NEW FOREST WATER NEWS

NEW FOREST CATCHMENT PARTNERSHIP NEWSLETTER

The New Forest Catchment Partnership is coordinated by the New Forest National Park Authority and Freshwater Habitats Trust who are working alongside other organisations and communities to protect and improve the special freshwater habitats of the New Forest. This newsletter showcases the work of those who are committed to improving the freshwater environment of the New Forest

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WORKING WITH HISTORY: A R'EEL'Y SUCCESSFUL OUTCOME FOR THE HARTFORD STREAM RESTORATION

AN OUR PAST:, OUR FUTURE, LIVING WATERS PROJECT

The Heritage Lottery Funded 'Living Waters' Project, a partnership between Freshwater Habitats Trust, the Beaulieu Estate, and Environment Agency, has been working on plans to improve eel passage along a series of medieval fish ponds on the Hartford Stream. We are thrilled to announce that the eels have returned!

European Eel *Anguilla anguilla,* have a remarkable life history; spending their adult lives (up to 20 years) in freshwaters, before migrating thousands of miles to the Sargasso Sea to reproduce.

The numbers of young eel returning to European coasts has declined dramatically (up to 95% at some catch sites in the last 25 years). As a result, the European Eel is now a Priority Species under the UK Post-2010 Biodiversity Framework, and are listed as Critically Endangered on the global IUCN Red List of Threatened Species.

Glass eels at the transition between salt sea and freshwater. Their skin at this stage is transparent, hence their name. © Uwe Kils bit.ly/2NaFStx.

The issues are not fully understood but may be a combination of climate change, overfishing, parasites, pollution and barriers to migration. Most of these issues are complex to resolve; they will take time and require global solutions. In the short term, we can at least tackle the historic modification of river and estuarine habitats, so that the young elver who make it this far have unobstructed passage to their freshwater homes.

The Hartford Stream, is a small spring-fed stream, running from the open forest on Beaulieu Heath, through the ancient monastic grounds of the Beaulieu Abbey before draining directly into the Beaulieu estuary. Ecologically the Hartford Stream is in good condition, flowing through woodland habitats and mostly free from nutrient pollution, resulting in high invertebrate diversity. This is a window into the past when clean, wildlife rich freshwaters were commonplace for lowland streams, but which is now a diminishing resource because of widespread pollution in most of the wider countryside.

The stream and its eels are also a reminder of our eco-heritage; the dependence of communities past and present on the natural environment for food and resources. We can well imagine the monks of Abbey and the surrounding community, being grateful for the abundant rich fatty food supply provided by the spring elvers, as they gathered in the Beaulieu Estuary, waiting for the full moon to make the journey home.

WORKING WITH HISTORY CONTINUED……

Through the Heritage Lottery Funded Our Past, Our Future (OPOF) programme, we have been working with the Beaulieu Estate and local stakeholders, to identify, and then remove or modify, 20th century in-stream structures, which are currently preventing eel passage, increasing erosion and causing a lack of habitat connectivity from source to sea.

The obstructions are associated with a series of dammed ponds. Often medieval in origin, the ponds are thought to have been created by the monks of Beaulieu Abbey. But, 'repairs' in recent history, using modern materials, are creating an insurmountable obstacle for the eels. The most 'natural' option would be to remove the on-line ponds altogether. However, their ecological and archaeological value mean that the stream course cannot be restored by removing the dams, so our preferred option was to find solutions which would allow young eel to get over the barriers.

The Stew Pond

As the name suggests, the Stew Pond, was likely to have been built to provide fish for the Cistercian monks, who founded the Abbey in 1204. A sluice structure at the pond outlet, holds and maintains water levels in the pond, then the stream flows through a culvert under the road and out into the estuary. The drop from the top of the sluice to the bottom of the culvert is considerable.

We attached U-shaped UPVC gutter to the side of the existing brick culvert wall, with 100mm wide bristle mat secured inside. A narrow slit was cut into the existing sluice wall, with flexible bristle matting, to allow low velocity gravity fed water to outflow from the pond (at approximately half a litre per second) during spring/summer flow conditions. Drop boards in the sluice will allow the flow of water to be adjusted if required. We recently revised the design to include a boom which will deflect leaves and organic matter away from the outlet and replaced the matting in the notch with an eel 'gutter brush' which can be removed and cleaned.

Newly installed eel pass disappearing into the depths of the culvert which carries the Hartford Stream underground from the Stew Pond in the grounds of the Beaulieu Abbey to the top of the Beaulieu Estuary. The bottom right picture also shows the toe of the otter ramp which was reinstalled above the eel pass.

Acknowledgements: *With thanks to the Beaulieu Estate and Countryside Education Trust for their enthusiasm and engagement in the restoration work; Environment Agency staff for their support, technical advice and match funding; Richard Reeves who researched the history of the Beaulieu Abbey Stream; Niccolls Plant hire for undertaking the capital works; Manny Hinge for persevering with attempts to film the eels; and last but not least Jane Nordstrom who went above and beyond, in her own time, to make this project a success.*

Fitting the gutter brush and eel ramp at Boarman Pond.

Boarman Pond

Certainly one of the oldest and largest ponds on the Hartford Stream. We worked with the Angling Society to find a solution which would fit alongside the monk structure at the pond outlet. Monks come in a variety of designs to allow water to flow from a pond without losing the fish, and can also be used to regulate pond temperature by creating a convection current drawing cold water from the depths (in this case a 12 foot drop). Unfortunately this, combined with a fast flowing 30m outfall pipe from Boarman Pond created a block to any eels swimming upstream.

We installed a multi-core gutter-brush through an overflow pipe from the pond, where we could control flow and by-pass the monk. The brushes hang down into the pond, below the low summer lake levels, and have been installed so that they can be easily removed for cleaning. A double width (200mm wide) bristle-brush ramp, now runs from the outlet of the overflow pipe to the stream bed to by-pass a concrete. Siphon pipes and wicking material draws water up from the pond and into the overflow pipe to maintain low velocity water flow over the brushes.

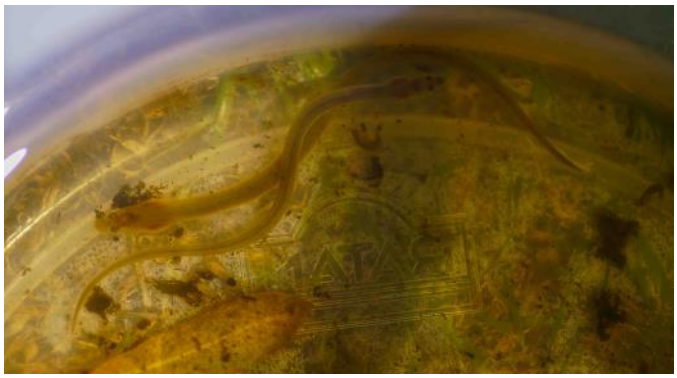
Middle Pond

Middle Pond was created in its current incarnation in c.1920, when a dam was built across the stream. A second reinforced concrete wall was constructed downstream of the original dam in the 1980s. The pond is managed by the Countryside Education Centre (CET) and is regularly used by school parties and volunteers. The dam and footpath were in urgent need of repair and this was the ideal opportunity to also address the eel passage issues.

The original dam was retained in the new design for its archaeological value. The modern redundant dam was removed and a new secondary retaining wall built from concrete sandbags. The space between the walls was backfilled with gravel to provide a safe footpath over the pond outlet. A notch was created within the existing concrete sill, to formalise water levels in the pond and direct water into two outlet pipes. A 110mm eel pipe with gutter brush was incorporated into the newly restored dam at a level below the minimum summer water level in the pond to create a constant gravity fed flow.

The key to our elver passes being sustainable in the longer term, has been the commitment from locals who are happy to check the build up to debris and periodically clean the brushes, whilst at the same time checking that flows are maintained at a constant low level.

Pre and post restoration work on the damn at the outlet to Middle Pond



Traps set at the top of the Stew Pond eel pass confirm that eel are already making their way up the stream, thanks to the combined efforts of the Hartford Stream Eel Team!

The eels return!

Capital works were completed by the end of April 2019, and although it was a bit of a long shot, Manny Hinge suggested we try to install an eel pass 'trap' to see if we could film elver using the newly installed passes.

None were recorded during the June full moon, but our efforts were rewarded in July when 6 eel were recorded. The eel had returned within just 3 months of completing the work. It shows, that with high quality freshwaters like the Hartford Stream, it only takes a small amount of work to make a big difference to the biodiversity of the catchment.

This is an extract from the full report which you can find on our New Forest Catchment Partnership web page here:

By Naomi Ewald, Freshwater Habitats Trust

VERDERERS OF THE NEW FOREST HLS WETLANDS 2019 UK RIVER PRIZE

AND NIGEL HOLMES TROPHY WIN

The project, to return New Forest streams and wetlands to their natural state, administered by Natural England, is part of the New Forest Higher Level Stewardship (HLS) scheme, a partnership between the Verderers, Forestry England and the National Park Authority. It is focussed on restoring and protecting internationally-important habitats in the New Forest which has 75% of the remaining valley mires left in North-Western Europe.

Conducting a project on this scale and in such an important place for habitats and species has required a huge team effort. Many colleagues, forest organisations, partners and members of the local community have been involved. Last month their hard work, support and commitment to the New Forest was recognised when the project was chosen as the most important river restoration scheme in the UK and awarded the 2019 UK River Prize. This prestigious prize, named after a hugely influential and passionate river restoration and conservation advocate, was judged by a panel of industry experts, including Martin Janes (The River Restoration Centre), Oliver Lowe (Natural Resources Wales), Pam Nolan (Environment Agency), Ann Skinner (Independent) and Christopher Spray (University of Dundee).

UK River Prize Award photo – The team collecting the UK River Prize in April 2019 (Photo © The RRC)

Started in 2010, the ten year project is reversing the damaging impacts of the artificial straightening of streams and digging of drainage channels, carried out since the Victorian era, by painstakingly reinstating the waters meanders and natural bends. This project has built on years of similar work in the Forest since the mid-1990s when it became apparent that intervention was needed to stop the loss of the natural habitats. This early work was fairly pioneering at the time and whilst the methodologies have since been refined, a lot of these works have stood the test of time to allow the natural wetlands to flourish.

As with previous projects in the Forest, we place a strong emphasis on learning more about its benefits to help inform future restorations right across the UK. We are exploring the changes that occur in hydrology, soil structure, vegetation and wildlife. We also look for changes in the physical features of the rivers and surrounding areas. Specialist surveys assess the impact of our work on vegetation and plant life to see how it is responding, and we are monitoring the development of invertebrates and fish communities. Our findings will help inform restoration work in the future and improve the understanding of how vital our wetlands are for the UK's ecology.

Soldiers Bog restored – three years after restoration (Photo © Mike Read)

By Nick Wardlaw, Higher Level Stewardship Manager, Forestry England

DEVELOPING THE EXTENDED RIVERFLY PROGRAMME IN THE NEW FOREST

NEW FOREST HIGER LEVEL STEWARDSHIP SCHEME

The Riverfly Partnership (RP) Anglers Riverfly Monitoring Initiative (ARMI) has been hugely effective at bring together a dynamic network of organisations and individuals; to protect water quality and biological conditions of UK rivers by monitoring 8 groups of commonly occurring freshwater invertebrates in rivers across the UK.

Building on the great accomplishment of ARMI, the Freshwater Biological Association (FBA), Environment Agency (EA) and Dorset Wildlife Trust (DWT) have been developing an Extended Riverfly Scheme to provide the following:

- An opportunity for Riverfly Monitors to extend their knowledge and skills by recording a wider range of freshwater invertebrate groups.
- A system for gathering more detailed information on freshwaters.

The new Extended Riverfly scheme was developed using the RIVPACS (River InVertebrate Prediction And Classification System) database. The database contains invertebrate samples from over 800 unpolluted reference sites across the UK. Reference samples were converted from species lists into family lists. An overall list of some 130 freshwater invertebrate families found across the UK as a whole was drawn up. FBA, DWT, RP and EA then undertook a process of combining these distinct families into groups that they thought represented a sensible level of taxonomic resolution that could be applied at the riverbank. For example, all of the separate flatworm families were combined into the simple group 'Flatworms'.

This process was repeated for all 130 families, giving a combined list of 33 groups. The RIVPACS database was then used to show how many of the 33 groups were found at each individual site. The data was then plotted to assess regional coverage and applicability.

Due to the New Forests diverse wetland habitats types (bogs, streams, rivers, mires and ponds) the new extended Riverfly scheme is currently being implemented and tested by the Higher Level Stewardship (HLS) citizen scientist programme - a collaborative volunteer research scheme.

The aims of the New Forest Extended Riverfly scheme is to assess whether it will:

- Allow volunteers to immerse themselves deeply in learning about freshwater issues.
- Be an effective way to monitor across a range of river and wetland types
- Provide an opportunity to evaluate restoration techniques.

For more information about extended Riverfly click here

Extended Riverfly Training day (photo © Grace Herve)

By Emma Tomlin, HLS Monitoring Officer , Forestry England

SOLENT AND POOLE HARBOUR BOATING AND WATER QUALITY WORKSHOP

LEAD BY ENVIRONMENT AGENCY AND NATURAL ENGLAND

There are over 9,000 recreational boats moored in the Solent and Poole Harbour, with limited facilities on board or on the shore, to dispose of 'black water' appropriately. Thus putting 22 bathing waters and 18 shellfish waters at risk from bacterial contamination. It can put peoples' health at risk, and effect local communities and the economy, when beaches or shellfish harvesting are impacted. These discharges also add to the nutrient enrichment issues that are causing significant damage to our designated coastal Natura 2000 sites. By engaging with the boating community, we tackle the issue at source, and demonstrate to other sectors that everyone is 'doing their bit' and taking responsibility to ensure our seas are healthy for wildlife, seafood consumption and recreational enjoyment.

We therefore invited 35 partners to join Natural England Social Scientists at a workshop to explore how we can persuade, motivate and enable behavioural changes in boaters, and design a toolkit of 'behaviour interventions'. The partners included Harbour Authorities, Water Companies, Coastal Forums, RYA, The Green Blue, British Marine Federation, Marina's, and other NGO's.

We were blown away by the energy, enthusiasm and commitment by all parties to bring about change – an astounding array of great ideas and pledges. Examples included: tackling the root causes e.g. cultures and lack of facilities on board or next to the water; raising awareness of the issues and where facilities are located, providing more flexible, working facilities which are affordable, accessible and hassle free; offering incentives; greater partnership and collaboration to strengthen the message and progress actions more effectively and with pace; and use 'champions' and boating events to get the messages out there and buy in to change behaviours.

One of many opportunities for recreational enjoyment on the Solent Water

Enjoying clean bathing waters

It certainly helps to have knowledgeable, influential, decision makers with a 'can do' attitude in the room (and a lot of ex-Navy Officers)!!

NE and EA will continue to work with partners, by providing support, information, raising awareness, promoting good practice, and facilitating events so that we can keep the momentum going and deliver the work required to protect and improve our marine protected sites.

If you would like any more information, then please contact Jackie Mellan, Greater Solent Project Manager – 02084 745875.

By Jackie Mellan, Greater Solent Project Manager, Natural England

OPPORTUNITY MAPPING IN SOUTHAMPTON WATER

WORKING IN COLLABORATION

The Government's 25 year Environment Plan, aims to improve the environment within a generation and embed an 'environmental net gain' principle for development, including housing and infrastructure. One aspect of this concept is using existing coastal infrastructure to mitigate the impact of new development, for example by removing obsolete structures or undertaking ecological enhancement.

Many new developments also require a Water Framework Directive assessment as part of the application. The purpose of these, is to ensure that the status of a water body is not degraded by new development; the long-term aim is for all water bodies to achieve 'good status'. Developers are required to use mitigation measures to ensure that there is no detrimental effect to water bodies, including internationally important sites for wildlife like Southampton Water.

Vertipools are artificial rock pools that offer a simple and versatile solution for creating new wildlife habitat

To move us closer to achieving these requirements, the Solent Forum worked with Solent partners to map and assess the opportunities to enhance the ecology of Southampton Water's shoreline infrastructure, including the Itchen and Hamble estuaries and sections of the New Forest coast.

This included reviewing seawalls, tyres, jetties, concrete and wooden structures, wrecks, revetments, rip rap walls, moorings, pontoons and quay walls. We also ran a consultative exercise to understand more about these coastal structures; their use, value, ownership, and potential opportunities for mitigation (ecological enhancement, restoration, or removal).

The information gathered helps us to understand 'what and where' the opportunities are, when considering future development proposals and 'net gain'. However, in many cases there is a lack of knowledge, evidence and practical help to make this happen. T

here is a will amongst the people of the Solent to improve the ecological value of the area in which they work and live; partners would like to develop the necessary tools and guidance to facilitate it to happen. The findings from this work should help in that process.

Vertipools deliver net ecological gains on defended coasts and harbours across the urban marine environment.

This was a collaborative partnership project, commissioned by the Environment Agency. To view the findings of this work and how the consultation was undertaken, click here

To begin the process of improving the knowledge base and developing guidance, the Solent Forum is working with its members to deliver a Building Biodiversity Solent hub of information, click here

By Kate Ansell, Solent Forum

SPECIES PROFILE: BROOK LAMPREY

A PRIMITIVE WONDER OF THE NEW FOREST'S STREAMS

The Brook Lamprey *Lampetra planeri*, is one of three species of primitive jawless lamprey found in the UK, and the only one to be found in the headwater streams of the New Forest. It is a non-migratory species, spending its whole life in freshwater streams without the need to return to the marine environment.

As with many of the New Forest's freshwater species, it has rather exacting habitat requirements - gravel beds for spawning and soft marginal silts but with high levels of dissolved oxygen for the larvae. These habitats are commonplace in clean headwater streams like we find in the New Forest, but are becoming a diminishing resource in much of the wider countryside. Sadly excess sediments from urban and agricultural pollution can smother gravel riffles, whilst artificial straightening of river channels can disrupt the formation of gravel riffle and silt pool sequences. For this reason Brook Lamprey, whilst still relatively widespread, are declining across most of their European range.

Traditional surveys for Brook Lamprey are time consuming and require specialist equipment and training. The blind toothless larvae (ammocoetes), that spend around 6 years hidden in their burrows, can be surveyed with electrofishing equipment. The idea is to use a pulse of electricity to 'irritate' them from their burrows. Then stun them so that they can be collected and counted without causing permanent harm or death.

The young lampreys metamorphose into adults en-masse in July and September, but remain nocturnal and hidden within the sediments or under stones to avoid becoming a tasty snack. At this stage they develop a primitive eye and a disk ring of 'teeth'. In fact the adults never feed, so this adaptation is a reminder of their parasitic evolutionary history. It is only in the following spring (March – June) that spawning adults suddenly reveal themselves in daylight, generally when river temperatures reach around 11oC. This is a fleeting glimpse, as following spawning, the short lived adults die. So you can see that a positive identification of the adults requires the surveyor to be in the right place at the right time, although it is a delight to witness (see our volunteer blog post below).

You may remember in the last issue of Water News, that we reported on our use of new eDNA technology to identify fish species using laboratory analysis of river water samples. We were excited to see that 9 out of the 13 eDNA New Forest river samples returned a positive result for Brook Lamprey. It opens up the possibility that we could detect the location of more sites without the need for invasive survey techniques.

EASTER LUNACY … AND GRANDCHILDREN

BY FIONA AND JULIAN WORMALD

We are keen to hear about your encounters with Brook Lamprey from the New Forest and, to give you inspiration, we are delighted to share with you one of our supporter blog posts.

… As we returned to the stream after lunch on Good Friday, our eldest granddaughter called out from ahead of us, that there were 3 eels in the stream. Doubtful, I reached the bank side and indeed she was right. Barely 4 feet from where we stood were three intertwining eel like fish, about 6 inches long and the thickness of a finger, sinuously twisting and focusing their activity on a very small area of the gravelly stream bed.

As we all made it to the viewing point, it became clear that this was a prelude to spawning, and Fiona spotted that the fish were using flexing body movements and physically picking up stones in their mouths to fashion some sort of shallow depression.

My limited knowledge of eel ecology included the fact, that all eels migrate to spawn in the Sargasso Sea - that unique area of the Atlantic that has no immediate land borders, defined by four different rotating ocean currents. So maybe these weren't eels after all?

Then they must be lampreys! How exciting since none of us had ever seen one before, and here in front of us they were performing their mating and spawning ritual, completely unfazed by our presence, noise, and even stick waving by the youngest of our clan. After several minutes watching we moved downstream and I kept looking for any more. I spotted one dark form swimming purposefully upstream. An hour or so later at the spawning site, there were indeed four more present.

Returning on my own just before dusk, the number had risen to 8, I think. Though it's difficult to count a writhing mass of lamprey …

Good Friday was the night of a full moon and being clear, warm and dry, I was intrigued to see the state of affairs the following morning, so around sunrise at 6.10 a.m. I walked back down to the stream. They'd all gone! It was only later, that I realised that the accumulated plant debris in the spawning site, just downstream of the larger stones, wasn't "just plant debris", but a collection of caddis larvae which had moved into the site for breakfast eggs!

This is an excerpt from Julian and online blog. If you'd like to read more about their adventures you can do so here: bit.ly/31vxaLL

PARTNER PROFILE: RHYS MORGAN

NEW FOREST LAND ADVICE OFFICER, WILDLIFE TRUST

Growing up in rural North Wales I have always had a keen interest in the countryside, this has certainly played a large part in my chosen career path. The majority of my career has involved an outdoor element of surveying the countryside. I would say I am a 'conservation generalist' with a keen interest to support the greater countryside.

My career began working for Powys County Council as a Rights of Way Officer shortly followed by a position with the Countryside Council for Wales. The position was varied but of most interest to me was working with the farmers through "Tir Gofal" an environmental stewardship scheme.

I started working with the Hampshire and Isle of Wight Wildlife Trust (HIWWT) in 2006 after moving south to live with my wife. The Project was called Forest Friendly Farming, a successful scheme supporting commoners and landowners with conservation advice. We ran a small grant scheme making various farm improvements, such as laying hedges. This project has continued to be successful for 19 years now, evolving into today's New Forest Land Advice Service (NFLAS), run in partnership with the New Forest National Park Authority (NPA).

My role is both interesting and varied. I`m employed by the HIWWT but based in the New Forest NPA office at Lymington with the NFLAS team. Our work varies depending on the time of year. We are a reactive service so you're never too sure what the next question will be! We provide a local one stop shop for those wanting support in the New Forest area regarding wildlife, habitat management, government regulations, small grants and back up grazing when it can be found.

NFLAS was created back in 2010 after the success of the previous project: Forest Friendly Farming. There had been a keen interest among several organisations to work together providing bespoke advice collectively for commoners and landowners in the New Forest. NFLAS enables several organisations to work together and bring greater expertise to the table. This has proven to work well and continues to do so. We started as three organisations: HIWWT, New Forest NPA and Natural England, with the Verderers also providing support to the service. This has changed over time but also expanded to bring in additional projects into the fold. NFLAS works closely with a variety of organisations such as Freshwater Habitats Trust and enjoys many positive relationships.

Recently NFLAS have been working with landowners to submit Catchment Sensitive Farming grant applications. We have a variety of applications across the New Forest, The aim of these grants are to financially support land owners with much needed capital work improvements. The grant allows for the funding of a variety of installations such as rainwater harvesting systems to reduce run off and water costs. One of the key items we look for are the location of manure piles as these are a key focus point for run off into the local environment. Of course, this isn`t our only work in the summer months as we are still a one stop shop in the New Forest providing advice on multiple issues.

As an advisor in the New Forest and Avon Valley since 2006 I can certainly say this is a unique place to work. We are all familiar with the fact the New Forest is an important place for wildlife and conservation but equally as important are the commoners and farmers I have got to know over these years. Continuing to support them is one of the driving forces behind my keen interest to support the New Forest. To find out more about the work of the New Forest Land Advice team click here.

By Rhys Morgan, New Forest Land Advice Officer, Wildlife Trust

THE NEW FOREST CATCHMENT PARTNERSHIP

The partnership is a group of organisations that are working with local communities to protect and improve the outstanding freshwater environment of the New Forest.

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Key partners include:

Freshwater Habitats Trust

SUPPORTED BY

NEW FOREST NATIONAL PARK

Environment Agency

THE wildlife TRUSTS

Hampshire & Isle of Wight Wildlife Trust

Catchment Based Approach

Partnerships for Action

Forestry Commission

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