Nature News

What is the wildest thing you have ever seen on National Trust land? For me, it would be the River Lisa in Ennerdale. As this autumn's rains kick in, I am reminded of the incessant and heavy rain of last winter, and what used to be called 'extreme' events. In the Lake District, water company bosses were tearing out their hair trying to find potable water which had not been discoloured by high sediment load when the usually pure water from Thirlmere that Mancunians enjoy had turned brown. For while, only the water in Ennerdale Lake remained potable, thanks to the Lisa upstream crashing through a valley with no settlements, dropping its small sediment load in every twist and turn.

Rewilding is a hot topic right now. George Monbiot amongst others argues convincingly that for ecosystem to function properly, we need to bring back 'keystone' species such as large carbora and large herbivores to regenerate trophic cascades and landscapes of fear (see the recent article in *The Guardian*). South of the Scottish border there is little prospect of lynxes or wolves returning. But we could rewild rivers and we could return another keystone species, the beaver. Unfortunately there is a real risk that approved reintroductions of the beaver will be jeopardised by unauthorised and unlawful releases or escapes. Right now, a few beavers are loose on the River Otter in Devon. Their fate is in the balance – will they be caught and rehomed, or left alone? Our position is clear: we do not support unauthorised releases/escapes. But we also support Devon Wildlife Trust's proposal to catch them, screen for disease and, if they are clean, plan for their rerelease.

P.S. Thinking about high rainfall events: Did changes in the land use in the catchment of the Horner River reduce flood risk downstream? Yes!

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Muscling in on the mussels

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Diane O'Leary, Pearls in Peril Project Officer, and Rachel Oakley, Wild Ennerdale Project Officer

'Muscling in' would be an appropriate phrase for the amount of work and funding that is currently happening in a bid to improve the understanding and habitat for this rare and highly protected species. The work itself is a much more sensitive approach, involving many partners and project methods to deliver practical improvements on the ground. The River Ehen flows from Ennerdale Water to the Irish Sea south of Whitehaven. It has the largest population of freshwater mussels in England, though recruitment of juvenile mussels has declined. It's not quite a 'one in a million' chance when it comes to survival, but it's not so far off…

Diane O'Leary is the Project Officer for Pearls in Peril (PIP); a UK-wide project to safeguard the future of the freshwater pearl mussel in Scotland, England and Wales. PIP is funded in part through the European Commission LIFE Nature programme and by 14 organisations across the UK. The project runs until September 2016. Diane's remit is solely for the River Ehen and this is the only river in England to be part of the programme. Here she provides the more technical detail: 'The freshwater pearl mussel *Margartifera margartifera* is an ancient and internationally protected species that cleans our rivers and can live for over 100 years, yet is now at critical risk of extinction.

Freshwater pearl mussels © Ian Killeen

'Each day an adult mussel, which can grow to over 15cm, can filter more water than we use in an average shower. Mussels need exceptionally clean, well-oxygenated water and very low levels of nutrients and silt. Issues, such as faulty septic tanks, run-off from roads and fields or excess silt from riverbanks settling on the riverbed all have a detrimental impact to the survival of the mussels.'

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New wetlands for wildlife

Rachel Holder, Ranger, The Lizard, Cornwall

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In common with many conservation organisations nationally, we've been doing our bit to try to reverse the long-term decline in the number of ponds in the wider countryside, as reported on our blogsite.

Thanks to funding through Higher Level Stewardship schemes and the Millennium Million Ponds Project administered by Pond Conservation (now renamed the Freshwater Habitats Trust), we've dug over 15 new ponds and scrapes on Trust land on The Lizard in the last four years.

At Grochall, ten new ponds were dug in 2011 in rush pastures close to the heathland of Lizard Downs, with the aim of giving a quiet refuge for wildlife. Some of the ponds hold water all year and have proven popular with dragonflies; others are shallow seasonal scrapes, great for water beetles and other rapid colonisers.

Spurred on by the success of these first ponds, we went on in 2012 to undertake a more ambitious project on Predannack Airfield, the southern half of which is owned by the Trust. The airfield was built, as many were, as part of the Second World War effort, and it remains a military airfield today, being a satellite site to RNAS Culdrose. With the MoD's support, we were able to reinstate long-lost scrapes and trackways shown on an 1880 map, but redundant and overgrown since the 1940s.

In June we had exciting news from our Cornwall Botanical Recorders who discovered two plants of conservation concern in the large new scrape on the airfield: pillwort *Pilularia globulifera* is a rare and unusual grass-like creeping fern that thrives in seasonal acid pools. It is named after its distinctive round sporocarps (reproductive bodies) found at the base of the fronds. It is a Biodiversity Action Plan Species, and is classed as Near Threatened Nationally, so it was great to see it in abundance, forming light green mats in the shallows. It was also fantastic to find the delicate little flowers of yellow centaury *Cicendia filiformis*, a Nationally Scarce plant of the gentian family, on the newly scraped bare mud. Both pillwort and yellow centaury are esteemed members of the 'puddle gang', rare plants for which The Lizard is famous, growing in a few choice trackways and heathland scrapes which are seasonally damp.

Our three newest ponds were completed at Tregullas on The Lizard in October 2013. Unlike those at Grochall and Predannack which are on or near heathland, these ponds are very much about giving farmland wildlife a helping hand. The ponds are in the corners of arable fields south of Lizard village and should be deep enough to hold water year round, drought years excepted. This area historically had several ponds associated with brick-clay extraction, but all had been infilled by the 1970s. We therefore wanted to put wetlands back in the landscape, and give farmland wildlife a boost. So far so good! Within a few weeks a snipe was spotted probing the edges of the ponds, and swallows swoop low over the surface as they take insects on the wing. And a handy by-product of these new ponds has been a steady supply of lovely modelling clay for our kids' events!

Looking to the future, we would love to be able to put in place more detailed monitoring of our new wetlands (do shout if you are a dab hand with water beetles), and we have plans for further HLS-funded scrapes to the north of Predannack Airfield, on farmland at Teneriffe that was once heathland.

Taken in the context of all the other great work done to reinstate ponds and trackways by our conservation partners locally, such as Cornwall Wildlife Trust/Cornwall Bird Watching & Preservation Society at Windmill Farm, and Natural England/St Keverne Parish Council, then it feels that we really have taken great strides forward for wetland wildlife on The Lizard in the last few years, proving how a little water and mud here and there can add up to an awful lot of new and improved habitat!

Images from top: The largest scrape being dug at Grochall © NT; New scrape on Predannack © Jeremy Clitherow, Natural England; The grass-like pillwort © CWT; Yellow centaury © CWT

Wetland creation at Park End Moss, Lyth Valley, Sizergh Estate

Tom Burditt, Project Manager and General Manager, North Lakes Thomas.Burditt@nationaltrust.org.uk

Throughout this year we have been creating a new wetland on land in the Lyth Valley, South Cumbria, which is part of the Trust's Sizergh Estate. In total, about 30 hectares of degraded low-lying agricultural land (between 4 and 5m above sea level) are being transformed into a mixture of open water (deeper pools and channels, ponds, and inter-connected shallow scrapes), wet and dry reedbed, fen and grazing marsh. The project area is large enough that it could one day be home to a pair of bitterns, but it will also be habitat for wildfowl, breeding waders, reedbed species, otters and dragonflies. Already lapwings have successfully bred, red deer have moved in, and egrets, cormorants, and young ospreys are scouting it out, ready to move in once the fish arrive (as, miraculously, they seem to be doing already).

The site sits within the Morecambe Bay Nature Improvement Area, one of 12 national pilot areas in which organisations and communities are working in partnership to bring about improvements in wildlife habitat at a landscape scale. We are being supported by a number of partners with the design and delivery of the scheme, most notably from the RSPB, Cumbria Wildlife Trust and Natural England, who are funding the works to the tune of £300,000 under their Higher Level Scheme.

The majority of the money has funded the diggers and tracked dumpers that have excavated the clay on the site to a range of depths and moved it to the edges to form a perimeter water-retaining bund. Three sluices are enabling us to control water levels, which will be held at just above the old field level. On higher, peaty soils around the edges we have stripped off soil to expose marl-depositing lime-rich natural springs that feed the site with water. It has also given us a bare substrate in which to distribute green 'hay' from two local flower-rich fens and in which to plant locally grown plugs.

Through the autumn the focus shifts to fencing: it is vital to the future sustainable management of the site that the land is grazed and will form part of a Farm Business Tenancy on completion of the capital works – this will ensure floristic diversity of the wetland habitats, and the plan eventually is to use large herbivores to periodically open up the reedbed rather than relying on mechanical cutting. The grazing is also important to the local politics. Against controversial plans by the Environment Agency to withdraw from funding land drainage in the valley, the project is designed to showcase 'wetter farming': to break down what has become a polarised debate between conservation and farming. We want to prove that wildlife and farming can coexist. A bird hide will open next spring to enable visitors to enjoy watching the habitats develop before their eyes. Watch this space…

A wetland emerges: Park End Moss, August 2014. © National Trust/Tom Burditt

Catchments in Trust

Helen Dangerfield, Head of Conservation, East of England helen.dangerfield@nationaltrust.org.uk

Catchments in Trust is a partnership project between the National Trust and the Environment Agency, set up so that by working together, we deliver more for the water environment. The catchment-based approach was launched by Defra in 2013 in a policy framework promoting integrated catchment management – pretty much what we were calling for in our 2008 report *From Source to Sea*.

Earlier this year, we collated a list of Trust projects working towards improving water quality, managing flood risk and enhancing habitat quality; our properties have started over 80 projects since *From Source to Sea* was published. These projects have been forged through hard work, partnership-working and local problem-solving. Building on this foundation and learning from them, Catchments in Trust aims to scale up our work, thinking bigger and working wider, to enable more to be achieved in whole catchment areas.

And the need to focus on our water environment remains great: only 22% of rivers are in a good ecological state. Rivers are critical pathways for habitat connectivity yet 62% are severely modified. Improving land management within our catchment is vital when critical loads of nitrogen are exceeded in over 89% of sensitive habitats. Catchment in Trust focuses on land, water and habitat quality in line with our Land, Outdoors and Nature programme, an emerging priority in the forthcoming strategy. A key part will be engaging others in our work to take account of water as a vital part of sustainable communities. The project has begun by looking at ten places where we have greatest landownership within catchment boundaries and could potentially make the biggest difference. We know from the water quality data that there are significant improvements to be made but early work has shown that big opportunities are achievable, for example, in managing flood risk. We have already worked with the Environment Agency to feed into their national investment programme and we shall look into how we can catalyse working beyond our boundaries and inspire action in others.

A key objective is to exploit the benefits of knowledge-sharing across projects during the development phase so we can see the economies of scale in developing our plans. Each catchment-scale project is being supported by our partnership in terms of scoping what the needs might be. This will extend to how we seek to fundraise: this year there is money to support scoping which will enable us to join all the projects into a holistic fundraising strategy with the help of our fundraising team.

If you would like more information, please contact me on helen.dangerfield@nationaltrust.org.uk.

Wimpole provides 100 millionth NBN record!

The National Biodiversity Network (NBN) has added its 100 millionth species record, making it one of the largest biodiversity databases in the world. From its prototype beginnings when 100,000 records were available in the late 1990s, to a staggering 100 million species records from across the UK.

Two-spot ladybird © Northeast Wildlife

And the 100 millionth record came courtesy of Peter Kirby, a consultant entomologist, and is of a two-spot ladybird *Adalia bipunctata* he recorded while working on the Trust's Wimpole Estate, Cambridgeshire.

The data for NBN is provided voluntarily by amateur and professional experts around the country. NBN Gateway allows anyone to look and investigate the distribution of these species on maps and to download information. Users range from naturalists interested in the distribution of particular species, government agencies monitoring changes in populations of threatened or non-native species, researchers using data for analysis and the general public interested in the wildlife in their local area.

'This biological data is one of the most important resources for anyone learning about, caring for, or managing the UK environment' says John Sawyer, Chief Executive of the National Biodiversity Network; 'Were it not for the dedication of volunteers recording what they see, we would know very little about the status of our wildlife, what is happening over time, whether a changing climate is having an effect and whether our conservation and restoration is making a difference.'

For more on this story, see www.nbn.org.uk/News/Latest-news/100-million-records-on-NBN-Gateway!.aspx

Introducing Stewart Clarke, National Specialist, Freshwater and Estuaries

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The Trust owns significant freshwater assets, from ornamental ponds to internationally designated lakes and wetlands such as Wastwater in the Lake District, Bosherston Lily Ponds at Stackpole, Pembs, Upper Lough Erne on the Crom Estate, Co Fermanagh, and Wicken Fen, Cambs. In addition to these individual sites, the Trust's land ownership includes large areas of the uplands and some river catchments fall entirely within our stewardship. This presents some huge opportunities and responsibilities for water management.

For these reasons I was both delighted and a little daunted to be offered the job as National Specialist for Freshwater and Estuaries within the National Consultancy. I'm working alongside Mark Roberts, Water Adviser, whose profile was in the previous issue of *Nature News*. As my job title suggests, I will be providing advice and support from 'source to sea' and in particular trying to help people link land and water management. The Trust already has an enviable reputation for leading innovative landscape-scale projects, such as the natural flood management pilot on the Holnicote Estate; I hope that there will be many more reasons to be proud.

I have a long-standing interest in freshwater ecology and management. Having completed a PhD in river ecology, I joined English Nature as a national specialist covering standing waters (lakes, ponds, canals and ditches) as well as leading on aquatic plant issues, both conservation of rarities and the management of problems. During ten years providing advice to local teams looking after SSSIs, I found myself dealing with the whole range of issues that affect freshwaters and soon became convinced that most problems, no matter how small in scale, really needed to be considered within a wider context and often at the catchment scale.

Many problems in lakes, rivers and estuaries are the result of how the surrounding land is managed or the unintended consequence of some action to manipulate freshwaters for other uses. In response to this, I jumped at the opportunity to get involved as project manager and technical specialist in three upland ecosystem-approach pilots initiated by Natural England. More recently, I was seconded to the Department for Food and Rural Affairs to work with the Government-appointed Natural Capital Committee which is trying to ensure the natural environment is properly recognised in decision making.

In addition to providing advice directly to properties, I hope I can use my knowledge of the water sector and links to the research community to help the Trust understand both its role in water management and the evidence for particular management options. I will be trying to use my external roles as a trustee for Buglife and as member of the Natural Environment Research Council's peer review college to advocate the Trust's work and explore opportunities for collaboration.

My priorities for my first weeks with the Trust are to meet many of the people I will be advising and supporting and to see some of the amazing places, helping me understand some of the water management issues we face. I will also be working to improve internal networks around water work and will develop the existing Water Group to help with this. I look forward to meeting many of you over the coming weeks and months as I travel around.

Building Design Guides

Kelly Gardiner, Building and Projects Design Guide Manager

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Did you know there is a vast collection of case studies offering best practice and lessons learnt from a variety of projects available at your fingertips?

Our Building Design Guides are a knowledge base that aims to help you save time and money, by drawing attention to aspects of projects that have worked particularly well, as well as those that haven't.

This growing resource now covers projects in the outdoors including our collection of landscape and external works case studies and an increasing collection of wildlife adaption case studies. Over the coming months we will be looking at adding to both of these areas, including a case study on the relocation of house martins at Croome.

Please do take a look through the case studies and use them to help inform your project planning. For more information or to suggest a project for a new Building Design Guide, do contact me by email or on 07774 556071.

Muscling in on the mussels *continued from page 1*

Diane continues: 'In addition to their essential role in our rivers, they have a fascinating lifecycle; they spend the first few months of their life growing on the gills of a young salmonid (Atlantic salmon or trout). An adult mussel releases one to four million larvae, called glochidia, in the summer. The microscopic larva looks like a miniature mussel; the shells are held open until they are inhaled by the fish, then snap shut on the gill filaments. This association does not appear to harm the fish. The chances of a larva meeting a suitable fish, however, are very low; only four in every million will do so, nearly all are swept away by the river. Glochidia remain on the fish gills until the following spring, when they drop off. They must land and burrow into clean, sandy or gravelly substrates in order to survive; if they land in mud or silt they will suffocate.

'Freshwater pearl mussels are rapidly declining all across Europe; Scotland is the stronghold for them in the UK. In England, the River Ehen in Cumbria supports the largest breeding population of mussels and, as a result, the river has been designated as a Site of Special Scientific Interest and a Special Area of Conservation. The River Ehen mussels are at serious risk of extinction due to habitat degradation (e.g. excess silt) and declining water quality. As mussels have been identified as an umbrella species and indicators of excellent water quality, a declining population is an indication that the conditions in the river are deteriorating.

'West Cumbria Rivers Trust is responsible for delivering the Pearls in Peril Project in England and works closely with other organisations, such as the National Trust and Wild Ennerdale, on a range of projects such as tree planting, fencing, bank stabilisation and community events to ensure that England's most important population of freshwater pearl mussels gets the best chance of survival.'

To support the freshwater mussel population, United Utilities is currently re-naturalising an upland mountain stream back to its original course. Ben Gill was diverted from the Ehen directly to Ennerdale Water to boost water supply for West Cumbria in the 1970s. As more scientific understanding has emerged, the clean gravels and fresh flushes of water are deemed essential for this population to survive. Work on the stream is on schedule and due to be completed this year.

Balancing visitor pressure and environmental compliance is challenging at this site. The western end of Ennerdale is the most highly visited part of the valley, with a main car park and road access adjacent to the Ehen. For many years local people have come to paddle and play. Whilst access to the lake and surrounding fells continues, people are now being asked not to go in the river, and fences installed to restrict access. The question many people ask is 'why bother?' when the mussels have survived for so long with human activity, yet now restrictions are in place. The simple answer is they are surviving, but only just. The evidence shows that with the current level of juvenile recruitment and without any intervention, it's likely the mussel population would be extinct within the next 40 years. Time to 'muscle in'…

For information on the PIP, contact Diane on 017687 44347, visit www.westcumbriariverstrust.org or Tweet @mothemussel. And for more information on Wild Ennerdale, contact me on 07836 374808 or visit www.wildennerdale.co.uk

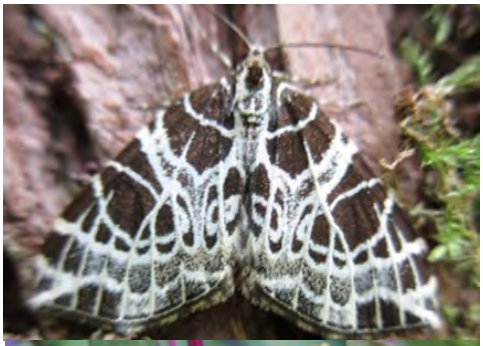
Images: (top) Works underway to renaturalise the course of Ben Gill © National Trust/Wild Ennerdale ; (below) from left to right, Diane and Rachel raising awareness of the conservation needs of the freshwater pearl mussels. © Diane O'Leary

Ongoing touch-me-not balsam and netted carpet moth conservation

Roland Wicksteed, Ranger, North West Central and East Lakes roland.wicksteed@nationaltrust.org.uk

Clearing brambles at two National Trust sites, Millerground and Parson Wyke, in the Lake District has given a much-needed boost to the numbers of the nationally scarce native touch-me-not balsam *Impatiens noli-tangere*. Its main stronghold is in the Lake District but even here the plant is found in quite limited numbers.

Important to conserve for its own sake, touch-me-not is also the only food source for the netted carpet moth *Eustroma reticulatum*, one of the rarest moths in the UK and one of the eight species for which the Trust has special responsibility. Its caterpillars are utterly reliant on this plant and good numbers of plants are needed to maintain annual moth populations. These moths were extensively collected by Victorians; in fact, the moths were thought to have become extinct by the 1900s, however, it was 'rediscovered' in the 1940s at a site near Windermere.



Our woodland at Parson Wyke is small and entirely enclosed; it is next to Ferry Nab car-park near Bowness and the Trust's Cockshott Point, an extremely popular lakeshore walk. It is Carr woodland, principally alder. We thinned it in 2013 which has helped touch-me-not to flourish as there is a better balance of light and shade that really does suit the plant. We pulled out brambles that were starting to smother a colony of touch-me-not. Reducing the competition and disturbing the ground will hopefully allow more touch-me-not seeds to germinate next spring. The image (*below left*) shows an impressive stand of touch-me-not where brambles were once dominant so we know it works.

Images (top) Netted carpet moth and (right) netted carpet caterpillar on the plant.

(Left) A healthy stand of touch-me-not balsam; (right) A single plant overshadowed by pendulous sedge grass. © NT/RolandWicksteed

Millerground, a semi-natural ancient woodland, is one of few public access points on Windermere's eastern shore. Many non-native trees were felled in 2009 surrounding Wynlass Beck, which flows through the wood into the lake. This let in more sunlight, and enabled touch-me-not to be successfully reintroduced by way of a seeding programme that autumn. Touch-me-not had not been observed here for decades prior to this! Now into its fifth growing season, netted carpet moth larvae was surveyed there during the first growing season. Last March, volunteers helped to cut back and clear brambles, which enabled us to also plant 2,200 bluebells to be planted; we were rewarded by a good display, followed by greater numbers of touch-me-not in late spring, which should be even more numerous next year.

A few non-native and highly invasive plants are causing us work, however. A concerted effort will be made to deal with these, as there is a major risk that some touch-me-not stands will become completely overrun. Himalayan balsam is a constant threat. It is pulled out regularly to prevent it from displacing touch-me-not and other native plants. Pendulous sedge grass *Carex pendula* (aka the 'thug plant') likes similar conditions to touch-me-not, ie damp shady woodlands, and is spreading at an alarming rate, particularly at Millerground unfortunately. White butterbur *Petatsites albus*, a perennial from Central Europe, is also becoming increasingly invasive, rapidly displacing native flora as it spreads. Where there was once a flourishing touch-me-not stand two years ago, is now a single plant on the outer edge of the massed ranks of butterbur. Keeping invasive plants in check will be ongoing work for us; we'll need regular volunteer work parties to manage the sites as we'll never completely eradicate the plants we don't want. But the successes we've had on cleared sites with touch-me-not balsam, and consequently the netted carpet moth, mean that while both remain nationally scarce or rare, they are at least able to flourish.

Bees, burrows and bloody cranesbill

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Corrinne Manning, Wildlife Survey and Monitoring Seasonal Ranger, Carms, Ceredigion & Gower

An exciting new venture is well underway to help understand and protect the wonderful limestone grassland on Gower.

Cwm Ivy Tor is an impressive limestone outcrop which looms out of the surrounding dune system of Whiteford Burrows. From late spring through to autumn, these rocky slopes are awash with an incredible array of colourful, nectar-rich flowering plants, many of which are specialists of limey soils. Species found here include bloody cranesbill, burnet saxifrage, quaking grass, greater knapweed, squinancywort and the delicately beautiful fairy flax. At least 75 species have been recorded on the western slope alone. These in turn support an enormous number of bees, butterflies and other invertebrate species.

On a world scale, such species-rich limestone grasslands are pretty rare. Monitoring of the tor is vital if we are to assess the condition of the grassland to inform its management and ensure that a rich variety of plants continues to thrive at this beautiful site. In summer 2013, I worked with Helen Buckingham and Alan Kearsley-Evans to set up Common Standards Monitoring plots on the tor. This provided the data for a monitoring training pack for use with Gower. These include an illustrated monitoring guide for volunteers, monitoring sheets specific to the site and a set of wildflower identification cards, which include photographic ID, uses and folklore of each species.

This summer saw the first trial of the new packs and they were met with great enthusiasm at a training session held in July. With Trust ranger Kathryn Thomas, I led a group of volunteers in a wildflower ID session and training in completion of the monitoring. The two days were highly successful and the end result is that we now have a small group of wonderfully keen and able volunteers, Cherry Lowe, Sarah Oakey-Philips and Lyn Richards, who are ready to continue with the monitoring next year. In the autumn they will input and analyse the data with me, feeding back the results into the management plan for the tor. Projects such as this are a really effective way of boosting confidence, increasing knowledge, skills and job prospects for our volunteers, a fair reward for all the wonderful work they do.

With the success of the monitoring project at Cwm Ivt, we are hoping to run similar ones at other sites, so… watch this space!

Images from top: Bloody cranesbill, quaking grass and bird's-foot trefoil; Kathryn with volunteers Lyn, Sarah and Cherry; harebells, with Whiteford Burrows in the background. © NT/Corrinne Manning

Coastal Bioblitz Programme planned for 2015

Ed Bartlett, Technical Assistant, Nature Conservation

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Next year, there are lots of coastal-themed events being planned across the Trust to mark the Golden Anniversary of the Trust's Neptune Coastline Campaign. As a result of the incredible support received, the Trust is safeguarding a staggering 1,190km (740 miles) of coast across England, Wales and Northern Ireland. Of course, we will be celebrating our coastal heritage and wildlife throughout next year, but more importantly, we will be looking to the Trust's significant role at the coast for the next 50 years.

As part of the programme, 24 Wildlife Bioblitz or mini-Bioblitz events are being planned at coastal properties in every region and country – even landlocked Midlands – from February to October 2015. Visitors of all ages, volunteers, staff and expert naturalists will be working together, racing against the clock to find and record as many types of animal and plant species as possible.

We hope that these events will be great experiences for all involved, that we will create valuable wildlife records to help us continue to conserve nature and that, for some, it might spark or help develop a lifelong love of wildlife around our diverse and dynamic island nation.

For peat's sake?

Huw Jenkins, writer

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A huge amount of work has gone into blocking drainage ditches on the Migneint, most of which is part of the Trust's 8,094ha Ysbyty Estate. The ditches were dug between the 1930s and 1970s in a misguided attempt to increase farming productivity. But the anticipated gains did not materialise, the ditches became deeper, some livestock even got trapped and died in the ditches. At the same time much of the peat was dried out and exposed to oxygen thereby accelerating its decomposition, releasing large quantities of carbon into the atmosphere.

In the last four years thousands of dams have been built to block hundreds of kilometres of ditches, and the good news is that the bog is squelching back into health: 'The most impressive aspect is the enormous scale of the project; the second largest such project in Wales after the work at the RSPB Vyrnwy Reserve' said Dr Peter Jones, Peatland Ecologist for Natural Resources Wales.

Peat is the product of dead vegetation which is unable to decompose due to the absence of oxygen in the wet, acidic conditions. Ditch or 'grip' blocking has an instant effect; after just three years there has been a wonderful growth of sphagnum behind the peat dams, restoring the natural hydrology and building more peat in the old ditches. The Migneint is relatively rich in species with a mix of dwarf shrubs (cross-leaved heath, heather, crowberry, bilberry), cotton grasses and bog mosses. It's also home to some of our rarer bog plants such as lesser twayblade *Listera cordata*, a tiny orchid. This is good news for the peat and for all of us in terms of biodiversity, carbon storage and mitigating against climate change.

Another aspect of the Migneint bog is its ability to store and purify an enormous volume of water which should mean less flooding further down the Conwy Valley. 'Sort out the sponge in the upland and the lowland will fare better' is the adage and whilst there is anecdotal evidence that the situation is improving, it would be good to know by how much. To that end the Centre for Ecology & Hydrology (CEH) is undertaking research to measure water flow and quality at the base of a site (Cefn Gwyn) about to be blocked. Recording devices have been installed in the river, which when linked to rainfall data, will provide empirical data on flow spikes before and after blocking ditches.

Similarly we all know that restoring peat bogs is a good thing to do but how can we quantify that? The goal is to reduce greenhouse gases (GHG) such as carbon dioxide (CO_2) and methane (CH_4) but we need to factor in the fact that CH_4 is 25 times more potent in terms of climate change than CO_2. Peatland plants absorb CO_2 through photo-synthesis and as they die and decay the plants release some of the CO_2 and CH_4. Does the net CO_2 capture outweigh the smaller but more potent emission of CH_4? Do different techniques of peatland restoration produce 'better' results? These questions are being researched, with funds from Defra, by a group of scientists from Leeds University in a consortium with the Open University and CEH. The four-year study is about to conclude with results due in early 2015. An additional project has been started by Leeds University to investigate an area of old peat hagging that is recovering naturally and building new peat; drone flights have been used to capture data.

The ongoing restoration work has been rolled up into a larger project led by the Snowdonia National Park. One of the other partners is Dŵr Cymru and evaluation work has been underway since 2012 to evaluate the pros and cons of whether to block the active ditches that lead directly into Llyn Conwy where a new treatment plant is being built.

All these changes to the land have been made with the cooperation and understanding of the graziers and tenant farmers and there is an ongoing discussion with them to see how to develop a sustainable agricultural use to retain the farming heritage on the Migneint. It's not just for peat's sake!

Images: (top) Blocking a seemingly naturally blocked ditch – uncovering the 'peat pipes' which occur when thatch closes over old ditches; (bottom) the awesome Migneint. © National Trust/Trystan Edwards

Rare beetle re-introduced to Wicken Fen after 32 year absence

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A very rare iridescent leaf beetle has been re-introduced to Wicken Fen nature reserve in Cambridgeshire in a joint project between the National Trust, Buglife and the Tansy Beetle Action Group (TBAG), with the support of Natural England.

Tansy beetle © NT/Stuart Warrington

The tansy beetle *Chrysolina graminis* is currently in decline and under threat in the UK and across its worldwide range, and is a conservation priority species in England. Distinctive and eye-catching with a metallic appearance, the beetle was last seen at Wicken Fen 32 years ago and is currently known only from York and also Woodwalton Fen, Cambs, where it was rediscovered earlier this summer.

The tansy beetle was always restricted to larger wetlands, where there was the right combination of abundant food plants and damp soil. Many wetlands have been lost over the decades, and this may have left the beetle in smaller isolated wetland patches. This beetle does seem to be very reluctant to fly, so each isolated population becomes more vulnerable to local extinction, when the site becomes unfavourable or is drained. This may be the reason why we lost the species at Wicken Fen, as the site had become too dry and scrubby by the early 80s. Since 1982, the year of its last sighting, we have cleared the scrub and got the site much wetter again. Due to its aversion to flight, it would have struggled to recolonise wetlands that could support it, which is why we thought it worthwhile to try re-introducing it to Wicken Fen... via two buckets in the back of a car down the A1(M)…

Although Woodwalton Fen is nearer, the beetle's stronghold has been along a 30km stretch of the River Ouse, around York, where it mainly eats – yes, you guessed it – tansy *Tanacetum vulgare*. It will also feed on water mint and gipsywort, which are both very abundant at Woodwalton and Wicken Fens. The beetle has had a bumper year in York so there were many thousands of adults present. A few hundred were relocated to Wicken Fen so that they can feed up through the autumn before hibernation and – we hope – re-emergence next spring. We shall go and have a look next May.

The reintroduction project, especially with a little insect, is partly an act of faith, as we really don't know if it will thrive at Wicken. But it is certainly worth trying to put the tansy beetle back into its former sites, to help bolster its population and reduce the risk of extinction.

Ash dieback *Chalara fraxinea* has reached Malham and the Yorkshire Dales

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Unfortunately ash dieback has now reached the Yorkshire Dales National Park. This was not unexpected as there had been some outbreaks in the wild along the southern part of the Ribble Valley. It's been found predominantly in the woodlands along the A65 as well as in some north of Settle towards Horton in Ribblesdale. Other areas include the Aire valley (Airton, Kirkby Malham and Malham) as well as the area around Hetton and Rylstone.

If the expected proportion of infected ash trees die, it will have a significant impact on the National Park's ancient semi-natural woodland habitat as well as the landscape of the area. The disease is carried by a fungus that develops in leaf litter over the winter and then sporulates in the spring, thus spreading the infection. The spores will die if they dry out, however they will survive in, for example, wet mud. Recommended low-risk biosecurity advice when visiting woodlands/new planting in the Yorkshire Dales National Park is:

1. avoid unnecessary visits;
2. before you visit, remove all mud and leaf litter from your clothes, boots, tools and vehicles;
3. after a visit, remove all mud and leaf litter from your clothes, boots, tools and vehicles;
4. in between visits, where possible, ensure that your clothes/boots/tools are dried out.

The most up-to-date information is on the Forestry Commission website at www.forestry.gov.uk/chalara including a map that shows the distribution of the disease over the UK.

Brief encounter: spotting the red helleborine

Tim Jenkins, Area Ranger, Haresfield Estate, Gloucestershire timothy.jenkins@nationaltrust.org.uk

Red helleborine *Cephalanthera rubra* is one of Britain's rarest orchids. Both striking and attractive in appearance, only a handful of plants are known to exist during any one year. The plant is now restricted to three sites in England, all found in beechwoods growing either on chalk, as in the Chilterns and Hampshire, or limestone in the Cotswolds. The sites are all on free-draining slopes, offering either partial shade or open light conditions. Red helleborine is found in more mixed habitats in continental Europe but here in Britain it is on the edge of its northern range.

The plant has always been rare but the Cotswolds were traditionally seen as its stronghold. Although believed to have been recorded on at least ten separate sites, by the 1970s, plants could only be found at our site near the village of Sheepscombe. I have been involved with managing the site for nearly ten years and have worked closely with our partners in the Red Helleborine Group to gain better understanding of the orchid and improve the habitat to enhance conditions for the plant to thrive. The objective has always been to secure the site and increase, if possible, the number of plants. Since 2005 we have gone from three plants with no flowering spikes to over 30 in 2013 and seven flowering. We had a decrease in numbers this year to 17 in total and two flowering. Judging by what has happened at the other sites where a decrease in numbers or simply non-appearance has been recorded (plants have not been seen at the Hampshire site for several years), I'm hoping this year is a one-off.

Close-up of flower © NT/T.Jenkins

Plants in this country have never been known to set seed naturally. There has been some success with hand-pollination in the Chilterns but, despite numerous attempts, we have been unable to produce seed pods at Sheepscombe. The Royal Botanic Gardens Kew are working on techniques to germinate seed in the laboratory, much as they did successfully for the lady's slipper *Cypripedium calceolus* project in the 1980s; however, this is proving to be a difficult and long process and it has relied on seed collected on the continent.

The general trend for the plant at Sheepscombe has been a positive one and that is probably due to the proactive management that has been carried out on the local habitat. My impression of the site when I first saw it was one of heavy shading, particularly from understorey species including sycamore, holly and dog rose. The ground had a dense mat of leaf litter. We used photos taken from the late 1970s until the early 1990s, when the plant had been recorded in larger numbers, as a basis to establish similar growing conditions. With advice from the Red Helleborine Group and a former estate worker who had a very good knowledge of the site and plant, it was agreed to reduce the shading and rake off the build-up of leaf litter. The first work was undertaken in winter 2005 and the following summer saw a relatively dramatic increase in numbers to 11 plants with two flowering. Over the next few years I maintained a gentle shade-reduction policy around the site until we reached the stage where we thought we had reached an optimal level of light for the plant. The helleborine has responded well to this management approach but it is not an easy plant to understand or find. When not in flower, it is elusive, especially when hidden amongst the other ground flora. It seems to survive being dormant for many years before reappearing if conditions favour it. With this in mind, I have spent many hours each year looking for it on former sites but to no avail... until now!

Flowering spike © L.B.Tettenborn

You'll understand why I can give no details of the site. All I can say is that I found what I only suspected might be red helleborine earlier this year. Only once I had the results of a leaf sample test from Kew was it confirmed as such. Its presence is tenuous, but I am hopeful, confident even, that I may find another plant or two there next year.

All things bright and beautiful, all creatures amphibious and reptilian...

… are the theme for our next issue of *Nature News*. Get in touch to share your conservation stories with colleagues near and far – we are all interested in what you're doing for the small and scaly, wet, dry and warty!

Articles and ideas for articles are welcome at any time but email Jacky on consultant@nationaltrust.org.uk by **30 November** to contribute to the next issue. A guidance template and back issues can be found on http://intranet/intranet/nat-nature_news.htm

The Yorkshire Naturalists Union survey Hudswell Woods, North Yorks

John Newbould, Volunteer Ecologist, West Dorset team
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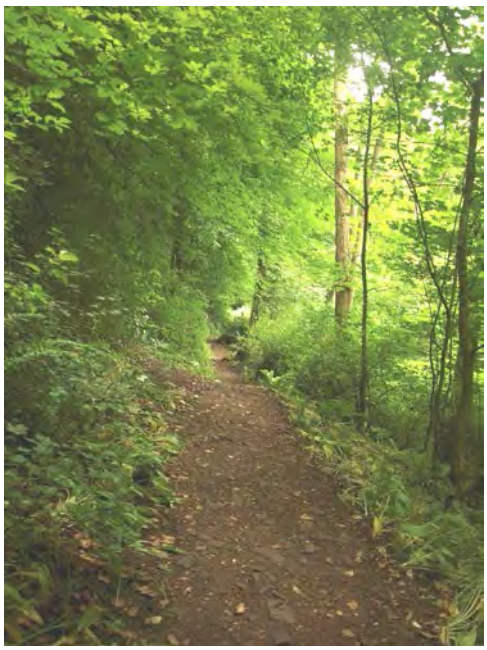
(note misspelling in email)

The Yorkshire Naturalists Union (YNU) records wildlife across the traditional county of Yorkshire. In a chance stop, whilst driving along the A6108 with another YNU member, I came across the Trust property of Hudswell Woods. In the pouring rain, the woods were dark and not easy to walk but the little we saw prompted further investigation. Perhaps it was the presence of a single yellow wagtail or two or three unusual plant galls or the presence of lime, but we wanted to find out more.



Billy Bank Wood and alpine currant. © John Newbould

We armed ourselves with the most recent Trust surveys (1981 and 1999) and arranged with the Upper Wharfedale team to do a survey in July 2013. That first year, we surveyed Hudswell Woods, including Billy Bank Wood and Calfhall Wood together with the Round Howe grasslands, and in June this year, returned to Hudswell Woods and Hag Wood. In preparing a report, we were considerably assisted by Seb Mankelow, the Ranger, who provided the all-year continuity required to monitor the bird population. YNU members undertaking fungal surveys also assisted us and have published their significant results *The Naturalist*, the journal of the YNU.

The woods are in a cutting of the River Swale with exposed Carboniferous rocks, whilst the upper valley sides are of the main limestone of the Millstone Grit series. The riverside meadows are of the post-glacial series. There are two sandy places along an otherwise steep and inaccessible riverbank, which attract bathers and a number of rare flies. Elsewhere, the riverside is effectively limestone pavement. Birds breeding along it include kingfisher, dipper, goosander, common sandpiper, sand martins, grey wagtail and spotted flycatcher.

Taking a 1971 York University survey as a baseline, a meadow to the south of Round Howe that was described as grade 1, we now feel has deteriorated to grade 4 with just ten species recorded. This is typical of our experience of sampling meadows across Swaledale where early grass-cutting before the seed has set, coupled with bigger baling machinery, has resulted in meadows which look good with colour provided by buttercup but little else of value. The Round Howe meadows still have plenty of greater burnet and pignut but these are being swamped by false oat-grass and other coarse species. Working with a Buglife B-lines project, the Hudswell Woods team has introduced conservation management to reduce coarse grasses and improve the diversity. It is also seeding traditional Dales hay-meadow plants such as wood cranesbill.

The woods are important for the presence of native large-leaved lime *Tillia platyphyllos* with the Swaledale trees being at possibly their most northerly location. Billy Bank Wood also has alpine currant *Ribes alpinum,* which is native on the Carboniferous limestone and more rarely on the Magnesian limestone such as at Fountains Abbey. By the time of the 1981 Trust survey, most of the wych elm in the woods had died from Dutch elm disease. The dead trees were felled and left either *in situ* or stacked in log piles, providing a rich source of dead-wood invertebrates. Ash appears to be healthy, but the woods contain quite a lot of beech, which is creating shade and reducing the ground flora and sycamore. Many of the usual woodland birds are present, with the National BAP bullfinch doing well and eight pairs of the Red-Listed marsh tit seen. Pied flycatcher is present in nearby woods and the Trust has initiated a project with local schools to provide nesting boxes. Since the 1999 survey, wood warbler has not been seen and is now largely confined to the Pennine foothills of west Yorkshire. The absence of standing dead wood means the rare lesser-spotted woodpecker has not been seen since 2011–12.

During 2014, more entomological survey work was undertaken by the YNU with many new species recorded, including a good number of ichneumons. Moth traps in July this year recorded 122 species, including the Nationally Scarce square-spotted clay and plain clay. During 2013, butterfly transect walks recorded just eight species but good weather this summer found eight species in two hours including the Red Data small heath.

In all we estimate that over 80 hours of volunteer time has been spent recording, with probably the same amount of time on microscopic identification, data entry and reports. The updated nature conservation assessment will soon be available in the modern National Trust format and added to the Habitats Database. Butterfly data has been recorded using the new BRC app iRecord butterflies *in situ* and entomological data on iRecord. Moth data will be added to the Butterfly Conservation database.

Making your project happen through external funding

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The Fundraising Team at Heelis, together with Fundraising and Grants Consultants in each region/country, bring in around £70 million each year. This comes from a range of different sources, including legacies, donations and grants.

Many funders and supporters can help fund projects to restore or recreate particular habitats, carry out specific improvements to enhance the habitat or support key species at the site, conduct monitoring and research, and provide opportunities for volunteering and interpretation for visitors.

The Individual Giving Team manages existing donors to ensure they continue their support through organising private visits to properties, and visits and lectures for larger groups. Recent research has shown these are incredibly important to donors and we shall have a broader range and greater number of activities in 2015. Our colleagues' support in delivering these is vital. We also work with potential donors, or prospects, to secure new support.

Donors have a wide range of interests which cover all the Trust's activity and many are passionate about our land and countryside work. Many supported the White Cliffs and Snowdonia appeals and others have particular interests, for example, one donor gave £7,000 for natterjack toads at Formby and another gave £400,000 for woodland.

Below are two grant-funded examples to give you a flavour of the types of freshwater projects that can be supported, but over the years external funding has supported peat restoration, veteran tree management and work to support bats, white-clawed crayfish and reptiles. To find out more about the funding that could help your project – small or large – to get off the ground, please contact your Fundraising or Grants Consultant!

Pond habitat restoration at Ightham Mote, Kent

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The South Lake at Ightham Mote had, over many decades, accumulated silt, resulting in a reduction of 30% of the pond area and 40% of the volume of water. In June 2013 SITA Trust awarded a grant of £20,000 to support the restoration of the lake and removal of silt to enable flora and fauna to flourish again.

White-legged damselfly © National Trust

De-silting work took place in autumn 2013 and finished during the wettest winter in many years, making management of liquid mud even more problematic than normal. With the silt removed and the arrival of spring, the South Lake made a rapid recovery. Vegetation is re-growing on its margins and a recent dragonfly survey day revealed an impressive nine species, despite the unpromising weather. This is an early sign that the restored lake will not only be better for wildlife but will also look fantastic for our visitors for many years to come.

The Mercaston and Markeaton Brooks Project, Derbyshire

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The Mercaston and Markeaton Brooks catchment, north west of Derby, covers an area of approx. 22km^2. The project began in 2004 when concerns were raised that the sediment and other inputs were having adverse impacts on the water quality, biodiversity and also flood defences in Derby. The project also wanted to protect and enhance the special features of the brooks such as the globally threatened white-clawed crayfish, otter, wet woodland and open river habitat. It was established as an integrated catchment sensitive farming project designed to improve water quality to benefit wildlife, landscape and the environment in general.

Between 2004 and 2010 surveys of the brooks were conducted and training days and advice sessions for farmers held. In 2010 a grant from SITA Trust enabled the Trust to employ a project offer and begin capital works. Subsequent grants followed, and to date over £160,000 has supported a range of different activities. This has included digital mapping of all the brooks and their tributaries, working with farmers to find practical solutions to the sediment problems, construction of bank-side fencing and provision of cattle drinking areas. Other work included construction of otter holts, installation of bat boxes, removal of invasive species such as Himalayan balsam, and hedgerow restoration.

The project officer is now in the process of developing the next phase of the project, with plans to submit an application to WREN's Biodiversity Action Fund in January 2015.

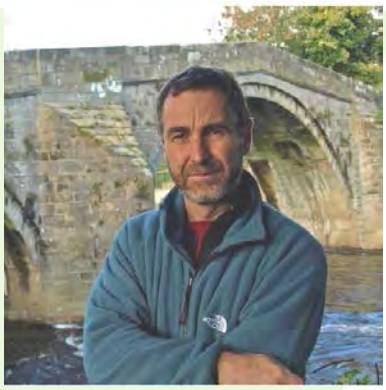
Eutrophication as nutrient-rich sediment settles in the lakes (above), and some of the 2060m of bankside fencing installed during the project (right). © National Trust

Introducing the Natural Environment Panel

http://intranet/intranet/i-nat-nature_cons_panel.htm

Our Natural Environmental Panel comprises expert volunteers who act as an extension to our internal National Consultancy. They are our critical friends, keen to advise on projects at the early stages of development and contribute their particular expertise. In this issue, we would like to introduce you to ...

John Altringham



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I am Professor of Animal Ecology and Conservation at the University of Leeds. In the past I have studied animals as diverse as tuna fish and tarantulas, but I now work primarily on the ecology and conservation of bats. Recent work from my research group includes a report on methods for the systematic surveillance of bats in woodland, studies on the impact of transport infrastructure on bats and large-scale modelling and mapping of bat distributions for national parks and AONBs. Our work extends beyond the UK – for example we are studying the effects on bats of forest fragmentation in the Western Ghats of India.

I am the author of three books on bats, the most recent being *Bats: from evolution to conservation*, published by OUP. I belong to a number of conservation advisory groups, and regularly contribute to BBC Natural History Unit productions for TV and radio.

[*Details and links to many of John's published papers can be found at www.fbs.leeds.ac.uk/staff/profile.php?tag=Altringham*]

Blogspot http://fellrangers.blogspot.co.uk/

Spare a thought for the Fell Rangers of Central & Eastern Lake District. They've calculated that this year they've walked the equivalent of scaling Mount Everest three and a half times! This has all been in aid of building a path up Esk Hause. Amazing how much landscaping goes on to 'naturalise' a path setting in remote sites – Capability Brown had it far easier!

Over the air waves: BBC Radio 4

A life with… series profiling naturalists and wildlife experts
www.bbc.co.uk/programmes/b008vhxv/episodes/guide
Requiem for a moth
www.bbc.co.uk/programmes/b010t6nr
Island of Secrets – sound portrait of Orford Ness
www.bbc.co.uk/programmes/b00j7528

News in brief

Bats may be mistaking wind turbines for trees
Daily Telegraph 29.09.14

Nature Communications journal goes fully open access
Times Education Supplement 25.09.14

Hedgehogs more sparsely distributed than thought
BBC 17.09.14

Red squirrels under threat from new foe carrying deadly virus, Daily Telegraph 10.09.14

[Notes of a recent meeting on red squirrels attended by David Bullock, plus new reports can be found on the Nature Conservation wiki]

Training and conferences

Sustainable Woodland Management 27–31 October 2014, Centre for Alternative Technology, Powys
Aimed at those currently managing or planning to manage woodland who wish to learn how to add value to it from a social, economic and ecological standpoint. It covers both practical and theoretical aspects of managing a small wood and can lead to accreditation at Level 3 with the Open College Network for an additional fee. Cost £600.

Crayfish Conference 17–19 August 2015, Giggleswick, North Yorkshire
The 2015 Crayfish Conference will bring together a broad range of researchers, practitioners, regulators and conservationists. Whether you are interested in crayfish in particular, or the issues related to crayfish conservation and INNS invasion in general, this will be an unmissable national conference. Convened by a charitable trust, together with the Environment Agency, a call for papers will be issued shortly. In the meantime, you can express your interest at:crayfish-conference-2015.

Identification of Freshwater Invertebrates to Species Level: Distance Learning Course
This course has been designed by the Environment Agency and the Freshwater Biological Association to train ecologists to identify aquatic macro-invertebrates, from rivers, stillwaters and wetlands, to species-level. The course is modular, beginning with general principles and processes (Modules 1–2),and developing into further modules (Modules 3–11) which concentrate in more detail on specific groups of invertebrates. These modules consist of pdf workbooks (one per module), which you can download and print.