



Habitat Action Plan: Freshwater

Introduction

Scope

This grouped habitat action plan includes:

- Eutrophic standing waters
- Mesotrophic lakes
- Oligotrophic and dystrophic lakes
- Ponds
- Rivers

There are no examples of Aquifer-fed naturally fluctuating water bodies in Pembrokeshire, so this habitat type is not discussed further in this plan. Some ponds are closely associated with the management of heathland sites and reference should be made to the Heathland Habitat Action Plan (HAP). Agricultural irrigation ponds are dealt with in the Farmland HAP. Control of Invasive Non-Native Species (INNS) is dealt with in a separate grouped Species Action Plan (SAP).

Although the habitats included in this plan are quite distinct, conditions in one habitat (such as water quality and level) can be affected by actions elsewhere in the catchment which can have a profound effect on the flora and fauna of the water body. A sensible management unit is therefore, the catchment. For the purposes of this plan, the limit of freshwater habitats will be considered to be the tidal limit of rivers. Brackish waters and estuaries are included in the Coastal HAP. Marginal and bank-side vegetation can be important for species associated with these habitats (such as amphibians and otters), affects some of the physical characteristics of the water-body (eg by shading the water surface) and can provide a buffer between freshwater habitats and adjacent (often intensively managed) land. Marginal and bank-side vegetation should therefore be considered as part of this plan.

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Actions in these habitats which form part of the management of a protected site (Site of Special Scientific Interest, Special Area for Conservation etc) are administered by Natural Resources Wales and are reported separately elsewhere.

Vision Statement

To improve and sustain the biodiversity value and potential of freshwater habitats and associated species in Pembrokeshire.

Description of Habitats

Surface waters can be classified according to their nutrient levels, from eutrophic (high nutrient) through mesotrophic to oligotrophic (low nutrient) and dystrophic (peaty) waters. Eutrophic waters typically contain at least 0.035 mg/l total phosphorous, whereas mesotrophic lakes have values in the range 0.01 – 0.03mg/l, with values below that for oligotrophic lakes. However, it is important to note that water quality alone should not be relied upon to classify water bodies. High nutrient levels may be a result of anthropogenic pollution in a historically oligotrophic habitat. The Water Framework Directive places emphasis on assessment of biotic elements as well as physical and chemical ones in determining the condition of a water body.

Pembrokeshire has a wide variety of freshwater habitats, from upland flushes, ponds and streams in the Preseli Hills to the main lowland watercourses (the Nevern, Gwaun, Eastern Cleddau and Western Cleddau). The coastal fringe is characterised by many short coastal streams. Two reservoirs (Rosebush and Llys Y Fran) have been created in the upper reaches of the Eastern Cleddau catchment to supply much of the potable water for the County, with a further abstraction point above Haverfordwest on the Western Cleddau. The network of watercourses in the County act as wildlife corridors along which many species can move between areas of suitable habitat.

For the purposes of the UK Biodiversity Action Plan, lakes are defined as permanent water bodies of one hectare in area or greater. Mesotrophic lakes are relatively infrequent in the UK and largely confined to the margins of upland areas in the North and West. Rosebush reservoir was identified as a potential example in Pembrokeshire by the Countryside Council for Wales (now part of Natural Resources Wales) in their publication *Priority Habitats in Wales, 2003*. Oligotrophic and dystrophic lakes are water bodies which are characterised by their low nutrient levels and low productivity. They tend to occur in upland areas, often over hard acidic rocks.

Ponds are widespread over the County, often created artificially for amenity or conservation purposes. Larger ponds (for example associated with heathland) can be very important sites of conservation interest, whereas smaller garden

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ponds can provide vital connectivity for some species across a fragmented environment.

Rivers are highly connected linear ecological units where a factor applied at one point in the catchment can have profound effects on downstream habitats. The upper reaches of the main rivers tend to be characterised by hill farming and/or forestry operations, whereas the lowland stretches favour dairy and arable farming and see the highest concentration of human settlements. Some of these rivers support recreational fishery, water abstraction and effluent discharges, all of which are regulated and licensed by Natural Resources Wales (NRW). The Cleddau Rivers Special Area for Conservation (SAC) was designated in 2005 for many features including Otter (*Lutra lutra*). The shorter coastal streams tend not to support significant populations of fish, but are still important freshwater habitats for many species.

Threats

Threats to these habitats come from:

- **Loss or fragmentation of habitat** due to changing land use.
- **Altered flow regimes** due to abstraction and/or impoundment, loss of upland wetland habitats through drainage / canalisation of lower reaches. New micro hydro-power schemes are becoming more frequent in response to the drive for low-carbon, local energy sources. Typically these comprise a new weir, a depleted reach, and an outfall returning the water to the stream. The structures and reduced flow can impair the channel's physical continuity and can disrupt the stream's biological connectivity. This has the potential to degrade in-stream and riparian habitats and thus impact the abundance and diversity of plant and animal species using the watercourse.
- **Pollution.** Much of the County's land use is rural with potential for diffuse pollution from field runoff, including increased sediment load from soil erosion. In urban areas, sewage overflows or mis-connections and/or industrial effluent can be a factor. Nutrient loading can increase the frequency and severity of algal blooms. Un-consented discharges to watercourses (whether through ignorance, accident or intent) can be subject to enforcement action by NRW.
- **Removal of bank-side vegetation** including trees resulting in reduction in the biodiversity value of the marginal or bank-side habitats and a loss of buffer strips between watercourses and adjacent land use.
- **Inappropriate management of river corridors.** Protected riverside corridors help avoid erosion/siltation which can be a significant problem in some areas. However excluding stock from riverbanks is not always appropriate. There are numerous rare/scarce plants and invertebrates associated with grazed (and eroding) riverbanks. On short coastal streams for example, exclusion of stock may lead to loss of open habitats, vertical river cliffs and shading of small streams.
- **Removal of large woody debris.** Historically removed from rivers and streams to prevent flooding and ease fish passage but current thinking

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and research show they can increase biodiversity and prevent flooding - should be assessed on a case by case basis with a presumption to leave in-situ.

- **Invasive Non –Native Species** (INNS) are a threat to native flora and fauna in many habitats. In addition to natural vectors for INNS such as migratory animals, recreational uses can spread INNS as described below. Plants and animals which ‘escape’ from gardens, ponds and fish farms can also cause problems. Reference should be made to the INNS SAP for actions to control INNS in these habitats.
- **Recreation.** Including angling in rivers, artificial stocking of ponds and lakes, water-sports, walking (increased bank-side erosion), improving access to previously undisturbed areas (especially significant in potential otter breeding sites) and increased bio-security hazard where invasive species can be spread between sites (eg. where dogs run in and out of multiple ponds, or recreational boaters move craft between water bodies).
- **Poaching** seriously threatens fish stocks especially salmonid species. The use of indiscriminate methods such as foul hooking, toxic chemicals and explosive devices causes significant damage to other species, habitats and water quality. Illegal angling (fishing without a licence) also impacts on fish populations and threatens revenue for restocking programmes. NRW undertake a programme to combat illegal fishing activities and have continued success in prosecuting poachers and illegal anglers.
- **Climate change.** Although the causes of climate change are beyond the scope of the Biodiversity Partnership, conservation action can take account of the need for certain species to move their range either northward or to higher altitude as average temperatures rise. Increased habitat connectivity is vital to this process. With expected increases in the frequency and severity of storm events, some of the ecosystem services provided by freshwater habitats (such as flood and drought alleviation or water purification) may become more significant in the minds of policy makers. Healthy, functioning ecosystems are key to providing these services.

The threats outlined above are not mutually exclusive. A proposed change in land use within a catchment may affect the level of risk from more than one of these threats and consideration should be given to all aspects of habitat conservation in determining appropriate land use or management regimes.

Related Plans and Policies

Other plans / policies directly affecting the management of these habitats in Pembrokeshire are:

- Coastal HAP: <http://ukbars.defra.gov.uk/project/show/36391>
- Heathland HAP: <http://ukbars.defra.gov.uk/project/show/36386>
- Lowland Farmland HAP: <http://ukbars.defra.gov.uk/project/show/36387>

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- Invasive Non-Native SAP:
<http://ukbars.defra.gov.uk/project/show/37479>
- Wetlands HAP: <http://ukbars.defra.gov.uk/project/show/36388>
- Southern Damselfly SAP:
<http://ukbars.defra.gov.uk/project/show/36404>
- Cleddau Rivers SAC Core Management Plan, 2008
- Pembrokeshire Water Framework Directive Strategy: NRW

Species Associated with these Habitats

Priority Species Associated with this Grouped Habitat Action Plan				
Species Name	Common Name	UK Bap Spp	S42 list Welsh Spp	Locally Important Spp
Mammals				
<i>Arvicola terrestris</i>	Water vole	✓	✓	
<i>Lutra lutra</i>	Otter	✓	✓	
<i>Myotis daubentonii</i>	Daubenton's Bat			✓
<i>Nyctalus noctula</i>	Noctule bat	✓	✓	
<i>Pipistrellus pipistrellus</i>	Common pipistrelle		✓	
<i>Pipistrellus pygmaeus</i>	Soprano pipistrelle	✓	✓	
Birds				
<i>Alcedo atthis</i>	Kingfisher			✓
<i>Cinclus cinclus</i>	Dipper			✓
<i>Emberiza schoeniclus</i>	Reed bunting	✓	✓	
<i>Parus montanus subsp. Kleinschimdti</i>	Willow tit			✓
<i>Passer montanus</i>	Eurasian tree sparrow	✓	✓	
<i>Rallus aquaticus</i>	Water rail			✓
Fish				
<i>Alosa alosa</i>	Allis shad	✓	✓	
<i>Alosa fallax</i>	Twaite shad	✓	✓	
<i>Anguilla anguilla</i>	European eel	✓	✓	
<i>Cottus Gobio</i>	European bullhead			✓
<i>Lampetra fluviatilis</i>	River lamprey	✓	✓	
<i>Osmerus eperlanus</i>	Smelt	✓	✓	
<i>Petromyzon marinus</i>	Sea lamprey	✓	✓	
<i>Salmo salar</i>	Atlantic salmon	✓	✓	
<i>Salmo trutta</i>	Brown/sea trout	✓	✓	
Reptiles / Amphibians				
<i>Anguis fragilis</i>	Slow-worm	✓	✓	
<i>Bufo bufo</i>	Common toad	✓	✓	
<i>Natrix natrix</i>	Grass snake	✓	✓	
Invertebrates				
<i>Austropotamobius pallipes</i>	Freshwater white-clawed crayfish		✓	
<i>Brachytron pratense</i>	Hairy dragonfly			✓

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<i>Ceragrion tenellum</i>	Small red damselfly			✓
<i>Coenagrion mercuriale</i>	Southern damselfly		✓	
<i>Ischnura pumilio</i>	Scarce blue-tailed damselfly			✓
<i>Margaritifera margaritifera</i>	Freshwater pearl mussel		✓	
<i>Nigrobaetis niger</i>	Iron blue mayfly	✓	✓	
Vascular Plants				
<i>Fossombronia foveolata</i>	Pitted frillwort			✓
<i>Luronium natans</i>	Floating water plantain	✓	✓	
<i>Pilularia globulifera</i>	Pillwort	✓	✓	
<i>Ranunculus tripartitus</i>	Three-lobed water-crowfoot	✓	✓	
Lower Plants				
<i>Chara curta</i>	Lesser bearded stonewort			✓
<i>Chara</i> species	Stoneworts	✓		
<i>Cryphaea lamyana</i>	Multi-fruited river moss	✓	✓	
<i>Lycopodiella inundata</i>	Marsh clubmoss			✓

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Plan Aims

No.	Aims	Deadline	Comments
FW01	Maintain and/or expand/improve the extent and ecological quality of habitats included in this plan	Date of next review	
FW02	Maintain and/or expand range and/or population of key species associated with these habitats	Date of next review	
FW03	Raise awareness of and interest in the conservation of freshwater habitats in Pembrokeshire.	Ongoing	

Action

Code	Action	Report By	Lead Role	Progress / Additional Information
POLG1.03	Through the implementation of Pembrokeshire's Biodiversity SPG, ensure all Planning applications are assessed for possible effects on biodiversity resources. Ensure that planning applications which affect LBAP Habitats and Species are addressed and include full ecological surveys which are properly considered, and mitigation measures which significantly addresses potential negative impacts.	Annually	PBP	
FW03.01	NRW Senior Environment Officer (catchment sensitive) to give at least one presentation covering management	Annually	NRW	

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	of and threats to freshwater habitats to a relevant interest group per year.			
FW03.02	NRW fisheries staff to hold at least one awareness raising event per year	Annually	NRW	