potentially influence how conservation work is carried out across Wales and in Pembrokeshire and it is hoped that this approach will help to meet future biodiversity targets.

State of wildlife assessment

The report has been produced to raise awareness of Pembrokeshire's wildlife amongst all sectors of society and to inform decision makers and members of the general public. The report is available for all to download from www.pembrokeshire.gov.uk. The document should be read as a whole for clear interpretation of the information but each species and habitat page can be used individually for reference.

The status assessments are based on the best available information at this time and data has been gathered from a variety of sources including WWBIC, County Recorders, targeted surveys, designated site reports, the Water Framework Directive and the UK Biodiversity Action Plan (BAP).

One of the main limitations, highlighted by the report, is the lack of consistent data across the county. Resources are limited and funding is not freely available for targeted surveys. Volunteers are heavily relied upon but even with this huge effort scientific data is still insufficient. Where there is a lack of data for a species or habitats, the status and trend assessments have been provided by local experts, who have been working in the county for many years and have been witness to the changes. Some map data is also ambiguous as it is based on limited survey records that do not cover the entire county. Further research and surveys are needed to give a truer and clearer representation of species and habitat status.

It should also be noted that species and habitats are surveyed and recorded using different techniques for different scenarios. Some data may be from individual sightings, or it may be based on the presence of a species within an ordnance survey grid square. The records are reported in the same format for a species or habitat across the UK to allow for comparison. Details are given of the format of the records where figures have been reported.

HEATHLAND

Pembrokeshire supports 36% of the total lowland heathland in Wales of which two thirds is found within Sites of Special Scientific Interest (SSSI)[1]. Heathland forms a mosaic of habitats which supports a wide variety of rare species of plants, lichens, mosses and invertebrates. Bird species including linnets, skylark, stonechat and more recently the Dartford warbler are found on Pembrokeshire's heathland.

Distribution in Pembrokeshire

Pembrokeshire supports some large areas of heathland particularly along the coast around Strumble, St. Davids Peninsula, Marloes Deer Park and Castlemartin. Heathland is also found further inland on and around the Preseli Hills and other smaller areas of Common Land.

Status

Some lowland heathland is being lost to scrub encroachment in Pembrokeshire as a result of neglect[2]. There are however sites coming into management through active heathland projects. With these changes the status of the quantity and quality of Pembrokeshire heathland is unknown.

Threats affecting status

- Neglect has resulted in many sites not being burnt or grazed and some that are being grazed, are suffering as a result of too much or too little.
- Nutrient enrichment, particularly runoff from adjacent fields.
- Illegal dumping of waste is associated specifically with areas of Common Land.
- Coastal heathland is also affected by extreme climatic conditions influencing erosion rates and vegetation growth.

[1] Jones, P.S., Stevens, D.P., Blackstock, T.H., Burrows, C.R., & Howe, E.A. (2003). Priority habitats of Wales: a technical guide. Countryside Council for Wales

[2] Biodiversity Action Reporting System. (2008). Status and trends of species and habitats.

Conservation Management

Since 2000 various projects have enhanced Pembrokeshire's heathland such as the re-introduction of burning and grazing and the re-creation of heathland in areas including St. Davids airfield and Marloes Coast. Other sites, such as Penlan, that were planted with coniferous trees in the 1960's have now been harvested and the restoration of the heathland is underway. Projects like Cig Tir Comin – Pembrokeshire Heathland Beef managed by the National Trust, promotes and provides economic benefits to conservation grazing.

Getting Involved

- Volunteer with the National Trust to help manage some of their heathland sites. www.nationaltrust.org.uk
- Further information: Heathland Project, Natur Cymru, issue 6, spring 2003 and issue 38, spring 2011 www.naturcymru.org.uk

Lowland heathland © National Trust / Andrew Tuddenham

SOUTHERN DAMSELFLY

Southern damselflies were once widespread across northern Pembrokeshire but today the main population is found around Mynydd Preseli. Many thousands of individuals still fly here in summer and this is one of its UK strongholds[1]. They rely on slow flowing streams and flushes, found on heathland, which are well vegetated in sections but also have small peaty open pools for breeding. Grazing by heavy stock at the right time of year helps to maintain this specialised habitat.

Distribution in Pembrokeshire

There are numerous colonies to the north of the Preseli Hills, on the Commons west of the B4329 to the eastern end of the range and in the south around Mynachlog-ddu. Although Mynydd Preseli supports the largest population of southern damselflies, a smaller but still healthy population can be seen at Waun Fawr – Puncheston and tiny colonies persist at Carningli and Hayscastle Cross.

Status

It is thought that the status of the core population of southern damselfly on Pembrokeshire's Common Land is in long term decline, a result of about a 50% reduction in the niche habitat the species needs[2]. Remaining areas of suitable habitat on Common Land are also often below optimum condition. However smaller colonies, located on the private land around the edges of the core population, are more stable due to targeted management undertaken in agreement with the land owners.

Threats affecting status

- Inappropriate grazing stock and quantity on the Common Land supporting southern damselflies.
- Fragmentation and destruction of wetland habitat.
- Destruction of the fine network of runnels and flushes that occur on stream entrainment and land drainage.
- Increased water extraction from streams as more springs are being used as a local supply for farms.
- Nutrient enrichment from agricultural runoff.

Conservation Management

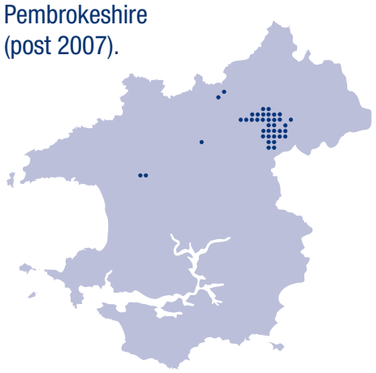
Many former and potentially suitable sites in private ownership are being managed to create specialised habitats for southern damselflies. Most breeding sites are also designated as Sites of Special Scientific Interest (SSSI).

Getting Involved

- Report sightings of southern damselflies to Stephen Coker, stephenandanne.coker@virgin.net
- Further information: British Dragonfly Society, www.dragonflysoc.org.uk/comer.htm
- Further information: Conservation of the southern damselfly in Britain, Environment Agency, www.dragonflysoc.org.uk

[1] Arkive (2001). Southern damselfly species fact sheet
[2] Stephen Coker (2011). pers. comm.

Distribution of southern damselfly / *Coenagrion mercuriale* in Pembrokeshire (post 2007).



Map produced by PCC derived from data provided by Stephen Coker, County Recorder Odonata. © All rights reserved. PCC 100023344 (2011).

Southern damselfly © Stephen & Anne Coker

Brynberian

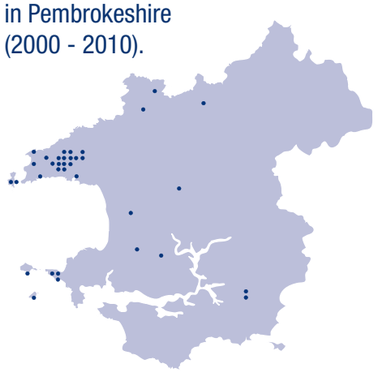
THREE-LOBED WATER CROWFOOT

The conservation of three-lobed water crowfoot is a major international responsibility for Wales. Over half the areas in Wales which support three-lobed water crowfoot are found in Pembrokeshire, this represents 26% of the total UK sites[1]. The species is associated with seasonal pools, trackways and pinch points, where livestock movement is concentrated, particularly on grazed heathland. This species has a remarkable ability to re-appear from seeds buried in the mud of overgrown pools.

Distribution in Pembrokeshire

Three-lobed water crowfoot populations are concentrated around St. Davids and Marloes Peninsulas. There are also some more isolated populations found on Ramsey, Skomer and Skokholm islands and inland on some Common Land sites.

Distribution of three-lobed water crowfoot / *Ranunculus tripartitus* in Pembrokeshire (2000 - 2010).



Map produced by PCC derived from data provided by Stephen Evans, BSBI Recorder for Pembrokeshire. © All rights reserved. PCC 100023344 (2011).

Status

The status of three-lobed water crowfoot is improving, it has benefited from targeted management and over the last 10 years the populations have been found at 13 new sites (36% of the total sites in Pembrokeshire)[2]. Projects such as Plantlife's 'back from the brink' and Pond Conservation Trusts Million Ponds Project have all helped contribute to this achievement. Restoration work has been successful at a number of sites most notably Dowrog, Tretio and the St. David's Airfield.

Threats affecting status

- Reduction or loss of livestock grazing.
- Loss and fragmentation of heathland sites.
- Deepening or infilling of seasonal pools.
- Draining or in filling of tracks or pinch-points with hardcore.

Conservation Management

Positive heathland management and the re-introduction of processes such as fire break cutting, pond creation and especially the re-introduction of cattle and pony grazing has helped populations spread. Creating pinch points for cattle in suitable habitat has also helped in re-establishing populations.

Getting Involved

- Volunteer to survey existing populations with Stephen Evans, Botanical Society of the British Isles (BSBI) Recorder for Pembrokeshire, glanymor.dinas@onetel.net
- Further information: Briefing sheet, Plantlife, www.plantlife.org.uk/

[1] Plantlife (2010) Three-lobed water crowfoot briefing sheet.
[2] Stephen Evans (2010) pers. comm.

Three-lobed water crowfoot © Liam Rooney

Three-lobed water crowfoot © Jon Hudson

PONDS AND LAKES

Open freshwater habitats support a huge amount of wildlife and can range from small ponds to large lakes. Pembrokeshire is recognised as an 'important area for ponds'[1] as there are many clean water, seasonal ponds that dry out for a few months during the year. Several rare species are associated with this type of habitat including scarce blue-tailed and small red damselfly, pilwort, floating water plantain and three-lobed water crowfoot. Permanent water bodies provide very important food sources for birds and otters.

Distribution in Pembrokeshire

Throughout Pembrokeshire there are hundreds of small water bodies which are essential for some of the specialist species mentioned above. There are also several man-made lakes in Pembrokeshire such as Westfield Pill and Bosherston Lily Ponds, which are both very important for their wildlife value. In addition to these other man-made lakes including Llys-y-fran, Rosebush and Pembroke Millpond support a variety of species.

Status

The number of new clean water ponds has increased over the last 10 years as a result of specifically targeted pond creation projects. However many other ponds are of low wildlife interest due to poor water quality or over stocking with fish. With these considerations the status of the quantity and quality of Pembrokeshire ponds and lakes is unclear.

Threats affecting status

- Neglect causes many ponds to in-fill particularly, where cattle are not grazing.
- Increased amount of soil in rivers and streams brings more nutrients and sediment into ponds and lakes.
- Risk of competition from invasive species such as Australian swamp stonecrop, water fern and parrots feather.

Conservation Management

During the last 10 years several new ponds have been created to support some of the rare species found in Pembrokeshire. Along with this positive management the Water Framework Directive has established a new, integrated approach to the protection, improvement and sustainable use of surface waters.

Getting Involved

- Report any pollution incidents to the Environment Agency 0800 807060.
- Create a wildlife pond using advice from the Pond Creation Toolkit www.pondconservation.org.uk
- Avoid disturbing areas of invasive weeds; seek advice on how to control them near a watercourse.
- Further information: Be plant wise and help prevent the spread of invasive aquatic plants, Directgov, www.direct.gov.uk/beplantwise.

[1] Nicolet, P., Weatherby, A., Biggs, J., Williams, P., & Hatton-Ellis, T. (2007) *A preliminary assessment of Important Areas for Ponds (IAPs) in Wales.* Pond Conservation.

Scarce blue tailed damselfly

Dowrog Common © Nathan Walton

RIVERS, STREAMS AND DITCHES

Pembrokeshire's watercourses are particularly important spawning grounds for fish including lamprey, bullhead, salmon and brown trout. Common aquatic vegetation such as fresh water crowfoot creates a very important habitat which is used as a nursery area for fish. Rivers, streams and ditches also support otters and historically supported rare invertebrates such as freshwater pearl mussel, freshwater white-clawed crayfish and iron blue mayfly.

Distribution in Pembrokeshire

There are hundreds of small streams all over Pembrokeshire forming the larger network of rivers and streams. These include the Eastern and Western Cleddau, Nevern, Gwaun, Solva, Alun and Ritec. Parts of the rivers Teifi and Taf also lie within the county boundary.

Status

The general water quality assessment in Wales has shown significant improvements between 1990 and 2010[1]. From 2008 new, tougher methodology has been used to assess water quality, as a result of the Water Framework Directive (WFD). The change in methodology makes the status of water quality in Pembrokeshire unclear as rivers are now classed as failing, where as pre 2008 the rivers were classed as good or excellent[1]. Significant issues still need to be addressed to improve the status of water quality. Key species within the river system are also monitored, which helps give an indication of the health of the river. The Environment Agency (EA) has been monitoring juvenile salmon and trout in the Cleddau and Nevern rivers since 1984, the densities of which have fluctuated over the last ten years[2].

Threats affecting status

- Disturbance of soil in, or close to water bodies increases the amount of sediment in the water.
- Nutrient enrichment from agricultural intensification is causing algal blooms.
- Competition from invasive species such as Japanese knotweed, Australian swamp stonecrop and Himalayan balsam.
- Abstraction and lowering of groundwater levels.

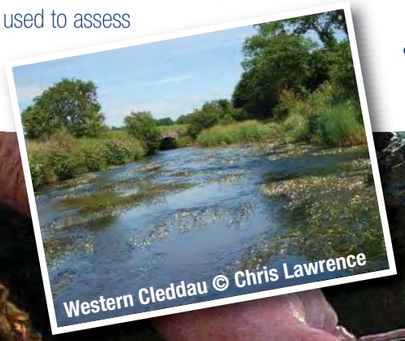
Conservation Management

Grant schemes in Pembrokeshire have provided assistance and advice which has lead to the enhancement and protection of rivers around the county. Improvements have also been made to fish spawning areas for salmon on the Western Cleddau.

Getting Involved

- Report any pollution incidents to the EA 0800 807060.
- Volunteer with the Pembrokeshire Rivers Trust (PRT) on various projects, www.pembsrt.org/.
- Seek advice from the Countryside Council for Wales (CCW) or PRT before undertaking works in, or alongside a river.
- Avoid disturbing areas of invasive weeds; seek advice on how to control them near a watercourse.
- Further information: Rivers and ponds explorer guide, CCW, www.ccw.gov.uk

[1] Environment Agency Wales (2008). Biological quality - an indicator of overall health of rivers
[2] Environment Agency Wales (2010). *South West Wales Juvenile Salmonid Monitoring Programme, Annual Report.*



Western Cleddau © Chris Lawrence

Brown Trout © Environment Agency

OTTERS

Otters use most of the rivers and streams in Pembrokeshire. They are also known to use the marine environment extensively, searching for prey not only where streams run into the sea, but also on more remote stretches of coast and even the offshore islands.

Distribution in Pembrokeshire

All freshwater and marine habitats in Pembrokeshire could support otters. Otters are elusive but can be seen at various locations including Stackpole, Pembroke Millpond and Westfield Pill. Signs of otters using an area are relative easy to find, as they mark their territory with spraints (faeces).

Status

The status of otters has improved across key monitoring sites on the Cleddau river from 54% in 1984; 78% in 1991 to 97% in 2002[1]. Across the UK otter numbers declined between the 1950's and 1970's, thought to have been caused by chemical pollution (pesticides) in rivers. The fact that otters have returned to rivers and their numbers are increasing indicates an improvement in water quality and suitable natural vegetation cover along watercourses. Coastal studies conducted through the Pembrokeshire Marine Special Area of Conservation (SAC) relevant authority group in 2002, 2007, and 2008 provided evidence that otters are extensively using the marine environment[2].

[1] Jones, T., Jones, D. (2004). *Otter Survey of Wales, Environment Agency Wales.*
[2] Pembrokeshire Marine SAC (2010). *Coastal Otter Survey Reports.*

Site specific monitoring is also undertaken at the Welsh Wildlife Centre, Stackpole, Pembroke Millpond and sites within the Afonydd Cleddau SAC.

Threats affecting status

- Development along the river fragmenting otter's territories.
- Disturbance of breeding sites by people and dogs or through loss of habitat.
- Water pollution.

Conservation Management

Management has been carried out across the county and include projects such as habitat enhancement, surveying and road scheme improvements to incorporate underpasses and bolt on ledges to bridges to reduce otter road fatalities.

Getting Involved

- Report sightings to the Pembrokeshire County Mammal Recorder, Annie Haycock, annie@rushmoorphotos.co.uk
- Discuss land management works alongside rivers (including scrub clearance) with the Environment Agency and Countryside Council for Wales.
- Volunteer with Pembroke Millpond Action Group to help monitor species, www.pembroke21c.org/.
- Further Information: Predatory Mammals in Wales, CCW, www.ccw.gov.uk
- Further information: Coastal Otter Survey Reports, Pembrokeshire Marine SAC, www.pembrokeshiremarinesac.org.uk


Otter © Annie Haycock

HEDGEBANKS

Field boundaries are important for wildlife throughout the UK. Traditional Pembrokeshire field boundaries are earth banks either with or without hedges. These hedgebanks are of significant archaeological and cultural importance and are legally protected, although this legislation is limited. Depending on their location and management, hedgebanks can support a wider variety of habitats and species than a hedgerow without a bank.

Distribution in Pembrokeshire

Traditional field boundaries are found throughout the county, their wildlife value and health will however depend on how they are managed.

Status

It is thought that the overall quality of hedgebanks is in decline, as the species diversity is reducing. However in some areas where hedgebanks are managed sympathetically they form vital links (wildlife corridors) for lots of species such as bats, dormice and brown hairstreak butterflies.

Threats affecting status

- Removal of hedgebanks due to development and land use changes.
- Intensive management resulting in hedges and banks being cut too often.
- Nutrient enrichment from cut vegetation which has been left on the banks to rot, this favours dominant grasses over delicate flowers.
- Chemical or nutrients sprayed on fields can drift onto hedgebanks.
- Invasion by non-native species e.g. Japanese knotweed, winter heliotrope, Himalayan balsam.

Conservation Management

Agri-enviornment schemes such as Glas Tir (previously Tir Gofal) work alongside landowners to help them manage their boundaries sympathetically for the benefit of wildlife. Training courses are available to teach the traditional skills of building and managing hedgebanks. Several development schemes in Pembrokeshire have also successfully translocated and designed hedgebanks to complement and preserve the surrounding landscape.

Getting Involved

- Support hedgebank conservation by taking part in training days to learn about managing field boundaries traditionally.
- Volunteer with Butterfly Conservation to survey blackthorn hedges for brown hairstreak eggs, Richard Smith rgsoverton@boltblue.com or Russel Hobson rhobson.bcw@btconnect.com
- Volunteer with the Wildlife Trust of South and West Wales (WTSWW) to manage blackthorn hedges for brown hairstreak. n.walton@welshwildlife.org
- Further information: Hedgebank management advice, Countryside Council for Wales, RSPB, People's Trust for Endangered Species, Farming and Wildlife Advisory Group.


Coastal hedgebank © Annie Haycock

BATS

Pembrokeshire is home to at least 15 of Britain's 17 resident species of bat. The county's specialities include greater and lesser horseshoe bats, two of Europe's rarest species and Barbastelle bats, another rarity with a stronghold in Pembrokeshire.

Distribution in Pembrokeshire

Bats are found all over Pembrokeshire. Although their roosts are protected, individuals also need large areas of suitable habitat, connected by hedgerows and other linear corridors, in order to feed and move between roosts. Some bat species can travel up to 16km from their roosts to feed, so their use of the wider countryside needs to be considered when planning landscape changes.

Status

The status of bats depends greatly on the species. Species of pipistrelle bats are increasing as they tend to adapt more easily to habitat changes compared with other species; greater horseshoe bats are also thought to be increasing. Barbastelle and lesser horseshoe bats status is unknown, further monitoring work is required to give an accurate assessment of their status. Brown long eared bats are thought to be declining, which may be as a result of the loss of roost sites.

Threats affecting status

- Development in and around bat roosts which may damage or destroy a roost through the blocking up of access points, re-roofing with inappropriate materials or the entire loss of the roost due to demolition.
- Artificial lighting close to roost entrances or along flight lines can deter some species of bats.
- Changes in the landscape can disturb flight lines and may result in the loss of feeding habitat.
- Reduction in numbers of insect prey due to pesticide use.

Conservation Management

Survey and monitoring work is undertaken in Pembrokeshire coordinated through the Countryside Council for Wales (CCW) and the Pembrokeshire Bat Group. CCW also monitor bat Special Area of Conservation (SAC) sites and currently have auto counters present at two sites.

Getting Involved

- Participate in a bat walk to find out more about these fascinating creatures.
- Support bat conservation by installing bat boxes, advice available from the Bat Conservation Trust (BCT) www.bats.org.uk/.
- Volunteer with Pembrokeshire Bat Group www.pembs bats.org.uk/ and BCT www.bats.org.uk/ to undertake surveys.
- Further information: Bats' and Bats in Roofs booklet, CCW, www.ccw.gov.uk

Greater horseshoe bats © Annie Haycock

OAK WOODLAND

Oak woodland is the most abundant type of woodland in Pembrokeshire, covering 3,000 hectares[1]. Oak dominated woodland is largely a result of past management practices and the requirement for oak to produce charcoal and tanbark. Pembrokeshire's oak woodlands support a variety of mosses, ferns and liverworts and many sites are nationally important for lichens. Bird species associated with oak woodland include spotted and pied flycatchers, woodwarblers and song thrush. Depending on the soil type within the wood, flowers such as bluebells, violets, wood sorrel and wood anemone may be found, whilst more acidic soils support shrubs such as heather and bilberry.

Distribution in Pembrokeshire

Oak woodland is found throughout the majority of the county, and is most common on marginal land i.e. steep slopes. Notable woodland sites are found in the more inaccessible boulder-strewn slopes of the Gwaun and Nevern Valleys and in the upper Daugleddau Estuary.

Status

It is thought that oak woodland is probably increasing in quantity across Wales[2]. The status in Pembrokeshire is unclear, as the quality of oak woodland varies between sites; it is thought that in general, sites are decreasing in wildlife value due to changes in management. There are however a few well managed sites which are maintaining their quality (e.g. Pengelli Forest and Ty-canol Wood).

[1] Jones, P.S., Stevens, D.P., Blackstock, T.H., Burrows, C.R., & Howe, E.A. (2003). *Priority habitats of Wales: a technical guide.* Countryside Council for Wales.
[2] Biodiversity Action Reporting System.(2008). *Status and trends of species and habitats.*

Threats affecting status

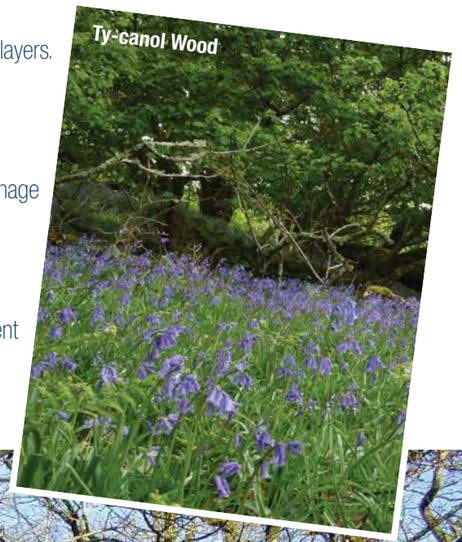
- Low diversity of age class and structure within the woodland.
- Lack of woodland edges and canopy gaps.
- Inappropriate or lack of woodland management.
- Overgrazing results in poor understorey and ground flora, encouraging invasion by dominant grasses. A complete absence of grazing results in the loss of lichen species, as shading increases.
- Insufficient deadwood habitats, particularly standing deadwood.
- Invasive species such as laurel, Japanese knotweed and rhododendron damage shrub layers.

Conservation Management

Grants and advice have helped encourage woodland owners to manage oak woodland sustainably and sympathetically for wildlife and recreation. Positive habitat management is carried out on ancient woodland sites and conservation partners are working to restoration ancient woodland sites around Pembrokeshire.

Getting Involved

- Volunteer as a tree warden with Pembrokeshire Coast National Park Authority.
- Visit the Woodland Trust website to support woodland conservation, Woodland Trust, www.british-trees.com/takepart
- Further information: General woodland management, Forestry Commission, www.forestry.gov.uk
- Further information: Woodlands explorer guide, CCW, www.ccw.gov.uk.



Ty-canol Wood

Pengelli Forest © Nathan Walton

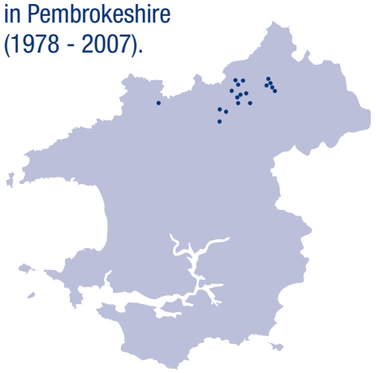
HAZEL DORMOUSE

The dormouse is largely restricted to the south of England and Wales. The dormouse is nocturnal and travels above ground, as such they depend on habitats where the shrub layer, especially hazel is allowed to form a continuous canopy. Bramble rich woodland and scrub edge provides excellent habitat for breeding.

Distribution in Pembrokeshire

There are at least three significant populations of dormice in Pembrokeshire. The largest population is found around Newport to Tycanol, and it is possible there are links to the separate Gwaun valley area. A further population is found in Pengelli Forest. There are limited records of dormice outside these areas, however recent anecdotal sightings suggest dormice may be elsewhere in the county.

Distribution of hazel dormice/*Muscardinus avellanarius* in Pembrokeshire (1978 - 2007).



Map produced by PCC derived from data provided by the County Mammal Recorder. © All rights reserved. PCC 100023344 (2011).

Status

The status of the dormouse in Pembrokeshire is unclear although surveys have been carried out at key sites, it is very difficult to get accurate information on population health or size. The population at Pengelli Forest is monitored annually as part of the National Dormouse Nestbox Monitoring Programme. Results from this survey may however be misleading as a large amount of habitat improvement work has been undertaken at this site; therefore a reduction in individuals using boxes doesn't necessarily correspond to a reduction in the population size.

Threats affecting status

- Loss of links between populations as a result of hedgerow degradation and development.
- Changes in woodland habitat structure, due to neglect e.g. lack of coppicing or no stock in the woodland or intensive management e.g. annual flailing of hazel–rich hedges.
- Poor breeding success as a result of small isolated populations

Conservation Management

Across Pembrokeshire conservation partners raise awareness of the requirements of the dormouse with woodland owners and undertake additional surveys to determine a more accurate picture of dormouse distribution. More specific management work in Pengelli Forest has focused on reinstating coppicing to create the optimum habitat for the dormouse.

Getting Involved

- Volunteer with the People's Trust for Endangered Species (PTES) to take part in a dormouse nut survey www.ptes.org/
- Report sightings to the Pembrokeshire county mammal recorder, Annie Haycock, annie@rushmoorphotos.co.uk
- Further information: Dormouse ecology, surveys and management of habitats, PTES www.ptes.org/

Dormouse © Nathan Walton

ARABLE FIELD MARGINS

Pembrokeshire has 24% of the Welsh resource of arable land [1]. Arable field margins when uncropped or unsprayed support a vast range of wildlife including rare species such as annual knawel, small flowered catchfly, skylark, tree sparrow, yellowhammer, harvest mouse, rare mosses and ground beetles. Arable field margins and hedges can form important wildlife corridors, linking one habitat with another.

Distribution in Pembrokeshire

Several farms around the county encourage wildlife, specifically in the arable field margins. Key areas include the Marloes Peninsula, Mathry and St. Davids Peninsula.

Status

Although there has been a decline in the quantity of field margins over the last 50 years, it is thought to have increased over the last decade, therefore there has been some improvement in the status. This corresponds to the trend across Wales. It is thought that it is mainly due to targeted agri-environment schemes encouraging farmers to leave field margins unmanaged [2].

Threats affecting status

- Changes in grant payments may lead to the cultivation of existing margins or may not support the creation of new margins.
- Application of nutrients, pesticides and herbicides, which may spread onto field margin.

Conservation Management

Grant aid has increased the amount of field margins being managed for wildlife, particularly through schemes like Tir Gofal (now Glas Tir). Conservation headlands have also been created on some farms in Pembrokeshire through management agreements with Countryside Council for Wales (CCW). There are some best practice farms where training events and guided walks take place run by the Farming and Wildlife Advisory Group (FWAG), the Soil Association and private farmers (e.g. Trefrane National Trust Farm, Southwood Estate; Knapps Farm, Martletwy; Great Nash, Llangwm).

Getting Involved

- Leave field margins to regenerate naturally where possible, advice available from FWAG www.fwag.co.uk
- Further information: Managing field margins, Buglife, www.buglife.org.uk and the RSPB, www.rspb.org.uk

[1] Jones, P.S., Stevens, D.P., Blackstock, T.H., Burrows, C.R., & Howe, E.A. (2003) *Priority habitats of Wales: a technical guide.* Countryside Council for Wales.
[2] Biodiversity Action Reporting System. (2008). *Status and trends of species and habitats.*

Arable field margin © Jon Hudson

Arable field margin © Maureen Gardiner-Plantlife

FARMLAND BIRDS

There are several species of birds associated with farmland in Pembrokeshire, including the 10 key species listed in figure 2. In addition to these species swallows are possibly the most iconic lowland farmland bird, they rely heavily on high numbers of insects and farm outbuildings for nesting. Farmland birds are monitored through various schemes across the UK and are used as an indicator of the wildlife health of the wider environment.

Distribution in Pembrokeshire

The species of farmland birds identified in figure 2 are found across the whole county, however some of the species are becoming more dependant on designated sites for their survival. Survey evidence shows the distribution of breeding farmland birds has declined particularly in areas dominated by intensive dairy farming[1].

Status

Since the mid 1970's there have been alarming declines in the farmland birds across the UK, the status in Pembrokeshire varies according to the species being considered. House sparrow and linnet are reported to have declined across the UK but surveys undertaken over the last 20 years, indicate that they are stable in Pembrokeshire (figure 2). The survey results also show that dunnock appear to be stable and reed buntings have increased. Other species such as whinchat, starling, yellowhammer, tree sparrow and skylark have declined dramatically over the last 20 years[1].

Threats affecting status

- Changes in agricultural practice such as the reduction of winter food sources, the move from mixed farming to intensive dairy farming and the production of silage.
- Loss of nesting habitat through unfavourable hedgerow management including removal of mature hedgerow trees and the conversion of farm buildings.
- Unusual weather conditions affect food availability and breeding success which will impact fragile populations of birds.

Conservation Management

Agri-environmental schemes support farmers with financial incentives to plant winter stubble crops, manage hedgerows for wildlife and leave margins of fields unsprayed. Volunteers have been co-ordinating and undertaking bird surveys in Pembrokeshire for several years, collecting data for local and national surveys. Currently data is being gathered for the latest British Trust for Ornithology (BTO) Atlas of wintering and breeding birds in the UK.

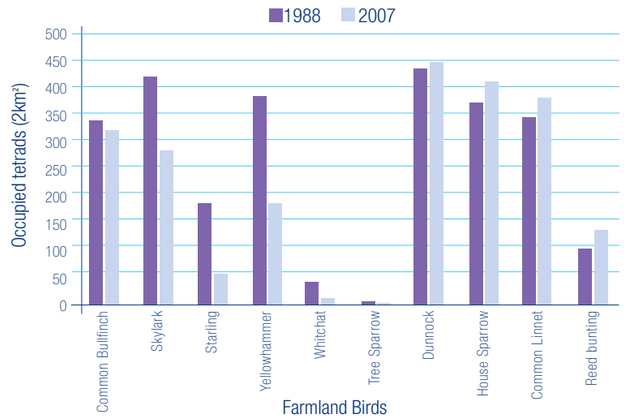
Getting Involved

- Volunteer in a local or BTO survey, Annie Haycock annie@rushmoorphotos.co.uk
- Further information: Atlas of Breeding Birds in Pembrokeshire, 2003 – 2007 and 1984 – 1988. Pembrokeshire Bird Group
- Further information: Birds of Pembrokeshire, 1994. Donovan & Rees
- Further information: Managing farmland habitats for wildlife, RSPB. www.rspb.org.uk

[1] Pembrokeshire Bird Group, (2007) *Atlas of Breeding Birds in Pembrokeshire.*

Figure 2.

Farmland Birds Occupied Tetrads 1988 and 2007[1]




Yellowhammer

GRASSLAND

Pembrokeshire supports 6% of Wales' species rich, lowland grassland, equivalent to 7400 hectares[1], of which the predominant habitat type is purple moor grass and rush pastures (figure 3). A large proportion of species rich grassland is found within Sites of Special Scientific Interest (SSSI) but roadside verges are also an important refuge for grassland species which may have been lost from the surrounding countryside.

Distribution in Pembrokeshire

There are some extensive areas of lowland grassland supporting a rich variety of species and micro-habitats including Castlemartin Range, areas around Brynberian, Yerbeston, Commons near St. David's and the Preseli Hills.

Status

The overall assessment of these grassland habitats in Wales is that they are declining in quality and quantity [2], it is believed that the status is also declining in Pembrokeshire. The condition of individual sites will vary depending on the level of protection and management undertaken.

Threats affecting status

- Changes in the level of grazing or complete abandonment.
- Agricultural intensification (e.g. re-seeding and draining).
- Damage to the grassland as a consequence of nutrient enrichment from livestock excrement or runoff from adjacent land.

Conservation Management

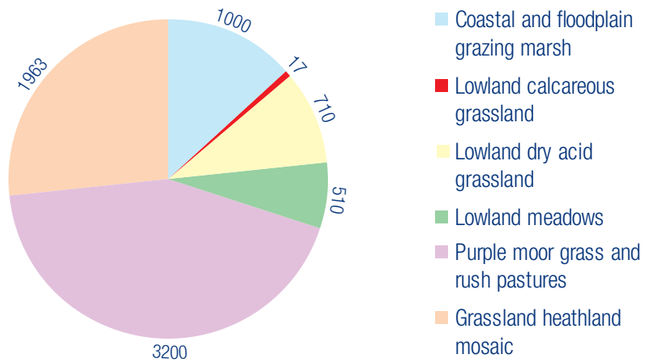
Many of these sites are managed for wildlife by landowners in agreement with either Countryside Council for Wales (CCW), Pembrokeshire Coast National Park Authority (PCNPA) or the Welsh Assembly Government (WAG) through Glas Tir. Pembrokeshire Grazing Network (PGN) provide stock at the right time and level for some grassland sites.

Getting Involved

- Manage grassland you own, or a communal space in your area with advice from PGN and PCNPA 0845 3457275.
- Further Information: Saving our magnificent meadows project, Flora Locale's www.floralocale.org/

[1] Jones, P.S., Stevens, D.P., Blackstock, T.H., Burrows, C.R., & Howe, E.A. (2003) *Priority habitats of Wales: a technical guide.* Countryside Council for Wales,
[2] Biodiversity Action Reporting System. (2008). *Status and trends of species and habitats.*

Figure 3.
Proportion of grassland habitat of wildlife value in Pembrokeshire (hectares)[1].




Grassland © Flora Locale

MARSH FRITILLARY

The marsh fritillary was once widespread across Pembrokeshire but has declined severely over the last century, a decline mirrored throughout Britain and Europe. Marsh fritillaries are specialist butterflies that form metapopulations which need a network of several sites close to one another to ensure their long term survival. Historically marsh fritillary habitats were larger and more connected allowing populations to mingle and spread.

Distribution in Pembrokeshire

The marsh fritillary strong hold is Castlemartin, with smaller populations found around Yerbeston Moors and Ambleston / Puncheston. Marsh fritillaries are still found in low numbers on the St. Davids Peninsula, in particular Dowrog Common and also at Mynachclog-ddu.

Status

It is thought that there are still five metapopulations in Pembrokeshire. The general status is considered to be declining[1], but there is insufficient data to confirm this. It is difficult to estimate population size as it changes each year depending on weather, predation, parasitism, and number of volunteers surveying. Surveys that took place between 2005 and 2009 show only four 10km squares compared with thirteen 10km squares between 2000 and 2005[2]. This is hoped to be linked to a lack of data, rather than a loss of the population from these grid squares.

Threats affecting status

- Abandonment of traditional rough grazing by cattle and horses reducing suitable breeding habitat.
- Agricultural improvement which reduces habitat available and leads to fragmentation of populations leaving small/isolated colonies.
- Weather, food supply and parasitism by certain wasp species cause population fluctuations and threaten local extinctions.
- Isolation of populations may lead to genetic declines and fertility problems.

Getting Involved

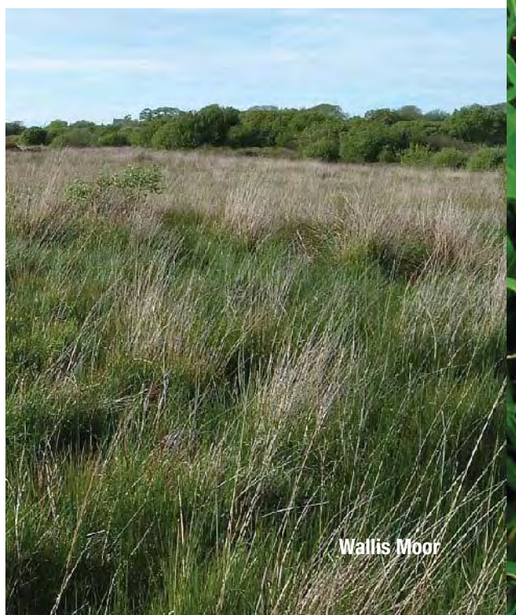
- Volunteer with Countryside Council for Wales to undertake butterfly and larval web surveys, – Jon Hudson, j.hudson@ccw.gov.uk, 01646 624000.
- Further Information: Priority Species Factsheet, Butterfly Conservation, www.butterfly-conservation.org/

Marsh Fritillary © Alan Barnes

Conservation Management

Management agreements are in place to create optimum habitat opportunities for marsh fritillaries on some designated sites. Butterfly Conservation have also developed a new monitoring programme for marsh fritillaries across Wales.

[1]Biodiversity Action Reporting System. (2008). *Status and trends of species and habitats.*
[2]Butterfly Conservation. (2007). *Butterflies of the New Millennium (BNM).*



Wallis Moor

GRASSLAND FUNGI

Records gathered show that 112 species from the waxcap-grassland assemblage of fungi have been recorded in Pembrokeshire compared with a total of 188 known to occur in the UK[1]. 13 of these species are of conservation concern[2]. Key habitats for grassland fungi include undisturbed, unimproved and semi-improved grassland, dune grassland and heathland. Important grassland fungus sites have several features in common, they are unfertilized, regularly grazed by livestock and/or rabbits, and/or mown with the grass removed.

Distribution in Pembrokeshire

Grassland fungi are found in these specialised habitats as mentioned above. Sites which support a high diversity of species include Castlemartin Range (West), Stackpole Warren and a range of cemeteries including Honeyborough, Crymych and Milford Haven.

Sites with one or more grassland species of conservation concern.

Map produced by PCC derived from data provided by David Harries, Pembrokeshire Fungus Recording Network. © All rights reserved. PCC 100023344 (2011).

Status

The status of grassland fungi in Pembrokeshire is unclear due to insufficient data, although the amount of data available has increased in the last seven years. Over 4,800 individual grassland fungus records have been collected across Pembrokeshire, the vast majority since 2003. 10 sites with three or more species of conservation concern have been identified, with the prospect of further sites being added as more information is gathered[2]. Recording presents particular challenges due to the sporadic and unpredictable production of fruiting bodies, and the lack of UK expertise for verification of some of the more difficult species.

Threats affecting status

- Loss of suitable habitat as a result of changes in grassland management leading to an increase in nutrient levels.
- Encroachment of scrub.
- The physical disturbance of soils.

Conservation Management

Management of semi-improved grasslands through grazing and mowing is supporting grassland fungi populations in Pembrokeshire.

Getting Involved

- Report sightings to the Pembrokeshire Fungus Recording Network (PFRN)
- Further information: Managing Grassland for Waxcaps - Land managed by grazing and Managing Grassland for Waxcaps - Lawns, Cemeteries and Parks, PFRN www.pembsfungi.org.uk

Pink Waxcap © David Harries

[1]Griffith G.W *et al.* (2006). Mycological survey of selected semi-natural grasslands in Wales, Countryside Council for Wales report 743.
[2]Pembrokeshire Fungus Recording Network. (2010). *Pers Comms*

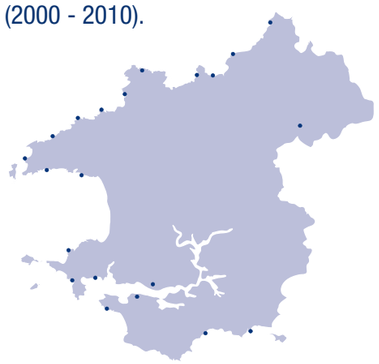
KESTRELS

Kestrels were once found all over Pembrokeshire but in the last 50 years their numbers have declined and they have become more restricted in their distribution. They are a familiar sight to many as they hover over open ground hunting for small prey. They prefer to feed on voles but will take other small mammals, large invertebrates and ground nesting birds. They are one of the smallest breeding raptors and were formerly the commonest in the UK.

Distribution in Pembrokeshire

In Pembrokeshire kestrels are found mainly along the coastal strip, but there are also a few pairs nesting inland.

Distribution of breeding Kestrel/ *Falco tinnunculus* in Pembrokeshire (2000 - 2010).



Map produced by PCC derived from data provided by Paddy Jenks Recorder for Pembrokeshire. © All rights reserved. PCC 100023344 (2011).

Status

The status of kestrels in the UK and Pembrokeshire is declining; UK kestrel surveys show a 25% decline between 1988-1991 and 1994-2006[1] . In Pembrokeshire between the survey periods of 1984–1988 and 2003–2007 the local Breeding Atlas also showed kestrel numbers declining by 30-40%[2]. In addition to this work, in 2008 a dedicated survey found the breeding population to be 20 to 25 pairs; 31 occupied territories were found however a few of which were thought to contain either late staying migrants or non-breeding birds[3].

Threats affecting status

- Changes in agricultural practices such as lack of winter stubbles, decrease in arable tillage, increase in grazing pressure, and pasture improvement.
- With greater land use pressures the areas suitable for kestrel breeding and feeding is reduced, the density of birds of prey has therefore increased leading to a higher risk of predation from larger raptors.

Conservation Management

A nest box scheme was initiated in Pembrokeshire in 2007, in an attempt to alleviate potential nest site competition. Radio tagging projects are planned to try to gain a better understanding of kestrel behaviour. Large areas of the coastal strip are also being managed for wildlife which may increase the number of voles, the kestrel's preferred food.

Getting Involved

- Report sightings of kestrels to West Wales Biodiversity Information Centre www.wwbic.org.uk and on the Pembrokeshire Bird Group blog www.pembsbirds.blogspot.com.

[1] British Trust for Ornithology. (2010). *Breeding Birds in the Wilder Countryside.*
[2] Pembrokeshire Bird Group (2007). *Atlas of Breeding Birds in Pembrokeshire.*
[3] Paddy Jenks. (2010). *A Report on breeding kestrels in Pembrokeshire 2010.*

Kestrel © Annie Haycock

COASTAL CLIFFS AND SLOPES

38% of maritime cliff and slopes in Wales are found in Pembrokeshire (1400 hectares)[1]. Much of this is found within the Pembrokeshire Coast National Park (PCNP), parts of which are designated as Sites of Special Scientific Interest (SSSI). The Pembrokeshire coast is of high wildlife interest and it forms an important green corridor linking up sites which enables species to move around the wider countryside.

Distribution in Pembrokeshire

The cliffs and slopes of Pembrokeshire form key habitats which are locally distinctive, supporting a huge range of flora and fauna. The habitat formed on cliffs and slopes will depend greatly on the geology and soil types, varying from acidic soils supporting heathland on the Strumble Peninsula to lime rich grassland on the Castlemartin coastline.

Status

Across Wales it is thought that coastal slopes are declining in quality[2]. In Pembrokeshire most of the SSSI coastal habitat are considered to be improving from a poor state. Over the last 10 years some areas of coastal slope habitats have started to recover, through positive management undertaken by conservation agencies and landowners. However much of the coastline requires further work to aid recovery and ensure that habitats are stabilised.

Threats affecting status

- Disturbance and erosion due to public access and recreation.
- Coastal development and changes in land use including coastal defence structures.
- Intensification or abandonment of agriculture land.
- Extreme climatic events such as soil and cliff destabilisation and erosion, salt scorch from storms, changing seasonality of vegetation growth and accelerated vegetation growth.

Conservation Management

Management undertaken by the Pembrokeshire Coast National Park Authority (PCNPA), National Trust (NT), Ministry of Defence (MoD) and Countryside Council for Wales (CCW) has positively impacted on coastal slope habitats. Grazing schemes and selective scrub clearance continue to be implemented to further aid recovery.

Getting Involved

- Volunteer with the NT work parties to carry out practical management on coastal habitats. www.nationaltrust.org.uk
- Report any wildlife sightings and observations to West Wales Biodiversity Information Centre www.wwbic.org.uk
- Further information: Walking the Butterfly Coast, Butterfly Conservation www.butterfly-conservation.org/
- Further information: Coastal slopes management, PCNPA, www.pembrokeshirecoast.org.uk

[1] Jones, P.S., Stevens, D.P., Blackstock, T.H., Burrows, C.R., & Howe, E.A. (2003). *Priority habitats of Wales: a technical guide.* Countryside Council for Wales.
[2] Biodiversity Action Reporting System. (2008). *Status and trends of species and habitats.*

Skomer

Deer Park, Marloes

CHOUGH

Pembrokeshire is home to about 15% of the UK breeding population of chough [1]. Choughs are specialist feeders and they obtain most of their invertebrate food by probing the upper soil levels and ant hills with their tough, down-curved bill. Their preferred feeding habitats are sunny slopes with short, open turf and bare soil.

Distribution in Pembrokeshire

Choughs are found along much of the Pembrokeshire coastline and on the offshore islands. There are several important areas where the population occurs at locally higher concentrations, these include Castlemartin Peninsula, Marloes Coast and Skomer Island, St. David's Peninsula and Ramsey Island, Strumble Peninsula and Cemaes to Ceibwr coast.

Status

Annual breeding population records are collated each year, however data is patchy and there is much less information on the Pembrokeshire non-breeding and wintering population. The status of breeding chough has improved over the last decade, with some annual fluctuations, however the population appears to have levelled off, and it is believed it may now be in decline (figure 4).

Threats affecting status

- Loss of available nest sites and winter foraging habitats through land use changes.
- Weather conditions affect their ability to find sufficient food. Frozen ground conditions contribute to high mortality; dry soils and conversely, waterlogged soils can reduce invertebrate prey availability.
- High mortality rate of young choughs due to predation or starving.
- High levels of chemicals in animal dung affects the invertebrates chough feed on.
- Human disturbance through recreation, particularly rock climbing.

Conservation Management

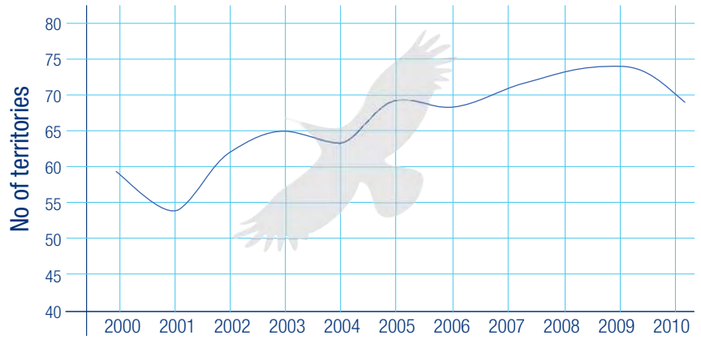
The Pembrokeshire Chough Conservation Strategy has initiated projects, such as the introduction of grazing schemes, to manage the coastal habitat. The Pembrokeshire Coast National Park Authority (PCNPA) and Ministry of Defence (MoD) manage recreational activities through awareness raising and liaison with their ranger and site wardens to limit the impact on chough habitat.

Getting Involved

- Report sightings of chough to PCNPA or Countryside Council for Wales (CCW).
- Further information: Pembrokeshire Breeding Birds Atlas (2003-2007) and Birds of Pembrokeshire (Donovan and Rees, 1994)
- Further information: Species fact sheets, RSPB www.rspb.org.uk

[1] Thorpe, R.I. & Johnstone, I. (2003) *The status of the chough (Pyrrhocorax pyrrhocorax) in Wales 2002.* Welsh Birds 3: 354 - 362

Figure 4. Chough territory occupancy in Pembrokeshire 2000 to 2010




Chough © Annie Haycock

WETLAND BIRDS

The Daugleddau Estuary – Milford Haven Waterway complex is of international importance as it holds a minimum of 25,000 wetland birds each winter, some 13.5% of the total on Welsh Wetland Bird Survey (WeBS) sites[1]. Llys-y-Fran Reservoir is also of national importance for the thousands of lesser black-back gulls roosting there at night. Pasture land away from these roosts also support large numbers of lapwing, golden plover and snipe.

Distribution in Pembrokeshire

Almost all parts of the Daugleddau complex support some roosting and feeding wetland birds, depending on the state of tide. Areas with extensive mudflats or saltmarsh, (e.g. Pembroke River, Carew-Cresswell, Western Cleddau) hold the highest numbers of birds. Elsewhere the Nevern and Teifi Estuaries and Fishguard Harbour are important, along with a number of freshwater sites including Bosherston Lakes, Castlemartin Corse, and Bicton and Llys-y-Fran reservoirs.

Status

Numbers of wetland birds visiting Pembrokeshire are influenced by a variety of external factors, and local fluctuations need to be looked at in a national context, the status in Pembrokeshire therefore varies according to the species being considered. Declines in dunlin, curlew, redshank, mallard, teal and shelduck; increases in wigeon, little egret and greenshank in Pembrokeshire correspond with national trends[2].

The Milford Haven Waterway and Daugleddau Estuary supports the majority of breeding shelducks in Pembrokeshire. The numbers and sizes of broods seen in the Estuary system fluctuates from year to year, although number of broods recorded between 2007 & 2010 have been disappointingly low[3].

Little grebe, Canada goose and mallard have expanded their breeding range since the mid-1980s, taking advantage of irrigation reservoirs that have now matured as ponds and provided suitable nesting sites.

Threats affecting status

- Predation will affect breeding and wintering birds.
- Poor weather during nesting period.
- Localised disturbance from people and dogs will affect breeding and wintering birds.

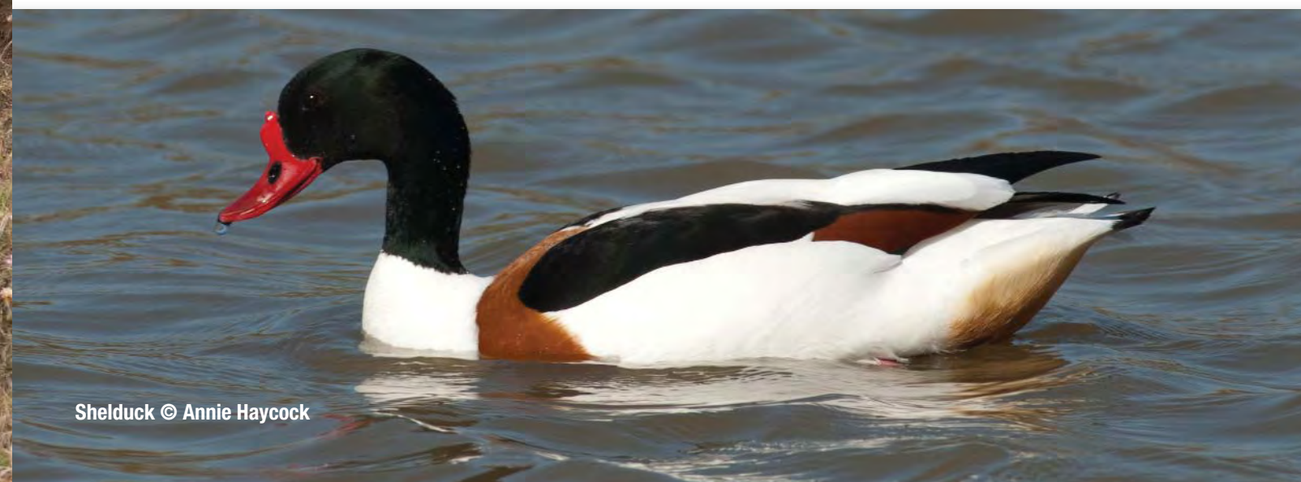
Conservation Management

Much of the good quality feeding habitat and high tide roosts within the estuarine systems are designated as Sites of Special Scientific Interest (SSSI) and Special Areas of Conservation (SAC). Volunteers have been co-ordinating and undertaking annual surveillance of wetland birds wintering in Pembrokeshire since 1982.

Getting Involved

- Volunteer in a WeBs scheme or British Trust of Ornithology (BTO) bird survey, Annie Haycock annie@rushmoorphotos.co.uk
- Further information: WeBS counters handbook, BTO, www.bto.org/ Birds www.rspb.org.uk

[1] Haycock A (2008). *A review of the status of wetland birds in the Milford Haven Waterway and Daugleddau Estuary.* A report to the Milford Haven Waterway Environmental Surveillance Group.
[2] Pembrokeshire Bird Group (2007). *Atlas of Breeding Birds in Pembrokeshire.*
[3] Hodges, J E. (1992-2010). Daugleddau *Estuary and Milford Haven Waterway: An annual surveillance of summer shelduck populations.* In-house reports for Pembrokeshire Coast National Park Authority.


Shelduck © Annie Haycock

MUDFLATS

7.5% of Wales's mudflats are found in Pembrokeshire [1]. Despite first appearances, a close look underneath the mud surface reveals that mudflats are teeming with life – large numbers of worms (some obvious and some microscopic) and molluscs. Mudflats are not only important as a wildlife haven but they also act as a natural filter system for coastal waters, play a vital part in the estuarine and marine food chain, contribute to the economy via recreational fishing and commercial fishing and act as a natural form of sea defence.

Distribution in Pembrokeshire

Mudflats in Pembrokeshire are found in the major river estuaries including the tidal areas of the Western and Eastern Cleddau, the Nevern and the south side of the Teifi. Mudflats are also found along the length of the Milford Haven Waterway and in large bays such as Angle Bay and the Gann. Most of the pills in the Haven and smaller inlets such as Solva, Porth Clais, Poppit and Lower Town Fishguard also support areas of mudflats.

Status

Mudflats in Pembrokeshire are not monitored routinely but they are thought to be declining in quantity and quality [2]. This assessment is based on visual observations, and limited monitoring. An estimate of the current extent of mudflat habitat in Pembrokeshire is just over 1000 hectares[1]. There has been a great deal of loss and degradation of mudflat habitat in Pembrokeshire as a result of industrial and commercial development. One study indicates that over the last 50 years there has been a 31% loss of intertidal habitat in Cosheston Pill, 45% loss in Hubberston Pill and 11% loss in Pembroke River [3].

Threats affecting status

- Marina development and land claim resulting in loss of mudflat habitat.
- Nutrient enrichment of waters in the Haven causing surface algal blooms, making underlying mud anoxic.
- High concentrations of hydrocarbon and metal contaminants in mudflats.
- Commercial cockling and inappropriate bait digging have resulted in physical damage to mudflat habitat, including sensitive seagrass bed habitat.

Conservation Management

The Environment Agency (EA) monitor growth of intertidal macro-algal and Countryside Council for Wales (CCW) analyse mudflat samples, for levels of contaminants. Management of the Pembrokeshire Marine Special Area of Conservation (SAC) addresses issues relevant to mudflats e.g. bait digging, cockling and physical damage.

Getting Involved

- Ring the EA to report suspected pollution events (e.g. oil, sewage, chemical, fly tipping) 0800 807060.
- Ring the CCW to report suspected damage to mudflats (e.g. physical damage) 01646 624000.
- Visit a mudflat near you to discover the amazing variety of life they support.
- Further information: booklet on Marine Mudflats, leaflet on bait digging good practice, CCW www.ccw.gov.uk.

[1] Brazier, P., Birch, K., Brunstrom, A., Bunker, A., Jones, M., Lough, N., Salmon, L. & Wyn, G, CCW. (2007). *When the tide goes out: the biodiversity and conservation of the shores of Wales – results from a 10 year intertidal survey of Wales.*
[2] Biodiversity Action Reporting System. (2008). Status and trends of species and habitats.
[3] Howell, Sarah. (2002). *Coastal Change within the Milford Haven Waterway.* SAC Placement report to Relevant Authorities Group.


Black tailed godwit


Llangwm

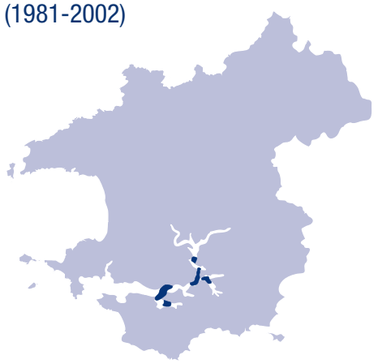
NATIVE OYSTER

About 150 years ago Pembrokeshire supported a thriving oyster industry, however over-harvesting of the beds has led to a depleted population, and many of the historic beds no longer support oysters. Pembrokeshire is one of the few areas in Wales where the native oyster remains in its natural habitat.

Distribution in Pembrokeshire

Oysters were once found along the west coast of Wales between Pembrokeshire and Swansea Bay. In Pembrokeshire oyster beds are now restricted to the Milford Haven waterway, where a small fishery still exists.

Distribution of native oyster / *Ostrea edulis* in Pembrokeshire (1981-2002)



Map produced by PCC derived from data provided by Countryside Council for Wales. © All rights reserved. PCC 100023344 (2011).

Status

The population of native oysters in Pembrokeshire is considered to be declining[1]. Baseline surveys of oysters in the Haven were undertaken by Countryside Council for Wales (CCW) in 2002 and Seasearch in 2007. In 2010, CCW used drop down video to identify the location of historic oyster beds off Stackpole and Tenby. This survey identified the historic beds with greater precision than was previously known. No clear evidence of live oysters was provided by the video footage, which is backed up by a limited number of Seasearch dives.

Threats affecting status

- Continued commercial fishing of native oysters over an increasing area in the Haven.
- *Bonamia ostreae* (a parasite), which has been present in the Haven population since 2005. This infection is known to cause mortality in oyster populations.
- Competition from the invasive non-native slipper limpet which is widespread in the Haven.

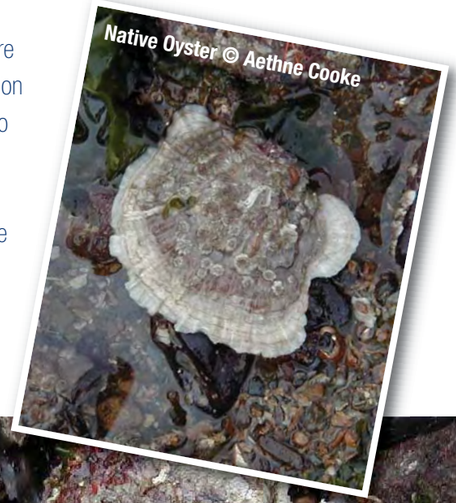
Conservation Management

Management of the Pembrokeshire Marine Special Area of Conservation (SAC) addresses issues relevant to the native oyster e.g. fishing and water quality. A feasibility study is being undertaken by CCW into the restoration of oyster beds in South Wales, including Pembrokeshire. It is hoped this will lead to the restoration of native oysters to South Wales waters in the future.

Getting Involved

- Volunteer with Seasearch to undertake survey dives in Pembrokeshire www.seasearch.co.uk.
- Submit records online of shore sightings of the native oyster to MarLIN,
- Further information: Native oyster fact file, MarLIN. www.marlin.ac.uk/

[1] Biodiversity Action Reporting System. (2008). *Status and trends of species and habitats.*


Native Oyster © Aethne Cooke


Native Oyster © Aethne Cooke

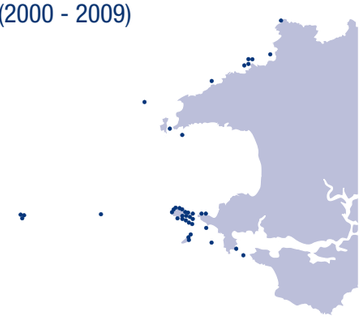
PINK SEA-FAN

Pink sea-fans are colonies of tiny polyps, which occur on seabed habitats such as boulder fields, rocky substrates and wrecks. Pembrokeshire is the only location in Wales to support pink sea-fan colonies and is the most northerly known population in the UK.

Distribution in Pembrokeshire

Pink sea-fans are found around Pembrokeshire in the shallow coastal waters, from depths ranging between 15-50 meters. Notable sites include Skomer Marine Nature Reserve (MNR), Wales' only MNR and one of only three in the UK. They are also found around Skokolm, the North Pembrokeshire Coast, Milford Haven approaches, Grassholm and The Smalls.

Distribution of pink sea-fan / *Eunicella verrucosa* in Pembrokeshire (2000 - 2009)



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Status

Pink sea-fans are annually monitored at the Skomer MNR and Seasearch also record sightings of the species from Pembrokeshire dive surveys. It is thought that the population of pink sea-fans is declining[1].

Threats affecting status

- Physical disturbance from fishing activities including bottom trawling and potting.
- Disease caused by the bacteria, *Vibrio splendidus*.
- Entanglement in discarded angling fishing lines.

Conservation Management

The pink sea-fan is a component part of the reef habitat for the Pembrokeshire Marine Special Area of Conservation (SAC). Within the SAC management scheme, measures are developed and implemented to protect reef habitat and sensitive features. Measures are also in place to prevent impacts such as smothering from dredge spoil dumping.

Getting Involved

- Volunteer with Seasearch to undertake pink sea-fan survey dives or submit records of sightings from recreational dives.
- Further information: Seasearch Reports for Wales and pink sea-fan surveys, www.seasearch.co.uk
- Further information: Skomer MNR Annual Reports, Countryside Council for Wales, www.ccw.gov.uk.
- Further information: West Wales Marine Conservation, www.wwmc.org.uk

[1] Biodiversity Action Reporting System. (2008). *Status and trends of species and habitats.*

Pink Sea Fan © Skomer Marine Nature Reserve

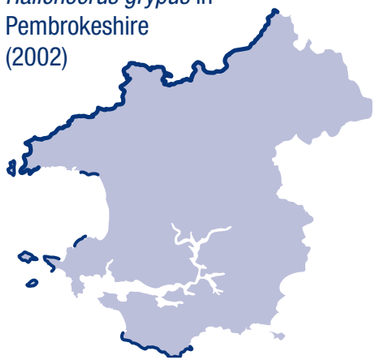
ATLANTIC GREY SEAL

The west Wales grey seal breeding population is the largest in southern Britain, representing about 4% of the UK population and around 2% of the world population [1]. Breeding occurs in late summer and the autumn. During the winter, bulls and cows come ashore for an annual moult and to rest. This is when the largest assemblies are found on remote beaches and offshore islands where 150-200 grey seals can be located at one site.

Distribution in Pembrokeshire

Grey seals can be seen around the Pembrokeshire coast and offshore islands throughout the year. During the pupping season (from August to November) the seals concentrate around pupping sites.

Pupping sites of Atlantic grey seal / *Halichoerus grypus* in Pembrokeshire (2002)



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Status

Grey seal pupping numbers and adult photo-monitoring occurs annually in the Skomer Marine Nature Reserve (MNR). Periodically, pupping numbers are also recorded at a selection of sites on Ramsey Island and on the north Pembrokeshire coast. Pupping data collected from these locations indicate that the number of pups born each year is stable.

Threats affecting status

- Potential disturbance from recreational activities close to seal pupping beaches.
- Entanglement in fishing lines and nets.
- Intensive fishing practices resulting in a reduction of fish stocks and available food.
- Disease spreads rapidly between populations.
- Pollution (e.g. oil spills) and build-up of pollutants in body tissue.

Conservation Management

The Pembrokeshire Marine Special Area of Conservation (SAC) management scheme contributes to management of the SAC's grey seal population by addressing issues such as water quality and fisheries. The Pembrokeshire Marine Code has a specific Seal Code and Restricted Areas maps to protect breeding seals from recreational disturbance. The Pembrokeshire Outdoor Charter also has agreements in place to protect seals.

Getting Involved

- Ring the RSPCA to report any injured grey seals 0300 1234999.
- Ring Marine Environmental Monitoring to report any dead grey seals 01348 875000.
- Support Pembrokeshire's Voluntary Marine Code to avoid disturbing wildlife on the water or choose a WiSe accredited boat operator for trips.
- Visit Skomer MNR information centre at Martins Haven, near Marloes.
- Attend a Pembrokeshire Coast National Park Authority or National Trust seal watching walk.
- Further information: Seal watching leaflet, Skomer Marine Nature Reserve, Countryside Council for Wales, www.ccw.gov.uk.
- Further information: Seal fact sheet, Wildlife Trust of South and West Wales, www.welshwildlife.org

[1] Pembrokeshire Biodiversity Partnership. (2000). *A local Biodiversity Action Plan for Pembrokeshire.* Pembrokeshire Biodiversity Partnership.

ACKNOWLEDGEMENTS / APPENDIX A

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Pembrokeshire Biodiversity Partners

Organisations and groups helping to deliver the Local Biodiversity Action Plan.

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 Relevant Authorities Group
Chevron
Country Landowners Association
Dwr Cymru Welsh Water
Farmers Union of Wales
Farming and Wildlife Advisory Group
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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 and Moth Group
Wildlife Trust of South and West Wales

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Llywodraeth Cynulliad Cymru
Welsh Assembly Government

West Wales Biodiversity
Information Centre

Pembrokeshire Biodiversity Partnership

Partneriaeth Bioamrywiaeth Sir Benfro

Cyngor Cefn Gwlad Cymru
Countryside Council for Wales