State of Wildlife in Pembrokeshire

Update: April 2016

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Photo: Trevor Theobald


Photo: David Harries


Photo: Trevor Theobald


Photo: Kite Ecology

An update is provided on the current status and trends for the 23 habitats and species detailed in the State of Wildlife in Pembrokeshire report (2011). Significant issues are highlighted.

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Executive Summary

Fourteen species (or species groups) and nine habitats (or habitat groups) are assessed for their current condition and likely trend over the last five years in Pembrokeshire.

Whilst there have been some successes and some features are now improving, the majority of features assessed are in poor or moderate condition and the overall trend is still declining. Accurate assessment is hampered by a paucity of robust, long term data. If Pembrokeshire is going to play its part in fulfilling the UK's international commitments on halting biodiversity loss and reversing its decline, there will need to be even more sustained commitment to, and greater investment in, long term conservation projects and monitoring programmes.

The features assessed as in good condition or with improving trend have all been the subject of sustained conservation effort.

Table 1: Summary of Condition and Trend Assessments

Feature	Condition	Trend
Heathland	Poor	Data Deficient
Southern Damselfly	Poor	Declining
Three Lobed Water Crowfoot	Moderate	Stable
Ponds and Lakes	Moderate	Improving
Rivers, Streams & Ditches	Moderate	Improving
Otters	Good	Stable
Hedgebanks	Data Deficient	Stable
Bats	Moderate	Stable
Oak Woodland	Moderate	Improving
Hazel Dormouse	Data Deficient	Data Deficient
Arable Field Margins	Data Deficient	Declining
Farmland Birds	Poor	Declining
Grassland	Data Deficient	Declining
Marsh Fritillary	Poor	Declining
Grassland Fungi	Good	Stable
Kestrel	Moderate	Data Deficient
Coastal Cliffs and Slopes	Moderate	Improving
Chough	Moderate	Stable
Wetland Birds	Moderate	Stable
Mudflats	Poor	Stable
Native Oyster	Poor	Declining
Pink Sea Fan	Moderate	Declining
Grey Seal	Good	Improving

1.0 Introduction

This report is intended as an update to the 2011 State of Wildlife in Pembrokeshire report[1] and should be read in conjunction with it. It is produced in consultation with relevant conservation professionals using the best available information applied through a filter of local knowledge. In some cases, there is insufficient data to assess change over the last five years. Where this is the case, the legend 'data deficient' appears and survey work will be required to address gaps in knowledge.

Since the publication of the original State of Wildlife report in 2011, there have been significant changes in the governance of nature conservation and environmental regulation in Wales. The functions of the former Countryside Council for Wales (CCW), Environment Agency Wales (EAW) and Forestry Commission Wales (FCW) have been amalgamated into one organisation – Natural Resources Wales (NRW). References to predecessor organisations in the 2011 report should be replaced with NRW[2].

Recent legislative changes in Wales include the enactment of the Well-being of Future Generations (Wales) Bill and the Environment (Wales) Bill. Together, these statutory instruments seek to embed sustainability and natural resource management for the benefit of the environment, the economy and society into public bodies in Wales. The former duty on public bodies to 'have regard to biodiversity' in exercising their functions has been strengthened in the Environment (Wales) Act with a biodiversity and ecosystems resilience duty to 'seek to maintain and enhance' biodiversity and 'promote the resilience of ecosystems'. Under the Well-being of Future Generations (Wales) Act, all public bodies are required to test their actions against five principles of sustainable development.

The Skomer Marine Nature Reserve was replaced in 2015 with the Skomer Marine Conservation Zone (MCZ). Further information on the MCZ can be found here: https://naturalresources.wales/conservation-biodiversity-and-wildlife/find-protected-areas-of-land-and-seas/skomer-marine-conservation-zone/?lang=en

Many of the species and habitats considered below are included in the Local Biodiversity Action Plan (LBAP), which sets national policy and priorities in a local context to guide conservation partners in formulating conservation projects and site management plans. The LBAP can be accessed here: http://ukbars.defra.gov.uk/project/show/36376

[1] Available to download here: http://www.pembrokeshire.gov.uk/content.asp?nav=1626,109,135&parent_directory_id=646&id=22546&language=

[2] Links to the websites of predecessor organisations provided in the 2011 report may no longer work. The NRW website is available here: https://naturalresources.wales/?lang=en

2.0 Assessment of Progress

Assessment of progress in the last five years takes into account the current condition and likely trend for the conservation feature concerned. This is displayed as a 'traffic light' graphic with condition as good, moderate or poor and trend as improving, stable or declining. Note that where condition is rated 'good' a trend of 'stable' is considered acceptable as there may be little room for improvement. Where condition is assessed as 'poor' a trend of 'stable' is sub-optimal. Care must therefore be exercised in interpreting the results.

The original report often provided a narrative text for the conservation features discussed and did not always directly assess status and trend. It will not, therefore be possible to apply a direct comparison of status and trend over the last five years, but this report can set a baseline for future updates. It should be noted that the assessments made are at a county-wide level. The condition and trend at individual sites may vary.

Assessments are made using the best available data, interpreted by local experts in the feature concerned. Where robust data sets exist, these are cited in footnotes to aid future reporting. Where data is insufficient for a robust assessment, but a 'best guess' is possible using local knowledge, this is reflected in the text. Where such assessments were not possible, the legend 'data deficient' appears. Individual assessments are given below:

2.1 Heathland

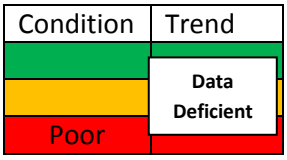
Habitat condition monitoring data for the St. Davids Special Area of Conservation (SAC) and North West Pembrokeshire Commons SAC indicates that the condition of the coastal and lowland heathland on parts of these two sites is still a cause for serious concern. Under-grazing remains the main issue affecting the favourable condition of this habitat. In the Preseli Hills and Carn Ingli, grazing is almost entirely by sheep, which do not maintain the full range of habitats and species formerly present on the sites. Grazing therefore needs diversification, with the involvement of more heavy stock. Cattle management issues (e.g TB) need to be dealt with in order to help address this issue.

Marsh fritillary butterfly, a species dependent upon favourably grazed sites on the North West Pembrokeshire Commons SAC is now thought to be locally extinct on the St. David's peninsula. Small inland commons across Pembrokeshire are reverting to gorse and willow scrub as a result of neglect. The increasing dominance of gorse is a continuing threat to open, species rich coastal heath, although there is insufficient data to quantify the exact extent and rate of change.

Other threats affecting the status of this habitat include nutrient enrichment (particularly runoff from adjacent fields), illegal dumping of waste (often associated specifically with areas of Common Land) and, on exposed coastal heathland, extreme climatic conditions influencing erosion rates and vegetation growth. There is insufficient data to quantify the extent or rate of change of these impacts.

There are however sites coming into management through active heathland projects, including the National Trust's 'Farming the North West Pembrokeshire Heathlands' project. The Pembrokeshire Coast National Park Authority are also providing practical support for cutting and burning on several heathland commons within the Preseli range and on the coast.

The Habitat Action Plan for heathland can be viewed here: http://ukbars.defra.gov.uk/project/show/36386



2.2 Southern Damselfly

The Preseli SAC supports the greatest concentration of current populations of Southern Damselfly (*Coenagrion mercuriale*) in Pembrokeshire and is the main stronghold for the species in the County. The formerly extensive north-western Pembrokeshire populations became extinct in the 1990s.

Population size estimates were made for some sites in 1989. Populations numbering thousands of Southern Damselflies were found at Waun Faur (Puncheston) and Brynberian, hundreds at Pont Clegyr, Glynsaithmaen, Corscewgyil, Gors Fawr and Waun Isaf, and tens of individuals at Ffynnon Clegyr, Waun Maes and Waun Llwyd. In 2002, several of the remaining Southern Damselfly colonies in north-eastern Pembrokeshire were described as vulnerable (Coker, 2002). In 2004, the Pembrokeshire LBAP described the extent of the Southern Damselfly populations in Pembrokeshire: 'the only thriving population surrounds Mynydd Preseli. Many thousands of individuals still fly here in summer. A smaller but still healthy population can be seen at Waun Fawr, Puncheston and tiny colonies persist at Carningli and Hayscastle Cross. On the Preseli Hills, the commons to the north from west of the B4329 to the eastern end of the range and in the south around Mynachlogddu support numerous colonies'. The Preseli population appears to be declining and in many cases now clinging on to the last fragments of habitat that are suitable, though not ideal (pers. comm. Stephen Coker, Jon Hudson).

Whilst monitoring of the Preseli SAC indicates that it is probably in favourable condition there remain serious concerns regarding the long term prospects for the species. On many sites suitable habitat is becoming scrubbed over and lost. An updated Species Action Plan for this species detailing recent habitat restoration projects can be viewed here: http://ukbars.defra.gov.uk/project/show/36404 . However, on all sites, more diversified and heavy grazing regimes (involving appropriate numbers of heavy livestock including horses, ponies and/or cattle as well as sheep) are needed to maintain Southern Damselfly habitat in favourable condition. Without the establishment of such a mixed grazing regime, habitat will

quickly become sub-optimal and the 'conservation status' for the species cannot be considered as being favourable.

Condition	Trend
Poor	Declining

2.3 Three-lobed Water Crowfoot

Three-lobed Water Crowfoot (*Ranunculus tripartitus*) is a plant of ephemeral pools often found in poached ground where water stands for part of the year, particularly near 'pinch points' such as gateways where trampling by grazing stock is concentrated. Grazing by suitably heavy stock and sometimes the creation of artificial pinch points are therefore required to ensure suitable habitat conditions for this species. Appropriate management has continued at most known sites. Pembrokeshire continues to support a significant population and is considered to be a Welsh and UK stronghold for this GB Endangered Red List species.

Under-grazing exacerbated by eutrophication has led to declines/losses at a few known sites but it is still present at most. Overall the population trend in Pembrokeshire is stable, but only because significant nature conservation effort has continued to go into site management by grazing and cutting. If the resources for such nature conservation driven activity were to be withdrawn, there would be a rapid decline of *Ranunculus tripartitus* populations in Pembrokeshire within two to three years.

Threats to this species which appear to be increasingly significant and are not identified in the 2011 report include the spread of Invasive Non-Native Species (INNS) such as the New Zealand pigmyweed, *Crassula helmsii* and the eutrophication (nutrient enrichment) of ground and surface water. It continues to be particularly important to avoid any infilling of rough heathland tracks or pinch-points with hardcore or other material.

Survey work has continued since 2011. The Freshwater Habitat Trust commissioned a survey in February 2015[3]. Although several sites, including some with big populations, were not visited, the survey report makes excellent site management recommendations. If implemented, these will help to maintain the Pembrokeshire population.

Condition	Trend
Moderate	Stable

[3]The survey report (Sutton, 2015) is available for download here: http://wyndrushwild.co.uk/wp-content/uploads/2015/02/MSE__Ranunculus-tripartitus-summary-report-of-survey-2015.pdf

2.4 Ponds and Lakes

Throughout Pembrokeshire there are hundreds of small water bodies which are essential for some of the specialist species of conservation concern. 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.

Bosherston Lakes have been designated a Nitrate Vulnerable Zone under the Nitrates Directive in 2008. The EC Nitrates Directive (91/676/EEC) tries to reduce water pollution caused by nitrates from agricultural sources and to prevent further pollution. The Nitrates Directive forms an integral part of the Water Framework Directive (WFD)[4] and is one of the key instruments in the protection of waters against agricultural pressures. There have been no detectable trends in measured nutrient levels. Drainage improvements were added through the Welsh Government Nature fund in 2015, under a project led by the National Trust.

Llys-y-Fran has been susceptible to Blue Green Algae blooms in recent years. Natural Resources Wales are working with Dŵr Cymru Welsh Water to develop catchment level approaches to improved land management.

A significant threat to the condition of ponds and lakes is the occurrence of INNS such as *Crassula helmsii* (New Zealand Pigmyweed). *Crassula* is a particularly acute problem on some protected sites in the St. David's area. The Invasive Non-Native Species Action Plan for Pembrokeshire can be accessed here: http://ukbars.defra.gov.uk/project/show/37479

The Freshwater Habitat Action Plan can be accessed here: http://ukbars.defra.gov.uk/project/show/36389

Condition	Trend
	Improving
Moderate	

2.5 Rivers, Streams and Ditches

There are 144 separate streams, rivers and lakes across Pembrokeshire forming the larger catchment networks. 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.

[4] More information on the Water Framework Directive is available here: http://ec.europa.eu/environment/water/water-framework/index_en.html

The Water Framework Directive (WFD) sets standards for ecological and chemical water quality; all water-bodies must be at good status by 2021[5]. Key species within the river system are monitored which helps give an indication of the health of the river, for example Natural Resources Wales has been monitoring juvenile salmon and trout in the Cleddau and Nevern rivers since 1984[6]. However, significant issues still need to be addressed to meet the 2021 target.

Threats affecting the biological and chemical quality of these water bodies include:

- Disturbance of soil in, or close to water bodies increasing the amount of sediment in the water.
- Nutrient enrichment sources such as agricultural intensification and sewage treatment.
- Algal blooms.
- Competition from invasive species such as Japanese knotweed, Australian swamp stonecrop and Himalayan balsam.
- Water abstraction and lowering of groundwater levels.
- Unauthorised in-river works causing damage to conservation areas and risking an increase in flooding.

Grant schemes in Pembrokeshire have provided assistance and advice which has led 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.

NRW and partner organisations are carrying out a range of measures to improve and enhance our rivers, streams lakes and groundwater in Pembrokeshire. These include catchment survey projects working with the agricultural community and Dŵr Cymru Welsh Water, pollution incident response, development planning consultation and habitat regeneration projects. Welsh Government Ministers are considering the designation of a Nitrate Vulnerable Zone covering the rivers that drain to the upper reaches of the Milford Haven Waterway. This would require farms to limit the amount of nutrients applied to fields and have adequate winter storage for farm effluent in order to limit nutrient runoff to streams and rivers.

Getting Involved

- Report any pollution incidents to NRW on 0800 807060.
- Seek advice from NRW or Pembrokeshire County Council before undertaking works in, or alongside a river.
- Avoid disturbing areas of invasive weeds; seek advice on how to control them near a watercourse.

[5] Western Wales River Basin Management Plan, Natural Resources Wales, December 2015

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

Further information can be accessed here:
www.waterwatchwales.naturalresourcewales.gov.uk

The Freshwater Habitat Action Plan can be accessed here:
http://ukbars.defra.gov.uk/project/show/36389

Condition	Trend
	Improving
Moderate	

2.6 Otters

The distribution of the otter (*Lutra lutra*) population in Pembrokeshire has expanded over recent years. Figures from the Otter Survey of Wales show an increase in the proportion of surveyed sites where otter signs were found on the Cleddau catchment from 54% in 1984 to 97% in 2002 and 2009. Otters have been found to be active on the vast majority of main rivers and tributaries in all river catchments in Pembrokeshire. Monitoring of the Coastal SAC in 2012 shows that otters are active along the coastline of Pembrokeshire. They have also been recorded using some of the islands. The increases in otter range in Pembrokeshire have taken place within the context of river habitats which have been highly modified in many lowland areas. Trends across Wales as a whole show continued recovery but sites in West Wales show particularly high percentage occupation. Otter numbers are naturally low on river systems as they are the top predator in the food chain. Individuals have very large home ranges.

There are several identified threats to otter populations including loss or fragmentation of habitat, water quality and mortality on roads. Breeding sites are particularly vulnerable to changes in land use which result in habitat loss or increased disturbance, such as agricultural intensification or increased recreational use of previously undisturbed areas.

The Species Action Plan for Otter was reviewed in 2015 and contains more detail on conservation of this species. It is available to view here:
http://ukbars.defra.gov.uk/project/show/36401

Condition	Trend
Good	
	Stable

2.7 Hedgebanks

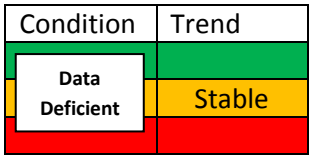
For the purposes of this report, hedgebanks will be considered as a functional unit with their associated verges and hedgerows where present. There is great variation in form across the County, from limestone grassland with dry stone walls in the South, to earth and stone banks with no verge and typically hawthorn, blackthorn and hazel rich hedge on top in the North. The biodiversity value of the feature is

often multiplied by its value as a connectivity feature in the wider landscape and their value as a component of the local landscape character is also significant.

Where there is positive management (e.g. through changes to the frequency and width of roadside verge mowing and awareness raising with local mowing contractors) there have been improvements in the ability of spring flowers to set seed, increasing floristic diversity. Cutting of hedges associated with these banks (often on private land) has shown some improvement (especially where landowners are engaged with agri-environment schemes), however there are still many features where the frequency and depth of mechanical cutting results in poor condition.

The threats identified in the 2011 report remain, however there is a more robust system in place to ensure that hedgebanks are adequately considered in development proposals.

There is no comprehensive survey throughout the County to assess condition or trend of these features. The known variability in condition described above and the lack of data therefore make a meaningful assessment of overall current condition impossible. There are known to be both losses and gains in both the extent and quality of these features. Whilst clear data is lacking, it is thought that the overall trend is likely to be stable.



2.8 Bats

Whilst it is not known for certain how all the County's species of bats are faring, it does seem that some species are increasing whilst others are declining. In Pembrokeshire, Lesser horseshoe bat numbers are decreasing in their known maternity roosts and their status and trend would be assessed as 'poor, declining'. In contrast, the breeding population of greater horseshoe bats is increasing and can be classed as 'moderate, improving'. Both species are monitored annually by the Pembrokeshire Bat Group and results sent to the Bat Conservation Trust.

The two most common pipistrelle species are not monitored systematically in Pembrokeshire, but the national trends for these species are good, stable. Species that roost at least partly in trees, such as barbastelle, brown long-eared, *Myotis* and noctule bats, are particularly difficult to monitor as they move between roosts frequently. For these species, the data is deficient for categorization. Overall, bats as a group should be treated as 'moderate, stable'.

New threats to bats include wind turbines (which can disrupt bat flight lines and even cause mortality for high-flying species) and breathable roofing membranes (which can entangle bats). New research has shown that artificial lighting in areas used by foraging bats, particularly around water, can significantly reduce bat activity.

The Species Action Plan for Bats can be accessed here:
http://ukbars.defra.gov.uk/project/show/36394

Condition	Trend
Moderate	Stable

2.9 Oak Woodland

There has been no consented felling of woodland without replanting in the last five years. Some new native woodland is being planted under Glastir Entry and Glastir Advanced and many applications for new planting are currently being processed. Overall, the area of native woodland is increasing.

Much of Pembrokeshire's oak woodland is now under favourable management through individual management agreements and Glastir Advanced, and more woodlands are still coming into the scheme. Some woodlands still require changes to, or introduction of, management to halt their loss of biodiversity. The figures for Pembrokeshire will not be available until these have been finalised. However, the overall condition of oak woodland is assessed as 'moderate' with a trend of 'improving'.

The Habitat Action Plan for woodlands can be accessed here:
http://ukbars.defra.gov.uk/project/show/36390

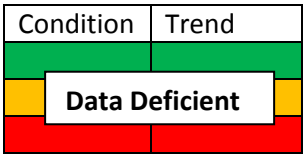
Condition	Trend
	Improving
Moderate	

2.10 Hazel Dormouse

New populations of dormice (*Muscardinus avellanarius*) have been discovered in South Pembrokeshire in recent years, although there is insufficient information at present to gauge how widespread they might be, or whether the population is increasing or decreasing. Hedgerows are likely to be particularly important in these areas, as they have little semi-natural woodland compared with the traditional Pembrokeshire dormouse strongholds of the Nevern and Gwaun catchments. In these strongholds, regular dormouse surveillance is undertaken by the Wildlife Trust of South and West Wales (WTSWW) and Pembrokeshire Coast National Park Authority (PCNPA). WTSWW produces records of these annually. However, occupancy rates in survey nest boxes are too low to allow trends to be properly determined, even though nut evidence shows their continued presence.

Overall, dormice populations are considered 'data deficient'. Identifying new populations and improving connectivity between existing ones should be the main priorities.

The Species Action Plan for Dormouse can be accessed here:
http://ukbars.defra.gov.uk/project/show/41270

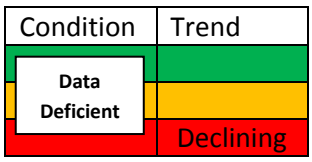


2.11 Arable Field Margins

Arable margins may include low-input and fallow margins for important arable flora, margins sown with wild bird seed or pollinator mixes and grass margins or 'beetle banks'. These margins are undertaken almost exclusively within agri-environment schemes so measuring effort through the monitoring of provision of conservation action on these habitats through Glastir is a meaningful indicator. Glastir also offers whole field options for low intensity arable management which makes the concept of 'arable margins' a little misleading and the total provision of 'low intensity arable habitat' is considered.

Between the 1933-49 land use survey and the 1979-1991 CCW Phase 1 survey there was a 54% reduction in amount of arable land in Pembrokeshire. This contraction occurred largely inland and in the coastal belt between Newport and Cardigan. Comparison of the most recent Phase 1 data published in 2015 may allow more recent trends in arable land cover in the County to be analysed to determine whether this is a continuing trend. Despite declines, a recent report by Plantlife still confirms the status of Pembrokeshire as an Important Arable Plant Area (IAPA), with a particular focus on the sandy soils around the coastal belt[7].

Around 365 ha of land in the National Park was managed under some form of low intensity arable management option in 2015, only around 5% of the total arable resource. Just one hectare of land in the Park is entered into the best option for arable flora (fallow margins and unsprayed headlands) which is of concern given the importance of the County for these plants. Data for the whole county exists but could not be obtained. Extrapolating the information which was available, it is hard to see how trend can be assessed as anything but declining. This is consistent with observed declines in farmland birds (see **Section 2.12**).



[7] Report available to download here:
http://www.plantlife.org.uk/our_work/conservationprojects/arable_projects/mapping_wales_arable_plants

2.12 Farmland Birds

Data from three county-wide tetrad breeding bird atlases (1984-88, 2003-07 and 2008-12)[8] have provided a considerable amount of information on the distribution of farmland birds across Pembrokeshire. A recently published report by the Department for Environment, Food and Rural Affairs (DEFRA) indicates that in 2014, the breeding farmland bird index in the UK was, alarmingly, less than half (a decline of 54 per cent) of its 1970 level[9]. This assessment is based on data for 19 farmland bird indicator species taken from the DEFRA list and tailored to the Pembrokeshire context[10].

Changes in the distribution of selected farmland species (using the DEFRA "specialist" and "generalist" species approach) are shown in **Figures 1 and 2**. Whilst there have been declines in the majority of the species considered here, it is particularly apparent in **Figure 1** that nine out of the ten "specialist" farmland species have shown the steepest overall declines across the County, with continued fragmentation in their breeding distribution at tetrad level. For most of the farmland "generalists" the trends in **Figure 2** are less clear cut.

Of the "specialists", the breeding distribution of skylark is now only about half of what it was in the mid 1980s, and for yellowhammer, only about a quarter of what it was then. Already previously scarce species (such as grey partridge, lapwing and tree sparrow) now hardly feature. As far as breeding populations on "typical farmland" are concerned, they can probably be regarded as functionally extinct in the County at present. Goldfinch is the only one of the ten "specialists" that has expanded its distribution in Pembrokeshire during the last 30 years. This seed-eater has spread northwards within Britain. Its survival is probably being aided by milder winters and also by artificial foods such as nyjer seed and sunflower hearts provided in gardens, where large increases in their numbers have been reported in recent decades. (See: http://www.bto.org/volunteer-surveys/gbw/gardens-wildlife/garden-birds/a-z-garden-birds/goldfinch).

[8] Donovan, J and Rees, G. 1994. Birds of Pembrokeshire (Status and Atlas of Pembrokeshire Birds). Dyfed Wildlife Trust; Rees, G. et.al. 2009; Atlas of Breeding Birds in Pembrokeshire 2003-2007. Pembrokeshire Bird Group; Breeding Atlas records (2008-12). Unpublished national atlas data held by Pembrokeshire Bird Group.

[9] DEFRA, 2015. Wild Bird Populations in the UK, 1970 TO 2014. A DEFRA National Statistics publication, 29th October 2015.

[10] 19 farmland bird indicator species as follows: 10 of the species identified by DEFRA as farmland "specialists" (species that are restricted to, or highly dependent on, farmland habitats) and which breed, or have bred, on farmland in Pembrokeshire, since 1970, and six identified as farmland "generalists" which breed in the County. Dunnock and bullfinch have been added to the Pembrokeshire list of farmland "generalists" due to their association with shrub-dominated farmland hedgerows in the County. House sparrow is also included due to its association with farm buildings, mature hedgerows and arable land.

Figure 1: Changes in the % distribution of ten "specialist" farmland birds in Pembrokeshire from Breeding Atlas tetrads during the last c.30 years (DEFRA indicator species)

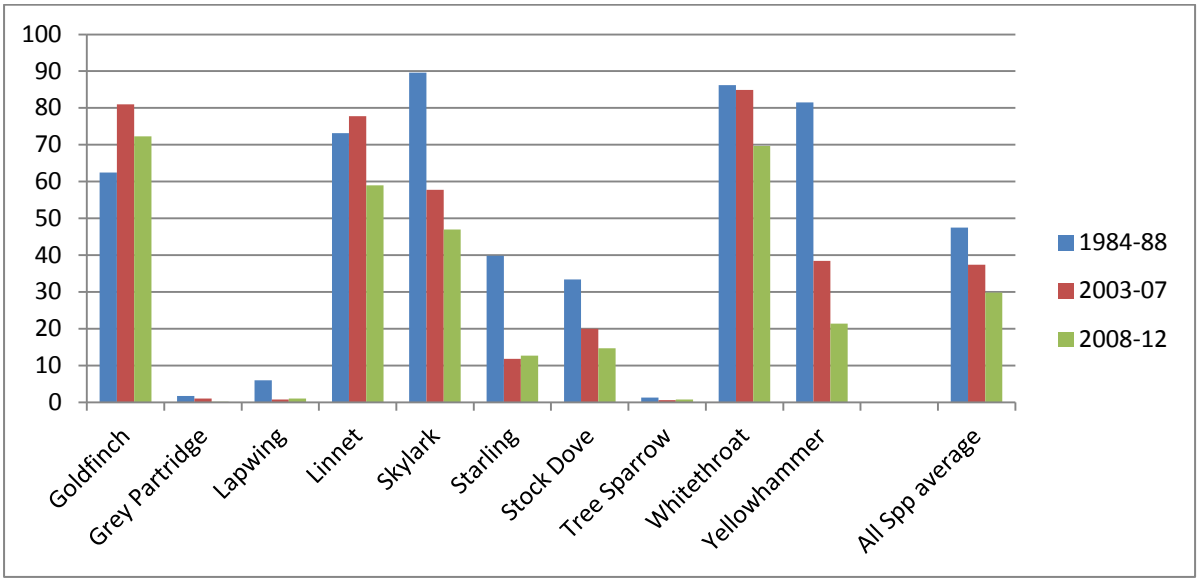
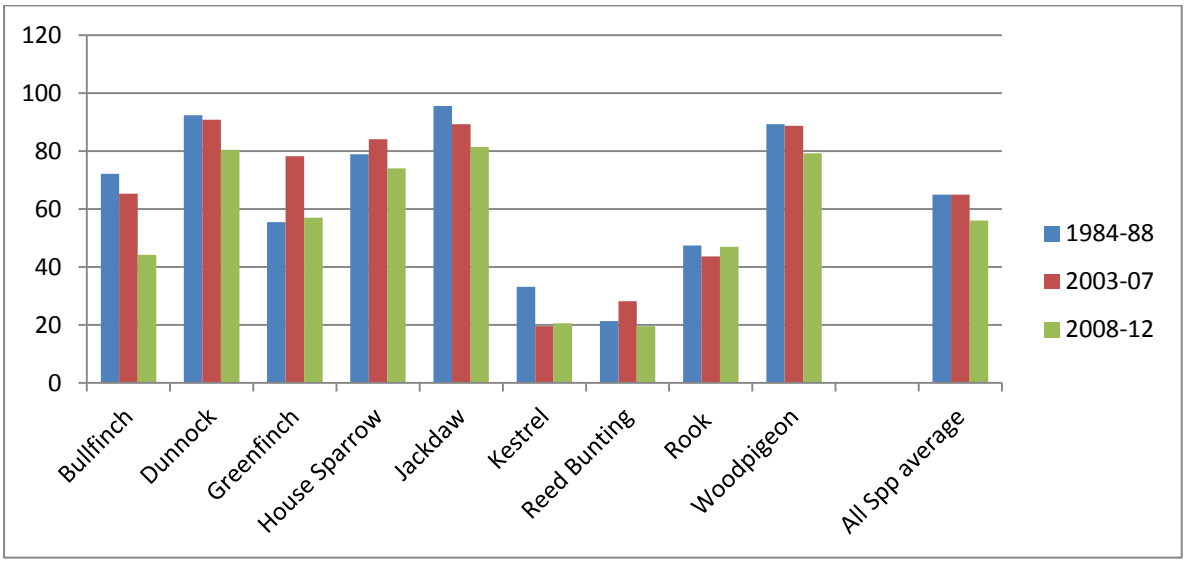


Figure 2: Changes in the % distribution of nine "generalist" farmland birds in Pembrokeshire from Breeding Atlas tetrads during the last c.30 years (DEFRA indicator species)



Of the "generalists", bullfinch distribution recently seems to have declined quite steeply. Dunnock, house sparrow, jackdaw and woodpigeon distribution also seem to be declining, but not at such a steep rate, with other species possibly being more stable. Greenfinch distribution increased quite significantly between 1984-88 and 2003-07, but has decreased again since then. The recent decline could be due to the presence of the disease (*Trichomonosis*) which was new to British finches in 2005. (See: http://www.bto.org/volunteer-surveys/gbw/gardens-wildlife/garden-birds/disease/trichomonosis).

A number of factors are likely to be affecting farmland bird populations and their survival, particularly reductions in the quality and quantity of breeding habitat and related food resources, influenced by:

- intensive dairy farming and silage production (loss of habitat and damage to nest-sites);
- a move away from mixed farming, leading to a decline in winter stubbles and arable land in general, supporting seed and insect-sources;
- abandonment of less productive land-holdings, including a growth in the use of farmland for potentially sterile solar energy farms;
- unfavourable hedgerow management, including losses of trees and scrub;
- the conversion of farm buildings.

In addition to changes in the way farmland is managed, the Met Office predictions of much stormier, wet weather “events” could significantly impact breeding success and food availability, especially for those species with already low and fragmented populations.

Condition	Trend
Poor	Declining

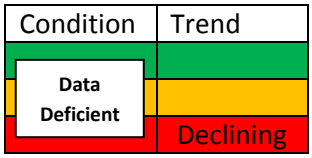
2.13 Grassland

The term grasslands refers to a range of habitat types occurring within the County, including purple moor grass and rush pastures, Species-rich neutral grassland and acid grasslands where they occur as part of a heathland mosaic.

Where positive conservation management of our grassland resource is taking place, either on land managed by partners (e.g. on Castlemartin range and St. Davids Airfield) or on private land through conservation management incentives such as the Conserving the Park Scheme and Glastir, it is very successful. Industry (the energy sector in particular) has made a significant contribution to the creation and management of new grassland habitats at sites located around the Milford Haven Waterway. Significant progress has also been made in establishing the value of grasslands in the County for species which are more difficult to survey such as grassland fungi (see below).

Pembrokeshire supports around 7,400 hectares, 6% of the lowland grassland resource in Wales - a figure taken from the phase 1 survey which is notoriously inaccurate for grasslands. With no further detailed surveys available, we have a poor understanding of where our grassland resource is located and very little information on its condition in the wider County. The overall UK trend for grasslands

has been down in both quality and extent and there is no reason to expect grasslands in the County to be faring any better.



2.14 Marsh Fritillary

Pembrokeshire Marsh Fritillary (*Euphydryas aurinia*) Group has been working with Butterfly Conservation to ensure the species is better monitored throughout the County. Many sites now have formalised monitoring programmes and the two most important SACs for Marsh Fritillaries (The Limestone Coast SAC and Gweunydd Blaencleddau SAC) have habitat maps and monitoring protocols in place. This information will allow a better assessment of how the species is doing in the County and will contribute to national monitoring.

Four out of the five core populations in Pembrokeshire have SAC/SSSI protection and most sites have management in place. On many sites however, grazing levels are insufficient to maximise the amount and quality of suitable habitat.

Both the Mynachlog-ddu and Ambleston–Puncheston populations appear to be doing well with record web counts at many sites. Castlemartin still has the highest web counts but numbers appear to be down on previous years and some areas to the east of the colony are unoccupied. The Yerbeston meta-population counts were low, with only the Copybush Moor/Shortlands Moor sites having a healthy population (although Yerbeston Tops, with 15 webs, may be showing signs of recovery).

Both the Keeston-Tiers Cross and St. David's colonies continue to cause concern as only one adult was recorded between them in 2015. On the whole the Keeston and St David`s sites do not hold sufficient areas of suitable habitat to support viable Marsh Fritillary populations. Small populations are likely to re-occur sporadically over the next 5-10 years, but both meta-populations are thought likely to go extinct in the not too distant future. All sites within these meta-populations could probably support larger areas of suitable habitat if they were better managed. Most sites would benefit from more appropriate grazing regimes, although burning and cutting may be required, particularly in the restoration of sites. Improved management could possibly save these two meta-populations. If these two meta-populations go extinct, the species will have been lost from the west of Pembrokeshire.

The available evidence provided by surveys indicates that the size of the population of the Marsh Fritillary in Pembrokeshire is probably at its highest level since records began. However this is likely to be merely a reflection of increased recording effort. Many of the outlying populations do not appear to be part of viable, sustainable meta-populations. None of the populations have sufficient connectivity to ensure

continuous exchange of individuals between sites within each population. The population status is therefore deemed to be in poor condition with a declining trend.

Condition	Trend
Poor	Declining

2.15 Grassland Fungi

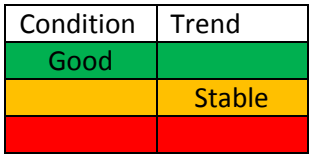
Since the publication of the State of Wildlife in Pembrokeshire report in 2011, our knowledge of the distribution of grassland fungi and of “grassland fungal hotspots” has increased considerably as a result of recording effort. New areas and locations that support at least two or three species have been discovered and long-term data sets are being developed for those sites that were already known to support a diverse assemblage of grassland fungi. During this time, the conservation profile of grassland fungi has also been raised e.g. through general awareness-raising; recognition of the conservation requirements of grassland fungi in the Glastir agri-environment scheme and in local land management initiatives.

As noted in the 2011 report, monitoring and recording of grassland fungi is particularly challenging. This is largely due to the nature of the organisms themselves which produce fruit bodies (the evidence of presence/absence on which we rely - the bulk of the fungal organism being hidden in the soil) on a very irregular basis. Many aspects of the ecology of grassland fungi e.g. what triggers the development and appearance of fruit bodies, are still relatively poorly understood. This group of fungi continues to present challenges in terms of taxonomy and field identification, which have not been helped by declining levels of taxonomic expertise at Wales and UK levels - hence support for local groups and recorders. Many areas in the County where there appears to be suitable habitat for grassland fungi e.g. in the Preseli Hills and on parts of the coast have yet to be studied, a consequence of which is that our knowledge of the distribution of grassland fungi in the County is still far from complete.

Although we are not able to provide a definitive statement on the status of grassland fungi in Pembrokeshire, annual surveillance of individual sites combined with the knowledge that we are still discovering new grassland fungi sites suggest that there have been no significant losses of the grassland and associated habitats on which they depend since 2011. Some deterioration of some sites e.g. as a result of subtle changes in soil structure, or chemistry and small-scale losses in e.g. in cemeteries and graveyards cannot be ruled out. However overall, the data suggest that the situation is probably stable and that Pembrokeshire continues to support a rich and diverse assemblage of grassland fungi.

Threats to grassland fungi continue to include outright habitat loss e.g. as a result of physical disturbance of soils; destruction of suitable grassland and associated habitats; encroachment by scrub or bracken; and degradation e.g. as a result of

nutrient enrichment. The key to the future health of grassland fungi is ensuring that, as far as possible, their conservation requirements are taken into account by site/land managers.



2.16 Kestrel

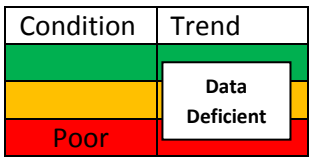
Kestrel (*Falco tinnunculus*) numbers within the County have declined and a monitoring report in 2012 considered them to be at their lowest level since 1894. Much of the decline is attributed to loss of suitable breeding habitat due to changes in farming practices, but there are also other contributing factors. Productivity seems sufficient to maintain a viable breeding population, but many successful breeding sites become unoccupied in subsequent years. This indicates that either adult survival between breeding seasons is too low, or insufficient recruitment is taking place due to low survival of first winter birds following independence - or perhaps both. A likely cause of low survival of first winters is, again, changes in farming practices reducing the foraging quality of the arable landscape. Radio-tracking showed that kestrels make no use of improved pasture apart from commuting over it to seek out rough grassland/heath for foraging.

Predation cannot be ruled out as a cause of poor over-winter or post fledging survival, but during the breeding season it appears to be insignificant.

Competition for nest sites may occur inland and the provision of artificial nesting sites in some areas may help, but it is thought that nest site competition is not a significant factor that is driving the population decline. In 2012, six nest boxes were occupied of a total of 62 erected in suitable habitat throughout the County. Until other factors are understood and mitigated for, then the kestrel population will not increase significantly in response to provision of artificial nest sites.

Kestrel is now red-listed in Wales but as with all such species, there is little funding available for targeted research/monitoring/practical conservation, so further declines can perhaps be expected.

The full 2012 monitoring report can be read here: http://static1.1.sqspcdn.com/static/f/576237/23457042/1378459167090/kestrel+report+final.pdf?token=TMtCQei4A0T7dhBuLNXitFhWjBo%3D . A follow up survey is planned in 2016.



2.17 Coastal Cliffs and Slopes

Across Wales it is thought that coastal slopes are declining in quality. In Pembrokeshire most of the SSSI coastal habitats are considered to be improving from a poor state. Over recent 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.

Areas of the coastal slopes recognised as impractical to manage (steep, narrow areas and scrubby patches) are being treated as minimum intervention areas and are left to natural processes.

Threats affecting status:
• The primary threat to the condition of the coastal slopes is insufficient grazing.
• 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.

Management undertaken by the PCNPA, National Trust (NT), Ministry of Defence (MoD) and NRW has positively impacted upon coastal slope habitats. Grazing schemes, selective scrub clearance and patch burning continue to be implemented to further aid recovery.

In summary, the condition of the coastal cliffs and slopes in Pembrokeshire varies with a slow improvement generally. Many sites however still require an increased and diversified grazing regime coupled with more topping and scrub control.

Further information can be found on the PCNPA website here: http://www.pembrokeshirecoast.org.uk/default.asp?PID=145 . The Coastal Habitat Action Plan can be viewed here: http://ukbars.defra.gov.uk/project/show/36391 . You can volunteer with NT work parties to carry out practical management on coastal habitats: www.nationaltrust.org.uk .

Condition	Trend
	Improving
Moderate	

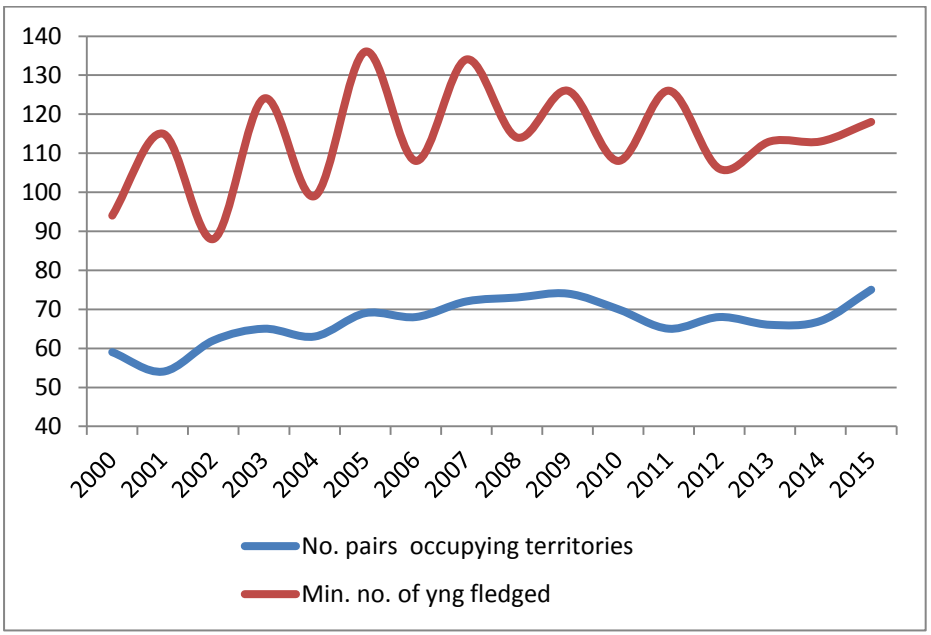
2.18 Chough

Although we have a reasonable knowledge of the breeding population of choughs (*Pyrrhocorax pyrrhocorax*), there are gaps in our understanding of aspects of the ecology and conservation requirements of this iconic species. We have limited and increasingly dated information (from an earlier colour-ringing programme) on post-fledging survival, post-breeding dispersal and recruitment to the breeding population. These limitations should be borne in mind in the context of this review.

The distribution of occupied territories and nest sites, which are confined exclusively to the open coast in the National Park, has remained largely unchanged since the 2011 report. The Castlemartin and St. David's Peninsulas, together with the islands of Ramsey, Skokholm and Skomer continue to support a significant proportion of the breeding population.

Between 2000 and 2014, the numbers of pairs occupying territories in the National Park fluctuated between 54 and 74. In 2015 this increased to 75 (**Figure 3**). Reasons for the current upward trend in the size of the breeding population are thought to include a return to mild winters following the cold winters of 2009/10 and 2010/11 resulting in better winter survival and recruitment of new pairs to the breeding population. There has been a slight but sustained increase in productivity since 2012 (**Figure 3**) although the minimum number of young known to have fledged each year since then has been well below the peaks in productivity that were recorded in the preceding decade.

Figure 3: Chough territory occupancy and breeding success in Pembrokeshire 2000 to 2015



Improvements in the extent and quality of foraging habitats on the coast as a result of conservation grazing and other habitat management for choughs by conservation partners, private landowners and farmers are also thought to have had a major influence on the current trend. Management (through voluntary codes of conduct) of recreation to minimise disturbance of nest sites has also had a beneficial effect on individual pairs/sites.

In addition to the challenges of maintaining basic surveillance of breeding choughs in Pembrokeshire, there is a need to plug some of the gaps in our knowledge of the dynamics and structure of population in order to better understand their conservation requirements. New issues requiring investigation include an apparently low genetic diversity within the population and possible inter-specific competition e.g. between choughs, jackdaws and rooks - particularly for food resources.

Natural factors such as coastal erosion will continue to affect the availability of suitable nest sites. Land management, including management of the nature conservation/recreation interface, will also continue to play a vital part in determining the future of choughs as a breeding species in the County. However, perhaps the biggest single "unknown" is long-term climate change which will present a major challenge to the resilience of the local population.

The Species Action Plan for Chough can be viewed here:
http://ukbars.defra.gov.uk/project/show/36405

Condition	Trend
Moderate	Stable

2.19 Wetland Birds

Much of the good quality feeding habitat and high tide roosts within Pembrokeshire's estuarine systems are designated as SSSI and SAC. Volunteers have been co-ordinating and undertaking annual surveillance of wetland birds wintering in Pembrokeshire since 1982. This long-term monitoring means that we can compare our local data with the rest of the country and say that most changes here seem to be in line with national trends[11].

[11] Haycock A (2013) 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

Pembrokeshire Bird Group (2007) Atlas of Breeding Birds in Pembrokeshire

Hodges J E (1992 – 2015) Daugleddau Estuary and Milford Haven Waterway: An annual surveillance of summer Shelduck populations. In-house reports for Pembrokeshire Coast National Park Authority

The Daugleddau Estuary-Milford Haven Waterway complex is of international importance as it holds a minimum of 20,000 wetland birds each winter, including at least a third of the wigeon and greenshank counted on all the Wetland Bird Survey (WeBS) sites in Wales. Almost all parts of the Daugleddau complex support roosting and feeding wetlands birds in winter, depending on the state of the 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 are important, along with a number of freshwater sites including Bosherston Lakes, Castlemartin Corse, and Bicton and Llys-y-fran reservoirs (Llys-y-fran is of national importance for the thousands of lesser black-back gulls roosting there during the winter). Pasture land away from wetlands also supports large numbers of lapwing, golden plover and snipe.

The average number of birds recorded on the Daugleddau estuary between 2010 and 2015 is lower than the previous average. Dunlin, shelduck and wigeon have all declined, though the latter has recovered somewhat. Larger numbers of greenshank and black-tailed godwits are staying through the winter, while curlew is now more numerous on migration than during the winter. Little egrets were badly hit by the three cold winters between 2009 and 2013 but appear to be recovering. Canada goose numbers seem to have stabilised at around 600 birds. Elsewhere in Pembrokeshire, e.g. on the Nevern and Teifi estuaries, the numbers of Canada goose have increased. They have also increased as a breeding species here.

The Milford Haven Waterway and Daugleddau Estuary supports the majority of breeding shelducks in Pembrokeshire. The number and size of broods fluctuates from year to year, although the number of broods recorded in the last ten years has been disappointingly low.

Numbers of wetland birds visiting Pembrokeshire are influenced by a variety of external factors and local fluctuations need to be considered 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, and increases in little egret and greenshank in Pembrokeshire correspond with national trends. A recent decline in wigeon is also in line with national trends. These changes are thought likely to be linked with changing climatic conditions, with many species not moving as far south and west as they used to.

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 provide suitable nesting sites.

Threats affecting status include:

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

You can volunteer in a WeBS scheme or with a British Trust for Ornithology survey. Contact Annie Haycock (annie@rushmoorphotos.co.uk).

Condition	Trend
Moderate	Stable

2.20 Mudflats

There is very little detailed information on sites other than the Milford Haven Waterway SAC.

The mudflats and sandlfats feature of the Pembrokeshire Marine SAC is described as in unfavourable condition, mainly because the water quality is sub-optimal and some areas of the feature are degraded.

Contaminant levels in sediments remain high in spite of improvements in pollution source controls. This is mostly due to historic activities, but these historic pollutants can be re-circulated following sediment disturbance.

Infaunal community diversity at some sites is degraded and is characterised by a raised abundance of opportunistic species and lower community diversity which is likely to be linked to anthropogenic changes, e.g. raised nutrient levels and inappropriate bait collection.

Commercial and inappropriate bait collection also threatens the physical condition of mudflats. Bait digging can cause sediment surface relief to change from a subtle, fairly even surface to a 'lunar landscape'. The problem is particularly acute at the Gann near Dale where the abundance of individual species has also declined. A voluntary code of conduct has been developed with local stakeholders, including bait collectors and is under trial (2015). This is attempting to limit the damage caused by digging by zoning the beach into dig and no dig zones.

The amount of nuisance green macro algae (an indicator of elevated nutrient levels) has increased and in some places completely smothers the mudflats and pioneer saltmarsh, e.g. *Salicornia* (Glasswort) in Sandy Haven and Cosheston Pill. In 2016 The Welsh Government will be consulting on whether to designate the catchment of the Milford Haven Waterway as a Nitrate Vulnerable Zone (NVZ) which will lead to controls on the nitrogen inputs to land.

Condition	Trend
	Stable
Poor	

2.21 Native Oyster

In Pembrokeshire oyster (*Ostrea edulis*) beds are now restricted to the Milford Haven Waterway. Whether sufficient stocks currently exist to sustain commercial fishing is in doubt; no permits for oyster dredging have been issued by Welsh Government since 2011.

The population of native oysters in Pembrokeshire is considered to be declining. Baseline surveys of oysters in the Milford Haven Waterway were undertaken by CCW in 2002 and Seasearch in 2007/2010/2011. 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. Further work in 2011 (Woolmer *et.al*.(2011) and Pell (2011))[12] looked in more detail at some areas within the waterway and provided useful information for practical approaches for restoration of native oyster beds locally.

Threats affecting status include:

- Potential future commercial dredging of native oysters.
- Water quality and availability of suitable habitat.
- *Bonamia ostreae* (a parasite), which has been present in the waterway population since 2006. This infection is known to cause mortality in oyster populations, although it is possible that resistance to it can build up over time.
- Competition from the non-native Pacific oyster *Crassostrea gigas*[13] and the invasive non-native slipper limpet (*Crepidula fornicata*) which is widespread in the waterway.

Management of the Pembrokeshire Marine SAC addresses issues relevant to the native oyster e.g. fishing and water quality. A study[14] seeking to carry forward the work done in 2011, and to gather up to date information on current status of oysters in a handful of specific locations within the waterway is planned for 2016-17. It is hoped this will lead to the restoration of native oysters within the Milford Haven waterway in the future.

[12] Woolmer, A.P., Syvret, M. & FitzGerald A., 2011. Restoration of Native Oyster, Ostrea edulis, in South Wales: Options and Approaches. CCW Contract Science Report No: 960, 93 pp. and Pell, N., 2011. An investigation of the Native Oyster, Ostrea edulis (Linnaeus, 1758) at Milford Haven, Pembrokeshire. Aberystwyth University M.Sc.

[13] Information on *Crassostrea gigas* can be found here: http://www.marlin.ac.uk/species/detail/1676

[14] Milford Haven Native Oyster Regeneration Project - Stage One (current status and practicalities). A project funded by NRW and led by West Wales Shellfisherman's Association Ltd.

More information on Native Oysters can be found here: http://www.marlin.ac.uk/species/detail/1146 .

The Local Biodiversity Action Plan for this species is under review and once complete will be published here: http://ukbars.defra.gov.uk/project/show/36376

Condition	Trend
Poor	Declining

2.22 Pink Sea-fan

Pink sea-fans (*Eunicella verrucosa*) 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. This is one of the few marine species that is also a UK Biodiversity Action Plan species.

The highest numbers of Pink sea-fans locally are found in the Skomer MCZ where annual monitoring has been completed since 1994[15]. The monitoring shows that recruitment is at a lower level than the rate of loss and the population is considered to be in decline. Sea fan condition is moderate based on annual assessments of tissue necrosis, entanglement and damage.

Seasearch[16] also records sightings of the species on Pembrokeshire dive surveys providing additional distribution records. There are, however, no known changes in distribution since 2011 – the most northerly record being off Strumble Head.

The main cause of loss is thought to be physical damage from contact with potting lines between lobster pots. Currently there is no management in place to stop or reduce this and it therefore remains a significant threat to the local population of this species.

Condition	Trend
Moderate	
	Declining

2.23 Atlantic Grey Seal

The Wales grey seal (*Halichoerus grypus)* breeding population forms around 3.3% of the UK or 2.7% of the European population. The Pembrokeshire coast contains the

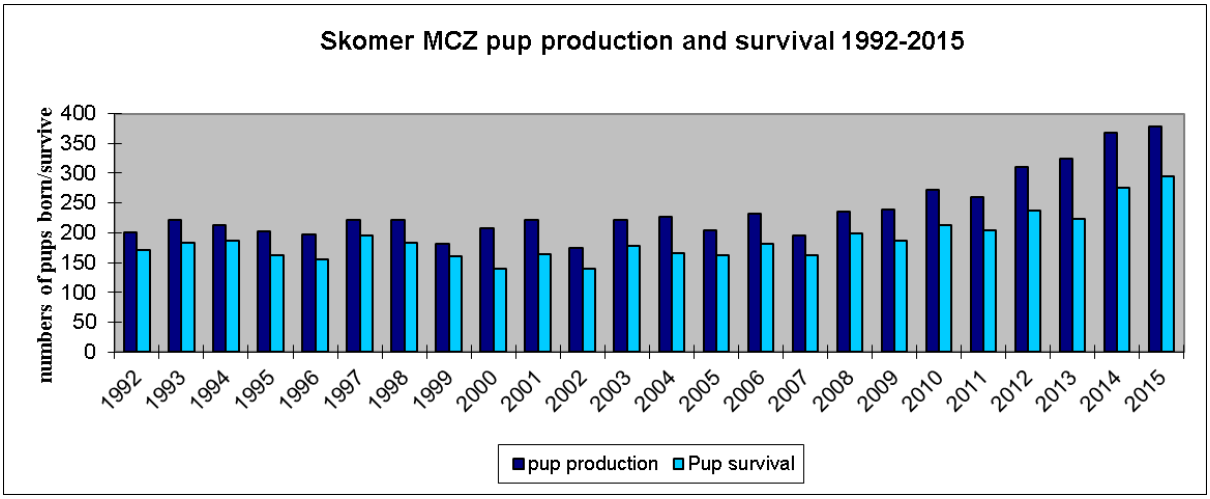
[15] Annual monitoring reports for the Skomer MCZ can be accessed here: https://naturalresources.wales/conservation-biodiversity-and-wildlife/find-protected-areas-of-land-and-seas/skomer-marine-conservation-zone/?lang=en

[16] Details of Seasearch and other marine conservation initiatives can be found here: http://www.wwmc.org.uk/

main colony in Wales and is the most southerly in Europe of any significant size. The largest assemblies are found on remote beaches and offshore islands. Grey seals can be seen around the Pembrokeshire coast and offshore islands throughout the year. During the pupping and breeding season (from August to November) the seals concentrate around breeding sites.

Grey seal pup production and survival is monitored annually in the Skomer MCZ and also at a selection of sites on Ramsey Island and on the north and south Pembrokeshire coasts. At Skomer MCZ pup production has shown an increasing trend and the percentage of pup survival has been stable, this has also been recorded at other monitored sites. The condition of the Grey seal population in Pembrokeshire is currently considered to be good. More has been done in recent years on seal photo identification and this work should provide useful information about seal movements in the Irish Sea and further afield. It is thought that good food sources, clean waters, and availability of suitable habitats are helping to maintain a healthy population.

Figure 4: Skomer MCZ Pup Production and Survival 1992 - 2015



Threats to Grey Seal populations remain largely unchanged, however the Pembrokeshire Outdoor Charter Group and Pembrokeshire Marine Code have made significant contributions towards minimising disturbance from recreational and commercial activities[17].

Condition	Trend
Good	Improving

[17] Information on the Outdoor Charter Group can be found here: http://www.pembrokeshireoutdoors.org.uk/ and the Marine Code here: http://www.pembrokeshiremarinecode.org.uk/

3.0 Results and Discussion

The majority (70%) of species and habitats assessed in this report are considered to be in poor or moderate condition and are therefore sub-optimal. Only three (13%) are currently considered to be in good condition. Four of the features included (17%) are lacking sufficient data to assess current state.

However, targets for biodiversity conservation tend to focus upon trend rather than current status. The target in the UN Convention on Biological Diversity[18] is to halt the decline in biodiversity by 2020 (and then reverse it). The Environment (Wales) Act (2016) (referred to here as the Environment Act)[19] enshrines the UN Convention on Biological Diversity in domestic legislation, placing enhanced duties upon public bodies to not only have regard for biodiversity, but to 'maintain and enhance' it and to 'promote the resilience of ecosystems'.

The assessment of recent trends indicates that 13 of the 23 habitats and species assessed (57%) are considered to be stable or improving (eight [35%] stable and five [22%] improving) and could be said to meet the UN target to halt the decline in biodiversity by 2020 and the domestic target to maintain biodiversity. Seven features (30%) are still in decline and a further three (13%) have insufficient data to assess trend. Since the number of features assessed as declining exceeds the number assessed as improving, the overall trend could still be said to be downward. Furthermore, the assessment of trend has to be in the context of current status. A stable trend for a population in good condition is a positive outcome. A stable trend in a population considered to be in poor condition is not. The number of habitats or species assessed as declining, or stable but in poor condition is eight (35%) and these remain a cause for concern.

There are some good news stories. The grey seal population is assessed as in good condition with an improving trend. Otters and grassland fungi are assessed as in good, stable condition. Oak woodland, the freshwater habitats assessed and coastal cliffs and slopes are in moderate, improving condition. Five of the 23 features assessed (22%) are improving and could therefore be said to be contributing to the UN target of reversing the decline and the domestic target of enhancing biodiversity. All have been the subject of considerable and sustained conservation effort.

Six features (26%) are considered to have insufficient data to assess condition and/or trend. This remains a cause for concern and reflects the shortage of resources in the conservation sector. Furthermore, it is likely that this reflects a wider problem of the availability of robust and comprehensive data. If public bodies are to report accurately on progress towards biodiversity conservation targets, it will be necessary to undertake structured and systematic surveys. The Environment Act calls for a wider and improved evidence base in order to increase our understanding

[18] Details of the Convention on Biological Diversity are available here: https://www.cbd.int/intro/default.shtml
[19] Details of the Environment (Wales) Act (2016) are available here: http://gov.wales/topics/environmentcountryside/consmanagement/natural-resources-management/environment-act/?lang=en

of our natural resources, how they function and of the benefits that they provide by taking account of 'all relevant evidence and gather[ing] evidence in respect of uncertainties'.

The assessments which have been given are only possible because of the expertise of local naturalists in interpreting the available data sets and understanding the dynamic situation in the field. Without robust data and local expertise, effective management of natural resources is difficult to both plan and evidence. Some data sets are the result of statutory monitoring by public bodies, but many are the result of considerable effort and commitment by volunteers. This volunteer effort should not be underestimated. For example, a glance at the acknowledgements section of this report shows that over one third of the lead contributors are not employed by agencies with statutory duties on biodiversity conservation. Many are ecological consultants, third sector employees or expert naturalists acting in a private capacity. All have donated their time and expertise free of charge to the Pembrokeshire Biodiversity Partnership in order to further understanding of the state of wildlife in our County. This demonstrates that resources invested in conservation often achieve far greater outputs than would be expected without such commitment. Crucially, the Environment Act requires public bodies to 'take account of the benefits and intrinsic value of natural resources and ecosystems'. Whilst it is the value of ecosystem services that often drives the public policy agenda, it is this ***intrinsic*** value which often motivates the volunteer.

This report is intended to provide a snapshot of selected species and habitats as a proxy measure of the state of Pembrokeshire's wildlife in the absence of comprehensive data for all species and habitats. Care should be taken to ensure that publication of this report does not focus conservation effort entirely upon the features reported here as this would skew future assessments, making them unrepresentative of the situation in the wider countryside.

4.0 Conclusion

Whilst there have been some successes and some features are now improving, the majority of features assessed are in poor or moderate condition and the overall trend is still declining. Accurate assessment is hampered by a paucity of robust, long term data. If Pembrokeshire is going to play its part in fulfilling the UK's international commitments on halting biodiversity loss and reversing its decline, there will need to be even more sustained commitment to, and greater investment in, long term conservation projects and monitoring programmes.

This report covers the five years leading up to the enactment of key new legislation in Wales with a bearing upon biodiversity conservation. If, over the next few years, the Environment (Wales) Act and the Wellbeing of Future Generations (Wales) Act are successful in 'mainstreaming' biodiversity conservation and the principles of sustainability into public life, then further progress towards conservation aims is possible.

5.0 Recommendations

Since the features reported here are used as a proxy measure of the state of wildlife in the wider context, specific recommendations for individual features in this report will not be made. For many of the features assessed, local habitat or species action plans exist which identify known threats and make specific management recommendations. The action plans can be accessed here: http://ukbars.defra.gov.uk/project/show/36376. General recommendations are given below:

- Greater resources for coordinated action to conserve and enhance biodiversity are needed. It is not only the amount of resources, but the security of resources that is often important since many conservation projects are necessarily long term.
- Collection of robust and long term data sets across an array of features should be encouraged to assist in planning conservation work, assessing the efficacy of actions and reporting upon outcomes.
- Conservation effort should not be focussed solely upon features reported here as this will skew the results of future reports intended to reflect the wider situation.
- The maintenance of an interface between volunteers and statutory bodies helps to ensure the best knowledge and experience is available during decision making and guides volunteer effort to ensure outcomes are optimised for the available resources. Such an interface should be maintained.

6.0 Acknowledgements

Thanks are due to all members of the Pembrokeshire Biodiversity Partnership whose work contributes to the conservation and enhancement of biodiversity and our understanding of its status and trends. However, particular thanks go to the individuals listed in **Table 2**, below, who took the lead in describing and assessing the various habitats and species covered by this report.

Table 2: Lead Contributors to this Report

Name	Section
Blaise Bullimore, Milford Haven Waterway Environmental Surveillance Group	Native Oyster; Grey Seal; Pink Sea Fan
Anne Bunker, Senior Marine Conservation Officer – Natural Resources Wales	Native Oyster; Grey Seal; Pink Sea Fan
Sue Burton, Pembrokeshire Marine SAC Officer	Native Oyster; Grey Seal; Pink Sea Fan
Mary Chadwick, Senior Conservation Officer - Natural Resources Wales	Bats; Dormouse; Oak Woodland
Kate Collins, Senior Technical Biodiversity Officer - Natural Resources Wales	Ponds and Lakes; Rivers, Streams and Ditches
Stephen Evans, BSBI County Recorder	Three-lobed Water Crowfoot
David Harries, County Recorder for Fungi	Grassland Fungi
Annie Haycock, Naturalist (WeBS Coordinator)	Wetland Birds
Bob Haycock, Ornithologist (Pembs Bird Group and BTO Rep)	Chough; Farmland Birds
Jane Hodges, Ecologist	Chough; Grassland Fungi
Jon Hudson, Senior Conservation Officer - Natural Resources Wales	Southern Damselfly; Marsh Fritillary; Heathland; Coastal Cliffs & Slopes
Paddy Jenks, Ecologist	Kestrel
Chris Lawrence, Senior Conservation Officer - Natural Resources Wales	Mudflats; Otters
Geoff Liles, The Otter Consultancy	Otters
Kate Lock, Marine Conservation Officer - Natural Resources Wales	Grey Seal; Native Oyster; Pink Sea Fan
Sarah Mellor, Biodiversity Officer – Pembrokeshire Coast National Park Authority	Arable Field Margins; Grassland
Bob Phillips, Environment Officer - Natural Resources Wales	Ponds and Lakes; Rivers, Streams and Ditches
Trevor Theobald, Biodiversity Officer – Pembrokeshire County Council	Grassland Fungi; Hedgebanks
Andrew Tuddenham, Manager North Pembrokeshire - National Trust	Heathland