



DŴR CYMRU
WELSH WATER

Welsh Water Biodiversity Overview



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WELSH WATER BIODIVERSITY OVERVIEW



Introduction

Welcome to our 2004 Biodiversity Overview which sets out, for the first time, in a single document our approach to managing Welsh Water's landholdings and more generally to conserving the environment and promoting biodiversity.

Working in partnership with our contract service providers and other organisations we take our responsibility as a major landowner and guardian of some of Wales's most important wildlife sites very seriously. We encourage best practice and the integration of biodiversity and heritage considerations throughout our business.

Since 1996 Welsh Water has invested some £1 billion in improving the quality of wastewater discharged to the coastal environment. This is investment that Welsh Water needed to make to comply with European Union (EU) Directives, but which we prioritised to deliver improvements to the aquatic environment much sooner than would otherwise be required.

We take pride in Living and Learning With Water, our environmental education strategy. This promotes an awareness and understanding of the value of water and the role it plays in our every day lives. Each year over 10,000 primary schoolchildren attend one of our 4 Education Centres and receive teacher led lessons, which promote the importance of rich, diverse habitats and nature conservation.

We believe we are well positioned, under the ownership of Glas Cymru, to continue to play a leading role in

protecting and enhancing the natural environment in our region for the benefit of future generations.

I hope you will enjoy reading this our first published report on Biodiversity.



Managing Director

WELSH WATER BIODIVERSITY OVERVIEW



Welsh Water was bought by Glas Cymru in May 2001. Glas Cymru is a single purpose company with no shareholders. Under Glas Cymru ownership, Welsh Water is run solely for the benefit of its customers and to deliver high quality services at lowest cost.

Welsh Water provides water supply and sewerage services to over three million people living and working in Wales and some adjoining areas of England. We have 1.2 million household customers and over 110,000 business customers making us the sixth largest of the ten regulated water and sewerage companies in England & Wales.

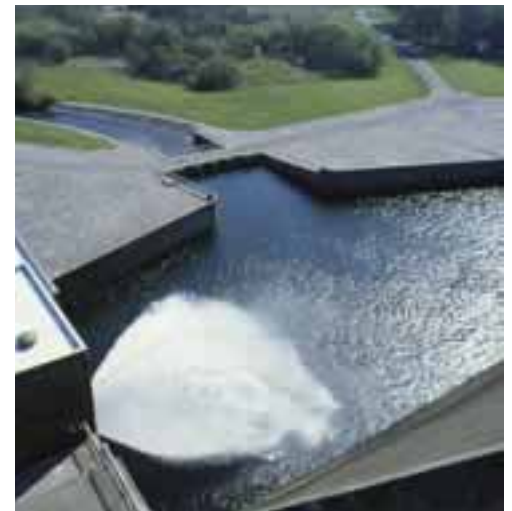
Our primary responsibility is to ensure a clean and reliable supply of drinking water and to deal effectively with wastewater so as to protect the natural environment. We cannot diversify into other unrelated activities and any financial surpluses generated by our business are reinvested in improving services to our customers and lowering bills.

The UK water industry is capital intensive. Welsh Water employs assets worth over £14 billion.

We operate 83 impounding reservoirs, 105 water treatment works and supply on average 900 million litres of water every day through a network of 27,000km of water mains, including 738 pumping stations and 715 service reservoirs. We also collect wastewater (and surface drainage) through a network of 18,400km of sewers, incorporating 1,700 sewage pumping stations and

3,300 combined sewer overflows. It is treated at 850 wastewater treatment works located next to rivers and along the coast of Wales.

As a large landowner and with processes and activities that have a direct influence on the environment, Welsh Water is committed to enhancing biodiversity within its landholdings and to also assist others where possible.





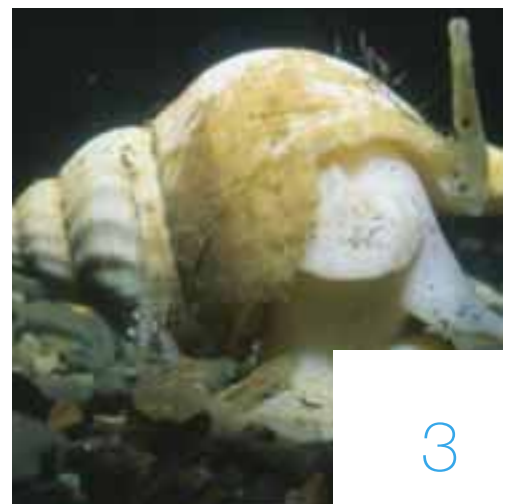
WELSH WATER BIODIVERSITY OVERVIEW

Biodiversity is the technical term used to describe the richness of biological life, from the smallest micro-organism to the largest living mammal.

In recent years, various organisations and government agencies have introduced a strong drive to preserve and enrich the biodiversity of the world. At the first Earth Summit held in Rio de Janeiro in 1992, over 150 countries (including the UK) signed the Convention on Biological Diversity. The UK then translated this commitment into the first UK Biodiversity report which identified over 40 key habitats, which are either under threat, important for key species or protected by international legislation.

The Welsh Assembly Government has separately identified habitats and species which are of nature conservation interest in Wales. Whilst these include those that are on the UK wide Habitat and Species List, there are some differences, reflecting the variations in habitats and species in Wales.

Biodiversity objectives have been set which are now being cascaded through the production of local Biodiversity Action Plans. Many local authorities and organisations have prepared such action plans.



WELSH WATER BIODIVERSITY OVERVIEW



We are committed to enhancing biodiversity, protecting our archaeological heritage and promoting access and recreation at our sites.

In fulfilling this commitment we will:

- Encourage best practice and the integration of biodiversity and heritage considerations throughout the business.
- Manage our water and landholdings so as to enhance and actively encourage the public enjoyment of our sites.
- Undertake appropriate consultation, survey and research so as to properly inform our operational and land management decisions.
- Implement site-specific habitat and species plans for our major landholdings and so contribute to the development of a Corporate Biodiversity Action Plan.
- Share appropriate ecological and heritage data with other interested organisations.
- Talk to and develop positive relationships with the public and key conservation, access and recreation interests.
- Have the vision to plan around the interests of sensitive areas where necessary.
- Comply with all relevant environmental legislation and applicable Codes of Practice.

We will achieve this by:

- Basing wider business decisions on sound environmental, social and economic considerations.
- Taking steps to ensure that all our staff, including those employed by our outsourced contract partners, are aware of, and committed to this Policy.
- Regularly reviewing our environmental performance and setting improvement targets so as to deliver continuous improvement.
- Reporting results to the Quality and Environment Committee of the Board, and periodically publishing an overview of performance.

Our commitment
to biodiversity, access & recreation

WELSH WATER BIODIVERSITY OVERVIEW



Welsh Water manages both the supply of clean water and the collection and treatment of dirty water. Our business therefore has an impact on the environment. We have created reservoirs to store rainfall, we take water from these and from rivers, treat and supply it. Following use by our customers, it is then cleaned and subsequently returned to the environment.

The processes that are used to treat the water will have a direct impact on the environment in terms of the use of primary resources such as energy, water, chemicals and in terms of the discharges to water (fresh and coastal), generation of waste, and the emissions to air (odours and greenhouse gases).

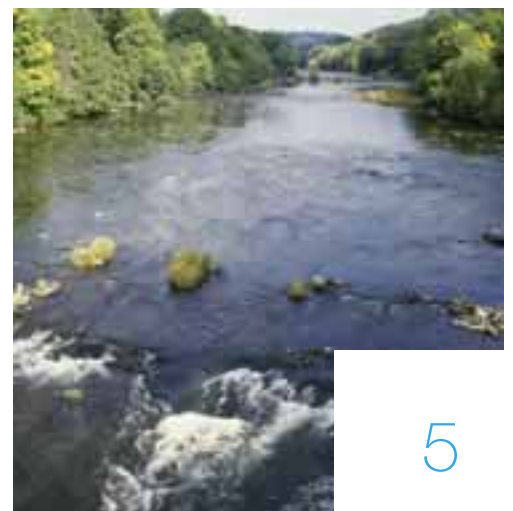
All of these environmental impacts can in turn, affect the biodiversity of the receiving environment. The quality of rivers in Wales is amongst the best in the UK and it is important for Welsh Water to help safeguard the water environment from pollution incidents.

Work on the management of our other environmental impacts, such as waste and energy, is being undertaken by us and our contract service providers and we shall be reporting separately on our wider environmental management.

Welsh Water has the potential to impact on the environment in general, and on biodiversity in particular, through a number of activities, including:

- Abstraction and use of water from surface or ground waters (water resource management).
- Discharges to rivers or coastal waters.
- Construction, building and refurbishing a range of infrastructure, treatment works and pumping stations.
- Owning 35,000 hectares of land.

Our impacts



WELSH WATER BIODIVERSITY OVERVIEW



Our impact
on water resources

Water resources

The rivers and wildlife of Wales are adapted to the relatively wet climate and it is our task to deliver supplies to our customers whilst preserving the natural environment which includes many rivers of national and international conservation significance.

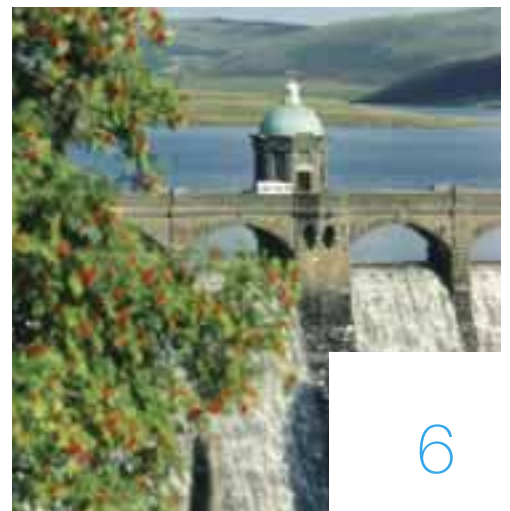
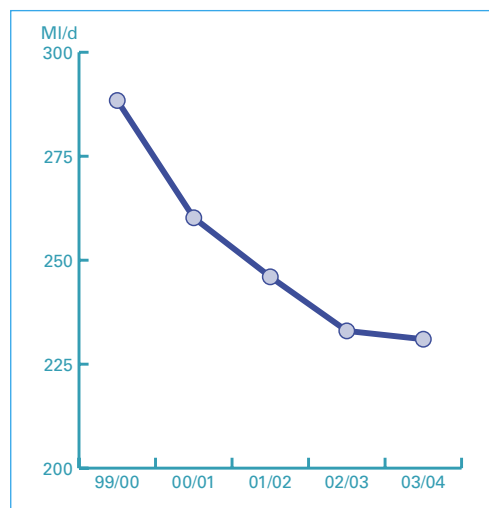
Nearly all of the water used for supply is taken from rivers and reservoirs across our region and most of these rivers are supported by releases from Welsh Water's impounding Reservoirs in line with agreements with Environment Agency Wales.

In a normal year we abstract about 5% of the annual rainfall in our region to supply about 900 million litres of water per day, utilising a network of reservoirs for storage. The potential impact of such abstractions at or near Sites of Special Scientific Interest (SSSI) receives additional and serious consideration by Welsh Water.

Once inside the distribution system we endeavour to minimise losses of this precious resource. The age and condition of our 27,000 km water supply network, as well as the character of our operating environment, mean that Welsh Water has more mains bursts than the industry average. However in the last five years we have reduced leakage by more than a third. In 2003/04 we invested £6 million in leakage reduction, and repaired on average 50 bursts and leaks every day.

Mainly as a result of such work we have consistently reduced the amount of water that we need to abstract from the environment. Water input for distribution has fallen by 15% over the last ten years.

Leakage trend



WELSH WATER BIODIVERSITY OVERVIEW



Our impact
on rivers and coastal waters

Discharges to rivers and coastal waters

Welsh Water has directly contributed to biodiversity through the improved quality of its discharges to the marine and freshwater environments. Major investments in new treatment works and improvements in the combined sewer overflows during the past 10 years have been a significant factor in environmental improvements and enhanced marine and freshwater habitat.

We target investment at key areas: improving the quality of treated water that our wastewater treatment works discharge; protecting rivers and coastal areas from pollution during storms and ensuring that our processes operate with minimum impact on local communities.

Since 1995 over £1.5 billion has been invested in our wastewater network and overall performance has steadily

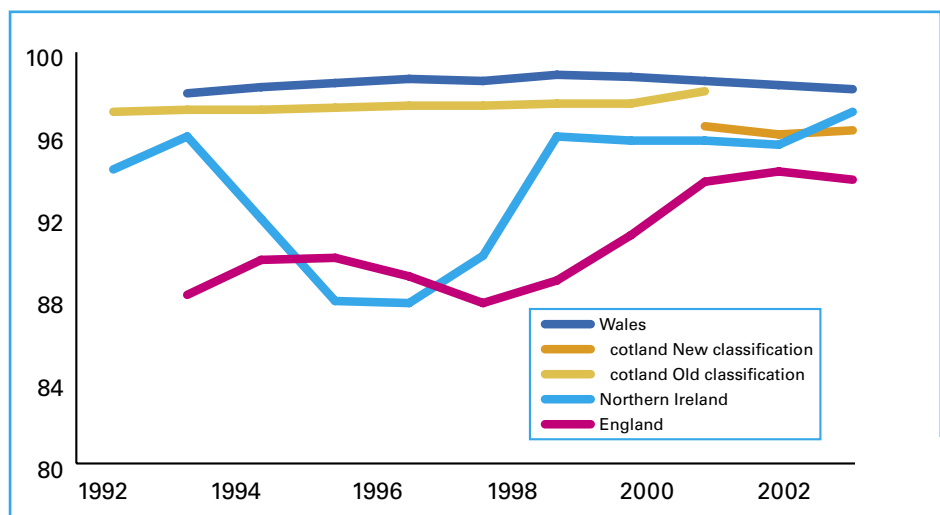
improved. Today 99% of our customers are served by treatment works providing full treatment by biological and other processes. As recently as 1996 only 57% of the wastewater we collected received full treatment.

As a regulated water and sewerage company, providing an essential public service, much of what Welsh Water does is determined by standards set by government, often in accordance with EU directives. However we strive to prioritise these significant investment needs so as to deliver the maximum environmental benefit at the earliest opportunity.

Freshwater

The quality of rivers in Wales is amongst the best in the United Kingdom. In 2003 97% of rivers and canals were found to be achieving the highest quality capable of supporting healthy salmonid fisheries.

Rivers of good or fair chemical quality



WELSH WATER BIODIVERSITY OVERVIEW



Our impact
on rivers and coastal waters

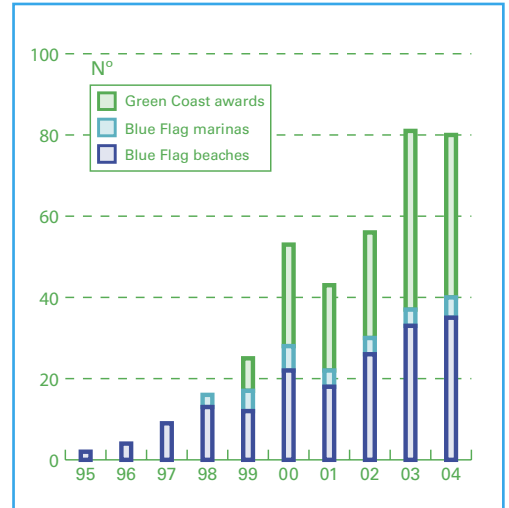
Marine

One of the key aspects of our investment programme has been the improvements targeted at wastewater assets in coastal areas.

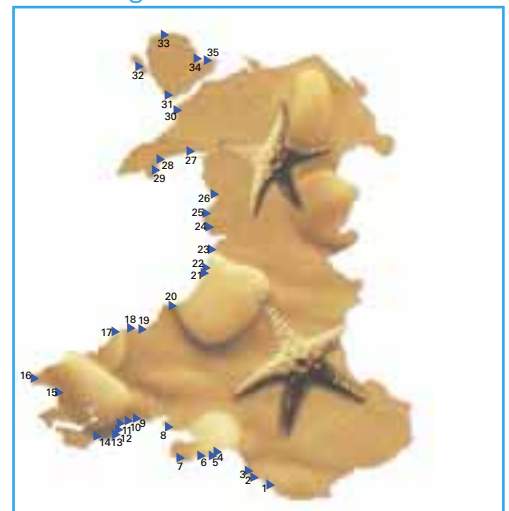
We are already seeing the results of this work. Marine water quality is monitored at our bathing beaches and in 2003, 77 of the 78 designated areas achieved the 'Mandatory' water standards, whilst over 83% also achieved the much higher "Guideline" standard required for European Blue Flag Awards. Wales in 2004 has 40 Blue Flag Awards nearly a third of the UK total, and 40 equivalent Green Coast Awards which recognise the need in certain areas for exceptional water quality without the facilities generally associated with more traditional resorts.



Coastal awards



Blue Flag awards



Green Coast awards





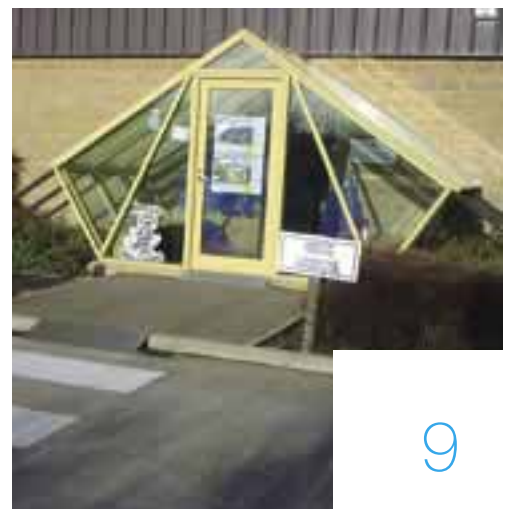
WELSH WATER BIODIVERSITY OVERVIEW

Investment in infrastructure

Investing some £250 million a year to improve water and sewerage services inevitably means working in close proximity to sensitive conservation and wildlife sites. Design teams are made aware of statutory sites at the earliest possible stage and this year we have further enhanced our electronic database which contains comprehensive details of over 4,800 sensitive sites.

Where appropriate, preliminary design work is followed by extensive consultation with environmental bodies to ensure that wider issues are identified and taken into account. In addition, wherever possible, we seek to enhance biodiversity and have completed many projects to this end from safeguarding bat roosts to wetland creation.

Major investment in new treatment works and improvements in the combined sewer overflow networks over the past 10 years has significantly contributed to 'cleaner' environments for the benefit of both marine and freshwater habitats and species.



WELSH WATER BIODIVERSITY OVERVIEW



We have surveyed over 100 reservoir and wastewater sites to identify their conservation value. A number of long term actions for enhancing the overall nature conservation of our sites were then implemented as a result of the surveys. Grassland management plans for many of our sites have been produced. These implemented simple but effective measures that make a difference to the biodiversity value of an operational site.

With 60% of our land being of national conservation and biodiversity importance, and a continual capital investment programme, we are very much committed to the responsible management of our operational and construction activities. Our environmental policy commits us to preventing pollution and to furthering the conservation of the environment and protecting and enhancing biodiversity.

Owning approximately 35,000 hectares of land generates a wide range of opportunities to implement best practice on our operational sites. There is a small team of dedicated staff who manage our major reservoir sites on a day-to-day basis. Known as the Environmental Conservation, Access And Recreation Group, their remit covers all nature conservation and recreational uses of the major reservoir sites. They also run visitor and recreational facilities at key reservoirs, such as Llys y Fran, Elan Valley and Llyn Brenig.

To ensure the long term sustainability of our landholdings Outline Biodiversity Action Plans were prepared in 2002

for each major Welsh Water reservoir site. Many Biodiversity Action Plans for smaller sites have already been completed. For example, a pilot scheme at Llanbwchllyn Lake in mid Wales was undertaken in partnership with the Radnorshire Wildlife Trust, Countryside Council for Wales and local landowners. On this site, we improved the wetland management regime, enhanced an area of botanical interest through grassland management whilst at the same time improved access to the area for birdwatchers and anglers.



Our impact
from managing our land

WELSH WATER BIODIVERSITY OVERVIEW



Welsh Water has a specific duty to further conservation. To meet this duty, the company has developed a number of tools to manage both our large portfolio of landholdings and also to co-ordinate and provide guidance on a wide range of construction and operational projects. These include:

Best practice group

A Best Practice Group for Nature Conservation has been established by Welsh Water with its partners. With a wide ranging membership of practitioners who are constantly involved in the planning and operational stages of all our business activities, this Group has developed a number of tools to ensure that best practice is followed. It also acts as a forum for sharing ideas and information, and as a vehicle for continual improvement and training.

Making the most of our sites

A handbook has been produced, providing practical information and guidance for operational managers. It gives advice on evaluating a site, conserving it and creating and sustainably managing habitats.

Nature Conservation Manual

Our Guide to Operational Works & Conservation outlines company policy and procedure for consultation on conservation matters. It also provides advice on the relevant legislation, protected species, protected habitats and the implications of these for our operations.

Consultation Database

Consultation with key stakeholders, regulatory bodies and interested conservation organisations is an essential part of our planning processes. We have developed a database of relevant contacts within these organisations (and their responsibilities, interests and geographical scope), which encourages good practice with stakeholders. This database also allows tracking of the various ecological monitoring studies for our future projects. This information can be shared with external organisations.

Biodiversity Index

A methodology for assessing the quality of a particular habitat in a formalised, systematic way such that it can be repeated at a later date has been trialled. This allows changes in a habitat's quality over time to be quantified and has been adapted for use in Wales from an idea originally developed by Anglian Water. A User Manual has been prepared and we are currently evaluating its effectiveness in our business area.

WELSH WATER BIODIVERSITY OVERVIEW



The UK Biodiversity Action Plan (BAP) identifies some 40 key habitats requiring action because they are either under threat, important for key species or of international importance and thereby protected under international legislation. A similar list of habitats of principal importance for conservation of biological diversity for Wales has been prepared by the Welsh Assembly Government. Welsh Water's landholdings include some of the UK and Wales's key habitats including:

- Upland oakwood
- Lowland beech
- Yew woodland
- Purple moor-grass
- Mesotrophic lakes
- Reed beds
- Wetland wood
- Upland heathland
- Blanket bog
- Rush pastures
- Fens
- Ancient and species rich hedgerows

Long term priorities

- Better understand the nature conservation value of landholdings.
- Implement individual Site Habitat Action Plans to enhance nature conservation value of key habitats e.g. upland oak woods.
- Encourage tenant farmers to protect and enhance nature conservation on our landholdings.
- Ongoing consultation and liaison with key environmental and heritage organisations.
- Implement scheme specific habitat enhancements through Conservation Best Practice Group to protect biodiversity.
- Increase recording of habitat improvement schemes to track nature, range and effectiveness of mitigation and enhancement measures from capital and operational activities to learn lessons and promote best practice.
- Provide habitat data from our surveys to local ecological record centres to share information.
- Undertake partnership projects to optimise resources and co-ordinate initiatives.
- Investigate feasibility of using reed beds as soft tank sustainable alternatives to concrete structures for stormwater at specified sites.

Interim targets for habitats 2004/05

- Finalise BAPs for individual major reservoir sites.
- Implement land management regime at operational sites.
- Consultation with key organisations on proposed Business Plan for 2005 -2010.



Elan Case Study

The Elan Estate is the largest single area owned by any of the water companies comprising some 180 square kilometres encompassing the catchments of the Elan and Claerwen rivers.

The management of this special area has been mostly vested in the Elan Valley Trust, an independent charity that manages the area for the benefit of nature conservation and public enjoyment.

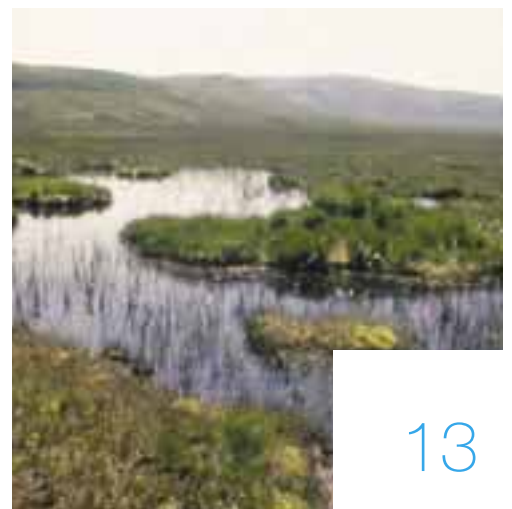
The site includes twelve Sites of Special Scientific Interest, three large Special Areas of Conservation under the EU Habitats Directive and a Special Protection Area under the EU Wild Birds Directive which covers most of the Estate.

The whole of the Estate falls within the Cambrian Mountains Environmentally Sensitive Area and is a registered Landscape of Special Historic Interest in Wales. It includes significant areas of six UK BAP Priority Habitats and populations of eighteen UK BAP Priority Species, several of which are extremely rare.

Welsh Water and the Elan Valley Trust work in partnership to deliver a joint Biodiversity Action Plan for the whole estate with the support of the Countryside Council for Wales. It summarises the biodiversity importance of the area and provides detailed action plans for conservation and enhancement of specific habitats and species.

For more information on the Elan Valley trust, go to: www.elanvalley.org.uk

Key habitats
at Elan valley





Upland oakwoods at Elan valley

Upland Oakwood

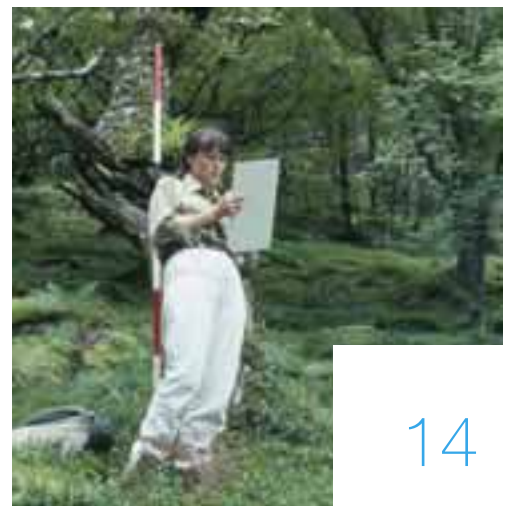
Upland Oakwoods are characterised by the presence of at least 30% oak combined with other native broadleaved tree species such as birch, ash, hazel or rowan. They are rich in mosses, ferns liverworts, lichens and fungi; and support more invertebrates and birds than any other habitat in the British Isles. Largely due to felling for farming, development and overgrazing by livestock, over 40% of the upland oakwoods in Wales and the UK have been lost in the past fifty years.

Welsh Water care for 100 hectares of upland oakwood all of which is within a SSSI and is mostly part of the Elan Woodlands Special Area of Conservation.

There is a rich and varied breeding bird community and several rare beetles and other invertebrates have been found. Each wood has an individual management plan and the plant and animal life is formally monitored on a five year cycle. Many of the woods are used for educational purposes and there is a nature trail as well as a booklet of woodland walks.

"All of the oakwoods owned by Welsh Water in the Elan Valley were brought into positive management for wildlife in the early 1990s when the woodlands were fenced and sheep excluded. Results so far have been spectacular with young trees coming up and the natural wildflowers and ferns of the woodland floor starting to thrive. The bird and insect life has increased very noticeably and overall the flora and fauna is at a much more natural state than it has ever been. Any native woodland regeneration project is very long term and we are only "sowing the seed" in this generation. Welsh Water's work in the Elan Valley has survived nearly 15 years without change in methods or survey staff thus providing a unique study of Upland Oakwoods biodiversity restoration."

Ruth Lowther, Ecologist, who has monitored and provided management advice for the last 15 years.



Lowland meadows at Elan valley



Lowland Meadows

The Elan Estate has a number of SSSI designated species-rich neutral meadows totalling some 25.75 hectares. Together they form one of the most important series of such neutral grasslands in the UK. The meadows have over fifty species of flowering plants with some having Wood Bitter Vetch, Globeflower, three rare eyebrights as well as several orchid species including Fragrant, Southern Marsh, Greater and Lesser Butterfly.

The meadows are included in the UK title of 'Lowland Meadows' as they are unlike typical upland meadows, but probably should be included in a new habitat type of Welsh Upland Meadows. Such meadows are extremely sensitive to change and once damaged rarely recover their former glory. More than 98% have been lost in the UK since the mid 1930s. They need very close and specialised monitoring to ensure that their biodiversity is maintained. Soil conditions, grazing regimes, the timing of hay-making and an understanding of the inputs required are all critical in their management.





WELSH WATER BIODIVERSITY OVERVIEW

The UK Biodiversity Action Plan identified some 400 key species requiring attention because they were either under threat or had international legal protection. A list of species of principal importance for conservation of biological diversity for Wales has also been prepared by the Welsh Assembly Government.

Welsh Water's landholdings include a considerable number of some of these key species, including some of the more well known species such as:

- Otter
- Brown hare
- Red squirrel
- Pipistrelle bat
- Skylark
- Song thrush
- Pink meadow cap
- Argent and Sable moth
- Water vole
- Dormouse
- Common shrew
- Badger
- Black grouse
- Bullfinch
- Slender stonewort
- Pearl bordered fritillary

Long term priorities

- Better understand the presence of specifically protected species on landholdings.
- Implement Action Plans to protect and enhance key species.
- Ongoing consultation and liaison with key environmental organisations.
- Implement scheme specific species protection and enhancement through Conservation Best Practice Group to protect biodiversity.
- Increase recording of species protection schemes to track type, range and effectiveness of mitigation and enhancement measures from capital and operational activities to learn lessons and promote best practice.
- Provide species data from our surveys to local ecological record centres to share information.
- Undertake partnership projects to optimise resources and co-ordinate initiatives.
- Support key biodiversity campaigns e.g. Water for Wildlife Project.

Interim targets for species 2004/05

- Finalise BAPs for individual major reservoir sites.
- Investigate funding and partnership opportunities and identify key protected species for action.



Key species - brown hare and tree sparrow

Tree sparrows, Llandegfedd reservoir

Nature conservation at this major reservoir site in Gwent (also a SSSI) has been enhanced through sympathetic management of existing hay meadows, grassland for wintering wildfowl, woodland and reedbeds and through the creation of new habitats including nesting islands on the reservoir, reedbeds and ponds. Specific programmes of work for certain species have been implemented. The site supports a small but important population of tree sparrows, which like their more familiar cousin the house sparrow, have suffered a crash in UK population (by some 95% between 1970 and 1999). With some financial assistance from Monmouthshire County Council, to encourage this population over 70 suitable nest boxes have been built, along with a feeding station and a number of birdwatching hides.



Brown hares, north Wales

Brown hares benefit from the general grassland management at Llyn Alaw, one of our reservoirs in Anglesey. The regular but not drastic cutting of grass along the lake side paths and picnic areas ensure areas of fresh grass and herbs, particularly clover which hares like. Other grass areas, if left uncut, act as field edges giving shelter and a safe place to breed, allowing hares to move freely from the lake area to open fields. Some areas around the lake are hardly ever disturbed, a ready means of providing safe and natural habitats. Welsh Water staff work with others to deter hare poaching and implement simple and effective measures such as leaving a narrow strip of land around the lake making it unsuitable for hare coursing. This is a typical example of how select management can be simply planned and executed to benefit biodiversity.





key species - rare fungi and black grouse

Rare fungi, Elan Valley

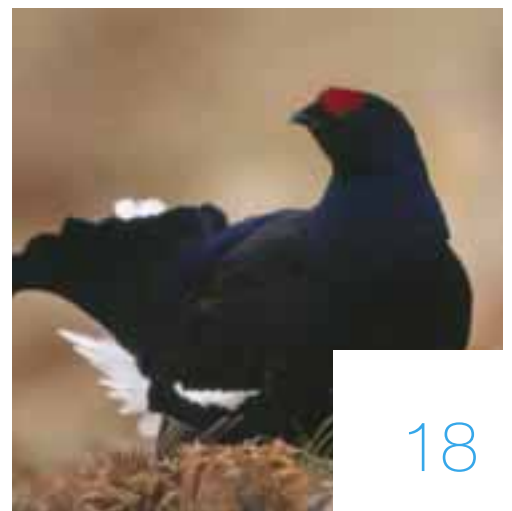
There are three very rare fungi found in the Elan valley; the Pink Meadow Cap, the Date-Coloured Waxcap and the Olive Earth-Tongue. The fruiting bodies appear mostly in short grassland between August and November and they have become nationally rare due to the widespread use of fertilisers and herbicides and the general increase in pollution levels. The Pink Meadow Cap has been found at 100 sites in the UK of which some 65 are in Wales. The Date-Coloured Waxcap has been recorded only a dozen times in the last thirty years with half of them in Wales whilst the Olive Earth-Tongue is known in just 25 places, again half of them in Wales.

All three species are surveyed every autumn and carefully monitored for any changes in vegetation, grazing or recreational pressure. Our aim is to better understand the needs of these three strange but beautiful, lifeforms and to increase their number and distribution by careful land management.



Black grouse, north Wales

The moorland around Llyn Brenig, near Denbigh, is one of the few remaining places in Wales where you can catch sight of the black grouse. The numbers of black grouse have been declining since the last century because of the loss of suitable habitats, caused by the abandonment of traditional management practices. In response, the RSPB has launched the Welsh Grouse Project. As a major landowner in Wales, Welsh Water has been very involved with this Project and we are now managing the land to suit grouse. We have created scrapes for the birds to forage in and by flailing areas of heather, we have been able to establish alternative habitats. Grit piles have been laid, as the small stones aid digestion when swallowed by black grouse. Whilst population densities remain low, there has been a noticeable increase in numbers.





Return of the otter a biodiversity success story

For over 25 years Welsh Water has been working closely with the Wildlife Trusts, the Countryside Council for Wales and the Environment Agency and their predecessors to restore the otter, a much loved creature, to our rivers.

This builds on a longstanding successful partnership with other water companies to champion the cause of this key species. This has produced the largest ever corporate sponsorship for a threatened creature in the UK. As part of the Water UK and the Wildlife Trusts recent Otters and Rivers Project a funding package of over £1.5 million pounds was provided over three years to assist this essential work.

However the provision of funding is only part of the story and in order to encourage the return of the otter to our rivers we have:

- Created 'Otter Havens', quiet undisturbed areas on our reservoirs.
- Encouraged our staff to become actively involved in species recovery work.
- Facilitated the recruitment and training of hundreds of volunteers to assist in otter conservation work.
- Encouraged others to work in partnership to facilitate the Species Action Plan.
- Assisted research in order to improve the knowledge and understanding of otter conservation.

- Supported the monitoring of population numbers and distribution.
- Generated a wider awareness and understanding of what biodiversity really means.
- Built artificial otter holts on our riverside resources which have the capacity to provide protected shelters.



WELSH WATER BIODIVERSITY OVERVIEW



Return of the otter a biodiversity success story

The Otter Survey of Wales in 2002 concluded that of the 1008 common sites surveyed, 74% (744) were positive. This compares with 20% in 1977/78, 38% in 1984/85, and 53% in 1991.

These results for Wales exceed the UK Otter Biodiversity Action Plan target of 65% of positive sites in the national survey by 2002 and also the 70% target for 2010.

Otter signs were found in all 16 hydrometric areas, including Anglesey, which had no signs in the surveys of 1984/85 and 1991. The hydrometric areas with the highest proportion of positive sites were the Cleddau, Teifi and Wye. The areas with the lowest proportion of positive sites were Mid Glamorgan, Anglesey and Taff, however these areas saw a significant increase in positive sites since 1991.

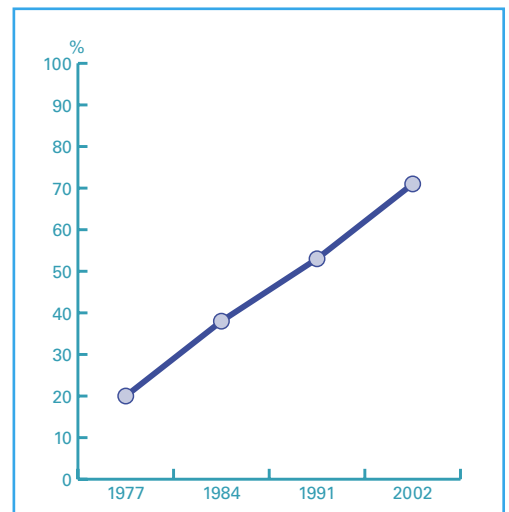
The 2002 survey confirms the continuing recovery of the otter population and provides an opportunity to recommend future actions to continue the expansion to all parts of Wales.

Common and widespread in the early 1950s, the otter declined dramatically from about 1957 onwards due largely to pollution from farm pesticides and habitat loss.

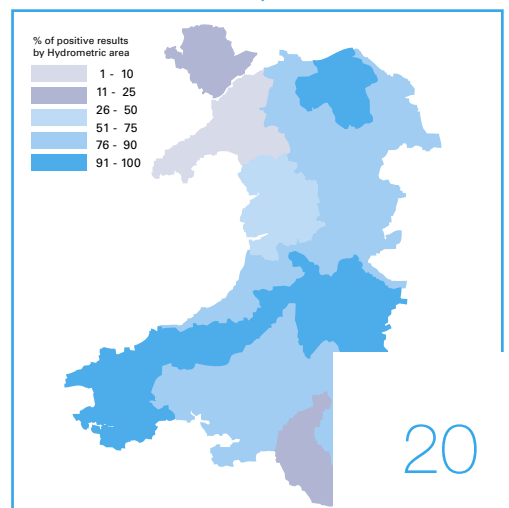
As the top predator in aquatic ecosystems the otter is considered an important biological indicator of the health of our rivers and wetlands. Monitoring the status and distribution of the otter population therefore gives us a good measure of the state of our aquatic ecosystems.

Water quality has improved massively in the period since the decline of otters in the 1950s and is still improving. This is mainly due to the massive investment by water companies in sewerage infrastructure to reduce the impact of episodic pollution from storm-water run-off, and in wastewater treatment works to improve the quality of the final effluent.

% of positive sites from 1977/2002



2002 Otter Survey of Wales



WELSH WATER BIODIVERSITY OVERVIEW



Water is vital for life, and every school, business and household should have an appreciation of its value.

In 2003 we developed and launched our new education strategy 'Living and Learning with Water'.

This provides a coherent framework for Welsh Water to help pupils, parents and the public at large to learn about water and the essential role of the water industry in its sustainable management and use.

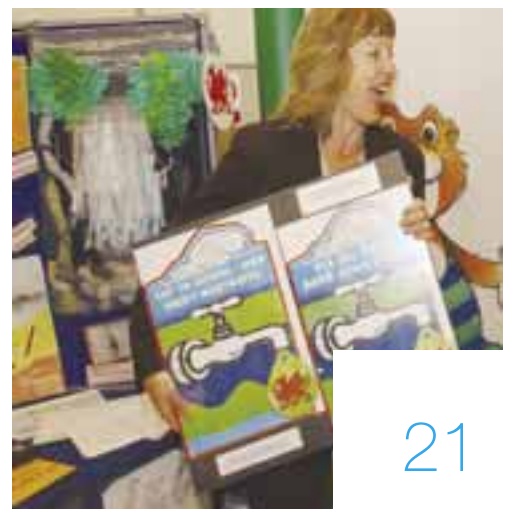
The primary focus of this education programme is on the 7 - 11 age range because these are the key formative years in the education process and, as a group, are the most influential in shaping decision making in the home environment.

Our overall ambition remains to educate and inform all about water, good water practice and the role of Welsh Water. However, by focusing our initial efforts in this way we are confident that in the future our water supplies will be in the safe hands of a well-informed and responsible generation of customers and consumers.

Through 'Living and Learning with Water' Welsh Water is committed to supporting education by offering a range of free experiences, resources and programmes to schools across its operational area.

Fundamental to this strategy is a phased programme of development focused upon:

- Education Centres
- Education Resources
- Education Websites
- Education Partners



WELSH WATER BIODIVERSITY OVERVIEW



Education centres

In 2003 we opened 2 new Environmental Education Centres; one at our Cogmoors Wastewater Treatment Works to the west of Cardiff, and one at our reservoir and dam at Alwen in north Wales. Both were developed in close conjunction with educational organisations and each is staffed by a Local Education Authority primary school teacher seconded for a year from a local school. This partnership working has proved to be most successful as it not only provides a valuable opportunity for the individual teacher, but also builds relationships with local education establishments whilst ensuring that all resources offered are directly relevant to the current curriculum.

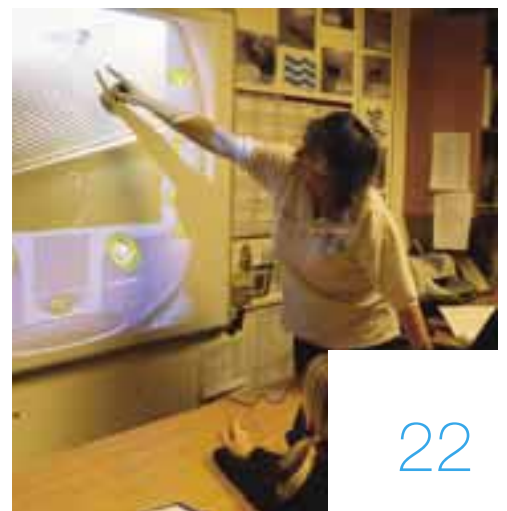
These new facilities compliment the longstanding provision at our award winning Cilfynydd and Elan Valley Environmental Education Centres in the south Wales valleys and mid Wales.

Education resources

Welsh Water has a proven track record in supporting education with high quality teaching resources. In February 2004 we launched Waterworld Explorers, an innovative and stimulating CD-ROM for primary school pupils. It provides a virtual tour of water in Wales without leaving the classroom and focuses on learning activities covered by the current National Curriculum; in particular the Schemes of Work for Geography and Science.

However, the design and structure of the programme also covers aspects of Literacy, Numeracy, Environmental Education and Information Computer Technology. The material has also been designed to accommodate the interactive capabilities of 'whiteboard' technology which has recently been introduced to every school in Wales as part of a current Welsh Assembly Government initiative.

Living & learning
with water



WELSH WATER BIODIVERSITY OVERVIEW



Living & learning
with water

Education website

The Internet is a vital learning resource at both home and school. Working together with other water companies, WaterAid and the Environment Agency we have developed 'Water In The School', an interactive website which provides everything required to set up and run a water conservation project in the classroom.

www.waterintheschool.co.uk

We are continuing to work with primary and secondary schools in Mid and South Ceredigion, an area of potential water shortage, to promote water efficiency.

Using the website to identify areas of waste and advisors to help implement appropriate measures, on average there is a saving of 16% in water use.

Finally we are developing our own dedicated educational website

www.livingandlearningwithwater.com

This will be resourced with exciting online 'interactives' for pupils, downloadable materials for teachers and parents.



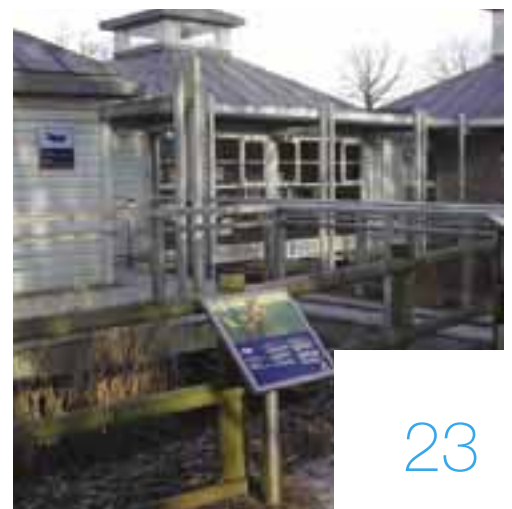
Educational partnerships

We have a long history of working positively together with a variety of organisations to enhance the understanding of our environment.

We were founding supporters of the National Botanical Gardens providing funding for the creation of the Welsh Water Discovery Centre. With the Wildfowl and Wetlands Trust we created a major new wetland and the 'Water for Life' Interpretation Centre.

For over thirty years we have been associated with the Waterworks Museum in Hereford where an enthusiastic team of volunteers tell the story of the history of water supply. This site is currently being further developed to provide new educational and display facilities.

Finally we have recently developed an exciting interactive water efficiency display with Techniquest, the science discovery centre in Cardiff.



WELSH WATER BIODIVERSITY OVERVIEW



Working together
with our partners

For a long time, Welsh Water has adopted a policy of partnership throughout all of our activities. Enhancing nature conservation is often best achieved through collected efforts with our strategic partners, a wide range of wildlife and nature conservation organisations, Countryside Council for Wales, Environment Agency, English Heritage, Cadw and local authorities.

Welsh Water has worked with many local authorities in the development of Local Biodiversity Plans. We were instrumental in promoting the Green Sea Partnership, a unique forum that included the collaboration of over 40 different partners. When it was launched in 1996, Wales had 2 Blue Flag beaches, but now, in 2004, Wales has 35 (+ 5 Blue Flag marinas), making a major contribution not just to the environment, but also to the tourism and economy of Wales.

In addition, we are proud of our membership of the Special Area of Conservation Management Groups which oversee and advise on the protection and enhancement of the coastal environment around Wales.

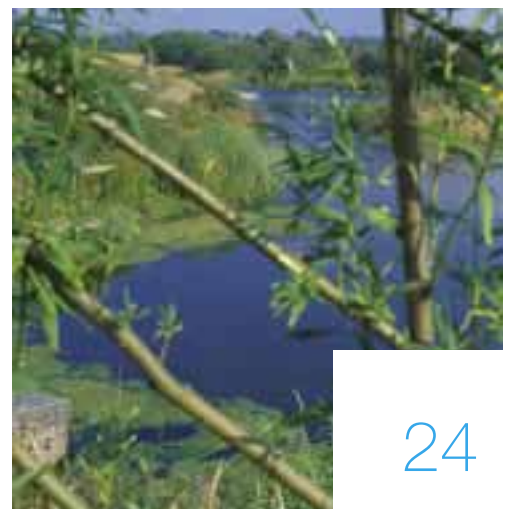
In another example of partnership in action, Welsh Water supported a Welsh Assembly Government project by planting trees on Welsh Water land at Milton in West Wales. These trees now provide a screen between the flight paths of a colony of Greater Horseshoe bats and the street lighting on the adjoining road improvement scheme funded by the National Assembly.

Meanwhile at the Morfa Madryn nature

reserve in North Wales our contractors worked with the RSPB, Gwynedd and Conwy Councils to improve the nesting habitat for lapwings.

This continuing partnership with key environmental organisations is acknowledged by the many awards we have received over the years including the five Millennium Marque Awards for sustained environmental excellence at our sites, and the five Rural Wales Awards from the Campaign for the Protection of Rural Wales, for improving areas for both wildlife and community use. Additionally the work of the company has been recognised, by the British Trust for Ornithology Hanson Business Bird Challenge in which two of our larger sites, Llandegfedd and Elan Valley, have been very successful over recent years, both winning their categories for best site and wetland respectively.

Last but by no means least, we received a Business Commitment to the Environment Award for our work at Llanelli.



WELSH WATER BIODIVERSITY OVERVIEW



Millennium wetland

- partnership in action

Welsh Water worked in partnership with the Wildfowl and Wetlands Trust and Carmarthenshire County Council to create the 80 hectare Millennium Wetlands at Llanelli. This £3 million Lottery funded project turned low grade farmland of little conservation value into one of the most significant new wetlands in Europe in just two years. It forms one of the key elements in the creation of the Millennium Coastal Park, a major new recreational facility and tourist attraction for the region.

The wetland makes a major contribution to biodiversity as it provides significant areas of priority habitat and has been specifically and carefully designed from the outset to benefit key species such as bittern, Cetti's warbler, the aquatic warbler, terns, water vole, otter, and lapwing amongst others. Water levels in the intricate series of lakes ponds and reedbeds are all controlled by a series of sluices, which permit fine control of the depth and surface area of the water bodies. This in turn allows conditions to be optimised for target species whilst also facilitating the effective management of a large wetland area.

The site is fed by high grade disinfected effluent from Welsh Water's neighbouring treatment works, at a rate of up to 100 litres a second thereby ensuring a constant supply of water to maintain the habitat under all conditions. This new works was recently completed as part of the coastal improvement programme, and has made a major contribution to the improving water quality of the adjacent Loughour Estuary, itself a Special Area for Conservation.

This ground-breaking project continues to evolve and we are currently investigating a possible extension to the site. The requirements of the Shellfish Waters Directive require enhanced storage of wastewater during times of prolonged or heavy rainfall to reduce spills. Rather than build the standard solution of a concrete storage tank we are working together with the Wildfowl and Wetlands Advisory Service, Environment Agency Wales and Swansea University to examine the potential for a new reed bed area or 'soft tank'. This will be capable of effectively and sustainably storing surplus water pending further treatment as flows subside.



WELSH WATER BIODIVERSITY OVERVIEW



Looking forward

Our track record in nature conservation is both long and diverse. Over the past 15 years, a number of wonderful projects have come to fruition, often as a result of considerable planning and effort by a number of people and organisations.

Welsh Water takes its responsibility as a major landowner and guardian of some of Wales's most important wildlife sites very seriously. We continue to avoid or minimise environmental impacts from our activities and, wherever possible, to maximise opportunities for nature conservation and enhancement.

Through Living and Learning with Water we aim to develop yet closer links with these and other relevant organisations sharing best practice and resources to mutual benefit and perhaps more importantly to promote a wider understanding of water and the vital role it plays in our everyday lives.

This Overview is a tribute to all those who have supported and implemented all of our efforts in nature conservation, from our Environmental and Education team within Welsh Water, our strategic business partners and the large number of wildlife organisations, local authorities and other environmental and educational groups, without whom our achievements would have been far more modest.

Indeed, the underlying theme of all of our work in biodiversity has been partnership. Many of our projects are long-term and require our ongoing and continuous commitment. We continue to work with a wide range of environmental and conservation

organisations, and both acknowledge and appreciate their co-operation, assistance and enthusiasm.

We look forward to making a continuing contribution to enhancing conservation throughout our operational area and I trust that you have enjoyed reading this, our first, Biodiversity Overview.



Brian Nelson

Brian Nelson
**Head of Environment
& Education**

If you would like further information or have any comments, please do not hesitate to contact us, or visit our website.

www.dwrcymru.com

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D Ŵ R C Y M R U
W E L S H W A T E R

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