

BIODIVERSITY

NEWS ²⁰¹⁴



... for all the latest in biodiversity news

| *Issue 65* |

SUMMER EDITION



© Mike Page

EDITORIAL

| 3

NEWS

The Natural Capital Financing Facility | 4

Pioneering DNA technique offers hope for protection of endangered aquatic species | 5

Fifteen winged saviours to take to the air | 6

FEATURES

Alan's Challenge to Britain's councils - to save road verge flowers... | 8

Bumblebee Conservation Trust Works Closely with MPA to Help Conserve Bees | 9

Wild Beavers in Tayside | 11

A Stepping Stones Approach to Brownfield conservation | 12

RESTORE: Best Practice Demonstration Event | 14

Rare dormice find a home in Nottinghamshire | 15

Science into practice: Helping nature conservationists prepare for climate change | 16

LOCAL AND REGIONAL

Kent Dormice Can Sleep Easy | 18

Pearls in Peril | 19

Restoring nature to the Regents Canal with Floating Islands | 21

Carmarthenshire Bogs Project | 22

Nature Reserve Goes Global | 23

UK FRAMEWORK

8th Meeting of the UK Biodiversity Indicators Forum | 25

PUBLICATIONS

Wood Wise: Ancient Trees | 26

Microeconomic Evidence for the Benefits of Investment in the Environment | 26

EVENTS

Microeconomic Evidence for the Benefits of Investment in the Environment Webinar | 27

Nature After Minerals/RESTORE Best-Practice Demonstration Events now booking | 27

Please note that the views expressed in Biodiversity News are the views of the contributors and do not necessarily reflect the views of the UK Biodiversity Partnership or the organisations they represent.



From *the* Editor

Welcome to the 65th edition of Biodiversity News!

As ever, this edition of Biodiversity News is filled with a wide variety of interesting articles and features for you to enjoy, with topics ranging from the reintroduction of rare hazel dormice in Nottinghamshire to the innovative eDNA technique offering hope for the protection of endangered aquatic species.

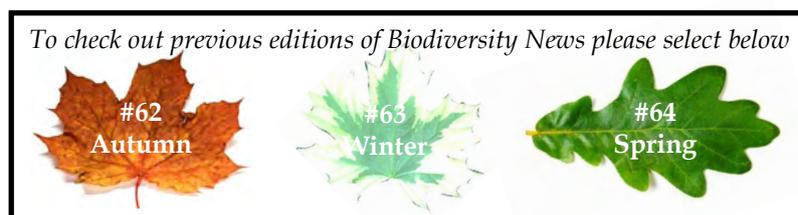
A special thank you to Plantlife's Bob Gibbons for his beautiful photo of road verge flowers which features as our front cover; the photo represents part of Plantlife's *Flowers on the Edge* campaign through which Alan Titchmarsh is challenging councils to change their management of road verges. To discover more about the scheme check out 'Alan's Challenge to Britain's councils' on pages 8 and 9.

Equally, congratulations are in order for Mike Page whose photograph of Titchwell features throughout the Newsletter as the header bar. The photo originally featured as the front cover of the 'Climate change adaptation manual', a new resource for conservation practitioners, produced by Natural England and the RSPB, in partnership with the Environment Agency and the Forestry Commission. The new resource is a hands-on document giving up-to-date, habitat-specific information for conservation managers to use, to prepare and respond to a changing climate. For more information please see pages 16 and 17.

Sadly, this is the final edition of Biodiversity News that I will have the pleasure of editing and compiling. I have greatly enjoyed my time as custodian of this Newsletter and would like to thank all our subscribers for their continued support and eagerness to contribute; I am sure your enthusiasm will carry over into future editions of the Newsletter, ensuring that this valuable information sharing point for our stakeholders is maintained in the safe hands of my successor.

Yours faithfully,

Rachel Coombe





THE NATURAL CAPITAL FINANCING FACILITY: *An opportunity for environmental projects?*

Sally Read, Defra

Ernst & Young France and ICF GHK are currently undertaking a study for the European Investment Bank (EIB) to identify a potential pipeline of projects for funding by the Natural Capital Financing Facility (NCF) and are inviting applications from anyone with a potential interest in the facility.

The NCF will be a new EU financial instrument funded by the EIB and the European Commission, providing innovative financial solutions to support bankable projects which are or have the potential to be revenue-generating or cost-saving, promoting the conservation, restoration, management and enhancement of natural capital for biodiversity and ecosystem services (BES) and climate adaptation benefits, including ecosystem-based solutions to challenges related to land, soil, forestry, agriculture, water and waste.

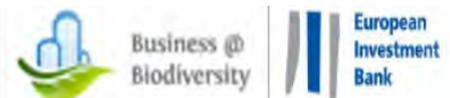
The NCF will be created by blending EIB funding with EC financing funded by the LIFE budget to step up the financing of BES, considered as one of the prerequisites for achieving the EU's 2020 biodiversity goals. Its primary aim is to provide a proof of concept to demonstrate that BES and nature-based climate adaptation projects can be financed through innovative and sustainable market-based mechanisms. The ultimate objective is to demonstrate to investors the attractiveness of the projects for the longer term in order to develop a sustainable flow of capital towards those projects and achieve scale.

The NCF will provide debt and equity finance for projects in fields such as green infrastructure (e.g. green roofs, green walls, ecosystem-based rainwater collection / water reuse systems, flood protection and erosion control), payment for ecosystem services (PES, e.g. programmes to protect and enhance forestry, biodiversity, to reduce water or soil pollution), biodiversity offsets / compensation beyond legal requirements (e.g. compensation pools), and pro-biodiversity and adaptation businesses (e.g. sustainable forestry, agriculture, aquaculture, eco-tourism). It will be complemented by technical assistance to support project preparation, implementation and monitoring.

There will be an initial pilot phase of 3 to 4 years from 2014 to 2017, with a total amount of 100 million euros for the financing of 9 to 12 projects. For this phase, target operations will typically have a size of 5 to 15 million euros, but they are considering projects that could run for up to 10 years.

Ernst & Young France and ICF GHK would welcome ideas and approaches from anyone with a potential interest in the facility, whilst recognising that final eligibility criteria for the pilot phase are still under development. The pipeline study to identify potential projects will end in July and so anyone interested in the facility should contact the following people as soon as possible for consideration:

Alexis Gazzo - alexis.gazzo@fr.ey.com Matt Rayment - matt.rayment@ghkint.com



SUMMER 2014 BIODIVERSITYNEWS | 4

Pioneering DNA technique offers hope for protection of endangered aquatic species

Freshwater Habitats Trust

A groundbreaking new technique analysing DNA traces in water offers hope for the future protection of rare and endangered aquatic species – including Britain’s population of great crested newts – by making it much easier to find them in the depths of ponds and streams.

In one of the world’s first applications of the pioneering survey method, a Defra-funded research project has discovered that monitoring levels of environmental DNA (eDNA) in water is a remarkably accurate and rapid method for detecting the great crested newt.

The research – led by the Freshwater Habitats Trust with Amphibian and Reptile Conservation, University of Kent and genetics company SpyGen – is an important breakthrough.

The findings also bring potential benefits for developers who often have to provide planners with an accurate assessment of great crested newt populations on proposed development sites. The new method could reduce both the need for specialist surveyors and the amount of time traditionally taken on newt survey work, giving significant cost savings for developers.



Triturus cristatus Larva © Freshwater Habitats Trust

The eDNA test is at least 10 times faster than traditional surveying methods, and surveyors can collect the necessary water samples quickly, easily and with only simple training. This means that many more sites can be checked for newts, and changes in their distribution across the whole country can be more easily measured – providing information that is essential for effective conservation and for land-use planning.

The findings are of wide significance for conservation, as eDNA could be useful for monitoring many other rare and endangered aquatic species – including freshwater fish, amphibians and invertebrates such as the rare pearl mussel, which are currently very hard to survey.

“Previously it has been impossible to determine whether the great crested newt population was going up or down because it was just too time-consuming and expensive to visit enough sites to get a reliable national or regional picture. Now that we’ve shown a single water sample can detect the newts with remarkable reliability, it makes large scale surveys practical – which will help enormously with future protection of Great Crested Newts,” said Dr Jeremy Biggs, project leader and Director of Freshwater Habitats Trust.

Jim Foster, Conservation Director of Amphibian and Reptile Conservation, which runs the National Amphibian and Reptile Recording Scheme, said: “We hope that the new method will make it easier to understand the distribution of the elusive great crested newt. At some ponds our volunteers can spot newts very quickly using a torch or by searching for eggs. eDNA now means they’ll be able to get reliable results from a wider range of ponds.” >

Under the new technique, traces of eDNA – which is released by plants and animals from their skin, faeces, mucous, hair, eggs and sperm, or when they die – can be used to monitor freshwater species living in a pond or stream through a simple water sample.

A ‘primer’ – an artificial length of DNA matching specifically the DNA of the species being surveyed – is first developed. Before trials began, the research team had to develop and test a primer for the great crested newt to ensure that it only detected this species.

Test kits with a simple instruction sheet were then mailed to 100 volunteers across the UK last summer. Without further training or requiring a survey licence, the volunteers collected and preserved a single water sample from a total of 250 ponds where great crested newts are known to occur, and posted the kit back for analysis. Laboratory testing showed that the eDNA techniques correctly detected newts in 91% of the ponds.

A more detailed study of 35 ponds in Hampshire and North Wales looked at how well the eDNA test detected newts over time. These intensive studies showed that a single water sample taken at any time during the newt breeding season of late April to June is almost certain to detect newts when present. DNA detected newts on 139 out of 140 occasions – a 99.3% success rate.

Both surveys were more effective than any combination of traditional methods for finding great crested newts, such as torch counting at night, bottle trapping or searching for eggs. Including time to get to and from the pond, it took volunteers only two hours to collect an eDNA sample. To detect newts with similar levels of certainty using traditional methods requires four night-time visits over a month by two people, taking up to 48 hours – 10 times longer.

The project team is now discussing the best way to deploy eDNA in volunteer and professional surveys whilst funding for sample analysis is finalised. Funding for the research project was by Defra, Natural England, Joint Nature Conservation Committee and Scottish Natural Heritage.

Fifteen winged saviours to take to the air

British Trust for Ornithology

In a bid to tackle the worrying decline in Cuckoo numbers, 15 satellite-tagged individuals are to take to the air during the next week, and begin transmitting information of their incredible journeys to researchers at the BTO (British Trust for Ornithology).



Announcing the arrival of spring, the song of the Cuckoo was once commonly heard across the country, but during the last 15 years the public have noted its growing absence. BTO surveys confirm that Cuckoos numbers have fallen by 50% in that time. In 2011, in a bid to help uncover what might be driving this decline, the BTO began a project to track Cuckoos on their migration to and from Africa. This work should prove pivotal in understanding the pressures that these birds face, both during migration and on their African wintering grounds.

The Cuckoos are fitted with satellite-tags, enabling the public to follow their migration in near real-time by visiting www.bto.org/cuckoos. >

These birds have provided information new to science from the very start: some birds stay in Britain for only just over a month; they winter in the Congo rainforest; and they use different routes to get there. The initial findings pose further questions and, as we move into the fourth year of the project, there is even more to learn about what influences the successes and failures of different birds. This spring BTO is fitting a further 15 satellite-tags to Cuckoos across England.

These birds – all males, as they are larger than females and better suited for carrying these particular tags – are being tagged in East Anglia, Sherwood Forest, Dartmoor, The New Forest and Ashdown Forest. Each tag costs £2,500, with an additional £60 needed per month, per bird, for the satellite time. The BTO is looking for Cuckoo sponsors to support the project. Anyone can help by sponsoring one or more birds, for as little as £10; the opportunity to name a Cuckoo for the cost of £3,000 is also on offer.

Andy Clements, Director BTO, commented:

“Our satellite-tagged Cuckoos are the pioneering heroes of bird migration research. Their journeys provide rich information and pose questions for future research, on their routes, their stop-over sites and the habitats they occupy in Africa. It is the generosity of our public supporters that enables us to fund this ground-breaking research that ultimately informs how to conserve our precious birds.”

To follow the Cuckoos, or to support the project and help us to continue to gather important information about migration and its challenges, please visit, www.bto.org/cuckoos.





Alan's Challenge to Britain's councils - to save road verge flowers...

Plantlife

This summer, the nation's favourite gardener wants to help save Britain's wild flowers that are under attack from councils who are mowing verges too early and too often. As part of Plantlife's Flowers on the Edge campaign he is throwing down the "Alan Challenge" to councils across Britain.

Wayside flowers bring so much pleasure, colouring our towns and countryside and brightening up our daily commute. They are also incredibly important. With about 3 times more grassland on our road verges than there is left in the countryside, many road verges are the last refuge for local wild flowers - and the wildlife which depend on them. Yet, road verges are under attack: flowers are being mown down in full bloom, sprayed off with poisons, or smothered with cuttings. Over time, only plants such as thistles, docks and coarse grasses can survive this onslaught.

Alan Titchmarsh comments *'It's an important and hugely worthwhile campaign. The road verges near where I live have some really gorgeous displays of wild flowers but they are sometimes being mown down in their prime. This deprives wildlife of food, us of their beauty and, in the end, unwittingly contributes to the eventual loss of the flowers altogether. We have lost 98% of our wildflower meadows; let's look after the slivers that are left.'*



Roadside verges © Pierino Algieri, Plantlife

Councils can take up 'The Alan Challenge' and manage out-of-town road verges following these three simple guidelines from Plantlife:

- Cut the full width of the verge once a year, no earlier than the end of August and no later than the end of March. Where a road passes through woodland, cutting should be carried out no later than the end of January.
- Between the beginning of April and the end of August, do not cut the verge except to maintain sight-lines or for other road-safety purposes.
- Gather and remove cuttings wherever possible. >

Plantlife's Andy Byfield believes that *“With the right management as a matter of course, our road verges could be invaluable havens for wildlife: these ribbons of flowers would bring colour to the countryside, and would provide flyways for essential pollinators such as bees. Yet all too often members of the public tell us of verges cut at their flowering best. We understand the many pressures facing councils but urge them to sign up and take on our guidelines or at the very least work with us to reassess their current procedures, even the smallest tweaks to what they are currently doing could make a huge difference and save them money!”*

Plantlife are also urging members of the public to sign up to “Alan’s Army”:

1. Add your name to our petition calling for better road verge management www.plantlife.org.uk/roadvergecampaign
2. Download your road verge warrior tool kit so you are armed with all the information and advice on what you can do to help.
3. Send in your before and after pictures of road verges in bloom and after they have been cut.

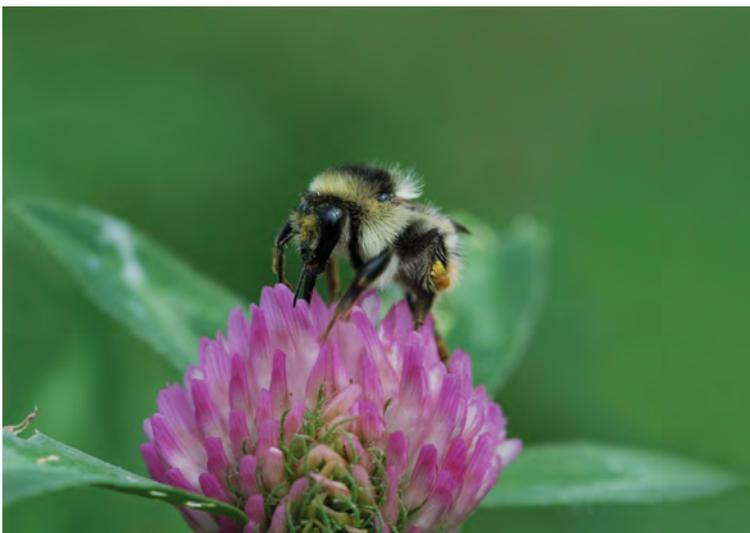


Common spotted orchid © Andrew Gag, Plantlife

To find out more about the campaign, contact: Justina Simpson on 07584 995 929 or email justina.simpson@plantlife.org.uk

Bumblebee Conservation Trust Works Closely with MPA to Help Conserve Bees

Bumblebee Conservation Trust and The Mineral Products Association



© Mineral Products Association

Back in November 2012, the Mineral Products Association (MPA) and the Bumblebee Conservation Trust (BBCT) signed a memorandum of understanding. This was a significant step towards meeting the aims of the MPA and BBCT, in particular, the protection, creation and restoration of flower rich habitats. But also extending the knowledge of those working on quarries about bumblebees in particular, and wildlife generally.

The Bumblebee Conservation Trust was established because of serious concerns about the 'plight of the bumblebee'. In the last 80 years our bumblebee populations have crashed. Two species have become nationally extinct and several others have declined dramatically. Much of the work that BBCT does is with farmers and other land managers, so working with quarries was going to be a challenging and learning experience for both partners. >

Since November 2012, BBCT has visited 5 quarries, all very different and requiring different approaches. But they have learnt through their visits how quarries can be surprisingly useful places for wildlife. The process often allows wildflowers to thrive, and pollinating insects like bumblebees can be abundant. There are many different habitats on quarries too and each one can be managed sensitively for bees.

The highlight of this year for BBCT was their visit to Wainwright's Moon Hill quarry in Somerset – an MPA member. BBCT delivered a presentation to over 50 attendees at the Earth Science Centre. The room was full, the enthusiasm and interest for bumblebees was very clear. BBCT are attending Moon Hill quarry's open day on 6th September and hope to encourage more people to plant flowers for bees.

During 2013, the Conservation Team put together a [Quarry fact sheet](#) to go with BBCT's suite of factsheets. BBCT are also working with RESTORE, www.restorequarries.eu to share their knowledge, hopefully making more gains for wildlife and bumblebees. Part of BBCT advisory work with farmers and landowners includes 'Farm Days', where farmers are invited to come along to other farms to see what the farmers there are doing that benefits bees. BBCT hopes that it will be possible, in the near future to hold such a day for quarries – there is always the lure of a bacon sandwich to encourage people to come along, plus the curiosity of seeing what someone else is doing!

BBCT ambitions are to get more quarries thinking about what they can do for bees. Some restoration normally includes planting trees, there are some crucial trees for bees - the goat willow for example, which produces high quality nectar and pollen in March when bumblebees are emerging and need feeding up after their long hibernation.

BBCT also want quarry workers to start monitoring bees. This year saw the launch of their national BeeWalk scheme – the only national recording scheme that monitors the abundance of bumblebees providing early warning of declines. A network of volunteers walk a set route (1km) once a month between March and October counting and identifying the bumblebees they see. Anyone can join in, all you need is a spare hour or so every month to walk your transect – you choose where to go. For further information go to: <http://bumblebeeconservation.org/get-involved/surveys/beewalk/>. BBCT suggests a bee ID training session (usually 2-3 hours) to help you get started, but they can provide help on identification remotely as well.

The importance of bees generally cannot be underestimated. In the UK about 70 crops are dependent on, or benefit from, visit from bees. In addition, bees pollinate the flowers of many plants which become part of the feed of farm animals. The economic value of bees, as pollinators of commercially grown insect pollinated crops in the UK, has been estimated at over £500 million per year. Insect pollination contributes €14.2 billion to Europe's economy, and bumblebees are one of our most important pollinators.

As well as this commercial importance, many wild plants depend on bumblebees in particular for pollination. It is often said that bees are responsible for one out of every three bites of food we eat. But for some crops, such as tomatoes: no bumblebees, no fruit. (Bumblebees use a process called 'buzz pollination' to extract pollen from flowers that are tightly packed within it. Only a bumblebee can vibrate at the right frequency to release the pollen).

In the last year, Pollination has also risen up the political agenda. The National Pollinator Strategy is due to be launched this Autumn.



WILD BEAVERS IN TAYSIDE

Paul Ramsay, Scottish Wild Beaver Group

The Tayside Biodiversity Action Plan will include one or two specific actions within the Tayside Water & Wetlands Actions Schedule for catchment management with beavers in mind, or "to consider specific riparian planting to mitigate for beavers".

This forward planning fits in well with the Cairngorm National Park Authority's report last year on the possibility of restoring a number of vertebrate species, among which it included the beaver. The proposal gave a welcome push to the return of that species to Scotland.



This pool, with a dam at the far end, is a good example of the restoration of wetland © Paul Ramsay

Riparian woodland has figured for some years as a priority in agri-environmental schemes, partly on account of its importance in flood management and pollution mitigation, but uptake has been disappointingly small, considering the importance that this habitat also has for biodiversity, both in the terrestrial and fresh water domains. Beavers depend to a great extent on this habitat and make important contributions to its dynamic, so it is of increasing importance that riparian woodland should be given priority: the Tayside Biodiversity Action Plan is taking, therefore, a welcome step in that direction.

The officially funded survey of the population of beavers in 2012 concluded that around one hundred and forty beavers were living in the catchment of the Tay. Since then two breeding seasons have passed and we may guess that the number may have risen to around two hundred animals.

Whatever the case, the evidence of the presence of beavers is to be seen throughout the rivers of the Tay catchment. From west of Comrie on the Earn, Loch Tay and Kinloch Rannoch in Perthshire, to Forfar Loch in Angus in the East, beavers are right through the river systems of the Tay.

Beaver watching is proving to be a growing attraction to visitors to Perthshire. Bed and breakfast providers have commented on the number of people coming to stay specifically to watch beavers. Beaver walks have been organised by the Scottish Wild Beaver Group, both under its own auspices, as in Blairgowrie, Aberfeldy and Perth.

An international perspective has been given by the welcome Beaver Spring (Printemps des Castors: <http://www.beaverspring.eu>) initiative run by the French Société Française pour l'Etude et la Protection des Mammifères (SFEPM <http://www.sfepm.org/association.htm>), the French Mammal Society. Badged walks and other events to promote public interest in beavers and wetlands have been organised in France, Germany and Switzerland. It also gives a truly international feel to the return of the beaver to our country.



© Ray Scott

This fits in with the Scottish Government's "natural capital" ideas and putting a value on species and habitats. It enhances, besides, the promotion of citizen science that is being encouraged by Government at the present time.

A STEPPING STONES APPROACH to Brownfield conservation

Buglife

Brownfields are varied and dynamic habitats, and can include anything from former industrial estates to quarries, spoil heaps to disused railway lines or landfill sites to former brick pits.

Cycles of disturbance and abandonment coupled with low nutrient soils influence site topography, soil type, hydrology and pH. This in turn leads to a mosaic of habitats developing in close proximity which is particularly important for invertebrates, many of which require at least two habitats in close proximity during their life cycle. The biodiversity that brownfield sites can support should not be under-rated – some of our best sites in the UK such as Canvey Wick SSSI can have as many Red Data and Nationally Scarce invertebrate species associated with them as do ancient woodlands!



Re-facing sandy cliff face at Tata steel, Scunthorpe © Claire Dinham, Buglife

Within the landscape the presence of brownfield habitats can be of vital importance, functioning as ‘stepping stones’ and refuges for wildlife as the microhabitats they contain have become rare and fragmented in the wider countryside. These sites are however under increasing pressure from development resulting in open mosaic habitat being lost at an alarming rate (i.e. in the Thames Gateway 39% of sites containing Open Mosaic Habitat have been lost in the last 5 years).

Over the past 5 years Buglife has been undertaking a number of ‘Stepping Stones’ projects across the UK to gain a better understanding of brownfield habitats, the biodiversity that they support and how to conserve and manage them. This year has seen the completion of three such projects in Scunthorpe, Teesside and Peterborough, building upon previous project work in the Thames Gateway and Falkirk. Adopting a national approach to brownfield conservation has been key to understanding the often complex nature of these habitats which vary greatly from region to region - from the former sand and gravel extraction pits of Scunthorpe, to the reclaimed slag grasslands of the Tees estuary, to the clay extraction pits which fuel Peterborough’s brick-making industry.

The Scunthorpe, Teesside and Peterborough Stepping Stones projects have enhanced/created approximately 70ha of open mosaic habitat for the benefit of invertebrates and a wide range of other wildlife such as reptiles, amphibians, small mammals and birds; with management works being informed by baseline surveys carried out in Year 1 of the project’s and subsequently monitored in Year 3.

Disturbance is very important for maintaining Open Mosaic Habitat; small patches of bare ground are ideal for basking and burrowing invertebrates such as butterflies and solitary bees as they provide habitat that will heat up rapidly in the sun and the higher temperatures are beneficial for larval development. Exposing these typically shallow, low nutrient substrates also allows species rich open sward grassland and lichen and moss communities to establish, as more competitive species are unable to dominate. >

At Tata Steel in Scunthorpe Buglife created a series of bare ground scrapes and bee banks and re-faced 100m of a sandy cliff face. This has provided important habitat for solitary bees and wasps, flies and butterflies including the Ruby tail wasp (*Chrysis viridula*), the crane fly (*Nephrotoma crocata*) and Grayling (*Hipparchia semele*). Although typically found on coastal sites this declining butterfly is taking refuge on brownfield sites such as steelworks and quarries as they typically provide the sparsely vegetated, sheltered dry sites that are required. The population of Grayling found at the steelworks is of regional significance in Lincolnshire and forms part of a network of brownfield sites in Scunthorpe that are being managed to allow this and many other species, to disperse across the landscape.



Ruby tail wasp (*Chrysis viridula*) © Buglife

As part of the **Teesside Stepping Stones project** a series of 'trial plots' were created in an area of rank grassland on industrial site Lucite International using sand, blast furnace slag and pulverised fly ash (PFA) in 2011. These plots were monitored throughout the life of the project; the sandy area grassed over within the space of a few months however the blast furnace slag and PFA areas have become re-vegetated at a much slower rate due to the nature of the materials. The blast furnace slag, calcareous in its nature, has since colonised with species such as bird's-foot trefoil, thistles and weld whilst maintaining areas of bare ground. To date the PFA has been colonised by mosses in parts and grasses around the periphery of the plot, the slower rate of succession being a result of the toxicity of the substrate which will decrease over time. Both of these areas have added topographical variation and will continue to develop floristically providing areas for invertebrates to bask, burrow and forage. The

creation plots will continue to be monitored and managed by project partner INCA (Industry Nature Conservation Association) to gain a better understanding of brownfield habitat creation techniques.

To find out more about Buglife's brownfield work including information on current Stepping Stones projects and our 'Brownfield Hub' please visit <http://www.buglife.org.uk/campaigns-and-our-work/habitat-projects/brownfields>

BEST PRACTICE DEMONSTRATION EVENT

Nature After Minerals

RESTORE project mid-term conference, Dortmund

The RESTORE Project's mid-term conference took place on the 4th June in Dortmund, Germany. Stakeholders from local and regional governments, environmental NGOs, community groups, the minerals industry and research institutes contributed and discussed four themes related to mineral sites restoration, each with keynote speeches.

Keynote speaker, Christoph Schröter-Schlaack, from the Helmholtz Centre for Environmental Research presented on public benefits and biodiversity. He explained that ecosystem services are useful to understand the relationship between nature and human well-being and that economic valuation can highlight the importance of nature's benefits to society and the value that people place on nature. However, economic valuation is more than just a monetary value, but is rarely enough to induce behavioural change. Mr Schröter-Schlaack presented some TEEB studies ([The Economics of Ecosystems and Biodiversity](#)) to showcase an economic approach and successful examples which included the Lusatia mines in Germany.



Dortmund Conference (4 June 2014) ©NAM

Stephan Redwood, Reserves Development Director at CEMEX UK spoke about best practices in restoration and gave an industry perspective. He described how restoration and creation of biodiversity are good for business and how real gains can be achieved for nature by working in partnership with an understanding of different parties' perspectives and strong collaboration.

The third keynote speaker, David Payne of the Mineral Products Association presented on the topic 'Policy into Practice' for the integrated policy seminar section of the conference. He outlined the National Planning Policy Framework and the relevant biodiversity policy documents in England to demonstrate how policy differs in the rest of north-west Europe. He explained that the minerals industry is uniquely placed to deliver nature policy targets e.g. priority habitats and biodiversity offsetting.

The final keynote was Coen van der Gugten, a representative of the population of Maastricht in the Netherlands, where an active limestone quarry is being transformed into a place for nature and the local community to enjoy. He outlined the history of the site and offered a key insight into the process of how the community became involved in its restoration, on the back of which, a Foundation was set up to represent the community. Presentations will soon be available on the RESTORE website at www.restorequarries.eu



SUMMER 2014 BIODIVERSITYNEWS | 14

Rare dormice find a home in Nottinghamshire:

Wildlife charity reintroduces extinct dormice as part of national programme

People's Trust for Endangered Species



PTES hazel dormouse reintroduction 2014 © Susannah Penn

Following the successful reintroduction of rare hazel dormice (*Muscardinus avellanarius*) to an undisclosed woodland location in Nottinghamshire last year, the charity People's Trust for Endangered Species (PTES) released 21 breeding pairs into another nearby wood on the 10th June 2014, as part of a national programme to help this endangered species survive.

Despite their once widespread existence throughout much of England and Wales, the range and population of the dormouse has diminished significantly over the past 100 years, and the species is now rare and vulnerable to extinction. However, analysis from the National Dormouse Monitoring Programme (NDMP) - the world's largest and longest running small mammal monitoring project which is managed by PTES and co-funded by Natural England - suggests that although dormice continue to decline, the rate of decline may be slowing.

This does not mean that dormice are 'out of the woods yet' though, and such reintroductions play an important role in UK dormouse conservation.

Following a recent review of dormouse reintroductions by Natural England, PTES has carefully selected an appropriate release site this year, clustering it closely with last year's location. Habitat such as woodland and hedgerows will be improved between the two sites so that as the two separate populations establish themselves in their respective woodlands, they will later have the opportunity to disperse and eventually join up. This will enhance the chance of long term viability for dormice in Nottinghamshire.

Ian White, Dormouse Officer at PTES, explains why dormouse reintroductions are part of the charity's long-term conservation strategy for the species: "We cannot undo overnight the changes that have occurred in our countryside and rural practices over the last 100 years which have contributed to the decline of dormice. But with time and careful management we can create sustainable areas of woodland and hedgerows so that dormice can re-establish themselves and thrive."

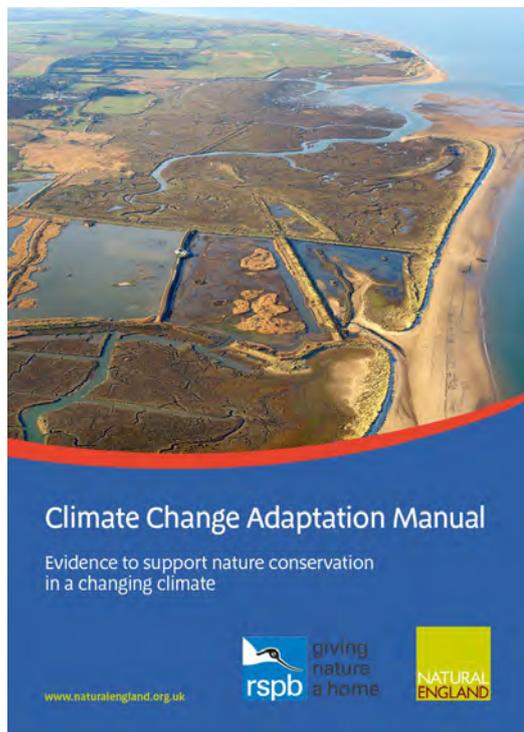
This year marks the 24th dormouse reintroduction by PTES at 19 different sites, with more than 750 dormice released across 12 English counties over the last 21 years. In this latest reintroduction, 38 captive-bred dormice will be released into the wild at a woodland in Nottinghamshire.

The Nottinghamshire Wildlife Trust actively manages the woodland where the dormice are being released, ensuring the habitat offers suitable food and shelter for the released animals as well as wider range of wildlife, including birds, bats and insects.

Science into practice:

Helping nature conservationists prepare for climate change

Natural England



Natural England and the RSPB, in partnership with the Environment Agency's Climate Ready Support Service and the Forestry Commission have published a new resource for conservation practitioners: *'Climate change adaptation manual: evidence to support nature conservation in a changing climate'*.

There is strong evidence that climate change is already affecting wildlife and habitats; species such as the Dartford warbler and the bee orchid are moving further north and recent storms have highlighted the vulnerability of coastal and wetland habitats.

But we can reduce the risks of climate change and, in some cases, make the most of new opportunities for species and habitats. The Climate Change Adaptation Manual helps land managers and conservationists to plan and take action to limit the impacts of climate change on the natural environment. This is a ground-breaking step forward in responding to the risks recently highlighted by the Inter-governmental Panel on Climate Change in its report **'Climate Change 2014: Impacts, Adaptation and Vulnerability'**.

The manual is a hands-on document giving up-to-date, detailed, habitat-specific information for conservation managers to use, to prepare and respond to a changing climate. It is divided into three sections, focusing on:

- the key concepts for making decisions about adaptation and the impact of climate change on the natural environment;
- climate change impacts and potential adaptation responses for 27 of England's most important habitats; and
- the relationship between climate change and the delivery of ecosystem services.

Andrew Wood, Executive Director at Natural England said:

"Climate change has wide-ranging implications for habitats and species in Britain and for the way that the countryside is managed. The Manual gives conservation managers and advisors access to the best available science to enable their conservation work to be carried out with climate change adaptation in mind."

Martin Harper, Conservation Director at the RSPB said:

"We're already witnessing the impacts of climate change at RSPB nature reserves across the country – and we're taking action to ensure we protect wildlife from these changes. If we are going to help threatened species adapt to a warmer climate then we need to act fast. We also need to work together and share knowledge and experience - I hope this manual will help us do just that. Science has given us a clear warning about the future and we have no excuse for not acting now." >



Titchwell © Mike Page

The Manual builds on experience gained from climate change impact assessments and adaptation planning at National Nature Reserves and RSPB nature reserves, together with contributions from a range of partners including the RSPB, Environment Agency, Forestry Commission, Wildlife Trusts and National Park Authorities. Potential users include nature reserve managers, conservation organisations, ecological consultants, local authority ecologists and those working at the larger scale in Nature Improvement Areas (NIAs), Areas of Outstanding Natural Beauty and National Parks.

The Climate Change Adaptation Manual can be found on Natural England's publications catalogue.



© Debbie Adams



KENT DORMICE CAN SLEEP EASY

John Bark, The Conservation Volunteers

Volunteers in Kent have braved wind and rain to come to the aid of a newly discovered colony of hazel dormice (*muscardinus avellanarius*) on the outskirts of Ashford. The nests of this declining BAP Priority Species were found by ecological surveys prior to scrub clearance for a new cycleway next to the A2070 bypass. Of the 2,885m² of scrub and hedgerow scheduled to be removed, 25% was identified as suitable dormouse habitat.

Known as 'The Wild Crew', the volunteers are part of The Conservation Volunteers' Kent Heritage Trees Project funded by the Heritage Lottery. Working in partnership with Ashford Borough Council and The Kentish Stour Countryside Partnership, they created a new corridor habitat for the dormice across damp pasture land close to Ashford's suburban retail fringe. Over 6 days in January and February 2014, 3,900 trees were planted, including those favoured by dormice for food and nests: hazel, blackthorn, wayfaring tree, hawthorn and honeysuckle. 10 nest boxes were set up in the remaining habitat so that the dormouse population could be monitored by a licensed handler from May onwards.

The Kent Heritage Trees Project continues, inspiring volunteers to join in and feel good with practical environmental activity. Mark, who came out with the Wild Crew for the first time at this site said: "I was very surprised to find out I lived so close to a colony of dormice. I jumped at the chance to volunteer with TCV and help protect and extend their habitat.

"I ended the day knowing a great more about our local trees, pleased to meet kindred spirits, and very eager to volunteer more of my time with a group that is so focused on improving my local area and educating its habitants of the importance of local conservation."

The project's main aim is to survey 10,000 heritage trees across Kent by 2016. It is around halfway to its goal, but more surveyors and extra funding are still needed to make sure it is reached.



Volunteers plant trees for dormice © Jadie Baker

For further information about The Conservation Volunteers/Kent Heritage Trees Project contact: j.baker@tcv.org.uk

PEARLS IN PERIL

Elain Gwilym, Natur Cymru

Freshwater pearl mussels are extraordinary creatures which fill an important ecological niche, improving conditions for other species by cleaning up water. They are also critically endangered. One project, based on the Afon Eden, is attempting to turn the situation around.

The freshwater pearl mussel (FWPM) *Margaritifera margaritifera* has been known in rivers of Wales since Roman times. They are believed to be one of the reasons why Julius Caesar and the Romans invaded Britain in 55BC. The pearl mussel is declining throughout its holarctic range and has become one of the most critically endangered molluscs in the world. The species is protected under national and international legislation.

Incredibly, pearl mussels can live for more than 100 years and can grow as large as your hand. They live at the bottom of clean, dark, cool, fast-flowing, nutrient poor rivers, where they can be completely or partly buried in coarse sand or fine gravel. A single adult mussel can filter 50 litres of water a day. By filtering the water the pearl mussels remove particles for food whilst improving the habitat for other species. Conservation work to conserve pearl mussels will ultimately benefit the river ecosystem as a whole.



The mussels require salmonid fish (salmon and trout) to complete their early lifecycle; the larval glochidia released by the adults must attach to the gills of a fish and overwinter there for about nine months before transforming and dropping off as juvenile mussels and burying themselves in-

to the riverbed, where they continue to grow until mature enough to produce their own offspring. In a population review undertaken in 1983 by Young & Williams, it was suggested that a catastrophic decline of 81% had occurred in British rivers. The primary reason for their decline is a lack of juvenile recruitment, causing a slow but steady decrease in numbers.

Major threats to the FWPM include:

- Habitat loss, fine silts and soil entering the river smothering mussels and river gravels, unauthorised river engineering work, and changes in riparian land use.
- Nutrient enrichment, and industrial and agricultural pollutants such as nitrates and phosphates.
- Exploitation from (now illegal) pearl fishing.
- Reduction in salmonid populations.
- Water temperature – pearl mussels thrive in cool water and predicted rises of 1-2oC in Welsh rivers, as a result of climate change, could affect their ability to survive.

The Afon Eden – Cors Goch Trawsfynydd in Meirionnydd, Gwynedd is designated as a Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC). It is home to several important ecological features such as bog-rosemary, Atlantic salmon, otter, and the most important being the colony of Freshwater Pearl Mussels.

Pearls in Peril (PIP) is a Life+ Nature project with 22 partners working to restore river habitats benefiting freshwater pearl mussel and salmonids in 21 SAC rivers across Britain. In Wales the work will be located within the Afon Eden catchment and led by Natural Resources Wales (NRW). PIP has a total budget of £3.5million. >

The project aims to:

- RESTORE the habitat of freshwater pearl mussel and salmonids.
- SECURE the long-term survival of existing freshwater pearl mussel populations.
- COMMUNICATE with local, national and international audiences to raise awareness

The Afon Eden's substantial FWPM colony was discovered in 1997 by Killeen & Oliver, when it supported around 1300 mussels. By 2011 it was estimated to support around 550, less than half what it did in 1997. This declining trend is seen across Europe. The PIP project aims to mitigate against this by undertaking in-situ works and creating a more viable habitat for recruitment.

Improving woodland and river habitat

NRW's Brynteg forestry block is part of the action to improve the riparian habitat. The site is known to affect the natural hydrology of the catchment and is a source of acidification and run-off of nutrients and sediment into the river. It is also a key source of anthropogenic phosphate. To address these issues, PIP is restoring the intensive conifer forestry to an area of native broadleaf, wet woodland and raised bog plant communities.

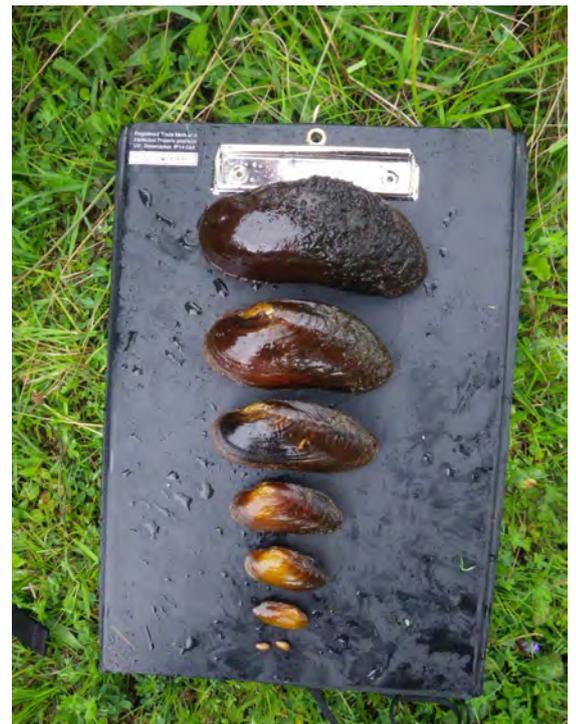
Diffuse pollution is known to have a direct negative effect on the FWPM in the river, by reducing water quality. In partnership with the North and Mid Wales Trunk Road Authority, PIP will be working with landowners, farmers and other stakeholders to create filtration systems that will reduce diffuse pollution flowing into the Eden. We will also be ditch blocking and creating settlement ponds on the tributaries of the Eden, thus trapping silt and improving the water quality.

Monitoring and public awareness

An important part of the PIP LIFE project is to implement a structured programme of monitoring surveys. These will allow us to establish the existing conditions at the start of the project and indicate the successes of the project's actions.

Water quality monitoring is a key part of the project. Sonde data loggers will be used within the catchment to provide data on the variation in water quality parameters along the river. Salmonid encystment levels, the number of juvenile FWPM attached to the gills of salmon and trout, will also be monitored. Combined all of the monitoring data will contribute to the restoration of habitat and inform conservation actions to secure the populations future.

Fundamental to the aims of the project are engagement and participation with our stakeholders. We will undertake public awareness and dissemination events in all areas where major conservation actions are proposed. PIP delivers a 'Pearls in the Classroom' educational programme to local school children which explores the pearl mussel's relevance and role within the river ecosystem.



©JW/SNH

Freshwater pearl mussels have a long human history and an important place in the river ecosystem. The PIP project is excited about making a difference and securing the culture and ecology of this species into the future. This is only the beginning for FWPM!

For more information, please see www.pearlsinperil.org or follow PIP on twitter @MoTheMussel.

This article first appeared in **Natur Cymru**, the quarterly magazine which flies the flag for the nature of Wales. Subscriptions cost £17 a year by direct debit. Details at www.naturcymru.org.uk

Restoring nature to the Regents Canal with Floating Islands

London Wildlife Trust



The Wildlife on your Waterways team prepare a floating raft prior to installation in the Regents Canal © London Wildlife Trust

Narrow boats, ducks and unwanted litter aren't the only things that float in the Regents Canal. Four new, floating islands have been berthed opposite Baynes Street Canalside Garden in Camden, north London by the Wildlife on your Waterways Team, funded by Royal Bank of Canada and Heritage Lottery Fund.

The islands have been created to provide a home to wetland plants, as well as a perfect habitat for aquatic insects such as dragonfly and damselfly, and terrestrial insects such as beetles, butterflies and bees. Each island also provides underwater shelter and feeding opportunities for fish.

The Wildlife on your Waterways project is run by London Wildlife Trust (LWT) and looks after 1.6km of the Regents Canal, as part of a community adoption scheme, coordinated by the Canal & River Trust. Floating islands are increasingly being used to clean up waterways and to enhance wildlife and fish stocks.

The islands mimic natural wetland habitat and are planted with a variety of native wetland plants, including skullcap, water figwort, loosestrife and gypsywort, which struggle to grow on the sheer walls of the canal. The planting and construction of the islands also help to filter pollutants from the canal, helping to improve water quality in this stretch of the canal.

The new floating islands have been moored in an unused canal recess which will protect them from passing canal traffic. With the help of volunteers, the Wildlife on your Waterways project team helped clear and prepare the site of litter and overgrown vegetation, before overseeing the positioning of the rafts.

Joanne Mould, London Wildlife Trust's Regional Development Manager for North London said: *"The Regent's Canal is an important green corridor for wildlife and London Wildlife Trust is delighted to be leading the way in improving this section of waterway. By installing these floating islands we will improve the biodiversity of the canal, but our work doesn't stop there; as regular management and litter clearance are also required to keep the canal clean, green and a great place for wildlife and people."*

Francis Binney, Environmental Officer at Royal Bank of Canada, commented: *"This is a really innovative solution to an important problem. There is increasing strain on our waterways and initiatives like this - which help keep them clean, encourage biodiversity and increase awareness of their role in towns and cities - are crucial to ensuring that we can continue to enjoy them well into the future."*

Leela O' Dea, Environmental Manager at the Canal & River Trust added: *"These are the first floating wetland Biohaven's to be used in our canals and we are delighted to be working with London Wildlife Trust on this trial project. These unique structures not only help to improve water but also encourage a variety of species to come to London's waterways and in doing so they enhance the whole area."*

Carmarthenshire Bogs Project

Isabel Macho, Carmarthenshire County Council

The landscape of Carmarthenshire has been shaped by people over many generations. Commons are examples, within a changing agricultural landscape, of sites that have been traditionally managed by local communities and which today reflect a landscape once found much more widely in the county. Commons are also areas that are typically rich in wildlife.

Carmarthenshire County Council has successfully secured funding from the Welsh Government Resilient Ecosystems Fund (REF) for a project focusing on six commons in central Carmarthenshire. All the sites are Section 45 commons (those that have no known owner giving the Council some responsibility for their care) and have significant areas of raised bog habitat.



Figyn Common © Isabel Macho

These bogs lie within an area that has been identified nationally as a priority area for this habitat in Wales. These wet bog habitats are one of our most important natural resources. They support many native wildlife species including wetland plants such as cranberry, sundew and rare sphagnum mosses, and are habitats for declining bird species such as curlews.

These bog habitats are also important for us. They provide us with fresh water by filtering out pollution and can act as sponges, reducing flood risk through the storage of rainwater. They can help buffer the extremes associated with climate change by storing carbon within the peat. Managing our wetland habitats appropriately has many benefits for wildlife and humans.

An important part of the project is liaison with the graziers and local communities to discuss management, the needs of the graziers and raise awareness of the importance of these sites. These conversations have not always been straightforward – and the project has highlighted the importance of the close human relationship with these sites and the different connections that people have with the commons. Some objectives that the project set out to achieve may have to be changed as initial aspirations are met with the reality of the situation on the ground!

A peatland specialist has assessed the extent and depth of the peat resource on a number of the bogs and we have been amazed to discover the depth of peat on some of these sites - on one common it was over 9 m – that's over 9000 years of peat accumulation. This data will be used to help assess the peat resource across the whole of Wales and the importance of the sites as a carbon store and potential carbon sink.

With the REF funding the project's aim is to enable management of these six commons that and will encourage management of the commons that will restore resilient, robust bog habitats and improve their value as both wildlife habitats, carbon sinks and for the people that use them for grazing.

NATURE RESERVE GOES GLOBAL

The Wildlife Trust of Lancashire, Manchester and North Merseyside

Brockholes is the leading light for wetland nature reserves all over the world. The award-winning Lancashire Wildlife Trust reserve is being used as an example of best practise for organisations from every corner of the globe.

The marketing of Brockholes and the sustainable design of the floating Visitor Village are being used as case studies in a new handbook being published, aimed at showcasing best practice for developing a wetland education centre.

Brockholes General Manager, Kath Knight was invited to attend the “Workshop on Best Practices for the Design and Operation of Wetland Education Centres” in November to talk about the work of the Lancashire Wildlife Trust in developing Brockholes, which is just off the M6 at Preston. Kath gave presentations on the development of the wetland reserve, the Visitor Village and the marketing activity.

Kath said: “We were honoured to be invited to contribute at the workshop and hope that it will enable us to establish links with wetland centres around the world. Fourteen countries are represented at the workshop including Australia, China, Canada, United Arab Emirates and the United Kingdom.



Brockholes © Alan Wright

“The fact that Brockholes is being used in several areas as a case study for best practice is a testament to the work of The Lancashire Wildlife Trust, and its members who supported the initial purchase of the reserve in 2006.”

The workshop was a partnership event organised by the Ramsar Convention Secretariat, the Ministry of Environment Korea and the Environmental Ecosystem Research Foundation.

Lindsey Poole, Marketing Manager said: “To have the marketing recognised on a global scale is breathtaking. Our plans were always big when it came to Brockholes, we wanted to portray the unique features of the site and break down the barriers of nature reserve perceptions, and we wanted to let people know we were a new kind of nature reserve.

“We had to be creative, though, with small budgets, a small team and a launch campaign which began before the reserve and Visitor Village were completed. The multi-channel approach we used enabled us to build the excitement and anticipation around the launch, with a powerful PR campaign ensuring we made the most of opportunities to raise our profile to a national level.

“Our marketing is constantly developing with the needs of the business. As our visitor numbers grow, so do our databases and our focus now is communicating effectively with both our existing and new audiences and monitoring our visitor feedback and trends to inform our future plans.” >

Brockholes Nature Reserve is home to the UK's first floating Visitor Village. The reserve is 250 acres of important wetland and woodland habitats, transformed by the Lancashire Wildlife Trust from a former quarry site. Breeding bird numbers have increased each year and recent exciting sightings include bittern and otter.



Heron at Brockholes © Jean Price

The newly released Handbook presents a range of lessons on the design and operation of wetland education centres based on experiences of centre managers from around the world. It is hoped that these lessons will inform people involved in the planning and development of new centres, and assist others in the redevelopment or management of existing centres.

Topics covered in the handbook include:

- Planning or redeveloping a wetland education centre
- Ensuring the financial sustainability of a wetland education centre
- Communication, Education, Participation and Awareness (CEPA) programmes and learning content at wetland education centres
- The sustainable design of wetland education centres

The Handbook is aimed at a diverse and extensive audience, reflecting the breadth of skills and interests involved in the design, planning and operation of wetland education centres. These include government agencies, architects, conservation organizations and consultants. However, it is not meant to be a step-by-step guide to the development and management of wetland education centres since individuals with specialist skills will also be needed.



8th Meeting of the UK Biodiversity Indicators Forum (BIF8) – 4 June 2014

Emma Durham, JNCC

As has been mentioned in previous editions of Biodiversity News, the UK Biodiversity Indicators suite has been under development since 2011, in order to align the indicators with the Aichi Biodiversity Targets outlined in the 'Strategic Plan for Biodiversity 2011-2020', adopted by the CBD in 2010. The most recent update of the indicators was published in October 2014, and included some information on the development of the indicators that have not yet been finalised. There is, however, still some work to be undertaken in developing the proposed new indicators, and in updating and revising some of the already existing indicators.

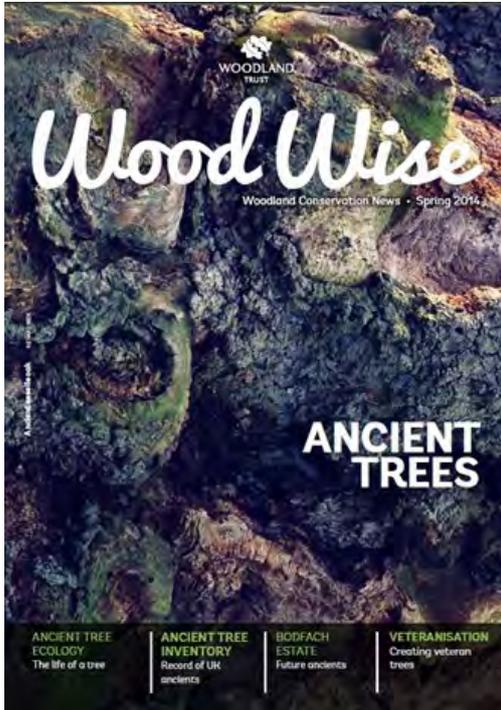
To support the development work, several meetings have been held. Most recently, the 8th meeting of the UK Biodiversity Indicators Forum (BIF8), was held on 4 June 2014, at the Royal Society in London. This Forum focussed on the species indicators which incorporate data on birds, bats and butterflies. Over 40 participants attended, including representatives from the statutory bodies, NGOs and the academic community.

The objective of the meeting was to consider whether the species indicators being used (birds, bats, and butterflies) remain fit for purpose in a changing policy agenda. This was explored in two parts:

1. *How good are the established indicators at showing changes in species populations and how can they be improved in the short term?*
2. *Can we go beyond trends for a few narrow taxonomic groups to more comprehensive indicators of biodiversity and ecological communities in the longer term?*

The Forum resulted in some lively and productive sessions, and helped those involved in producing the indicators to develop their thinking. Based on the outcomes of the Forum, several papers will be prepared, to provide some recommendations and options for discussion by the Biodiversity Indicators Steering Group (BISG). The presentations from the workshop, and a summary report, will be available on the JNCC website shortly.

Go to <http://jncc.defra.gov.uk/default.aspx?page=1824> for further details and for more information about the UK biodiversity indicator set.



Wood Wise: Ancient Trees

The Woodland Trust

The spring 2014 issue of Wood Wise looks at the wonders of ancient trees. The UK has a large percentage of all the ancient trees left in Europe. They are vital for many specialist species and other wildlife, and are culturally important for people.

The articles in Wood Wise look at the definition of ancient trees and other trees of special interest, their ecology, future ancients, the veteranisation of trees, and identifying and protecting hotspots using data from the hugely successful ancient tree hunt.

To read current and past issues of Wood Wise just follow this [link](#) to our new website.

If you would like to be added to the subscription list for future issues please email your request to Conservation@woodlandtrust.org.uk

Microeconomic Evidence for the Benefits of Investment in the Environment

Natural England Research Report NERR057

Microeconomic Evidence for the Benefits of Investment in the Environment 2 (MEBIE2)

Microeconomic Evidence for the Benefits of the Investment in the Environment 2 (MEBIE 2) is a review of the evidence for the benefits of the natural environment to people based on the Ecosystem Approach. It is designed to help anyone who needs to make a robust case to decision makers for investment in the environment. The review focuses particularly on England, however incorporates useful evidence from other regions where appropriate.

MEBIE2 updates the original MEBIE review released in 2012 and includes over 100 new pieces of evidence and new chapters on Consumer Spending, Pollination and Pest Control.

For further details please see the [Natural England](#) website.



Natural England Research Report NERR057

Microeconomic Evidence for the Benefits of Investment in the Environment 2 (MEBIE2)

'Microeconomic Evidence for the Benefits of Investment in the Environment' Webinar

Sally Read, Defra

Natural England will host a webinar on the key findings from the [MEBIE2 report](#), a review of the evidence for the benefits of the natural environment to people based on the Ecosystem Approach, on the 1st July at 2pm. The webinar is open to anyone interested in the report.

If you are interested in joining the webinar please email Sophie via for further information:

Sophie.rolls@naturalengland.org.uk



Nature After Minerals/RESTORE Best-Practice Demonstration Events now booking!



Bookings are now being taken for these events which seek to share best practice in minerals sites restoration for biodiversity, between all stakeholders across north-west Europe.

The events are being run free-of-charge, thanks to funding from the European Regional Development Fund through the INTER-REG IVB NWE programme, and are available to all interested parties on a first-come, first-served basis.

Topics covered include floodplain forest creation, biodiversity enhancements within agricultural restorations, landscape-scale conservation through minerals restoration and flood alleviation and other ecosystem benefits through the appropriate and sustainable restoration of minerals sites for biodiversity.

Details of the events are available on the [NAM website](#) and the [RESTORE website](#). For further information on these events and to book a place, fill in the on-line booking form and send to NAM's Events & Communications Officer at debra.royal@rspb.org.uk